

April 12, 2022

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143 Diamond Ave.  
Parachute, CO 81635



## **REPORT OF WORK COMPLETED - 1<sup>st</sup> Qtr 2022**

**Project Name:** PJ16 Dump-line Leak  
**COGCC Spill/Release Point ID (Facility ID):** 480346 (334656)  
**Legal Description:** NWSE Sec. 16 T7S-R95W Garfield County, CO  
**Location (Lat/Long):** 39.434772, -108.001368

On behalf of Caerus Operating LLC (Caerus), Campos EPC (CEPC) has prepared this Report of Work Completed (ROWC) to document recent assessment activities at the PJ16 well pad (Site). This ROWC provides background and purpose of the assessment, methodology, summarized results, and recommendations for additional action. Attachments to this ROWC include field notes and photos, Site exhibits, soil boring logs, soil analytical data tables and laboratory reports.

### **BACKGROUND**

The Site is located approximately 2.85 miles southeast of Parachute, CO within the Battlement Mesa Unit. Land use is primarily high mountain desert rangeland with rural residences. Surrounding topography slopes generally to the west on 5-20% slopes. Lithology consists of Ildefonso stony loam. The nearest surface water is Monument Gulch, an ephemeral stream situated approximately 800 feet (ft) southeast of the Site, which is a tributary to the Colorado River -receiving waters- 2.5 miles west. According to local well construction data from the Division of Water Resources (Permit# 249762), depth to groundwater is approximately 86 ft in the vicinity of the Site.

In response to a dump-line failure that resulted in a release, investigative and remedial activities were conducted during the 3<sup>rd</sup> and 4<sup>th</sup> quarters of 2021. Completed activities include excavation of the impacted area to 20 ft below ground surface (bgs), background soil sampling, restoration of the pad surface, three soil borings, and two Soil Vapor Extraction (SVE) well installs. Documentation and data from all completed work are included as attachments to this report.

To complete assessment of the Site, 1<sup>st</sup> quarter 2022 activities included two additional soil borings with SVE well installs and a pilot test to determine viability of SVE remediation.

### **METHODOLOGY**

On February 21<sup>st</sup> and 22<sup>nd</sup>, 2022, CEPC continued drilling operations to complete horizontal delineation to the south and southeast of the point of release (POR). Soil boring SB-03 was drilled approximately 25 ft south of the POR and completed as monitoring well SVE-03. Visual inspection and field screening via Photo Ionization Detector (PID) were completed at five ft intervals beginning at 20 ft bgs. Soil samples were collected at 20 ft bgs, 30 ft bgs, and 34 ft bgs using strict decontamination practices for drill rig equipment. Soil boring SB-05 was drilled approximately 30 ft southeast of the POR and completed as monitoring well SVE-02. Visual inspection and field screening were completed at five ft intervals beginning at 10 ft bgs. Soil samples were collected at 10 ft bgs, 20 ft bgs, 30 ft bgs, and 38 ft bgs using strict decontamination practices for drill rig equipment. All samples were collected in laboratory provided jars, immediately packed on ice, and submitted via courier to Pace Analytical for analysis of all constituents listed on the COGCC Table 915-1. Sample locations and pertinent features were surveyed using a Trimble RTX Data Collector with sub-inch accuracy. An aerial survey to gather updated imagery of the property was completed with an Autel Evo II drone. Drilling operations were completed by Colorado Drilling and Sampling using auger and air rotary methods.

On March 24, 2022, CEPC and Caerus personnel conducted a pilot test of the SVE wells using Caerus's mobile SVE system. SVE-01 was connected to the system as the extraction test well, while SVE-03 and SVE-04 were used as observation wells. Testing periods of 15-20 minutes were conducted at three separate flow rates. Field measurements for vacuum pressure, volatile organic compound (VOC) concentration, and temperature were collected throughout each testing period and are included as an attachment. Two air samples were collected from SVE-01 at flow rates of 50 cubic feet per minute (cfm) and 110 cfm, respectively, using a ball valve on the mobile SVE system. Air samples were collected in laboratory provided tedlar bags and submitted to Pace Analytical for laboratory analysis (report included as attachment).

## **RESULTS**

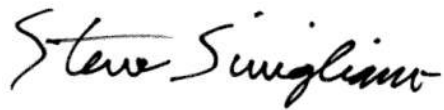
Field screening results from February 21<sup>st</sup> and 22<sup>nd</sup>, 2022 drilling activities indicated no staining or odors throughout all screened intervals of soil borings SB-03 and SB-05. PID readings were all below 1.0 ppm throughout all screened intervals. Laboratory results for soil samples collected from SB-03 indicate compliance with COGCC Table 915-1 Residential SSL concentrations, with exception to pH and Arsenic. Results for pH indicated values of 8.56 and 8.51 at 20 ft bgs and 34 ft bgs, respectively. Results for Arsenic indicated concentrations of 4.29 mg/kg and 3.31 mg/kg at 20 ft bgs and 34 ft bgs, respectively. Laboratory results for soil samples collected from SB-05 indicate compliance with COGCC Table 915-1 Residential SSL concentrations, with exception to pH and Arsenic. Laboratory results for soil samples collected from SB-05 indicate compliance with COGCC Table 915-1 Residential SSL concentrations, with exception to pH and Arsenic. Results for pH ranged from 8.49 at 10 ft bgs to 8.58 at 34 ft bgs. Results for Arsenic ranged from 2.69 mg/kg at 34 ft bgs to 4.84 mg/kg at 20 ft bgs.

Pilot test results at 50 cubic feet per minute (cfm) flow rate, indicated vacuum pressure for the test well at 8 inches of water column (IWC) as vacuum pressure at the observation wells increased from 1.0 IWC to 1.1 IWC and from 0.72 IWC to 0.88 IWC, respectively. PID readings collected from the exhaust stack increased from 2,184 ppm to 2,332 ppm during the testing period. At 80 cfm flow rate, vacuum pressure at the test well measured 9 IWC and indicated vacuum pressures increasing at the observation wells from 1.9 IWC to 2.0 IWC and from 1.2 IWC to 1.4 IWC, respectively. PID readings increased from 1,858 ppm to 1,979 ppm during the 80 cfm flow rate testing period. At 110 cfm flow rate, vacuum pressure at the test well measured 12 IWC and indicated vacuum pressures increasing at the observation wells from 2.3 IWC to 2.4 IWC and from 1.6 IWC to 1.7 IWC, respectively. PID readings increased from 2,001 ppm to 2,442 ppm during the 110 cfm flow rate testing period.

## **CONCLUSION**

Based on this investigation, CEPC concludes vertical and horizontal extent of remaining impacts have been delineated within the footprint of the five soil borings. Pilot test results indicate SVE remediation is a viable method as demonstrated by increased vacuum pressures at the observation wells and high concentration of VOC extraction at the test well. CEPC recommends installing a passive and/or enhanced SVE remediation system along with periodic observations and sampling events to monitor attenuation of the remaining impacts. Additionally, based on known groundwater depth at approximately 50 ft below vertical extent of impacts, CEPC recommends a request to the COGCC to use Table 915-1 Residential SSL concentrations for COA cleanup standards.

Thank you for the opportunity to support you on this project. Please reach out anytime with questions regarding this report and associated field work.

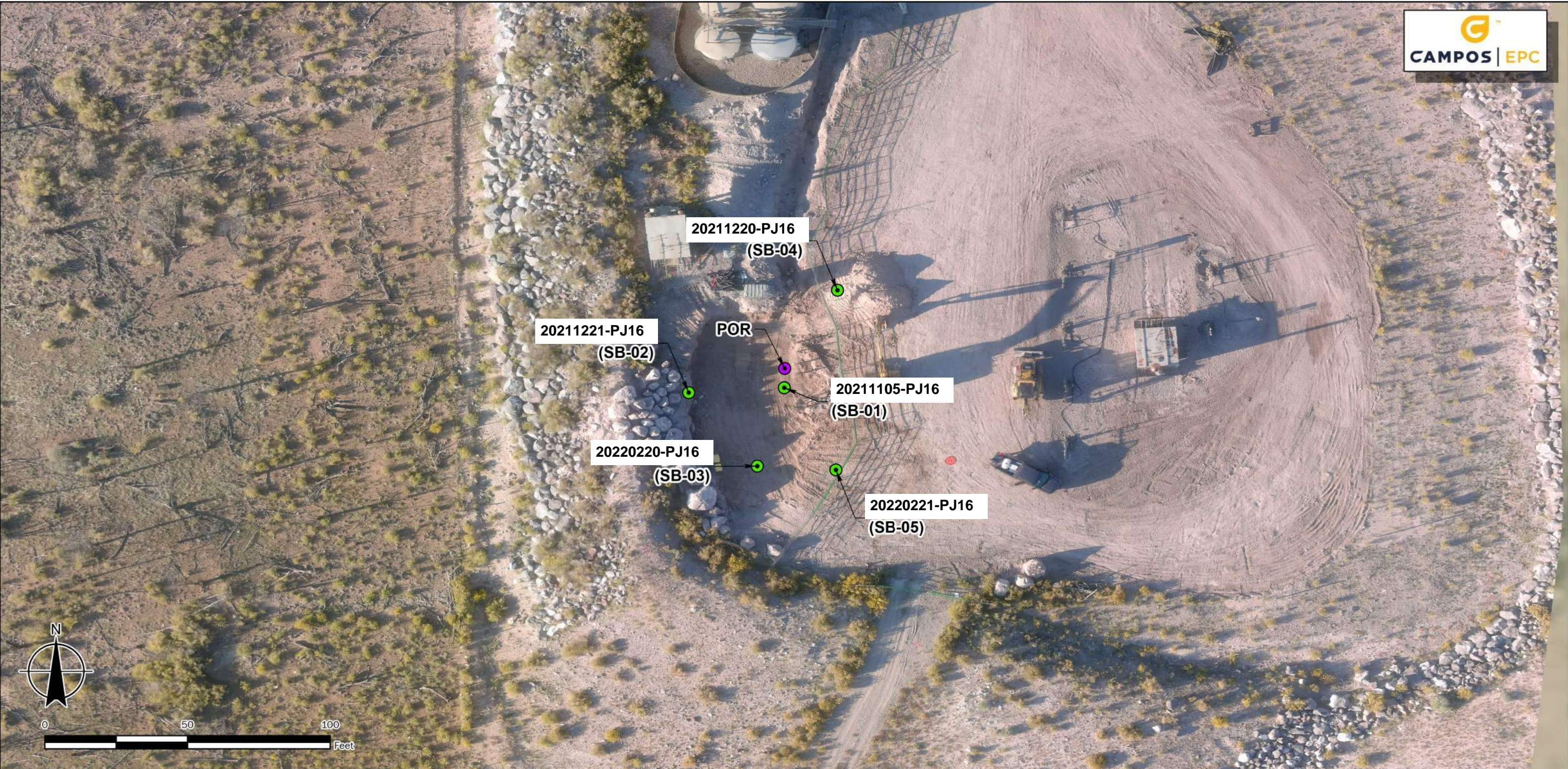


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### Attachments

- Site Exhibits
- Soil Analytical Table
- Soil Boring Logs
- Laboratory Reports
- Field Notes and Photos
- SVE Pilot Test Data



20211220-PJ16  
(SB-04)

20211221-PJ16  
(SB-02)

POR

20211105-PJ16  
(SB-01)

20220220-PJ16  
(SB-03)

20220221-PJ16  
(SB-05)



PJ16  
SHORE-67S95W / 16NWSE  
COGCC LOCATION ID: 334656  
GARFIELD COUNTY, CO  
NWSE SEC. 16 T7S-R95W

- Legend
- Soil Boring Location
  - Point of Release

COORDINATE SYSTEM  
GCS NORTH AMERICAN 1983

DRAFTER: AP      DATE: 2/25/2022

Identifier	Latitude NAD83	Longitude NAD83	Elevation
20211105-PJ16(SB-01)	39.434709	-108.001624	6063.60 ft
20220221-PJ16(SB-02)	39.434705	-108.001715	6063.01 ft
20220221-PJ16(SB-03)	39.434634	-108.001650	6063.56 ft
20220221-PJ16(SB-04)	39.434803	-108.001573	6064.04 ft
20220221-PJ16(SB-05)	39.434631	-108.001574	6062.93 ft
POR	39.434728	-108.001623	6061.41 ft





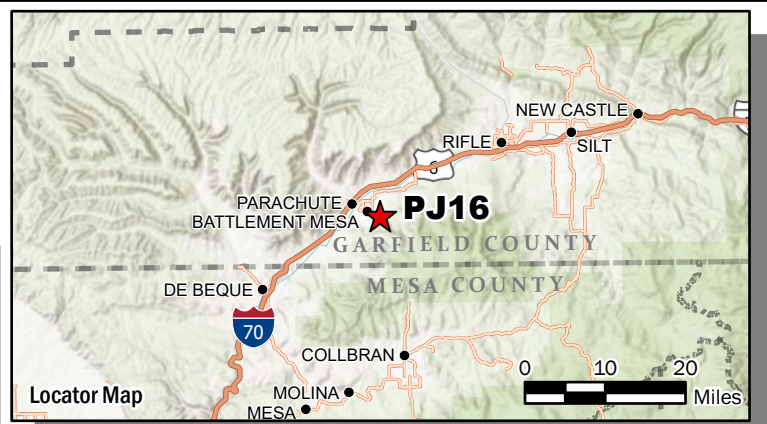
**PJ16**  
 SHORE-67S95W / 16NWSE  
 COGCC LOCATION ID: 334656  
 GARFIELD COUNTY, CO  
 NWSE SEC. 16 T7S-R95W

DRAFTER: AP      DATE: 4/7/2022

- Legend**
- Point of Release
  - Soil Vapor Extraction (SVE) Well

COORDINATE SYSTEM  
 GCS NORTH AMERICAN 1983

Identifier	Latitude NAD83	Longitude NAD83	Elevation
POR	39.434728	-108.001623	6061.41 ft
SVE-01	39.434709	-108.001624	6063.60 ft
SVE-02	39.434631	-108.001574	6062.93 ft
SVE-03	39.434634	-108.001650	6063.56 ft
SVE-04	39.434803	-108.001573	6064.04 ft



**SOIL ANALYTICAL DATA TABLE**  
**Caerus Oil and Gas - PJ16 Soil Borings**



Sample Name	ORGANIC COMPOUNDS in mg/kg								SOIL SUITABILITY				INORGANIC COMPOUNDS in mg/kg									
	TPH-GRO	TPH-DRO	TPH-ORO	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Electrical Conductivity (mmhos/cm)	Sodium Adsorption Ratio	pH (su)	Boron-hot water soluble (mg/L)	Arsenic	Barium	Cadmium	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
20210922-PJ16 (BGN) @ 2'	na	na	na	na	na	na	na	na	0.318	0.062	7.94	0.56	<b>6.74</b>	na	na	na	na	na	na	na	na	na
20210922-PJ16 (BGE) @ 3'	na	na	na	na	na	na	na	na	0.233	0.088	8.18	0.521	<b>6.29</b>	na	na	na	na	na	na	na	na	na
20210922-PJ16 (BGS) @ 3'	na	na	na	na	na	na	na	na	0.325	0.059	7.9	0.582	<b>4.67</b>	na	na	na	na	na	na	na	na	na
20210922-PJ16 (BGW) @ 2'	na	na	na	na	na	na	na	na	0.250	0.095	8.03	0.425	<b>6.72</b>	na	na	na	na	na	na	na	na	na
20211105-PJ16(SB01)@25'	865	142	12.7	<b>1019.70</b>	0.084	3.64	0.991	18.9	<b>4.67</b>	<b>47.5</b>	<b>8.91</b>	0.257	<b>4.89</b>	209	0.424	<1.0	22.1	7.23	45	1.58	<1.0	41
20211105-PJ16(SB01)@34'	956	158	30.4	<b>1144.4</b>	<0.040	1.59	0.721	14.4	<b>5.3</b>	<b>17.9</b>	<b>8.32</b>	0.297	<b>4.37</b>	158	0.403	<1.0	23	6.27	48	1.49	<1.0	40.5
20211105-PJ16(SB01)@39'	0.766	6.94	5.21	12.916	<0.001	<0.005	<0.0025	0.0137	3.59	<b>12.1</b>	8.30	0.189	<b>3.98</b>	112	0.313	<1.0	21.9	5.16	46.2	1.06	<1.0	35.4
20211220-PJ16(SB04)@15'	0.11	<4	5.88	5.99	<0.001	<0.005	<0.0025	<0.0065	0.335	2.66	<b>8.95</b>	0.2	<b>3.33</b>	80.2	<0.500	<1.0	16.4	5.03	37.1	<2.0	<1.0	23.4
20211220-PJ16(SB04)@30'	<0.1	5.5	6.79	12.29	<0.001	<0.005	<0.0025	<0.0065	0.459	1.3	<b>8.56</b>	<0.2	<b>4.66</b>	139	<0.500	<1.0	19.1	6.3	37.8	<2.0	<1.0	29.5
20211220-PJ16(SB02)@10'	<0.1	7.99	10.2	18.19	<0.001	<0.005	<0.0025	<0.0065	0.465	1.55	8.03	0.453	<b>4.19</b>	154	<0.500	<1.0	9.42	5.83	16.4	<2.0	<1.0	18
20211220-PJ16(SB02)@30'	0.181	7.44	9.08	16.701	<0.001	<0.005	<0.0025	<0.0065	0.166	na	<b>8.44</b>	<0.2	<b>3.77</b>	135	<0.500	<1.0	20.9	6.32	48.6	<2.0	<1.0	29.2
20220221-PJ16(SB03)@20'	0.127	6.64	9.85	16.617	<0.001	<0.005	<0.0025	<0.0065	0.199	0.688	<b>8.56</b>	<0.2	<b>4.29</b>	198	<0.500	<1.0	17.6	9.22	26	<2.0	<1.0	28.9
20220221-PJ16(SB03)@34'	0.145	13.4	16.3	29.845	<0.001	<0.005	<0.0025	<0.0065	0.209	0.488	<b>8.51</b>	<0.2	<b>3.31</b>	121	<0.500	<1.0	17.9	5.41	38.4	<2.0	<1.0	31.9
20220222-PJ16(SB05)@10'	<0.1	12.7	10.6	23.3	<0.001	<0.005	<0.0025	<0.0065	0.605	2.03	<b>8.49</b>	0.39	<b>4.19</b>	260	<0.500	<1.0	15.2	4.54	51.8	<2.0	<1.0	27.8
20220222-PJ16(SB05)@20'	<0.1	7.13	17.6	24.73	<0.001	<0.005	<0.0025	<0.0065	0.152	0.429	<b>8.53</b>	<0.2	<b>4.84</b>	264	<0.500	<1.0	25.7	8.99	40.9	<2.0	<1.0	46.3
20220222-PJ16(SB05)@30'	<0.1	4.46	11	15.46	<0.001	<0.005	<0.0025	<0.0065	0.137	0.396	<b>8.53</b>	<0.2	<b>4.77</b>	188	<0.500	<1.0	25.3	6.97	48.5	<2.0	<1.0	43.6
20220222-PJ16(SB05)@38'	0.108	4.51	5.93	10.548	<0.001	<0.005	<0.0025	<0.0065	0.14	0.431	<b>8.58</b>	<0.2	<b>2.69</b>	219	<0.500	<1.0	28.4	7.97	56.7	<2.0	<1.0	46.9
<b>COGCC TABLE 915-1</b> RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	500 mg/kg				1.2 mg/kg	490 mg/kg	5.8 mg/kg	58 mg/kg	<4.0 mmhos/cm	<6 unitless	6 - 8.3 su	2 mg/L	0.68 mg/kg	15,000 mg/kg	71 mg/kg	0.3 mg/kg	3,100 mg/kg	400 mg/kg	1,500 mg/kg	390 mg/kg	390 mg/kg	23,000 mg/kg
PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	500 mg/kg				0.0026 mg/kg	0.69 mg/kg	0.78 mg/kg	9.9 mg/kg	<4.0 mmhos/cm	<6 unitless	6 - 8.3 su	2 mg/L	0.29 mg/kg	82 mg/kg	0.38 mg/kg	0.00067 mg/kg	46 mg/kg	14 mg/kg	26 mg/kg	0.26 mg/kg	0.8 mg/kg	370 mg/kg

Notes:  
**Bold w/ yellow highlight** - exceeds COGCC 915-1 residential soil screening level concentration

- < - less than laboratory reporting detection limit (RDL)
- COGCC - Colorado Oil and Gas Conservation Commission
- TPH-GRO - Total Petroleum Hydrocarbon-Gasoline Range Organics
- TPH-DRO - Total Petroleum Hydrocarbon-Diesel Range Organics
- TPH-ORO - Total Petroleum Hydrocarbon-Oil Range Organics
- mg/kg - milligrams per kilogram
- mg/L - milligrams per Liter
- mmhos/cm - millimhos per centimeter
- su - standard unit
- na - not analyzed

SOIL ANALYTICAL DATA TABLE (continued)

Caerus Oil and Gas - PJ16 Soil Borings



Sample Name	ORGANIC COMPOUNDS in mg/kg (continued)																
	1, 2, 4-trimethylbenzene	1, 3, 5-trimethylbenzene	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno (1, 2, 3-cd)pyrene	1-methylnaphthalene	2-methylnaphthalene	Naphthalene	Pyrene
20210922-PJ16 (BGN) @ 2'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20210922-PJ16 (BGE) @ 3'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20210922-PJ16 (BGS) @ 3'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20210922-PJ16 (BGW) @ 2'	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
20211105-PJ16(SB01)@25'	4.27	3.69	0.0042	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.00844	<0.006	0.188	0.53	0.235	<0.006
20211105-PJ16(SB01)@34'	4.62	3.95	0.00509	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.0104	<0.006	0.214	0.596	0.239	<0.006
20211105-PJ16(SB01)@39'	0.00795	0.00513	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.00482	0.0119	0.00835	<0.006
20211220-PJ16(SB04)@15'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20211220-PJ16(SB04)@30'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20211220-PJ16(SB02)@10'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20211220-PJ16(SB02)@30'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220221-PJ16(SB03)@20'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220221-PJ16(SB03)@34'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220222-PJ16(SB05)@10'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220222-PJ16(SB05)@20'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220222-PJ16(SB05)@30'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
20220222-PJ16(SB05)@38'	<0.005	<0.005	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.02	<0.02	<0.02	<0.006
<b>COGCC TABLE 915-1</b> RESIDENTIAL SOIL SCREENING LEVEL CONCENTRATIONS	30 mg/kg	27 mg/kg	360 mg/kg	1800 mg/kg	1.1 mg/kg	1.1 mg/kg	11 mg/kg	0.11 mg/kg	110 mg/kg	0.11 mg/kg	240 mg/kg	240 mg/kg	1.1 mg/kg	18 mg/kg	24 mg/kg	2 mg/kg	180 mg/kg
PROTECTION OF GROUNDWATER SOIL SCREENING LEVEL CONCENTRATIONS	0.0081 mg/kg	0.0087 mg/kg	0.55 mg/kg	5.8 mg/kg	0.011 mg/kg	0.3 mg/kg	2.9 mg/kg	0.24 mg/kg	9 mg/kg	0.096 mg/kg	8.9 mg/kg	0.54 mg/kg	0.98 mg/kg	0.006 mg/kg	0.019 mg/kg	0.0038 mg/kg	1.3 mg/kg

Notes:

**Bold w/ yellow highlight - exceeds COGCC 915-1 residential soil screening level concentration**

< - less than laboratory reporting detection limit (RDL)

COGCC - Colorado Oil and Gas Conservation Commission

TPH-GRO - Total Petroleum Hydrocarbon-Gasoline Range Organics

TPH-DRO - Total Petroleum Hydrocarbon-Diesel Range Organics

TPH-ORO - Total Petroleum Hydrocarbon-Oil Range Organics

mg/kg - milligrams per kilogram

mg/L - milligrams per Liter

mmhos/cm - millimhos per centimeter

su - standard unit

na - not analyzed

**SOIL GAS ANALYTICAL RESULTS TABLE  
PJ16 - PILOT TEST**



Sample Name	VOLATILE ORGANIC COMPOUNDS in ppmv					
	TPH-GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Methyl tert-butyl ether
20220324-PJ16-SVE01@110	27,900	711	946	28.6	329.2	<0.08
20220324-PJ16-SVE01@50	29,000	485	753	30.5	223.2	<0.08

Sample Name	VOLATILE ORGANIC COMPOUNDS in mg/m <sup>3</sup>					
	TPH-GRO	Benzene	Toluene	Ethylbenzene	Total Xylenes	Methyl tert-butyl ether
20220324-PJ16-SVE01@110	115,000	2,270	3,560	124	1,423	<288
20220324-PJ16-SVE01@50	120,000	1,550	2,840	132	968	<288

Notes:

< - less than laboratory reporting detection limit (RDL)

TPH-GRO - Total Petroleum Hydrocarbons Gasoline Range Organics

ppmv - parts per million by volume

mg/m<sup>3</sup> - milligrams per cubic meter

# BORING LOG / WELL CONSTRUCTION DETAILS: SVE-01



DRILL DATE: 11/5/2021	WELL INSTALL DATE: 11/24/2021
SITE NAME: PJ16	BORING ID: SB-01
LOGGED BY: EVAN MASON	WELL INSTALLED (Y/N): Y
DRILLED BY/METHOD: CO DRILLING & SAMPLING/ AIR ROTARY/AUGER	WELL TYPE: SOIL VAPOR EXTRACTION
OWNER: CAERUS	LOCATION: NWSE SEC16 T7S R95W GARFIELD COUNTY, CO
LAT/LONG: 39.434709, -108.001624	

TOTAL DEPTH (FEET): 42    DEPTH TO WATER (FEET): N/A    WELL DIAMETER (INCHES): 2    NG/TOC ELEVATION (FEET): 6,066'

DEPTH (FT)	SOIL/ROCK TYPE	MOISTURE CONTENT	PID (ppm)	WELL CONSTRUCTION	LITHOLOGY/ADDITIONAL NOTES
0				40" Above Ground Stick-up	
0-2.5'				Backfill 0-2.5' below ground surface (bgs)	(0-20') Backfill.
0-20'				2" Diameter Schedule 40 PVC Riser	
2.5-20' bgs				Bentonite Chips	
20-21'	ML	DRY	1,895		(20-21') Brown, clayey SILT. Cobble-sized fragments of basalt and 1" films of consolidated sands throughout. Strong hydrocarbon odor (HC/O). No staining (N/S).
25-26'	ML	DRY	1,934		(25-26') Same as above (SAA). Sample: 20211105-PJ16(SB01)@25'
20-40' bgs				10/20 Silica Sand Pack	
33-34'	ML	DRY	1,243		(33-34') SAA. Sample: 20211105-PJ16(SB01)@34'
20-40' bgs				2" Diameter, Schedule 40 Slotted PVC (0.010")	
38-39'	ML	DRY	191		(38-39') SAA. Sample: 20211105-PJ16(SB01)@39'
41-42'	SM	MOIST	76		(41-42') Brown, SILT with SAND. Pulverized basalt throughout. N/O, N/S.
@42'				2' Sand	(@42') Bottom of boring

# BORING LOG / WELL CONSTRUCTION DETAILS: SVE-02

DRILL DATE: 12/20&21/2021	WELL INSTALL DATE: n/a
SITE NAME: PJ16	BORING ID: SB-02
LOGGED BY: EVAN MASON	WELL INSTALLED (Y/N): N
DRILLED BY/METHOD: CO DRILLING & SAMPLING/ AIR ROTARY/AUGER	WELL TYPE: SOIL VAPOR EXTRACTION



WELL ID: n/a

OWNER: CAERUS	LOCATION: NWSE SEC16 T7S R95W GARFIELD COUNTY, CO
---------------	---------------------------------------------------

LAT/LONG: 39.434705, -108.001715

TOTAL DEPTH (FEET): n/a	DEPTH TO WATER (FEET): N/A	WELL DIAMETER (INCHES): n/a	NG/TOC ELEVATION (FEET): 6,063
-------------------------	----------------------------	-----------------------------	--------------------------------

DEPTH (FT)	SOIL/ROCK TYPE	MOISTURE CONTENT	PID (ppm)	WELL CONSTRUCTION	LITHOLOGY/ADDITIONAL NOTES
0				SVE Well not installed. Boring backfilled with sand and bentonite.	Potholed to 8.5' bgs
10	ML	DRY	0.55		(10-12') Brown clayey SILT. Cobble-sized fractured basalt throughout. No odor (N/O). No staining (N/S). Sample: 20211220-PJ16(SB02)@10'
15	—	DRY	—		(15-16') 5% recovery. 100% fractured basalt. N/O. N/S.
20	CL	DRY	0.05		(20-21') Tan silty CLAY. 1-2" films of fractured sandstone and basalt throughout. Insufficient recovery for sample submission. N/O. N/S.
25	—	DRY	—		(25') 0% recovery. Insufficient soil for sample collection and screening.
30	SM	DRY	1.65		(30-32') Brown silty SAND. 1" films of fractured basalt throughout. N/O. N/S. Sample: 20211221-PJ16(SB02)@30'
35	—	DRY	—		(35') 100% fractured basalt. N/O. N/S. (36') Auger bit stuck down hole. Not able to collect sample or set well. Boring backfilled with sand and bentonite.
40					
45					

# BORING LOG / WELL CONSTRUCTION DETAILS: SVE-04



DRILL DATE: 12/20/2021	WELL INSTALL DATE: 12/20/2021
SITE NAME: PJ16	BORING ID: SB-04
LOGGED BY: EVAN MASON	WELL INSTALLED (Y/N): Y
DRILLED BY/METHOD: CO DRILLING & SAMPLING/ AIR ROTARY/AUGER	WELL TYPE: SOIL VAPOR EXTRACTION

WELL ID: SVE-04

OWNER: CAERUS      LOCATION: NWSE SEC16 T7S R95W GARFIELD COUNTY, CO      LAT/LONG: 39.434803, -108.001573

TOTAL DEPTH (FEET): 31      DEPTH TO WATER (FEET): N/A      WELL DIAMETER (INCHES): 2      **(NG)** TOC ELEVATION (FEET): 6,064

DEPTH (FT)	SOIL/ROCK TYPE	MOISTURE CONTENT	PID (ppm)	WELL CONSTRUCTION	LITHOLOGY/ADDITIONAL NOTES
0				40" Above Ground Stick-up	
0-10				2" Diameter Schedule 40 PVC Riser 0-20'	Potholed to 10' bgs
10-12	SM	DRY	0.0		(10-12') Reddish brown sandy SILT. Cobble-sized fractured sandstone and basalt throughout. No odor (N/O). No staining (N/S).
12-15				Bentonite Chips 0-19' bgs	
15-17	ML	DRY	0.50		(15-17') Light brown clayey SAND. Cobble-sized fractured sandstone and basalt throughout. N/O. (N/S). Sample: 20211220-PJ16(SB04)@15'
17-20	—	DRY	NA		(20-21') 3% recovery. 100% fractured basalt. N/O. N/S.
20-21				10/20 Silica Sand Pack 19-31' bgs	
21-25	CL	DRY	0.25		(25-26') Brown silty CLAY. Cobble-sized fractured basalt throughout. N/O. N/S.
25-26				2" Diameter, Schedule 40 Slotted PVC (0.010") 21-31' bgs	
26-30	ML	DRY	0.70		(30-32') Brown clayey SILT. Cobble-sized fractured basalt throughout. N/O. N/S. Sample: 20211220-PJ16(SB04)@30'
30-31					(@31') Bottom of boring

# BORING LOG / WELL CONSTRUCTION DETAILS: SVE-03



DRILL DATE: 2/21/2022	WELL INSTALL DATE: 2/21/2022
SITE NAME: PJ16	BORING ID: SB-03
LOGGED BY: EVAN MASON	WELL INSTALLED (Y/N): Y
DRILLED BY/METHOD: CO DRILLING & SAMPLING/AUGER	WELL TYPE: SOIL VAPOR EXTRACTION

WELL ID: SVE-03  
 LAT/LONG: 39.434634, -108.001650

OWNER: CAERUS      LOCATION: NWSE SEC16 T7S R95W GARFIELD COUNTY, CO  
 TOTAL DEPTH (FEET): 34    DEPTH TO WATER (FEET): N/A    WELL DIAMETER (INCHES): 2    NG/TOC ELEVATION (FEET): 6063.6'/6069.31'

DEPTH (FT)	SOIL/ROCK TYPE	MOISTURE CONTENT	PID (ppm)	WELL CONSTRUCTION	LITHOLOGY/ADDITIONAL NOTES
0				40" Above Ground Stick-up	
0-19'				Bentonite Chips	Pothole to 8' below ground surface (bgs)
0-19'				2" Diameter Schedule 40 PVC Riser	
19-20'				Backfill to 20' bgs	
20-22'	CL	DRY	0.40		(20-22') Brown clayey SILT with cobble sized fractured basalt throughout. No Odor (N/O). No staining (N/S). Sample: 20220221-PJ16(SB03)@20'
25-25.5'	---	DRY	---	10/20 Silica Sand Pack	(25-25.5') Red oxidized fractured basalt. Insufficient soil recovery for proper screen or sampling
19-32'				2" Diameter, Schedule 40 Slotted PVC (0.010")	
30'	---	DRY	---		(30') 0% Recovery.
33-34'	SM	DRY	0.35	2' Sand	(33-34') Tan sandy SILT with miscellaneous fractured gravel throughout. Boulder at 35'. (N/O). (N/S). Sample: 20220221-PJ16(SB03)@34'
@34'					(@34') Bottom of boring

# BORING LOG / WELL CONSTRUCTION DETAILS: SVE-02



DRILL DATE: 2/22/2022		WELL INSTALL DATE: 2/22/2022	
SITE NAME: PJ16		BORING ID: SB-05	
LOGGED BY: EVAN MASON		WELL INSTALLED (Y/N): Y	
DRILLED BY/METHOD: CO DRILLING & SAMPLING/AUGER		WELL TYPE: SOIL VAPOR EXTRACTION	
OWNER: CAERUS		LOCATION: NWSE SEC16 T7S R95W GARFIELD COUNTY, CO	
		LAT/LONG: 39.434631, -108.001574	
TOTAL DEPTH (FEET): 38		DEPTH TO WATER (FEET): N/A	
		WELL DIAMETER (INCHES): 2	
		NG/TOC ELEVATION (FEET): 6063.33'/6066.65'	

DEPTH (FT)	SOIL/ROCK TYPE	MOISTURE CONTENT	PID (ppm)	WELL CONSTRUCTION	LITHOLOGY/ADDITIONAL NOTES
0				<p>40" Above Ground Stick-up</p> <p>Bentonite Chips 0-8' bgs</p> <p>2" Diameter Schedule 40 PVC Riser 0-8'</p>	Pothole to 8' below ground surface (bgs)
10-12	MH	DRY	0.10		(10-12') Tan SILT with gravel sized fractured basalt throughout. No Odor (N/O). No staining (N/S). Sample: 20220222-PJ16(SB05)@10'
15-17	MH	DRY	0.05		(15-17') Same as above (SAA)
20-22	CL	DRY	0.25	10/20 Silica Sand Pack 8-38' bgs	(20-22') Tan silty CLAY with various sizes of fractured basalt throughout. (N/O). (N/S). Sample 20220222-PJ16(SB05)@20'
25-27	CL	DRY	0.00		(25-27') SAA.
30-32	SM	DRY	0.55	2" Diameter, Schedule 40 Slotted PVC (0.010") 8-36' bgs	(30-32') Gray SILT with sand. Various sizes of fractured basalt throughout. (N/O). (N/S). Sample: 20220222-PJ16(SB05)@30'
35-36	SM	DRY	0.00		(35-36) SAA.
37-38	SM	DRY	0.00	2' Sand	(37-38) SAA. Sample: 20220222-PJ16(SB05)@38' (@38') Bottom of boring

**SVE PILOT TEST DATA  
FIELD MEASUREMENTS  
PJ16**

Personnel: Janicek/Sivigliano

Date: 3/24/2022

<b>Extraction Test</b>									
Test Start Time: 1055					Test End Time: 1218				
Test Well: SVE-01					Observation Wells				
Wellhead Vacuum (IWC)	Wellhead Flowrate (cfm)	VOC Stack (ppm)	Stack Temp (°F)	Time (minutes)	SVE-03	SVE-04			
					Distance From Test Well (feet)				
					27.2	36.9			
					Vacuum (IWC)		Air Sample?		
8	50	2184	<140	7	1	0.72			
	50	2223	<140	16	1.1	0.86			
	50	2332	140	24	1.1	0.88			Y
9	80	1858	140	39	1.9	1.2			
	80	1903	140	49	1.95	1.35			
	80	1979	150	60	2	1.4			
12	110	2001	190	68	2.3	1.6			
	110	1808	190	77	2.3	1.6			
	110	2442	190	83	2.4	1.7			Y

**Notes:**

cfm - cubic feet per minute

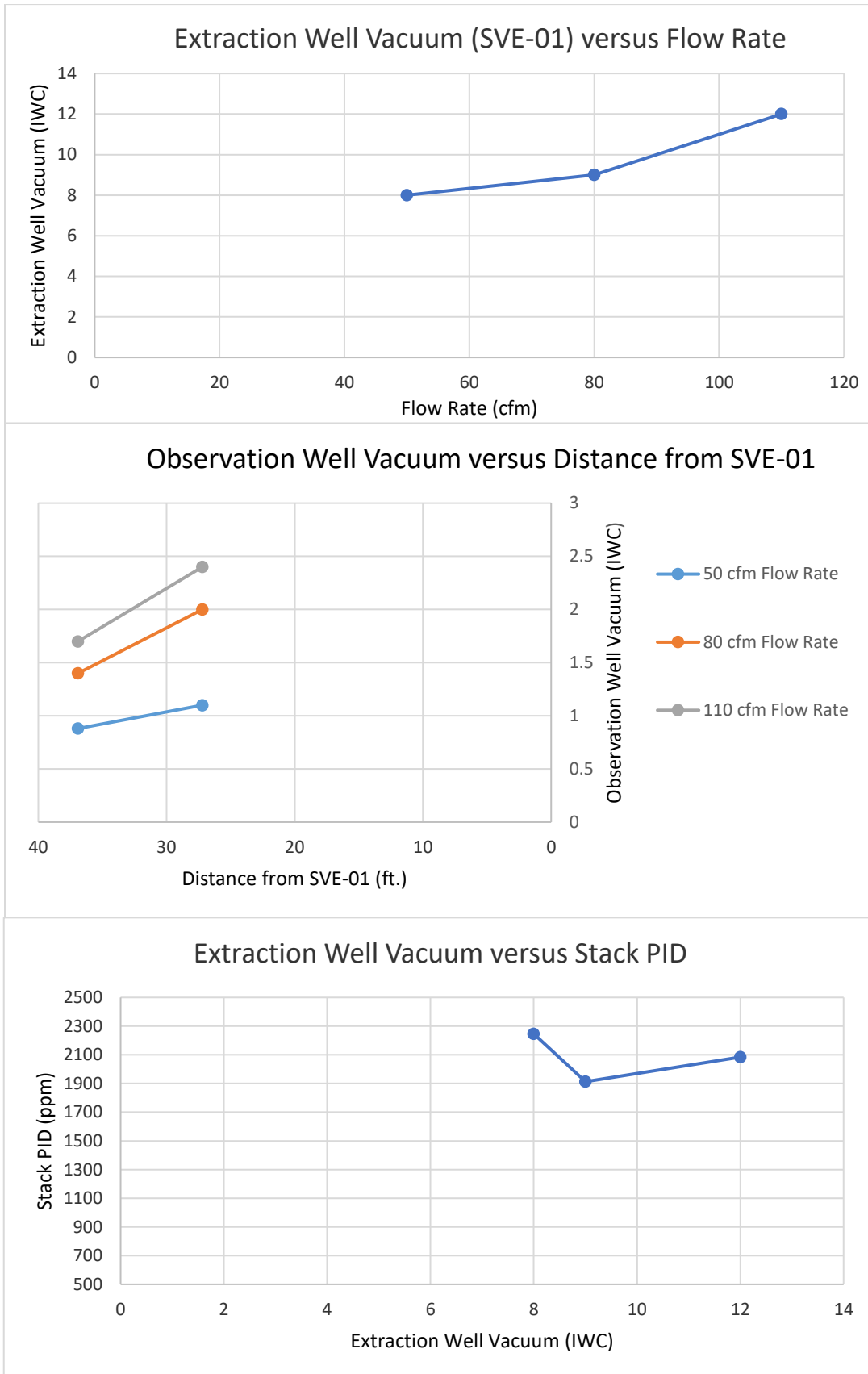
IWC - inches water column

ppm - parts per million

°F - degrees Fahrenheit



## PILOT TEST DATA - PJ16



## Caerus Oil and Gas

Sample Delivery Group: L1408952  
Samples Received: 09/24/2021  
Project Number: PJ16  
Description: PJ16 Well Pad  
Site: PJ16  
Report To: Steve Sivigliano  
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](http://www.pacenational.com)

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# SAMPLE SUMMARY

## 20210922-PJ16 (BGN) @ 2' L1408954-01 Solid

Collected by: Evan Mason  
 Collected date/time: 09/22/21 14:45  
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:14	10/01/21 14:14	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:51	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:42	LAT	Mt. Juliet, TN



## 20210922-PJ16 (BGE) @ 3' L1408954-02 Solid

Collected by: Evan Mason  
 Collected date/time: 09/22/21 15:00  
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:22	10/01/21 14:22	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:54	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:46	LAT	Mt. Juliet, TN



## 20210922-PJ16 (BGS) @ 3' L1408954-03 Solid

Collected by: Evan Mason  
 Collected date/time: 09/22/21 14:15  
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:25	10/01/21 14:25	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:57	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:49	LAT	Mt. Juliet, TN



## 20210922-PJ16 (BGW) @ 2' L1408954-04 Solid

Collected by: Evan Mason  
 Collected date/time: 09/22/21 14:30  
 Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1747664	1	10/01/21 14:28	10/01/21 14:28	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1750513	1	10/02/21 11:00	10/02/21 13:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1748901	1	09/30/21 14:03	09/30/21 21:03	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 14:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748271	5	09/29/21 18:43	10/01/21 01:52	LAT	Mt. Juliet, TN

# CASE NARRATIVE

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



Chris Ward  
Project Manager

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0622		1	10/01/2021 14:14	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.94	<u>T8</u>	1	10/02/2021 13:00	<a href="#">WG1750513</a>

Sample Narrative:

L1408954-01 WG1750513: 7.94 at 21.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	318		10.0	1	09/30/2021 21:03	<a href="#">WG1748901</a>

Sample Narrative:

L1408954-01 WG1748901: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.560		0.0167	0.200	1	10/01/2021 13:51	<a href="#">WG1747670</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.74		0.100	1.00	5	10/01/2021 01:42	<a href="#">WG1748271</a>

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	0.0882		1	10/01/2021 14:22	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	<u>T8</u>	1	10/02/2021 13:00	<a href="#">WG1750513</a>

Sample Narrative:

L1408954-02 WG1750513: 8.18 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	233		10.0	1	09/30/2021 21:03	<a href="#">WG1748901</a>

Sample Narrative:

L1408954-02 WG1748901: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.521		0.0167	0.200	1	10/01/2021 13:54	<a href="#">WG1747670</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.29		0.100	1.00	5	10/01/2021 01:46	<a href="#">WG1748271</a>

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	0.0593		1	10/01/2021 14:25	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.90	T8	1	10/02/2021 13:00	<a href="#">WG1750513</a>

Sample Narrative:

L1408954-03 WG1750513: 7.9 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	325		10.0	1	09/30/2021 21:03	<a href="#">WG1748901</a>

Sample Narrative:

L1408954-03 WG1748901: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.582		0.0167	0.200	1	10/01/2021 13:57	<a href="#">WG1747670</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.67		0.100	1.00	5	10/01/2021 01:49	<a href="#">WG1748271</a>

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	0.0949		1	10/01/2021 14:28	WG1747664

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	T8	1	10/02/2021 13:00	<a href="#">WG1750513</a>

Sample Narrative:

L1408954-04 WG1750513: 8.03 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	250		10.0	1	09/30/2021 21:03	<a href="#">WG1748901</a>

Sample Narrative:

L1408954-04 WG1748901: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.425		0.0167	0.200	1	10/01/2021 14:00	<a href="#">WG1747670</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	6.72		0.100	1.00	5	10/01/2021 01:52	<a href="#">WG1748271</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1408952-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1408952-03 10/02/21 13:00 • (DUP) R3711693-2 10/02/21 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su	su		%		%
pH	8.51	8.51	1	0.000		1

Sample Narrative:

OS: 8.51 at 21.4C  
DUP: 8.51 at 21.5C

L1411250-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1411250-01 10/02/21 13:00 • (DUP) R3711693-3 10/02/21 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su	su		%		%
pH	7.21	7.22	1	0.139		1

Sample Narrative:

OS: 7.21 at 21.3C  
DUP: 7.22 at 21.2C

Laboratory Control Sample (LCS)

(LCS) R3711693-1 10/02/21 13:00

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

Sample Narrative:

LCS: 10.02 at 21.8C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3711029-1 09/30/21 21:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1408952-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1408952-08 09/30/21 21:03 • (DUP) R3711029-3 09/30/21 21:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	326	310	1	5.03		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

L1408954-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1408954-03 09/30/21 21:03 • (DUP) R3711029-4 09/30/21 21:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	325	327	1	0.613		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3711029-2 09/30/21 21:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	279	104	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3711378-1 10/01/21 13:15

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

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

(LCS) R3711378-2 10/01/21 13:17 • (LCSD) R3711378-3 10/01/21 13:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.02	1.02	102	102	80.0-120			0.622	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3711086-1 09/30/21 23:09

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) R3711086-2 09/30/21 23:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.3	93.3	80.0-120	

L1408809-56 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408809-56 09/30/21 23:16 • (MS) R3711086-5 09/30/21 23:26 • (MSD) R3711086-6 09/30/21 23:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	35.0	127	126	91.5	91.4	5	75.0-125			0.0709	20

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.
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

Qualifier	Description
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

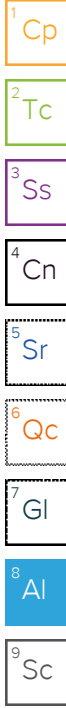
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.





# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY - Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

G235

Company: **Campos EPC**

Address: **1401 Blake St.**

Report To: **Steve Sivigliano**

Copy To: **Evan Mason - evan.mason@camposepc.com**

Billing Information:  
**Caerus Oil and Gas, LLC**  
**Account: CAERUSPCO**

Email To: **steve.sivigliano@camposepc.com**

Site Collection Info/Address:

**ALL SHADED AREAS are for LAB USE ONLY**

Container Preservative Type \*\*

Lab Project Manager:

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Customer Project Name/Number:  
**PJ16 Well Pad**

Phone: 9706199800  
Email: see above

Site/Facility ID #: **PJ16**

Compliance Monitoring?  
 Yes  No

Collected By (print): **Evan Mason**

Collected By (signature): *[Signature]*

Sample Disposal:  
 Dispose as appropriate  Return  
 Archive  
 Hold

State: **CO** / County/City: **Garfield** Time Zone Collected: **MT**

Purchase Order #: **PJ16**

Turnaround Date Required:

Rush:  
 Same Day  Next Day  
 2 Day  3 Day  4 Day  5 Day  
(Expedite Charges Apply)

Field Filtered (if applicable):  
 Yes  No

Analysis:

Analyses	Lab Profile/Line:	
	Lab Sample Receipt Checklist:	LAB USE ONLY
COGCC TABLE 915-1 (full list) pH, EC, SAR, Arsenic, Boron-Hot Water Sol.	Custody Seals Present/Intact	Y N NA
	Custody Signatures Present	Y N NA
	Collector Signature Present	Y N NA
	Bottles Intact	Y N NA
	Correct Bottles	Y N NA
	Sufficient Volume	Y N NA
	Samples Received on Ice	Y N NA
	VOL - Headspace Acceptable	Y N NA
	USDA Regulated Soils	Y N NA
	Samples in Holding Time	Y N NA
	Residual Chlorine Present	Y N NA
	Cl Strips:	
	Sample pH Acceptable	Y N NA
	pH Strips:	
	Sulfide Present	Y N NA
Lead Acetate Strips:		
Lab Sample # / Comments:	<b>4408954</b>	

\* Matrix Codes (insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
20210922-PJ16(B6A)@1	SS	Grab	9/22/21	1445				X
20210922-PJ16(B6E)@3				1500				X
20210922-PJ16(B6S)@3				1415				X
20210922-PJ16(B6W)@1				1430				X

Customer Remarks / Special Conditions / Possible Hazards:

Type of Ice Used:  Wet  Blue  Dry  None

Packing Material Used:

Radchem sample(s) screened (<500 cpm):  Y  N  NA

SHORT HOLDS PRESENT (<72 hours):  Y  N  N/A

Lab Tracking #:

Samples received via:  
FEDEX  UPS  Client  Courier  Pace Courier  MTJL LAB USE ONLY

Lab Sample Temperature Info:

Temp Blank Received:  Y  N  NA

Therm ID#: **Block**

Cooler 1 Temp Upon Receipt: **1.4** oC

Cooler 1 Therm Corr. Factor: **0** oC

Cooler 1 Corrected Temp: **1.4** oC

Comments:

Relinquished by/Company: (Signature)  
*[Signature]*

Date/Time: **9/23/21 1200**

Relinquished by/Company: (Signature)  
*[Signature]*

Date/Time: **9/23 1500**

Relinquished by/Company: (Signature)

Received by/Company: (Signature)  
*[Signature]*

Date/Time: **9/23 1200**

Received by/Company: (Signature)  
*[Signature]*

Date/Time:

Received by/Company: (Signature)  
*[Signature]*

Date/Time: **9/23 0945**

Table #:

Account:

Template:

Prelogin:

PM:

PB:

Trip Blank Received:  Y  N  NA

HCL MeOH TSP Other

Non Conformance(s):  
YES / NO

Page: \_\_\_\_\_ of: \_\_\_\_\_

## Caerus Oil and Gas

Sample Delivery Group: L1429476  
Samples Received: 11/10/2021  
Project Number:  
Description: PJ16  
Site: PJ16  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

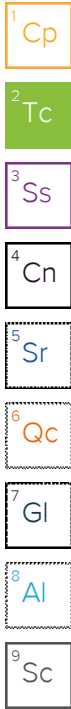
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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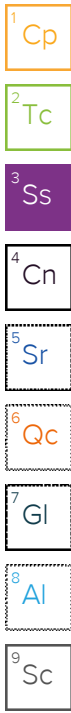


# SAMPLE SUMMARY

## 20211105-PJ16 (SB01) @ 25' L1429476-01 Solid

Collected by: Evan Mason  
 Collected date/time: 11/05/21 10:45  
 Received date/time: 11/10/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1774639	1	11/16/21 13:24	11/16/21 13:24	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1774201	1	11/14/21 18:00	11/16/21 13:34	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774234	1	11/15/21 10:24	11/16/21 05:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1774287	1	11/15/21 08:05	11/16/21 10:37	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:37	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:40	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1772472	500	11/10/21 22:05	11/11/21 14:45	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1773756	40	11/10/21 22:05	11/14/21 10:02	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1775570	1	11/17/21 11:51	11/17/21 18:31	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1775565	1	11/17/21 08:04	11/17/21 11:58	SHG	Mt. Juliet, TN



## 20211105-PJ16 (SB01) @ 34' L1429476-02 Solid

Collected by: Evan Mason  
 Collected date/time: 11/05/21 16:30  
 Received date/time: 11/10/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1774639	1	11/16/21 13:27	11/16/21 13:27	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1774201	1	11/14/21 18:00	11/16/21 13:39	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774234	1	11/15/21 10:24	11/16/21 05:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1774287	1	11/15/21 08:05	11/16/21 10:40	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:40	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1772472	500	11/10/21 22:05	11/11/21 15:07	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1773756	40	11/10/21 22:05	11/14/21 10:21	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1775570	1	11/17/21 11:51	11/17/21 18:44	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1775565	1	11/17/21 08:04	11/17/21 12:16	SHG	Mt. Juliet, TN

## 20211105-PJ16 (SB01) @ 42' L1429476-03 Solid

Collected by: Evan Mason  
 Collected date/time: 11/05/21 17:45  
 Received date/time: 11/10/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1774639	1	11/16/21 13:35	11/16/21 13:35	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1774201	1	11/14/21 18:00	11/16/21 13:44	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774234	1	11/15/21 10:24	11/16/21 05:00	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1774287	1	11/15/21 08:05	11/16/21 10:43	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:43	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:46	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1772184	1	11/10/21 22:05	11/11/21 11:00	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1773756	1	11/10/21 22:05	11/14/21 06:31	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1775570	1	11/17/21 11:51	11/17/21 21:23	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1775565	1	11/17/21 08:04	11/17/21 12:33	SHG	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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	47.5		1	11/16/2021 13:24	WG1774639

## 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	11/16/2021 13:34	<a href="#">WG1774201</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.91	<u>T8</u>	1	11/12/2021 08:00	<a href="#">WG1773265</a>

## Sample Narrative:

L1429476-01 WG1773265: 8.91 at 19C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	4670		10.0	1	11/16/2021 05:00	<a href="#">WG1774234</a>

## Sample Narrative:

L1429476-01 WG1774234: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	209		0.0852	0.500	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Cadmium	0.424	<u>J</u>	0.0471	0.500	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Copper	22.1		0.400	2.00	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Lead	7.23		0.208	0.500	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Nickel	45.0		0.132	2.00	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Selenium	1.58	<u>J</u>	0.764	2.00	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Silver	U		0.127	1.00	1	11/16/2021 10:37	<a href="#">WG1774287</a>
Zinc	41.0		0.832	5.00	1	11/16/2021 10:37	<a href="#">WG1774287</a>

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.257		0.0167	0.200	1	11/17/2021 13:37	<a href="#">WG1773235</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.89		0.100	1.00	5	11/16/2021 10:40	<a href="#">WG1774284</a>

## 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	865		10.9	50.0	500	11/11/2021 14:45	<a href="#">WG1772472</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	105			77.0-120		11/11/2021 14:45	<a href="#">WG1772472</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.0840		0.0187	0.0400	40	11/14/2021 10:02	<a href="#">WG1773756</a>
Toluene	3.64		0.0520	0.200	40	11/14/2021 10:02	<a href="#">WG1773756</a>
Ethylbenzene	0.991		0.0295	0.100	40	11/14/2021 10:02	<a href="#">WG1773756</a>
Xylenes, Total	18.9		0.0352	0.260	40	11/14/2021 10:02	<a href="#">WG1773756</a>
1,2,4-Trimethylbenzene	4.27		0.0632	0.200	40	11/14/2021 10:02	<a href="#">WG1773756</a>
1,3,5-Trimethylbenzene	3.69		0.0800	0.200	40	11/14/2021 10:02	<a href="#">WG1773756</a>
(S) Toluene-d8	109			75.0-131		11/14/2021 10:02	<a href="#">WG1773756</a>
(S) 4-Bromofluorobenzene	107			67.0-138		11/14/2021 10:02	<a href="#">WG1773756</a>
(S) 1,2-Dichloroethane-d4	107			70.0-130		11/14/2021 10:02	<a href="#">WG1773756</a>

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

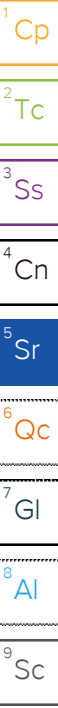
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	142		1.61	4.00	1	11/17/2021 18:31	<a href="#">WG1775570</a>
C28-C36 Motor Oil Range	12.7		0.274	4.00	1	11/17/2021 18:31	<a href="#">WG1775570</a>
(S) o-Terphenyl	66.5			18.0-148		11/17/2021 18:31	<a href="#">WG1775570</a>

## 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	11/17/2021 11:58	<a href="#">WG1775565</a>
Acenaphthene	0.00420	<u>J</u>	0.00209	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Acenaphthylene	U		0.00216	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Chrysene	U		0.00232	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Fluoranthene	U		0.00227	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Fluorene	0.00844		0.00205	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Naphthalene	0.235		0.00408	0.0200	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Phenanthrene	0.00451	<u>J</u>	0.00231	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
Pyrene	U		0.00200	0.00600	1	11/17/2021 11:58	<a href="#">WG1775565</a>
1-Methylnaphthalene	0.188		0.00449	0.0200	1	11/17/2021 11:58	<a href="#">WG1775565</a>
2-Methylnaphthalene	0.530		0.00427	0.0200	1	11/17/2021 11:58	<a href="#">WG1775565</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/17/2021 11:58	<a href="#">WG1775565</a>
(S) p-Terphenyl-d14	79.2			23.0-120		11/17/2021 11:58	<a href="#">WG1775565</a>
(S) Nitrobenzene-d5	0.000	<u>J2</u>		14.0-149		11/17/2021 11:58	<a href="#">WG1775565</a>
(S) 2-Fluorobiphenyl	51.9			34.0-125		11/17/2021 11:58	<a href="#">WG1775565</a>

## Sample Narrative:

L1429476-01 WG1775565: Surrogate failure due to matrix interference



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	17.9		1	11/16/2021 13:27	WG1774639

## 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	11/16/2021 13:39	<a href="#">WG1774201</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.32	<u>T8</u>	1	11/12/2021 08:00	<a href="#">WG1773265</a>

## Sample Narrative:

L1429476-02 WG1773265: 8.32 at 19.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	5300		10.0	1	11/16/2021 05:00	<a href="#">WG1774234</a>

## Sample Narrative:

L1429476-02 WG1774234: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	158		0.0852	0.500	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Cadmium	0.403	<u>J</u>	0.0471	0.500	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Copper	23.0		0.400	2.00	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Lead	6.27		0.208	0.500	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Nickel	48.0		0.132	2.00	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Selenium	1.49	<u>J</u>	0.764	2.00	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Silver	U		0.127	1.00	1	11/16/2021 10:40	<a href="#">WG1774287</a>
Zinc	40.5		0.832	5.00	1	11/16/2021 10:40	<a href="#">WG1774287</a>

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.297		0.0167	0.200	1	11/17/2021 13:40	<a href="#">WG1773235</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.37		0.100	1.00	5	11/16/2021 10:43	<a href="#">WG1774284</a>

## 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	956		10.9	50.0	500	11/11/2021 15:07	<a href="#">WG1772472</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	103			77.0-120		11/11/2021 15:07	<a href="#">WG1772472</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.0187	0.0400	40	11/14/2021 10:21	<a href="#">WG1773756</a>
Toluene	1.59		0.0520	0.200	40	11/14/2021 10:21	<a href="#">WG1773756</a>
Ethylbenzene	0.721		0.0295	0.100	40	11/14/2021 10:21	<a href="#">WG1773756</a>
Xylenes, Total	14.4		0.0352	0.260	40	11/14/2021 10:21	<a href="#">WG1773756</a>
1,2,4-Trimethylbenzene	4.62		0.0632	0.200	40	11/14/2021 10:21	<a href="#">WG1773756</a>
1,3,5-Trimethylbenzene	3.95		0.0800	0.200	40	11/14/2021 10:21	<a href="#">WG1773756</a>
(S) Toluene-d8	109			75.0-131		11/14/2021 10:21	<a href="#">WG1773756</a>
(S) 4-Bromofluorobenzene	107			67.0-138		11/14/2021 10:21	<a href="#">WG1773756</a>
(S) 1,2-Dichloroethane-d4	115			70.0-130		11/14/2021 10:21	<a href="#">WG1773756</a>

## Sample Narrative:

L1429476-02 WG1773756: Non-target compounds too high to run at a lower dilution.

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

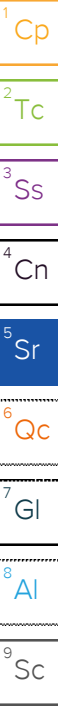
Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	158		1.61	4.00	1	11/17/2021 18:44	<a href="#">WG1775570</a>
C28-C36 Motor Oil Range	30.4		0.274	4.00	1	11/17/2021 18:44	<a href="#">WG1775570</a>
(S) o-Terphenyl	56.9			18.0-148		11/17/2021 18:44	<a href="#">WG1775570</a>

## 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	11/17/2021 12:16	<a href="#">WG1775565</a>
Acenaphthene	0.00509	J	0.00209	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Acenaphthylene	U		0.00216	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Chrysene	U		0.00232	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Fluoranthene	U		0.00227	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Fluorene	0.0104		0.00205	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Naphthalene	0.239		0.00408	0.0200	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Phenanthrene	0.00600	J	0.00231	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
Pyrene	U		0.00200	0.00600	1	11/17/2021 12:16	<a href="#">WG1775565</a>
1-Methylnaphthalene	0.214		0.00449	0.0200	1	11/17/2021 12:16	<a href="#">WG1775565</a>
2-Methylnaphthalene	0.596		0.00427	0.0200	1	11/17/2021 12:16	<a href="#">WG1775565</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/17/2021 12:16	<a href="#">WG1775565</a>
(S) p-Terphenyl-d14	71.5			23.0-120		11/17/2021 12:16	<a href="#">WG1775565</a>
(S) Nitrobenzene-d5	0.000	J2		14.0-149		11/17/2021 12:16	<a href="#">WG1775565</a>
(S) 2-Fluorobiphenyl	52.4			34.0-125		11/17/2021 12:16	<a href="#">WG1775565</a>

## Sample Narrative:

L1429476-02 WG1775565: Surrogate failure due to matrix interference



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	12.1		1	11/16/2021 13:35	WG1774639

## 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	11/16/2021 13:44	<a href="#">WG1774201</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.30	<u>T8</u>	1	11/12/2021 08:00	<a href="#">WG1773265</a>

## Sample Narrative:

L1429476-03 WG1773265: 8.3 at 18.9C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	3590		10.0	1	11/16/2021 05:00	<a href="#">WG1774234</a>

## Sample Narrative:

L1429476-03 WG1774234: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	112		0.0852	0.500	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Cadmium	0.313	<u>J</u>	0.0471	0.500	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Copper	21.9		0.400	2.00	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Lead	5.16		0.208	0.500	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Nickel	46.2		0.132	2.00	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Selenium	1.06	<u>J</u>	0.764	2.00	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Silver	U		0.127	1.00	1	11/16/2021 10:43	<a href="#">WG1774287</a>
Zinc	35.4		0.832	5.00	1	11/16/2021 10:43	<a href="#">WG1774287</a>

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.189	<u>J</u>	0.0167	0.200	1	11/17/2021 13:43	<a href="#">WG1773235</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.98		0.100	1.00	5	11/16/2021 10:46	<a href="#">WG1774284</a>

## 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	0.766		0.0217	0.100	1	11/11/2021 11:00	<a href="#">WG1772184</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	90.8			77.0-120		11/11/2021 11:00	<a href="#">WG1772184</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.000525	U	0.000467	0.00100	1	11/14/2021 06:31	<a href="#">WG1773756</a>
Toluene	0.00480	U	0.00130	0.00500	1	11/14/2021 06:31	<a href="#">WG1773756</a>
Ethylbenzene	U		0.000737	0.00250	1	11/14/2021 06:31	<a href="#">WG1773756</a>
Xylenes, Total	0.0137		0.000880	0.00650	1	11/14/2021 06:31	<a href="#">WG1773756</a>
1,2,4-Trimethylbenzene	0.00795		0.00158	0.00500	1	11/14/2021 06:31	<a href="#">WG1773756</a>
1,3,5-Trimethylbenzene	0.00513		0.00200	0.00500	1	11/14/2021 06:31	<a href="#">WG1773756</a>
(S) Toluene-d8	109			75.0-131		11/14/2021 06:31	<a href="#">WG1773756</a>
(S) 4-Bromofluorobenzene	105			67.0-138		11/14/2021 06:31	<a href="#">WG1773756</a>
(S) 1,2-Dichloroethane-d4	111			70.0-130		11/14/2021 06:31	<a href="#">WG1773756</a>

## 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	6.94		1.61	4.00	1	11/17/2021 21:23	<a href="#">WG1775570</a>
C28-C36 Motor Oil Range	5.21		0.274	4.00	1	11/17/2021 21:23	<a href="#">WG1775570</a>
(S) o-Terphenyl	63.3			18.0-148		11/17/2021 21:23	<a href="#">WG1775570</a>

## 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	11/17/2021 12:33	<a href="#">WG1775565</a>
Acenaphthene	U		0.00209	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Acenaphthylene	U		0.00216	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Chrysene	U		0.00232	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Fluoranthene	U		0.00227	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Fluorene	U		0.00205	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Naphthalene	0.00835	U	0.00408	0.0200	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Phenanthrene	U		0.00231	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
Pyrene	U		0.00200	0.00600	1	11/17/2021 12:33	<a href="#">WG1775565</a>
1-Methylnaphthalene	0.00482	U	0.00449	0.0200	1	11/17/2021 12:33	<a href="#">WG1775565</a>
2-Methylnaphthalene	0.0119	U	0.00427	0.0200	1	11/17/2021 12:33	<a href="#">WG1775565</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/17/2021 12:33	<a href="#">WG1775565</a>
(S) p-Terphenyl-d14	72.9			23.0-120		11/17/2021 12:33	<a href="#">WG1775565</a>
(S) Nitrobenzene-d5	49.2			14.0-149		11/17/2021 12:33	<a href="#">WG1775565</a>
(S) 2-Fluorobiphenyl	51.7			34.0-125		11/17/2021 12:33	<a href="#">WG1775565</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3730163-1 11/16/21 11:26

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1424106-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1424106-03 11/16/21 11:50 • (DUP) R3730163-3 11/16/21 11:55

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	2.05	1.80	1	12.6		20

L1429476-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1429476-03 11/16/21 13:44 • (DUP) R3730163-8 11/16/21 13:50

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	U	U	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3730163-2 11/16/21 11:31

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	9.79	97.9	80.0-120	

L1424273-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1424273-03 11/16/21 12:52 • (MS) R3730163-4 11/16/21 12:58 • (MSD) R3730163-5 11/16/21 13:03

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	1.93	20.3	19.5	91.9	87.7	1	75.0-125			4.19	20

L1424273-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1424273-03 11/16/21 12:52 • (MS) R3730163-6 11/16/21 13:08

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	661	1.93	675	102	50	75.0-125	

L1428769-18 Original Sample (OS) • Duplicate (DUP)

(OS) L1428769-18 11/12/21 08:00 • (DUP) R3728752-2 11/12/21 08:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.69	8.68	1	0.115		1

Sample Narrative:

OS: 8.69 at 19.5C  
 DUP: 8.68 at 19.5C

L1428769-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1428769-20 11/12/21 08:00 • (DUP) R3728752-3 11/12/21 08:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.55	8.54	1	0.117		1

Sample Narrative:

OS: 8.55 at 19.6C  
 DUP: 8.54 at 18.7C

Laboratory Control Sample (LCS)

(LCS) R3728752-1 11/12/21 08:00

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

Sample Narrative:

LCS: 10.01 at 18.8C



Method Blank (MB)

(MB) R3729796-1 11/16/21 05:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1428770-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1428770-11 11/16/21 05:00 • (DUP) R3729796-3 11/16/21 05:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	316	298	1	6.00		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1429476-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1429476-02 11/16/21 05:00 • (DUP) R3729796-4 11/16/21 05:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	5300	5190	1	2.10		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3729796-2 11/16/21 05:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	269	101	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3730107-1 11/16/21 09:52

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

Laboratory Control Sample (LCS)

(LCS) R3730107-2 11/16/21 09:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.8	97.8	80.0-120	
Cadmium	100	94.7	94.7	80.0-120	
Copper	100	95.6	95.6	80.0-120	
Lead	100	94.0	94.0	80.0-120	
Nickel	100	95.7	95.7	80.0-120	
Selenium	100	96.4	96.4	80.0-120	
Silver	20.0	17.9	89.3	80.0-120	
Zinc	100	93.6	93.6	80.0-120	

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1428773-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428773-02 11/16/21 09:58 • (MS) R3730107-4 11/16/21 10:07 • (MSD) R3730107-5 11/16/21 10:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	1080	439	641	0.000	0.000	1	75.0-125	V	J3 V	37.4	20
Cadmium	100	0.0475	90.2	93.5	90.1	93.5	1	75.0-125			3.62	20
Copper	100	11.2	108	115	96.9	104	1	75.0-125			6.63	20
Lead	100	14.3	105	111	91.0	96.8	1	75.0-125			5.37	20
Nickel	100	14.9	117	126	102	111	1	75.0-125			7.43	20
Selenium	100	0.946	90.7	94.9	89.8	93.9	1	75.0-125			4.46	20
Silver	20.0	U	16.9	17.7	84.4	88.3	1	75.0-125			4.57	20
Zinc	100	34.8	126	132	91.4	97.7	1	75.0-125			4.83	20

Method Blank (MB)

(MB) R3730720-1 11/17/21 12:54

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

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

(LCS) R3730720-2 11/17/21 12:57 • (LCSD) R3730720-3 11/17/21 12:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.07	1.05	107	105	80.0-120			1.86	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3729934-1 11/16/21 09:48

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) R3729934-2 11/16/21 09:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	92.2	92.2	80.0-120	

L1428773-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428773-02 11/16/21 09:54 • (MS) R3729934-5 11/16/21 10:04 • (MSD) R3729934-6 11/16/21 10:07

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	1.90	83.9	88.3	82.0	86.4	5	75.0-125			5.09	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3728972-2 11/11/21 04:51

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0311	↓	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	95.3			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3728972-1 11/11/21 04:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.29	96.2	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			115	77.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3729280-3 11/11/21 07:53

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
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)	112			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3729280-2 11/11/21 06:33

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	
<sup>(S)</sup> 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) R3730360-3 11/14/21 03:59

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	104			67.0-138
(S) 1,2-Dichloroethane-d4	105			70.0-130

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

(LCS) R3730360-1 11/14/21 02:43 • (LCSD) R3730360-2 11/14/21 03:02

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.125	0.123	0.120	98.4	96.0	70.0-123			2.47	20
Ethylbenzene	0.125	0.126	0.123	101	98.4	74.0-126			2.41	20
Toluene	0.125	0.126	0.121	101	96.8	75.0-121			4.05	20
1,2,4-Trimethylbenzene	0.125	0.132	0.125	106	100	70.0-126			5.45	20
1,3,5-Trimethylbenzene	0.125	0.131	0.125	105	100	73.0-127			4.69	20
Xylenes, Total	0.375	0.387	0.382	103	102	72.0-127			1.30	20
(S) Toluene-d8				109	108	75.0-131				
(S) 4-Bromofluorobenzene				104	106	67.0-138				
(S) 1,2-Dichloroethane-d4				113	119	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) R3730840-1 11/17/21 17:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
<i>(S) o-Terphenyl</i>	79.9			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3730840-4 11/17/21 21:49

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
C10-C28 Diesel Range	50.0	25.7	51.4	50.0-150	
<i>(S) o-Terphenyl</i>			65.8	18.0-148	

L1429552-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1429552-01 11/17/21 21:07 • (MS) R3730840-2 11/17/21 19:23 • (MSD) R3730840-3 11/17/21 19:36

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	48.5	4.38	28.7	35.6	50.1	65.3	1	50.0-150		J3	21.5	20
<i>(S) o-Terphenyl</i>					68.1	185		18.0-148		J1		

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3730600-2 11/17/21 11:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	51.0			14.0-149
(S) 2-Fluorobiphenyl	58.9			34.0-125
(S) p-Terphenyl-d14	86.8			23.0-120

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3730600-1 11/17/21 11:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0606	75.8	50.0-126	
Acenaphthene	0.0800	0.0590	73.8	50.0-120	
Acenaphthylene	0.0800	0.0635	79.4	50.0-120	
Benzo(a)anthracene	0.0800	0.0602	75.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0457	57.1	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0548	68.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0527	65.9	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0536	67.0	49.0-125	
Chrysene	0.0800	0.0567	70.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0573	71.6	47.0-125	
Fluoranthene	0.0800	0.0587	73.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3730600-1 11/17/21 11:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0573	71.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0571	71.4	46.0-125	
Naphthalene	0.0800	0.0529	66.1	50.0-120	
Phenanthrene	0.0800	0.0568	71.0	47.0-120	
Pyrene	0.0800	0.0569	71.1	43.0-123	
1-Methylnaphthalene	0.0800	0.0567	70.9	51.0-121	
2-Methylnaphthalene	0.0800	0.0560	70.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0546	68.3	50.0-120	
<i>(S) Nitrobenzene-d5</i>			66.9	14.0-149	
<i>(S) 2-Fluorobiphenyl</i>			69.3	34.0-125	
<i>(S) p-Terphenyl-d14</i>			91.2	23.0-120	

L1429552-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1429552-02 11/17/21 13:09 • (MS) R3730600-3 11/17/21 13:27 • (MSD) R3730600-4 11/17/21 13:44

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	U	0.0571	0.0558	71.4	69.8	1	10.0-145			2.30	30
Acenaphthene	0.0800	U	0.0581	0.0581	72.6	72.6	1	14.0-127			0.000	27
Acenaphthylene	0.0800	U	0.0599	0.0590	74.9	73.8	1	21.0-124			1.51	25
Benzo(a)anthracene	0.0800	U	0.0547	0.0536	68.4	67.0	1	10.0-139			2.03	30
Benzo(a)pyrene	0.0800	U	0.0529	0.0522	66.1	65.3	1	10.0-141			1.33	31
Benzo(b)fluoranthene	0.0800	U	0.0544	0.0553	68.0	69.1	1	10.0-140			1.64	36
Benzo(g,h,i)perylene	0.0800	U	0.0546	0.0540	68.3	67.5	1	10.0-140			1.10	33
Benzo(k)fluoranthene	0.0800	U	0.0555	0.0530	69.4	66.3	1	10.0-137			4.61	31
Chrysene	0.0800	U	0.0560	0.0552	70.0	69.0	1	10.0-145			1.44	30
Dibenz(a,h)anthracene	0.0800	U	0.0570	0.0564	71.3	70.5	1	10.0-132			1.06	31
Fluoranthene	0.0800	U	0.0583	0.0569	72.9	71.1	1	10.0-153			2.43	33
Fluorene	0.0800	U	0.0551	0.0544	68.9	68.0	1	11.0-130			1.28	29
Indeno(1,2,3-cd)pyrene	0.0800	U	0.0559	0.0549	69.9	68.6	1	10.0-137			1.81	32
Naphthalene	0.0800	U	0.0516	0.0513	64.5	64.1	1	10.0-135			0.583	27
Phenanthrene	0.0800	U	0.0572	0.0555	71.5	69.4	1	10.0-144			3.02	31
Pyrene	0.0800	U	0.0566	0.0567	70.8	70.9	1	10.0-148			0.177	35
1-Methylnaphthalene	0.0800	U	0.0554	0.0547	69.3	68.4	1	10.0-142			1.27	28
2-Methylnaphthalene	0.0800	U	0.0522	0.0513	65.3	64.1	1	10.0-137			1.74	28
2-Chloronaphthalene	0.0800	U	0.0515	0.0512	64.4	64.0	1	29.0-120			0.584	24
<i>(S) Nitrobenzene-d5</i>					52.8	55.0		14.0-149				
<i>(S) 2-Fluorobiphenyl</i>					61.6	61.8		34.0-125				
<i>(S) p-Terphenyl-d14</i>					88.6	84.9		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

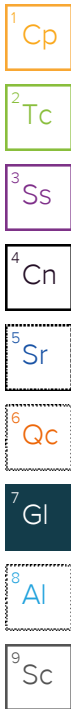
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
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

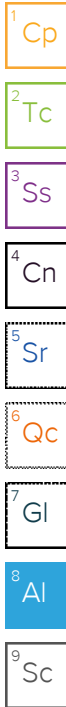
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

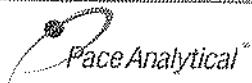
Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.





# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTIL Log-in Number Here

C176

ALL SHADED AREAS are for Lab Use Only

Company: **Campos EPC** Billing Information: **Caerus Oil and Gas, LLC**

Address: **1401 Blake St. Denver, CO 80202** Account: **CAERUSPCO**

Report To: **Steve Sivigliano** Email To: **steve.sivigliano@camposepc.com**

Copy To: **Evan Mason - evan.mason@camposepc.com** Site Collection Info/Address:

Customer Project Name/Number: **PJ16** State: **CO** County/City: **/Garfield** Time Zone Collected: **[ ] PT [x] MT [ ] CT [ ] ET**

Phone: 970-619-0800 Site/Facility ID #: **PJ16** Compliance Monitoring? **[ ] Yes [ ] No**

Email: same as above Purchase Order #: **PJ16** DW PWS ID #: **[ ] Yes [ ] No**

Collected By (print): **Evan Mason** Quote #: **[ ]** DW Location Code: **[ ]**

Collected By (signature): *[Signature]* Turnaround Date Required: **[ ]** Immediately Packed on Ice: **[ ] Yes [ ] No**

Sample Disposal: **[x] Dispose as appropriate [ ] Return [ ] Archive [ ] Hold** Rush: **[ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [x] 5 Day** Field Filtered (if applicable): **[ ] Yes [ ] No**  
(Expedite Charges Apply) Analysis: **[ ]**

Container Preservative Type \*\*

Lab Project Manager:

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses

Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact	Y	N	NA
Custody Signatures Present	Y	N	NA
Collector Signatures Present	Y	N	NA
Bottles Intact	Y	N	NA
Correct Bottles	Y	N	NA
Sufficient Volume	Y	N	NA
Samples Received on Ice	Y	N	NA
VOL - Headspace Acceptable	Y	N	NA
USDA Regulated Soils	Y	N	NA
Samples in Holding Time	Y	N	NA
Residual Chlorine Present	Y	N	NA
Cl Strips	Y	N	NA
Sample pH Acceptable	Y	N	NA
pH Strips	Y	N	NA
Sulfide Present	Y	N	NA
Lead Acetate Strips	Y	N	NA

LAB USE ONLY:  
Lab Sample # / Comments: **61429476**

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
2021105-PJ16 (SBO) @ 25'	SL	Grab	11/5/21	1645	-	-	-	2
2021105-PJ16 (SBO) @ 34'	↓	↓	↓	1630	-	-	-	↓
2021105-PJ16 (SBO) @ 42'	↓	↓	↓	1745	-	-	-	↓

Customer Remarks / Special Conditions / Possible Hazards: **Wet** Type of Ice Used: **Wet** Blue Dry None

Packing Material Used: **None** SHORT HOLDS PRESENT (<72 hours) **Y** N/A

Lab Tracking #: **[ ]**

Radchem sample(s) screened (<500 cpm) **Y** N **NA** Samples received via **FEDEX** UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: **Y** NA

Therm ID#: **[ ]**

Cooler 1 Temp Upon Receipt: **[ ]** oC

Cooler 1 Therm Corr. Factor: **[ ]** oC

Cooler 1 Corrected Temp: **[ ]** oC

Comments: *[Handwritten]*

Trip Blank Received: **Y** NA

HCL MeOH TSP Other

Non Conformance(s): **YES / NO** Page: **[ ]** of: **[ ]**

Relinquished by/Company: (Signature) *[Signature]* Date/Time: **11/8/21 1100** Received by/Company: (Signature) *[Signature]* Date/Time: **11/10/21 930**

Relinquished by/Company: (Signature) *[Signature]* Date/Time: **[ ]** Received by/Company: (Signature) *[Signature]* Date/Time: **[ ]**

Relinquished by/Company: (Signature) *[Signature]* Date/Time: **[ ]** Received by/Company: (Signature) *[Signature]* Date/Time: **[ ]**

MTIL LAB USE ONLY

Table #: **[ ]**

Acctnum: **[ ]**

Template: **[ ]**

Prelogin: **[ ]**

PM: **[ ]**

RP: **[ ]**

**Caerus Oil and Gas**

Sample Delivery Group: L1445237  
Samples Received: 12/22/2021  
Project Number:  
Description: PJ16  
Site: PJ16  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



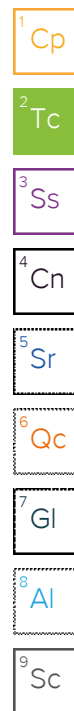
Chris Ward  
Project Manager

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](http://www.pacenational.com)

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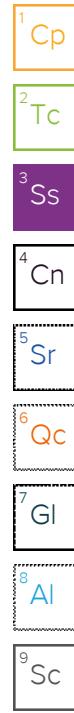


# SAMPLE SUMMARY

## 20211220-PJ16 (SB04) @ 15' L1445237-01 Solid

Collected by: Evan Mason  
 Collected date/time: 12/20/21 11:30  
 Received date/time: 12/22/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1794666	1	12/30/21 12:48	12/30/21 12:48	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1795453	1	12/28/21 12:00	12/29/21 13:59	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1796448	1	12/30/21 02:46	12/30/21 06:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794778	1	12/27/21 03:37	12/27/21 07:56	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1794664	1	12/28/21 21:03	12/29/21 13:50	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1794664	1	12/29/21 09:37	12/30/21 21:52	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1794647	5	12/28/21 21:04	12/29/21 12:29	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794319	1	12/22/21 18:48	12/24/21 05:31	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794072	1	12/22/21 18:48	12/23/21 16:25	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1795490	1	12/28/21 11:20	12/29/21 01:16	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1795406	1	12/28/21 11:25	12/28/21 23:02	AMG	Mt. Juliet, TN



## 20211220-PJ16 (SB04) @ 30' L1445237-02 Solid

Collected by: Evan Mason  
 Collected date/time: 12/20/21 14:45  
 Received date/time: 12/22/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1794666	1	12/30/21 12:51	12/30/21 12:51	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1795453	1	12/28/21 12:00	12/29/21 14:04	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1796448	1	12/30/21 02:46	12/30/21 06:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794778	1	12/27/21 03:37	12/27/21 07:56	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1794664	1	12/28/21 21:03	12/29/21 13:52	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1794664	1	12/29/21 09:37	12/30/21 21:55	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1794647	5	12/28/21 21:04	12/29/21 12:42	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794319	1	12/22/21 18:48	12/24/21 08:09	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794072	1	12/22/21 18:48	12/23/21 16:44	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1795490	1	12/28/21 11:20	12/29/21 01:29	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1795406	1	12/28/21 11:25	12/28/21 23:22	AMG	Mt. Juliet, TN


## 20211220-PJ16 (SB02) @ 10' L1445237-03 Solid

Collected by: Evan Mason  
 Collected date/time: 12/20/21 16:00  
 Received date/time: 12/22/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1794666	1	12/30/21 12:54	12/30/21 12:54	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1795453	1	12/28/21 12:00	12/29/21 14:10	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1796448	1	12/30/21 02:46	12/30/21 06:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794952	1	12/28/21 01:39	12/28/21 03:14	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1794664	1	12/28/21 21:03	12/29/21 13:55	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1794664	1	12/29/21 09:37	12/30/21 21:58	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1794647	5	12/28/21 21:04	12/29/21 12:45	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794319	1	12/22/21 18:48	12/24/21 09:00	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794072	1	12/22/21 18:48	12/23/21 17:03	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1795490	1	12/28/21 11:20	12/29/21 01:42	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1795406	1	12/28/21 11:25	12/28/21 23:42	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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.66		1	12/30/2021 12:48	WG1794666

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	12/29/2021 13:59	<a href="#">WG1795453</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.95	<u>T8</u>	1	12/30/2021 06:45	<a href="#">WG1796448</a>

## Sample Narrative:

L1445237-01 WG1796448: 8.95 at 21.7C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	335		10.0	1	12/27/2021 07:56	<a href="#">WG1794778</a>

## Sample Narrative:

L1445237-01 WG1794778: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	80.2		0.500	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Cadmium	ND		0.500	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Copper	16.4		2.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Lead	5.03		0.500	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Nickel	37.1		2.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Selenium	ND		2.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Silver	ND		1.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Zinc	23.4		5.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.200		0.200	1	12/30/2021 21:52	<a href="#">WG1794664</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.33		1.00	5	12/29/2021 12:29	<a href="#">WG1794647</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.110		0.100	1	12/24/2021 05:31	<a href="#">WG1794319</a>
(S) <i>a, a, a</i> -Trifluorotoluene(FID)	106		77.0-120		12/24/2021 05:31	<a href="#">WG1794319</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2021 16:25	<a href="#">WG1794072</a>
Toluene	ND		0.00500	1	12/23/2021 16:25	<a href="#">WG1794072</a>
Ethylbenzene	ND		0.00250	1	12/23/2021 16:25	<a href="#">WG1794072</a>
Xylenes, Total	ND		0.00650	1	12/23/2021 16:25	<a href="#">WG1794072</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:25	<a href="#">WG1794072</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:25	<a href="#">WG1794072</a>
(S) Toluene-d8	107		75.0-131		12/23/2021 16:25	<a href="#">WG1794072</a>
(S) 4-Bromofluorobenzene	93.6		67.0-138		12/23/2021 16:25	<a href="#">WG1794072</a>
(S) 1,2-Dichloroethane-d4	92.4		70.0-130		12/23/2021 16:25	<a href="#">WG1794072</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	12/29/2021 01:16	<a href="#">WG1795490</a>
C28-C36 Motor Oil Range	5.88		4.00	1	12/29/2021 01:16	<a href="#">WG1795490</a>
(S) o-Terphenyl	80.0		18.0-148		12/29/2021 01:16	<a href="#">WG1795490</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Acenaphthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Acenaphthylene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(a)anthracene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(a)pyrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Chrysene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Fluoranthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Fluorene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Naphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Phenanthrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Pyrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
1-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
2-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
2-Chloronaphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
(S) p-Terphenyl-d14	95.1		23.0-120		12/28/2021 23:02	<a href="#">WG1795406</a>
(S) Nitrobenzene-d5	88.1		14.0-149		12/28/2021 23:02	<a href="#">WG1795406</a>
(S) 2-Fluorobiphenyl	82.7		34.0-125		12/28/2021 23:02	<a href="#">WG1795406</a>

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	1.30		1	12/30/2021 12:51	WG1794666

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	12/29/2021 14:04	<a href="#">WG1795453</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.56	<u>T8</u>	1	12/30/2021 06:45	<a href="#">WG1796448</a>

## Sample Narrative:

L1445237-02 WG1796448: 8.56 at 21.9C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	459		10.0	1	12/27/2021 07:56	<a href="#">WG1794778</a>

## Sample Narrative:

L1445237-02 WG1794778: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	139		0.500	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Cadmium	ND		0.500	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Copper	19.1		2.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Lead	6.30		0.500	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Nickel	37.8		2.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Selenium	ND		2.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Silver	ND		1.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Zinc	29.5		5.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	12/30/2021 21:55	<a href="#">WG1794664</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.66		1.00	5	12/29/2021 12:42	<a href="#">WG1794647</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/24/2021 08:09	<a href="#">WG1794319</a>
(S) a,a,a-Trifluorotoluene(FID)	106		77.0-120		12/24/2021 08:09	<a href="#">WG1794319</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2021 16:44	<a href="#">WG1794072</a>
Toluene	ND		0.00500	1	12/23/2021 16:44	<a href="#">WG1794072</a>
Ethylbenzene	ND		0.00250	1	12/23/2021 16:44	<a href="#">WG1794072</a>
Xylenes, Total	ND		0.00650	1	12/23/2021 16:44	<a href="#">WG1794072</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:44	<a href="#">WG1794072</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:44	<a href="#">WG1794072</a>
(S) Toluene-d8	107		75.0-131		12/23/2021 16:44	<a href="#">WG1794072</a>
(S) 4-Bromofluorobenzene	94.6		67.0-138		12/23/2021 16:44	<a href="#">WG1794072</a>
(S) 1,2-Dichloroethane-d4	93.6		70.0-130		12/23/2021 16:44	<a href="#">WG1794072</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.50		4.00	1	12/29/2021 01:29	<a href="#">WG1795490</a>
C28-C36 Motor Oil Range	6.79		4.00	1	12/29/2021 01:29	<a href="#">WG1795490</a>
(S) o-Terphenyl	82.8		18.0-148		12/29/2021 01:29	<a href="#">WG1795490</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Acenaphthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Acenaphthylene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(a)anthracene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(a)pyrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Chrysene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Fluoranthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Fluorene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Naphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Phenanthrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Pyrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
1-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
2-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
2-Chloronaphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
(S) p-Terphenyl-d14	75.0		23.0-120		12/28/2021 23:22	<a href="#">WG1795406</a>
(S) Nitrobenzene-d5	70.0		14.0-149		12/28/2021 23:22	<a href="#">WG1795406</a>
(S) 2-Fluorobiphenyl	65.1		34.0-125		12/28/2021 23:22	<a href="#">WG1795406</a>

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	1.55		1	12/30/2021 12:54	WG1794666

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	12/29/2021 14:10	<a href="#">WG1795453</a>

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	<u>T8</u>	1	12/30/2021 06:45	<a href="#">WG1796448</a>

Sample Narrative:

L1445237-03 WG1796448: 8.03 at 21.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	465		10.0	1	12/28/2021 03:14	<a href="#">WG1794952</a>

Sample Narrative:

L1445237-03 WG1794952: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	154		0.500	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Cadmium	ND		0.500	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Copper	9.42		2.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Lead	5.83		0.500	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Nickel	16.4		2.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Selenium	ND		2.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Silver	ND		1.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Zinc	18.0		5.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.453		0.200	1	12/30/2021 21:58	<a href="#">WG1794664</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.19		1.00	5	12/29/2021 12:45	<a href="#">WG1794647</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/24/2021 09:00	<a href="#">WG1794319</a>
(S) a,a,a-Trifluorotoluene(FID)	108		77.0-120		12/24/2021 09:00	<a href="#">WG1794319</a>

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

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2021 17:03	<a href="#">WG1794072</a>
Toluene	ND		0.00500	1	12/23/2021 17:03	<a href="#">WG1794072</a>
Ethylbenzene	ND		0.00250	1	12/23/2021 17:03	<a href="#">WG1794072</a>
Xylenes, Total	ND		0.00650	1	12/23/2021 17:03	<a href="#">WG1794072</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/23/2021 17:03	<a href="#">WG1794072</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/23/2021 17:03	<a href="#">WG1794072</a>
(S) Toluene-d8	106		75.0-131		12/23/2021 17:03	<a href="#">WG1794072</a>
(S) 4-Bromofluorobenzene	95.2		67.0-138		12/23/2021 17:03	<a href="#">WG1794072</a>
(S) 1,2-Dichloroethane-d4	93.0		70.0-130		12/23/2021 17:03	<a href="#">WG1794072</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.99		4.00	1	12/29/2021 01:42	<a href="#">WG1795490</a>
C28-C36 Motor Oil Range	10.2		4.00	1	12/29/2021 01:42	<a href="#">WG1795490</a>
(S) o-Terphenyl	61.2		18.0-148		12/29/2021 01:42	<a href="#">WG1795490</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Acenaphthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Acenaphthylene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(a)anthracene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(a)pyrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Chrysene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Fluoranthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Fluorene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Naphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Phenanthrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Pyrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
1-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
2-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
2-Chloronaphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
(S) p-Terphenyl-d14	63.3		23.0-120		12/28/2021 23:42	<a href="#">WG1795406</a>
(S) Nitrobenzene-d5	67.9		14.0-149		12/28/2021 23:42	<a href="#">WG1795406</a>
(S) 2-Fluorobiphenyl	59.5		34.0-125		12/28/2021 23:42	<a href="#">WG1795406</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3746468-1 12/29/21 11:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

L1445206-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445206-01 12/29/21 12:01 • (DUP) R3746468-2 12/29/21 12:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

<sup>5</sup>Sr

<sup>6</sup>Qc

L1445856-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445856-01 12/29/21 14:25 • (DUP) R3746468-7 12/29/21 14:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3746468-8 12/29/21 14:46

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	8.33	83.3	80.0-120	

L1445206-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445206-05 12/29/21 14:51 • (MS) R3746468-3 12/29/21 12:55 • (MSD) R3746468-4 12/29/21 13:02

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	9.76	10.7	48.8	53.3	1	75.0-125	<u>J6</u>	<u>J6</u>	8.81	20

L1445206-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1445206-05 12/29/21 14:51 • (MS) R3746468-5 12/29/21 13:07

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	633	ND	372	58.7	50	75.0-125	<u>J6</u>

L1444512-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1444512-02 12/30/21 06:45 • (DUP) R3746174-2 12/30/21 06:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.62	8.67	1	0.578		1

Sample Narrative:

OS: 8.62 at 21.7C  
DUP: 8.67 at 21.6C

L1445237-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445237-01 12/30/21 06:45 • (DUP) R3746174-3 12/30/21 06:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.95	9.00	1	0.557		1

Sample Narrative:

OS: 8.95 at 21.7C  
DUP: 9 at 21.6C

Laboratory Control Sample (LCS)

(LCS) R3746174-1 12/30/21 06:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.96	99.6	99.0-101	

Sample Narrative:

LCS: 9.96 at 20.2C



Method Blank (MB)

(MB) R3744847-1 12/27/21 07:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1445222-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1445222-14 12/27/21 07:56 • (DUP) R3744847-3 12/27/21 07:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	269	245	1	9.21		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

L1445235-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445235-02 12/27/21 07:56 • (DUP) R3744847-4 12/27/21 07:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	6730	7020	1	4.22		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3744847-2 12/27/21 07:56

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	273	102	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3745223-1 12/28/21 03:14

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

Sample Narrative:

BLANK: at 25C

L1445673-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445673-02 12/28/21 03:14 • (DUP) R3745223-3 12/28/21 03:14

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	6500	6900	1	5.97		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3745223-2 12/28/21 03:14

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	266	99.2	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3746199-1 12/29/21 13:15

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

Laboratory Control Sample (LCS)

(LCS) R3746199-2 12/29/21 13:17

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Barium	100	98.9	98.9	80.0-120	
Cadmium	100	96.7	96.7	80.0-120	
Copper	100	99.3	99.3	80.0-120	
Lead	100	96.1	96.1	80.0-120	
Nickel	100	96.8	96.8	80.0-120	
Selenium	100	98.0	98.0	80.0-120	
Silver	20.0	18.1	90.6	80.0-120	
Zinc	100	95.4	95.4	80.0-120	

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1445236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445236-01 12/29/21 13:20 • (MS) R3746199-5 12/29/21 13:28 • (MSD) R3746199-6 12/29/21 13:30

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Barium	100	28.9	115	95.0	86.6	66.1	1	75.0-125		J6	19.5	20
Cadmium	100	ND	87.9	68.4	87.8	68.3	1	75.0-125		J3 J6	25.0	20
Copper	100	5.00	95.3	74.0	90.3	69.0	1	75.0-125		J3 J6	25.1	20
Lead	100	9.39	97.2	75.1	87.8	65.7	1	75.0-125		J3 J6	25.6	20
Nickel	100	5.41	95.1	74.1	89.7	68.7	1	75.0-125		J3 J6	24.8	20
Selenium	100	ND	85.8	69.7	85.8	69.7	1	75.0-125		J3 J6	20.8	20
Silver	20.0	ND	17.0	13.1	84.9	65.5	1	75.0-125		J3 J6	25.8	20
Zinc	100	29.6	110	89.1	80.0	59.5	1	75.0-125		J3 J6	20.7	20

Method Blank (MB)

(MB) R3746525-1 12/30/21 21:01

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

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

(LCS) R3746525-2 12/30/21 21:04 • (LCSD) R3746525-3 12/30/21 21:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.05	1.06	105	106	80.0-120			0.781	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3745929-1 12/29/21 11:57

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3745929-2 12/29/21 12:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.9	91.9	80.0-120	

4 Cn

5 Sr

L1445236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445236-01 12/29/21 12:04 • (MS) R3745929-5 12/29/21 12:15 • (MSD) R3745929-6 12/29/21 12:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	4.90	89.2	65.0	84.3	60.1	5	75.0-125		J3 J6	31.4	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3745590-2 12/23/21 23:03

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
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)	108			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3745590-1 12/23/21 22:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.63	84.2	72.0-127	
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)			97.2	77.0-120	

L1444919-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1444919-04 12/23/21 23:24 • (MS) R3745590-3 12/24/21 09:22 • (MSD) R3745590-4 12/24/21 09:44

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	4.75	4.29	86.4	78.0	1	10.0-151			10.2	28
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)					103	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) R3745056-3 12/23/21 12:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	102			75.0-131
(S) 4-Bromofluorobenzene	95.7			67.0-138
(S) 1,2-Dichloroethane-d4	85.9			70.0-130

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

(LCS) R3745056-1 12/23/21 11:07 • (LCSD) R3745056-2 12/23/21 11:26

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.125	0.114	0.113	91.2	90.4	70.0-123			0.881	20
Ethylbenzene	0.125	0.120	0.118	96.0	94.4	74.0-126			1.68	20
Toluene	0.125	0.108	0.111	86.4	88.8	75.0-121			2.74	20
1,2,4-Trimethylbenzene	0.125	0.121	0.121	96.8	96.8	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.116	0.123	92.8	98.4	73.0-127			5.86	20
Xylenes, Total	0.375	0.356	0.326	94.9	86.9	72.0-127			8.80	20
(S) Toluene-d8				101	102	75.0-131				
(S) 4-Bromofluorobenzene				102	96.4	67.0-138				
(S) 1,2-Dichloroethane-d4				100	98.6	70.0-130				

L1445222-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445222-07 12/23/21 13:54 • (MS) R3745056-4 12/23/21 19:53 • (MSD) R3745056-5 12/23/21 20:12

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	0.125	ND	0.120	0.125	95.6	99.6	1	10.0-149			4.08	37
Ethylbenzene	0.125	ND	0.132	0.134	106	107	1	10.0-160			1.50	38
Toluene	0.125	ND	0.125	0.129	98.8	102	1	10.0-156			3.15	38
1,2,4-Trimethylbenzene	0.125	ND	0.127	0.129	102	103	1	10.0-160			1.56	36
1,3,5-Trimethylbenzene	0.125	ND	0.131	0.133	105	106	1	10.0-160			1.52	38
Xylenes, Total	0.375	ND	0.375	0.387	99.2	102	1	10.0-160			3.15	38
(S) Toluene-d8					104	104		75.0-131				
(S) 4-Bromofluorobenzene					93.8	94.6		67.0-138				
(S) 1,2-Dichloroethane-d4					97.1	97.9		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) R3745775-1 12/28/21 16:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.422	J	0.274	4.00
(S) o-Terphenyl	87.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3745775-2 12/28/21 16:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
C10-C28 Diesel Range	50.0	42.9	85.8	50.0-150	
(S) o-Terphenyl			109	18.0-148	

L1445464-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445464-02 12/28/21 23:23 • (MS) R3745775-3 12/28/21 23:35 • (MSD) R3745775-4 12/28/21 23:48

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	49.0	ND	34.9	40.9	71.2	82.6	1	50.0-150			15.8	20
(S) o-Terphenyl					89.1	104		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) R3745912-2 12/28/21 18:01

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	89.0			14.0-149
(S) 2-Fluorobiphenyl	88.6			34.0-125
(S) p-Terphenyl-d14	106			23.0-120

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3745912-1 12/28/21 17:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0572	71.5	50.0-126	
Acenaphthene	0.0800	0.0592	74.0	50.0-120	
Acenaphthylene	0.0800	0.0592	74.0	50.0-120	
Benzo(a)anthracene	0.0800	0.0560	70.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0504	63.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0580	72.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0546	68.3	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0576	72.0	49.0-125	
Chrysene	0.0800	0.0574	71.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0556	69.5	47.0-125	
Fluoranthene	0.0800	0.0598	74.8	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3745912-1 12/28/21 17:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0589	73.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0580	72.5	46.0-125	
Naphthalene	0.0800	0.0573	71.6	50.0-120	
Phenanthrene	0.0800	0.0584	73.0	47.0-120	
Pyrene	0.0800	0.0571	71.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0568	71.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0611	76.4	50.0-120	
2-Chloronaphthalene	0.0800	0.0601	75.1	50.0-120	
(S) Nitrobenzene-d5			93.9	14.0-149	
(S) 2-Fluorobiphenyl			90.6	34.0-125	
(S) p-Terphenyl-d14			99.5	23.0-120	

L1444957-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1444957-01 12/28/21 19:21 • (MS) R3745912-3 12/28/21 19:41 • (MSD) R3745912-4 12/28/21 20:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0784	ND	0.0446	0.0423	56.9	54.5	1	10.0-145			5.29	30
Acenaphthene	0.0784	ND	0.0475	0.0443	60.6	57.1	1	14.0-127			6.97	27
Acenaphthylene	0.0784	ND	0.0462	0.0430	58.9	55.4	1	21.0-124			7.17	25
Benzo(a)anthracene	0.0784	ND	0.0444	0.0410	56.6	52.8	1	10.0-139			7.96	30
Benzo(a)pyrene	0.0784	ND	0.0487	0.0455	62.1	58.6	1	10.0-141			6.79	31
Benzo(b)fluoranthene	0.0784	ND	0.0444	0.0427	56.6	55.0	1	10.0-140			3.90	36
Benzo(g,h,i)perylene	0.0784	ND	0.0445	0.0417	56.8	53.7	1	10.0-140			6.50	33
Benzo(k)fluoranthene	0.0784	ND	0.0459	0.0418	58.5	53.9	1	10.0-137			9.35	31
Chrysene	0.0784	ND	0.0474	0.0440	60.5	56.7	1	10.0-145			7.44	30
Dibenz(a,h)anthracene	0.0784	ND	0.0445	0.0412	56.8	53.1	1	10.0-132			7.70	31
Fluoranthene	0.0784	ND	0.0481	0.0444	61.4	57.2	1	10.0-153			8.00	33
Fluorene	0.0784	ND	0.0469	0.0432	59.8	55.7	1	11.0-130			8.21	29
Indeno(1,2,3-cd)pyrene	0.0784	ND	0.0451	0.0417	57.5	53.7	1	10.0-137			7.83	32
Naphthalene	0.0784	ND	0.0468	0.0433	59.7	55.8	1	10.0-135			7.77	27
Phenanthrene	0.0784	ND	0.0473	0.0432	60.3	55.7	1	10.0-144			9.06	31
Pyrene	0.0784	ND	0.0468	0.0437	59.7	56.3	1	10.0-148			6.85	35
1-Methylnaphthalene	0.0784	ND	0.0468	0.0436	59.7	56.2	1	10.0-142			7.08	28
2-Methylnaphthalene	0.0784	ND	0.0485	0.0454	61.9	58.5	1	10.0-137			6.60	28
2-Chloronaphthalene	0.0784	ND	0.0474	0.0447	60.5	57.6	1	29.0-120			5.86	24
(S) Nitrobenzene-d5					78.3	74.0		14.0-149				
(S) 2-Fluorobiphenyl					75.9	71.2		34.0-125				
(S) p-Terphenyl-d14					86.8	81.3		23.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1444964-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1444964-01 12/28/21 21:42 • (MS) R3745912-5 12/28/21 22:02 • (MSD) R3745912-6 12/28/21 22:22

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 %
Anthracene	0.0800	ND	0.0537	0.0445	67.1	55.6	1	10.0-145			18.7	30
Acenaphthene	0.0800	ND	0.0564	0.0467	70.5	58.4	1	14.0-127			18.8	27
Acenaphthylene	0.0800	ND	0.0547	0.0456	68.4	57.0	1	21.0-124			18.1	25
Benzo(a)anthracene	0.0800	ND	0.0513	0.0420	64.1	52.5	1	10.0-139			19.9	30
Benzo(a)pyrene	0.0800	ND	0.0581	0.0471	72.6	58.9	1	10.0-141			20.9	31
Benzo(b)fluoranthene	0.0800	ND	0.0534	0.0437	66.8	54.6	1	10.0-140			20.0	36
Benzo(g,h,i)perylene	0.0800	ND	0.0533	0.0436	66.6	54.5	1	10.0-140			20.0	33
Benzo(k)fluoranthene	0.0800	ND	0.0538	0.0439	67.3	54.9	1	10.0-137			20.3	31
Chrysene	0.0800	ND	0.0558	0.0458	69.8	57.3	1	10.0-145			19.7	30
Dibenz(a,h)anthracene	0.0800	ND	0.0532	0.0430	66.5	53.8	1	10.0-132			21.2	31
Fluoranthene	0.0800	ND	0.0567	0.0469	70.9	58.6	1	10.0-153			18.9	33
Fluorene	0.0800	ND	0.0549	0.0455	68.6	56.9	1	11.0-130			18.7	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0540	0.0437	67.5	54.6	1	10.0-137			21.1	32
Naphthalene	0.0800	ND	0.0561	0.0467	70.1	58.4	1	10.0-135			18.3	27
Phenanthrene	0.0800	ND	0.0557	0.0465	69.6	58.1	1	10.0-144			18.0	31
Pyrene	0.0800	ND	0.0548	0.0457	68.5	57.1	1	10.0-148			18.1	35
1-Methylnaphthalene	0.0800	ND	0.0560	0.0468	70.0	58.5	1	10.0-142			17.9	28
2-Methylnaphthalene	0.0800	ND	0.0591	0.0486	73.9	60.8	1	10.0-137			19.5	28
2-Chloronaphthalene	0.0800	ND	0.0562	0.0462	70.3	57.8	1	29.0-120			19.5	24
(S) Nitrobenzene-d5					88.5	73.4		14.0-149				
(S) 2-Fluorobiphenyl					86.0	73.1		34.0-125				
(S) p-Terphenyl-d14					97.5	82.1		23.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# GLOSSARY OF TERMS

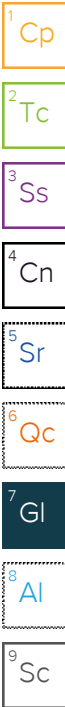
## Guide to Reading and Understanding Your Laboratory Report

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



### Qualifier Description

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

# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

Company: **Campos EPC**

Billing Information:  
**Caerus Oil and Gas, LLC**  
**Account: CAERUSPCO**

**J075**

**ALL SHADED AREAS are for LAB USE ONLY**

Address: **1401 Blake St. Denver, CO 80202**

Email To: **steve.sivigliano@camposepc.com**

Report To: **Steve Sivigliano**

Site Collection Info/Address:

Copy To: **Evan Mason - evan.mason@camposepc.com**

State: **CO** County/City: **Garfield** Time Zone Collected: **[ ] PT [x] MT [ ] CT [ ] ET**

Customer Project Name/Number:  
**PJ16**

Phone: **970-619-0600**  
Email: **same as above**

Site/Facility ID #:  
**PJ16**

Compliance Monitoring?  
 Yes  No

Collected By (print):  
**Evan Mason**

Purchase Order #:  
Quote #:

DW PWS ID #:  
DW Location Code:

Collected By (signature):  
*[Signature]*

Turnaround Date Required:

Immediately Packed on Ice:  
 Yes  No

Sample Disposal:

Rush:  
 Same Day  Next Day  
 2 Day  3 Day  4 Day  5 Day  
(Expedite Charges Apply)

Field Filtered (if applicable):  
 Yes  No  
Analysis: \_\_\_\_\_

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
20211220-PJ16(SB04)@15'	SL	Grab	12/20/21	1130	-	-	-	2 X
20211220-PJ16(SB04)@30'	SL	Grab	12/20/21	1445	-	-	-	2 X
20211220-PJ16(SB01)@10'	SL	Grab	12/20/21	1600	-	-	-	2 X

Container Preservative Type \*\*  
Lab Project Manager:  
\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses	Lab Profile/Line:	
Arsenic, pH, EC, SAR, Boron (hot water sol.)	Lab Sample Receipt Checklist:	
	Custody Seals Present/Intact	Y N NA
	Custody Signatures Present	Y N NA
	Collector Signature Present	Y N NA
	Bottles Intact	Y N NA
	Correct Bottles	Y N NA
	Sufficient Volume	Y N NA
	Samples Received on Ice	Y N NA
	VOA - Headspace Acceptable	Y N NA
	USDA Regulated Soils	Y N NA
	Samples in Holding Time	Y N NA
	Residual Chlorine Present	Y N NA
	Cl Strips:	
	Sample pH Acceptable	Y N NA
	pH Strips:	
Sulfide Present	Y N NA	
Lead Acetate Strips:		

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)	Composite End	Res Cl	# of Ctns	LAB USE ONLY:
							Lab Sample # / Comments: <b>L1445237</b>
							<b>-01</b>
							<b>-02</b>
							<b>-03</b>

Customer Remarks / Special Conditions / Possible Hazards:  
Type of Ice Used: **Wet** Blue Dry None  
Packing Material Used:  
Radchem sample(s) screened (<500 cpm): **Y N NA**

SHORT HOLDS PRESENT (<72 hours): **Y N N/A**  
Lab Tracking #:  
Samples received via:  
FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:  
Temp Blank Received: **Y N NA**  
Therm ID#: \_\_\_\_\_  
Cooler 1 Temp Upon Receipt: \_\_\_\_\_ oC  
Cooler 1 Therm Corr. Factor: \_\_\_\_\_ oC  
Cooler 1 Corrected Temp: \_\_\_\_\_ oC  
Comments:

Relinquished by/Company: (Signature)  
*[Signature]*  
Date/Time: **12/21/21 1700**

Received by/Company: (Signature)  
*[Signature]*  
Date/Time: **12/21/21 1500**

Relinquished by/Company: (Signature)  
*[Signature]*  
Date/Time: **12/22/21 1930**

MTJL LAB USE ONLY  
Table #:  
Acctnum:  
Template:  
Prelogin:  
PM:  
PB:  
Trip Blank Received: **Y N NA**  
HCL MeOH TSP Other  
Non Conformance(s):  
YES / NO  
Page: \_\_\_\_\_  
of: \_\_\_\_\_

**5016 1232 0423**



# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

**ALL SHADED AREAS are for LAB USE ONLY**

Company: <b>Campos EPC</b>		Billing Information:	
Address: <b>1401 Blake St. Denver, CO 80202</b>		<b>Caerus Oil and Gas</b>	
Report To: <b>Jake Janicek</b>		Email To: <b>jjanicek@caerusoilandgas.com</b>	
Copy To: <b>Steve.Sivigliano@camposepc.com</b>		Site Collection Info/Address:	
Customer Project Name/Number:		State: /	County/City: /
		Time Zone Collected: [ ] PT [ ] MT [ ] CT [ ] ET	

Container Preservative Type **	Lab Project Manager:
** Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other	

Phone: 970-819-0800 Email: same as above	Site/Facility ID #: <b>PJ16</b>	Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): <b>Evan Mason</b>	Purchase Order #: / Quote #: /	DW PWS ID #: / DW Location Code: /
Collected By (signature): <b>E.M.</b>	Turnaround Date Required: /	Immediately Packed on Ice: [x] Yes [ ] No
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: / [ ] Hold: /	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [x] 5 Day (Expedite Charges Apply)	Field Filtered (if applicable): [ ] Yes [ ] No Analysis: /

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
20211220-PJ16(SB04)@15'	SL	G	12/20/21	1130			-	2
20211220-PJ16(SB04)@30'	SL	G	12/20/21	1445			-	2
20211220-PJ16(SB02)@10'	SL	G	12/20/21	1600			-	2

Analyses	Lab Profile/Line:	
	Lab Sample Receipt Checklist:	
	Custody Seals Present/Intact	Y N NA
	Custody Signatures Present	Y N NA
	Collector Signature Present	Y N NA
	Bottles Intact	Y N NA
	Correct Bottles	Y N NA
	Sufficient Volume	Y N NA
	Samples Received on Ice	Y N NA
	VOA - Headspace Acceptable	Y N NA
	USDA Regulated Soils	Y N NA
	Samples in Holding Time	Y N NA
	Residual Chlorine Present	Y N NA
	Cl Strips:	
	Sample pH Acceptable	Y N NA
	pH Strips:	
	Sulfide Present:	Y N NA
	Lead Acetate Strips:	
	LAB USE ONLY:	
	Lab Sample # / Comments:	

Customer Remarks / Special Conditions / Possible Hazards:	Type of Ice Used: Wet Blue Dry None	SHORT HOLDS PRESENT (<72 hours): Y N N/A	Lab Sample Temperature Info: Temp Blank Received: Y N NA Therm ID#: _____ Cooler 1 Temp Upon Receipt: _____oC Cooler 1 Therm Corr. Factor: _____oC Cooler 1 Corrected Temp: _____oC Comments:
	Packing Material Used:	Lab Tracking #:	
	Radchem sample(s) screened (<500 cpm): Y N NA	Samples received via: FEDEX UPS Client Courier Pace Courier	

Relinquished by/Company: (Signature) <b>E.M.</b>	Date/Time: <b>12/21/21</b>	Received by/Company: (Signature)	Date/Time:	<b>MTJL LAB USE ONLY</b> Table #: Acctnum: Template: Prelogin: PM: FB:	Trip Blank Received: Y N NA HCL MeOH TSP Other
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:		
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:		

COGCC Table 915-1

**Caerus Oil and Gas**

Sample Delivery Group: L1445649  
Samples Received: 12/23/2021  
Project Number:  
Description: PJ16  
Site: PJ16  
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](http://www.pacenational.com)

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# SAMPLE SUMMARY

20211221-PJ16 (SB02) @ 30' L1445649-01 Solid

Collected by: Evan Mason  
 Collected date/time: 12/21/21 12:30  
 Received date/time: 12/23/21 09:50

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1797362	1	01/03/22 09:29	01/10/22 15:49	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1795701	1	12/30/21 09:00	12/30/21 11:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794952	1	12/28/21 01:39	12/28/21 03:14	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1797152	1	01/04/22 12:09	01/06/22 10:36	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1798206	1	01/09/22 06:01	01/10/22 19:05	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1797155	5	01/04/22 12:00	01/05/22 16:42	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794895	1	12/26/21 10:42	12/27/21 21:15	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794908	1	12/26/21 10:42	12/27/21 12:37	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1796544	1	12/31/21 05:51	12/31/21 17:11	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1796536	1	12/30/21 09:05	12/30/21 13:57	AGW	Mt. Juliet, TN

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

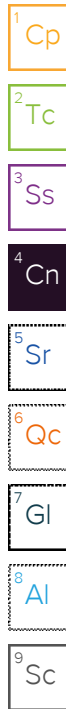
<sup>9</sup>Sc

# CASE NARRATIVE

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



Chris Ward  
Project Manager



## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Hexavalent Chromium	mg/kg		mg/kg		date / time	
Hexavalent Chromium	ND		1.00	1	01/10/2022 15:49	<a href="#">WG1797362</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis	Batch
pH	pH			date / time	
pH	8.44	<u>T8</u>	1	12/30/2021 11:00	<a href="#">WG1795701</a>

## Sample Narrative:

L1445649-01 WG1795701: 8.44 at 20.1C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Specific Conductance	umhos/cm		umhos/cm		date / time	
Specific Conductance	166		10.0	1	12/28/2021 03:14	<a href="#">WG1794952</a>

## Sample Narrative:

L1445649-01 WG1794952: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Barium	mg/kg		mg/kg		date / time	
Barium	135		0.500	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Cadmium	ND		0.500	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Copper	20.9		2.00	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Lead	6.32		0.500	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Nickel	48.6		2.00	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Selenium	ND		2.00	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Silver	ND		1.00	1	01/06/2022 10:36	<a href="#">WG1797152</a>
Zinc	29.2		5.00	1	01/06/2022 10:36	<a href="#">WG1797152</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Hot Water Sol. Boron	mg/l		mg/l		date / time	
Hot Water Sol. Boron	ND		0.200	1	01/10/2022 19:05	<a href="#">WG1798206</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Arsenic	mg/kg		mg/kg		date / time	
Arsenic	3.77		1.00	5	01/05/2022 16:42	<a href="#">WG1797155</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
TPH (GC/FID) Low Fraction	mg/kg		mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.181		0.100	1	12/27/2021 21:15	<a href="#">WG1794895</a>
(S) a, a, a-Trifluorotoluene(FID)	99.0		77.0-120		12/27/2021 21:15	<a href="#">WG1794895</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
Benzene	mg/kg		mg/kg		date / time	
Benzene	ND		0.00100	1	12/27/2021 12:37	<a href="#">WG1794908</a>
Toluene	ND		0.00500	1	12/27/2021 12:37	<a href="#">WG1794908</a>
Ethylbenzene	ND		0.00250	1	12/27/2021 12:37	<a href="#">WG1794908</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Xylenes, Total	ND		0.00650	1	12/27/2021 12:37	<a href="#">WG1794908</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/27/2021 12:37	<a href="#">WG1794908</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/27/2021 12:37	<a href="#">WG1794908</a>
(S) Toluene-d8	111		75.0-131		12/27/2021 12:37	<a href="#">WG1794908</a>
(S) 4-Bromofluorobenzene	98.4		67.0-138		12/27/2021 12:37	<a href="#">WG1794908</a>
(S) 1,2-Dichloroethane-d4	88.1		70.0-130		12/27/2021 12:37	<a href="#">WG1794908</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.44		4.00	1	12/31/2021 17:11	<a href="#">WG1796544</a>
C28-C36 Motor Oil Range	9.08		4.00	1	12/31/2021 17:11	<a href="#">WG1796544</a>
(S) o-Terphenyl	77.4		18.0-148		12/31/2021 17:11	<a href="#">WG1796544</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Acenaphthene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Acenaphthylene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Benzo(a)anthracene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Benzo(a)pyrene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Chrysene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Fluoranthene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Fluorene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Naphthalene	ND		0.0200	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Phenanthrene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
Pyrene	ND		0.00600	1	12/30/2021 13:57	<a href="#">WG1796536</a>
1-Methylnaphthalene	ND		0.0200	1	12/30/2021 13:57	<a href="#">WG1796536</a>
2-Methylnaphthalene	ND		0.0200	1	12/30/2021 13:57	<a href="#">WG1796536</a>
2-Chloronaphthalene	ND		0.0200	1	12/30/2021 13:57	<a href="#">WG1796536</a>
(S) p-Terphenyl-d14	94.0		23.0-120		12/30/2021 13:57	<a href="#">WG1796536</a>
(S) Nitrobenzene-d5	68.3		14.0-149		12/30/2021 13:57	<a href="#">WG1796536</a>
(S) 2-Fluorobiphenyl	80.5		34.0-125		12/30/2021 13:57	<a href="#">WG1796536</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3748804-1 01/10/22 15:31

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

L1445673-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445673-02 01/10/22 16:20 • (DUP) R3748804-7 01/10/22 16:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

<sup>5</sup>Sr

<sup>6</sup>Qc

L1446207-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1446207-04 01/10/22 17:12 • (DUP) R3748804-8 01/10/22 17:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3748804-2 01/10/22 15:38

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	9.85	98.5	80.0-120	

L1445649-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445649-01 01/10/22 15:49 • (MS) R3748804-3 01/10/22 15:54 • (MSD) R3748804-4 01/10/22 15:59

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	18.7	19.0	93.7	95.1	1	75.0-125			1.52	20

L1445649-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1445649-01 01/10/22 15:49 • (MS) R3748804-5 01/10/22 16:04

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	646	ND	659	102	50	75.0-125	

L1445464-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1445464-04 12/30/21 11:00 • (DUP) R3746289-2 12/30/21 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.42	8.48	1	0.710		1

Sample Narrative:

OS: 8.42 at 20C

DUP: 8.48 at 20C

L1445651-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445651-01 12/30/21 11:00 • (DUP) R3746289-3 12/30/21 11:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.13	8.14	1	0.123		1

Sample Narrative:

OS: 8.13 at 19.9C

DUP: 8.14 at 20C

Laboratory Control Sample (LCS)

(LCS) R3746289-1 12/30/21 11:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.95	99.5	99.0-101	

Sample Narrative:

LCS: 9.95 at 19.9C



Method Blank (MB)

(MB) R3745223-1 12/28/21 03:14

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

Sample Narrative:

BLANK: at 25C

L1445673-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445673-02 12/28/21 03:14 • (DUP) R3745223-3 12/28/21 03:14

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	6500	6900	1	5.97		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3745223-2 12/28/21 03:14

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	266	99.2	85.0-115	

Sample Narrative:

LCS: at 25C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3748073-1 01/06/22 09:25

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

Laboratory Control Sample (LCS)

(LCS) R3748073-2 01/06/22 09:27

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Barium	100	94.5	94.5	80.0-120	
Cadmium	100	93.4	93.4	80.0-120	
Copper	100	96.3	96.3	80.0-120	
Lead	100	94.3	94.3	80.0-120	
Nickel	100	93.9	93.9	80.0-120	
Selenium	100	92.7	92.7	80.0-120	
Silver	20.0	18.0	90.0	80.0-120	
Zinc	100	91.7	91.7	80.0-120	

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1446207-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1446207-04 01/06/22 09:30 • (MS) R3748073-5 01/06/22 09:39 • (MSD) R3748073-6 01/06/22 09:41

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Barium	100	141	296	176	155	35.9	1	75.0-125	J5	J3 J6	50.6	20
Cadmium	100	ND	85.2	87.0	85.0	86.8	1	75.0-125			2.08	20
Copper	100	13.8	98.4	97.9	84.6	84.0	1	75.0-125			0.549	20
Lead	100	7.25	94.5	97.9	87.3	90.6	1	75.0-125			3.45	20
Nickel	100	28.2	109	109	81.2	80.8	1	75.0-125			0.351	20
Selenium	100	ND	86.3	87.5	86.3	87.5	1	75.0-125			1.31	20
Silver	20.0	ND	17.0	17.1	84.8	85.4	1	75.0-125			0.711	20
Zinc	100	32.5	98.8	106	66.3	73.4	1	75.0-125	J6	J6	6.92	20

Method Blank (MB)

(MB) R3748726-1 01/10/22 18:24

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

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

(LCS) R3748726-2 01/10/22 18:26 • (LCSD) R3748726-3 01/10/22 18:29

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.04	1.05	104	105	80.0-120			0.630	20

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Method Blank (MB)

(MB) R3747751-1 01/05/22 14:49

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) R3747751-2 01/05/22 14:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	89.5	89.5	80.0-120	

L1446207-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1446207-04 01/05/22 14:56 • (MS) R3747751-5 01/05/22 15:06 • (MSD) R3747751-6 01/05/22 15:09

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.06	84.1	83.1	77.0	76.1	5	75.0-125			1.12	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3746040-2 12/27/21 13:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3746040-1 12/27/21 12:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.38	97.8	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			108	77.0-120	

L1445587-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445587-02 12/27/21 19:29 • (MS) R3746040-3 12/27/21 22:50 • (MSD) R3746040-4 12/27/21 23:14

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	4.18	1.07	75.5	18.9	1	10.0-151		J3	118	28
(S) a,a,a-Trifluorotoluene(FID)					95.1	85.5		77.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3744925-2 12/27/21 08:22

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	112			75.0-131
(S) 4-Bromofluorobenzene	93.1			67.0-138
(S) 1,2-Dichloroethane-d4	87.4			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3744925-1 12/27/21 07:23

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Benzene	0.125	0.113	90.4	70.0-123	
Ethylbenzene	0.125	0.111	88.8	74.0-126	
Toluene	0.125	0.106	84.8	75.0-121	
1,2,4-Trimethylbenzene	0.125	0.112	89.6	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.105	84.0	73.0-127	
Xylenes, Total	0.375	0.350	93.3	72.0-127	
(S) Toluene-d8			103	75.0-131	
(S) 4-Bromofluorobenzene			107	67.0-138	
(S) 1,2-Dichloroethane-d4			93.4	70.0-130	

L1445768-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445768-01 12/27/21 13:55 • (MS) R3744925-3 12/27/21 18:41 • (MSD) R3744925-4 12/27/21 19:00

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	0.125	ND	0.137	0.142	110	114	1	10.0-149			3.58	37
Ethylbenzene	0.125	ND	0.134	0.141	107	113	1	10.0-160			5.09	38
Toluene	0.125	ND	0.137	0.140	110	112	1	10.0-156			2.17	38
1,2,4-Trimethylbenzene	0.125	ND	0.137	0.150	110	120	1	10.0-160			9.06	36
1,3,5-Trimethylbenzene	0.125	ND	0.143	0.154	114	123	1	10.0-160			7.41	38
Xylenes, Total	0.375	ND	0.411	0.435	110	116	1	10.0-160			5.67	38
(S) Toluene-d8					111	107		75.0-131				
(S) 4-Bromofluorobenzene					97.0	98.2		67.0-138				
(S) 1,2-Dichloroethane-d4					94.9	86.3		70.0-130				



Method Blank (MB)

(MB) R3746668-1 12/31/21 15:36

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
<i>(S) o-Terphenyl</i>	93.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3746668-2 12/31/21 15:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	50.9	102	50.0-150	
<i>(S) o-Terphenyl</i>			117	18.0-148	

L1445654-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445654-01 01/02/22 16:22 • (MS) R3746820-1 01/02/22 16:36 • (MSD) R3746820-2 01/02/22 16:49

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 %
C10-C28 Diesel Range	50.9	90.3	60.3	63.0	0.000	0.000	1.02	50.0-150	<u>J6</u>	<u>J6</u>	4.38	20
<i>(S) o-Terphenyl</i>					104	108		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) R3746390-2 12/30/21 12:10

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	75.4			14.0-149
(S) 2-Fluorobiphenyl	87.2			34.0-125
(S) p-Terphenyl-d14	109			23.0-120

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3746390-1 12/30/21 11:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0738	92.3	50.0-126	
Acenaphthene	0.0800	0.0728	91.0	50.0-120	
Acenaphthylene	0.0800	0.0742	92.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0708	88.5	45.0-120	
Benzo(a)pyrene	0.0800	0.0719	89.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0737	92.1	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0731	91.4	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0721	90.1	49.0-125	
Chrysene	0.0800	0.0735	91.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0700	87.5	47.0-125	
Fluoranthene	0.0800	0.0741	92.6	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3746390-1 12/30/21 11:52

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0718	89.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0782	97.8	46.0-125	
Naphthalene	0.0800	0.0614	76.8	50.0-120	
Phenanthrene	0.0800	0.0745	93.1	47.0-120	
Pyrene	0.0800	0.0763	95.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0768	96.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0709	88.6	50.0-120	
2-Chloronaphthalene	0.0800	0.0705	88.1	50.0-120	
(S) Nitrobenzene-d5			102	14.0-149	
(S) 2-Fluorobiphenyl			114	34.0-125	
(S) p-Terphenyl-d14			128	23.0-120	J1

L1445950-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445950-01 12/30/21 14:14 • (MS) R3746390-3 12/30/21 14:32 • (MSD) R3746390-4 12/30/21 14:50

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 %
Anthracene	0.0800	ND	0.0636	0.0576	79.5	72.0	1	10.0-145			9.90	30
Acenaphthene	0.0800	ND	0.0664	0.0607	83.0	75.9	1	14.0-127			8.97	27
Acenaphthylene	0.0800	ND	0.0678	0.0608	84.8	76.0	1	21.0-124			10.9	25
Benzo(a)anthracene	0.0800	ND	0.0635	0.0549	79.4	68.6	1	10.0-139			14.5	30
Benzo(a)pyrene	0.0800	ND	0.0691	0.0614	86.4	76.8	1	10.0-141			11.8	31
Benzo(b)fluoranthene	0.0800	ND	0.0615	0.0557	76.9	69.6	1	10.0-140			9.90	36
Benzo(g,h,i)perylene	0.0800	ND	0.0650	0.0592	81.3	74.0	1	10.0-140			9.34	33
Benzo(k)fluoranthene	0.0800	ND	0.0646	0.0583	80.7	72.9	1	10.0-137			10.3	31
Chrysene	0.0800	ND	0.0653	0.0613	81.6	76.6	1	10.0-145			6.32	30
Dibenz(a,h)anthracene	0.0800	ND	0.0655	0.0538	81.9	67.3	1	10.0-132			19.6	31
Fluoranthene	0.0800	ND	0.0672	0.0602	84.0	75.3	1	10.0-153			11.0	33
Fluorene	0.0800	ND	0.0640	0.0579	80.0	72.4	1	11.0-130			10.0	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0654	0.0568	81.8	71.0	1	10.0-137			14.1	32
Naphthalene	0.0800	ND	0.0560	0.0496	70.0	62.0	1	10.0-135			12.1	27
Phenanthrene	0.0800	ND	0.0672	0.0612	84.0	76.5	1	10.0-144			9.35	31
Pyrene	0.0800	ND	0.0686	0.0641	85.8	80.1	1	10.0-148			6.78	35
1-Methylnaphthalene	0.0800	ND	0.0720	0.0643	90.0	80.4	1	10.0-142			11.3	28
2-Methylnaphthalene	0.0800	ND	0.0654	0.0592	81.8	74.0	1	10.0-137			9.95	28
2-Chloronaphthalene	0.0800	ND	0.0615	0.0565	76.9	70.6	1	29.0-120			8.47	24
(S) Nitrobenzene-d5					87.3	77.5		14.0-149				
(S) 2-Fluorobiphenyl					104	97.2		34.0-125				
(S) p-Terphenyl-d14					121	112		23.0-120	J1			

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1445631-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445631-01 12/30/21 18:23 • (MS) R3746390-5 12/30/21 18:41 • (MSD) R3746390-6 12/30/21 18:59

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	0.0772	0.00683	0.0615	0.0624	70.8	72.0	1	10.0-145			1.45	30
Acenaphthene	0.0772	0.0287	0.0762	0.0774	61.5	63.1	1	14.0-127			1.56	27
Acenaphthylene	0.0772	ND	0.0642	0.0676	83.2	87.6	1	21.0-124			5.16	25
Benzo(a)anthracene	0.0772	ND	0.0541	0.0814	63.0	98.4	1	10.0-139		J3	40.3	30
Benzo(a)pyrene	0.0772	ND	0.0564	0.0769	69.5	96.1	1	10.0-141			30.8	31
Benzo(b)fluoranthene	0.0772	ND	0.0580	0.0834	69.2	102	1	10.0-140			35.9	36
Benzo(g,h,i)perylene	0.0772	ND	0.0555	0.0702	66.5	85.6	1	10.0-140			23.4	33
Benzo(k)fluoranthene	0.0772	ND	0.0525	0.0696	64.9	87.0	1	10.0-137			28.0	31
Chrysene	0.0772	0.00669	0.0589	0.0849	67.6	101	1	10.0-145		J3	36.2	30
Dibenz(a,h)anthracene	0.0772	ND	0.0476	0.0553	61.7	71.6	1	10.0-132			15.0	31
Fluoranthene	0.0772	0.0138	0.0659	0.121	67.5	139	1	10.0-153		J3	59.0	33
Fluorene	0.0772	0.0305	0.0751	0.0760	57.8	58.9	1	11.0-130			1.19	29
Indeno(1,2,3-cd)pyrene	0.0772	ND	0.0548	0.0721	71.0	93.4	1	10.0-137			27.3	32
Naphthalene	0.0772	10.1	7.92	6.20	0.000	0.000	1	10.0-135	EV	EV	24.4	27
Phenanthrene	0.0772	0.0549	0.0998	0.119	58.2	83.0	1	10.0-144			17.6	31
Pyrene	0.0772	0.0175	0.0687	0.117	66.3	129	1	10.0-148		J3	52.0	35
1-Methylnaphthalene	0.0772	5.22	4.17	3.34	0.000	0.000	1	10.0-142	EV	EV	22.1	28
2-Methylnaphthalene	0.0772	9.88	7.86	6.25	0.000	0.000	1	10.0-137	EV	EV	22.8	28
2-Chloronaphthalene	0.0772	ND	0.0530	0.0567	68.7	73.4	1	29.0-120			6.75	24
(S) Nitrobenzene-d5					0.000	0.000		14.0-149	J2	J2		
(S) 2-Fluorobiphenyl					94.8	97.0		34.0-125				
(S) p-Terphenyl-d14					105	108		23.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Sample Narrative:

OS: Surrogate failure due to matrix interference

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

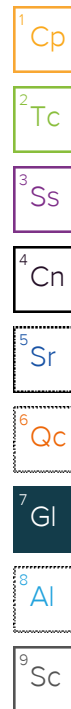
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

### Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



# ACCREDITATIONS & LOCATIONS

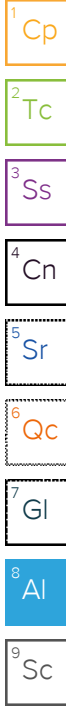
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.





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: L1445237  
Samples Received: 12/22/2021  
Project Number:  
Description: PJ16  
Site: PJ16  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



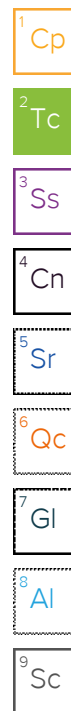
Chris Ward  
Project Manager

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](http://www.pacenational.com)

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# SAMPLE SUMMARY

## 20211220-PJ16 (SB04) @ 15' L1445237-01 Solid

Collected by: Evan Mason  
 Collected date/time: 12/20/21 11:30  
 Received date/time: 12/22/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1794666	1	12/30/21 12:48	12/30/21 12:48	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1795453	1	12/28/21 12:00	12/29/21 13:59	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1796448	1	12/30/21 02:46	12/30/21 06:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794778	1	12/27/21 03:37	12/27/21 07:56	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1794664	1	12/28/21 21:03	12/29/21 13:50	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1794664	1	12/29/21 09:37	12/30/21 21:52	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1794647	5	12/28/21 21:04	12/29/21 12:29	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794319	1	12/22/21 18:48	12/24/21 05:31	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794072	1	12/22/21 18:48	12/23/21 16:25	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1795490	1	12/28/21 11:20	12/29/21 01:16	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1795406	1	12/28/21 11:25	12/28/21 23:02	AMG	Mt. Juliet, TN



## 20211220-PJ16 (SB04) @ 30' L1445237-02 Solid

Collected by: Evan Mason  
 Collected date/time: 12/20/21 14:45  
 Received date/time: 12/22/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1794666	1	12/30/21 12:51	12/30/21 12:51	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1795453	1	12/28/21 12:00	12/29/21 14:04	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1796448	1	12/30/21 02:46	12/30/21 06:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794778	1	12/27/21 03:37	12/27/21 07:56	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1794664	1	12/28/21 21:03	12/29/21 13:52	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1794664	1	12/29/21 09:37	12/30/21 21:55	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1794647	5	12/28/21 21:04	12/29/21 12:42	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794319	1	12/22/21 18:48	12/24/21 08:09	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794072	1	12/22/21 18:48	12/23/21 16:44	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1795490	1	12/28/21 11:20	12/29/21 01:29	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1795406	1	12/28/21 11:25	12/28/21 23:22	AMG	Mt. Juliet, TN

## 20211220-PJ16 (SB02) @ 10' L1445237-03 Solid

Collected by: Evan Mason  
 Collected date/time: 12/20/21 16:00  
 Received date/time: 12/22/21 10:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1794666	1	12/30/21 12:54	12/30/21 12:54	KMG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1795453	1	12/28/21 12:00	12/29/21 14:10	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1796448	1	12/30/21 02:46	12/30/21 06:45	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1794952	1	12/28/21 01:39	12/28/21 03:14	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1794664	1	12/28/21 21:03	12/29/21 13:55	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1794664	1	12/29/21 09:37	12/30/21 21:58	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1794647	5	12/28/21 21:04	12/29/21 12:45	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1794319	1	12/22/21 18:48	12/24/21 09:00	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1794072	1	12/22/21 18:48	12/23/21 17:03	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1795490	1	12/28/21 11:20	12/29/21 01:42	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1795406	1	12/28/21 11:25	12/28/21 23:42	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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.66		1	12/30/2021 12:48	WG1794666

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	12/29/2021 13:59	<a href="#">WG1795453</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.95	<u>T8</u>	1	12/30/2021 06:45	<a href="#">WG1796448</a>

## Sample Narrative:

L1445237-01 WG1796448: 8.95 at 21.7C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	335		10.0	1	12/27/2021 07:56	<a href="#">WG1794778</a>

## Sample Narrative:

L1445237-01 WG1794778: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	80.2		0.500	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Cadmium	ND		0.500	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Copper	16.4		2.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Lead	5.03		0.500	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Nickel	37.1		2.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Selenium	ND		2.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Silver	ND		1.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>
Zinc	23.4		5.00	1	12/29/2021 13:50	<a href="#">WG1794646</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.200		0.200	1	12/30/2021 21:52	<a href="#">WG1794664</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.33		1.00	5	12/29/2021 12:29	<a href="#">WG1794647</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.110		0.100	1	12/24/2021 05:31	<a href="#">WG1794319</a>
(S) a,a,a-Trifluorotoluene(FID)	106		77.0-120		12/24/2021 05:31	<a href="#">WG1794319</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2021 16:25	<a href="#">WG1794072</a>
Toluene	ND		0.00500	1	12/23/2021 16:25	<a href="#">WG1794072</a>
Ethylbenzene	ND		0.00250	1	12/23/2021 16:25	<a href="#">WG1794072</a>
Xylenes, Total	ND		0.00650	1	12/23/2021 16:25	<a href="#">WG1794072</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:25	<a href="#">WG1794072</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:25	<a href="#">WG1794072</a>
(S) Toluene-d8	107		75.0-131		12/23/2021 16:25	<a href="#">WG1794072</a>
(S) 4-Bromofluorobenzene	93.6		67.0-138		12/23/2021 16:25	<a href="#">WG1794072</a>
(S) 1,2-Dichloroethane-d4	92.4		70.0-130		12/23/2021 16:25	<a href="#">WG1794072</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	12/29/2021 01:16	<a href="#">WG1795490</a>
C28-C36 Motor Oil Range	5.88		4.00	1	12/29/2021 01:16	<a href="#">WG1795490</a>
(S) o-Terphenyl	80.0		18.0-148		12/29/2021 01:16	<a href="#">WG1795490</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Acenaphthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Acenaphthylene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(a)anthracene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(a)pyrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Chrysene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Fluoranthene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Fluorene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Naphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Phenanthrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
Pyrene	ND		0.00600	1	12/28/2021 23:02	<a href="#">WG1795406</a>
1-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
2-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
2-Chloronaphthalene	ND		0.0200	1	12/28/2021 23:02	<a href="#">WG1795406</a>
(S) p-Terphenyl-d14	95.1		23.0-120		12/28/2021 23:02	<a href="#">WG1795406</a>
(S) Nitrobenzene-d5	88.1		14.0-149		12/28/2021 23:02	<a href="#">WG1795406</a>
(S) 2-Fluorobiphenyl	82.7		34.0-125		12/28/2021 23:02	<a href="#">WG1795406</a>

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	1.30		1	12/30/2021 12:51	WG1794666

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	12/29/2021 14:04	<a href="#">WG1795453</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.56	<u>T8</u>	1	12/30/2021 06:45	<a href="#">WG1796448</a>

## Sample Narrative:

L1445237-02 WG1796448: 8.56 at 21.9C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	459		10.0	1	12/27/2021 07:56	<a href="#">WG1794778</a>

## Sample Narrative:

L1445237-02 WG1794778: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	139		0.500	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Cadmium	ND		0.500	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Copper	19.1		2.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Lead	6.30		0.500	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Nickel	37.8		2.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Selenium	ND		2.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Silver	ND		1.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>
Zinc	29.5		5.00	1	12/29/2021 13:52	<a href="#">WG1794646</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	12/30/2021 21:55	<a href="#">WG1794664</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.66		1.00	5	12/29/2021 12:42	<a href="#">WG1794647</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/24/2021 08:09	<a href="#">WG1794319</a>
(S) a,a,a-Trifluorotoluene(FID)	106		77.0-120		12/24/2021 08:09	<a href="#">WG1794319</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2021 16:44	<a href="#">WG1794072</a>
Toluene	ND		0.00500	1	12/23/2021 16:44	<a href="#">WG1794072</a>
Ethylbenzene	ND		0.00250	1	12/23/2021 16:44	<a href="#">WG1794072</a>
Xylenes, Total	ND		0.00650	1	12/23/2021 16:44	<a href="#">WG1794072</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:44	<a href="#">WG1794072</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/23/2021 16:44	<a href="#">WG1794072</a>
(S) Toluene-d8	107		75.0-131		12/23/2021 16:44	<a href="#">WG1794072</a>
(S) 4-Bromofluorobenzene	94.6		67.0-138		12/23/2021 16:44	<a href="#">WG1794072</a>
(S) 1,2-Dichloroethane-d4	93.6		70.0-130		12/23/2021 16:44	<a href="#">WG1794072</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.50		4.00	1	12/29/2021 01:29	<a href="#">WG1795490</a>
C28-C36 Motor Oil Range	6.79		4.00	1	12/29/2021 01:29	<a href="#">WG1795490</a>
(S) o-Terphenyl	82.8		18.0-148		12/29/2021 01:29	<a href="#">WG1795490</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Acenaphthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Acenaphthylene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(a)anthracene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(a)pyrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Chrysene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Fluoranthene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Fluorene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Naphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Phenanthrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
Pyrene	ND		0.00600	1	12/28/2021 23:22	<a href="#">WG1795406</a>
1-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
2-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
2-Chloronaphthalene	ND		0.0200	1	12/28/2021 23:22	<a href="#">WG1795406</a>
(S) p-Terphenyl-d14	75.0		23.0-120		12/28/2021 23:22	<a href="#">WG1795406</a>
(S) Nitrobenzene-d5	70.0		14.0-149		12/28/2021 23:22	<a href="#">WG1795406</a>
(S) 2-Fluorobiphenyl	65.1		34.0-125		12/28/2021 23:22	<a href="#">WG1795406</a>

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	1.55		1	12/30/2021 12:54	WG1794666

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	12/29/2021 14:10	<a href="#">WG1795453</a>

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	<u>T8</u>	1	12/30/2021 06:45	<a href="#">WG1796448</a>

Sample Narrative:

L1445237-03 WG1796448: 8.03 at 21.7C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	465		10.0	1	12/28/2021 03:14	<a href="#">WG1794952</a>

Sample Narrative:

L1445237-03 WG1794952: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	154		0.500	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Cadmium	ND		0.500	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Copper	9.42		2.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Lead	5.83		0.500	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Nickel	16.4		2.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Selenium	ND		2.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Silver	ND		1.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>
Zinc	18.0		5.00	1	12/29/2021 13:55	<a href="#">WG1794646</a>

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

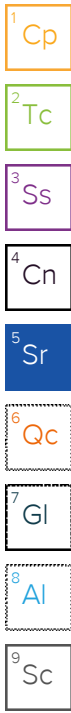
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.453		0.200	1	12/30/2021 21:58	<a href="#">WG1794664</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.19		1.00	5	12/29/2021 12:45	<a href="#">WG1794647</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	12/24/2021 09:00	<a href="#">WG1794319</a>
(S) a,a,a-Trifluorotoluene(FID)	108		77.0-120		12/24/2021 09:00	<a href="#">WG1794319</a>



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	12/23/2021 17:03	<a href="#">WG1794072</a>
Toluene	ND		0.00500	1	12/23/2021 17:03	<a href="#">WG1794072</a>
Ethylbenzene	ND		0.00250	1	12/23/2021 17:03	<a href="#">WG1794072</a>
Xylenes, Total	ND		0.00650	1	12/23/2021 17:03	<a href="#">WG1794072</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	12/23/2021 17:03	<a href="#">WG1794072</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	12/23/2021 17:03	<a href="#">WG1794072</a>
(S) Toluene-d8	106		75.0-131		12/23/2021 17:03	<a href="#">WG1794072</a>
(S) 4-Bromofluorobenzene	95.2		67.0-138		12/23/2021 17:03	<a href="#">WG1794072</a>
(S) 1,2-Dichloroethane-d4	93.0		70.0-130		12/23/2021 17:03	<a href="#">WG1794072</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.99		4.00	1	12/29/2021 01:42	<a href="#">WG1795490</a>
C28-C36 Motor Oil Range	10.2		4.00	1	12/29/2021 01:42	<a href="#">WG1795490</a>
(S) o-Terphenyl	61.2		18.0-148		12/29/2021 01:42	<a href="#">WG1795490</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Acenaphthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Acenaphthylene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(a)anthracene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(a)pyrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(b)fluoranthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(g,h,i)perylene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Benzo(k)fluoranthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Chrysene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Dibenz(a,h)anthracene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Fluoranthene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Fluorene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Naphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Phenanthrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
Pyrene	ND		0.00600	1	12/28/2021 23:42	<a href="#">WG1795406</a>
1-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
2-Methylnaphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
2-Chloronaphthalene	ND		0.0200	1	12/28/2021 23:42	<a href="#">WG1795406</a>
(S) p-Terphenyl-d14	63.3		23.0-120		12/28/2021 23:42	<a href="#">WG1795406</a>
(S) Nitrobenzene-d5	67.9		14.0-149		12/28/2021 23:42	<a href="#">WG1795406</a>
(S) 2-Fluorobiphenyl	59.5		34.0-125		12/28/2021 23:42	<a href="#">WG1795406</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3746468-1 12/29/21 11:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

L1445206-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445206-01 12/29/21 12:01 • (DUP) R3746468-2 12/29/21 12:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

<sup>5</sup>Sr

<sup>6</sup>Qc

L1445856-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445856-01 12/29/21 14:25 • (DUP) R3746468-7 12/29/21 14:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3746468-8 12/29/21 14:46

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	8.33	83.3	80.0-120	

L1445206-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445206-05 12/29/21 14:51 • (MS) R3746468-3 12/29/21 12:55 • (MSD) R3746468-4 12/29/21 13:02

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	9.76	10.7	48.8	53.3	1	75.0-125	<u>J6</u>	<u>J6</u>	8.81	20

L1445206-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1445206-05 12/29/21 14:51 • (MS) R3746468-5 12/29/21 13:07

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	633	ND	372	58.7	50	75.0-125	<u>J6</u>

L1444512-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1444512-02 12/30/21 06:45 • (DUP) R3746174-2 12/30/21 06:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.62	8.67	1	0.578		1

Sample Narrative:

OS: 8.62 at 21.7C  
 DUP: 8.67 at 21.6C

L1445237-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1445237-01 12/30/21 06:45 • (DUP) R3746174-3 12/30/21 06:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	pH	su		%		%
pH	8.95	9.00	1	0.557		1

Sample Narrative:

OS: 8.95 at 21.7C  
 DUP: 9 at 21.6C

Laboratory Control Sample (LCS)

(LCS) R3746174-1 12/30/21 06:45

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.96	99.6	99.0-101	

Sample Narrative:

LCS: 9.96 at 20.2C



Method Blank (MB)

(MB) R3744847-1 12/27/21 07:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1445222-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1445222-14 12/27/21 07:56 • (DUP) R3744847-3 12/27/21 07:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	269	245	1	9.21		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

L1445235-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445235-02 12/27/21 07:56 • (DUP) R3744847-4 12/27/21 07:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	6730	7020	1	4.22		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3744847-2 12/27/21 07:56

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	273	102	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3745223-1 12/28/21 03:14

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

Sample Narrative:

BLANK: at 25C

L1445673-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1445673-02 12/28/21 03:14 • (DUP) R3745223-3 12/28/21 03:14

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	6500	6900	1	5.97		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3745223-2 12/28/21 03:14

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	266	99.2	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3746199-1 12/29/21 13:15

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

Laboratory Control Sample (LCS)

(LCS) R3746199-2 12/29/21 13:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.9	98.9	80.0-120	
Cadmium	100	96.7	96.7	80.0-120	
Copper	100	99.3	99.3	80.0-120	
Lead	100	96.1	96.1	80.0-120	
Nickel	100	96.8	96.8	80.0-120	
Selenium	100	98.0	98.0	80.0-120	
Silver	20.0	18.1	90.6	80.0-120	
Zinc	100	95.4	95.4	80.0-120	

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1445236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445236-01 12/29/21 13:20 • (MS) R3746199-5 12/29/21 13:28 • (MSD) R3746199-6 12/29/21 13:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	28.9	115	95.0	86.6	66.1	1	75.0-125		J6	19.5	20
Cadmium	100	ND	87.9	68.4	87.8	68.3	1	75.0-125		J3 J6	25.0	20
Copper	100	5.00	95.3	74.0	90.3	69.0	1	75.0-125		J3 J6	25.1	20
Lead	100	9.39	97.2	75.1	87.8	65.7	1	75.0-125		J3 J6	25.6	20
Nickel	100	5.41	95.1	74.1	89.7	68.7	1	75.0-125		J3 J6	24.8	20
Selenium	100	ND	85.8	69.7	85.8	69.7	1	75.0-125		J3 J6	20.8	20
Silver	20.0	ND	17.0	13.1	84.9	65.5	1	75.0-125		J3 J6	25.8	20
Zinc	100	29.6	110	89.1	80.0	59.5	1	75.0-125		J3 J6	20.7	20

Method Blank (MB)

(MB) R3746525-1 12/30/21 21:01

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

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

(LCS) R3746525-2 12/30/21 21:04 • (LCSD) R3746525-3 12/30/21 21:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.05	1.06	105	106	80.0-120			0.781	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3745929-1 12/29/21 11:57

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3745929-2 12/29/21 12:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.9	91.9	80.0-120	

4 Cn

5 Sr

L1445236-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445236-01 12/29/21 12:04 • (MS) R3745929-5 12/29/21 12:15 • (MSD) R3745929-6 12/29/21 12:19

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	4.90	89.2	65.0	84.3	60.1	5	75.0-125		J3 J6	31.4	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3745590-2 12/23/21 23:03

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
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)	108			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3745590-1 12/23/21 22:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.63	84.2	72.0-127	
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)			97.2	77.0-120	

L1444919-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1444919-04 12/23/21 23:24 • (MS) R3745590-3 12/24/21 09:22 • (MSD) R3745590-4 12/24/21 09:44

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	4.75	4.29	86.4	78.0	1	10.0-151			10.2	28
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)					103	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) R3745056-3 12/23/21 12:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	102			75.0-131
(S) 4-Bromofluorobenzene	95.7			67.0-138
(S) 1,2-Dichloroethane-d4	85.9			70.0-130

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

(LCS) R3745056-1 12/23/21 11:07 • (LCSD) R3745056-2 12/23/21 11:26

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.125	0.114	0.113	91.2	90.4	70.0-123			0.881	20
Ethylbenzene	0.125	0.120	0.118	96.0	94.4	74.0-126			1.68	20
Toluene	0.125	0.108	0.111	86.4	88.8	75.0-121			2.74	20
1,2,4-Trimethylbenzene	0.125	0.121	0.121	96.8	96.8	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.116	0.123	92.8	98.4	73.0-127			5.86	20
Xylenes, Total	0.375	0.356	0.326	94.9	86.9	72.0-127			8.80	20
(S) Toluene-d8				101	102	75.0-131				
(S) 4-Bromofluorobenzene				102	96.4	67.0-138				
(S) 1,2-Dichloroethane-d4				100	98.6	70.0-130				

L1445222-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445222-07 12/23/21 13:54 • (MS) R3745056-4 12/23/21 19:53 • (MSD) R3745056-5 12/23/21 20:12

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	0.125	ND	0.120	0.125	95.6	99.6	1	10.0-149			4.08	37
Ethylbenzene	0.125	ND	0.132	0.134	106	107	1	10.0-160			1.50	38
Toluene	0.125	ND	0.125	0.129	98.8	102	1	10.0-156			3.15	38
1,2,4-Trimethylbenzene	0.125	ND	0.127	0.129	102	103	1	10.0-160			1.56	36
1,3,5-Trimethylbenzene	0.125	ND	0.131	0.133	105	106	1	10.0-160			1.52	38
Xylenes, Total	0.375	ND	0.375	0.387	99.2	102	1	10.0-160			3.15	38
(S) Toluene-d8					104	104		75.0-131				
(S) 4-Bromofluorobenzene					93.8	94.6		67.0-138				
(S) 1,2-Dichloroethane-d4					97.1	97.9		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) R3745775-1 12/28/21 16:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.422	J	0.274	4.00
(S) o-Terphenyl	87.4			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3745775-2 12/28/21 16:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
C10-C28 Diesel Range	50.0	42.9	85.8	50.0-150	
(S) o-Terphenyl			109	18.0-148	

L1445464-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1445464-02 12/28/21 23:23 • (MS) R3745775-3 12/28/21 23:35 • (MSD) R3745775-4 12/28/21 23:48

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	49.0	ND	34.9	40.9	71.2	82.6	1	50.0-150			15.8	20
(S) o-Terphenyl					89.1	104		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) R3745912-2 12/28/21 18:01

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	89.0			14.0-149
(S) 2-Fluorobiphenyl	88.6			34.0-125
(S) p-Terphenyl-d14	106			23.0-120

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3745912-1 12/28/21 17:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0572	71.5	50.0-126	
Acenaphthene	0.0800	0.0592	74.0	50.0-120	
Acenaphthylene	0.0800	0.0592	74.0	50.0-120	
Benzo(a)anthracene	0.0800	0.0560	70.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0504	63.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0580	72.5	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0546	68.3	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0576	72.0	49.0-125	
Chrysene	0.0800	0.0574	71.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0556	69.5	47.0-125	
Fluoranthene	0.0800	0.0598	74.8	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3745912-1 12/28/21 17:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0589	73.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0580	72.5	46.0-125	
Naphthalene	0.0800	0.0573	71.6	50.0-120	
Phenanthrene	0.0800	0.0584	73.0	47.0-120	
Pyrene	0.0800	0.0571	71.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0568	71.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0611	76.4	50.0-120	
2-Chloronaphthalene	0.0800	0.0601	75.1	50.0-120	
(S) Nitrobenzene-d5			93.9	14.0-149	
(S) 2-Fluorobiphenyl			90.6	34.0-125	
(S) p-Terphenyl-d14			99.5	23.0-120	

L1444957-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1444957-01 12/28/21 19:21 • (MS) R3745912-3 12/28/21 19:41 • (MSD) R3745912-4 12/28/21 20:01

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0784	ND	0.0446	0.0423	56.9	54.5	1	10.0-145			5.29	30
Acenaphthene	0.0784	ND	0.0475	0.0443	60.6	57.1	1	14.0-127			6.97	27
Acenaphthylene	0.0784	ND	0.0462	0.0430	58.9	55.4	1	21.0-124			7.17	25
Benzo(a)anthracene	0.0784	ND	0.0444	0.0410	56.6	52.8	1	10.0-139			7.96	30
Benzo(a)pyrene	0.0784	ND	0.0487	0.0455	62.1	58.6	1	10.0-141			6.79	31
Benzo(b)fluoranthene	0.0784	ND	0.0444	0.0427	56.6	55.0	1	10.0-140			3.90	36
Benzo(g,h,i)perylene	0.0784	ND	0.0445	0.0417	56.8	53.7	1	10.0-140			6.50	33
Benzo(k)fluoranthene	0.0784	ND	0.0459	0.0418	58.5	53.9	1	10.0-137			9.35	31
Chrysene	0.0784	ND	0.0474	0.0440	60.5	56.7	1	10.0-145			7.44	30
Dibenz(a,h)anthracene	0.0784	ND	0.0445	0.0412	56.8	53.1	1	10.0-132			7.70	31
Fluoranthene	0.0784	ND	0.0481	0.0444	61.4	57.2	1	10.0-153			8.00	33
Fluorene	0.0784	ND	0.0469	0.0432	59.8	55.7	1	11.0-130			8.21	29
Indeno(1,2,3-cd)pyrene	0.0784	ND	0.0451	0.0417	57.5	53.7	1	10.0-137			7.83	32
Naphthalene	0.0784	ND	0.0468	0.0433	59.7	55.8	1	10.0-135			7.77	27
Phenanthrene	0.0784	ND	0.0473	0.0432	60.3	55.7	1	10.0-144			9.06	31
Pyrene	0.0784	ND	0.0468	0.0437	59.7	56.3	1	10.0-148			6.85	35
1-Methylnaphthalene	0.0784	ND	0.0468	0.0436	59.7	56.2	1	10.0-142			7.08	28
2-Methylnaphthalene	0.0784	ND	0.0485	0.0454	61.9	58.5	1	10.0-137			6.60	28
2-Chloronaphthalene	0.0784	ND	0.0474	0.0447	60.5	57.6	1	29.0-120			5.86	24
(S) Nitrobenzene-d5					78.3	74.0		14.0-149				
(S) 2-Fluorobiphenyl					75.9	71.2		34.0-125				
(S) p-Terphenyl-d14					86.8	81.3		23.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1444964-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1444964-01 12/28/21 21:42 • (MS) R3745912-5 12/28/21 22:02 • (MSD) R3745912-6 12/28/21 22:22

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 %
Anthracene	0.0800	ND	0.0537	0.0445	67.1	55.6	1	10.0-145			18.7	30
Acenaphthene	0.0800	ND	0.0564	0.0467	70.5	58.4	1	14.0-127			18.8	27
Acenaphthylene	0.0800	ND	0.0547	0.0456	68.4	57.0	1	21.0-124			18.1	25
Benzo(a)anthracene	0.0800	ND	0.0513	0.0420	64.1	52.5	1	10.0-139			19.9	30
Benzo(a)pyrene	0.0800	ND	0.0581	0.0471	72.6	58.9	1	10.0-141			20.9	31
Benzo(b)fluoranthene	0.0800	ND	0.0534	0.0437	66.8	54.6	1	10.0-140			20.0	36
Benzo(g,h,i)perylene	0.0800	ND	0.0533	0.0436	66.6	54.5	1	10.0-140			20.0	33
Benzo(k)fluoranthene	0.0800	ND	0.0538	0.0439	67.3	54.9	1	10.0-137			20.3	31
Chrysene	0.0800	ND	0.0558	0.0458	69.8	57.3	1	10.0-145			19.7	30
Dibenz(a,h)anthracene	0.0800	ND	0.0532	0.0430	66.5	53.8	1	10.0-132			21.2	31
Fluoranthene	0.0800	ND	0.0567	0.0469	70.9	58.6	1	10.0-153			18.9	33
Fluorene	0.0800	ND	0.0549	0.0455	68.6	56.9	1	11.0-130			18.7	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0540	0.0437	67.5	54.6	1	10.0-137			21.1	32
Naphthalene	0.0800	ND	0.0561	0.0467	70.1	58.4	1	10.0-135			18.3	27
Phenanthrene	0.0800	ND	0.0557	0.0465	69.6	58.1	1	10.0-144			18.0	31
Pyrene	0.0800	ND	0.0548	0.0457	68.5	57.1	1	10.0-148			18.1	35
1-Methylnaphthalene	0.0800	ND	0.0560	0.0468	70.0	58.5	1	10.0-142			17.9	28
2-Methylnaphthalene	0.0800	ND	0.0591	0.0486	73.9	60.8	1	10.0-137			19.5	28
2-Chloronaphthalene	0.0800	ND	0.0562	0.0462	70.3	57.8	1	29.0-120			19.5	24
(S) Nitrobenzene-d5					88.5	73.4		14.0-149				
(S) 2-Fluorobiphenyl					86.0	73.1		34.0-125				
(S) p-Terphenyl-d14					97.5	82.1		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.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

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



# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

Company: **Campos EPC**

Billing Information:  
**Caerus Oil and Gas, LLC**  
**Account: CAERUSPCO**

**J075**

**ALL SHADED AREAS are for LAB USE ONLY**

Address: **1401 Blake St. Denver, CO 80202**

Email To: **steve.sivigliano@camposepc.com**

Report To: **Steve Sivigliano**

Site Collection Info/Address:

Copy To: **Evan Mason - evan.mason@camposepc.com**

State: **CO** County/City: **Garfield** Time Zone Collected: **[ ] PT [x] MT [ ] CT [ ] ET**

Customer Project Name/Number:  
**PJ16**

Phone: **970-619-0600**  
Email: **same as above**

Site/Facility ID #:  
**PJ16**

Compliance Monitoring?  
 Yes  No

Collected By (print):  
**Evan Mason**

Purchase Order #:  
Quote #:

DW PWS ID #:  
DW Location Code:

Collected By (signature):  
*[Signature]*

Turnaround Date Required:

Immediately Packed on Ice:  
 Yes  No

Sample Disposal:

Rush:  
 Same Day  Next Day  
 2 Day  3 Day  4 Day  5 Day  
(Expedite Charges Apply)

Field Filtered (if applicable):  
 Yes  No  
Analysis: \_\_\_\_\_

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
20211220-PJ16(SB04)@15'	SL	Grab	12/20/21	1130	-	-	-	2
20211220-PJ16(SB04)@30'	SL	Grab	12/20/21	1445	-	-	-	2
20211220-PJ16(SB01)@10'	SL	Grab	12/20/21	1600	-	-	-	2

Container Preservative Type \*\*  
Lab Project Manager:  
\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

Analyses	Lab Profile/Line:	
Arsenic, pH, EC, SAR, Boron (hot water sol.)	Lab Sample Receipt Checklist:	
	Custody Seals Present/Intact	Y N NA
	Custody Signatures Present	Y N NA
	Collector Signature Present	Y N NA
	Bottles Intact	Y N NA
	Correct Bottles	Y N NA
	Sufficient Volume	Y N NA
	Samples Received on Ice	Y N NA
	VOA - Headspace Acceptable	Y N NA
	USDA Regulated Soils	Y N NA
	Samples in Holding Time	Y N NA
	Residual Chlorine Present	Y N NA
	Cl Strips:	
	Sample pH Acceptable	Y N NA
	pH Strips:	
Sulfide Present	Y N NA	
Lead Acetate Strips:		

LAB USE ONLY:
Lab Sample # / Comments: <b>L1445237</b>
<b>-01</b>
<b>-02</b>
<b>-03</b>

Customer Remarks / Special Conditions / Possible Hazards:  
Type of Ice Used: **Wet** Blue Dry None  
Packing Material Used:  
Radchem sample(s) screened (<500 cpm): **Y N NA**

SHORT HOLDS PRESENT (<72 hours): **Y N N/A**  
Lab Tracking #:  
Samples received via:  
FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:  
Temp Blank Received: **Y N NA**  
Therm ID#: \_\_\_\_\_  
Cooler 1 Temp Upon Receipt: \_\_\_\_\_ °C  
Cooler 1 Therm Corr. Factor: \_\_\_\_\_ °C  
Cooler 1 Corrected Temp: \_\_\_\_\_ °C  
Comments:

Relinquished by/Company: (Signature)  
*[Signature]*  
Date/Time: **12/21/21 1700**

Received by/Company: (Signature)  
*[Signature]*  
Date/Time: **12/21/21 1500**

Relinquished by/Company: (Signature)  
*[Signature]*  
Date/Time: **12/22/21 1930**

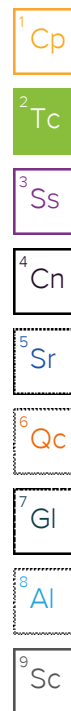
MTJL LAB USE ONLY  
Table #:  
Acctnum:  
Template:  
Prelogin:  
PM:  
PB:  
Trip Blank Received: **Y N NA**  
HCL MeOH TSP Other  
Non Conformance(s):  
YES / NO  
Page: \_\_\_\_\_  
of: \_\_\_\_\_

**5916 1232 0423**



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# SAMPLE SUMMARY

## 20220221-PJ16(SB03)@20' L1464512-01 Solid

Collected by: Evan Mason  
 Collected date/time: 02/21/22 11:30  
 Received date/time: 02/23/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1824074	1	02/28/22 19:21	02/28/22 19:21	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1824375	1	02/27/22 08:00	02/28/22 14:07	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1823593	1	02/25/22 07:30	02/25/22 09:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1824657	1	02/28/22 05:48	02/28/22 08:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1823229	1	02/24/22 18:05	02/28/22 14:54	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1824070	1	02/27/22 12:32	02/28/22 18:24	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1823230	5	02/24/22 18:17	02/25/22 02:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1822847	1	02/23/22 16:30	02/24/22 02:39	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1822874	1	02/23/22 16:30	02/25/22 03:37	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1824827	1	02/23/22 16:30	02/28/22 20:09	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1824797	1	02/28/22 17:06	03/01/22 04:49	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1825278	1	03/01/22 09:26	03/01/22 13:56	LEA	Mt. Juliet, TN

## 20220221-PJ16(SB03)@34' L1464512-02 Solid

Collected by: Evan Mason  
 Collected date/time: 02/21/22 15:30  
 Received date/time: 02/23/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1824074	1	02/28/22 19:24	02/28/22 19:24	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1824375	1	02/27/22 08:00	02/28/22 14:12	SCM	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1823593	1	02/25/22 07:30	02/25/22 09:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1824657	1	02/28/22 05:48	02/28/22 08:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1823229	1	02/24/22 18:05	02/28/22 15:06	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1824070	1	02/27/22 12:32	02/28/22 18:27	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1823230	5	02/24/22 18:17	02/25/22 02:59	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1822847	1	02/23/22 16:30	02/24/22 03:02	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1822874	1	02/23/22 16:30	02/25/22 03:57	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1824827	1	02/23/22 16:30	02/28/22 20:29	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1824797	1	02/28/22 17:06	03/01/22 05:02	JDG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1825278	1	03/01/22 09:26	03/01/22 14:14	LEA	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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.688		1	02/28/2022 19:21	WG1824074

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/28/2022 14:07	<a href="#">WG1824375</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.56	<u>T8</u>	1	02/25/2022 09:00	<a href="#">WG1823593</a>

## Sample Narrative:

L1464512-01 WG1823593: 8.56 at 19.5C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	199		10.0	1	02/28/2022 08:42	<a href="#">WG1824657</a>

## Sample Narrative:

L1464512-01 WG1824657: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	198	<u>J6</u>	0.500	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Cadmium	ND		0.500	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Copper	17.6		2.00	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Lead	9.22		0.500	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Nickel	26.0		2.00	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Selenium	ND		2.00	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Silver	ND		1.00	1	02/28/2022 14:54	<a href="#">WG1823229</a>
Zinc	28.9		5.00	1	02/28/2022 14:54	<a href="#">WG1823229</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/28/2022 18:24	<a href="#">WG1824070</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.29		1.00	5	02/25/2022 02:43	<a href="#">WG1823230</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.127		0.100	1	02/24/2022 02:39	<a href="#">WG1822847</a>
(S) a,a,a-Trifluorotoluene(FID)	99.7		77.0-120		02/24/2022 02:39	<a href="#">WG1822847</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	02/25/2022 03:37	<a href="#">WG1822874</a>
Toluene	ND		0.00500	1	02/25/2022 03:37	<a href="#">WG1822874</a>
Ethylbenzene	ND		0.00250	1	02/25/2022 03:37	<a href="#">WG1822874</a>
Xylenes, Total	ND		0.00650	1	02/25/2022 03:37	<a href="#">WG1822874</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	02/28/2022 20:09	<a href="#">WG1824827</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	02/25/2022 03:37	<a href="#">WG1822874</a>
(S) Toluene-d8	110		75.0-131		02/25/2022 03:37	<a href="#">WG1822874</a>
(S) Toluene-d8	95.5		75.0-131		02/28/2022 20:09	<a href="#">WG1824827</a>
(S) 4-Bromofluorobenzene	94.3		67.0-138		02/25/2022 03:37	<a href="#">WG1822874</a>
(S) 4-Bromofluorobenzene	98.9		67.0-138		02/28/2022 20:09	<a href="#">WG1824827</a>
(S) 1,2-Dichloroethane-d4	85.8		70.0-130		02/25/2022 03:37	<a href="#">WG1822874</a>
(S) 1,2-Dichloroethane-d4	86.9		70.0-130		02/28/2022 20:09	<a href="#">WG1824827</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	6.64		4.00	1	03/01/2022 04:49	<a href="#">WG1824797</a>
C28-C36 Motor Oil Range	9.85	B	4.00	1	03/01/2022 04:49	<a href="#">WG1824797</a>
(S) o-Terphenyl	57.0		18.0-148		03/01/2022 04:49	<a href="#">WG1824797</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Anthracene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Benzo(a)anthracene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Benzo(b)fluoranthene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Benzo(k)fluoranthene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Benzo(a)pyrene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Chrysene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Dibenz(a,h)anthracene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Fluoranthene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Fluorene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
1-Methylnaphthalene	ND		0.0200	1	03/01/2022 13:56	<a href="#">WG1825278</a>
2-Methylnaphthalene	ND		0.0200	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Naphthalene	ND		0.0200	1	03/01/2022 13:56	<a href="#">WG1825278</a>
Pyrene	ND		0.00600	1	03/01/2022 13:56	<a href="#">WG1825278</a>
(S) p-Terphenyl-d14	71.6		23.0-120		03/01/2022 13:56	<a href="#">WG1825278</a>
(S) Nitrobenzene-d5	65.4		14.0-149		03/01/2022 13:56	<a href="#">WG1825278</a>
(S) 2-Fluorobiphenyl	66.3		34.0-125		03/01/2022 13:56	<a href="#">WG1825278</a>

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	0.488		1	02/28/2022 19:24	WG1824074

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	02/28/2022 14:12	<a href="#">WG1824375</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.51	<u>T8</u>	1	02/25/2022 09:00	<a href="#">WG1823593</a>

## Sample Narrative:

L1464512-02 WG1823593: 8.51 at 19.3C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	209		10.0	1	02/28/2022 08:42	<a href="#">WG1824657</a>

## Sample Narrative:

L1464512-02 WG1824657: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	121		0.500	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Cadmium	ND		0.500	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Copper	17.9		2.00	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Lead	5.41		0.500	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Nickel	38.4		2.00	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Selenium	ND		2.00	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Silver	ND		1.00	1	02/28/2022 15:06	<a href="#">WG1823229</a>
Zinc	31.9		5.00	1	02/28/2022 15:06	<a href="#">WG1823229</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/28/2022 18:27	<a href="#">WG1824070</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.31		1.00	5	02/25/2022 02:59	<a href="#">WG1823230</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.145		0.100	1	02/24/2022 03:02	<a href="#">WG1822847</a>
(S) a,a,a-Trifluorotoluene(FID)	99.0		77.0-120		02/24/2022 03:02	<a href="#">WG1822847</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	02/25/2022 03:57	<a href="#">WG1822874</a>
Toluene	ND		0.00500	1	02/25/2022 03:57	<a href="#">WG1822874</a>
Ethylbenzene	ND		0.00250	1	02/25/2022 03:57	<a href="#">WG1822874</a>
Xylenes, Total	ND		0.00650	1	02/25/2022 03:57	<a href="#">WG1822874</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	02/28/2022 20:29	<a href="#">WG1824827</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	02/25/2022 03:57	<a href="#">WG1822874</a>
(S) Toluene-d8	110		75.0-131		02/25/2022 03:57	<a href="#">WG1822874</a>
(S) Toluene-d8	95.4		75.0-131		02/28/2022 20:29	<a href="#">WG1824827</a>
(S) 4-Bromofluorobenzene	93.5		67.0-138		02/25/2022 03:57	<a href="#">WG1822874</a>
(S) 4-Bromofluorobenzene	96.0		67.0-138		02/28/2022 20:29	<a href="#">WG1824827</a>
(S) 1,2-Dichloroethane-d4	83.1		70.0-130		02/25/2022 03:57	<a href="#">WG1822874</a>
(S) 1,2-Dichloroethane-d4	91.4		70.0-130		02/28/2022 20:29	<a href="#">WG1824827</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	13.4		4.00	1	03/01/2022 05:02	<a href="#">WG1824797</a>
C28-C36 Motor Oil Range	16.3	<u>B</u>	4.00	1	03/01/2022 05:02	<a href="#">WG1824797</a>
(S) o-Terphenyl	63.5		18.0-148		03/01/2022 05:02	<a href="#">WG1824797</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Anthracene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Benzo(a)anthracene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Benzo(b)fluoranthene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Benzo(k)fluoranthene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Benzo(a)pyrene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Chrysene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Dibenz(a,h)anthracene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Fluoranthene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Fluorene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
1-Methylnaphthalene	ND		0.0200	1	03/01/2022 14:14	<a href="#">WG1825278</a>
2-Methylnaphthalene	ND		0.0200	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Naphthalene	ND		0.0200	1	03/01/2022 14:14	<a href="#">WG1825278</a>
Pyrene	ND		0.00600	1	03/01/2022 14:14	<a href="#">WG1825278</a>
(S) p-Terphenyl-d14	77.8		23.0-120		03/01/2022 14:14	<a href="#">WG1825278</a>
(S) Nitrobenzene-d5	70.9		14.0-149		03/01/2022 14:14	<a href="#">WG1825278</a>
(S) 2-Fluorobiphenyl	74.4		34.0-125		03/01/2022 14:14	<a href="#">WG1825278</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3764926-1 02/28/22 11:50

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00



L1464272-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1464272-02 02/28/22 12:03 • (DUP) R3764926-7 02/28/22 13:20

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

L1464494-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1464494-11 02/28/22 13:36 • (DUP) R3764926-8 02/28/22 13:41

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	1.31	4.99	1	117	P1	20

Laboratory Control Sample (LCS)

(LCS) R3764926-2 02/28/22 11:57

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	9.58	95.8	80.0-120	

L1464494-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464494-01 02/28/22 12:08 • (MS) R3764926-3 02/28/22 12:13 • (MSD) R3764926-4 02/28/22 12:18

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	ND	ND	0.000	0.000	1	75.0-125	J6	J6	0.000	20

Sample Narrative:

MS: Sample is a reducer, causing low spike recovery, see graph on network drive.  
 MSD: Sample is a reducer, causing low spike recovery, see graph on network drive.

L1464494-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1464494-01 02/28/22 12:08 • (MS) R3764926-5 02/28/22 12:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Hexavalent Chromium	642	ND	ND	0.000	50	75.0-125	<u>J6</u>

Sample Narrative:

MS: Sample is a reducer, causing low spike recovery, see graph on network drive.



L1464512-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1464512-02 02/25/22 09:00 • (DUP) R3763741-2 02/25/22 09:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.51	8.49	1	0.235		1

Sample Narrative:

OS: 8.51 at 19.3C  
DUP: 8.49 at 19.4C

Laboratory Control Sample (LCS)

(LCS) R3763741-1 02/25/22 09:00

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

Sample Narrative:

LCS: 10.02 at 18.6C

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3764433-1 02/28/22 08:42

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

Sample Narrative:

BLANK: at 25C

L1465349-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1465349-01 02/28/22 08:42 • (DUP) R3764433-3 02/28/22 08:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	605	681	1	11.8		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3764433-2 02/28/22 08:42

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	275	103	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3764817-1 02/28/22 14:49

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

Laboratory Control Sample (LCS)

(LCS) R3764817-2 02/28/22 14:51

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Barium	100	92.7	92.7	80.0-120	
Cadmium	100	94.6	94.6	80.0-120	
Copper	100	97.2	97.2	80.0-120	
Lead	100	95.5	95.5	80.0-120	
Nickel	100	97.9	97.9	80.0-120	
Selenium	100	90.8	90.8	80.0-120	
Silver	20.0	17.7	88.5	80.0-120	
Zinc	100	91.5	91.5	80.0-120	

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1464512-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464512-01 02/28/22 14:54 • (MS) R3764817-5 02/28/22 15:01 • (MSD) R3764817-6 02/28/22 15:04

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Barium	100	198	256	239	57.6	40.5	1	75.0-125	J6	J6	6.92	20
Cadmium	100	ND	100	97.9	100	97.7	1	75.0-125			2.35	20
Copper	100	17.6	117	116	99.3	98.1	1	75.0-125			1.08	20
Lead	100	9.22	111	106	101	97.0	1	75.0-125			4.02	20
Nickel	100	26.0	133	129	107	103	1	75.0-125			2.83	20
Selenium	100	ND	92.3	90.8	92.3	90.8	1	75.0-125			1.60	20
Silver	20.0	ND	18.6	18.0	93.1	90.1	1	75.0-125			3.25	20
Zinc	100	28.9	119	112	89.9	83.0	1	75.0-125			5.94	20

Method Blank (MB)

(MB) R3764821-1 02/28/22 18:17

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

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

(LCS) R3764821-2 02/28/22 18:19 • (LCSD) R3764821-3 02/28/22 18:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.03	1.02	103	102	80.0-120			1.20	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3763751-1 02/25/22 02:37

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) R3763751-2 02/25/22 02:40

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	87.8	87.8	80.0-120	

L1464512-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464512-01 02/25/22 02:43 • (MS) R3763751-5 02/25/22 02:53 • (MSD) R3763751-6 02/25/22 02:56

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	4.29	91.2	89.8	86.9	85.5	5	75.0-125			1.55	20



Method Blank (MB)

(MB) R3763583-3 02/23/22 17:55

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
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)	101			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3763583-2 02/23/22 17:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.39	98.0	72.0-127	
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)			103	77.0-120	

L1464508-16 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464508-16 02/24/22 01:31 • (MS) R3763583-4 02/24/22 03:25 • (MSD) R3763583-5 02/24/22 03:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	4.46	6.55	81.1	119	1	10.0-151		J3	38.0	28
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)					104	109		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) R3764469-2 02/25/22 01:41

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
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	107			75.0-131
(S) 4-Bromofluorobenzene	93.1			67.0-138
(S) 1,2-Dichloroethane-d4	85.0			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS)

(LCS) R3764469-1 02/25/22 00:42

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.109	87.2	70.0-123	
Ethylbenzene	0.125	0.111	88.8	74.0-126	
Toluene	0.125	0.115	92.0	75.0-121	
1,3,5-Trimethylbenzene	0.125	0.103	82.4	73.0-127	
Xylenes, Total	0.375	0.336	89.6	72.0-127	
(S) Toluene-d8			104	75.0-131	
(S) 4-Bromofluorobenzene			93.7	67.0-138	
(S) 1,2-Dichloroethane-d4			89.3	70.0-130	

7 Gl

8 Al

9 Sc

L1464527-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464527-01 02/25/22 04:16 • (MS) R3764469-3 02/25/22 08:29 • (MSD) R3764469-4 02/25/22 08:49

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	0.0975	ND	0.106	0.0999	109	102	1	10.0-149			5.93	37
Ethylbenzene	0.0975	ND	0.114	0.108	117	111	1	10.0-160			5.41	38
Toluene	0.0975	ND	0.120	0.112	123	115	1	10.0-156			6.90	38
1,3,5-Trimethylbenzene	0.0975	ND	0.107	0.0986	110	101	1	10.0-160			8.17	38
Xylenes, Total	0.293	ND	0.347	0.320	118	109	1	10.0-160			8.10	38
(S) Toluene-d8					109	108		75.0-131				
(S) 4-Bromofluorobenzene					89.8	93.1		67.0-138				
(S) 1,2-Dichloroethane-d4					85.5	85.2		70.0-130				

Method Blank (MB)

(MB) R3764787-3 02/28/22 10:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
1,2,4-Trimethylbenzene	U		0.00158	0.00500
(S) Toluene-d8	96.9			75.0-131
(S) 4-Bromofluorobenzene	102			67.0-138
(S) 1,2-Dichloroethane-d4	88.8			70.0-130

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

(LCS) R3764787-1 02/28/22 09:10 • (LCSD) R3764787-2 02/28/22 09:30

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,2,4-Trimethylbenzene	0.125	0.119	0.118	95.2	94.4	70.0-126			0.844	20
(S) Toluene-d8				93.4	90.4	75.0-131				
(S) 4-Bromofluorobenzene				100	96.4	67.0-138				
(S) 1,2-Dichloroethane-d4				79.6	82.1	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) R3764966-1 03/01/22 01:48

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	1.74	↓	0.274	4.00
(S) o-Terphenyl	63.8			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3764966-2 03/01/22 02:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.2	74.4	50.0-150	
(S) o-Terphenyl			88.9	18.0-148	

L1464026-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464026-02 03/01/22 02:39 • (MS) R3764966-3 03/01/22 02:52 • (MSD) R3764966-4 03/01/22 03:05

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	ND	32.3	35.0	61.4	67.0	1	50.0-150			8.02	20
(S) o-Terphenyl					75.1	73.1		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) R3765019-2 03/01/22 12:27

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
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(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
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) Nitrobenzene-d5	92.6			14.0-149
(S) 2-Fluorobiphenyl	98.2			34.0-125
(S) p-Terphenyl-d14	106			23.0-120

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3765019-1 03/01/22 12:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0702	87.8	50.0-126	
Acenaphthene	0.0800	0.0723	90.4	50.0-120	
Benzo(a)anthracene	0.0800	0.0733	91.6	45.0-120	
Benzo(a)pyrene	0.0800	0.0635	79.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0663	82.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0671	83.9	49.0-125	
Chrysene	0.0800	0.0741	92.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0700	87.5	47.0-125	
Fluoranthene	0.0800	0.0758	94.8	49.0-129	
Fluorene	0.0800	0.0723	90.4	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0755	94.4	46.0-125	
Naphthalene	0.0800	0.0677	84.6	50.0-120	
Pyrene	0.0800	0.0765	95.6	43.0-123	
1-Methylnaphthalene	0.0800	0.0718	89.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0739	92.4	50.0-120	

Laboratory Control Sample (LCS)

(LCS) R3765019-1 03/01/22 12:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) Nitrobenzene-d5			92.9	14.0-149	
(S) 2-Fluorobiphenyl			96.5	34.0-125	
(S) p-Terphenyl-d14			102	23.0-120	

L1464703-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464703-01 03/01/22 14:32 • (MS) R3765019-3 03/01/22 14:50 • (MSD) R3765019-4 03/01/22 15:07

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0784	ND	0.0571	0.0587	72.8	76.0	1	10.0-145			2.76	30
Acenaphthene	0.0784	ND	0.0593	0.0620	75.6	80.3	1	14.0-127			4.45	27
Benzo(a)anthracene	0.0784	ND	0.0541	0.0577	69.0	74.7	1	10.0-139			6.44	30
Benzo(a)pyrene	0.0784	ND	0.0585	0.0618	74.6	80.1	1	10.0-141			5.49	31
Benzo(b)fluoranthene	0.0784	ND	0.0491	0.0512	62.6	66.3	1	10.0-140			4.19	36
Benzo(k)fluoranthene	0.0784	ND	0.0513	0.0549	65.4	71.1	1	10.0-137			6.78	31
Chrysene	0.0784	ND	0.0571	0.0607	72.8	78.6	1	10.0-145			6.11	30
Dibenz(a,h)anthracene	0.0784	ND	0.0532	0.0556	67.9	72.0	1	10.0-132			4.41	31
Fluoranthene	0.0784	ND	0.0584	0.0601	74.5	77.8	1	10.0-153			2.87	33
Fluorene	0.0784	ND	0.0573	0.0611	73.1	79.1	1	11.0-130			6.42	29
Indeno(1,2,3-cd)pyrene	0.0784	ND	0.0548	0.0551	69.9	71.4	1	10.0-137			0.546	32
Naphthalene	0.0784	ND	0.0578	0.0635	61.8	70.1	1	10.0-135			9.40	27
Pyrene	0.0784	ND	0.0610	0.0616	77.8	79.8	1	10.0-148			0.979	35
1-Methylnaphthalene	0.0784	ND	0.0598	0.0646	76.3	83.7	1	10.0-142			7.72	28
2-Methylnaphthalene	0.0784	ND	0.0617	0.0720	78.7	93.3	1	10.0-137			15.4	28
(S) Nitrobenzene-d5					80.7	86.5		14.0-149				
(S) 2-Fluorobiphenyl					80.7	85.5		34.0-125				
(S) p-Terphenyl-d14					77.8	82.7		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.
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.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

### 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.
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.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

# ACCREDITATIONS & LOCATIONS

## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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





**Caerus Oil and Gas**

Sample Delivery Group: L1465349  
Samples Received: 02/25/2022  
Project Number:  
Description: PJ16  
Site: PJ16  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



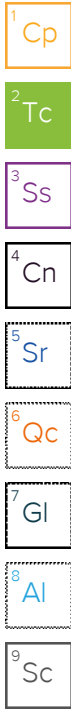
Chris Ward  
Project Manager

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](http://www.pacenational.com)

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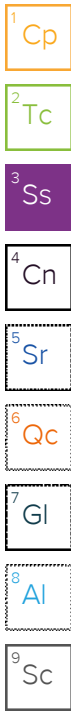


# SAMPLE SUMMARY

## 20220222-PJ16 (SB05) @ 10 L1465349-01 Solid

Collected by: Evan Mason  
 Collected date/time: 02/22/22 11:30  
 Received date/time: 02/25/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1824074	1	02/28/22 19:38	02/28/22 19:38	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1826405	1	03/03/22 02:00	03/03/22 16:55	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1824245	1	02/26/22 13:00	02/26/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1824657	1	02/28/22 05:48	02/28/22 08:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1824634	1	02/28/22 17:11	03/02/22 12:32	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1824070	1	02/27/22 12:32	02/28/22 18:29	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1826572	5	03/03/22 08:44	03/03/22 13:33	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1824601	1	02/26/22 16:47	02/28/22 00:16	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1824491	1	02/26/22 16:47	02/27/22 16:27	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1826165	1	03/02/22 17:07	03/02/22 22:35	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1826207	1	03/03/22 06:05	03/03/22 18:08	LEA	Mt. Juliet, TN



## 20220222-PJ16 (SB05) @ 20 L1465349-02 Solid

Collected by: Evan Mason  
 Collected date/time: 02/22/22 13:00  
 Received date/time: 02/25/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1824074	1	02/28/22 19:41	02/28/22 19:41	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1826405	1	03/03/22 02:00	03/03/22 17:06	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1824245	1	02/26/22 13:00	02/26/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1824657	1	02/28/22 05:48	02/28/22 08:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1824634	1	02/28/22 17:11	03/02/22 13:44	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1824070	1	02/27/22 12:32	02/28/22 18:32	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1826572	5	03/03/22 08:44	03/03/22 13:37	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1824601	1	02/26/22 16:47	02/28/22 00:38	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1824491	1	02/26/22 16:47	02/27/22 16:46	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1826165	1	03/02/22 17:07	03/02/22 22:48	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1826207	1	03/03/22 06:05	03/03/22 18:26	LEA	Mt. Juliet, TN

## 20220222-PJ16 (SB05) @ 30 L1465349-03 Solid

Collected by: Evan Mason  
 Collected date/time: 02/22/22 14:15  
 Received date/time: 02/25/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1824074	1	02/28/22 19:44	02/28/22 19:44	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1826405	1	03/03/22 02:00	03/03/22 17:11	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1824245	1	02/26/22 13:00	02/26/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1825852	1	03/02/22 02:49	03/02/22 09:07	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1824634	1	02/28/22 17:11	03/02/22 13:47	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1824070	1	02/27/22 12:35	02/28/22 18:35	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1826572	5	03/03/22 08:44	03/03/22 13:40	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1824601	1	02/26/22 16:47	02/28/22 01:00	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1824491	1	02/26/22 16:47	02/27/22 17:05	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1826165	1	03/02/22 17:07	03/02/22 23:01	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1826207	1	03/03/22 06:05	03/03/22 18:44	LEA	Mt. Juliet, TN

## 20220222-PJ16 (SB05) @ 38 L1465349-04 Solid

Collected by: Evan Mason  
 Collected date/time: 02/22/22 16:30  
 Received date/time: 02/25/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1824074	1	02/28/22 18:04	02/28/22 18:04	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1826405	1	03/03/22 02:00	03/03/22 17:16	JER	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1824245	1	02/26/22 13:00	02/26/22 15:00	GI	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1824657	1	02/28/22 05:48	02/28/22 08:42	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1824632	1	02/28/22 07:38	03/02/22 16:52	CCE	Mt. Juliet, TN

# SAMPLE SUMMARY

20220222-PJ16 (SB05) @ 38 L1465349-04 Solid

Collected by: Evan Mason  
 Collected date/time: 02/22/22 16:30  
 Received date/time: 02/25/22 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1824070	1	02/27/22 12:32	02/28/22 18:37	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1826572	5	03/03/22 08:44	03/03/22 13:43	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1824601	1	02/26/22 16:47	02/28/22 01:21	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1824491	1	02/26/22 16:47	02/27/22 17:23	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1826165	1	03/02/22 17:07	03/02/22 23:27	TJD	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1826207	1	03/03/22 06:05	03/03/22 19:02	LEA	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# CASE NARRATIVE

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



Chris Ward  
Project Manager

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.03		1	02/28/2022 19:38	WG1824074

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	03/03/2022 16:55	<a href="#">WG1826405</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.49	<u>T8</u>	1	02/26/2022 15:00	<a href="#">WG1824245</a>

## Sample Narrative:

L1465349-01 WG1824245: 8.49 at 24.9C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	605		10.0	1	02/28/2022 08:42	<a href="#">WG1824657</a>

## Sample Narrative:

L1465349-01 WG1824657: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	260	<u>J6 O1</u>	0.500	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Cadmium	ND		0.500	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Copper	15.2		2.00	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Lead	4.54		0.500	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Nickel	51.8	<u>O1</u>	2.00	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Selenium	ND		2.00	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Silver	ND		1.00	1	03/02/2022 12:32	<a href="#">WG1824634</a>
Zinc	27.8	<u>O1</u>	5.00	1	03/02/2022 12:32	<a href="#">WG1824634</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.390		0.200	1	02/28/2022 18:29	<a href="#">WG1824070</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.19		1.00	5	03/03/2022 13:33	<a href="#">WG1826572</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/28/2022 00:16	<a href="#">WG1824601</a>
(S) a,a,a-Trifluorotoluene(FID)	110		77.0-120		02/28/2022 00:16	<a href="#">WG1824601</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	02/27/2022 16:27	<a href="#">WG1824491</a>
Toluene	ND		0.00500	1	02/27/2022 16:27	<a href="#">WG1824491</a>
Ethylbenzene	ND		0.00250	1	02/27/2022 16:27	<a href="#">WG1824491</a>
Xylenes, Total	ND		0.00650	1	02/27/2022 16:27	<a href="#">WG1824491</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	02/27/2022 16:27	<a href="#">WG1824491</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	02/27/2022 16:27	<a href="#">WG1824491</a>
(S) Toluene-d8	108		75.0-131		02/27/2022 16:27	<a href="#">WG1824491</a>
(S) 4-Bromofluorobenzene	102		67.0-138		02/27/2022 16:27	<a href="#">WG1824491</a>
(S) 1,2-Dichloroethane-d4	93.9		70.0-130		02/27/2022 16:27	<a href="#">WG1824491</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	12.7	<u>B</u>	4.00	1	03/02/2022 22:35	<a href="#">WG1826165</a>
C28-C36 Motor Oil Range	10.6		4.00	1	03/02/2022 22:35	<a href="#">WG1826165</a>
(S) o-Terphenyl	82.8		18.0-148		03/02/2022 22:35	<a href="#">WG1826165</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Anthracene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Benzo(a)anthracene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Benzo(b)fluoranthene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Benzo(k)fluoranthene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Benzo(a)pyrene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Chrysene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Dibenz(a,h)anthracene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Fluoranthene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Fluorene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
1-Methylnaphthalene	ND		0.0200	1	03/03/2022 18:08	<a href="#">WG1826207</a>
2-Methylnaphthalene	ND		0.0200	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Naphthalene	ND		0.0200	1	03/03/2022 18:08	<a href="#">WG1826207</a>
Pyrene	ND		0.00600	1	03/03/2022 18:08	<a href="#">WG1826207</a>
(S) p-Terphenyl-d14	60.9		23.0-120		03/03/2022 18:08	<a href="#">WG1826207</a>
(S) Nitrobenzene-d5	54.2		14.0-149		03/03/2022 18:08	<a href="#">WG1826207</a>
(S) 2-Fluorobiphenyl	57.9		34.0-125		03/03/2022 18:08	<a href="#">WG1826207</a>

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	0.429		1	02/28/2022 19:41	WG1824074

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	03/03/2022 17:06	<a href="#">WG1826405</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.53	<u>T8</u>	1	02/26/2022 15:00	<a href="#">WG1824245</a>

## Sample Narrative:

L1465349-02 WG1824245: 8.53 at 22.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	152		10.0	1	02/28/2022 08:42	<a href="#">WG1824657</a>

## Sample Narrative:

L1465349-02 WG1824657: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	264		0.500	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Cadmium	ND		0.500	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Copper	25.7		2.00	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Lead	8.99		0.500	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Nickel	40.9		2.00	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Selenium	ND		2.00	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Silver	ND		1.00	1	03/02/2022 13:44	<a href="#">WG1824634</a>
Zinc	46.3		5.00	1	03/02/2022 13:44	<a href="#">WG1824634</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/28/2022 18:32	<a href="#">WG1824070</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.84		1.00	5	03/03/2022 13:37	<a href="#">WG1826572</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/28/2022 00:38	<a href="#">WG1824601</a>
(S) a,a,a-Trifluorotoluene(FID)	106		77.0-120		02/28/2022 00:38	<a href="#">WG1824601</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	02/27/2022 16:46	<a href="#">WG1824491</a>
Toluene	ND		0.00500	1	02/27/2022 16:46	<a href="#">WG1824491</a>
Ethylbenzene	ND		0.00250	1	02/27/2022 16:46	<a href="#">WG1824491</a>
Xylenes, Total	ND		0.00650	1	02/27/2022 16:46	<a href="#">WG1824491</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	02/27/2022 16:46	<a href="#">WG1824491</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	02/27/2022 16:46	<a href="#">WG1824491</a>
(S) Toluene-d8	108		75.0-131		02/27/2022 16:46	<a href="#">WG1824491</a>
(S) 4-Bromofluorobenzene	102		67.0-138		02/27/2022 16:46	<a href="#">WG1824491</a>
(S) 1,2-Dichloroethane-d4	96.6		70.0-130		02/27/2022 16:46	<a href="#">WG1824491</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	7.13	<u>B</u>	4.00	1	03/02/2022 22:48	<a href="#">WG1826165</a>
C28-C36 Motor Oil Range	17.6		4.00	1	03/02/2022 22:48	<a href="#">WG1826165</a>
(S) o-Terphenyl	78.9		18.0-148		03/02/2022 22:48	<a href="#">WG1826165</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Anthracene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Benzo(a)anthracene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Benzo(b)fluoranthene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Benzo(k)fluoranthene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Benzo(a)pyrene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Chrysene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Dibenz(a,h)anthracene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Fluoranthene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Fluorene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
1-Methylnaphthalene	ND		0.0200	1	03/03/2022 18:26	<a href="#">WG1826207</a>
2-Methylnaphthalene	ND		0.0200	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Naphthalene	ND		0.0200	1	03/03/2022 18:26	<a href="#">WG1826207</a>
Pyrene	ND		0.00600	1	03/03/2022 18:26	<a href="#">WG1826207</a>
(S) p-Terphenyl-d14	84.4		23.0-120		03/03/2022 18:26	<a href="#">WG1826207</a>
(S) Nitrobenzene-d5	76.6		14.0-149		03/03/2022 18:26	<a href="#">WG1826207</a>
(S) 2-Fluorobiphenyl	81.1		34.0-125		03/03/2022 18:26	<a href="#">WG1826207</a>

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	0.396		1	02/28/2022 19:44	WG1824074

## Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	03/03/2022 17:11	<a href="#">WG1826405</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.53	<u>T8</u>	1	02/26/2022 15:00	<a href="#">WG1824245</a>

## Sample Narrative:

L1465349-03 WG1824245: 8.53 at 23.5C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	137		10.0	1	03/02/2022 09:07	<a href="#">WG1825852</a>

## Sample Narrative:

L1465349-03 WG1825852: at 25C

## Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	188		0.500	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Cadmium	ND		0.500	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Copper	25.3		2.00	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Lead	6.97		0.500	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Nickel	48.5		2.00	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Selenium	ND		2.00	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Silver	ND		1.00	1	03/02/2022 13:47	<a href="#">WG1824634</a>
Zinc	43.6		5.00	1	03/02/2022 13:47	<a href="#">WG1824634</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/28/2022 18:35	<a href="#">WG1824070</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.77		1.00	5	03/03/2022 13:40	<a href="#">WG1826572</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	02/28/2022 01:00	<a href="#">WG1824601</a>
(S) a,a,a-Trifluorotoluene(FID)	107		77.0-120		02/28/2022 01:00	<a href="#">WG1824601</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	02/27/2022 17:05	<a href="#">WG1824491</a>
Toluene	ND		0.00500	1	02/27/2022 17:05	<a href="#">WG1824491</a>
Ethylbenzene	ND		0.00250	1	02/27/2022 17:05	<a href="#">WG1824491</a>
Xylenes, Total	ND		0.00650	1	02/27/2022 17:05	<a href="#">WG1824491</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	02/27/2022 17:05	<a href="#">WG1824491</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	02/27/2022 17:05	<a href="#">WG1824491</a>
(S) Toluene-d8	109		75.0-131		02/27/2022 17:05	<a href="#">WG1824491</a>
(S) 4-Bromofluorobenzene	103		67.0-138		02/27/2022 17:05	<a href="#">WG1824491</a>
(S) 1,2-Dichloroethane-d4	96.0		70.0-130		02/27/2022 17:05	<a href="#">WG1824491</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.46	<u>B</u>	4.00	1	03/02/2022 23:01	<a href="#">WG1826165</a>
C28-C36 Motor Oil Range	11.0		4.00	1	03/02/2022 23:01	<a href="#">WG1826165</a>
(S) o-Terphenyl	86.0		18.0-148		03/02/2022 23:01	<a href="#">WG1826165</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Anthracene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Benzo(a)anthracene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Benzo(b)fluoranthene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Benzo(k)fluoranthene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Benzo(a)pyrene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Chrysene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Dibenz(a,h)anthracene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Fluoranthene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Fluorene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
1-Methylnaphthalene	ND		0.0200	1	03/03/2022 18:44	<a href="#">WG1826207</a>
2-Methylnaphthalene	ND		0.0200	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Naphthalene	ND		0.0200	1	03/03/2022 18:44	<a href="#">WG1826207</a>
Pyrene	ND		0.00600	1	03/03/2022 18:44	<a href="#">WG1826207</a>
(S) p-Terphenyl-d14	84.1		23.0-120		03/03/2022 18:44	<a href="#">WG1826207</a>
(S) Nitrobenzene-d5	73.5		14.0-149		03/03/2022 18:44	<a href="#">WG1826207</a>
(S) 2-Fluorobiphenyl	80.0		34.0-125		03/03/2022 18:44	<a href="#">WG1826207</a>

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	0.431		1	02/28/2022 18:04	WG1824074

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	03/03/2022 17:16	<a href="#">WG1826405</a>

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.58	T8	1	02/26/2022 15:00	<a href="#">WG1824245</a>

Sample Narrative:

L1465349-04 WG1824245: 8.58 at 20.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	140		10.0	1	02/28/2022 08:42	<a href="#">WG1824657</a>

Sample Narrative:

L1465349-04 WG1824657: at 25C

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Barium	219		0.500	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Cadmium	ND		0.500	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Copper	28.4		2.00	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Lead	7.97		0.500	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Nickel	56.7		2.00	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Selenium	ND		2.00	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Silver	ND		1.00	1	03/02/2022 16:52	<a href="#">WG1824632</a>
Zinc	46.9		5.00	1	03/02/2022 16:52	<a href="#">WG1824632</a>

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

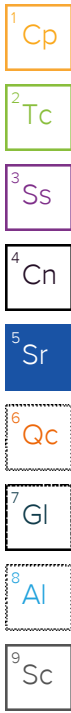
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	ND		0.200	1	02/28/2022 18:37	<a href="#">WG1824070</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	2.69		1.00	5	03/03/2022 13:43	<a href="#">WG1826572</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.108		0.100	1	02/28/2022 01:21	<a href="#">WG1824601</a>
(S) a,a,a-Trifluorotoluene(FID)	107		77.0-120		02/28/2022 01:21	<a href="#">WG1824601</a>



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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	02/27/2022 17:23	<a href="#">WG1824491</a>
Toluene	ND		0.00500	1	02/27/2022 17:23	<a href="#">WG1824491</a>
Ethylbenzene	ND		0.00250	1	02/27/2022 17:23	<a href="#">WG1824491</a>
Xylenes, Total	ND		0.00650	1	02/27/2022 17:23	<a href="#">WG1824491</a>
1,2,4-Trimethylbenzene	ND		0.00500	1	02/27/2022 17:23	<a href="#">WG1824491</a>
1,3,5-Trimethylbenzene	ND		0.00500	1	02/27/2022 17:23	<a href="#">WG1824491</a>
(S) Toluene-d8	112		75.0-131		02/27/2022 17:23	<a href="#">WG1824491</a>
(S) 4-Bromofluorobenzene	102		67.0-138		02/27/2022 17:23	<a href="#">WG1824491</a>
(S) 1,2-Dichloroethane-d4	92.7		70.0-130		02/27/2022 17:23	<a href="#">WG1824491</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	4.51	B	4.00	1	03/02/2022 23:27	<a href="#">WG1826165</a>
C28-C36 Motor Oil Range	5.93		4.00	1	03/02/2022 23:27	<a href="#">WG1826165</a>
(S) o-Terphenyl	77.8		18.0-148		03/02/2022 23:27	<a href="#">WG1826165</a>

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Anthracene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Benzo(a)anthracene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Benzo(b)fluoranthene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Benzo(k)fluoranthene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Benzo(a)pyrene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Chrysene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Dibenz(a,h)anthracene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Fluoranthene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Fluorene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
1-Methylnaphthalene	ND		0.0200	1	03/03/2022 19:02	<a href="#">WG1826207</a>
2-Methylnaphthalene	ND		0.0200	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Naphthalene	ND		0.0200	1	03/03/2022 19:02	<a href="#">WG1826207</a>
Pyrene	ND		0.00600	1	03/03/2022 19:02	<a href="#">WG1826207</a>
(S) p-Terphenyl-d14	79.3		23.0-120		03/03/2022 19:02	<a href="#">WG1826207</a>
(S) Nitrobenzene-d5	71.8		14.0-149		03/03/2022 19:02	<a href="#">WG1826207</a>
(S) 2-Fluorobiphenyl	76.3		34.0-125		03/03/2022 19:02	<a href="#">WG1826207</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3766357-1 03/03/22 16:43

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Hexavalent Chromium	U		0.255	1.00

1 Cp

2 Tc

3 Ss

4 Cn

L1465349-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1465349-01 03/03/22 16:55 • (DUP) R3766357-3 03/03/22 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

5 Sr

6 Qc

L1465665-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1465665-01 03/03/22 18:13 • (DUP) R3766357-8 03/03/22 18:18

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	0.000		20

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3766357-2 03/03/22 16:50

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

L1465422-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465422-07 03/03/22 17:21 • (MS) R3766357-4 03/03/22 17:26 • (MSD) R3766357-5 03/03/22 17:32

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	18.6	20.1	90.5	98.2	1	75.0-125			7.97	20

L1465422-07 Original Sample (OS) • Matrix Spike (MS)

(OS) L1465422-07 03/03/22 17:21 • (MS) R3766357-6 03/03/22 17:47

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	674	ND	597	88.6	50	75.0-125	

L1465176-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1465176-02 02/26/22 15:00 • (DUP) R3764143-2 02/26/22 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.35	8.34	1	0.120		1

Sample Narrative:

OS: 8.35 at 20.7C  
DUP: 8.34 at 20.9C

Laboratory Control Sample (LCS)

(LCS) R3764143-1 02/26/22 15:00

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

Sample Narrative:

LCS: 9.99 at 20.5C



Method Blank (MB)

(MB) R3764433-1 02/28/22 08:42

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

Sample Narrative:

BLANK: at 25C

L1465349-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1465349-01 02/28/22 08:42 • (DUP) R3764433-3 02/28/22 08:42

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	605	681	1	11.8		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3764433-2 02/28/22 08:42

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	275	103	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3765366-1 03/02/22 09:07

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Specific Conductance	U		10.0	10.0

Sample Narrative:

BLANK: at 25C

L1465650-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1465650-01 03/02/22 09:07 • (DUP) R3765366-3 03/02/22 09:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	12000	12700	1	5.76		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

L1465650-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1465650-21 03/02/22 09:07 • (DUP) R3765366-4 03/02/22 09:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	7530	7460	1	0.934		20

Sample Narrative:

OS: at 25C  
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3765366-2 03/02/22 09:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	268	266	99.4	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3765802-1 03/02/22 16:17

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS)

(LCS) R3765802-2 03/02/22 16:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Barium	100	99.7	99.7	80.0-120	
Cadmium	100	94.6	94.6	80.0-120	
Copper	100	98.0	98.0	80.0-120	
Lead	100	97.4	97.4	80.0-120	
Nickel	100	97.3	97.3	80.0-120	
Selenium	100	91.0	91.0	80.0-120	
Silver	20.0	18.2	91.0	80.0-120	
Zinc	100	93.4	93.4	80.0-120	

7 Gl

8 Al

9 Sc

L1465468-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465468-04 03/02/22 16:22 • (MS) R3765802-5 03/02/22 16:31 • (MSD) R3765802-6 03/02/22 16:34

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Barium	99.8	22.5	111	108	88.3	85.9	1	75.0-125			2.17	20
Cadmium	99.8	ND	87.3	87.9	87.3	87.9	1	75.0-125			0.708	20
Copper	99.8	5.13	100	101	95.3	95.4	1	75.0-125			0.163	20
Lead	99.8	9.84	96.9	96.2	87.1	86.4	1	75.0-125			0.747	20
Nickel	99.8	3.28	98.6	98.3	95.3	95.0	1	75.0-125			0.306	20
Selenium	99.8	ND	81.8	83.1	81.8	83.1	1	75.0-125			1.48	20
Silver	20.0	ND	17.1	17.1	85.6	85.6	1	75.0-125			0.0408	20
Zinc	99.8	7.09	94.7	94.1	87.6	87.0	1	75.0-125			0.650	20

Method Blank (MB)

(MB) R3765657-1 03/02/22 12:27

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

Laboratory Control Sample (LCS)

(LCS) R3765657-2 03/02/22 12:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Barium	100	106	106	80.0-120	
Cadmium	100	101	101	80.0-120	
Copper	100	106	106	80.0-120	
Lead	100	102	102	80.0-120	
Nickel	100	103	103	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	19.9	99.7	80.0-120	
Zinc	100	99.5	99.5	80.0-120	

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

L1465349-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465349-01 03/02/22 12:32 • (MS) R3765657-5 03/02/22 12:41 • (MSD) R3765657-6 03/02/22 12:44

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Barium	100	260	294	294	34.0	33.2	1	75.0-125	J6	J6	0.294	20
Cadmium	100	ND	95.6	97.7	95.5	97.5	1	75.0-125			2.11	20
Copper	100	15.2	117	118	102	103	1	75.0-125			0.804	20
Lead	100	4.54	101	104	96.8	99.5	1	75.0-125			2.55	20
Nickel	100	51.8	141	141	88.9	89.3	1	75.0-125			0.272	20
Selenium	100	ND	94.6	97.7	93.7	96.8	1	75.0-125			3.25	20
Silver	20.0	ND	19.8	20.2	99.0	101	1	75.0-125			1.82	20
Zinc	100	27.8	109	109	81.6	80.9	1	75.0-125			0.600	20

Method Blank (MB)

(MB) R3764821-1 02/28/22 18:17

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

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

(LCS) R3764821-2 02/28/22 18:19 • (LCSD) R3764821-3 02/28/22 18:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.03	1.02	103	102	80.0-120			1.20	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3766059-1 03/03/22 12:48

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

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3766059-2 03/03/22 12:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.7	96.7	80.0-120	

4 Cn

5 Sr

L1464757-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1464757-01 03/03/22 12:54 • (MS) R3766059-5 03/03/22 13:05 • (MSD) R3766059-6 03/03/22 13:08

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 %
Arsenic	100	ND	86.7	95.0	85.9	94.2	5	75.0-125			9.14	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3764612-3 02/27/22 20:05

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
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)	113			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3764612-2 02/27/22 18:57

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.37	97.6	72.0-127	
<sup>(S)</sup> a,a,a-Trifluorotoluene(FID)			98.6	77.0-120	

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Method Blank (MB)

(MB) R3764649-3 02/27/22 13:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	110			75.0-131
(S) 4-Bromofluorobenzene	104			67.0-138
(S) 1,2-Dichloroethane-d4	92.6			70.0-130

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

(LCS) R3764649-1 02/27/22 11:59 • (LCSD) R3764649-2 02/27/22 12:18

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.125	0.114	0.119	91.2	95.2	70.0-123			4.29	20
Toluene	0.125	0.119	0.127	95.2	102	75.0-121			6.50	20
Ethylbenzene	0.125	0.120	0.127	96.0	102	74.0-126			5.67	20
Xylenes, Total	0.375	0.372	0.402	99.2	107	72.0-127			7.75	20
1,2,4-Trimethylbenzene	0.125	0.106	0.112	84.8	89.6	70.0-126			5.50	20
1,3,5-Trimethylbenzene	0.125	0.111	0.117	88.8	93.6	73.0-127			5.26	20
(S) Toluene-d8				106	107	75.0-131				
(S) 4-Bromofluorobenzene				103	102	67.0-138				
(S) 1,2-Dichloroethane-d4				96.3	97.2	70.0-130				

L1465355-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465355-02 02/27/22 18:20 • (MS) R3764649-4 02/27/22 19:54 • (MSD) R3764649-5 02/27/22 20:13

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Benzene	0.125	ND	0.139	0.140	111	112	1	10.0-149			0.717	37
Toluene	0.125	ND	0.143	0.148	114	118	1	10.0-156			3.44	38
Ethylbenzene	0.125	ND	0.140	0.147	112	118	1	10.0-160			4.88	38
Xylenes, Total	0.375	ND	0.434	0.452	116	121	1	10.0-160			4.06	38
1,2,4-Trimethylbenzene	0.125	ND	0.128	0.132	102	106	1	10.0-160			3.08	36
1,3,5-Trimethylbenzene	0.125	ND	0.132	0.141	106	113	1	10.0-160			6.59	38
(S) Toluene-d8					104	107		75.0-131				
(S) 4-Bromofluorobenzene					97.9	98.4		67.0-138				
(S) 1,2-Dichloroethane-d4					99.1	96.8		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) R3765757-1 03/02/22 21:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	3.88	U	1.61	4.00
C28-C36 Motor Oil Range	0.585	U	0.274	4.00
(S) o-Terphenyl	99.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3765757-2 03/02/22 21:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	48.2	96.4	50.0-150	
(S) o-Terphenyl			118	18.0-148	

L1465295-21 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465295-21 03/03/22 01:41 • (MS) R3765757-3 03/03/22 01:54 • (MSD) R3765757-4 03/03/22 02:08

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	50.0	ND	37.5	33.0	75.0	66.0	1	50.0-150			12.8	20
(S) o-Terphenyl					91.1	90.1		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) R3766172-2 03/03/22 13:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	83.0			23.0-120
(S) Nitrobenzene-d5	72.3			14.0-149
(S) 2-Fluorobiphenyl	76.6			34.0-125

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3766172-1 03/03/22 12:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0624	78.0	50.0-120	
Anthracene	0.0800	0.0596	74.5	50.0-126	
Benzo(a)anthracene	0.0800	0.0614	76.8	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0568	71.0	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0569	71.1	49.0-125	
Benzo(a)pyrene	0.0800	0.0535	66.9	42.0-120	
Chrysene	0.0800	0.0621	77.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0600	75.0	47.0-125	
Fluoranthene	0.0800	0.0657	82.1	49.0-129	
Fluorene	0.0800	0.0623	77.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0633	79.1	46.0-125	
1-Methylnaphthalene	0.0800	0.0618	77.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0641	80.1	50.0-120	
Naphthalene	0.0800	0.0582	72.8	50.0-120	
Pyrene	0.0800	0.0642	80.3	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3766172-1 03/03/22 12:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			81.9	23.0-120	
(S) Nitrobenzene-d5			77.9	14.0-149	
(S) 2-Fluorobiphenyl			80.9	34.0-125	

L1464992-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

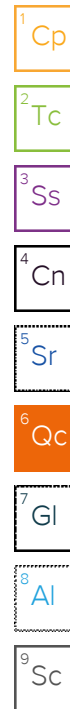
(OS) L1464992-08 03/03/22 13:41 • (MS) R3766172-3 03/03/22 13:59 • (MSD) R3766172-4 03/03/22 14:17

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 %
Acenaphthene	0.0788	ND	0.0571	0.0573	72.5	71.6	1	14.0-127			0.350	27
Anthracene	0.0788	ND	0.0564	0.0546	71.6	68.3	1	10.0-145			3.24	30
Benzo(a)anthracene	0.0788	ND	0.0532	0.0525	67.5	65.6	1	10.0-139			1.32	30
Benzo(b)fluoranthene	0.0788	ND	0.0526	0.0515	66.8	64.4	1	10.0-140			2.11	36
Benzo(k)fluoranthene	0.0788	ND	0.0509	0.0507	64.6	63.4	1	10.0-137			0.394	31
Benzo(a)pyrene	0.0788	ND	0.0587	0.0580	74.5	72.5	1	10.0-141			1.20	31
Chrysene	0.0788	ND	0.0561	0.0549	71.2	68.6	1	10.0-145			2.16	30
Dibenz(a,h)anthracene	0.0788	ND	0.0531	0.0528	67.4	66.0	1	10.0-132			0.567	31
Fluoranthene	0.0788	ND	0.0592	0.0583	75.1	72.9	1	10.0-153			1.53	33
Fluorene	0.0788	ND	0.0569	0.0562	72.2	70.3	1	11.0-130			1.24	29
Indeno(1,2,3-cd)pyrene	0.0788	ND	0.0569	0.0556	72.2	69.5	1	10.0-137			2.31	32
1-Methylnaphthalene	0.0788	ND	0.0570	0.0565	72.3	70.6	1	10.0-142			0.881	28
2-Methylnaphthalene	0.0788	ND	0.0588	0.0583	74.6	72.9	1	10.0-137			0.854	28
Naphthalene	0.0788	ND	0.0537	0.0535	68.1	66.9	1	10.0-135			0.373	27
Pyrene	0.0788	ND	0.0594	0.0598	75.4	74.8	1	10.0-148			0.671	35
(S) p-Terphenyl-d14					85.3	74.9		23.0-120				
(S) Nitrobenzene-d5					80.0	69.8		14.0-149				
(S) 2-Fluorobiphenyl					82.9	73.4		34.0-125				

L1465286-39 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465286-39 03/03/22 15:10 • (MS) R3766172-5 03/03/22 15:28 • (MSD) R3766172-6 03/03/22 15:46

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 %
Acenaphthene	0.0800	ND	0.0486	0.0499	60.8	62.4	1	14.0-127			2.64	27
Anthracene	0.0800	ND	0.0479	0.0488	59.9	61.0	1	10.0-145			1.86	30
Benzo(a)anthracene	0.0800	ND	0.0452	0.0462	56.5	57.8	1	10.0-139			2.19	30
Benzo(b)fluoranthene	0.0800	ND	0.0447	0.0456	55.9	57.0	1	10.0-140			1.99	36
Benzo(k)fluoranthene	0.0800	ND	0.0445	0.0453	55.6	56.6	1	10.0-137			1.78	31
Benzo(a)pyrene	0.0800	ND	0.0506	0.0509	63.3	63.6	1	10.0-141			0.591	31



L1465286-39 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1465286-39 03/03/22 15:10 • (MS) R3766172-5 03/03/22 15:28 • (MSD) R3766172-6 03/03/22 15:46

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 %
Chrysene	0.0800	ND	0.0488	0.0499	61.0	62.4	1	10.0-145			2.23	30
Dibenz(a,h)anthracene	0.0800	ND	0.0447	0.0451	55.9	56.4	1	10.0-132			0.891	31
Fluoranthene	0.0800	ND	0.0512	0.0516	64.0	64.5	1	10.0-153			0.778	33
Fluorene	0.0800	ND	0.0480	0.0491	60.0	61.4	1	11.0-130			2.27	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0489	0.0485	61.1	60.6	1	10.0-137			0.821	32
1-Methylnaphthalene	0.0800	ND	0.0481	0.0502	49.9	52.5	1	10.0-142			4.27	28
2-Methylnaphthalene	0.0800	0.0269	0.0498	0.0522	28.6	31.6	1	10.0-137			4.71	28
Naphthalene	0.0800	0.0345	0.0465	0.0485	15.0	17.5	1	10.0-135			4.21	27
Pyrene	0.0800	ND	0.0523	0.0531	65.4	66.4	1	10.0-148			1.52	35
<i>(S) p-Terphenyl-d14</i>					72.8	69.9		23.0-120				
<i>(S) Nitrobenzene-d5</i>					69.1	68.6		14.0-149				
<i>(S) 2-Fluorobiphenyl</i>					71.1	68.9		34.0-125				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# GLOSSARY OF TERMS

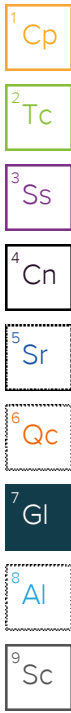
## Guide to Reading and Understanding Your Laboratory Report

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



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

# ACCREDITATIONS & LOCATIONS

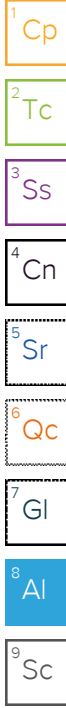
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.





# CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

Company: **Campos EPC**

Billing Information:  
**Caerus Oil and Gas**  
**Account: CAERUSPCO**

Address: **1401 Blake St. Denver, CO 80202**

Report To: **Jake Janicek**

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

Copy To: **Steve.Sivigliano@camposepc.com**

Site Collection Info/Address:

Customer Project Name/Number: **PJ16**

State: **/** County/City: **/** Time Zone Collected: **[ ] PT [ ] MT [ ] CT [ ] ET**

Phone: **970-619-0600**  
Email: **same as above**

Site/Facility ID #: **PJ16**

Compliance Monitoring?  
 Yes  No

Collected By (print):  
**Evan Mason**

Purchase Order #: **[REDACTED]**  
Quote #: **[REDACTED]**

DW PWS ID #: **[REDACTED]**  
DW Location Code: **[REDACTED]**

Collected By (signature):  
*[Signature]*

Turnaround Date Required:

Immediately Packed on Ice:  
 Yes  No

Sample Disposal:  
 Dispose as appropriate  Return  
 Archive: \_\_\_\_\_  
 Hold: \_\_\_\_\_

Rush:  
 Same Day  Next Day  
 2 Day  3 Day  4 Day  5 Day  
(Expedite Charges Apply)

Field Filtered (if applicable):  
 Yes  No  
Analysis: \_\_\_\_\_

\* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
20220222-PJ16 (SB05)@10'	SL	Grab	2/22/22	1130				1 X
20220222-PJ16 (SB05)@20'	↓	↓	↓	1300				2 X
20220222-PJ16 (SB05)@30'	↓	↓	↓	1415				2 X
20220222-PJ16 (SB05)@38'	↓	↓	↓	1630				2 X

COGCC Table 915-1

## ALL SHADED AREAS are for LAB USE ONLY

Container Preservative Type \*\* Lab Project Manager:

\*\* Preservative Types: (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other

### Analyses

### Lab Profile/Line:

Lab Sample Receipt Checklist:

Custody Seals Present/Intact Y N NA  N NA

Custody Signatures Present Y N NA  N NA

Collector Signature Present Y N NA  N NA

Bottles Intact Y N NA  N NA

Correct Bottles Y N NA  N NA

Sufficient Volume Y N NA  N NA

Samples Received on Ice Y N NA  N NA

VOA - Headspace Acceptable Y N NA  N NA

USDA Regulated Soils Y N NA  N NA

Samples in Holding Time Y N NA  N NA

Residual Chlorine Present Y N NA  N NA

Cl Strips: \_\_\_\_\_

Sample pH Acceptable Y N NA  N NA

pH Strips: \_\_\_\_\_

Sulfide Present Y N NA  N NA

Lead Acetate Strips: \_\_\_\_\_

LAB USE ONLY:  
Lab Sample # / Comments:

**LHL 5349**  
-01  
-02  
-03  
-04

Customer Remarks / Special Conditions / Possible Hazards: Type of Ice Used: Wet Blue Dry None  
Packing Material Used: \_\_\_\_\_  
Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A  
Lab Tracking #: **5016 1231 9923**  
Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:  
Temp Blank Received: Y N NA  
Therm ID#: \_\_\_\_\_  
Cooler 1 Temp Upon Receipt: \_\_\_\_\_ oC  
Cooler 1 Therm Corr. Factor: \_\_\_\_\_ oC  
Cooler 1 Corrected Temp: \_\_\_\_\_ oC  
Comments:

Relinquished by/Company: (Signature) *[Signature]*  
Date/Time: **2/23/22 1200**  
Relinquished by/Company: (Signature) *[Signature]*  
Date/Time: **2/23/22 1500**  
Relinquished by/Company: (Signature) \_\_\_\_\_  
Date/Time: \_\_\_\_\_

Received by/Company: (Signature) *[Signature]*  
Date/Time: **2/23/22 1300**  
Received by/Company: (Signature) *[Signature]*  
Date/Time: \_\_\_\_\_  
Received by/Company: (Signature) *[Signature]*  
Date/Time: **2/23/22 0930**

Date/Time: **2/23/22 1300**  
Acctnum: **A041**  
Template: \_\_\_\_\_  
Prelogin: \_\_\_\_\_  
PM: \_\_\_\_\_  
PB: \_\_\_\_\_

**4.8+0=4.8 BAA7**  
Trip Blank Received: Y N NA  
HCL MeOH TSP Other  Other  
Non Conformance(s): YES / NO  
Page: \_\_\_\_\_ of: \_\_\_\_\_

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: L1475072  
Samples Received: 03/25/2022  
Project Number:  
Description: PJ16  
Site: PJ16  
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](http://www.pacenational.com)

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# SAMPLE SUMMARY

20220324-PJ16-SVE01@110 L1475072-01 Air

Collected by: S. Sivigliano  
 Collected date/time: 03/24/22 12:21  
 Received date/time: 03/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1838353	400	03/25/22 23:48	03/25/22 23:48	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method M18-Mod	WG1838806	10000	03/27/22 02:15	03/27/22 02:15	CAW	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method M18-Mod	WG1839631	100000	03/29/22 06:07	03/29/22 06:07	MBF	Mt. Juliet, TN

20220324-PJ16-SVE01@50 L1475072-02 Air

Collected by: S. Sivigliano  
 Collected date/time: 03/24/22 12:30  
 Received date/time: 03/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1838353	400	03/26/22 00:25	03/26/22 00:25	DAH	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method M18-Mod	WG1839631	100000	03/29/22 06:48	03/29/22 06:48	MBF	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# CASE NARRATIVE

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



Chris Ward  
Project Manager

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	2000	6390	711000	2270000		10000	<a href="#">WG1838806</a>
Toluene	108-88-3	92.10	50000	188000	946000	3560000		100000	<a href="#">WG1839631</a>
Ethylbenzene	100-41-4	106	80.0	347	28600	124000		400	<a href="#">WG1838353</a>
m&p-Xylene	1330-20-7	106	4000	17300	294000	1270000		10000	<a href="#">WG1838806</a>
o-Xylene	95-47-6	106	80.0	347	35200	153000		400	<a href="#">WG1838353</a>
Methyl tert-butyl ether	1634-04-4	88.10	80.0	288	ND	ND		400	<a href="#">WG1838353</a>
TPH (GC/MS) Low Fraction	8006-61-9	101	2000000	8260000	27900000	115000000		10000	<a href="#">WG1838806</a>
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		126				<a href="#">WG1838353</a>
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		102				<a href="#">WG1838806</a>
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		101				<a href="#">WG1839631</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	20000	63900	485000	1550000		100000	<a href="#">WG1839631</a>
Toluene	108-88-3	92.10	50000	188000	753000	2840000		100000	<a href="#">WG1839631</a>
Ethylbenzene	100-41-4	106	80.0	347	30500	132000		400	<a href="#">WG1838353</a>
m&p-Xylene	1330-20-7	106	40000	173000	184000	798000		100000	<a href="#">WG1839631</a>
o-Xylene	95-47-6	106	80.0	347	39200	170000		400	<a href="#">WG1838353</a>
Methyl tert-butyl ether	1634-04-4	88.10	80.0	288	ND	ND		400	<a href="#">WG1838353</a>
TPH (GC/MS) Low Fraction	8006-61-9	101	20000000	82600000	29000000	120000000		100000	<a href="#">WG1839631</a>
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		133				<a href="#">WG1838353</a>
(S) 1,4-Bromofluorobenzene	460-00-4	175	60.0-140		101				<a href="#">WG1839631</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3774243-2 03/25/22 09:55

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Ethylbenzene	U		0.0835	0.200
o-Xylene	U		0.0828	0.200
MTBE	U		0.0647	0.200
(S) 1,4-Bromofluorobenzene	94.9			60.0-140

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

(LCS) R3774243-1 03/25/22 09:16 • (LCSD) R3774243-3 03/25/22 10:36

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Ethylbenzene	3.75	4.57	4.55	122	121	70.0-130			0.439	25
o-Xylene	3.75	4.44	4.40	118	117	70.0-130			0.905	25
MTBE	3.75	4.48	4.41	119	118	70.0-130			1.57	25
(S) 1,4-Bromofluorobenzene				95.6	95.9	60.0-140				



Method Blank (MB)

(MB) R3774450-3 03/26/22 08:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Benzene	U		0.0715	0.200
m&p-Xylene	U		0.135	0.400
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	96.0			60.0-140

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

(LCS) R3774450-1 03/26/22 07:12 • (LCSD) R3774450-2 03/26/22 07:54

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Benzene	3.75	4.50	4.52	120	121	70.0-130			0.443	25
m&p-Xylene	7.50	8.77	8.85	117	118	70.0-130			0.908	25
TPH (GC/MS) Low Fraction	203	248	252	122	124	70.0-130			1.60	25
(S) 1,4-Bromofluorobenzene				99.3	99.1	60.0-140				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3775009-3 03/29/22 01:18

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Benzene	U		0.0715	0.200
Toluene	U		0.0870	0.500
m&p-Xylene	U		0.135	0.400
TPH (GC/MS) Low Fraction	U		39.7	200
(S) 1,4-Bromofluorobenzene	97.8			60.0-140

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

(LCS) R3775009-1 03/28/22 23:55 • (LCSD) R3775009-2 03/29/22 00:37

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Benzene	3.75	3.71	3.70	98.9	98.7	70.0-130			0.270	25
Toluene	3.75	3.75	3.73	100	99.5	70.0-130			0.535	25
m&p-Xylene	7.50	7.39	7.58	98.5	101	70.0-130			2.54	25
TPH (GC/MS) Low Fraction	203	216	218	106	107	70.0-130			0.922	25
(S) 1,4-Bromofluorobenzene				99.2	99.4	60.0-140				

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.

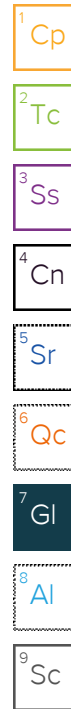
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

### Abbreviations and Definitions

MDL	Method Detection Limit.
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.
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

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



# ACCREDITATIONS & LOCATIONS

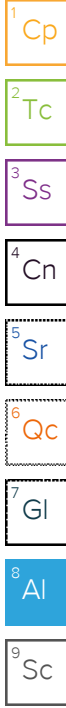
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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 <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	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 <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	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 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> 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.





11/29/21 - PJ-16 - SVE-01

8:45 - Arrive Onsite, meet CO Drilling (Scott + Lakota)

9:00 - Tag TD w/ casing, hole confirmed open to 42.5'

9:15 - Pour sand for 2.5 ft base in well, screen 20' - 40'

9:25 - Ground level 0' marked 31" from current ground level in trench

9:55 - Sand to 28'. Hook up to casing + pull w/ WCO excavator

10:15 - Casing successfully pulled, continue to pour sand to 20' MD

10:30 - Tag sand at 20' MD. Begin to pour Bentonite 20' to surface

10:40 - Bentonite to bottom of trench. Cut 40" stub from actual ground level. Draw Well Sketch

11:00 - Leave PJ-16 location

**DANGER**  
**NO SMOKING**

MARRON



Location PJ16Date 12/20/21Project / Client CaerusSunny. 15° F. No wind.900: Meet on site w/ CO Drilling & Sampling

to continue drilling PJ16

• Review &amp; sign JSA

• Review Scope of work

• Calibrate PID

• Prepare equipment for drilling &amp; sampling

1000: Begin drilling SB04Sample / Screen ID:PID:Time:Sample (Y/N):

SB04 @ 10'

0.00

—

N

20211220-PJ16 (SB04) @ 15'

.50

1130

Y

SB04 @ 20' (Insufficient soil for data collection)

N

SB04 @ 25'

.25

—

N

20211220-PJ16 (SB04) @ 30'

.70

1445

Y

20211220-PJ16 (SB01) @ 10'

.55

1600

Y

1000: Complete drilling SB04 and set well1530: Begin drilling at PH011645: Drilling done for the day. Return tomorrow to resume drilling SB011700: Off siteEM 12/20/21

Project / Client CaerusSunny. 20° F. No wind830: Arrive on site w/ CO Drilling &

Sampling to continue drilling.

- Review & sign JSA
- Review scope of work
- Calibrate PID
- Prepare equipment for drilling & sampling

915: Resume drilling SB01

<u>Sample/Screen ID:</u>	<u>PID:</u>	<u>Time:</u>	<u>Sample:</u>
SB01@15' (Insufficient recovery)			
SB01@20' (Insufficient recovery)			
SB01@25' (Insufficient recovery)			
20211221-PJ16 (SB01)@30'	1.65	1230	Y 1.5 jars
SB01@35' (Insufficient recovery)			

\* Fuel line busted on rig. Have to repair. Time: 1400

1430: Fuel line fixed. Resume drilling1500: Auger bit stuck down hole @ 36' bgs.

Will attempt to pull out hole

1600: Cannot extract bit or drill any further

• Will now have to backfill hole w/ sand &amp; bentonite

• Planning on re drilling hole in Feb.

• Pack equipment

1700: All personnel & equipment off site

*Rite in the Rain*  
12/21/21

Location PJ16Date 2/21/22Project / Client CaerusCloudy. 35°F. Wind gusts.

800: Arrive on site to continue drilling.  
Meet w/ Jake & Scott to review Scope  
of work

- Review & sign JSA
- Review scope of work
- Calibrate PID
- Prepare equipment for sampling

830: Begin drilling SB03

<u>Sample/Screen ID :</u>	<u>PID:</u>	<u>Time:</u>	<u>Sample (Y/N):</u>
20220221-PJ16 (SB03) @ 20'	.40 ppm	1130	Y
SB03 @ 25' *Insuff. soil recovery*			N
SB03 @ 30' *SAA*			N
20220221-PJ16 (SB03) @ 34'	.35 ppm	1530	Y

1600: SB03 drilling complete. Set SVE well

Total depth of SB03: 34'

- Load equipment

1730: Off site \*Refer to drill log for more details\*

2/21/22

*[Signature]*

Project / Client Caerus

20°F. Snow flurries.

830: Arrive on site to continue drilling tasks.

- Review  $\pm$  sign JSM
- Review scope of work
- Calibrate PID
- Prepare equipment for drilling

900: Equipment still warming up

1030: Begin drilling SBOS

	<u>Sample/Screen ID:</u>	<u>PID:</u>	<u>Time:</u>	<u>Sample:</u>
1 jar-	20220222-PJ16(SBOS)@10'	.10	1130	Y
	SBOS @ 15'	.05	—	N
	20220222-PJ16(SBOS)@20'	.25	1300	Y
	20220222-PJ16(SBOS)@25'	0.00	—	N
1.5-jars	20220222-PJ16(SBOS)@30'	.55	1415	Y
	SBOS @ 35'	0.00	—	N
	20220222-PJ16(SBOS)@38'	.25	1630	Y

1700: SBOS drilling complete

TD: 38'

1730: Set well (SVE)

1800: Load equipment

1830: All equipment  $\pm$  per sonnel off site

\* refer to drill log for details\*

2/22/22



