January 14, 2022

Mr. Jake Janicek
EHS Specialist
Caerus Operating LLC
143 Diamond Ave.
Parachute, CO 81635

REPORT OF WORK COMPLETED

Project Name: PJ16 Dumpline Leak Investigation
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 log, soil analytical data table 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.

On July 28, 2021, Caerus was conducting pressure testing of the dumplines and discovered a failure that resulted in the release of an unknown volume of produced water. Excavating via hydro-vac truck was conducted to identify the point of release (POR) and remove the failed equipment piping. An excavated trench along the flowline corridor was left in place to facilitate an assessment and remedial activities. An Initial Form 19 (Document# 402762640) was immediately submitted to the Colorado Oil and Gas Conservation Commission (COGCC).

METHODOLOGY

On September 22nd through September 29th, 2021, CEPC personnel conducted an investigation per Rule 915.e.(2) to assess extent of contamination as outlined in the Form 19 Condition of Approval (COA) set by the COGCC. Visual inspection and field screening via Photo Ionization Detector (PID) were completed along the sidewalls and base of the trench around the dumpline POR. Additional excavating with heavy equipment and field screening via PID were conducted to determine vertical and horizontal extent of impacts. Production equipment was removed to continue delineation. Hand tools with strict decontamination practices were used to collect samples from screened locations. All samples were collected in laboratory provided jars, immediately packed on ice, and submitted via courier to Pace Analytical for analysis of 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 Site was completed with an Autel Evo II drone. Additionally, four soil samples were collected from nearby undisturbed native areas at varying depths for comparison to background soil conditions.

On October 4th, 2021, CEPC conducted soil sampling at a nearby property to determine if native soil would be suitable backfill material for the Site. Five-point composite samples were collected from three locations at the

Knox Property and submitted for analysis of soil suitability parameters, including Arsenic. Sample locations and pertinent features were surveyed using a Trimble RTX Data Collector with sub-inch accuracy. An aerial survey to gather imagery of the property was completed with an Autel Evo II drone.

On November 5th, 2021, CEPC completed drilling of a soil boring at the POR (soil boring SB-01) to determine vertical extent of impacts. Visual inspection and field screenings were completed at five ft intervals beginning at 20' below ground surface (backfill material present from grade to 20 ft bgs). Soil samples were collected at intervals of 25 ft bgs, 34 ft bgs, and 39 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. The soil boring was surveyed using a Trimble RTX Data Collector with sub-inch accuracy. On November 24th, 2021 a Soil Vapor Extraction (SVE) well was completed in the soil boring as SVE-01.

On December 5th, 2021 CEPC deployed to the site with Caerus sub-contractor WCO to conduct potholing via hydro-vac truck at four locations intended for additional soil borings and SVE wells. Potholes were completed and confirmed to be clear of buried infrastructure to depths of 8.5 ft bgs, 8 ft bgs, 7.5 ft bgs, and 10 ft bgs respectively. The pothole locations were surveyed using a Trimble RTX Data Collector with sub-inch accuracy.

CEPC returned to the site on December 20th and 21st, 2021, to complete additional soil borings and SVE well installations to determine horizontal extent of impacts. Soil boring SB-04 was drilled approximately 25 ft northeast of the POR and installed as well SVE-04. Visual inspection and field screenings were completed at five ft intervals beginning at 10 ft bgs. Soil samples were collected at 15 ft bgs and 30 ft bgs using strict decontamination practices for drill rig equipment. Drilling of soil boring SB-02 was completed approximately 20 ft west of the POR. One sample was obtained from SB-02 at a depth of 10 ft bgs on December 20th, and another sample was collected on December 21st at 30 ft bgs. CEPC attempted to visually inspect and field screen soils at five ft intervals beginning at 10ft bgs in SB-02, however, soil recovery was insufficient at several intervals due to basalt boulders. During completion of soil boring SB-02, the auger bit became stuck in the boring at 36 ft bgs and could not be extracted. Therefore, an SVE well could not be completed at this location. The re-drilling and installation of SVE-02 will be planned for a later date. 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 imagery of the property was completed with an Autel Evo II drone. Drilling was completed by Caerus sub-contractor Colorado Drilling and Sampling using auger and air rotary methods.

RESULTS

Laboratory results from initial samples collected at the POR from four ft bgs indicated an exceedance of Total Petroleum Hydrocarbons (TPH) as compared to COGCC Table 915-1 Protection of Groundwater standards with a concentration of 1,834.9 milligrams per kilogram (mg/kg). Samples collected during excavation activities indicated exceedances of applicable standards for TPH at 20 ft bgs with concentrations up to 1,507.49 mg/kg. Excavation samples at 20 ft bgs below the POR also indicated exceedances of applicable standards for Total Xylenes, Specific Conductance, SAR, pH, and Arsenic. Laboratory results for Arsenic concentrations exceeded applicable standards in all samples, ranging from 3.87 mg/kg at four ft bgs below the POR to 8.9 mg/kg at 20 ft bgs below the POR. Background data from native areas indicate naturally occurring Arsenic concentrations up to 6.75 mg/kg.

Field screening results from November 5th drilling activities indicated no staining throughout soil boring SB-01. Odors were detected from 25 ft to 39 ft bgs with PID readings from those intervals ranging from 1,895 ppm to 191 ppm, respectively. Laboratory results for soil samples collected from SB-01 at 25 ft bgs and 34 ft bgs exceeded applicable standards for TPH with concentrations of 1,019.7 mg/kg and 1,144.4 mg/kg, respectively. The final soil boring sample collected from SB-01 at 39 ft bgs indicated compliance with applicable standards for TPH with a concentration of 12.91 mg/kg. All other analyses at 39 ft bgs were compliant with applicable standards, with exception to SAR that indicated a 12.1 ratio.

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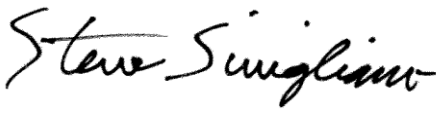
Field screening results from December 20th to 21st drilling activities indicated no staining or odors throughout all screened intervals of soil borings SB-02 and SB-04. PID readings were all below 2.0 ppm throughout all screened intervals. Laboratory results for soil samples collected from soil boring SB-04 indicate compliance with COGCC Table 915-1 standards, with exception to pH and Arsenic. Results for pH indicated values of 8.95 at 15 ft bgs and 8.56 at 30 ft bgs. Arsenic results in SB-04 ranged from 3.33 mg/kg at 15 ft bgs to 4.66 mg/kg at 30 ft bgs. Laboratory results for soil samples collected from soil boring SB-02 indicate compliance with applicable standards, with exception to pH and Arsenic. Results for pH indicated a value of 8.44 at 30 ft bgs, and arsenic concentrations ranged from 3.77 mg/kg at 30 ft bgs to 4.19 mg/kg at 10 ft bgs.

CONCLUSION

Excavation activities removed impacted soils from the Site to 20 ft bgs. Based on laboratory results, the soil boring sample collected from SB-01 delineates vertical extent of impacts at 39 ft bgs as analyses were compliant for all applicable standards with exception to SAR. Additionally, soil borings SB-02 and SB-04 delineate horizontal extent of impacts to the west and northeast of the POR, respectively.

Based on investigate results to date, CEPC recommends two additional soil borings to complete delineation of known impacts. Further delineation will allow comprehensive remediation to be planned and implemented.

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

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

DRAFTER: RB | DATE: 11/10/2021

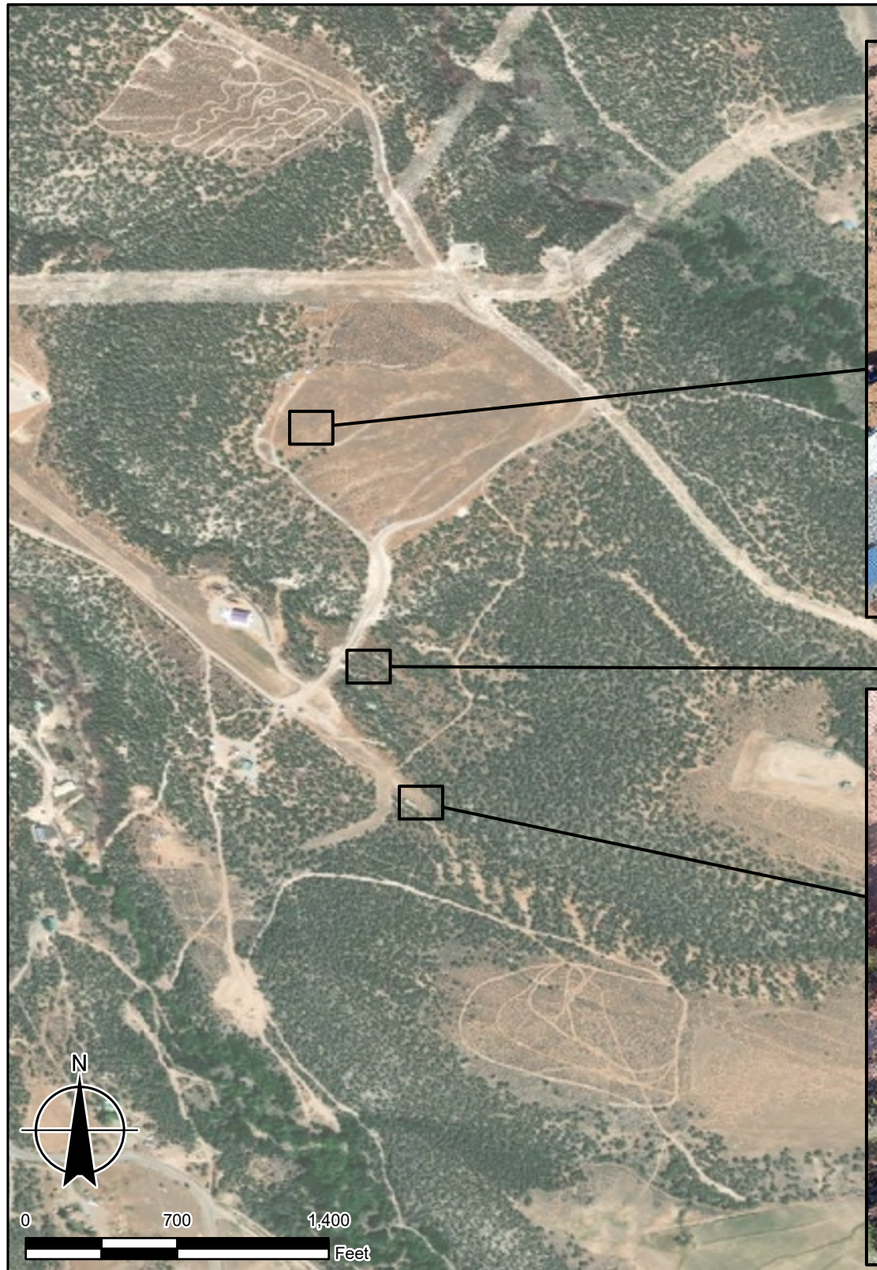
Legend

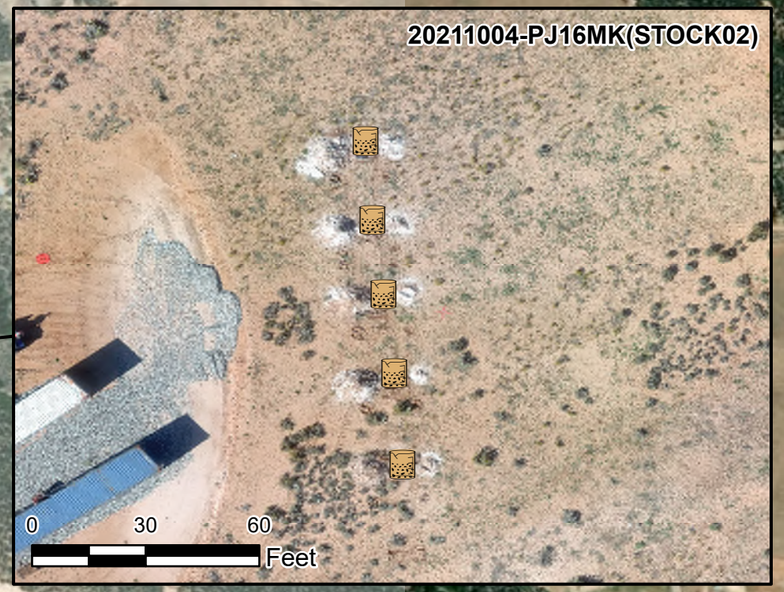
- Soil Boring Location
- Soil Sample Location

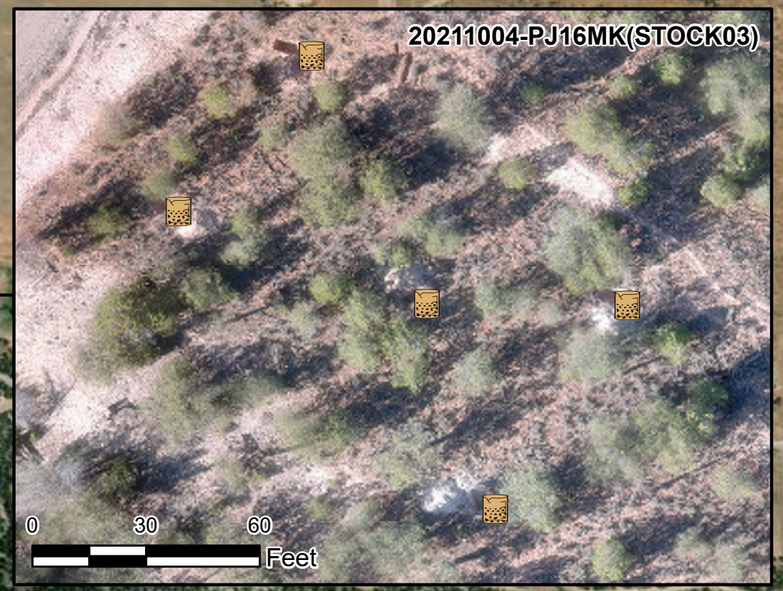
Sample Name	Latitude NAD83	Longitude NAD83
20210922-PJ16(BGE)@3'	39.435121	-108.000024
20210922-PJ16(BGN)@2'	39.435712	-108.000489
20210922-PJ16(BGS)@3'	39.433683	-108.001622
20210922-PJ16(BGW)@2'	39.434868	-108.002078
20210922-PJ16(EWALL01)@3'	39.434699	-108.001609
20210922-PJ16(EWALL02)@3'	39.434750	-108.001611
20210922-PJ16(NWALL)@3'	39.434759	-108.001617
20210922-PJ16(POR)@4'	39.434728	-108.001623
20210922-PJ16(SWALL)@3'	39.434675	-108.001617

Sample Name	Latitude NAD83	Longitude NAD83
20210922-PJ16(WWALL01)@3'	39.434697	-108.001622
20210922-PJ16(WWALL02)@3'	39.434750	-108.001624
20210923-PJ16(SBASE)@4.5'	39.434690	-108.001612
20210928-PJ16(NWALL)@14'	39.434785	-108.001614
20210929-PJ16(NBASE)@20'	39.434772	-108.001627
20210929-PJ16(PORBASE)@21'	39.434723	-108.001632
20210929-PJ16(WBASE)@20'	39.434721	-108.001695
20211105-PJ16(SB01)	39.434709	-108.001624

COORDINATE SYSTEM
GCS NORTH AMERICAN 1983







CAERUS OPERATING LLC

KNOX PROPERTY

GARFIELD COUNTY, CO

W2 NW4 SEC. 2 T8S-R96W

DRAFTER: RB | DATE: 10/6/2021

Legend

Composite Soil Sample Location

Sample Name	Latitude NAD83	Longitude NAD83
20211004-PJ16MK(STOCK01)	39.375999	-108.083609
20211004-PJ16MK(STOCK01)	39.376042	-108.083582
20211004-PJ16MK(STOCK01)	39.376089	-108.083559
20211004-PJ16MK(STOCK01)	39.376123	-108.083542
20211004-PJ16MK(STOCK01)	39.376157	-108.083519
20211004-PJ16MK(STOCK02)	39.380704	-108.084932
20211004-PJ16MK(STOCK02)	39.380770	-108.084938
20211004-PJ16MK(STOCK02)	39.380827	-108.084946

Sample Name	Latitude NAD83	Longitude NAD83
20211004-PJ16MK(STOCK02)	39.380881	-108.084954
20211004-PJ16MK(STOCK02)	39.380938	-108.084959
20211004-PJ16MK(STOCK03)	39.377866	-108.084369
20211004-PJ16MK(STOCK03)	39.377979	-108.084273
20211004-PJ16MK(STOCK03)	39.377799	-108.084190
20211004-PJ16MK(STOCK03)	39.377798	-108.084045
20211004-PJ16MK(STOCK03)	39.377651	-108.084140

COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

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PJ16

SHORE-67S95W / 16NWSE

COGCC LOCATION ID: 334656

GARFIELD COUNTY, CO

NWSE SEC. 16 T7S-R95W

DRAFTER: SCZ	DATE: 12/16/2021

COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

Legend

- Soil Boring Location
- Proposed Soil Boring Location

Identifier	Latitude NAD83	Longitude NAD83	Elevation
20211105-PJ16(SB01)	39.434709	-108.001624	6063.60 ft
PH01	39.434705	-108.001715	6063.01 ft
PH02	39.434634	-108.001650	6063.56 ft
PH03	39.434631	-108.001574	6062.93 ft
PH04	39.434803	-108.001573	6064.04 ft

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CAERUS OPERATING LLC

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

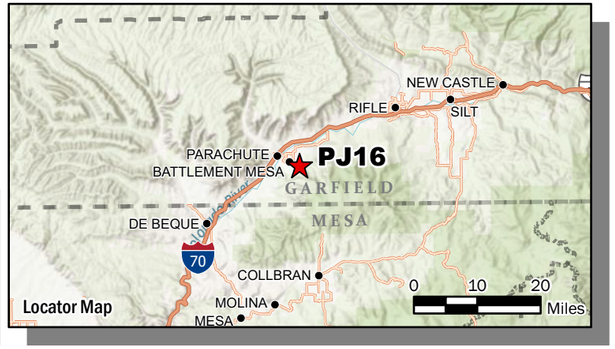
DRAFTER: SCZ | DATE: 12/20/2021

Legend

- Soil Boring Location
- Proposed Soil Boring Location

COORDINATE SYSTEM
GCS NORTH AMERICAN 1983

Identifier	Latitude NAD83	Longitude NAD83	Elevation
SB-01	39.434709	-108.001624	6063.60 ft
SB-02	39.434705	-108.001715	6063.01 ft
PH02	39.434634	-108.001650	6063.56 ft
PH03	39.434631	-108.001574	6062.93 ft
SB-04	39.434803	-108.001573	6064.04 ft



SOIL ANALYTICAL DATA TABLE
PJ16

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	ORGANIC COMPOUNDS in mg/kg								SOIL SUITABILITY				INORGANIC COMPOUNDS in mg/kg								
Sample Name	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 (NWALL) @ 3'	<0.1	18.8	50.7	69.5	<0.001	<0.005	<0.0025	<0.0065	0.220	0.276	**8.66**	0.221	**5.53**	199	0.408	<1	17	6.09	35.4	<2	<1	38.3
20210922-PJ16 (SWALL) @ 3'	<0.1	24.8	71.7	96.5	<0.001	<0.005	<0.0025	<0.0065	0.185	0.177	**8.63**	0.254	**5.61**	360	0.254	<1	12.9	7.79	25.6	<2	<1	37.1
20210922-PJ16 (WWALL01) @ 3'	<0.1	34.2	72.5	106.7	<0.001	<0.005	<0.0025	<0.0065	0.190	0.24	**8.51**	0.165	**4.79**	329	0.689	<1	12.2	11.3	25.3	<2	<1	31.1
20210922-PJ16 (POR) @ 4'	1140	665	29.9	**1834.9**	0.04	0.251	<0.1	9.64	**5.820**	**78**	8.1	1.1	**3.87**	865	0.153	<1	18	6.35	34.9	<2	<1	36.3
20210922-PJ16 (WWALL02) @ 3'	<0.1	15.5	49.4	64.9	<0.001	<0.005	<0.0025	<0.0065	0.241	0.194	**8.48**	0.201	**6.03**	253	0.315	<1	15.1	8.31	26	<2	<1	37.4
20210922-PJ16 (EWALL01) @ 3'	<0.1	26	75.7	101.7	<0.001	<0.005	<0.0025	<0.0065	0.210	0.279	**8.67**	0.252	**5.7**	293	0.264	<1	15.5	6.89	44.5	<2	<1	36.6
20210922-PJ16 (EWALL02) @ 3'	<0.1	15.6	40.5	56.1	<0.001	<0.005	<0.0025	<0.0065	0.219	0.202	**8.64**	0.172	**4.59**	215	0.261	<1	13.8	6.5	24.4	<2	<1	39.7
20210923-PJ16 (SBASE) @ 4.5'	<0.1	48.6	88	136.6	<0.001	<0.005	<0.0025	<0.0065	0.326	0.627	**8.44**	0.212	**5.51**	283	0.253	<1	13.3	7.82	21.4	<2	<1	32.6
20210922-PJ16 (BGN) @ 2'	na	na	na	na	na	na	na	na	0.318	0.062	7.94	0.56	**6.74**	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	**6.29**	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	**4.67**	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	**6.72**	na	na	na	na	na	na	na	na	na
20210927-PJ16 (WWALL01)@7.5'	<0.1	<4.0	<4.0	<4.0	<0.001	<0.005	<0.0025	<0.0065	0.323	0.221	**8.72**	0.347	**4.33**	184	0.223	<1	12.4	6.44	23	<2	<1	23.6
20210928-PJ16(NWALL)@14'	0.0347	20.9	7.15	28.08	<0.001	<0.005	<0.0025	0.0013	0.385	0.83	8.26	0.275	**4.31**	184	0.138	<1	6.22	5.06	10.6	<2	<1	14.9
20210929-PJ16(PORBASE)@20'	1350	152	5.49	**1507.49**	0.0842	9.24	3.43	**65**	**4.97**	**32.1**	**8.65**	0.309	**8.9**	292	0.239	<1	24.7	8.85	36.2	<2	<1	47.2
20210929-PJ16(WBASE)@20'	895	316	3.55	**1214.55**	0.645	11.8	2.39	40.4	3.55	3.72	7.92	0.135	**5.53**	191	0.226	<1	22.9	7.32	34.9	<2	<1	38.3
20211105-PJ16(SB01)@25'	865	142	12.7	**1019.70**	0.084	3.64	0.991	18.9	**4.67**	**47.5**	**8.91**	0.257	**4.89**	209	0.424	<1	22.1	7.23	45	1.58	<1	41
20211105-PJ16(SB01)@34'	956	158	30.4	**1144.4**	<0.040	1.59	0.721	14.4	**5.3**	**17.9**	**8.32**	0.297	**4.37**	158	0.403	<1	23	6.27	48	1.49	<1	40.5
20211105-PJ16(SB01)@39'	0.766	6.94	5.21	12.916	<0.001	<0.005	<0.0025	0.0137	3.59	**12.1**	**8.30**	0.189	**3.98**	112	0.313	<1	21.9	5.16	46.2	1.06	<1	35.4
202112200PJ16(SB04)@15'	0.11	<4	5.88	5.99	<0.001	<0.005	<0.0025	<0.0065	0.335	2.66	**8.95**	0.2	**3.33**	80.2	<0.500	<1	16.4	5.03	37.1	<2	<1	23.4
202112200PJ16(SB04)@30'	<0.1	5.5	6.79	12.29	<0.001	<0.005	<0.0025	<0.0065	0.459	1.3	**8.56**	<0.2	**4.66**	139	<0.500	<1	19.1	6.3	37.8	<2	<1	29.5
202112200PJ16(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	**4.19**	154	<0.500	<1	9.42	5.83	16.4	<2	<1	18
202112200PJ16(SB02)@30'	0.181	7.44	9.08	16.701	<0.001	<0.005	<0.0025	<0.0065	0.166	na	**8.44**	<0.2	**3.77**	135	<0.500	<1	20.9	6.32	48.6	<2	<1	29.2
COGCC TABLE 915-1 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 Convservation 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)
PJ16

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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-mehtylnaphthalene	Naphthalene	Pyrene
20210922-PJ16 (NWALL) @ 3'	<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
20210922-PJ16 (SWALL) @ 3'	<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
20210922-PJ16 (WWALL01) @ 3'	<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
20210922-PJ16 (POR) @ 4'	0.969	23.1	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.0802	0.006	1.2	3.05	1.23	<0.006
20210922-PJ16 (WWALL02) @ 3'	<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
20210922-PJ16 (EWALL01) @ 3'	<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
20210922-PJ16 (EWALL02) @ 3'	<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
20210923-PJ16 (SBASE) @ 4.5'	<0.005	0.0351	<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
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
20210927-PJ16 (WWALL01)@7.5'	<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
20210928-PJ16(NWALL)@14'	<0.005	0.00448	<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
20210929-PJ16(PORBASE)@20'	17.7	15.4	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.0103	<0.006	0.205	0.582	0.299	<0.006
20210929-PJ16(WBASE)@20'	8.51	7.42	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.0182	<0.006	0.374	1.07	0.566	<0.006
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
202112200PJ16(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
202112200PJ16(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
202112200PJ16(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
202112200PJ16(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
COGCC TABLE 915-1 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:

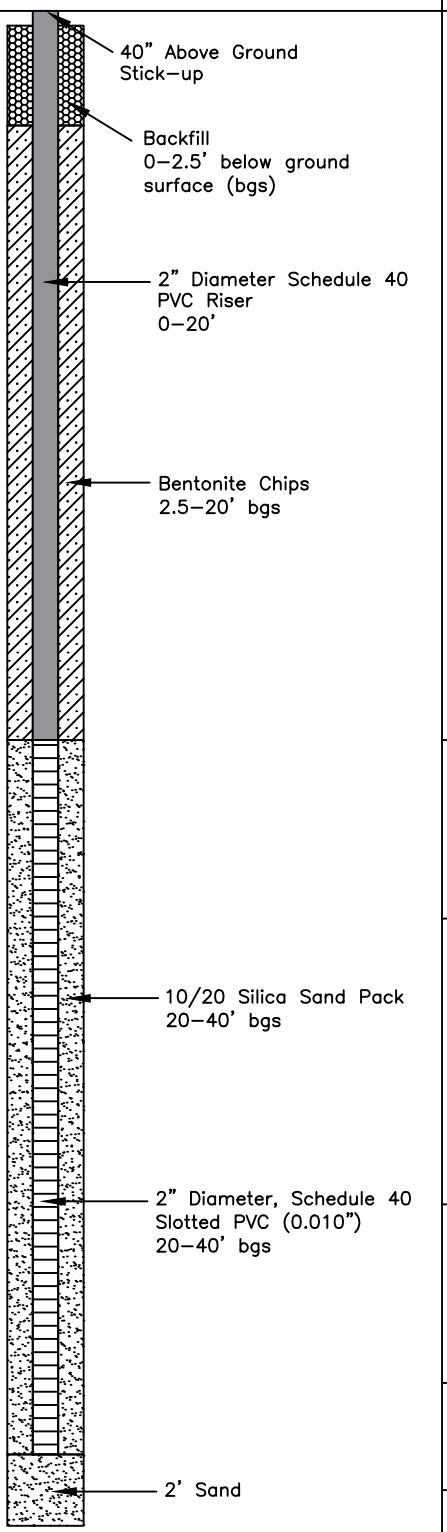
Bold w/ yellow highlight - exceeds COGCC 915-1 residential soil screening level concentration

< - less than laboratory reporting detection limit (RDL)
COGCC - Colorado Oil and Gas Convservation 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

BORING LOG / WELL CONSTRUCTION DETAILS: SVE-01

DRILL DATE: 11/5/2021	WELL INSTALL DATE: 11/24/2021	CAMPOS | EPC
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	WELL ID: SVE–01
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)	LITHOLOGY/ADDITIONAL NOTES
0–20				(0-20') Backfill.
20	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	ML	DRY	1,934	(25-26') Same as above (SAA). Sample: 20211105-PJ16(SB01)@25'
30–35	ML	DRY	1,243	(33-34') SAA. Sample: 20211105-PJ16(SB01)@34'
35–40	ML	DRY	191	(38-39') SAA. Sample: 20211105-PJ16(SB01)@39'
40–45	SM	MOIST	76	(41-42') Brown, SILT with SAND. Pulverized basalt throughout. N/O, N/S. (@42') Bottom of boring



BORING LOG / WELL CONSTRUCTION DETAILS: SVE-02

DRILL DATE: 12/20&21/2021	WELL INSTALL DATE: n/a	CAMPOS | EPC
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		

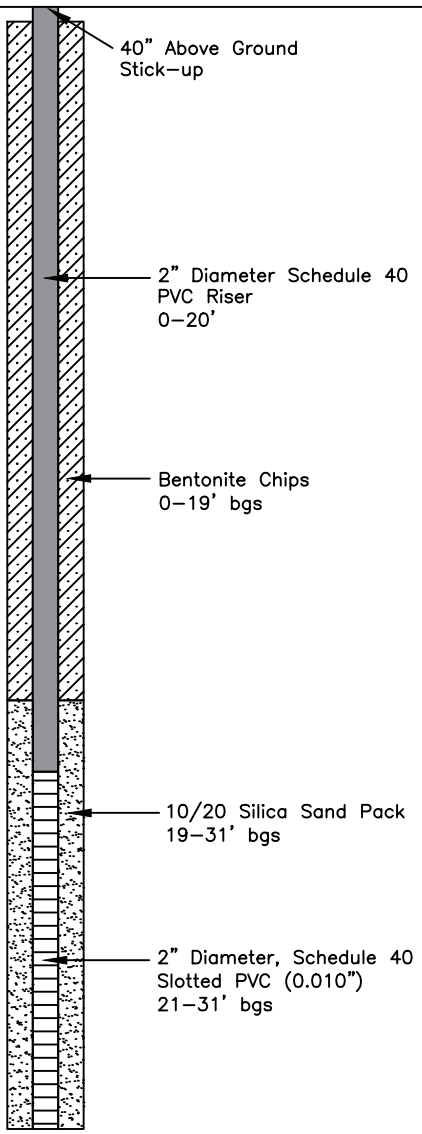
DEPTH (FT)	SOIL/ROCK TYPE	MOISTURE CONTENT	PID (ppm)	WELL CONSTRUCTION	LITHOLOGY/ADDITIONAL NOTES
0				SVE Well not installed. Boring backfilled with sand and bentonite.	Potholed to 8.5' bgs
10	ML	DRY	0.55		(10-12') Brown clayey SILT. Cobble-sized fractured basalt throughout. No odor (N/O). No staining (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	CAMPOS | EPC
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)	LITHOLOGY/ADDITIONAL NOTES
0				Potholed to 10' bgs
10	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).
15	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'
20	—	DRY	NA	(20-21') 3% recovery. 100% fractured basalt. N/O. N/S.
25	CL	DRY	0.25	(25-26') Brown silty CLAY. Cobble-sized fractured basalt throughout. N/O. N/S.
30	ML	DRY	0.70	(30-32') Brown clayey SILT. Cobble-sized fractured basalt throughout. N/O. N/S. Sample: 20211220-PJ16(SB04)@30'
35				(@31') Bottom of boring
40				
45				



ANALYTICAL REPORT

October 05, 2021

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

Caerus Oil and Gas

Sample Delivery Group:	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

Chris Ward
Project Manager

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

TABLE OF CONTENTS

20210922-PJ16 (NWALL) @ 3' L1408952-01 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 09:30 | 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 13:53	10/01/21 13:53	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 20:41	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 19:50	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:23	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 19:05	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749283	1	09/28/21 09:03	10/01/21 19:12	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 16:26	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 19:47	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 00:39	AAT	Mt. Juliet, TN

20210922-PJ16 (SWALL) @ 3' L1408952-02 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 09:45 | 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 13:55	10/01/21 13:55	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 20:46	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 20:46	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:26	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:18	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749283	1	09/28/21 09:03	10/01/21 19:36	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 16:45	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 20:00	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 00:56	AAT	Mt. Juliet, TN

20210922-PJ16 (WWALL01) @ 3' L1408952-03 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 10:00 | 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 13:58	10/01/21 13:58	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 20:52	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 20:49	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:29	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:21	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749285	1	09/28/21 09:03	10/02/21 01:07	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 17:04	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 20:26	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 01:14	AAT	Mt. Juliet, TN

20210922-PJ16 (POR) @ 4' L1408952-04 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 08:40 | 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 14:01	10/01/21 14:01	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 20:57	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 20:58	EL	Mt. Juliet, TN

20210922-PJ16 (POR) @ 4' L1408952-04 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 08:40 | Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:31	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:24	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1750596	500	09/28/21 09:03	10/04/21 07:55	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1749328	40	09/28/21 09:03	09/30/21 16:11	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 20:44	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	5	10/04/21 11:47	10/05/21 10:17	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 01:31	AAT	Mt. Juliet, TN

20210922-PJ16 (WWALL02) @ 3' L1408952-05 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 12:00 | 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 14:04	10/01/21 14:04	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 21:02	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 21:01	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:34	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:28	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749285	1	09/28/21 09:03	10/02/21 01:39	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 17:23	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 21:11	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 01:48	AAT	Mt. Juliet, TN

20210922-PJ16 (EWALL01) @ 3' L1408952-06 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 13:00 | 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 14:06	10/01/21 14:06	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 21:17	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 21:04	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:37	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:31	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749285	1	09/28/21 09:03	10/02/21 02:02	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 17:42	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 22:03	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 02:06	AAT	Mt. Juliet, TN

20210922-PJ16 (EWALL02) @ 3' L1408952-07 Solid

Collected by: Evan Mason | Collected date/time: 09/22/21 13:10 | 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 14:09	10/01/21 14:09	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 21:43	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 21:08	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:40	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:34	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749285	1	09/28/21 09:03	10/02/21 02:25	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 18:01	JHH	Mt. Juliet, TN

20210922-PJ16 (EWALL02) @ 3' L1408952-07 Solid

Collected by: Evan Mason
Collected date/time: 09/22/21 13:10
Received date/time: 09/24/21 09:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 21:24	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/04/21 23:47	AAT	Mt. Juliet, TN

20210923-PJ16 (SBASE) @ 4.5' L1408952-08 Solid

Collected by: Evan Mason
Collected date/time: 09/23/21 10:30
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 14:12	10/01/21 14:12	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1748885	1	09/29/21 18:00	09/30/21 21:49	GB	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	WG1748232	1	09/29/21 08:36	09/29/21 21:11	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1747670	1	09/30/21 10:55	10/01/21 13:48	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1748247	5	09/29/21 08:44	09/29/21 20:37	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1749285	1	09/28/21 09:03	10/02/21 02:49	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1747794	1	09/28/21 09:03	09/28/21 18:20	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	1	10/04/21 11:47	10/04/21 21:50	JAS	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1750857	2	10/04/21 11:47	10/05/21 10:04	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1749769	1	10/04/21 12:47	10/05/21 05:17	AAT	Mt. Juliet, TN

CASE NARRATIVE

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.276		1	10/01/2021 13:53	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 20:41	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.66	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-01 WG1750513: 8.66 at 21.6C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	220		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-01 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	199	J5 O1	0.0852	0.500	1	09/29/2021 19:50	WG1748232
Cadmium	0.408	J	0.0471	0.500	1	09/29/2021 19:50	WG1748232
Copper	17.0		0.400	2.00	1	09/29/2021 19:50	WG1748232
Lead	6.09		0.208	0.500	1	09/29/2021 19:50	WG1748232
Nickel	35.4		0.132	2.00	1	09/29/2021 19:50	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 19:50	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 19:50	WG1748232
Zinc	38.3		0.832	5.00	1	09/29/2021 19:50	WG1748232

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	0.221		0.0167	0.200	1	10/01/2021 13:23	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.53		0.100	1.00	5	09/29/2021 19:05	WG1748247

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	10/01/2021 19:12	WG1749283
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*		*10/01/2021 19:12*	WG1749283

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 16:26	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 16:26	WG1747794
Ethylbenzene	U		0.000737	0.00250	1	09/28/2021 16:26	WG1747794
Xylenes, Total	U		0.000880	0.00650	1	09/28/2021 16:26	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 16:26	WG1747794
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/28/2021 16:26	WG1747794
(S) Toluene-d8	*112*			*75.0-131*		*09/28/2021 16:26*	WG1747794
(S) 4-Bromofluorobenzene	*101*			*67.0-138*		*09/28/2021 16:26*	WG1747794
(S) 1,2-Dichloroethane-d4	*89.7*			*70.0-130*		*09/28/2021 16:26*	WG1747794

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	18.8		1.61	4.00	1	10/04/2021 19:47	WG1750857
C28-C36 Motor Oil Range	50.7		0.274	4.00	1	10/04/2021 19:47	WG1750857
(S) o-Terphenyl	*57.8*			*18.0-148*		*10/04/2021 19:47*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 00:39	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 00:39	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 00:39	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 00:39	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 00:39	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 00:39	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 00:39	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 00:39	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 00:39	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 00:39	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 00:39	WG1749769
Fluorene	U		0.00205	0.00600	1	10/05/2021 00:39	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 00:39	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/05/2021 00:39	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/05/2021 00:39	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 00:39	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/05/2021 00:39	WG1749769
2-Methylnaphthalene	U		0.00427	0.0200	1	10/05/2021 00:39	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 00:39	WG1749769
(S) p-Terphenyl-d14	*82.6*			*23.0-120*		*10/05/2021 00:39*	WG1749769
(S) Nitrobenzene-d5	*85.9*			*14.0-149*		*10/05/2021 00:39*	WG1749769
(S) 2-Fluorobiphenyl	*68.8*			*34.0-125*		*10/05/2021 00:39*	WG1749769

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.177		1	10/01/2021 13:55	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 20:46	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.63	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-02 WG1750513: 8.63 at 21.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	185		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-02 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	360		0.0852	0.500	1	09/29/2021 20:46	WG1748232
Cadmium	0.254	J	0.0471	0.500	1	09/29/2021 20:46	WG1748232
Copper	12.9		0.400	2.00	1	09/29/2021 20:46	WG1748232
Lead	7.79		0.208	0.500	1	09/29/2021 20:46	WG1748232
Nickel	25.6		0.132	2.00	1	09/29/2021 20:46	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 20:46	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 20:46	WG1748232
Zinc	37.1		0.832	5.00	1	09/29/2021 20:46	WG1748232

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	0.254		0.0167	0.200	1	10/01/2021 13:26	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.61		0.100	1.00	5	09/29/2021 20:18	WG1748247

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	10/01/2021 19:36	WG1749283
(S) a,a,a-Trifluorotoluene(FID)	*99.9*			*77.0-120*		*10/01/2021 19:36*	WG1749283

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 16:45	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 16:45	WG1747794
Ethylbenzene	U		0.000737	0.00250	1	09/28/2021 16:45	WG1747794
Xylenes, Total	U		0.000880	0.00650	1	09/28/2021 16:45	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 16:45	WG1747794
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/28/2021 16:45	WG1747794
(S) Toluene-d8	*112*			*75.0-131*		*09/28/2021 16:45*	WG1747794
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*09/28/2021 16:45*	WG1747794
(S) 1,2-Dichloroethane-d4	*86.9*			*70.0-130*		*09/28/2021 16:45*	WG1747794

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	24.8		1.61	4.00	1	10/04/2021 20:00	WG1750857
C28-C36 Motor Oil Range	71.7		0.274	4.00	1	10/04/2021 20:00	WG1750857
(S) o-Terphenyl	*64.7*			*18.0-148*		*10/04/2021 20:00*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 00:56	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 00:56	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 00:56	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 00:56	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 00:56	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 00:56	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 00:56	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 00:56	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 00:56	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 00:56	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 00:56	WG1749769
Fluorene	U		0.00205	0.00600	1	10/05/2021 00:56	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 00:56	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/05/2021 00:56	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/05/2021 00:56	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 00:56	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/05/2021 00:56	WG1749769
2-Methylnaphthalene	U		0.00427	0.0200	1	10/05/2021 00:56	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 00:56	WG1749769
(S) p-Terphenyl-d14	*85.4*			*23.0-120*		*10/05/2021 00:56*	WG1749769
(S) Nitrobenzene-d5	*88.7*			*14.0-149*		*10/05/2021 00:56*	WG1749769
(S) 2-Fluorobiphenyl	*69.9*			*34.0-125*		*10/05/2021 00:56*	WG1749769

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.240		1	10/01/2021 13:58	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 20:52	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.51	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-03 WG1750513: 8.51 at 21.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	190		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-03 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	329		0.0852	0.500	1	09/29/2021 20:49	WG1748232
Cadmium	0.689		0.0471	0.500	1	09/29/2021 20:49	WG1748232
Copper	12.2		0.400	2.00	1	09/29/2021 20:49	WG1748232
Lead	11.3		0.208	0.500	1	09/29/2021 20:49	WG1748232
Nickel	25.3		0.132	2.00	1	09/29/2021 20:49	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 20:49	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 20:49	WG1748232
Zinc	31.1		0.832	5.00	1	09/29/2021 20:49	WG1748232

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	0.165	J	0.0167	0.200	1	10/01/2021 13:29	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.79		0.100	1.00	5	09/29/2021 20:21	WG1748247

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	10/02/2021 01:07	WG1749285
(S) a,a,a-Trifluorotoluene(FID)	*99.3*			*77.0-120*		*10/02/2021 01:07*	WG1749285

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 17:04	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 17:04	WG1747794
Ethylbenzene	0.00123	J	0.000737	0.00250	1	09/28/2021 17:04	WG1747794
Xylenes, Total	0.00153	J	0.000880	0.00650	1	09/28/2021 17:04	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 17:04	WG1747794
1,3,5-Trimethylbenzene	0.00238	J	0.00200	0.00500	1	09/28/2021 17:04	WG1747794
(S) Toluene-d8	*111*			*75.0-131*		*09/28/2021 17:04*	WG1747794
(S) 4-Bromofluorobenzene	*99.3*			*67.0-138*		*09/28/2021 17:04*	WG1747794
(S) 1,2-Dichloroethane-d4	*90.9*			*70.0-130*		*09/28/2021 17:04*	WG1747794

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	34.2		1.61	4.00	1	10/04/2021 20:26	WG1750857
C28-C36 Motor Oil Range	72.5		0.274	4.00	1	10/04/2021 20:26	WG1750857
(S) o-Terphenyl	*57.0*			*18.0-148*		*10/04/2021 20:26*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 01:14	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 01:14	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 01:14	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 01:14	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 01:14	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 01:14	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 01:14	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 01:14	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 01:14	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 01:14	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 01:14	WG1749769
Fluorene	U		0.00205	0.00600	1	10/05/2021 01:14	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 01:14	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/05/2021 01:14	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/05/2021 01:14	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 01:14	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/05/2021 01:14	WG1749769
2-Methylnaphthalene	U		0.00427	0.0200	1	10/05/2021 01:14	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 01:14	WG1749769
(S) p-Terphenyl-d14	*89.3*			*23.0-120*		*10/05/2021 01:14*	WG1749769
(S) Nitrobenzene-d5	*90.0*			*14.0-149*		*10/05/2021 01:14*	WG1749769
(S) 2-Fluorobiphenyl	*72.2*			*34.0-125*		*10/05/2021 01:14*	WG1749769

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	78.0		1	10/01/2021 14:01	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.301	J	0.255	1.00	1	09/30/2021 20:57	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.10	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:
L1408952-04 WG1750513: 8.1 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	5820		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:
L1408952-04 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	865		0.0852	0.500	1	09/29/2021 20:58	WG1748232
Cadmium	0.153	J	0.0471	0.500	1	09/29/2021 20:58	WG1748232
Copper	18.0		0.400	2.00	1	09/29/2021 20:58	WG1748232
Lead	6.35		0.208	0.500	1	09/29/2021 20:58	WG1748232
Nickel	34.9		0.132	2.00	1	09/29/2021 20:58	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 20:58	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 20:58	WG1748232
Zinc	36.3		0.832	5.00	1	09/29/2021 20:58	WG1748232

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	1.10		0.0167	0.200	1	10/01/2021 13:31	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.87		0.100	1.00	5	09/29/2021 20:24	WG1748247

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	1140		10.9	50.0	500	10/04/2021 07:55	WG1750596
(S) a,a,a-Trifluorotoluene(FID)	*109*			*77.0-120*		*10/04/2021 07:55*	WG1750596

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	09/30/2021 16:11	WG1749328
Toluene	0.251		0.0520	0.200	40	09/30/2021 16:11	WG1749328
Ethylbenzene	U		0.0295	0.100	40	09/30/2021 16:11	WG1749328
Xylenes, Total	9.64		0.0352	0.260	40	09/30/2021 16:11	WG1749328
1,2,4-Trimethylbenzene	0.969		0.0632	0.200	40	09/30/2021 16:11	WG1749328
1,3,5-Trimethylbenzene	23.1		0.0800	0.200	40	09/30/2021 16:11	WG1749328
(S) Toluene-d8	*97.8*			*75.0-131*		*09/30/2021 16:11*	WG1749328
(S) 4-Bromofluorobenzene	*97.9*			*67.0-138*		*09/30/2021 16:11*	WG1749328
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*09/30/2021 16:11*	WG1749328

Sample Narrative:

L1408952-04 WG1749328: 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	665		8.05	20.0	5	10/05/2021 10:17	WG1750857
C28-C36 Motor Oil Range	29.9		0.274	4.00	1	10/04/2021 20:44	WG1750857
(S) o-Terphenyl	*68.8*			*18.0-148*		*10/04/2021 20:44*	WG1750857
(S) o-Terphenyl	*54.6*			*18.0-148*		*10/05/2021 10:17*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 01:31	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 01:31	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 01:31	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 01:31	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 01:31	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 01:31	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 01:31	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 01:31	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 01:31	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 01:31	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 01:31	WG1749769
Fluorene	0.0802		0.00205	0.00600	1	10/05/2021 01:31	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 01:31	WG1749769
Naphthalene	1.23		0.00408	0.0200	1	10/05/2021 01:31	WG1749769
Phenanthrene	0.0509		0.00231	0.00600	1	10/05/2021 01:31	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 01:31	WG1749769
1-Methylnaphthalene	1.20		0.00449	0.0200	1	10/05/2021 01:31	WG1749769
2-Methylnaphthalene	3.05		0.00427	0.0200	1	10/05/2021 01:31	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 01:31	WG1749769
(S) p-Terphenyl-d14	*87.1*			*23.0-120*		*10/05/2021 01:31*	WG1749769
(S) Nitrobenzene-d5	*0.000*	J2		*14.0-149*		*10/05/2021 01:31*	WG1749769
(S) 2-Fluorobiphenyl	*65.6*			*34.0-125*		*10/05/2021 01:31*	WG1749769

Sample Narrative:

L1408952-04 WG1749769: Surrogate failure due to matrix interference

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.194		1	10/01/2021 14:04	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 21:02	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.48	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-05 WG1750513: 8.48 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	241		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-05 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	253		0.0852	0.500	1	09/29/2021 21:01	WG1748232
Cadmium	0.315	J	0.0471	0.500	1	09/29/2021 21:01	WG1748232
Copper	15.1		0.400	2.00	1	09/29/2021 21:01	WG1748232
Lead	8.31		0.208	0.500	1	09/29/2021 21:01	WG1748232
Nickel	26.0		0.132	2.00	1	09/29/2021 21:01	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 21:01	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 21:01	WG1748232
Zinc	37.4		0.832	5.00	1	09/29/2021 21:01	WG1748232

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	0.201		0.0167	0.200	1	10/01/2021 13:34	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.03		0.100	1.00	5	09/29/2021 20:28	WG1748247

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	10/02/2021 01:39	WG1749285
(S) a,a,a-Trifluorotoluene(FID)	*99.2*			*77.0-120*		*10/02/2021 01:39*	WG1749285

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 17:23	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 17:23	WG1747794
Ethylbenzene	U		0.000737	0.00250	1	09/28/2021 17:23	WG1747794
Xylenes, Total	U		0.000880	0.00650	1	09/28/2021 17:23	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 17:23	WG1747794
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/28/2021 17:23	WG1747794
(S) Toluene-d8	*110*			*75.0-131*		*09/28/2021 17:23*	WG1747794
(S) 4-Bromofluorobenzene	*105*			*67.0-138*		*09/28/2021 17:23*	WG1747794
(S) 1,2-Dichloroethane-d4	*96.6*			*70.0-130*		*09/28/2021 17:23*	WG1747794

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	15.5		1.61	4.00	1	10/04/2021 21:11	WG1750857
C28-C36 Motor Oil Range	49.4		0.274	4.00	1	10/04/2021 21:11	WG1750857
(S) o-Terphenyl	*62.3*			*18.0-148*		*10/04/2021 21:11*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 01:48	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 01:48	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 01:48	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 01:48	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 01:48	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 01:48	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 01:48	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 01:48	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 01:48	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 01:48	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 01:48	WG1749769
Fluorene	U		0.00205	0.00600	1	10/05/2021 01:48	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 01:48	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/05/2021 01:48	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/05/2021 01:48	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 01:48	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/05/2021 01:48	WG1749769
2-Methylnaphthalene	U		0.00427	0.0200	1	10/05/2021 01:48	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 01:48	WG1749769
(S) p-Terphenyl-d14	*80.7*			*23.0-120*		*10/05/2021 01:48*	WG1749769
(S) Nitrobenzene-d5	*86.1*			*14.0-149*		*10/05/2021 01:48*	WG1749769
(S) 2-Fluorobiphenyl	*66.6*			*34.0-125*		*10/05/2021 01:48*	WG1749769

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.279		1	10/01/2021 14:06	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 21:17	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.67	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-06 WG1750513: 8.67 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	210		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-06 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	293		0.0852	0.500	1	09/29/2021 21:04	WG1748232
Cadmium	0.264	J	0.0471	0.500	1	09/29/2021 21:04	WG1748232
Copper	15.5		0.400	2.00	1	09/29/2021 21:04	WG1748232
Lead	6.89		0.208	0.500	1	09/29/2021 21:04	WG1748232
Nickel	44.5		0.132	2.00	1	09/29/2021 21:04	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 21:04	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 21:04	WG1748232
Zinc	36.6		0.832	5.00	1	09/29/2021 21:04	WG1748232

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	0.252		0.0167	0.200	1	10/01/2021 13:37	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.70		0.100	1.00	5	09/29/2021 20:31	WG1748247

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	10/02/2021 02:02	WG1749285
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*		*10/02/2021 02:02*	WG1749285

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 17:42	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 17:42	WG1747794
Ethylbenzene	U		0.000737	0.00250	1	09/28/2021 17:42	WG1747794
Xylenes, Total	U		0.000880	0.00650	1	09/28/2021 17:42	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 17:42	WG1747794
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/28/2021 17:42	WG1747794
(S) Toluene-d8	*109*			*75.0-131*		*09/28/2021 17:42*	WG1747794
(S) 4-Bromofluorobenzene	*101*			*67.0-138*		*09/28/2021 17:42*	WG1747794
(S) 1,2-Dichloroethane-d4	*92.9*			*70.0-130*		*09/28/2021 17:42*	WG1747794

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	26.0		1.61	4.00	1	10/04/2021 22:03	WG1750857
C28-C36 Motor Oil Range	75.7		0.274	4.00	1	10/04/2021 22:03	WG1750857
(S) o-Terphenyl	*55.8*			*18.0-148*		*10/04/2021 22:03*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 02:06	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 02:06	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 02:06	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 02:06	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 02:06	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 02:06	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 02:06	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 02:06	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 02:06	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 02:06	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 02:06	WG1749769
Fluorene	U		0.00205	0.00600	1	10/05/2021 02:06	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 02:06	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/05/2021 02:06	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/05/2021 02:06	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 02:06	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/05/2021 02:06	WG1749769
2-Methylnaphthalene	U		0.00427	0.0200	1	10/05/2021 02:06	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 02:06	WG1749769
(S) p-Terphenyl-d14	*89.1*			*23.0-120*		*10/05/2021 02:06*	WG1749769
(S) Nitrobenzene-d5	*89.2*			*14.0-149*		*10/05/2021 02:06*	WG1749769
(S) 2-Fluorobiphenyl	*70.4*			*34.0-125*		*10/05/2021 02:06*	WG1749769

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.202		1	10/01/2021 14:09	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 21:43	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.64	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-07 WG1750513: 8.64 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	219		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-07 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	215		0.0852	0.500	1	09/29/2021 21:08	WG1748232
Cadmium	0.261	J	0.0471	0.500	1	09/29/2021 21:08	WG1748232
Copper	13.8		0.400	2.00	1	09/29/2021 21:08	WG1748232
Lead	6.50		0.208	0.500	1	09/29/2021 21:08	WG1748232
Nickel	24.4		0.132	2.00	1	09/29/2021 21:08	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 21:08	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 21:08	WG1748232
Zinc	39.7		0.832	5.00	1	09/29/2021 21:08	WG1748232

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	0.172	J	0.0167	0.200	1	10/01/2021 13:40	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.59		0.100	1.00	5	09/29/2021 20:34	WG1748247

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0217	0.100	1	10/02/2021 02:25	WG1749285
(S) a,a,a-Trifluorotoluene(FID)	*99.5*			*77.0-120*		*10/02/2021 02:25*	WG1749285

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 18:01	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 18:01	WG1747794
Ethylbenzene	U		0.000737	0.00250	1	09/28/2021 18:01	WG1747794
Xylenes, Total	U		0.000880	0.00650	1	09/28/2021 18:01	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 18:01	WG1747794
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	09/28/2021 18:01	WG1747794
(S) Toluene-d8	*112*			*75.0-131*		*09/28/2021 18:01*	WG1747794
(S) 4-Bromofluorobenzene	*99.7*			*67.0-138*		*09/28/2021 18:01*	WG1747794
(S) 1,2-Dichloroethane-d4	*91.8*			*70.0-130*		*09/28/2021 18:01*	WG1747794

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	15.6		1.61	4.00	1	10/04/2021 21:24	WG1750857
C28-C36 Motor Oil Range	40.5		0.274	4.00	1	10/04/2021 21:24	WG1750857
(S) o-Terphenyl	*68.8*			*18.0-148*		*10/04/2021 21:24*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/04/2021 23:47	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/04/2021 23:47	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/04/2021 23:47	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/04/2021 23:47	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/04/2021 23:47	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/04/2021 23:47	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/04/2021 23:47	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/04/2021 23:47	WG1749769
Chrysene	U		0.00232	0.00600	1	10/04/2021 23:47	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/04/2021 23:47	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/04/2021 23:47	WG1749769
Fluorene	U		0.00205	0.00600	1	10/04/2021 23:47	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/04/2021 23:47	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/04/2021 23:47	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/04/2021 23:47	WG1749769
Pyrene	U		0.00200	0.00600	1	10/04/2021 23:47	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/04/2021 23:47	WG1749769
2-Methylnaphthalene	U		0.00427	0.0200	1	10/04/2021 23:47	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/04/2021 23:47	WG1749769
(S) p-Terphenyl-d14	*91.2*			*23.0-120*		*10/04/2021 23:47*	WG1749769
(S) Nitrobenzene-d5	*96.3*			*14.0-149*		*10/04/2021 23:47*	WG1749769
(S) 2-Fluorobiphenyl	*75.5*			*34.0-125*		*10/04/2021 23:47*	WG1749769

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.627		1	10/01/2021 14:12	WG1747664

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/30/2021 21:49	WG1748885

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.44	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408952-08 WG1750513: 8.44 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	326		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408952-08 WG1748901: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	283		0.0852	0.500	1	09/29/2021 21:11	WG1748232
Cadmium	0.253	J	0.0471	0.500	1	09/29/2021 21:11	WG1748232
Copper	13.3		0.400	2.00	1	09/29/2021 21:11	WG1748232
Lead	7.82		0.208	0.500	1	09/29/2021 21:11	WG1748232
Nickel	21.4		0.132	2.00	1	09/29/2021 21:11	WG1748232
Selenium	U		0.764	2.00	1	09/29/2021 21:11	WG1748232
Silver	U		0.127	1.00	1	09/29/2021 21:11	WG1748232
Zinc	32.6		0.832	5.00	1	09/29/2021 21:11	WG1748232

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	0.212		0.0167	0.200	1	10/01/2021 13:48	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.51		0.100	1.00	5	09/29/2021 20:37	WG1748247

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	0.0518	J	0.0217	0.100	1	10/02/2021 02:49	WG1749285
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*		*10/02/2021 02:49*	WG1749285

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	09/28/2021 18:20	WG1747794
Toluene	U		0.00130	0.00500	1	09/28/2021 18:20	WG1747794
Ethylbenzene	U		0.000737	0.00250	1	09/28/2021 18:20	WG1747794
Xylenes, Total	U		0.000880	0.00650	1	09/28/2021 18:20	WG1747794
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	09/28/2021 18:20	WG1747794
1,3,5-Trimethylbenzene	0.0351		0.00200	0.00500	1	09/28/2021 18:20	WG1747794
(S) Toluene-d8	*111*			*75.0-131*		*09/28/2021 18:20*	WG1747794
(S) 4-Bromofluorobenzene	*99.6*			*67.0-138*		*09/28/2021 18:20*	WG1747794
(S) 1,2-Dichloroethane-d4	*92.7*			*70.0-130*		*09/28/2021 18:20*	WG1747794

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	48.6		1.61	4.00	1	10/04/2021 21:50	WG1750857
C28-C36 Motor Oil Range	88.0		0.548	8.00	2	10/05/2021 10:04	WG1750857
(S) o-Terphenyl	*64.0*			*18.0-148*		*10/05/2021 10:04*	WG1750857
(S) o-Terphenyl	*60.7*			*18.0-148*		*10/04/2021 21:50*	WG1750857

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/05/2021 05:17	WG1749769
Acenaphthene	U		0.00209	0.00600	1	10/05/2021 05:17	WG1749769
Acenaphthylene	U		0.00216	0.00600	1	10/05/2021 05:17	WG1749769
Benzo(a)anthracene	U		0.00173	0.00600	1	10/05/2021 05:17	WG1749769
Benzo(a)pyrene	U		0.00179	0.00600	1	10/05/2021 05:17	WG1749769
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/05/2021 05:17	WG1749769
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/05/2021 05:17	WG1749769
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/05/2021 05:17	WG1749769
Chrysene	U		0.00232	0.00600	1	10/05/2021 05:17	WG1749769
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/05/2021 05:17	WG1749769
Fluoranthene	U		0.00227	0.00600	1	10/05/2021 05:17	WG1749769
Fluorene	U		0.00205	0.00600	1	10/05/2021 05:17	WG1749769
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/05/2021 05:17	WG1749769
Naphthalene	U		0.00408	0.0200	1	10/05/2021 05:17	WG1749769
Phenanthrene	U		0.00231	0.00600	1	10/05/2021 05:17	WG1749769
Pyrene	U		0.00200	0.00600	1	10/05/2021 05:17	WG1749769
1-Methylnaphthalene	U		0.00449	0.0200	1	10/05/2021 05:17	WG1749769
2-Methylnaphthalene	0.00518	J	0.00427	0.0200	1	10/05/2021 05:17	WG1749769
2-Chloronaphthalene	U		0.00466	0.0200	1	10/05/2021 05:17	WG1749769
(S) p-Terphenyl-d14	*89.2*			*23.0-120*		*10/05/2021 05:17*	WG1749769
(S) Nitrobenzene-d5	*90.4*			*14.0-149*		*10/05/2021 05:17*	WG1749769
(S) 2-Fluorobiphenyl	*75.4*			*34.0-125*		*10/05/2021 05:17*	WG1749769

QUALITY CONTROL SUMMARY

L1408952-01,02,03,04,05,06,07,08

Method Blank (MB)

(MB) R3711360-1 09/30/21 19:13

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

L1408099-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1408099-01 09/30/21 19:34 • (DUP) R3711360-3 09/30/21 19:39

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.820	0.836	1	1.95	J	20

L1408874-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1408874-02 09/30/21 20:20 • (DUP) R3711360-4 09/30/21 20:26

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	3.01	2.90	1	3.63		20

Laboratory Control Sample (LCS)

(LCS) R3711360-2 09/30/21 19:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.10	91.0	80.0-120	

L1408952-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408952-06 09/30/21 21:17 • (MS) R3711360-5 09/30/21 21:23 • (MSD) R3711360-6 09/30/21 21:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	19.3	19.5	96.5	97.3	1	75.0-125			0.880	20

L1408952-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1408952-06 09/30/21 21:17 • (MS) R3711360-7 09/30/21 21:33

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	660	U	635	96.2	50	75.0-125	

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		%		%
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		%		%
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	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.02 at 21.8C

Method Blank (MB)

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

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

Sample Narrative:
BLANK: at 25C

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 umhos/cm	DUP Result umhos/cm	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 umhos/cm	DUP Result umhos/cm	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 umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	279	104	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3710574-1 09/29/21 19:44

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	0.319	J	0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

Laboratory Control Sample (LCS)

(LCS) R3710574-2 09/29/21 19:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	99.0	99.0	80.0-120	
Copper	100	96.7	96.7	80.0-120	
Lead	100	98.8	98.8	80.0-120	
Nickel	100	101	101	80.0-120	
Selenium	100	101	101	80.0-120	
Silver	20.0	17.8	89.2	80.0-120	
Zinc	100	96.4	96.4	80.0-120	

L1408952-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408952-01 09/29/21 19:50 • (MS) R3710574-5 09/29/21 19:59 • (MSD) R3710574-6 09/29/21 20:02

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	199	317	365	118	166	1	75.0-125		J5	14.2	20
Cadmium	100	0.408	99.4	96.4	99.0	96.0	1	75.0-125			3.04	20
Copper	100	17.0	110	117	93.4	100	1	75.0-125			5.83	20
Lead	100	6.09	105	105	99.0	99.2	1	75.0-125			0.141	20
Nickel	100	35.4	136	139	101	104	1	75.0-125			2.39	20
Selenium	100	U	98.3	96.3	98.3	96.3	1	75.0-125			2.08	20
Silver	20.0	U	18.6	18.2	93.1	90.9	1	75.0-125			2.36	20
Zinc	100	38.3	123	129	84.4	90.6	1	75.0-125			4.96	20

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

Method Blank (MB)

(MB) R3710454-1 09/29/21 18:58

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) R3710454-2 09/29/21 19:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	93.9	93.9	80.0-120	

L1408952-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408952-01 09/29/21 19:05 • (MS) R3710454-5 09/29/21 19:14 • (MSD) R3710454-6 09/29/21 19:17

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 %
Arsenic	100	5.53	94.3	95.3	88.8	89.8	5	75.0-125			1.03	20

Method Blank (MB)

(MB) R3711372-2 10/01/21 11:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3711372-1 10/01/21 10:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.77	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*108*	*77.0-120*	

L1408809-77 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408809-77 10/01/21 15:14 • (MS) R3711372-3 10/01/21 20:00 • (MSD) R3711372-4 10/01/21 20:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	U	2.44	2.25	44.4	40.9	1	10.0-151			8.10	28
(S) a,a,a-Trifluorotoluene(FID)					*101*	*102*		*77.0-120*				

Method Blank (MB)

(MB) R3712680-2 10/01/21 23:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*102*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3712680-1 10/01/21 22:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.42	98.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*107*	*77.0-120*	

L1408809-57 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408809-57 10/02/21 03:12 • (MS) R3712680-3 10/02/21 07:30 • (MSD) R3712680-4 10/02/21 07:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	U	1.90	1.81	34.5	32.9	1	10.0-151			4.85	28
(S) a,a,a-Trifluorotoluene(FID)					*101*	*101*		*77.0-120*				

Method Blank (MB)

(MB) R3712450-3 10/04/21 03:14

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	*113*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3712450-2 10/04/21 02:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.46	99.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*100*	*77.0-120*	

Method Blank (MB)

(MB) R3710764-3 09/28/21 09:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*114*			*75.0-131*
(S) 4-Bromofluorobenzene	*97.3*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*90.1*			*70.0-130*

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

(LCS) R3710764-1 09/28/21 08:29 • (LCSD) R3710764-2 09/28/21 08:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.122	0.120	97.6	96.0	70.0-123			1.65	20
Ethylbenzene	0.125	0.132	0.132	106	106	74.0-126			0.000	20
Toluene	0.125	0.134	0.135	107	108	75.0-121			0.743	20
1,2,4-Trimethylbenzene	0.125	0.128	0.129	102	103	70.0-126			0.778	20
1,3,5-Trimethylbenzene	0.125	0.138	0.138	110	110	73.0-127			0.000	20
Xylenes, Total	0.375	0.389	0.390	104	104	72.0-127			0.257	20
(S) Toluene-d8				*109*	*111*	*75.0-131*				
(S) 4-Bromofluorobenzene				*102*	*99.2*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*97.8*	*98.3*	*70.0-130*				

Method Blank (MB)

(MB) R3711976-3 09/30/21 14:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*101*			*75.0-131*
(S) 4-Bromofluorobenzene	*99.4*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*

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

(LCS) R3711976-1 09/30/21 13:02 • (LCSD) R3711976-2 09/30/21 13:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.126	0.132	101	106	70.0-123			4.65	20
Ethylbenzene	0.125	0.110	0.114	88.0	91.2	74.0-126			3.57	20
Toluene	0.125	0.114	0.116	91.2	92.8	75.0-121			1.74	20
1,2,4-Trimethylbenzene	0.125	0.116	0.116	92.8	92.8	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.125	0.110	0.110	88.0	88.0	73.0-127			0.000	20
Xylenes, Total	0.375	0.326	0.331	86.9	88.3	72.0-127			1.52	20
(S) Toluene-d8				*99.0*	*98.7*	*75.0-131*				
(S) 4-Bromofluorobenzene				*96.4*	*96.8*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*109*	*112*	*70.0-130*				

Method Blank (MB)

(MB) R3712453-1 10/04/21 16:05

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	*68.0*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3712453-2 10/04/21 16:18

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.1	78.2	50.0-150	
(S) o-Terphenyl			*71.6*	*18.0-148*	

Method Blank (MB)

(MB) R3712347-2 10/04/21 23:30

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	*85.0*			*14.0-149*
(S) 2-Fluorobiphenyl	*71.9*			*34.0-125*
(S) p-Terphenyl-d14	*90.9*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3712347-1 10/04/21 23:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0574	71.8	50.0-126	
Acenaphthene	0.0800	0.0570	71.3	50.0-120	
Acenaphthylene	0.0800	0.0584	73.0	50.0-120	
Benzo(a)anthracene	0.0800	0.0601	75.1	45.0-120	
Benzo(a)pyrene	0.0800	0.0543	67.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0600	75.0	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0544	68.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0577	72.1	49.0-125	
Chrysene	0.0800	0.0583	72.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0564	70.5	47.0-125	
Fluoranthene	0.0800	0.0597	74.6	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3712347-1 10/04/21 23:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0610	76.3	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0571	71.4	46.0-125	
Naphthalene	0.0800	0.0571	71.4	50.0-120	
Phenanthrene	0.0800	0.0606	75.8	47.0-120	
Pyrene	0.0800	0.0560	70.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0568	71.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0560	70.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0574	71.8	50.0-120	
(S) Nitrobenzene-d5			*95.6*	*14.0-149*	
(S) 2-Fluorobiphenyl			*75.2*	*34.0-125*	
(S) p-Terphenyl-d14			*91.6*	*23.0-120*	

L1408952-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1408952-07 10/04/21 23:47 • (MS) R3712347-3 10/05/21 00:04 • (MSD) R3712347-4 10/05/21 00:22

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	0.0796	U	0.0504	0.0514	63.3	64.6	1	10.0-145			1.96	30
Acenaphthene	0.0796	U	0.0506	0.0523	63.6	65.7	1	14.0-127			3.30	27
Acenaphthylene	0.0796	U	0.0516	0.0534	64.8	67.1	1	21.0-124			3.43	25
Benzo(a)anthracene	0.0796	U	0.0532	0.0544	66.8	68.3	1	10.0-139			2.23	30
Benzo(a)pyrene	0.0796	U	0.0505	0.0510	63.4	64.1	1	10.0-141			0.985	31
Benzo(b)fluoranthene	0.0796	U	0.0519	0.0529	65.2	66.5	1	10.0-140			1.91	36
Benzo(g,h,i)perylene	0.0796	U	0.0503	0.0508	63.2	63.8	1	10.0-140			0.989	33
Benzo(k)fluoranthene	0.0796	U	0.0515	0.0511	64.7	64.2	1	10.0-137			0.780	31
Chrysene	0.0796	U	0.0529	0.0535	66.5	67.2	1	10.0-145			1.13	30
Dibenz(a,h)anthracene	0.0796	U	0.0525	0.0525	66.0	66.0	1	10.0-132			0.000	31
Fluoranthene	0.0796	U	0.0523	0.0531	65.7	66.7	1	10.0-153			1.52	33
Fluorene	0.0796	U	0.0544	0.0557	68.3	70.0	1	11.0-130			2.36	29
Indeno(1,2,3-cd)pyrene	0.0796	U	0.0515	0.0521	64.7	65.5	1	10.0-137			1.16	32
Naphthalene	0.0796	U	0.0509	0.0530	63.9	66.6	1	10.0-135			4.04	27
Phenanthrene	0.0796	U	0.0546	0.0552	68.6	69.3	1	10.0-144			1.09	31
Pyrene	0.0796	U	0.0513	0.0526	64.4	66.1	1	10.0-148			2.50	35
1-Methylnaphthalene	0.0796	U	0.0510	0.0531	64.1	66.7	1	10.0-142			4.03	28
2-Methylnaphthalene	0.0796	U	0.0496	0.0515	62.3	64.7	1	10.0-137			3.76	28
2-Chloronaphthalene	0.0796	U	0.0502	0.0521	63.1	65.5	1	29.0-120			3.71	24
(S) Nitrobenzene-d5					*82.5*	*88.4*		*14.0-149*				
(S) 2-Fluorobiphenyl					*69.5*	*71.4*		*34.0-125*				
(S) p-Terphenyl-d14					*87.3*	*88.7*		*23.0-120*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
T8	Sample(s) received past/too close to holding time expiration.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

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

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here: G234

ALL SHADED AREAS are for LAB USE ONLY

Company: Campos EPC	Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO
Address: 1401 Blake St.	
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 Well Pad	State: CO County/City: /Garfield Time Zone Collected: [ ] PT [✓] MT [ ] CT [ ] ET
Phone: 9705190800 Email: see above	Site/Facility ID #: PJ16
Collected By (print): Evan Mason	Purchase Order #: Quote #:
Collected By (signature):	Turnaround Date Required:
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [✓] 5 Day (Expedite Charges Apply)

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 _____

Compliance Monitoring? [ ] Yes [ ] No

DW PWS ID #: DW Location Code:

Immediately Packed on ice: [ ] Yes [ ] No

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) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: COGCC TABLE 915-1 (full list)	Analyses: pH, EC, SAR, Arsenic, Boron-Hot Water Sol.	Lab Profile/Line: LH08962
20210922-PJ16(NWALL)@3'	SS	Grab	9/22/21	930				2	X		-01
20210922-PJ16(SWALL)@3'				945					X		-02
20210922-PJ16(NWALL04)@3'				1000					X		-03
20210922-PJ16(FOR)@4'				840					X		-04
20210922-PJ16(NWALL07)@3'				1200					X		-05
20210922-PJ16(SWALL01)@3'				1300					X		-06
20210922-PJ16(EWALL01)@3'				1310					X		-07
20210923-PJ16(@5BMSE)@4.5'	SS	Grab	9/23/21	1030				2	X		-08

LAB USE ONLY:
Lab Sample # / Comments:

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 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: 6.6 oC
Cooler 1 Therm Corr. Factor: 0 oC
Cooler 1 Corrected Temp: 6.6 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time: 9/23/21 1200	Received by/Company: (Signature)	Date/Time: 9/23 1200
Relinquished by/Company: (Signature)	Date/Time: 9/23 1500	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature) 9/24/21 0945	Date/Time:

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: _____

ANALYTICAL REPORT

October 05, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1408954
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

Chris Ward
Project Manager

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

TABLE OF CONTENTS

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

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 su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.94	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408954-01 WG1750513: 7.94 at 21.4C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	318		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408954-01 WG1748901: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.560		0.0167	0.200	1	10/01/2021 13:51	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.74		0.100	1.00	5	10/01/2021 01:42	WG1748271

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 su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.18	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:

L1408954-02 WG1750513: 8.18 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	233		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:

L1408954-02 WG1748901: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.521		0.0167	0.200	1	10/01/2021 13:54	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.29		0.100	1.00	5	10/01/2021 01:46	WG1748271

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 su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.90	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:
L1408954-03 WG1750513: 7.9 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	325		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:
L1408954-03 WG1748901: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.582		0.0167	0.200	1	10/01/2021 13:57	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.67		0.100	1.00	5	10/01/2021 01:49	WG1748271

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 su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	T8	1	10/02/2021 13:00	WG1750513

Sample Narrative:
L1408954-04 WG1750513: 8.03 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	250		10.0	1	09/30/2021 21:03	WG1748901

Sample Narrative:
L1408954-04 WG1748901: at 25C

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.425		0.0167	0.200	1	10/01/2021 14:00	WG1747670

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.72		0.100	1.00	5	10/01/2021 01:52	WG1748271

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		%		%
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		%		%
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	%	%	
pH	10.0	10.0	100	99.0-101	

Sample Narrative:

LCS: 10.02 at 21.8C

Method Blank (MB)

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

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

Sample Narrative:
BLANK: at 25C

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 umhos/cm	DUP Result umhos/cm	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 umhos/cm	DUP Result umhos/cm	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 umhos/cm	LCS Result umhos/cm	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

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

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
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical

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

ALL SHADED AREAS are for LAB USE O

Company: Campos EPC	Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO
Address: 1401 Blake St.	
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 Well Pad	State: CO County/City: /Garfield Time Zone Collected: [ ] PT [✓] MT [ ] CT [ ] ET
Phone: 9706190800 Email: see 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):	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) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	COGCC TABLE 915-1 (full list)	pH, EC, SAR, Arsenic, Boron-Hot Water Sol.	Lab Sample # / Comments
20210922-PJ16(B6W)@2'	SS	Grab	9/22/21	1445				1	X	X	L1409454 -01
20210922-PJ16(B6E)@3'	"	"	"	1500				1		X	-02
20210922-PJ16(B6S)@3'	"	"	"	1415				1		X	-03
20210922-PJ16(B6W)@2'	V	V	V	1430				1		X	-04

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 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

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#: D6010

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)	Date/Time: 9/23/21 1200	Received by/Company: (Signature)	Date/Time: 9/23 1200	MTJL LAB USE ONLY
Relinquished by/Company: (Signature)	Date/Time: 9/23 1500	Received by/Company: (Signature)	Date/Time:	Table #: Acctnum: Template: Prelogin:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time: 9/24/21 0945	PM: PB:

Trip Blank Received: Y (N) NA

HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: of:

ANALYTICAL REPORT

October 11, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1410897
Samples Received:	09/29/2021
Project Number:	
Description:	

Report To: Steve Sivigliano
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward
Project Manager

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

TABLE OF CONTENTS

SAMPLE SUMMARY

20210927-PJ16(WWALL01)@7.5' L1410897-01 Solid

Collected by: Evan Mason
Collected date/time: 09/27/21 11:50
Received date/time: 09/29/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1749764	1	10/04/21 19:11	10/04/21 19:11	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1751278	1	10/04/21 23:19	10/06/21 10:40	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1752136	1	10/06/21 08:00	10/06/21 10:22	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1751305	1	10/05/21 03:45	10/05/21 17:26	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1751419	1	10/05/21 16:40	10/06/21 11:01	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1749750	1	10/03/21 15:22	10/05/21 13:10	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1751420	5	10/05/21 17:02	10/05/21 22:53	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1751368	1	10/01/21 14:36	10/06/21 07:17	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1750440	1	10/01/21 14:36	10/03/21 06:40	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1751791	1	10/05/21 19:14	10/06/21 02:50	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1751686	1	10/05/21 15:54	10/06/21 02:52	AAT	Mt. Juliet, TN

CASE NARRATIVE

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.221		1	10/04/2021 19:11	WG1749764

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/06/2021 10:40	WG1751278

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.72	T8	1	10/06/2021 10:22	WG1752136

Sample Narrative:

L1410897-01 WG1752136: 8.72 at 20.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	323		10.0	1	10/05/2021 17:26	WG1751305

Sample Narrative:

L1410897-01 WG1751305: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	184		0.0852	0.500	1	10/06/2021 11:01	WG1751419
Cadmium	0.223	J	0.0471	0.500	1	10/06/2021 11:01	WG1751419
Copper	12.4		0.400	2.00	1	10/06/2021 11:01	WG1751419
Lead	6.44		0.208	0.500	1	10/06/2021 11:01	WG1751419
Nickel	23.0		0.132	2.00	1	10/06/2021 11:01	WG1751419
Selenium	U		0.764	2.00	1	10/06/2021 11:01	WG1751419
Silver	U		0.127	1.00	1	10/06/2021 11:01	WG1751419
Zinc	23.6		0.832	5.00	1	10/06/2021 11:01	WG1751419

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	0.347		0.0167	0.200	1	10/05/2021 13:10	WG1749750

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.33		0.100	1.00	5	10/05/2021 22:53	WG1751420

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	0.0642	B J	0.0217	0.100	1	10/06/2021 07:17	WG1751368
(S) a,a,a-Trifluorotoluene(FID)	*87.8*			*77.0-120*		*10/06/2021 07:17*	WG1751368

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/03/2021 06:40	WG1750440
Toluene	U		0.00130	0.00500	1	10/03/2021 06:40	WG1750440
Ethylbenzene	U		0.000737	0.00250	1	10/03/2021 06:40	WG1750440
Xylenes, Total	U		0.000880	0.00650	1	10/03/2021 06:40	WG1750440
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/03/2021 06:40	WG1750440
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	10/03/2021 06:40	WG1750440
(S) Toluene-d8	*107*			*75.0-131*		*10/03/2021 06:40*	WG1750440
(S) 4-Bromofluorobenzene	*89.6*			*67.0-138*		*10/03/2021 06:40*	WG1750440
(S) 1,2-Dichloroethane-d4	*91.2*			*70.0-130*		*10/03/2021 06:40*	WG1750440

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	10/06/2021 02:50	WG1751791
C28-C36 Motor Oil Range	1.15	J	0.274	4.00	1	10/06/2021 02:50	WG1751791
(S) o-Terphenyl	*44.5*			*18.0-148*		*10/06/2021 02:50*	WG1751791

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/06/2021 02:52	WG1751686
Acenaphthene	U		0.00209	0.00600	1	10/06/2021 02:52	WG1751686
Acenaphthylene	U		0.00216	0.00600	1	10/06/2021 02:52	WG1751686
Benzo(a)anthracene	U		0.00173	0.00600	1	10/06/2021 02:52	WG1751686
Benzo(a)pyrene	U		0.00179	0.00600	1	10/06/2021 02:52	WG1751686
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/06/2021 02:52	WG1751686
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/06/2021 02:52	WG1751686
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/06/2021 02:52	WG1751686
Chrysene	U		0.00232	0.00600	1	10/06/2021 02:52	WG1751686
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/06/2021 02:52	WG1751686
Fluoranthene	U		0.00227	0.00600	1	10/06/2021 02:52	WG1751686
Fluorene	U		0.00205	0.00600	1	10/06/2021 02:52	WG1751686
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/06/2021 02:52	WG1751686
Naphthalene	U		0.00408	0.0200	1	10/06/2021 02:52	WG1751686
Phenanthrene	U		0.00231	0.00600	1	10/06/2021 02:52	WG1751686
Pyrene	U		0.00200	0.00600	1	10/06/2021 02:52	WG1751686
1-Methylnaphthalene	U		0.00449	0.0200	1	10/06/2021 02:52	WG1751686
2-Methylnaphthalene	U		0.00427	0.0200	1	10/06/2021 02:52	WG1751686
2-Chloronaphthalene	U		0.00466	0.0200	1	10/06/2021 02:52	WG1751686
(S) p-Terphenyl-d14	*86.6*			*23.0-120*		*10/06/2021 02:52*	WG1751686
(S) Nitrobenzene-d5	*61.1*			*14.0-149*		*10/06/2021 02:52*	WG1751686
(S) 2-Fluorobiphenyl	*69.0*			*34.0-125*		*10/06/2021 02:52*	WG1751686

Method Blank (MB)

(MB) R3712997-1 10/06/21 10:08

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

L1410205-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1410205-02 10/06/21 10:24 • (DUP) R3712997-3 10/06/21 10:29

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

L1409974-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1409974-06 10/06/21 16:28 • (DUP) R3712997-4 10/06/21 16:34

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

Laboratory Control Sample (LCS)

(LCS) R3712997-2 10/06/21 10:14

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

L1410191-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1410191-02 10/06/21 17:15 • (MS) R3712997-5 10/06/21 17:20 • (MSD) R3712997-6 10/06/21 17:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	18.3	18.4	91.4	92.0	1	75.0-125			0.656	20

L1410191-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1410191-02 10/06/21 17:15 • (MS) R3712997-7 10/06/21 17:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	648	U	560	86.4	50	75.0-125	

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3712960-2 10/06/21 10:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
		su		%		%
pH		8.25	1	0.121		1

Sample Narrative:

DUP: 8.25 at 20.4C

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3712960-3 10/06/21 10:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
		su		%		%
pH		9.00	1	0.111		1

Sample Narrative:

DUP: 9 at 20.4C

Laboratory Control Sample (LCS)

(LCS) R3712960-1 10/06/21 10:22

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

Sample Narrative:

LCS: 10.09 at 20.3C

Method Blank (MB)

(MB) R3712714-1 10/05/21 17:26

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

L1410895-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1410895-04 10/05/21 17:26 • (DUP) R3712714-3 10/05/21 17:26

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1070	1070	1	0.0932		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1410909-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1410909-03 10/05/21 17:26 • (DUP) R3712714-4 10/05/21 17:26

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	157	157	1	0.000		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3712714-2 10/05/21 17:26

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

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3713121-1 10/06/21 10:23

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

Laboratory Control Sample (LCS)

(LCS) R3713121-2 10/06/21 10:25

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	103	103	80.0-120	
Cadmium	100	98.4	98.4	80.0-120	
Copper	100	102	102	80.0-120	
Lead	100	98.8	98.8	80.0-120	
Nickel	100	98.6	98.6	80.0-120	
Selenium	100	98.9	98.9	80.0-120	
Silver	20.0	19.0	95.1	80.0-120	
Zinc	100	97.5	97.5	80.0-120	

L1411748-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1411748-05 10/06/21 10:28 • (MS) R3713121-5 10/06/21 10:37 • (MSD) R3713121-6 10/06/21 10:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	221	370	280	148	58.8	1	75.0-125	J5	J3 J6	27.6	20
Cadmium	100	0.282	110	104	109	104	1	75.0-125			5.13	20
Copper	100	24.0	135	123	111	99.2	1	75.0-125			9.18	20
Lead	100	11.6	119	111	108	99.8	1	75.0-125			6.87	20
Nickel	100	22.5	130	120	108	97.4	1	75.0-125			8.20	20
Selenium	100	U	103	105	103	105	1	75.0-125			2.55	20
Silver	20.0	U	21.7	20.4	108	102	1	75.0-125			5.80	20
Zinc	100	49.8	147	131	96.9	81.0	1	75.0-125			11.5	20

Method Blank (MB)

(MB) R3712597-1 10/05/21 12:24

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) R3712597-2 10/05/21 12:27 • (LCSD) R3712597-3 10/05/21 12:29

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	0.942	1.01	94.2	101	80.0-120			6.57	20

Method Blank (MB)

(MB) R3712811-1 10/05/21 22:06

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

Laboratory Control Sample (LCS)

(LCS) R3712811-2 10/05/21 22:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	88.0	88.0	80.0-120	

L1411748-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1411748-05 10/05/21 22:13 • (MS) R3712811-5 10/05/21 22:23 • (MSD) R3712811-6 10/05/21 22:26

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	7.87	96.8	91.2	88.9	83.4	5	75.0-125			5.90	20

Method Blank (MB)

(MB) R3713850-2 10/06/21 05:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0370	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*90.0*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3713850-1 10/06/21 05:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.16	93.8	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*105*	*77.0-120*	

Method Blank (MB)

(MB) R3714164-3 10/03/21 04:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*105*			*75.0-131*
(S) 4-Bromofluorobenzene	*90.1*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*86.6*			*70.0-130*

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

(LCS) R3714164-1 10/03/21 02:45 • (LCSD) R3714164-2 10/03/21 03:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.124	0.123	99.2	98.4	70.0-123			0.810	20
Ethylbenzene	0.125	0.115	0.119	92.0	95.2	74.0-126			3.42	20
Toluene	0.125	0.116	0.121	92.8	96.8	75.0-121			4.22	20
1,2,4-Trimethylbenzene	0.125	0.114	0.120	91.2	96.0	70.0-126			5.13	20
1,3,5-Trimethylbenzene	0.125	0.118	0.120	94.4	96.0	73.0-127			1.68	20
Xylenes, Total	0.375	0.338	0.349	90.1	93.1	72.0-127			3.20	20
(S) Toluene-d8				*101*	*101*	*75.0-131*				
(S) 4-Bromofluorobenzene				*91.7*	*94.7*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*107*	*108*	*70.0-130*				

L1410912-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1410912-01 10/03/21 10:34 • (MS) R3714164-4 10/03/21 10:54 • (MSD) R3714164-5 10/03/21 11:13

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	U	0.0707	0.0517	56.6	41.4	1	10.0-149			31.0	37
Ethylbenzene	0.125	U	0.0676	0.0497	54.1	39.8	1	10.0-160			30.5	38
Toluene	0.125	U	0.0713	0.0553	57.0	44.2	1	10.0-156			25.3	38
1,2,4-Trimethylbenzene	0.125	U	0.0735	0.0543	58.8	43.4	1	10.0-160			30.0	36
1,3,5-Trimethylbenzene	0.125	U	0.0736	0.0540	58.9	43.2	1	10.0-160			30.7	38
Xylenes, Total	0.375	U	0.185	0.147	49.3	39.2	1	10.0-160			22.9	38
(S) Toluene-d8					*104*	*106*		*75.0-131*				
(S) 4-Bromofluorobenzene					*89.6*	*90.3*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*97.5*	*96.4*		*70.0-130*				

Method Blank (MB)

(MB) R3712877-1 10/06/21 01:45

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	*67.9*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3712877-2 10/06/21 01:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.0	78.0	50.0-150	
(S) o-Terphenyl			*74.9*	*18.0-148*	

L1409348-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1409348-04 10/06/21 07:06 • (MS) R3712877-3 10/06/21 07:19 • (MSD) R3712877-4 10/06/21 07:32

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	U	37.0	35.7	74.0	71.4	1	50.0-150			3.58	20
(S) o-Terphenyl					*66.7*	*60.1*		*18.0-148*				

Method Blank (MB)

(MB) R3712855-2 10/05/21 22:13

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	*66.4*			*14.0-149*
(S) 2-Fluorobiphenyl	*76.5*			*34.0-125*
(S) p-Terphenyl-d14	*91.5*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3712855-1 10/05/21 21:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0676	84.5	50.0-126	
Acenaphthene	0.0800	0.0663	82.9	50.0-120	
Acenaphthylene	0.0800	0.0740	92.5	50.0-120	
Benzo(a)anthracene	0.0800	0.0690	86.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0547	68.4	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0590	73.8	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0590	73.8	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0605	75.6	49.0-125	
Chrysene	0.0800	0.0654	81.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0601	75.1	47.0-125	
Fluoranthene	0.0800	0.0702	87.8	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3712855-1 10/05/21 21:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0686	85.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0627	78.4	46.0-125	
Naphthalene	0.0800	0.0664	83.0	50.0-120	
Phenanthrene	0.0800	0.0658	82.3	47.0-120	
Pyrene	0.0800	0.0660	82.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0691	86.4	51.0-121	
2-Methylnaphthalene	0.0800	0.0646	80.7	50.0-120	
2-Chloronaphthalene	0.0800	0.0651	81.4	50.0-120	
(S) Nitrobenzene-d5			*82.5*	*14.0-149*	
(S) 2-Fluorobiphenyl			*89.3*	*34.0-125*	
(S) p-Terphenyl-d14			*103*	*23.0-120*	

L1410355-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1410355-01 10/06/21 04:51 • (MS) R3712855-3 10/06/21 05:11 • (MSD) R3712855-4 10/06/21 05:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0768	U	0.0516	0.0533	67.2	69.4	1	10.0-145			3.24	30
Acenaphthene	0.0768	U	0.0530	0.0552	69.0	71.9	1	14.0-127			4.07	27
Benzo(a)anthracene	0.0768	0.00225	0.0553	0.0552	69.1	68.9	1	10.0-139			0.181	30
Acenaphthylene	0.0768	U	0.0574	0.0604	74.7	78.6	1	21.0-124			5.09	25
Benzo(a)pyrene	0.0768	U	0.0485	0.0492	63.2	64.1	1	10.0-141			1.43	31
Benzo(b)fluoranthene	0.0768	0.00351	0.0513	0.0484	62.2	58.5	1	10.0-140			5.82	36
Benzo(g,h,i)perylene	0.0768	U	0.0411	0.0470	53.5	61.2	1	10.0-140			13.4	33
Benzo(k)fluoranthene	0.0768	U	0.0464	0.0464	60.4	60.4	1	10.0-137			0.000	31
Chrysene	0.0768	0.00331	0.0541	0.0537	66.1	65.6	1	10.0-145			0.742	30
Dibenz(a,h)anthracene	0.0768	U	0.0444	0.0505	57.8	65.8	1	10.0-132			12.9	31
Fluoranthene	0.0768	0.00678	0.0598	0.0595	69.0	68.6	1	10.0-153			0.503	33
Fluorene	0.0768	U	0.0530	0.0557	69.0	72.5	1	11.0-130			4.97	29
Indeno(1,2,3-cd)pyrene	0.0768	0.00187	0.0441	0.0495	55.0	62.0	1	10.0-137			11.5	32
Naphthalene	0.0768	U	0.0580	0.0583	75.5	75.9	1	10.0-135			0.516	27
Phenanthrene	0.0768	0.00825	0.0565	0.0564	62.8	62.7	1	10.0-144			0.177	31
Pyrene	0.0768	0.00671	0.0582	0.0569	67.0	65.4	1	10.0-148			2.26	35
1-Methylnaphthalene	0.0768	0.00498	0.0598	0.0607	71.4	72.6	1	10.0-142			1.49	28
2-Methylnaphthalene	0.0768	0.00544	0.0563	0.0572	66.2	67.4	1	10.0-137			1.59	28
2-Chloronaphthalene	0.0768	U	0.0508	0.0529	66.1	68.9	1	29.0-120			4.05	24
(S) Nitrobenzene-d5					*64.0*	*66.2*		*14.0-149*				
(S) 2-Fluorobiphenyl					*71.0*	*72.8*		*34.0-125*				
(S) p-Terphenyl-d14					*78.8*	*79.7*		*23.0-120*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
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.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

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

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

MTJL Log-in Number Here: E209

ALL SHADED AREAS are for LAB USE ONLY

Company: Campos EPC	Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO
Address: 1401 Blake St. Denver, CO 80202	
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:	State: CO / County/City: Garfield / Time Zone Collected: [ ] PT [✓] MT [ ] CT [ ] ET
Phone: 970-619-0800 Email: same as above	Site/Facility ID #: / Compliance Monitoring? [ ] Yes [ ] No
Collected By (print): Evan Mason	Purchase Order #: / Quote #: / DW PWS ID #: / DW Location Code:
Collected By (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)

** 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 Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	Analyses: 8015 Table 910 (Full List)	Lab Profile/Line:
20211027-PSIL-WWALLO[illegible]	SS	Grab	9/27/21	1150				1	X	L1410897 -01

Container Preservative Type **: | Lab Project Manager:

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

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#: IR 01
Cooler 1 Temp Upon Receipt: 5 oC
Cooler 1 Therm Corr. Factor: +0 oC
Cooler 1 Corrected Temp: 5 oC
Comments:

Relinquished by/Company: (Signature)	Date/Time: 9/28/21 1330	Received by/Company: (Signature)	Date/Time: 9/28 1330	MTJL LAB USE ONLY
Relinquished by/Company: (Signature)	Date/Time: 9/28/21 1700	Received by/Company: (Signature)	Date/Time:	Table #: / Acctnum: / Template: / Prelogin: / PM: / PB:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time: 9/29/21 9:3	

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

ANALYTICAL REPORT

October 12, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1411884
Samples Received:	10/01/2021
Project Number:	PJ16
Description:	Well Pad

Report To: Steve Sivigliano
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

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

TABLE OF CONTENTS

SAMPLE SUMMARY

20210928-PJ16(NWALL)@14' L1411884-01 Solid

Collected by: Evan Mason
Collected date/time: 09/28/21 16:00
Received date/time: 10/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1752759	1	10/07/21 18:47	10/07/21 18:47	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1751996	1	10/06/21 00:28	10/06/21 23:02	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1753918	1	10/08/21 15:00	10/09/21 17:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1752461	1	10/07/21 01:50	10/07/21 05:46	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1752452	1	10/06/21 16:09	10/07/21 17:47	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1752751	1	10/06/21 17:08	10/07/21 18:08	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1752453	5	10/06/21 16:49	10/06/21 22:02	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1752467	1	10/05/21 13:53	10/06/21 20:13	MGF	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1751815	1	10/05/21 13:53	10/06/21 04:33	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1752981	1	10/07/21 20:59	10/08/21 13:55	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1752570	1	10/06/21 16:55	10/07/21 13:10	AAT	Mt. Juliet, TN

20210929-PJ16(NBASE)@20' L1411884-02 Solid

Collected by: Evan Mason
Collected date/time: 09/29/21 11:00
Received date/time: 10/01/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1752759	1	10/07/21 18:50	10/07/21 18:50	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1751996	1	10/06/21 00:28	10/06/21 23:08	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1752867	1	10/07/21 13:00	10/07/21 15:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1752461	1	10/07/21 01:50	10/07/21 05:46	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1752452	1	10/06/21 16:09	10/07/21 17:50	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1752751	1	10/06/21 17:08	10/07/21 18:11	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1752453	5	10/06/21 16:49	10/06/21 22:05	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1752497	1000	10/05/21 13:53	10/07/21 09:41	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1751815	80	10/05/21 13:53	10/06/21 07:02	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1752981	1	10/07/21 20:59	10/08/21 13:18	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1752570	1	10/06/21 16:55	10/07/21 13:28	AAT	Mt. Juliet, TN

CASE NARRATIVE

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

Chris Ward
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.830		1	10/07/2021 18:47	WG1752759

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/06/2021 23:02	WG1751996

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.26	T8	1	10/09/2021 17:00	WG1753918

Sample Narrative:
L1411884-01 WG1753918: 8.26 at 20.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	385		10.0	1	10/07/2021 05:46	WG1752461

Sample Narrative:
L1411884-01 WG1752461: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	184		0.0852	0.500	1	10/07/2021 17:47	WG1752452
Cadmium	0.138	J	0.0471	0.500	1	10/07/2021 17:47	WG1752452
Copper	6.22		0.400	2.00	1	10/07/2021 17:47	WG1752452
Lead	5.06		0.208	0.500	1	10/07/2021 17:47	WG1752452
Nickel	10.6		0.132	2.00	1	10/07/2021 17:47	WG1752452
Selenium	U		0.764	2.00	1	10/07/2021 17:47	WG1752452
Silver	U		0.127	1.00	1	10/07/2021 17:47	WG1752452
Zinc	14.9		0.832	5.00	1	10/07/2021 17:47	WG1752452

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	0.275		0.0167	0.200	1	10/07/2021 18:08	WG1752751

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.31		0.100	1.00	5	10/06/2021 22:02	WG1752453

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	0.0347	B J	0.0217	0.100	1	10/06/2021 20:13	WG1752467
(S) a,a,a-Trifluorotoluene(FID)	*91.1*			*77.0-120*		*10/06/2021 20:13*	WG1752467

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	10/06/2021 04:33	WG1751815
Toluene	U		0.00130	0.00500	1	10/06/2021 04:33	WG1751815
Ethylbenzene	U		0.000737	0.00250	1	10/06/2021 04:33	WG1751815
Xylenes, Total	0.00130	J	0.000880	0.00650	1	10/06/2021 04:33	WG1751815
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	10/06/2021 04:33	WG1751815
1,3,5-Trimethylbenzene	0.00448	J	0.00200	0.00500	1	10/06/2021 04:33	WG1751815
(S) Toluene-d8	*108*			*75.0-131*		*10/06/2021 04:33*	WG1751815
(S) 4-Bromofluorobenzene	*99.9*			*67.0-138*		*10/06/2021 04:33*	WG1751815
(S) 1,2-Dichloroethane-d4	*85.2*			*70.0-130*		*10/06/2021 04:33*	WG1751815

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	20.9		1.61	4.00	1	10/08/2021 13:55	WG1752981
C28-C36 Motor Oil Range	7.15		0.274	4.00	1	10/08/2021 13:55	WG1752981
(S) o-Terphenyl	*97.5*			*18.0-148*		*10/08/2021 13:55*	WG1752981

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/07/2021 13:10	WG1752570
Acenaphthene	U		0.00209	0.00600	1	10/07/2021 13:10	WG1752570
Acenaphthylene	U		0.00216	0.00600	1	10/07/2021 13:10	WG1752570
Benzo(a)anthracene	U		0.00173	0.00600	1	10/07/2021 13:10	WG1752570
Benzo(a)pyrene	U		0.00179	0.00600	1	10/07/2021 13:10	WG1752570
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/07/2021 13:10	WG1752570
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/07/2021 13:10	WG1752570
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/07/2021 13:10	WG1752570
Chrysene	U		0.00232	0.00600	1	10/07/2021 13:10	WG1752570
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/07/2021 13:10	WG1752570
Fluoranthene	U		0.00227	0.00600	1	10/07/2021 13:10	WG1752570
Fluorene	U		0.00205	0.00600	1	10/07/2021 13:10	WG1752570
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/07/2021 13:10	WG1752570
Naphthalene	U		0.00408	0.0200	1	10/07/2021 13:10	WG1752570
Phenanthrene	U		0.00231	0.00600	1	10/07/2021 13:10	WG1752570
Pyrene	U		0.00200	0.00600	1	10/07/2021 13:10	WG1752570
1-Methylnaphthalene	U		0.00449	0.0200	1	10/07/2021 13:10	WG1752570
2-Methylnaphthalene	U		0.00427	0.0200	1	10/07/2021 13:10	WG1752570
2-Chloronaphthalene	U		0.00466	0.0200	1	10/07/2021 13:10	WG1752570
(S) p-Terphenyl-d14	*104*			*23.0-120*		*10/07/2021 13:10*	WG1752570
(S) Nitrobenzene-d5	*71.1*			*14.0-149*		*10/07/2021 13:10*	WG1752570
(S) 2-Fluorobiphenyl	*74.8*			*34.0-125*		*10/07/2021 13:10*	WG1752570

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	3.30		1	10/07/2021 18:50	WG1752759

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/06/2021 23:08	WG1751996

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.19	T8	1	10/07/2021 15:00	WG1752867

Sample Narrative:

L1411884-02 WG1752867: 8.19 at 20C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2820		10.0	1	10/07/2021 05:46	WG1752461

Sample Narrative:

L1411884-02 WG1752461: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	138		0.0852	0.500	1	10/07/2021 17:50	WG1752452
Cadmium	0.303	J	0.0471	0.500	1	10/07/2021 17:50	WG1752452
Copper	15.2		0.400	2.00	1	10/07/2021 17:50	WG1752452
Lead	9.25		0.208	0.500	1	10/07/2021 17:50	WG1752452
Nickel	26.2		0.132	2.00	1	10/07/2021 17:50	WG1752452
Selenium	U		0.764	2.00	1	10/07/2021 17:50	WG1752452
Silver	U		0.127	1.00	1	10/07/2021 17:50	WG1752452
Zinc	24.3		0.832	5.00	1	10/07/2021 17:50	WG1752452

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	0.163	J	0.0167	0.200	1	10/07/2021 18:11	WG1752751

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.53		0.100	1.00	5	10/06/2021 22:05	WG1752453

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	1420		21.7	100	1000	10/07/2021 09:41	WG1752497
(S) a,a,a-Trifluorotoluene(FID)	*107*			*77.0-120*		*10/07/2021 09:41*	WG1752497

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	0.104		0.0374	0.0800	80	10/06/2021 07:02	WG1751815
Toluene	6.18		0.104	0.400	80	10/06/2021 07:02	WG1751815
Ethylbenzene	2.05		0.0590	0.200	80	10/06/2021 07:02	WG1751815
Xylenes, Total	35.9		0.0704	0.520	80	10/06/2021 07:02	WG1751815
1,2,4-Trimethylbenzene	8.68		0.126	0.400	80	10/06/2021 07:02	WG1751815
1,3,5-Trimethylbenzene	5.38		0.160	0.400	80	10/06/2021 07:02	WG1751815
(S) Toluene-d8	*107*			*75.0-131*		*10/06/2021 07:02*	WG1751815
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*10/06/2021 07:02*	WG1751815
(S) 1,2-Dichloroethane-d4	*99.1*			*70.0-130*		*10/06/2021 07:02*	WG1751815

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	277		1.61	4.00	1	10/08/2021 13:18	WG1752981
C28-C36 Motor Oil Range	1.08	J	0.274	4.00	1	10/08/2021 13:18	WG1752981
(S) o-Terphenyl	*74.1*			*18.0-148*		*10/08/2021 13:18*	WG1752981

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/07/2021 13:28	WG1752570
Acenaphthene	0.00781		0.00209	0.00600	1	10/07/2021 13:28	WG1752570
Acenaphthylene	U		0.00216	0.00600	1	10/07/2021 13:28	WG1752570
Benzo(a)anthracene	U		0.00173	0.00600	1	10/07/2021 13:28	WG1752570
Benzo(a)pyrene	U		0.00179	0.00600	1	10/07/2021 13:28	WG1752570
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/07/2021 13:28	WG1752570
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/07/2021 13:28	WG1752570
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/07/2021 13:28	WG1752570
Chrysene	U		0.00232	0.00600	1	10/07/2021 13:28	WG1752570
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/07/2021 13:28	WG1752570
Fluoranthene	U		0.00227	0.00600	1	10/07/2021 13:28	WG1752570
Fluorene	0.0163		0.00205	0.00600	1	10/07/2021 13:28	WG1752570
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/07/2021 13:28	WG1752570
Naphthalene	0.450		0.00408	0.0200	1	10/07/2021 13:28	WG1752570
Phenanthrene	0.00807		0.00231	0.00600	1	10/07/2021 13:28	WG1752570
Pyrene	U		0.00200	0.00600	1	10/07/2021 13:28	WG1752570
1-Methylnaphthalene	0.340		0.00449	0.0200	1	10/07/2021 13:28	WG1752570
2-Methylnaphthalene	0.947		0.00427	0.0200	1	10/07/2021 13:28	WG1752570
2-Chloronaphthalene	U		0.00466	0.0200	1	10/07/2021 13:28	WG1752570
(S) p-Terphenyl-d14	*112*			*23.0-120*		*10/07/2021 13:28*	WG1752570
(S) Nitrobenzene-d5	*0.000*	J2		*14.0-149*		*10/07/2021 13:28*	WG1752570
(S) 2-Fluorobiphenyl	*75.2*			*34.0-125*		*10/07/2021 13:28*	WG1752570

Sample Narrative:

L1411884-02 WG1752570: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3712998-1 10/06/21 10:45

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

L1411507-45 Original Sample (OS) • Duplicate (DUP)

(OS) L1411507-45 10/06/21 22:15 • (DUP) R3712998-3 10/06/21 22:20

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

L1412287-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1412287-01 10/07/21 00:02 • (DUP) R3712998-8 10/07/21 00:08

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	0.752	0.751	1	0.222	J	20

Laboratory Control Sample (LCS)

(LCS) R3712998-2 10/06/21 10:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	9.84	98.4	80.0-120	

L1412011-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412011-01 10/06/21 23:26 • (MS) R3712998-4 10/06/21 23:31 • (MSD) R3712998-5 10/06/21 23:47

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	24.4	45.6	44.3	106	99.7	1	75.0-125	E	E	2.93	20

L1412011-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1412011-01 10/06/21 23:26 • (MS) R3712998-6 10/06/21 23:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	655	24.4	689	101	50	75.0-125	

L1411498-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1411498-10 10/07/21 15:00 • (DUP) R3713727-2 10/07/21 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.67	7.63	1	0.523		1

Sample Narrative:

OS: 7.67 at 20.2C

DUP: 7.63 at 20.3C

L1411884-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1411884-02 10/07/21 15:00 • (DUP) R3713727-3 10/07/21 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.19	8.16	1	0.367		1

Sample Narrative:

OS: 8.19 at 20C

DUP: 8.16 at 20.4C

Laboratory Control Sample (LCS)

(LCS) R3713727-1 10/07/21 15:00

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: 10.04 at 20C

L1411870-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1411870-01 10/09/21 17:00 • (DUP) R3714396-2 10/09/21 17:00

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

Sample Narrative:

OS: 8.33 at 20.7C

DUP: 8.32 at 21.3C

L1412349-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1412349-03 10/09/21 17:00 • (DUP) R3714396-3 10/09/21 17:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.40	8.41	1	0.119		1

Sample Narrative:

OS: 8.4 at 20.9C

DUP: 8.41 at 20.7C

Laboratory Control Sample (LCS)

(LCS) R3714396-1 10/09/21 17:00

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: 10.03 at 21.2C

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

Method Blank (MB)

(MB) R3713366-1 10/07/21 05:46

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

L1411915-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1411915-02 10/07/21 05:46 • (DUP) R3713366-3 10/07/21 05:46

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2180	2090	1	4.07		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1411945-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1411945-01 10/07/21 05:46 • (DUP) R3713366-4 10/07/21 05:46

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1110	1100	1	0.818		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3713366-2 10/07/21 05:46

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	276	103	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3713922-1 10/07/21 17:06

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

Laboratory Control Sample (LCS)

(LCS) R3713922-2 10/07/21 17:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.0	97.0	80.0-120	
Cadmium	100	92.2	92.2	80.0-120	
Copper	100	98.4	98.4	80.0-120	
Lead	100	92.1	92.1	80.0-120	
Nickel	100	92.3	92.3	80.0-120	
Selenium	100	89.6	89.6	80.0-120	
Silver	20.0	18.1	90.5	80.0-120	
Zinc	100	91.0	91.0	80.0-120	

L1411649-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1411649-03 10/07/21 17:12 • (MS) R3713922-5 10/07/21 17:21 • (MSD) R3713922-6 10/07/21 17:24

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	173	249	261	75.8	87.8	1	75.0-125			4.70	20
Cadmium	100	0.482	94.5	96.6	94.0	96.1	1	75.0-125			2.22	20
Copper	100	17.9	113	115	94.7	96.6	1	75.0-125			1.72	20
Lead	100	12.2	105	108	92.5	95.4	1	75.0-125			2.72	20
Nickel	100	15.6	109	111	93.4	95.7	1	75.0-125			2.02	20
Selenium	100	U	78.5	81.2	78.5	81.2	1	75.0-125			3.38	20
Silver	20.0	U	18.4	18.6	91.8	93.1	1	75.0-125			1.46	20
Zinc	100	53.5	130	134	77.0	80.6	1	75.0-125			2.76	20

Method Blank (MB)

(MB) R3713954-1 10/07/21 17:47

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) R3713954-2 10/07/21 17:49 • (LCSD) R3713954-3 10/07/21 17:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.968	0.974	96.8	97.4	80.0-120			0.599	20

Method Blank (MB)

(MB) R3713327-1 10/06/21 21:10

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) R3713327-2 10/06/21 21:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.2	95.2	80.0-120	

L1411649-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1411649-03 10/06/21 21:17 • (MS) R3713327-5 10/06/21 21:27 • (MSD) R3713327-6 10/06/21 21:30

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	4.76	90.9	93.1	86.1	88.3	5	75.0-125			2.39	20

Method Blank (MB)

(MB) R3713480-2 10/06/21 17:19

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0320	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*89.3*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3713480-1 10/06/21 16:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.60	102	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*116*	*77.0-120*	

Method Blank (MB)

(MB) R3715010-2 10/07/21 00:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	*113*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3715010-1 10/06/21 23:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.59	102	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*77.0-120*	

Method Blank (MB)

(MB) R3713140-3 10/06/21 00:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*109*			*75.0-131*
(S) 4-Bromofluorobenzene	*100*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*91.3*			*70.0-130*

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

(LCS) R3713140-1 10/05/21 23:35 • (LCSD) R3713140-2 10/06/21 00:31

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.128	0.117	102	93.6	70.0-123			8.98	20
Ethylbenzene	0.125	0.132	0.125	106	100	74.0-126			5.45	20
Toluene	0.125	0.133	0.124	106	99.2	75.0-121			7.00	20
1,2,4-Trimethylbenzene	0.125	0.129	0.115	103	92.0	70.0-126			11.5	20
1,3,5-Trimethylbenzene	0.125	0.133	0.120	106	96.0	73.0-127			10.3	20
Xylenes, Total	0.375	0.399	0.366	106	97.6	72.0-127			8.63	20
(S) Toluene-d8				*106*	*107*	*75.0-131*				
(S) 4-Bromofluorobenzene				*104*	*102*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*96.9*	*97.1*	*70.0-130*				

L1407571-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1407571-01 10/06/21 05:29 • (MS) R3713140-4 10/06/21 07:21 • (MSD) R3713140-5 10/06/21 07:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	2.30	U	1.12	2.67	48.7	116	20	10.0-149		J3	81.8	37
Ethylbenzene	2.30	1.13	2.22	3.94	47.4	122	20	10.0-160		J3	55.8	38
Toluene	2.30	U	1.10	2.67	47.8	116	20	10.0-156		J3	83.3	38
1,2,4-Trimethylbenzene	2.30	11.3	11.9	14.5	26.1	139	20	10.0-160			19.7	36
1,3,5-Trimethylbenzene	2.30	3.45	5.32	6.61	81.3	137	20	10.0-160			21.6	38
Xylenes, Total	6.90	6.14	9.53	14.5	49.1	121	20	10.0-160		J3	41.4	38
(S) Toluene-d8					*105*	*103*		*75.0-131*				
(S) 4-Bromofluorobenzene					*105*	*103*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*95.9*	*97.1*		*70.0-130*				

Method Blank (MB)

(MB) R3714163-1 10/08/21 09:36

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
(S) o-Terphenyl	*88.0*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3714163-2 10/08/21 09:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.9	79.8	50.0-150	
(S) o-Terphenyl			*98.8*	*18.0-148*	

L1412356-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412356-01 10/08/21 11:02 • (MS) R3714163-3 10/08/21 11:14 • (MSD) R3714163-4 10/08/21 11:27

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.7	1.88	38.3	47.4	73.3	91.4	1	50.0-150		J3	21.2	20
(S) o-Terphenyl					*94.7*	*114*		*18.0-148*				

Method Blank (MB)

(MB) R3713653-2 10/07/21 06:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Acenaphthylene	U		0.00216	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(g,h,i)perylene	U		0.00177	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Phenanthrene	U		0.00231	0.00600
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
2-Chloronaphthalene	U		0.00466	0.0200
(S) Nitrobenzene-d5	*82.5*			*14.0-149*
(S) 2-Fluorobiphenyl	*80.7*			*34.0-125*
(S) p-Terphenyl-d14	*115*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3713653-1 10/07/21 06:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0748	93.5	50.0-126	
Acenaphthene	0.0800	0.0722	90.3	50.0-120	
Acenaphthylene	0.0800	0.0791	98.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0746	93.3	45.0-120	
Benzo(a)pyrene	0.0800	0.0661	82.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0679	84.9	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0644	80.5	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0691	86.4	49.0-125	
Chrysene	0.0800	0.0735	91.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0644	80.5	47.0-125	
Fluoranthene	0.0800	0.0779	97.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3713653-1 10/07/21 06:37

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0735	91.9	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0673	84.1	46.0-125	
Naphthalene	0.0800	0.0721	90.1	50.0-120	
Phenanthrene	0.0800	0.0703	87.9	47.0-120	
Pyrene	0.0800	0.0752	94.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0749	93.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0704	88.0	50.0-120	
2-Chloronaphthalene	0.0800	0.0695	86.9	50.0-120	
(S) Nitrobenzene-d5			*93.5*	*14.0-149*	
(S) 2-Fluorobiphenyl			*87.8*	*34.0-125*	
(S) p-Terphenyl-d14			*117*	*23.0-120*	

L1411641-34 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1411641-34 10/07/21 09:17 • (MS) R3713653-3 10/07/21 09:35 • (MSD) R3713653-4 10/07/21 09:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0788	U	0.0486	0.0564	61.7	71.2	1	10.0-145			14.9	30
Acenaphthene	0.0788	U	0.0518	0.0559	65.7	70.6	1	14.0-127			7.61	27
Acenaphthylene	0.0788	U	0.0585	0.0648	74.2	81.8	1	21.0-124			10.2	25
Benzo(a)anthracene	0.0788	U	0.0494	0.0581	62.7	73.4	1	10.0-139			16.2	30
Benzo(a)pyrene	0.0788	U	0.0503	0.0585	63.8	73.9	1	10.0-141			15.1	31
Benzo(b)fluoranthene	0.0788	U	0.0455	0.0517	57.7	65.3	1	10.0-140			12.8	36
Benzo(g,h,i)perylene	0.0788	U	0.0481	0.0569	61.0	71.8	1	10.0-140			16.8	33
Benzo(k)fluoranthene	0.0788	U	0.0487	0.0589	61.8	74.4	1	10.0-137			19.0	31
Chrysene	0.0788	U	0.0539	0.0631	68.4	79.7	1	10.0-145			15.7	30
Dibenz(a,h)anthracene	0.0788	U	0.0467	0.0551	59.3	69.6	1	10.0-132			16.5	31
Fluoranthene	0.0788	U	0.0488	0.0562	61.9	71.0	1	10.0-153			14.1	33
Fluorene	0.0788	U	0.0521	0.0553	66.1	69.8	1	11.0-130			5.96	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0470	0.0549	59.6	69.3	1	10.0-137			15.5	32
Naphthalene	0.0788	U	0.0587	0.0957	74.5	121	1	10.0-135		J3	47.9	27
Phenanthrene	0.0788	U	0.0464	0.0550	58.9	69.4	1	10.0-144			17.0	31
Pyrene	0.0788	U	0.0500	0.0587	63.5	74.1	1	10.0-148			16.0	35
1-Methylnaphthalene	0.0788	U	0.0594	0.0755	75.4	95.3	1	10.0-142			23.9	28
2-Methylnaphthalene	0.0788	U	0.0556	0.0663	70.6	83.7	1	10.0-137			17.6	28
2-Chloronaphthalene	0.0788	U	0.0511	0.0566	64.8	71.5	1	29.0-120			10.2	24
(S) Nitrobenzene-d5					*81.9*	*83.5*		*14.0-149*				
(S) 2-Fluorobiphenyl					*70.5*	*77.1*		*34.0-125*				
(S) p-Terphenyl-d14					*75.8*	*113*		*23.0-120*				

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
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.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

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

LAB USE ONLY- Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here: D174

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 Well Pad	State: CO County/City: /Garfield Time Zone Collected: [ ] PT [✓] MT [ ] CT [ ] ET

Phone: 970-819-0800 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: [✓] 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: ____

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 ____

* 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)

Analyses: COGCC Table 915-1 (Full List)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start) Date	Collected Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	COGCC Table 915-1 (Full List)	Lab Sample # / Comments
20210928-PJ16(WWALL)@14'	SS	Grab	9/28/21	1600				2	X	1411 [illegible] 21
20210929-PJ16(WBASE)@20'	SS	↓	9/29/21	1100				2	X	02

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

Packing Material Used:

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 N NA
Therm ID#: ____
Cooler 1 Temp Upon Receipt: ____ oC
Cooler 1 Therm Corr. Factor: ____ oC
Cooler 1 Corrected Temp: ____ oC
Comments: 1974 3.1+0=3.1

Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time:	MTJL LAB USE ONLY
[signature]	9/29/21 1230	[signature]		Table #: Acctnum:
[signature]	9/29/21 1500			Template: Prelogin:
		Bailee Pelan [signature]	10/1/21 0900	PM: PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

ANALYTICAL REPORT

October 15, 2021

Caerus Oil and Gas

Sample Delivery Group:	L1412431
Samples Received:	10/02/2021
Project Number:	PJ16 WELL PAD
Description:	PJ16 WELL PAD
Site:	PJ16
Report To:	Steve Sivigliano 143 Diamond Avenue Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward

Chris Ward
Project Manager

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

TABLE OF CONTENTS

20210929-PJ16(PORBASE)@20' L1412431-01 Solid

Collected by: Evan Mason
Collected date/time: 09/29/21 14:00
Received date/time: 10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:36	10/10/21 21:36	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 12:31	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:14	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 12:50	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:32	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1753172	200	10/06/21 19:06	10/07/21 21:05	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1752862	20	10/06/21 19:06	10/07/21 13:20	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754388	1	10/10/21 09:01	10/10/21 22:47	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1753616	1	10/08/21 08:43	10/11/21 15:07	LEA	Mt. Juliet, TN

20210929-PJ16(WBASE)@20' L1412431-02 Solid

Collected by: Evan Mason
Collected date/time: 09/29/21 15:00
Received date/time: 10/02/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1753640	1	10/10/21 21:45	10/10/21 21:45	EL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1753456	1	10/07/21 15:00	10/13/21 12:36	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1755374	1	10/12/21 14:00	10/12/21 16:00	AW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1754492	1	10/10/21 17:26	10/11/21 13:37	AMH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1753588	1	10/08/21 08:25	10/09/21 20:23	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1753638	1	10/08/21 21:44	10/11/21 12:53	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1753590	5	10/08/21 08:34	10/08/21 19:36	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1753172	200	10/06/21 19:06	10/07/21 21:27	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1752862	20	10/06/21 19:06	10/07/21 13:40	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1754388	1	10/10/21 09:01	10/10/21 22:59	JN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1753616	1	10/08/21 08:43	10/11/21 15:24	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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	32.1		1	10/10/2021 21:36	WG1753640

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/13/2021 12:31	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.65	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412431-01 WG1755374: 8.65 at 21.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	4970		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412431-01 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	292		0.0852	0.500	1	10/09/2021 20:14	WG1753588
Cadmium	0.239	J	0.0471	0.500	1	10/09/2021 20:14	WG1753588
Copper	24.7		0.400	2.00	1	10/09/2021 20:14	WG1753588
Lead	8.85		0.208	0.500	1	10/09/2021 20:14	WG1753588
Nickel	36.2		0.132	2.00	1	10/09/2021 20:14	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:14	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:14	WG1753588
Zinc	47.2		0.832	5.00	1	10/09/2021 20:14	WG1753588

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	0.309		0.0167	0.200	1	10/11/2021 12:50	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	8.90		0.100	1.00	5	10/08/2021 19:32	WG1753590

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	1350		4.34	20.0	200	10/07/2021 21:05	WG1753172
(S) a,a,a-Trifluorotoluene(FID)	*97.6*			*77.0-120*		*10/07/2021 21:05*	WG1753172

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	0.0842		0.00934	0.0200	20	10/07/2021 13:20	WG1752862
Toluene	9.24		0.0260	0.100	20	10/07/2021 13:20	WG1752862
Ethylbenzene	3.43		0.0147	0.0500	20	10/07/2021 13:20	WG1752862
Xylenes, Total	65.0		0.0176	0.130	20	10/07/2021 13:20	WG1752862
1,2,4-Trimethylbenzene	17.7		0.0316	0.100	20	10/07/2021 13:20	WG1752862
1,3,5-Trimethylbenzene	15.4		0.0400	0.100	20	10/07/2021 13:20	WG1752862
(S) Toluene-d8	*104*			*75.0-131*		*10/07/2021 13:20*	WG1752862
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*10/07/2021 13:20*	WG1752862
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*10/07/2021 13:20*	WG1752862

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	152		1.61	4.00	1	10/10/2021 22:47	WG1754388
C28-C36 Motor Oil Range	5.49		0.274	4.00	1	10/10/2021 22:47	WG1754388
(S) o-Terphenyl	*60.2*			*18.0-148*		*10/10/2021 22:47*	WG1754388

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/11/2021 15:07	WG1753616
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 15:07	WG1753616
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 15:07	WG1753616
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 15:07	WG1753616
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 15:07	WG1753616
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 15:07	WG1753616
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 15:07	WG1753616
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 15:07	WG1753616
Chrysene	U		0.00232	0.00600	1	10/11/2021 15:07	WG1753616
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 15:07	WG1753616
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 15:07	WG1753616
Fluorene	0.0103		0.00205	0.00600	1	10/11/2021 15:07	WG1753616
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 15:07	WG1753616
Naphthalene	0.299		0.00408	0.0200	1	10/11/2021 15:07	WG1753616
Phenanthrene	0.00522	J	0.00231	0.00600	1	10/11/2021 15:07	WG1753616
Pyrene	U		0.00200	0.00600	1	10/11/2021 15:07	WG1753616
1-Methylnaphthalene	0.205		0.00449	0.0200	1	10/11/2021 15:07	WG1753616
2-Methylnaphthalene	0.582		0.00427	0.0200	1	10/11/2021 15:07	WG1753616
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 15:07	WG1753616
(S) p-Terphenyl-d14	*92.9*			*23.0-120*		*10/11/2021 15:07*	WG1753616
(S) Nitrobenzene-d5	*0.000*	J2		*14.0-149*		*10/11/2021 15:07*	WG1753616
(S) 2-Fluorobiphenyl	*75.6*			*34.0-125*		*10/11/2021 15:07*	WG1753616

Sample Narrative:

L1412431-01 WG1753616: Surrogate failure due to matrix interference

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	3.72		1	10/10/2021 21:45	WG1753640

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/13/2021 12:36	WG1753456

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.92	T8	1	10/12/2021 16:00	WG1755374

Sample Narrative:

L1412431-02 WG1755374: 7.92 at 21.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	3550		10.0	1	10/11/2021 13:37	WG1754492

Sample Narrative:

L1412431-02 WG1754492: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	191		0.0852	0.500	1	10/09/2021 20:23	WG1753588
Cadmium	0.226	J	0.0471	0.500	1	10/09/2021 20:23	WG1753588
Copper	22.9		0.400	2.00	1	10/09/2021 20:23	WG1753588
Lead	7.32		0.208	0.500	1	10/09/2021 20:23	WG1753588
Nickel	34.9		0.132	2.00	1	10/09/2021 20:23	WG1753588
Selenium	U		0.764	2.00	1	10/09/2021 20:23	WG1753588
Silver	U		0.127	1.00	1	10/09/2021 20:23	WG1753588
Zinc	38.3		0.832	5.00	1	10/09/2021 20:23	WG1753588

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	0.135	J	0.0167	0.200	1	10/11/2021 12:53	WG1753638

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.53		0.100	1.00	5	10/08/2021 19:36	WG1753590

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	895		4.34	20.0	200	10/07/2021 21:27	WG1753172
(S) a,a,a-Trifluorotoluene(FID)	*87.5*			*77.0-120*		*10/07/2021 21:27*	WG1753172

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	0.645		0.00934	0.0200	20	10/07/2021 13:40	WG1752862
Toluene	11.8		0.0260	0.100	20	10/07/2021 13:40	WG1752862
Ethylbenzene	2.39		0.0147	0.0500	20	10/07/2021 13:40	WG1752862
Xylenes, Total	40.4		0.0176	0.130	20	10/07/2021 13:40	WG1752862
1,2,4-Trimethylbenzene	8.51		0.0316	0.100	20	10/07/2021 13:40	WG1752862
1,3,5-Trimethylbenzene	7.42		0.0400	0.100	20	10/07/2021 13:40	WG1752862
(S) Toluene-d8	*108*			*75.0-131*		*10/07/2021 13:40*	WG1752862
(S) 4-Bromofluorobenzene	*99.3*			*67.0-138*		*10/07/2021 13:40*	WG1752862
(S) 1,2-Dichloroethane-d4	*103*			*70.0-130*		*10/07/2021 13:40*	WG1752862

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	316		1.61	4.00	1	10/10/2021 22:59	WG1754388
C28-C36 Motor Oil Range	3.55	B J	0.274	4.00	1	10/10/2021 22:59	WG1754388
(S) o-Terphenyl	*67.6*			*18.0-148*		*10/10/2021 22:59*	WG1754388

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	10/11/2021 15:24	WG1753616
Acenaphthene	U		0.00209	0.00600	1	10/11/2021 15:24	WG1753616
Acenaphthylene	U		0.00216	0.00600	1	10/11/2021 15:24	WG1753616
Benzo(a)anthracene	U		0.00173	0.00600	1	10/11/2021 15:24	WG1753616
Benzo(a)pyrene	U		0.00179	0.00600	1	10/11/2021 15:24	WG1753616
Benzo(b)fluoranthene	U		0.00153	0.00600	1	10/11/2021 15:24	WG1753616
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	10/11/2021 15:24	WG1753616
Benzo(k)fluoranthene	U		0.00215	0.00600	1	10/11/2021 15:24	WG1753616
Chrysene	U		0.00232	0.00600	1	10/11/2021 15:24	WG1753616
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	10/11/2021 15:24	WG1753616
Fluoranthene	U		0.00227	0.00600	1	10/11/2021 15:24	WG1753616
Fluorene	0.0182		0.00205	0.00600	1	10/11/2021 15:24	WG1753616
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	10/11/2021 15:24	WG1753616
Naphthalene	0.566	V	0.00408	0.0200	1	10/11/2021 15:24	WG1753616
Phenanthrene	0.00872		0.00231	0.00600	1	10/11/2021 15:24	WG1753616
Pyrene	U		0.00200	0.00600	1	10/11/2021 15:24	WG1753616
1-Methylnaphthalene	0.374	V	0.00449	0.0200	1	10/11/2021 15:24	WG1753616
2-Methylnaphthalene	1.07	V	0.00427	0.0200	1	10/11/2021 15:24	WG1753616
2-Chloronaphthalene	U		0.00466	0.0200	1	10/11/2021 15:24	WG1753616
(S) p-Terphenyl-d14	*104*			*23.0-120*		*10/11/2021 15:24*	WG1753616
(S) Nitrobenzene-d5	*0.000*	J2		*14.0-149*		*10/11/2021 15:24*	WG1753616
(S) 2-Fluorobiphenyl	*78.6*			*34.0-125*		*10/11/2021 15:24*	WG1753616

Sample Narrative:

L1412431-02 WG1753616: Surrogate failure due to matrix interference

Method Blank (MB)

(MB) R3716532-1 10/13/21 11:28

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

L1412766-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1412766-05 10/13/21 13:12 • (DUP) R3716532-7 10/13/21 13:17

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

L1411915-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1411915-03 10/13/21 13:33 • (DUP) R3716532-8 10/13/21 13:38

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

Laboratory Control Sample (LCS)

(LCS) R3716532-2 10/13/21 11:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	11.0	110	80.0-120	

L1412425-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412425-01 10/13/21 12:00 • (MS) R3716532-3 10/13/21 12:05 • (MSD) R3716532-4 10/13/21 12:10

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 %
Hexavalent Chromium	20.0	U	15.8	17.8	79.2	88.8	1	75.0-125			11.4	20

L1412425-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1412425-01 10/13/21 12:00 • (MS) R3716532-5 10/13/21 12:15

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	659	U	686	104	50	75.0-125	

L1412431-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1412431-01 10/12/21 16:00 • (DUP) R3715445-2 10/12/21 16:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.65	8.60	1	0.580		1

Sample Narrative:

OS: 8.65 at 21.3C

DUP: 8.6 at 21.3C

Laboratory Control Sample (LCS)

(LCS) R3715445-1 10/12/21 16:00

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

Sample Narrative:

LCS: 10.05 at 20.1C

Method Blank (MB)

(MB) R3714797-1 10/11/21 13:37

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

Laboratory Control Sample (LCS)

(LCS) R3714797-2 10/11/21 13:37

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	271	101	85.0-115	

Sample Narrative:
LCS: at 25C

Method Blank (MB)

(MB) R3714491-1 10/09/21 19:12

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

Laboratory Control Sample (LCS)

(LCS) R3714491-2 10/09/21 19:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	99.9	99.9	80.0-120	
Cadmium	100	95.5	95.5	80.0-120	
Copper	100	93.4	93.4	80.0-120	
Lead	100	95.1	95.1	80.0-120	
Nickel	100	97.4	97.4	80.0-120	
Selenium	100	96.7	96.7	80.0-120	
Silver	20.0	18.6	92.9	80.0-120	
Zinc	100	93.9	93.9	80.0-120	

L1412766-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412766-03 10/09/21 19:18 • (MS) R3714491-5 10/09/21 19:26 • (MSD) R3714491-6 10/09/21 19:29

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	896	619	547	0.000	0.000	1	75.0-125	V	V	12.4	20
Cadmium	100	0.208	105	102	105	102	1	75.0-125			2.81	20
Copper	100	12.6	120	114	107	101	1	75.0-125			5.26	20
Lead	100	19.4	127	120	107	101	1	75.0-125			5.15	20
Nickel	100	10.4	116	113	106	102	1	75.0-125			3.26	20
Selenium	100	U	105	101	105	101	1	75.0-125			3.96	20
Silver	20.0	U	20.9	20.4	105	102	1	75.0-125			2.79	20
Zinc	100	36.1	145	136	109	100	1	75.0-125			5.95	20

Method Blank (MB)

(MB) R3714834-1 10/11/21 12:13

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) R3714834-2 10/11/21 12:16 • (LCSD) R3714834-3 10/11/21 12:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.979	0.993	97.9	99.3	80.0-120			1.39	20

Method Blank (MB)

(MB) R3714238-1 10/08/21 18:13

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) R3714238-2 10/08/21 18:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	97.5	97.5	80.0-120	

L1412766-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412766-03 10/08/21 18:20 • (MS) R3714238-5 10/08/21 18:30 • (MSD) R3714238-6 10/08/21 18:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	2.88	108	108	105	105	5	75.0-125			0.288	20

Method Blank (MB)

(MB) R3714665-3 10/07/21 14:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.543	2.50
(S) a,a,a-Trifluorotoluene(FID)	*114*			*77.0-120*

Laboratory Control Sample (LCS)

(LCS) R3714665-1 10/07/21 12:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.46	99.3	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*102*	*77.0-120*	

L1414061-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1414061-01 10/07/21 20:00 • (MS) R3714665-6 10/08/21 02:42 • (MSD) R3714665-7 10/08/21 03:04

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	109	U	53.7	51.1	65.1	61.9	25	10.0-151			4.96	28
(S) a,a,a-Trifluorotoluene(FID)					*102*	*99.5*		*77.0-120*				

Method Blank (MB)

(MB) R3715451-3 10/07/21 06:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	*109*			*75.0-131*
(S) 4-Bromofluorobenzene	*88.9*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*89.1*			*70.0-130*

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

(LCS) R3715451-1 10/07/21 05:29 • (LCSD) R3715451-2 10/07/21 05:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.121	0.122	96.8	97.6	70.0-123			0.823	20
Ethylbenzene	0.125	0.114	0.115	91.2	92.0	74.0-126			0.873	20
Toluene	0.125	0.113	0.121	90.4	96.8	75.0-121			6.84	20
1,2,4-Trimethylbenzene	0.125	0.118	0.115	94.4	92.0	70.0-126			2.58	20
1,3,5-Trimethylbenzene	0.125	0.115	0.119	92.0	95.2	73.0-127			3.42	20
Xylenes, Total	0.375	0.323	0.324	86.1	86.4	72.0-127			0.309	20
(S) Toluene-d8				*98.4*	*104*	*75.0-131*				
(S) 4-Bromofluorobenzene				*96.3*	*90.3*	*67.0-138*				
(S) 1,2-Dichloroethane-d4				*106*	*103*	*70.0-130*				

L1412425-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412425-01 10/07/21 07:26 • (MS) R3715451-4 10/07/21 13:59 • (MSD) R3715451-5 10/07/21 14:19

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 %
Benzene	0.125	0.0172	0.142	0.147	99.8	104	1	10.0-149			3.46	37
Ethylbenzene	0.125	U	0.116	0.116	92.8	92.8	1	10.0-160			0.000	38
1,2,4-Trimethylbenzene	0.125	U	0.114	0.118	91.2	94.4	1	10.0-160			3.45	36
1,3,5-Trimethylbenzene	0.125	U	0.114	0.120	91.2	96.0	1	10.0-160			5.13	38
Toluene	0.125	0.0104	0.133	0.135	98.1	99.7	1	10.0-156			1.49	38
Xylenes, Total	0.375	U	0.316	0.312	84.3	83.2	1	10.0-160			1.27	38
(S) Toluene-d8					*105*	*105*		*75.0-131*				
(S) 4-Bromofluorobenzene					*85.6*	*85.9*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*93.2*	*94.8*		*70.0-130*				

Method Blank (MB)

(MB) R3714569-1 10/10/21 21:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	0.438	J	0.274	4.00
(S) o-Terphenyl	*74.3*			*18.0-148*

Laboratory Control Sample (LCS)

(LCS) R3714569-2 10/10/21 21:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	39.2	78.4	50.0-150	
(S) o-Terphenyl			*81.2*	*18.0-148*	

L1412494-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412494-03 10/10/21 21:57 • (MS) R3714569-3 10/10/21 22:09 • (MSD) R3714569-4 10/10/21 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 %
C10-C28 Diesel Range	50.0	U	38.6	32.8	77.2	65.6	1	50.0-150			16.2	20
(S) o-Terphenyl					*70.9*	*62.9*		*18.0-148*				

Method Blank (MB)

(MB) R3714750-2 10/11/21 08:44

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	*109*			*14.0-149*
(S) 2-Fluorobiphenyl	*94.6*			*34.0-125*
(S) p-Terphenyl-d14	*126*	J1		*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3714750-1 10/11/21 08:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0686	85.8	50.0-126	
Acenaphthene	0.0800	0.0739	92.4	50.0-120	
Acenaphthylene	0.0800	0.0710	88.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0691	86.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0614	76.8	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0827	103	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0765	95.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0824	103	49.0-125	
Chrysene	0.0800	0.0781	97.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0733	91.6	47.0-125	
Fluoranthene	0.0800	0.0758	94.8	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3714750-1 10/11/21 08:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0776	97.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0686	85.8	46.0-125	
Naphthalene	0.0800	0.0721	90.1	50.0-120	
Phenanthrene	0.0800	0.0773	96.6	47.0-120	
Pyrene	0.0800	0.0780	97.5	43.0-123	
1-Methylnaphthalene	0.0800	0.0732	91.5	51.0-121	
2-Methylnaphthalene	0.0800	0.0707	88.4	50.0-120	
2-Chloronaphthalene	0.0800	0.0736	92.0	50.0-120	
(S) Nitrobenzene-d5			*115*	*14.0-149*	
(S) 2-Fluorobiphenyl			*97.2*	*34.0-125*	
(S) p-Terphenyl-d14			*119*	*23.0-120*	

L1412431-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412431-02 10/11/21 15:24 • (MS) R3714750-3 10/11/21 15:41 • (MSD) R3714750-4 10/11/21 15:59

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	U	0.0577	0.0504	74.7	67.0	1	10.0-145			13.5	30
Acenaphthene	0.0772	U	0.0668	0.0590	86.5	78.5	1	14.0-127			12.4	27
Acenaphthylene	0.0772	U	0.0613	0.0540	79.4	71.8	1	21.0-124			12.7	25
Benzo(a)anthracene	0.0772	U	0.0587	0.0512	76.0	68.1	1	10.0-139			13.6	30
Benzo(a)pyrene	0.0772	U	0.0584	0.0523	75.6	69.5	1	10.0-141			11.0	31
Benzo(b)fluoranthene	0.0772	U	0.0656	0.0583	85.0	77.5	1	10.0-140			11.8	36
Benzo(g,h,i)perylene	0.0772	U	0.0410	0.0345	53.1	45.9	1	10.0-140			17.2	33
Benzo(k)fluoranthene	0.0772	U	0.0644	0.0606	83.4	80.6	1	10.0-137			6.08	31
Chrysene	0.0772	U	0.0634	0.0574	82.1	76.3	1	10.0-145			9.93	30
Dibenz(a,h)anthracene	0.0772	U	0.0412	0.0340	53.4	45.2	1	10.0-132			19.1	31
Fluoranthene	0.0772	U	0.0609	0.0540	78.9	71.8	1	10.0-153			12.0	33
Fluorene	0.0772	0.0182	0.0824	0.0696	83.2	68.4	1	11.0-130			16.8	29
Indeno(1,2,3-cd)pyrene	0.0772	U	0.0387	0.0321	50.1	42.7	1	10.0-137			18.6	32
Naphthalene	0.0772	0.566	0.703	0.552	177	0.000	1	10.0-135	V	V	24.1	27
Phenanthrene	0.0772	0.00872	0.0724	0.0632	82.5	72.4	1	10.0-144			13.6	31
Pyrene	0.0772	U	0.0653	0.0587	84.6	78.1	1	10.0-148			10.6	35
1-Methylnaphthalene	0.0772	0.374	0.469	0.380	123	7.98	1	10.0-142		V	21.0	28
2-Methylnaphthalene	0.0772	1.07	1.25	1.00	233	0.000	1	10.0-137	V	V	22.2	28
2-Chloronaphthalene	0.0772	U	0.0598	0.0534	77.5	71.0	1	29.0-120			11.3	24
(S) Nitrobenzene-d5					*0.000*	*0.000*		*14.0-149*	J2	J2		
(S) 2-Fluorobiphenyl					*89.8*	*71.2*		*34.0-125*				
(S) p-Terphenyl-d14					*102*	*90.3*		*23.0-120*				

L1412431-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1412431-02 10/11/21 15:24 • (MS) R3714750-3 10/11/21 15:41 • (MSD) R3714750-4 10/11/21 15:59

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 %

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

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

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

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

CHAIN-OF-CUSTODY Analytical Request Document

Pace Analytical®

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevent 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 L412438

Company: Campos EPC	Billing Information: Caerus Oil and Gas, LLC Account: CAERUSPCO
Address: 1401 Blake St.	
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 Well Pad	State: CO County/City: /Garfield Time Zone Collected: [ ] PT [✓] MT [ ] CT [ ] ET
Phone: 9706190800 Email: see above	Site/Facility ID #: PJ16
Collected By (print): Evan Mason	Purchase Order #: Quote #:
Collected By (signature):	Turnaround Date Required:
Sample Disposal: [ ] Dispose as appropriate [ ] Return [ ] Archive: [ ] Hold:	Rush: [ ] Same Day [ ] Next Day [ ] 2 Day [ ] 3 Day [ ] 4 Day [✓] 5 Day (Expedite Charges Apply)

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 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:

* 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) Date	Collected (or Composite Start) Time	Composite End Date	Composite End Time	Res Cl	# of Ctns	COGCC TABLE 915-1 (full list)	pH, EC, SAR, Arsenic, Boron-Hot Water Sol.										
20230929-PJ16-PORSASE-S20'	SL	Grab	9/29/21	1400				2	X	X										
10230929-PJ16-UNSASE-S10'	SL	Grab	9/29/21	1500				2	X	X										

L412438-01
L412438-02

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:
Bottles Intact

Relinquished by/Company: (Signature)	Date/Time: 10/1/21 - 1530	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time: 10/1 1700	Received by/Company: (Signature)	Date/Time:
Relinquished by/Company: (Signature)	Date/Time:	Received by/Company: (Signature)	Date/Time: 10/2/21 9:30

G001

Acctnum:
Template:
Prelogin:
PM:
PB:

Trip Blank Received: Y N NA
HCL MeOH TSP Other

Non Conformance(s): YES / NO

Page: ____ of: ____

Location PJ16 Date 9/22/21

Project / Client Cactus

Sunny. 60°F. No clouds.

820: Arrive on site to collect confirmation samples & possibly push excavation to clear POR impacts. Met w/ Mike & WCO

- Review scope of work
- Review & sign JSA
- Prepare equipment for sampling

840: Screen POR sample @ 4'

- POR @ 4': PID 883.4 ppm (Time: 840)

900: Conversation w/ Mike. Wait for Hydrovac to come out & dig deeper @ POR

915: Begin collecting wall samples

Sample Name:	PID: (ppm)	Sample Time:
20210922-PJ16 (NWALL) @ 3'	3.9	930
20210922-PJ16 (SWALL) @ 3'	.30	945
20210922-PJ16 (WWALL) @ 3'	.35	1000
~~20210922-PJ16 (EWALL) @ 3'~~ EM	—	—
20210922-PJ16 (POR) @ 4'	883.4	840
20210922-PJ16 (BGN) @ 2'	—	1445
20210922-PJ16 (BGE) @ 3'	—	1500
20210922-PJ16 (BGS) @ 3'	—	1415
20210922-PJ16 (BGW) @ 2'	—	1430
~~20210922-PJ16 (POR) @~~ EM	—	—
20210922-PJ16 (WWALL02) @ 3'	.30	1200
1030: Hydrovac arrives	~~.30~~ EM	~~1200~~ EM

Location PJ16 Date 9/22/21

Project / Client Caerus

Sunny. 65°F. No wind

1040: Begin hydrovaccing POR

1130: Collect POR @ 7.5': PID 645.9 ppm

1145: Hydrovaccers off site for day

1150: Collect WWALL sample in northern corridor to delinjate NW impacts

1200: Collect WWALL02 @ 3' sample

·PID: .30 ppm

· Sample name: 20210922-PJ16 (WWALL02) @ 3'

Time: 1200

1300: Collect EWALL samples

	PID:	Time:
- 20210922-PJ16 (EWALL01) @ 3'	0.15	1300
- 20210922-PJ16 (EWALL02) @ 3'	0.05	1310

1315: Screen EWALL parallel to POR

PID: 230.5 ppm

1400: Excavator pushed EWALL back as safely possible

1415: Hike to collect BG samples

1500: All BG samples collected & logged on collector

·Jar all samples & put on ice

·Load equipment

1600: off site

9/22/21

10 Location PJ16 Date 9/23/21

Project / Client Caerus

Sunny. 60°F. Little to no wind.

930: Arrive on site to continue pushing excavation & delinate impacts & conduct drone flight
- Review & sign JSA
- Review Scope of work
- Prepare equipment for sampling

1000: Begin setting GCPs
- Canel setting GCP's. Hydrovac arrives
- Begin collecting base samples

Sample Name:	PID: (ppm)	Time
20210923-PJ16 (SBASE)@4.5'	20.95	1030

1040: Screen N. Base ~~Sample~~ Soil Ex @ 4.5'
Location: 1.5' South of WWALL02 (west side of lines)
PID: 236.7 ppm

1120: Meet Rob in Parachute to drop off samples

1200: Arrive back on Site
- Hydrovac truck full, Off site
- Western wall pushed back ~2' w/in POR corridor
- ~~Mike discusses~~ EM

1230: Screen WWALL POR corridor @ 7.5'
PID: 217.6 ppm

1300: Discuss w/ Mike that we have to move lines & equipment to push further West

Location [redacted]

Project / Client Sunny. 75°F. Mild wind.

Caerus

- Will have to return to site once equipment is moved to deliniate Western soil impacts

1345: Set GCPs for drone flight

1445: Conduct drone flight

1515: Log excavation extent on data collector

1600: Decon & load equipment

1615: off site

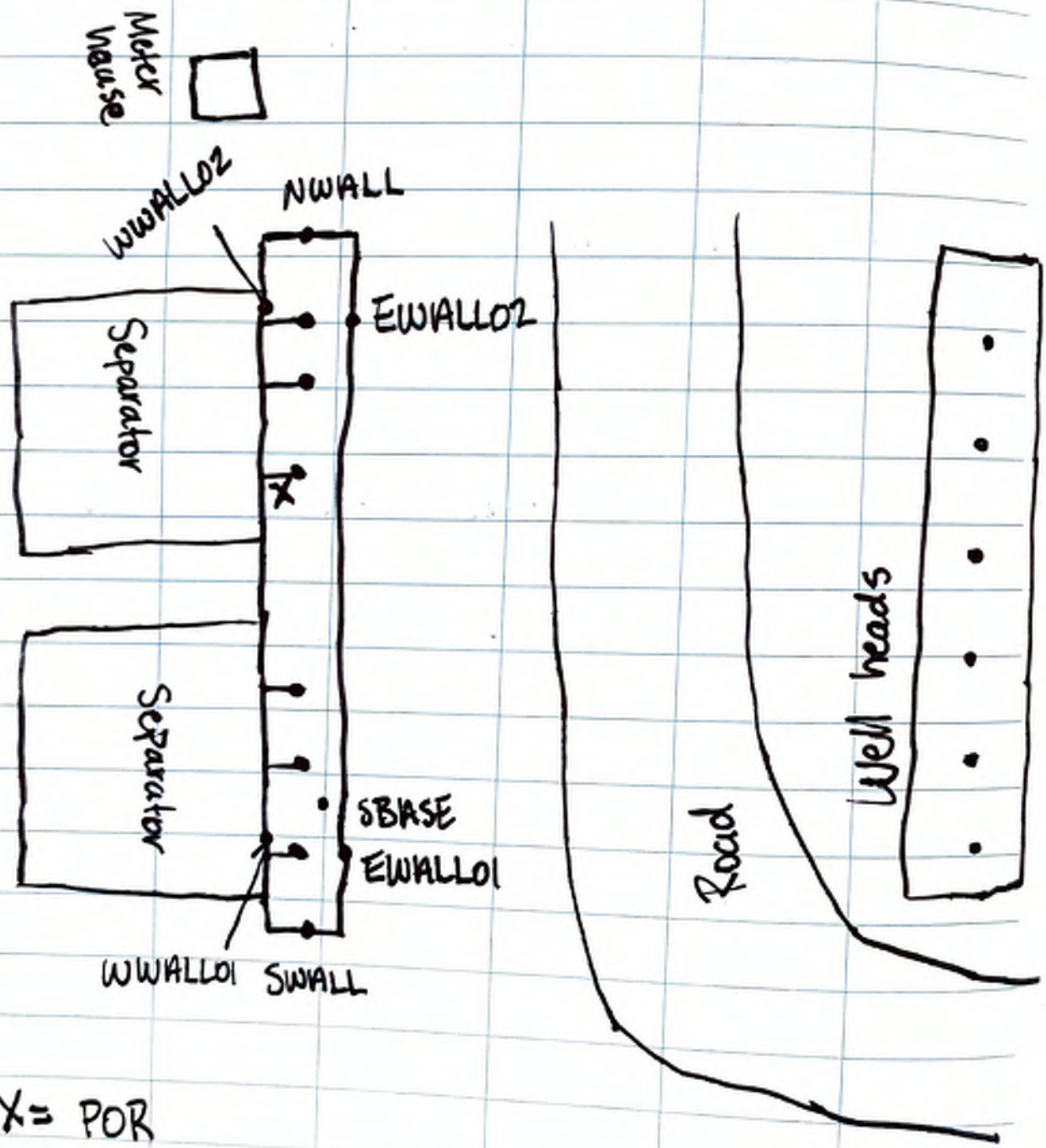
- See next page for site sketch

8/23/21

Location PS16 Date 9/23/21

Project / Client Caerus

Site Sketch



X = POR

N ↑

Location PJ16 Date 9/27/21

Project / Client Caerus

Sunny 70°F. Mild wind.

1000: Arrive on site & meet w/ Mike & WCO

- Review & sign JSA
- Discuss scope of work
- Prepare equipment for soil screening & sampling

1030: Separator already removed

- Priority will be to find western extents of impacted soil

1045: Begin pushing WWALL w/ excavator

Screen/Sample ID:	PID: (ppm)	Time:	Sample: (Y/N)
20210927-PJ16 (WWALL01)@7.5'	8.0	1150	Y
West Base @7.5'	1895		N
West Wall 02 @ 7'	383.3		N
East Wall @7.5'	492.7		N
POR @ 14'	870.4		N

1215: ~~WWALL Found~~ EM cleared ^ Western-most impacts with WWALL01 sample

- Screens are hot under southern separator
- WCO will now have to move separator to collect SW confirmation samples

* Next pg.

Location PJ 116 Date 9/27/21

Project / Client Caerus

Sunny. 75°F. Light wind

1330: Begin digging vertically @ POR location

1430: POR sample screened @ 4'. PID: 870.9 ppm

1500: Mike wants to move south Separator to access more of the west wall

- Will come back tomorrow w/ new plan

1530: WCO puts panel fencing around excavation & covers hole

- Separator moved
- Will come back tomorrow to continue digging
- Decon equipment
- Load equipment

1600: off site

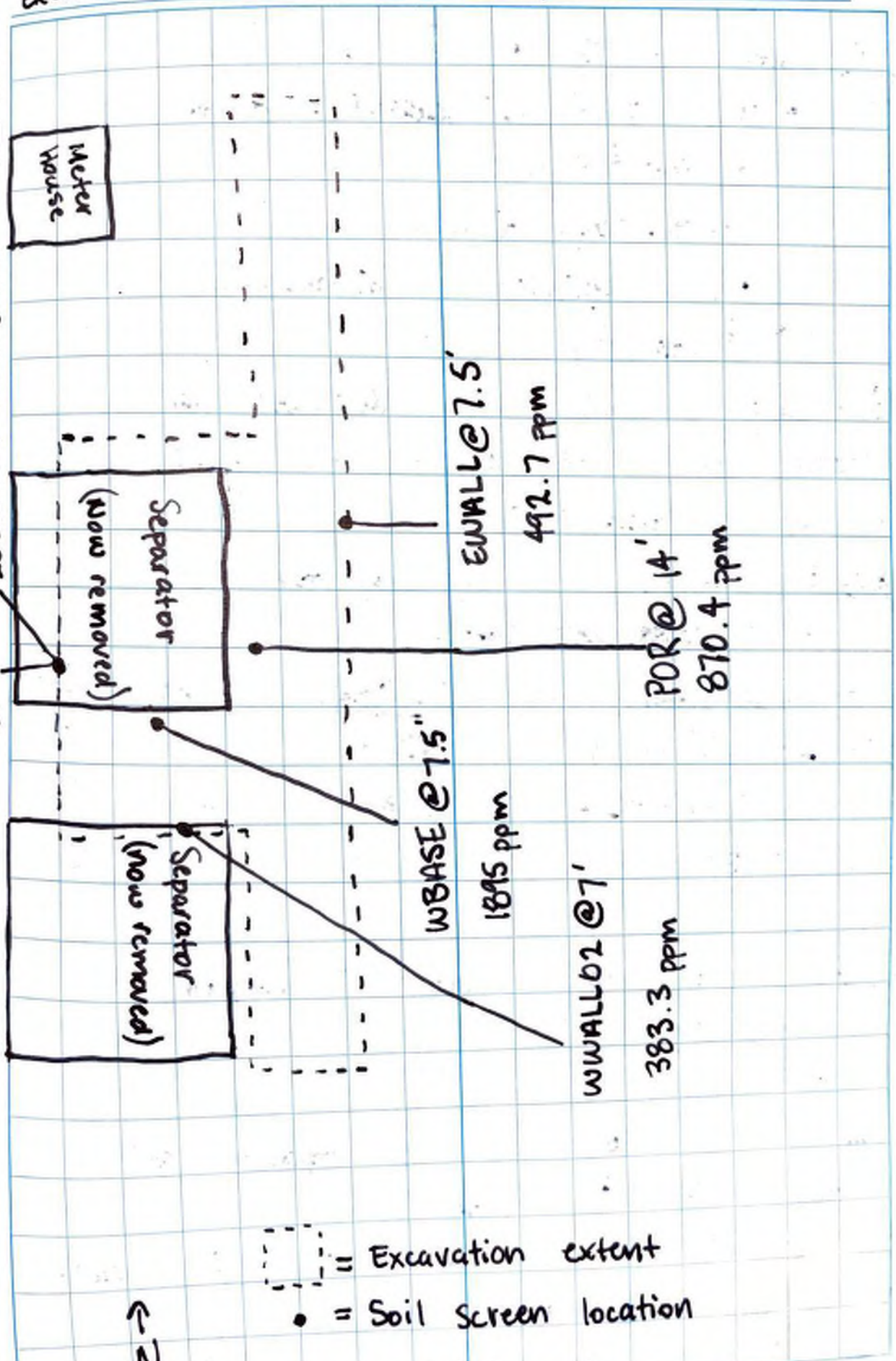
* Check next page for diagram

9/27/21

Location PJ16 Date 9/27/21

Project / Client Caerus

Excavation Extent as of 9/27/21.



Location PJUe Date 9/27/21

Project / Client Cypress

Sunny 70's Mild wind

1000: Arrive on site & meet w/ Mike & WCO
- Review & sign JSA
- Discuss scope of work
- Prepare equipment for soil screening & sampling

1030: Separator already removed
- Priority will be to find western extents of impacted soil

1045: Begin pushing WWALL w/ excavator

Screen/Sample ID:	PID (ppm):	Time:	Sample: (Y/N)
20210927-PJUe-(WWALL01)@7.5'	8.0	1150	Y
West Base @ 7.5'	895		N
West Wall 01 @ 7'	883.3		N
East Wall @ 7.5'	492.7		N
SOR @ 4'	870.4		N

1115: ~~[illegible] Found~~ cleared western - most impacts with WWALL01 sample
- Screens are not under southern separator
- WCO will now have to move separator to collect SW confirmation samples

Next pg.

Location PJ 16 Date 9/27/21

Project / Client Caerus

Sunny. 75°F. Light wind

1330: Begin digging vertically @ POR location

1430: POR sample screened @ 14'. PID: 870.9 ppm

1500: Mike wants to move south separator to access more of the west wall

- Will come back tomorrow w/ new plan

1530: WCO puts panel fencing around excavation & covers hole

- Separator moved
- Will come back tomorrow to continue digging
- Decon equipment
- Load equipment

1600: Off site

- * Check next page for diagram

9/27/21

Location PJ16 Date 9/27/21

Project / Client Caceres

Excavation Extent as of 9/27/21

Location PJ16 Date 9/28/21

Project / Client Caerus

Cloudy. 65°F. Mild wind.

1000: Arrive on site & meet w/ Jake, Mike & WCO personnel. Discussed scope of work

- Review & Sign JSA
- Review scope of work
- Prepare equipment for soil screening & sampling

1040: Priority will be to deliniate all sidewall impacts and then we will focus on vertical extents @ POR

1050: Begin digging & creating ramp for excavator to access hole safely

Screen/Sample ID:	PID (ppm):	Time:	Sample (Y/N)
NWALL @ 6.5'	375.4		N
20210928-PJ16 (NWALL EM) @ 14'	10.80	1600	Y
NBASE @ 15'	620.5		N

1230: Meet w/ Rob to drop off samples from yesterday

1310: Continue to clear out impacted soil within excavation & EM

1400: Continue to push North wall of excavation & vertically in northern corridor

1500: Collect soil to screen NBase @ 15'

PID: 620.5 ppm

Location PJ16 Date 9/28/21

Project / Client Caerus

Cloudy. 65°F. Rain

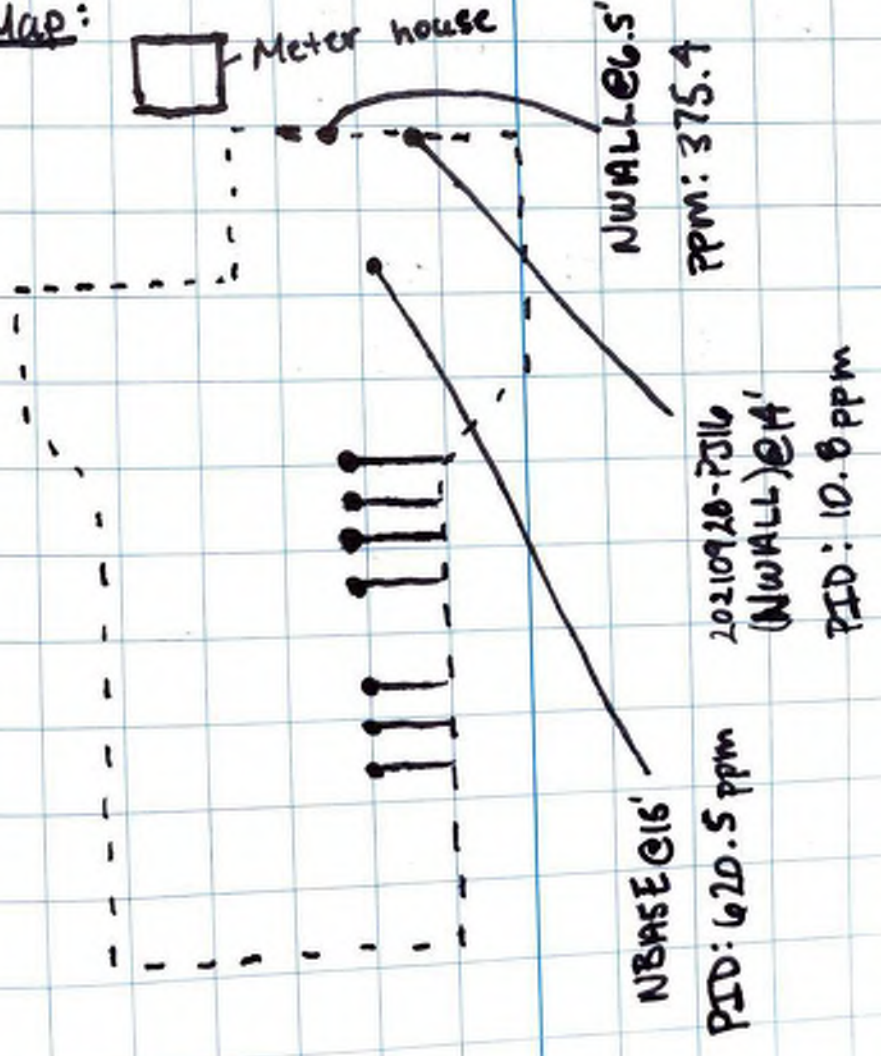
1600: Collect N wall screen / sample

- See Screen & sample section on previous page

1630: Stop for day. off site

- WCO puts panel fencing around excavation
- Jar Samples & put on ice
- Back tomorrow to continue excavation

Site Map:



= Piping

• = Soil screen/sample

= Excavation extent

9/28/21

Rite in the Rain

Project / Client Caerus

Sunny. 65°F. Little to no wind

1415: Begin digging in western corridor to collect WBASE sample

1500: Collect & screen WBASE @ 20'

1530: Set up GCP's for drone flight

1600: Conduct drone flight

1630: Shoot in excavation extent using data collector

- WCO using dirt to backfill extents for safety

1700:
- Load equipment
- WCO puts panels around excavation
- Samples put on ice off site

* See next pg for site map

9/29/21

Location PJ16 Date 9/29/21

Project / Client Caerus

50°F. Heavy rain.

835: Arrive on site to resume excavation with WCO

- Review & sign JSA
- Review scope of work
- Prepare equipment for sampling

900: Continue digging vertically in northern corridor

930: Shut down all operations on site (except for loading soil) due to heavy rainfall

- Decided to put operation on hold to see if rain clears up

1045: Rain clears. Resume operations

Screen/Sample ID:	PID: (ppm)	Time:	Sample (Y/N):
20210929-PJ16 (WBASE) @ 20'	3097	1100	Y
20210929-PJ16 (PORBASE) @ 20'	1328	1400	Y
20210929-PJ16 (WBASE) @ 20'	1296	1500	Y

1130: [redacted] Samples contain observable impacts @ 20'. Will submit all base samples to lab

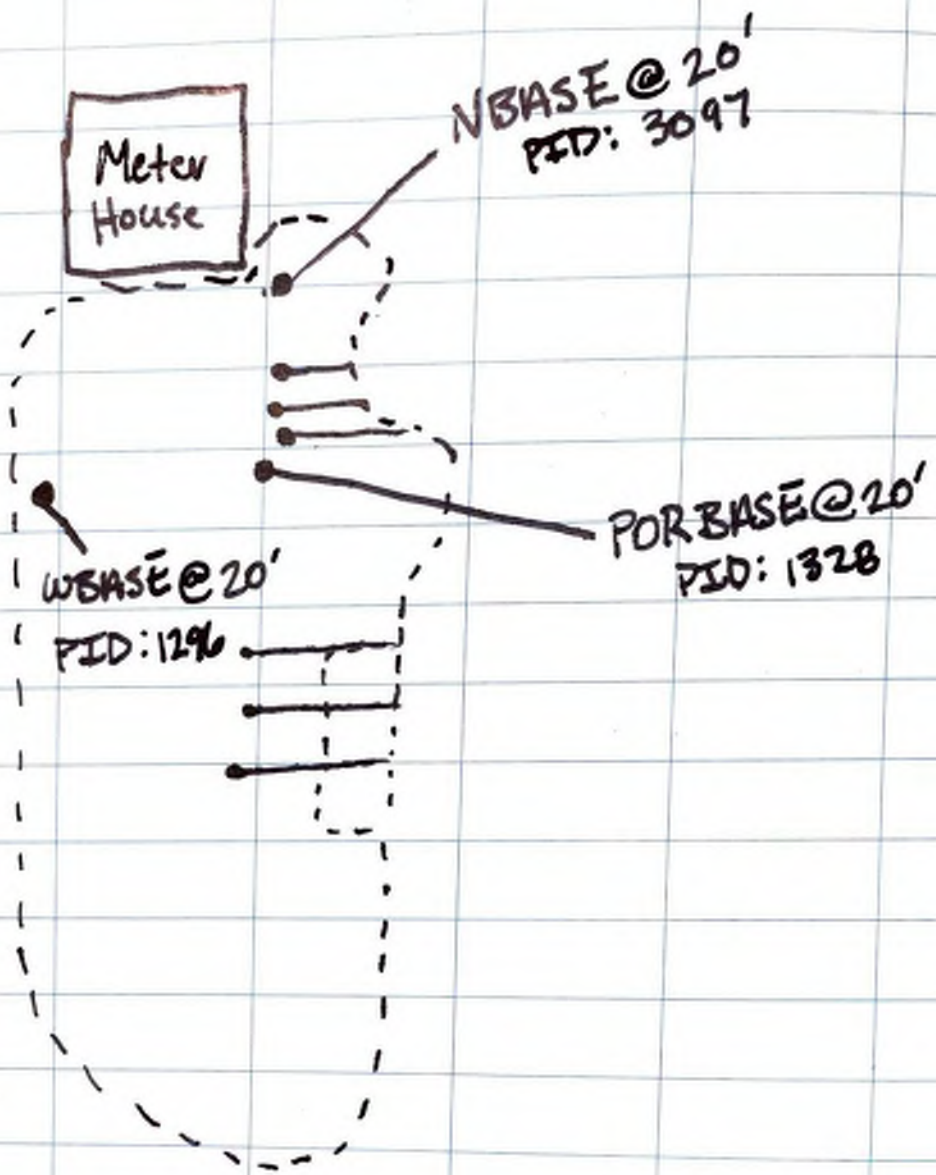
- Continue to dig in POR area to 20' bgs
- Collect sample from POR @ 20'

1230: Off site to drop samples off to courier

Location PJ16 Date 9/29/21

Project / Client Caerus

Excavation Extent



= Piping (exposed)

= Excavation extent

• = Sample locations

Location PJ116 (Mike's Property) Date 10/4/21

Project / Client Caerus

60°F. No clouds. No wind.

1100: Arrive at Mike Knox's property to collect stockpile samples from future excavations

- Scope of work: collect composite samples from property locations that will be excavated. Send soil samples to lab to make sure soil is okay to use for backfill
- Review & sign JSA
- Review scope of work
- Prepare equipment for sampling

1200: Begin collecting composite soil samples

Sample ID:	PID (ppm):	Sample Time:
20211004-PJ116MK (STOCK01)	0.00	1230
20211004-PJ116MK (STOCK02)	0.10	1300
20211004-PJ116MK (STOCK03)	0.10	1330

1330: Complete sampling & begin setting GCPs

1400: Begin drone flight of STOCK02

1430: Conduct STOCK03 drone flight

1500: Set STOCK01 GCPs

1530: Conduct STOCK01 drone flight

1630: Load equipment

1700: off site

10/4/21

Rite in the Rain.

Location PJ16 Date 11/5/21

Project / Client Caerus

Sunny. 30°F. No wind.

800: Arrive on site w/ Jake & Scott to conduct drilling & installation of SVE well
- Review & sign Ground Disturbance Permit
- Review & sign JSA
- Review scope of work

815: Set up equipment

830: Begin drilling

Sample Name:	Time:
20211105-PJ16(SB01)@ 25'	1045
20211105-PJ16(SB01)@ 34'	1630
20211105-PJ16(SB01)@ ~~AK~~ EM 39'	1745

1230: Auger refusal @ 31'. Most likely hit a sub-surface bassalt boulder
- Unable to drive and collect soil at this depth
- Have to switch to air-rotary

1530: Broke through bolder. Continue & sampling @ 33' bgs

1800: Drilling complete for the day, TD: 42'
- Begin loading equipment

1900: Equipment loaded. All personnel & equipment off site

* See drill log for drilling details

11/5/21


DANGER
NO SMOKING
MARRON

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 succesfully 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

Location PJ16 Date 12/15/21

Project / Client Caerus

Cloudy. 30°F. High winds & snow showers

1300: Arrive on site w/ WCO and Jake Janicek to conduct pot holing w/ hydrovac
- Review ground disturbance permit
- Review scope of work

1315: Begin pot holing

1330: Encountering rocks below surface

PH01: 8.5'

PH02: 8'

PH03: 7.5'

PH04: 10'

1600: Potholing complete
- Set GCP's
- Conduct drone flight
- WCO off site
- Log pot holes on data collector

1630: Load equipment
- Off site

12/15/21

Location PJ16 Date 12/20/21

Project / Client Caerus

Sunny. 15° F. No wind.

900: Meet on site w/ CO Drilling & Sampling to continue drilling PJ16

- Review & sign JSA
- Review Scope of work
- Calibrate PID
- Prepare equipment for drilling & sampling

1000: Begin drilling SB04

Sample / 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' S	.55	1600	Y

1600: Complete drilling SB04 and set well

1530: Begin drilling at PH01

1645: Drilling done for the day. Return tomorrow to resume drilling SB01

1700: Off site

12/20/21

Location PJ16 Date 12/21/21

Project / Client Caerus

Sunny. 20° F. No wind

830: 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

Sample/Screen ID:	PID:	Time:	Sample:	
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 drilling

1500: 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 & bentonite
- Planning on re drilling hole in Feb.
- Pack equipment

1700: All personnel & equipment off site

12/21/21