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## Report of Work Completed

<b>COGCC Location Name (ID)</b>	FEDERAL-62S95W 15SENE (316614)
<b>Client Location Name</b>	Federal 2S-95-15-42BP
<b>COGCC Remediation Project #</b>	20098
<b>Legal Description</b>	SENE Sec. 15 T2S-R95W
<b>Coordinates (Lat/Long)</b>	39.877758 / -108.034847
<b>County</b>	Rio Blanco County, Colorado

Mr. Janicek,

Confluence Compliance Companies, LLC (Confluence) prepared this Report of Work Completed (ROWC) for Caerus Oil & Gas LLC (Caerus) to document recent site investigation activities associated with the decommissioning of a dehydration unit at the Federal 2S-95-15-42BP well pad (Location). The Location is 13.2 miles southwest of Meeker, Colorado in Rio Blanco County, as illustrated in the attached Topographic Location Map. Additional information on the Location and the associated remediation project is provided in the title block above, the attached Site Diagrams, and the attached Laboratory Results Summary Table. This ROWC provides background on the Location, methods used to complete the investigation, results of the investigation, and recommendations for how to proceed with this information.

## Background

As required by Colorado Oil and Gas Conservation Commission (COGCC) Rule 911.a, Caerus submitted COGCC Initial eForm 27 Document # 402796347, presenting planned site investigation activities associated with the decommissioning of the dehydration unit and removal of the partially buried tank.

## Methodology

On November 4, 2021, Confluence was onsite to investigate and document dehydration unit decommissioning activities as per COGCC Form 27 Document # 402796347 and associated Conditions of Approval (COAs). Upon arrival to the Location, the dehydration unit and associated partially buried tank had been removed. Confluence inspected samples from both excavation areas, characterizing the soil using visual and olfactory observations, and field-screened soil samples for volatile organic compounds using a photoionization detector (PID). Soil samples were collected from the base of both excavations for laboratory analysis of soil constituents listed in COGCC Table 915-1. Additionally, background soil samples were collected from comparable, nearby, non-impacted soil to establish native soil conditions for pH, electrical conductivity (EC), and sodium adsorption ratio (SAR) per Rule 915.e.(2).D. All soil samples were collected in laboratory provided jars, immediately

placed on ice, and shipped for laboratory analysis. Sample locations are illustrated in the attached Site Diagrams.

## Results

These results summarize observations from onsite investigation efforts and associated field screening results. For organizational and presentation purposes the results summary is divided between general observations of lithology and hydrogeology for the entire Location and excavation activities.

### Lithology and Hydrogeology

Soil at the Location is described as a sandy loam with gravel throughout. Groundwater is expected to flow north toward Timber Gulch and ultimately the White River, located 17.8 miles northwest of the Location.

### Investigation Results

Laboratory results of investigation soil samples indicate compliance with COGCC Table 915-1 except for arsenic and pH. Arsenic exceedances range from 4.38 milligrams per kilogram (mg/kg) within the tank excavation to 4.21 mg/kg in the dehydration unit footprint. Values of pH exceeding COGCC Table 915-1 range from 8.38 in the dehydration unit footprint to 8.64 in the tank excavation. All other analytes are compliant with COGCC Table 915-1.

## Analysis and Recommendations

Although pH and arsenic values above COGCC Table 915-1 standards remain within the equipment removal excavations, background data suggests the exceedances are within naturally occurring levels at the Location. Background samples collected from the Location indicate a pH value of 8.66. Background samples collected from the adjacent Federal 2S-95-15-22 (COGCC Location ID 335858) indicate an arsenic concentration of 6.69 mg/kg. The Federal 2S-95-15-22 is 0.5 miles west of the Location. Based on these results and analysis, Confluence recommends that Caerus request closure of COGCC Remediation Project # 20098 and a no further action (NFA) determination.

Confluence is grateful for the opportunity to support you with this project. If you have any questions about the methods, results, or recommendations presented here, please do not hesitate to contact me.

Regards,



Chris McKisson  
Senior Project Manager  
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## Attachments

- Topographic Location Map
- Site Diagram – Background Samples
- Site Diagram – Investigation Sample Locations
- Laboratory Results Summary Table
- Laboratory Reports



## Topographic Location Map

**Caerus Oil and Gas LLC**

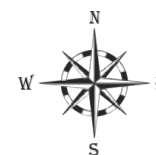
Federal 2S-95-15-42BP

(FEDERAL-62S95W 15SENE)

COGCC Location ID: 316614

Rio Blanco County

SENE Sec. 15 T2S-R95W



Topographic map sourced from 2020 Earth Point  
using data provided by United States Geological  
Survey

Created by: Chris McKisson on 12/03/2021.

Federal 2S-95-15-42BP



GRAND

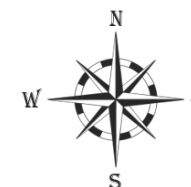
RIO BLANCO CO  
GARFIELD CO

7 mi

## Site Diagram Background Samples

### Caerus Oil and Gas LLC

Federal 2S-95-15-42BP  
(FEDERAL-62S95W 15SENE)  
COGCC Location ID: 316614  
Rio Blanco County  
SENE Sec. 15 T2S-R95W



### Legend

 Background Sample – 11/04/2021

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Andrew Smith on 11/08/2021.

20211104-Fed-2S-95-15-42BP-BGN@2'

20211104-Fed-2S-95-15-42BP-BGN2@2'

20211104-Fed-2S-95-15-42BP-BGE@2'

20211104-Fed-2S-95-15-42BP-BGE2@1.5'

## Site Diagram Sample Locations

### Caerus Oil and Gas LLC

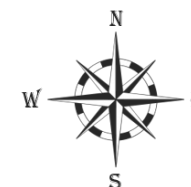
Federal 2S-95-15-42BP

(FEDERAL-62S95W 15SENE)


COGCC Location ID: 316614

Rio Blanco County

SENE Sec. 15 T2S-R95W



### Legend

 Soil Sample – 11/04/2021

Spatial data was collected using a handheld GPS unit with submeter accuracy. Illustration discrepancies may be present in this diagram due to the inherent limitations of data accuracy for both project data and the underlying aerial imagery. The position of illustrated data may have been manually adjusted to align with the aerial imagery in a manner more representative of field conditions for presentation purposes only.

Map created by: Andrew Smith on 11/08/2021.

20211104-Fed 2S-95-15-42BP-DEHY\_TANK@6'

20211104-Fed 2S-95-15-42BP-DEHY@6"

100 ft

Soil Screening and Remediation Limits			Organic Compounds (mg/kg [ppm])																									
COGCC Table 915-1 Residential -->			500	NA	NA	NA	1.2	490	5.8	58	30	27	360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	18	24	2	180	
Sample Date	Solid/Soil Source (Equipment [Vault/Sump, Separator, Tank Battery, Dump Line, Pit, Cuttings, Background, etc.]	Sample ID	TPH (total volatile and extractable petroleum hydrocarbons) (GRO+DRO+ORO)	TPH-GRO (C6-C10) Low Fraction	TPH-DRO (C10-C28) High Fraction	TPH-ORO (C28-C36) High Fraction	Benzene	Toluene	Ethylbenzene	Xylenes - total (sum of o-, m-, p- isomers)	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,C,D)pyrene	1- Methylanththalene	2- Methylanththalene	Naphthalene	Pyrene	
11/4/2021	Glycol Dehydra	20211104-FED-25-95-15-42BP-DEHY_TANK@6'	152	0.0499	122	29.5	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600	
11/4/2021	Glycol Dehydra	20211104-FED-25-95-15-42BP-DEHY@6"	20.6	0.0419	5.74	14.8	<0.00100	<0.00500	<0.00250	<0.00650	<0.00500	<0.00500	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.00600	<0.0200	<0.0200	<0.0200	<0.00600	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS3@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS3@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS3@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS4@8"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS3@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS3@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS4@8"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS4@8"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS4@8"	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE2@1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN2@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN2@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN2@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE2@1.5'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN2@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN2@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGE@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-42BP-BGN@2'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS@1'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS@1'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS@1'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS@1'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
11/4/2021	Background	20211104-FED-25-95-15-22-BGS@1'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Laboratory Results Summary Table - Soil  
Federal 2S-95-15-42BP

Soil Screening and Remediation Limits			Soil Suitability for Reclamation				Metals (mg/kg [ppm])									
COGCC Table 915-1 Residential -->			4	6	6-8.3	2	0.68	15000	71	0.3	3100	400	1500	390	390	23000
Sample Date	Solid/Soil Source (Equipment [Vault/Sump, Separator, Tank, Battery, Dump Line, Pit, Cuttings, Background, etc.]	Sample ID	EC (Specific Conductance) (millimhos/centimeter) (by saturated paste method)	SAR (Sodium Adsorption Ratio) (calculation) (by saturated paste method)	pH (pH Units) (by saturated paste method)	Boron - Hot Water Soluble (mg/L)	Arsenic	Barium	Cadmium (mg/kg)	Chromium (VI)	Copper	Lead	Nickel	Selenium	Silver	Zinc
11/4/2021	Glycol Dehydra	20211104-FED-2S-95-15-42BP-DEHY_TANK@6'	0.0987	0.351	8.64	1.09	4.38	283	0.663	<1.00	11.7	6.96	22.2	<2.00	<1.00	55.0
11/4/2021	Glycol Dehydra	20211104-FED-2S-95-15-42BP-DEHY@6"	0.133	0.353	8.38	0.208	4.21	364	0.246	<1.00	10.7	9.09	18.0	<2.00	<1.00	40.7
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS3@1.5'	0.183	NA	8.25	NA	6.69	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS3@1.5'	0.212	0.244	8.09	0.0768	5.77	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS2@1.5'	0.122	NA	8.69	NA	5.47	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS3@1.5'	0.206	0.247	8.57	0.0981	5.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS4@8"	0.118	0.292	8.78	0.0278	5.18	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS3@1.5'	0.227	0.235	8.41	0.108	5.17	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS3@1.5'	0.295	0.243	8.39	0.0643	5.05	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS4@8"	0.0945	NA	8.55	NA	4.79	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS2@1.5'	0.132	0.171	8.52	0.0291	4.44	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS2@1.5'	0.164	0.233	8.71	0.0345	4.34	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS4@8"	0.105	0.271	8.74	0.0226	4.24	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS4@8"	0.102	0.301	8.21	0.0214	4.14	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS4@8"	0.0994	0.275	8.60	0.0227	4.01	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS2@1.5'	0.180	0.170	8.58	0.0387	3.76	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS2@1.5'	0.129	0.173	9.22	0.0308	3.26	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE2@1.5'	0.136	0.238	8.21	0.206	3.18	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE2@1.5'	0.165	NA	8.24	NA	2.78	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE@1.5'	0.141	NA	8.24	NA	2.65	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE2@1.5'	0.148	NA	8.17	NA	2.46	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN2@2'	0.178	0.145	8.08	0.348	2.45	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN2@2'	0.182	NA	8.06	NA	2.44	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN2@2'	0.182	NA	8.05	NA	2.40	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE2@1.5'	0.148	NA	8.26	NA	2.35	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN2@2'	0.178	NA	8.05	NA	2.28	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN2@2'	0.164	NA	8.21	NA	2.16	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE@2'	0.201	0.195	8.10	0.521	2.04	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE@2'	0.233	NA	8.11	NA	1.97	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE@2'	0.206	NA	8.10	NA	1.94	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE@2'	0.198	NA	8.07	NA	1.88	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGE@2'	0.211	NA	7.96	NA	1.72	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN@2'	0.267	NA	8.20	NA	1.31	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN@2'	0.271	0.271	8.66	0.695	1.18	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN@2'	0.279	NA	8.00	NA	1.16	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN@2'	0.316	NA	7.92	NA	1.09	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS@1'	0.0858	NA	8.81	NA	0.667	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS@1'	0.0978	0.282	8.91	0.0564	0.660	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-42BP-BGN@2'	0.286	NA	8.15	NA	0.605	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS@1'	0.0966	NA	8.98	NA	0.575	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS@1'	0.0936	NA	8.23	NA	0.424	NA	NA	NA	NA	NA	NA	NA	NA	NA
11/4/2021	Background	20211104-FED-2S-95-15-22-BGS@1'	0.0818	0.300	9.00	0.0458	0.382	NA	NA	NA	NA	NA	NA	NA	NA	NA

**Caerus Oil and Gas**

Sample Delivery Group: L1428772  
Samples Received: 11/09/2021  
Project Number: FEDERAL 2S-95-15-42B  
Description: Facility Decommissioning  
Site: FEDERAL 2S-95-15-42B  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# SAMPLE SUMMARY

20211104-FED 2S-95-15-42BP-DEHY_TANK@6' L1428772-01 Solid				Collected by Andrew Smith	Collected date/time 11/04/21 10:20	Received date/time 11/09/21 09:30	<div>1Cp</div> <div>2Tc</div> <div>3Ss</div> <div>4Cn</div> <div>5Sr</div> <div>6Qc</div> <div>7Gl</div> <div>8Al</div> <div>9Sc</div>
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1774639	1	11/16/21 13:05	11/16/21 13:05	CCE	Mt. Juliet, TN	
Wet Chemistry by Method 7199	WG1772377	1	11/12/21 02:04	11/15/21 20:58	JER	Mt. Juliet, TN	
Wet Chemistry by Method 9045D	WG1771817	1	11/10/21 08:00	11/10/21 10:00	KAB	Mt. Juliet, TN	
Wet Chemistry by Method 9050AMod	WG1772198	1	11/10/21 15:22	11/11/21 06:50	ARD	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1772969	1	11/12/21 08:34	11/15/21 14:10	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:13	CCE	Mt. Juliet, TN	
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:14	JPD	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1775205	1	11/09/21 22:55	11/16/21 17:34	NCC	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1772127	1	11/09/21 22:55	11/10/21 21:50	JHH	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1772085	1	11/11/21 09:38	11/12/21 18:22	JAS	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1772876	1	11/15/21 09:18	11/15/21 18:57	ADF	Mt. Juliet, TN	

20211104-FED 2S-95-15-42BP-DEHY@6" L1428772-02 Solid				Collected by Andrew Smith	Collected date/time 11/04/21 10:15	Received date/time 11/09/21 09:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1774639	1	11/16/21 13:08	11/16/21 13:08	CCE	Mt. Juliet, TN	
Wet Chemistry by Method 7199	WG1772377	1	11/12/21 02:04	11/15/21 21:04	JER	Mt. Juliet, TN	
Wet Chemistry by Method 9045D	WG1772241	1	11/11/21 10:00	11/11/21 10:00	PSN	Mt. Juliet, TN	
Wet Chemistry by Method 9050AMod	WG1774234	1	11/15/21 10:24	11/16/21 05:00	ARD	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1772969	1	11/12/21 08:34	11/15/21 14:13	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:16	CCE	Mt. Juliet, TN	
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:17	JPD	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1775205	1	11/09/21 22:55	11/16/21 17:56	NCC	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1772127	1	11/09/21 22:55	11/10/21 22:10	JHH	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1774827	1	11/16/21 09:43	11/16/21 23:52	JAS	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1772876	1	11/15/21 09:18	11/15/21 19:17	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	0.351		1	11/16/2021 13:05	WG1774639

## Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	11/15/2021 20:58	<a href="#">WG1772377</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.64	<a href="#">T8</a>	1	11/10/2021 10:00	<a href="#">WG1771817</a>

## Sample Narrative:

L1428772-01 WG1771817: 8.64 at 19.8C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	98.7		10.0	1	11/11/2021 06:50	<a href="#">WG1772198</a>

## Sample Narrative:

L1428772-01 WG1772198: 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	11/15/2021 14:10	<a href="#">WG1772969</a>
Cadmium	0.663		0.0471	0.500	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Copper	11.7		0.400	2.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Lead	6.96		0.208	0.500	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Nickel	22.2		0.132	2.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Selenium	U		0.764	2.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Silver	U		0.127	1.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Zinc	55.0		0.832	5.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.09		0.0167	0.200	1	11/17/2021 13:13	<a href="#">WG1773235</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.38		0.100	1.00	5	11/16/2021 10:14	<a href="#">WG1774284</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0499	<a href="#">B J</a>	0.0217	0.100	1	11/16/2021 17:34	<a href="#">WG1775205</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.0			77.0-120		11/16/2021 17:34	<a href="#">WG1775205</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	11/10/2021 21:50	<a href="#">WG1772127</a>
Toluene	U		0.00130	0.00500	1	11/10/2021 21:50	<a href="#">WG1772127</a>
Ethylbenzene	U		0.000737	0.00250	1	11/10/2021 21:50	<a href="#">WG1772127</a>
Xylenes, Total	U		0.000880	0.00650	1	11/10/2021 21:50	<a href="#">WG1772127</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	11/10/2021 21:50	<a href="#">WG1772127</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	11/10/2021 21:50	<a href="#">WG1772127</a>
(S) Toluene-d8	106			75.0-131		11/10/2021 21:50	<a href="#">WG1772127</a>
(S) 4-Bromofluorobenzene	101			67.0-138		11/10/2021 21:50	<a href="#">WG1772127</a>
(S) 1,2-Dichloroethane-d4	85.5			70.0-130		11/10/2021 21:50	<a href="#">WG1772127</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	122		1.61	4.00	1	11/12/2021 18:22	<a href="#">WG1772085</a>
C28-C36 Motor Oil Range	29.5		0.274	4.00	1	11/12/2021 18:22	<a href="#">WG1772085</a>
(S) o-Terphenyl	51.1			18.0-148		11/12/2021 18:22	<a href="#">WG1772085</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Acenaphthene	U		0.00209	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Acenaphthylene	U		0.00216	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Chrysene	U		0.00232	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Fluoranthene	U		0.00227	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Fluorene	U		0.00205	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Naphthalene	U		0.00408	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Phenanthrene	U		0.00231	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Pyrene	U		0.00200	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
1-Methylnaphthalene	U		0.00449	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
(S) p-Terphenyl-d14	100			23.0-120		11/15/2021 18:57	<a href="#">WG1772876</a>
(S) Nitrobenzene-d5	60.0			14.0-149		11/15/2021 18:57	<a href="#">WG1772876</a>
(S) 2-Fluorobiphenyl	74.1			34.0-125		11/15/2021 18:57	<a href="#">WG1772876</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte					
Sodium Adsorption Ratio	0.353		1	11/16/2021 13:08	WG1774639

Wet Chemistry by Method 7199

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Hexavalent Chromium	U		0.255	1.00	1	11/15/2021 21:04	<a href="#">WG1772377</a>

Wet Chemistry by Method 9045D

	Result	Qualifier	Dilution	Analysis date / time	Batch
Analyte	su				
pH	8.38	<a href="#">T8</a>	1	11/11/2021 10:00	<a href="#">WG1772241</a>

Sample Narrative:  
L1428772-02 WG1772241: 8.38 at 19C

Wet Chemistry by Method 9050AMod

	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Analyte	umhos/cm		umhos/cm			
Specific Conductance	133		10.0	1	11/16/2021 05:00	<a href="#">WG1774234</a>

Sample Narrative:  
L1428772-02 WG1774234: at 25C

Metals (ICP) by Method 6010B

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Barium	364		0.0852	0.500	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Cadmium	0.246	<a href="#">J</a>	0.0471	0.500	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Copper	10.7		0.400	2.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Lead	9.09		0.208	0.500	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Nickel	18.0		0.132	2.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Selenium	U		0.764	2.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Silver	U		0.127	1.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Zinc	40.7		0.832	5.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.208		0.0167	0.200	1	11/17/2021 13:16	<a href="#">WG1773235</a>

Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
Arsenic	4.21		0.100	1.00	5	11/16/2021 10:17	<a href="#">WG1774284</a>

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/kg		mg/kg	mg/kg			
TPH (GC/FID) Low Fraction	0.0419	<a href="#">B J</a>	0.0217	0.100	1	11/16/2021 17:56	<a href="#">WG1775205</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.3			77.0-120		11/16/2021 17:56	<a href="#">WG1775205</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## 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	11/10/2021 22:10	<a href="#">WG1772127</a>
Toluene	U		0.00130	0.00500	1	11/10/2021 22:10	<a href="#">WG1772127</a>
Ethylbenzene	U		0.000737	0.00250	1	11/10/2021 22:10	<a href="#">WG1772127</a>
Xylenes, Total	U		0.000880	0.00650	1	11/10/2021 22:10	<a href="#">WG1772127</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	11/10/2021 22:10	<a href="#">WG1772127</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	11/10/2021 22:10	<a href="#">WG1772127</a>
(S) Toluene-d8	105			75.0-131		11/10/2021 22:10	<a href="#">WG1772127</a>
(S) 4-Bromofluorobenzene	98.3			67.0-138		11/10/2021 22:10	<a href="#">WG1772127</a>
(S) 1,2-Dichloroethane-d4	86.8			70.0-130		11/10/2021 22:10	<a href="#">WG1772127</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.74	<a href="#">B</a>	1.61	4.00	1	11/16/2021 23:52	<a href="#">WG1774827</a>
C28-C36 Motor Oil Range	14.8	<a href="#">B</a>	0.274	4.00	1	11/16/2021 23:52	<a href="#">WG1774827</a>
(S) o-Terphenyl	48.8			18.0-148		11/16/2021 23:52	<a href="#">WG1774827</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Acenaphthene	U		0.00209	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Acenaphthylene	U		0.00216	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Chrysene	U		0.00232	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Fluoranthene	U		0.00227	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Fluorene	U		0.00205	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Naphthalene	U		0.00408	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Phenanthrene	U		0.00231	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Pyrene	U		0.00200	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
1-Methylnaphthalene	U		0.00449	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
(S) p-Terphenyl-d14	79.9			23.0-120		11/15/2021 19:17	<a href="#">WG1772876</a>
(S) Nitrobenzene-d5	49.2			14.0-149		11/15/2021 19:17	<a href="#">WG1772876</a>
(S) 2-Fluorobiphenyl	61.7			34.0-125		11/15/2021 19:17	<a href="#">WG1772876</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3729918-1 11/15/21 18:54

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

L1427667-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1427667-05 11/15/21 19:14 • (DUP) R3729918-3 11/15/21 19:20

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

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3729918-8 11/15/21 21:24

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

Laboratory Control Sample (LCS)

(LCS) R3729918-2 11/15/21 18:59

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.7	107	80.0-120	

L1427912-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427912-02 11/15/21 20:01 • (MS) R3729918-4 11/15/21 20:06 • (MSD) R3729918-5 11/15/21 20:12

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	18.7	20.6	93.7	103	1	75.0-125			9.26	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1428752-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1428752-02 11/10/21 10:00 • (DUP) R3727707-2 11/10/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.68	8.65	1	0.346		1

Sample Narrative:

OS: 8.68 at 20.2C

DUP: 8.65 at 20.2C



L1428767-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1428767-20 11/10/21 10:00 • (DUP) R3727707-3 11/10/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.43	8.43	1	0.000		1

Sample Narrative:

OS: 8.43 at 20C

DUP: 8.43 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3727707-1 11/10/21 10:00

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

Sample Narrative:

LCS: 10.01 at 19.5C

L1428770-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1428770-20 11/11/21 10:00 • (DUP) R3728263-2 11/11/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.21	8.16	1	0.611		1

Sample Narrative:  
OS: 8.21 at 19C  
DUP: 8.16 at 19.1C

L1428952-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1428952-01 11/11/21 10:00 • (DUP) R3728263-3 11/11/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.75	6.77	1	0.296		1

Sample Narrative:  
OS: 6.75 at 19.1C  
DUP: 6.77 at 19.2C

Laboratory Control Sample (LCS)

(LCS) R3728263-1 11/11/21 10:00

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

Sample Narrative:  
LCS: 9.99 at 19.3C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3728101-1 11/11/21 06:50

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) R3728101-2 11/11/21 06:50

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	269	100	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

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

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

Sample Narrative:

BLANK: at 25C

Laboratory Control Sample (LCS)

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

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

Sample Narrative:

LCS: at 25C

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3729725-5 11/15/21 13:33

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3729725-6 11/15/21 13:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	109	109	80.0-120	
Cadmium	100	101	101	80.0-120	
Copper	100	105	105	80.0-120	
Lead	100	103	103	80.0-120	
Nickel	100	99.3	99.3	80.0-120	
Selenium	100	99.2	99.2	80.0-120	
Silver	20.0	18.9	94.5	80.0-120	
Zinc	100	93.3	93.3	80.0-120	

L1428485-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428485-02 11/15/21 13:38 • (MS) R3729725-9 11/15/21 13:46 • (MSD) R3729725-10 11/15/21 13:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	106	197	208	90.9	102	1	75.0-125			5.54	20
Cadmium	100	0.0691	93.0	100	93.0	99.9	1	75.0-125			7.20	20
Copper	100	21.5	115	124	93.3	102	1	75.0-125			7.39	20
Lead	100	9.02	104	113	95.1	104	1	75.0-125			7.92	20
Nickel	100	21.7	114	122	92.4	100	1	75.0-125			6.84	20
Selenium	100	0.846	89.2	94.8	88.4	93.9	1	75.0-125			6.03	20
Silver	20.0	U	17.2	18.5	86.0	92.6	1	75.0-125			7.39	20
Zinc	100	37.1	115	124	77.8	86.7	1	75.0-125			7.46	20

Method Blank (MB)

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

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

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

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

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

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

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

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

Laboratory Control Sample (LCS)

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

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

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

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

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

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3730309-2 11/16/21 15:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0309	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	90.1			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3730309-1 11/16/21 14:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.60	83.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			109	77.0-120	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3729535-3 11/10/21 14:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	99.0			67.0-138
(S) 1,2-Dichloroethane-d4	93.4			70.0-130

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

(LCS) R3729535-1 11/10/21 13:02 • (LCSD) R3729535-2 11/10/21 13:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.134	0.140	107	112	70.0-123			4.38	20
Ethylbenzene	0.125	0.126	0.136	101	109	74.0-126			7.63	20
Toluene	0.125	0.128	0.136	102	109	75.0-121			6.06	20
1,2,4-Trimethylbenzene	0.125	0.106	0.112	84.8	89.6	70.0-126			5.50	20
1,3,5-Trimethylbenzene	0.125	0.102	0.106	81.6	84.8	73.0-127			3.85	20
Xylenes, Total	0.375	0.385	0.410	103	109	72.0-127			6.29	20
(S) Toluene-d8				101	106	75.0-131				
(S) 4-Bromofluorobenzene				95.8	98.9	67.0-138				
(S) 1,2-Dichloroethane-d4				98.9	99.1	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3728860-2 11/12/21 10:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	60.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3728860-1 11/12/21 09:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	26.7	53.4	50.0-150	
(S) o-Terphenyl			61.4	18.0-148	

L1427912-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427912-03 11/12/21 18:36 • (MS) R3728860-3 11/12/21 18:49 • (MSD) R3728860-4 11/12/21 19:03

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.5	27.8	72.2	73.3	91.5	94.4	1	50.0-150			1.51	20
(S) o-Terphenyl					83.4	73.1		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3730410-1 11/16/21 22:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	2.86	⬇	1.61	4.00
C28-C36 Motor Oil Range	4.18		0.274	4.00
(S) o-Terphenyl	96.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3730410-2 11/16/21 22:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.6	67.2	50.0-150	
(S) o-Terphenyl			113	18.0-148	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3729712-2 11/15/21 14:18

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	57.6			14.0-149
(S) 2-Fluorobiphenyl	76.1			34.0-125
(S) p-Terphenyl-d14	102			23.0-120

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3729712-1 11/15/21 13:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0593	74.1	50.0-126	
Acenaphthene	0.0800	0.0595	74.4	50.0-120	
Acenaphthylene	0.0800	0.0629	78.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0595	74.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0485	60.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0559	69.9	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0576	72.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0570	71.3	49.0-125	
Chrysene	0.0800	0.0620	77.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0557	69.6	47.0-125	
Fluoranthene	0.0800	0.0636	79.5	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3729712-1 11/15/21 13:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0582	72.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0582	72.8	46.0-125	
Naphthalene	0.0800	0.0595	74.4	50.0-120	
Phenanthrene	0.0800	0.0593	74.1	47.0-120	
Pyrene	0.0800	0.0635	79.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0640	80.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0570	71.3	50.0-120	
2-Chloronaphthalene	0.0800	0.0562	70.3	50.0-120	
(S) Nitrobenzene-d5			62.9	14.0-149	
(S) 2-Fluorobiphenyl			82.7	34.0-125	
(S) p-Terphenyl-d14			104	23.0-120	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

# 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.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# ACCREDITATIONS & LOCATIONS

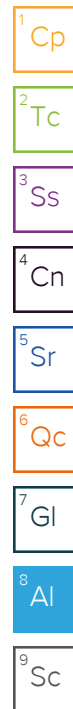
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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





**Caerus Oil and Gas**

Sample Delivery Group: L1428772  
Samples Received: 11/09/2021  
Project Number: FEDERAL 2S-95-15-42B  
Description: Facility Decommissioning  
Site: FEDERAL 2S-95-15-42B  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



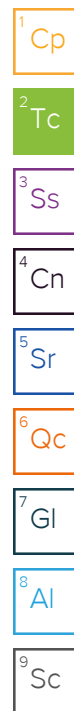
Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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# SAMPLE SUMMARY

20211104-FED 2S-95-15-42BP-DEHY_TANK@6' L1428772-01 Solid				Collected by Andrew Smith	Collected date/time 11/04/21 10:20	Received date/time 11/09/21 09:30	<div>1Cp</div> <div>2Tc</div> <div>3Ss</div> <div>4Cn</div> <div>5Sr</div> <div>6Qc</div> <div>7Gl</div> <div>8Al</div> <div>9Sc</div>
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1774639	1	11/16/21 13:05	11/16/21 13:05	CCE	Mt. Juliet, TN	
Wet Chemistry by Method 7199	WG1772377	1	11/12/21 02:04	11/15/21 20:58	JER	Mt. Juliet, TN	
Wet Chemistry by Method 9045D	WG1771817	1	11/10/21 08:00	11/10/21 10:00	KAB	Mt. Juliet, TN	
Wet Chemistry by Method 9050AMod	WG1772198	1	11/10/21 15:22	11/11/21 06:50	ARD	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1772969	1	11/12/21 08:34	11/15/21 14:10	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:13	CCE	Mt. Juliet, TN	
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:14	JPD	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1775205	1	11/09/21 22:55	11/16/21 17:34	NCC	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1772127	1	11/09/21 22:55	11/10/21 21:50	JHH	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1772085	1	11/11/21 09:38	11/12/21 18:22	JAS	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1772876	1	11/15/21 09:18	11/15/21 18:57	ADF	Mt. Juliet, TN	

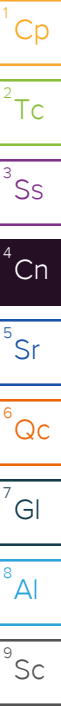
20211104-FED 2S-95-15-42BP-DEHY@6" L1428772-02 Solid				Collected by Andrew Smith	Collected date/time 11/04/21 10:15	Received date/time 11/09/21 09:30	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location	
Calculated Results	WG1774639	1	11/16/21 13:08	11/16/21 13:08	CCE	Mt. Juliet, TN	
Wet Chemistry by Method 7199	WG1772377	1	11/12/21 02:04	11/15/21 21:04	JER	Mt. Juliet, TN	
Wet Chemistry by Method 9045D	WG1772241	1	11/11/21 10:00	11/11/21 10:00	PSN	Mt. Juliet, TN	
Wet Chemistry by Method 9050AMod	WG1774234	1	11/15/21 10:24	11/16/21 05:00	ARD	Mt. Juliet, TN	
Metals (ICP) by Method 6010B	WG1772969	1	11/12/21 08:34	11/15/21 14:13	CCE	Mt. Juliet, TN	
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773235	1	11/16/21 14:28	11/17/21 13:16	CCE	Mt. Juliet, TN	
Metals (ICPMS) by Method 6020	WG1774284	5	11/15/21 08:03	11/16/21 10:17	JPD	Mt. Juliet, TN	
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1775205	1	11/09/21 22:55	11/16/21 17:56	NCC	Mt. Juliet, TN	
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1772127	1	11/09/21 22:55	11/10/21 22:10	JHH	Mt. Juliet, TN	
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1774827	1	11/16/21 09:43	11/16/21 23:52	JAS	Mt. Juliet, TN	
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1772876	1	11/15/21 09:18	11/15/21 19:17	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	0.351		1	11/16/2021 13:05	WG1774639

## Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	11/15/2021 20:58	<a href="#">WG1772377</a>

## Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.64	<a href="#">T8</a>	1	11/10/2021 10:00	<a href="#">WG1771817</a>

## Sample Narrative:

L1428772-01 WG1771817: 8.64 at 19.8C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	98.7		10.0	1	11/11/2021 06:50	<a href="#">WG1772198</a>

## Sample Narrative:

L1428772-01 WG1772198: 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	11/15/2021 14:10	<a href="#">WG1772969</a>
Cadmium	0.663		0.0471	0.500	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Copper	11.7		0.400	2.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Lead	6.96		0.208	0.500	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Nickel	22.2		0.132	2.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Selenium	U		0.764	2.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Silver	U		0.127	1.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>
Zinc	55.0		0.832	5.00	1	11/15/2021 14:10	<a href="#">WG1772969</a>

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.09		0.0167	0.200	1	11/17/2021 13:13	<a href="#">WG1773235</a>

## Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.38		0.100	1.00	5	11/16/2021 10:14	<a href="#">WG1774284</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0499	<a href="#">B J</a>	0.0217	0.100	1	11/16/2021 17:34	<a href="#">WG1775205</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.0			77.0-120		11/16/2021 17:34	<a href="#">WG1775205</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	11/10/2021 21:50	<a href="#">WG1772127</a>
Toluene	U		0.00130	0.00500	1	11/10/2021 21:50	<a href="#">WG1772127</a>
Ethylbenzene	U		0.000737	0.00250	1	11/10/2021 21:50	<a href="#">WG1772127</a>
Xylenes, Total	U		0.000880	0.00650	1	11/10/2021 21:50	<a href="#">WG1772127</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	11/10/2021 21:50	<a href="#">WG1772127</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	11/10/2021 21:50	<a href="#">WG1772127</a>
(S) Toluene-d8	106			75.0-131		11/10/2021 21:50	<a href="#">WG1772127</a>
(S) 4-Bromofluorobenzene	101			67.0-138		11/10/2021 21:50	<a href="#">WG1772127</a>
(S) 1,2-Dichloroethane-d4	85.5			70.0-130		11/10/2021 21:50	<a href="#">WG1772127</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	122		1.61	4.00	1	11/12/2021 18:22	<a href="#">WG1772085</a>
C28-C36 Motor Oil Range	29.5		0.274	4.00	1	11/12/2021 18:22	<a href="#">WG1772085</a>
(S) o-Terphenyl	51.1			18.0-148		11/12/2021 18:22	<a href="#">WG1772085</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Acenaphthene	U		0.00209	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Acenaphthylene	U		0.00216	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Chrysene	U		0.00232	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Fluoranthene	U		0.00227	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Fluorene	U		0.00205	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Naphthalene	U		0.00408	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Phenanthrene	U		0.00231	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
Pyrene	U		0.00200	0.00600	1	11/15/2021 18:57	<a href="#">WG1772876</a>
1-Methylnaphthalene	U		0.00449	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/15/2021 18:57	<a href="#">WG1772876</a>
(S) p-Terphenyl-d14	100			23.0-120		11/15/2021 18:57	<a href="#">WG1772876</a>
(S) Nitrobenzene-d5	60.0			14.0-149		11/15/2021 18:57	<a href="#">WG1772876</a>
(S) 2-Fluorobiphenyl	74.1			34.0-125		11/15/2021 18:57	<a href="#">WG1772876</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.353		1	11/16/2021 13:08	WG1774639

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	11/15/2021 21:04	<a href="#">WG1772377</a>

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.38	<a href="#">T8</a>	1	11/11/2021 10:00	<a href="#">WG1772241</a>

Sample Narrative:  
L1428772-02 WG1772241: 8.38 at 19C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	133		10.0	1	11/16/2021 05:00	<a href="#">WG1774234</a>

Sample Narrative:  
L1428772-02 WG1774234: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	364		0.0852	0.500	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Cadmium	0.246	<a href="#">J</a>	0.0471	0.500	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Copper	10.7		0.400	2.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Lead	9.09		0.208	0.500	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Nickel	18.0		0.132	2.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Selenium	U		0.764	2.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Silver	U		0.127	1.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>
Zinc	40.7		0.832	5.00	1	11/15/2021 14:13	<a href="#">WG1772969</a>

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

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.208		0.0167	0.200	1	11/17/2021 13:16	<a href="#">WG1773235</a>

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.21		0.100	1.00	5	11/16/2021 10:17	<a href="#">WG1774284</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0419	<a href="#">B J</a>	0.0217	0.100	1	11/16/2021 17:56	<a href="#">WG1775205</a>
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.3			77.0-120		11/16/2021 17:56	<a href="#">WG1775205</a>

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## 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	11/10/2021 22:10	<a href="#">WG1772127</a>
Toluene	U		0.00130	0.00500	1	11/10/2021 22:10	<a href="#">WG1772127</a>
Ethylbenzene	U		0.000737	0.00250	1	11/10/2021 22:10	<a href="#">WG1772127</a>
Xylenes, Total	U		0.000880	0.00650	1	11/10/2021 22:10	<a href="#">WG1772127</a>
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	11/10/2021 22:10	<a href="#">WG1772127</a>
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	11/10/2021 22:10	<a href="#">WG1772127</a>
(S) Toluene-d8	105			75.0-131		11/10/2021 22:10	<a href="#">WG1772127</a>
(S) 4-Bromofluorobenzene	98.3			67.0-138		11/10/2021 22:10	<a href="#">WG1772127</a>
(S) 1,2-Dichloroethane-d4	86.8			70.0-130		11/10/2021 22:10	<a href="#">WG1772127</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.74	<a href="#">B</a>	1.61	4.00	1	11/16/2021 23:52	<a href="#">WG1774827</a>
C28-C36 Motor Oil Range	14.8	<a href="#">B</a>	0.274	4.00	1	11/16/2021 23:52	<a href="#">WG1774827</a>
(S) o-Terphenyl	48.8			18.0-148		11/16/2021 23:52	<a href="#">WG1774827</a>

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.00230	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Acenaphthene	U		0.00209	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Acenaphthylene	U		0.00216	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(a)anthracene	U		0.00173	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(a)pyrene	U		0.00179	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(b)fluoranthene	U		0.00153	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(g,h,i)perylene	U		0.00177	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Benzo(k)fluoranthene	U		0.00215	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Chrysene	U		0.00232	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Fluoranthene	U		0.00227	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Fluorene	U		0.00205	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Naphthalene	U		0.00408	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Phenanthrene	U		0.00231	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
Pyrene	U		0.00200	0.00600	1	11/15/2021 19:17	<a href="#">WG1772876</a>
1-Methylnaphthalene	U		0.00449	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
2-Methylnaphthalene	U		0.00427	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
2-Chloronaphthalene	U		0.00466	0.0200	1	11/15/2021 19:17	<a href="#">WG1772876</a>
(S) p-Terphenyl-d14	79.9			23.0-120		11/15/2021 19:17	<a href="#">WG1772876</a>
(S) Nitrobenzene-d5	49.2			14.0-149		11/15/2021 19:17	<a href="#">WG1772876</a>
(S) 2-Fluorobiphenyl	61.7			34.0-125		11/15/2021 19:17	<a href="#">WG1772876</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3729918-1 11/15/21 18:54

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

L1427667-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1427667-05 11/15/21 19:14 • (DUP) R3729918-3 11/15/21 19:20

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

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3729918-8 11/15/21 21:24

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

Laboratory Control Sample (LCS)

(LCS) R3729918-2 11/15/21 18:59

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.7	107	80.0-120	

L1427912-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427912-02 11/15/21 20:01 • (MS) R3729918-4 11/15/21 20:06 • (MSD) R3729918-5 11/15/21 20:12

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	18.7	20.6	93.7	103	1	75.0-125			9.26	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1428752-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1428752-02 11/10/21 10:00 • (DUP) R3727707-2 11/10/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.68	8.65	1	0.346		1

Sample Narrative:

OS: 8.68 at 20.2C

DUP: 8.65 at 20.2C



L1428767-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1428767-20 11/10/21 10:00 • (DUP) R3727707-3 11/10/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.43	8.43	1	0.000		1

Sample Narrative:

OS: 8.43 at 20C

DUP: 8.43 at 20.1C

Laboratory Control Sample (LCS)

(LCS) R3727707-1 11/10/21 10:00

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

Sample Narrative:

LCS: 10.01 at 19.5C

L1428770-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1428770-20 11/11/21 10:00 • (DUP) R3728263-2 11/11/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.21	8.16	1	0.611		1

Sample Narrative:  
OS: 8.21 at 19C  
DUP: 8.16 at 19.1C

L1428952-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1428952-01 11/11/21 10:00 • (DUP) R3728263-3 11/11/21 10:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	6.75	6.77	1	0.296		1

Sample Narrative:  
OS: 6.75 at 19.1C  
DUP: 6.77 at 19.2C

Laboratory Control Sample (LCS)

(LCS) R3728263-1 11/11/21 10:00

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

Sample Narrative:  
LCS: 9.99 at 19.3C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3728101-1 11/11/21 06:50

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) R3728101-2 11/11/21 06:50

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	269	100	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

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

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

Sample Narrative:

BLANK: at 25C

Laboratory Control Sample (LCS)

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

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

Sample Narrative:

LCS: at 25C

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3729725-5 11/15/21 13:33

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

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

Laboratory Control Sample (LCS)

(LCS) R3729725-6 11/15/21 13:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	109	109	80.0-120	
Cadmium	100	101	101	80.0-120	
Copper	100	105	105	80.0-120	
Lead	100	103	103	80.0-120	
Nickel	100	99.3	99.3	80.0-120	
Selenium	100	99.2	99.2	80.0-120	
Silver	20.0	18.9	94.5	80.0-120	
Zinc	100	93.3	93.3	80.0-120	

L1428485-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428485-02 11/15/21 13:38 • (MS) R3729725-9 11/15/21 13:46 • (MSD) R3729725-10 11/15/21 13:48

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	106	197	208	90.9	102	1	75.0-125			5.54	20
Cadmium	100	0.0691	93.0	100	93.0	99.9	1	75.0-125			7.20	20
Copper	100	21.5	115	124	93.3	102	1	75.0-125			7.39	20
Lead	100	9.02	104	113	95.1	104	1	75.0-125			7.92	20
Nickel	100	21.7	114	122	92.4	100	1	75.0-125			6.84	20
Selenium	100	0.846	89.2	94.8	88.4	93.9	1	75.0-125			6.03	20
Silver	20.0	U	17.2	18.5	86.0	92.6	1	75.0-125			7.39	20
Zinc	100	37.1	115	124	77.8	86.7	1	75.0-125			7.46	20

Method Blank (MB)

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

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

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

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

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

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

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

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

Laboratory Control Sample (LCS)

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

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

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

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

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

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3730309-2 11/16/21 15:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0309	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	90.1			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3730309-1 11/16/21 14:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.60	83.6	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			109	77.0-120	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3729535-3 11/10/21 14:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Ethylbenzene	U		0.000737	0.00250
Toluene	U		0.00130	0.00500
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
Xylenes, Total	U		0.000880	0.00650
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	99.0			67.0-138
(S) 1,2-Dichloroethane-d4	93.4			70.0-130

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

(LCS) R3729535-1 11/10/21 13:02 • (LCSD) R3729535-2 11/10/21 13:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.134	0.140	107	112	70.0-123			4.38	20
Ethylbenzene	0.125	0.126	0.136	101	109	74.0-126			7.63	20
Toluene	0.125	0.128	0.136	102	109	75.0-121			6.06	20
1,2,4-Trimethylbenzene	0.125	0.106	0.112	84.8	89.6	70.0-126			5.50	20
1,3,5-Trimethylbenzene	0.125	0.102	0.106	81.6	84.8	73.0-127			3.85	20
Xylenes, Total	0.375	0.385	0.410	103	109	72.0-127			6.29	20
(S) Toluene-d8				101	106	75.0-131				
(S) 4-Bromofluorobenzene				95.8	98.9	67.0-138				
(S) 1,2-Dichloroethane-d4				98.9	99.1	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3728860-2 11/12/21 10:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	60.2			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3728860-1 11/12/21 09:53

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	26.7	53.4	50.0-150	
(S) o-Terphenyl			61.4	18.0-148	

L1427912-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1427912-03 11/12/21 18:36 • (MS) R3728860-3 11/12/21 18:49 • (MSD) R3728860-4 11/12/21 19:03

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	48.5	27.8	72.2	73.3	91.5	94.4	1	50.0-150			1.51	20
(S) o-Terphenyl					83.4	73.1		18.0-148				

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3730410-1 11/16/21 22:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	2.86	⬇	1.61	4.00
C28-C36 Motor Oil Range	4.18		0.274	4.00
(S) o-Terphenyl	96.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3730410-2 11/16/21 22:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	33.6	67.2	50.0-150	
(S) o-Terphenyl			113	18.0-148	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3729712-2 11/15/21 14:18

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	57.6			14.0-149
(S) 2-Fluorobiphenyl	76.1			34.0-125
(S) p-Terphenyl-d14	102			23.0-120

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Laboratory Control Sample (LCS)

(LCS) R3729712-1 11/15/21 13:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0593	74.1	50.0-126	
Acenaphthene	0.0800	0.0595	74.4	50.0-120	
Acenaphthylene	0.0800	0.0629	78.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0595	74.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0485	60.6	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0559	69.9	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0576	72.0	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0570	71.3	49.0-125	
Chrysene	0.0800	0.0620	77.5	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0557	69.6	47.0-125	
Fluoranthene	0.0800	0.0636	79.5	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3729712-1 11/15/21 13:58

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Fluorene	0.0800	0.0582	72.8	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0582	72.8	46.0-125	
Naphthalene	0.0800	0.0595	74.4	50.0-120	
Phenanthrene	0.0800	0.0593	74.1	47.0-120	
Pyrene	0.0800	0.0635	79.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0640	80.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0570	71.3	50.0-120	
2-Chloronaphthalene	0.0800	0.0562	70.3	50.0-120	
(S) Nitrobenzene-d5			62.9	14.0-149	
(S) 2-Fluorobiphenyl			82.7	34.0-125	
(S) p-Terphenyl-d14			104	23.0-120	

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

# 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.

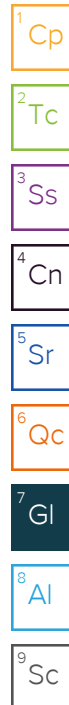
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.



# ACCREDITATIONS & LOCATIONS

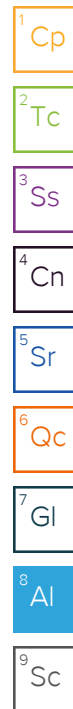
## Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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





**Caerus Oil and Gas**

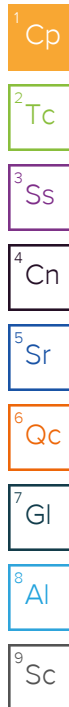
Sample Delivery Group: L1428769  
Samples Received: 11/09/2021  
Project Number: FEDERAL 2S-95-15-22  
Description: Background  
Site: FEDERAL 2S-95-16-22  
Report To: Brett Middleton  
143 Diamond Avenue  
Parachute, CO 81635

Entire Report Reviewed By:



Chris Ward  
Project Manager

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

**Pace Analytical National**12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

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

# SAMPLE SUMMARY

## 20211104-FED-2S-95-15-22-(BGS@1') L1428769-01 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:35

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:35	11/18/21 12:35	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1773984	1	11/15/21 02:27	11/15/21 09:23	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:30	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 18:00	LD	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

## 20211104-FED-2S-95-15-22-(BGS2@1.5') L1428769-02 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:45

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:38	11/18/21 12:38	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1773984	1	11/15/21 02:27	11/15/21 09:23	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:33	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 18:03	LD	Mt. Juliet, TN

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

## 20211104-FED-2S-95-15-22-(BGS3@1.5') L1428769-03 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:50

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:41	11/18/21 12:41	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1773984	1	11/15/21 02:27	11/15/21 09:23	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:36	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 18:07	LD	Mt. Juliet, TN

<sup>9</sup> Sc

## 20211104-FED-2S-95-15-22-(BGS4@8") L1428769-04 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:55

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:49	11/18/21 12:49	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1773984	1	11/15/21 02:27	11/15/21 09:23	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:39	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:00	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS@1') L1428769-05 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:35

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:51	11/18/21 12:51	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1773984	1	11/15/21 02:27	11/15/21 09:23	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:42	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:03	LD	Mt. Juliet, TN

# SAMPLE SUMMARY

## 20211104-FED-2S-95-15-22-(BGS2@1.5') L1428769-06 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:45

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:54	11/18/21 12:54	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:45	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:07	LD	Mt. Juliet, TN

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

## 20211104-FED-2S-95-15-22-(BGS3@1.5') L1428769-07 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:50

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:57	11/18/21 12:57	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:48	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:10	LD	Mt. Juliet, TN

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

## 20211104-FED-2S-95-15-22-(BGS4@8") L1428769-08 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:55

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 12:59	11/18/21 12:59	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 18:57	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:13	LD	Mt. Juliet, TN

<sup>9</sup> Sc

## 20211104-FED-2S-95-15-22-(BGS@1') L1428769-09 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:35

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:17	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS2@1.5') L1428769-10 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:45

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 13:02	11/18/21 13:02	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 19:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:20	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS3@1.5') L1428769-11 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:50

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 13:05	11/18/21 13:05	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN

# SAMPLE SUMMARY

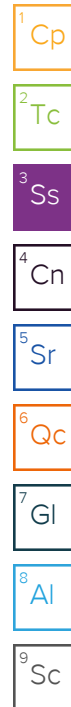
## 20211104-FED-2S-95-15-22-(BGS3@1.5') L1428769-11 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:50

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 19:03	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:24	LD	Mt. Juliet, TN



## 20211104-FED-2S-95-15-22-(BGS4@8") L1428769-12 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:55

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 13:07	11/18/21 13:07	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 19:06	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:27	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS@1') L1428769-13 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:35

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 17:43	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS2@1.5') L1428769-14 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:45

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 13:10	11/18/21 13:10	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 19:09	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:30	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS3@1.5') L1428769-15 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:50

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 13:13	11/18/21 13:13	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1772746	1	11/11/21 14:00	11/11/21 14:00	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 19:12	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1776955	5	11/18/21 19:16	11/18/21 21:15	LD	Mt. Juliet, TN

## 20211104-FED-2S-95-15-22-(BGS4@8") L1428769-16 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:55

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1773229	1	11/18/21 13:24	11/18/21 13:24	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1773233	1	11/17/21 11:39	11/18/21 19:15	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:42	LD	Mt. Juliet, TN

# SAMPLE SUMMARY

20211104-FED-2S-95-15-22-(BGS@1') L1428769-17 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:35

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:45	LD	Mt. Juliet, TN

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

20211104-FED-2S-95-15-22-(BGS2@1.5') L1428769-18 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:45

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:48	LD	Mt. Juliet, TN

20211104-FED-2S-95-15-22-(BGS3@1.5') L1428769-19 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:50

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:52	LD	Mt. Juliet, TN

20211104-FED-2S-95-15-22-(BGS4@8") L1428769-20 Solid

Collected by  
Andrew Smith

Collected date/time  
11/08/21 12:55

Received date/time  
11/09/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9045D	WG1773265	1	11/12/21 08:00	11/12/21 08:00	SDE	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1774233	1	11/15/21 09:37	11/16/21 04:26	ARD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1774279	5	11/15/21 10:33	11/15/21 19:55	LD	Mt. Juliet, TN

# CASE NARRATIVE

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



Chris Ward  
Project Manager

## Report Revision History

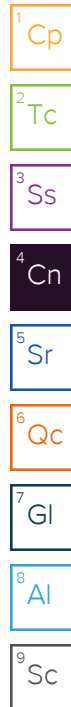
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Level II Report - Version 1: 11/19/21 11:17  
Level II Report - Version 2: 11/23/21 16:37  
Level II Report - Version 3: 11/29/21 11:07

## Project Narrative

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Regenerated to update sample IDs



## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.282		1	11/18/2021 12:35	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.91	<u>T8</u>	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-01 WG1772746: 8.91 at 19.5C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	97.8		10.0	1	11/15/2021 09:23	<a href="#">WG1773984</a>

## Sample Narrative:

L1428769-01 WG1773984: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.0564	<u>J</u>	0.0167	0.200	1	11/18/2021 18:30	<a href="#">WG1773233</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg	mg/kg			
Arsenic	0.660	<u>J</u>	0.100	1.00	5	11/15/2021 18:00	<a href="#">WG1774279</a>

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.170		1	11/18/2021 12:38	WG1773229

<sup>1</sup> Cp

<sup>2</sup> Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.58	T8	1	11/11/2021 14:00	<a href="#">WG1772746</a>

<sup>3</sup> Ss

<sup>4</sup> Cn

Sample Narrative:

L1428769-02 WG1772746: 8.58 at 19.3C

<sup>5</sup> Sr

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	<u>Qualifier</u>	RDL umhos/cm	Dilution	Analysis date / time	<u>Batch</u>
Specific Conductance	180		10.0	1	11/15/2021 09:23	<a href="#">WG1773984</a>

<sup>6</sup> Qc

<sup>7</sup> Gl

Sample Narrative:

L1428769-02 WG1773984: at 25C

<sup>8</sup> Al

<sup>9</sup> Sc

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

Analyte	Result mg/l	<u>Qualifier</u>	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	<u>Batch</u>
Hot Water Sol. Boron	0.0387	<u>J</u>	0.0167	0.200	1	11/18/2021 18:33	<a href="#">WG1773233</a>

Metals (ICPMS) by Method 6020

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	3.76		0.100	1.00	5	11/15/2021 18:03	<a href="#">WG1774279</a>

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.243		1	11/18/2021 12:41	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.39	<u>T8</u>	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-03 WG1772746: 8.39 at 19.2C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	295		umhos/cm	1	11/15/2021 09:23	<a href="#">WG1773984</a>

## Sample Narrative:

L1428769-03 WG1773984: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0643	<u>J</u>	mg/l	mg/l	1	11/18/2021 18:36	<a href="#">WG1773233</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.05		mg/kg	mg/kg	5	11/15/2021 18:07	<a href="#">WG1774279</a>

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.292		1	11/18/2021 12:49	WG1773229

<sup>1</sup>Cp

<sup>2</sup>Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.78	T8	1	11/11/2021 14:00	<a href="#">WG1772746</a>

<sup>3</sup>Ss

<sup>4</sup>Cn

Sample Narrative:  
L1428769-04 WG1772746: 8.78 at 19.1C

<sup>5</sup>Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	118		10.0	1	11/15/2021 09:23	<a href="#">WG1773984</a>

<sup>6</sup>Qc

<sup>7</sup>Gl

Sample Narrative:  
L1428769-04 WG1773984: at 25C

<sup>8</sup>Al

<sup>9</sup>Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.0278	J	0.0167	0.200	1	11/18/2021 18:39	<a href="#">WG1773233</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg	mg/kg			
Arsenic	5.18		0.100	1.00	5	11/15/2021 19:00	<a href="#">WG1774279</a>

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.300		1	11/18/2021 12:51	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.00	<u>T8</u>	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-05 WG1772746: 9 at 19.1C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	81.8		10.0	1	11/15/2021 09:23	<a href="#">WG1773984</a>

## Sample Narrative:

L1428769-05 WG1773984: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.0458	<u>J</u>	0.0167	0.200	1	11/18/2021 18:42	<a href="#">WG1773233</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg	mg/kg			
Arsenic	0.382	<u>J</u>	0.100	1.00	5	11/15/2021 19:03	<a href="#">WG1774279</a>

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

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.233		1	11/18/2021 12:54	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.71	<u>T8</u>	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-06 WG1772746: 8.71 at 19C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	164		10.0	1	11/16/2021 04:26	<a href="#">WG1774233</a>

## Sample Narrative:

L1428769-06 WG1774233: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.0345	<u>J</u>	0.0167	0.200	1	11/18/2021 18:45	<a href="#">WG1773233</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg	mg/kg			
Arsenic	4.34		0.100	1.00	5	11/15/2021 19:07	<a href="#">WG1774279</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.247		1	11/18/2021 12:57	WG1773229

1  
Cp

2  
Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.57	T8	1	11/11/2021 14:00	WG1772746

3  
Ss

4  
Cn

Sample Narrative:

L1428769-07 WG1772746: 8.57 at 1C

5  
Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	206		umhos/cm	1	11/16/2021 04:26	WG1774233

6  
Qc

7  
Gl

Sample Narrative:

L1428769-07 WG1774233: at 25C

8  
Al

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0981	J	mg/l	mg/l	1	11/18/2021 18:48	WG1773233

9  
Sc

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.40		mg/kg	mg/kg	5	11/15/2021 19:10	WG1774279

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.271		1	11/18/2021 12:59	WG1773229

<sup>1</sup>Cp

<sup>2</sup>Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.74	T8	1	11/11/2021 14:00	<a href="#">WG1772746</a>

<sup>3</sup>Ss

<sup>4</sup>Cn

Sample Narrative:  
L1428769-08 WG1772746: 8.74 at 19.2C

<sup>5</sup>Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	105		10.0	1	11/16/2021 04:26	<a href="#">WG1774233</a>

<sup>6</sup>Qc

<sup>7</sup>Gl

Sample Narrative:  
L1428769-08 WG1774233: at 25C

<sup>8</sup>Al

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.0226	J	0.0167	0.200	1	11/18/2021 18:57	<a href="#">WG1773233</a>

<sup>9</sup>Sc

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg	mg/kg			
Arsenic	4.24		0.100	1.00	5	11/15/2021 19:13	<a href="#">WG1774279</a>

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.23	<a href="#">T8</a>	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-09 WG1772746: 8.23 at 19.1C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	93.6		10.0	1	11/16/2021 04:26	<a href="#">WG1774233</a>

## Sample Narrative:

L1428769-09 WG1774233: at 25C

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	0.424	<a href="#">J</a>	0.100	1.00	5	11/15/2021 19:17	<a href="#">WG1774279</a>

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

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.173		1	11/18/2021 13:02	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	9.22	<u>T8</u>	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-10 WG1772746: 9.22 at 20C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	129		umhos/cm	1	11/16/2021 04:26	<a href="#">WG1774233</a>

## Sample Narrative:

L1428769-10 WG1774233: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0308	<u>J</u>	mg/l	mg/l	1	11/18/2021 19:00	<a href="#">WG1773233</a>

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.26		mg/kg	mg/kg	5	11/15/2021 19:20	<a href="#">WG1774279</a>

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

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.244		1	11/18/2021 13:05	WG1773229

1  
Cp

2  
Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.09	T8	1	11/11/2021 14:00	WG1772746

3  
Ss

4  
Cn

Sample Narrative:

L1428769-11 WG1772746: 8.09 at 19.3C

5  
Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	212		umhos/cm	1	11/16/2021 04:26	WG1774233

6  
Qc

7  
Gl

Sample Narrative:

L1428769-11 WG1774233: at 25C

8  
Al

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0768	J	mg/l	mg/l	1	11/18/2021 19:03	WG1773233

9  
Sc

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.77		mg/kg	mg/kg	5	11/15/2021 19:24	WG1774279

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.301		1	11/18/2021 13:07	WG1773229

<sup>1</sup> Cp

<sup>2</sup> Tc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.21	T8	1	11/11/2021 14:00	<a href="#">WG1772746</a>

<sup>3</sup> Ss

<sup>4</sup> Cn

Sample Narrative:  
L1428769-12 WG1772746: 8.21 at 19C

<sup>5</sup> Sr

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	102		umhos/cm	1	11/16/2021 04:26	<a href="#">WG1774233</a>

<sup>6</sup> Qc

<sup>7</sup> Gl

Sample Narrative:  
L1428769-12 WG1774233: at 25C

<sup>8</sup> Al

<sup>9</sup> Sc

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0214	J	mg/l	mg/l	1	11/18/2021 19:06	<a href="#">WG1773233</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.14		mg/kg	mg/kg	5	11/15/2021 19:27	<a href="#">WG1774279</a>

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.81	T8	1	11/11/2021 14:00	WG1772746

Sample Narrative:  
L1428769-13 WG1772746: 8.81 at 18.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	85.8		10.0	1	11/16/2021 04:26	WG1774233

Sample Narrative:  
L1428769-13 WG1774233: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	0.667	J	0.100	1.00	5	11/15/2021 17:43	WG1774279

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.171		1	11/18/2021 13:10	WG1773229

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.52	T8	1	11/11/2021 14:00	WG1772746

Sample Narrative:

L1428769-14 WG1772746: 8.52 at 18.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	132		umhos/cm	1	11/16/2021 04:26	WG1774233

Sample Narrative:

L1428769-14 WG1774233: at 25C

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

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.0291	J	mg/l	mg/l	1	11/18/2021 19:09	WG1773233

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.44		mg/kg	mg/kg	5	11/15/2021 19:30	WG1774279

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.235		1	11/18/2021 13:13	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.41	T8	1	11/11/2021 14:00	<a href="#">WG1772746</a>

## Sample Narrative:

L1428769-15 WG1772746: 8.41 at 19.1C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	227		umhos/cm	10.0	1	11/16/2021 04:26
						<a href="#">WG1774233</a>

## Sample Narrative:

L1428769-15 WG1774233: at 25C

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Analyte	mg/l		mg/l	mg/l			
Hot Water Sol. Boron	0.108	J	0.0167	0.200	1	11/18/2021 19:12	WG1773233

## Metals (ICPMS) by Method 6020

	Result	<u>Qualifier</u>	MDL	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	5.17		0.100	1.00	5	11/18/2021 21:15	<a href="#">WG1776955</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.275		1	11/18/2021 13:24	WG1773229

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.60	<u>T8</u>	1	11/12/2021 08:00	<a href="#">WG1773265</a>

## Sample Narrative:

L1428769-16 WG1773265: 8.6 at 19.5C

## Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	<u>Qualifier</u>	RDL umhos/cm	Dilution	Analysis date / time	<u>Batch</u>
Specific Conductance	99.4		10.0	1	11/16/2021 04:26	<a href="#">WG1774233</a>

## Sample Narrative:

L1428769-16 WG1774233: at 25C

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

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	mg/l		mg/l	mg/l		date / time	
Hot Water Sol. Boron	0.0227	J	0.0167	0.200	1	11/18/2021 19:15	WG1773233

## Metals (ICPMS) by Method 6020

	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
Analyte	mg/kg		mg/kg	mg/kg		date / time	
Arsenic	4.01		0.100	1.00	5	11/15/2021 19:42	WG1774279

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.98	<a href="#">T8</a>	1	11/12/2021 08:00	<a href="#">WG1773265</a>

## Sample Narrative:

L1428769-17 WG1773265: 8.98 at 19.4C

## Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	96.6		10.0	1	11/16/2021 04:26	<a href="#">WG1774233</a>

## Sample Narrative:

L1428769-17 WG1774233: at 25C

## Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
Arsenic	0.575	<a href="#">J</a>	0.100	1.00	5	11/15/2021 19:45	<a href="#">WG1774279</a>

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

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.69	T8	1	11/12/2021 08:00	WG1773265

Sample Narrative:

L1428769-18 WG1773265: 8.69 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	122		10.0	1	11/16/2021 04:26	WG1774233

Sample Narrative:

L1428769-18 WG1774233: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	5.47		0.100	1.00	5	11/15/2021 19:48	WG1774279

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.25	T8	1	11/12/2021 08:00	WG1773265

Sample Narrative:

L1428769-19 WG1773265: 8.25 at 19.1C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	183		10.0	1	11/16/2021 04:26	WG1774233

Sample Narrative:

L1428769-19 WG1774233: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	6.69		0.100	1.00	5	11/15/2021 19:52	WG1774279

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.55	T8	1	11/12/2021 08:00	WG1773265

Sample Narrative:  
L1428769-20 WG1773265: 8.55 at 19.6C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	94.5		10.0	1	11/16/2021 04:26	WG1774233

Sample Narrative:  
L1428769-20 WG1774233: at 25C

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg	mg/kg			
Arsenic	4.79		0.100	1.00	5	11/15/2021 19:55	WG1774279

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1428769-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1428769-02 11/11/21 14:00 • (DUP) R3728417-2 11/11/21 14:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.58	8.54	1	0.467		1

Sample Narrative:

OS: 8.58 at 19.3C

DUP: 8.54 at 19.2C

L1428769-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1428769-03 11/11/21 14:00 • (DUP) R3728417-3 11/11/21 14:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	8.39	8.36	1	0.358		1

Sample Narrative:

OS: 8.39 at 19.2C

DUP: 8.36 at 19.5C

Laboratory Control Sample (LCS)

(LCS) R3728417-1 11/11/21 14:00

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

Sample Narrative:

LCS: 9.99 at 18.3C



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

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

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.69	8.68	1	0.115		1

Sample Narrative:

OS: 8.69 at 19.5C

DUP: 8.68 at 19.5C

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

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

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

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.55	8.54	1	0.117		1

Sample Narrative:

OS: 8.55 at 19.6C

DUP: 8.54 at 18.7C

Laboratory Control Sample (LCS)

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

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

Sample Narrative:

LCS: 10.01 at 18.8C

Method Blank (MB)

(MB) R3729392-1 11/15/21 09:23

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

L1428768-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1428768-15 11/15/21 09:23 • (DUP) R3729392-3 11/15/21 09:23

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	101	106	1	5.51		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1428768-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1428768-20 11/15/21 09:23 • (DUP) R3729392-4 11/15/21 09:23

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	175	169	1	3.50		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3729392-2 11/15/21 09:23

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) R3729793-1 11/16/21 04:26

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

L1428769-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1428769-09 11/16/21 04:26 • (DUP) R3729793-3 11/16/21 04:26

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	93.6	89.2	1	4.81		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1428769-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1428769-11 11/16/21 04:26 • (DUP) R3729793-4 11/16/21 04:26

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	212	195	1	8.66		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3729793-2 11/16/21 04:26

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	268	270	101	85.0-115	

Sample Narrative:

LCS: at 25C

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

Method Blank (MB)

(MB) R3731521-1 11/18/21 18:22

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

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

(LCS) R3731521-2 11/18/21 18:25 • (LCSD) R3731521-3 11/18/21 18:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.956	0.962	95.6	96.2	80.0-120			0.695	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3729755-1 11/15/21 17:36

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) R3729755-2 11/15/21 17:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	85.4	85.4	80.0-120	

L1428769-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428769-13 11/15/21 17:43 • (MS) R3729755-5 11/15/21 17:53 • (MSD) R3729755-6 11/15/21 17:56

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	0.667	80.7	90.9	80.0	90.2	5	75.0-125			11.9	20

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

Method Blank (MB)

(MB) R3731381-1 11/18/21 21:08

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) R3731381-2 11/18/21 21:12

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	94.3	94.3	80.0-120	

L1428769-15 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1428769-15 11/18/21 21:15 • (MS) R3731381-5 11/18/21 21:25 • (MSD) R3731381-6 11/18/21 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 %
Arsenic	100	5.17	93.0	89.3	87.8	84.1	5	75.0-125			4.11	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

# GLOSSARY OF TERMS

## Guide to Reading and Understanding Your Laboratory Report

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

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

## Abbreviations and Definitions

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

## Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
T8	Sample(s) received past/too close to holding time expiration.

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

# ACCREDITATIONS & LOCATIONS

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

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

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

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

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

