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April 11, 2024

Mr. James Hix
Orphaned Well Program East EPS
Colorado Energy and Carbon Management Commission
Department of Natural Resources
1120 Lincoln St, Suite 810
Denver, CO 80203

Work Order No.: 15970.004.015

**Re: Site Investigation Report for the Running Creek State #11 Tank Battery (66S64W/16SENW)
Location (Location ID # 322201, Facility ID # 209678)**

Dear Mr. Hix:

On behalf of the Colorado Energy and Carbon Management Commission (ECMC) Orphan Well Program (OWP), Weston Solutions, Inc. (Weston) has prepared this site investigation report for the Running Creek State #11 Tank Battery (66S64W/16SENW) (Site) and associated flowlines in Elbert County, CO. Work was performed in accordance with the Master Task Order Contract Number CMS #176679, Task Order Number WS-02, which is effective as of March 2, 2023.

SITE DESCRIPTION

The Site is located in Elbert County near the town of Elizabeth, CO. The Global Positioning System (GPS) coordinates are 39.535433°N, 104.563417°W. The Site is located approximately 0.53 miles (mi) southeast of the intersection of County Road 21 and County Road 186 and is surrounded by rangeland (**Figure 1**). According to the ECMC Colorado Oil and Gas Information System (COGIS) database, the following equipment is associated with the Site: an aboveground storage tank (AST), produced water vault (PWV), horizontal separator, on-location flowlines, meter shed, related pit (#111260), an off-location wellhead, and an off-location flowline. According to COGIS, the Location ID for the Site is listed as Active as of August 28, 2023. According to a Field Operations Notice (#403257995), the on-location flowlines were scheduled to be removed on January 2, 2023. According to an Off-Location Flowline Report (#403479053), the off-location flowline was verified as being abandoned in-place on June 16, 2023.

The Running Creek State #11 (OWP) (API 05-039-06583) oil and gas well was last operated by Smith Energy Corporation (Operator ID #70385), and the drilling operations were completed in 1987. The Running Creek State #11 (OWP) oil and gas well is located approximately 0.5 mi southeast of the Running Creek State #11 Tank Battery. According to COGIS, the Running Creek State #11 (OWP) well is listed as Shut In as of June 1, 2018. According to COGIS, a field visit conducted on June 3, 2008 discovered no visible signs of the pit remains and determined that the related pit had been replaced with a fiberglass tank (PWV). A Pit Status Evaluation Form (#1561196) requested that the related pit be closed as there was no indication of a pit on site. According to COGIS, the related pit is listed as Closed as of September 23, 1999. According to COGIS, the Site is located within a High Priority Habitats (HPH) area for Pronghorn Winter Concentration and Mule Deer Migration Corridor.

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According to COGIS, during an inspection performed on April 8, 2014 (Field Inspection Form #673702199), a crude oil leak was discovered at an AST valve, with a quantity of less than or equal to 5 barrels (bbls). Recommendations were to fix the leak. During an inspection performed on October 21, 2016 (Field Inspection Form #673714205), a produced water spill from the flowline was discovered at the crude oil AST and PWV, with a quantity of greater than or equal to 5 bbls. The flowline appeared to have leaked due to significant corrosion. A crew mobilized to work on the cleanup and the operator was contacted on October 21, 2016. Recommendations were to test the flowline prior to starting it back up and contact ECMC in 2 days. During an inspection performed on October 23, 2019 (Field Inspection Form #688306101), a crude oil AST spill was discovered inside of the AST containment, with a quantity of less than or equal to 1 bbl. Stained soils from the tank leak were discovered in the AST containment. The operator was contacted on October 23, 2019. Recommendations were to properly treat or dispose of the oily waste. On December 22, 2020, an inspector called the landowner/lessee for permission to enter the property and was informed that the well was “spewing” gas (Field Inspection Form #688309239). Upon inspection, the casing valve was cracked open and the connection to the gas cylinder/motor valve was leaking. The inspector shut the casing valve and tightened the connection to the gas cylinder. The landowner/lessee suspected that cows had gotten into the well and rubbed on the valve, as the barbed wire fence around the wellhead was not maintained.

The Site features and conditions at the time of the investigation can be seen in the photolog in **Attachment A**. Weston observed staining and other evidence of impacted soils at the tank battery which appeared to be indicative of a release which is described in the sections below.

SITE INVESTIGATION ACTIVITIES AND METHODOLOGY

Weston mobilized to the Site on April 17, 2023, to complete an initial site visit and technologically enhanced naturally occurring radioactive material (TENORM) sampling. Weston mobilized to the Site on June 1 and 7, 2023, to complete flowline screening and tank battery sampling. Weston mobilized to the Site a final time on November 6, 2023, to complete a post-decommissioning site visit. ECMC’s contractor Ram-Co Services, LLC (Ram-Co) was on-site during the April and June 2023 mobilizations to decommission the tank battery and assist Weston with sampling and perform decommissioning activities.

Prior to commencing on-site activities, Weston photographed the Site to document baseline site conditions, as shown in **Attachment A**.

Initial Site Visit and TENORM Sampling

Weston performed an initial site visit on April 17, 2023, to record the locations of oil and gas infrastructure, take pictures of the Site, and complete TENORM sampling. A site inventory confirmed the presence of the following: one AST, one PWV, one horizontal separator, on-site flowlines, and flowline risers.

Weston collected waste samples from the PWV and the AST; the samples were submitted to Pace Analytical Services (Pace) for analysis. The laboratory report for the TENORM sample (L1606981) was issued to the ECMC and is included in **Attachment D**; the results of the TENORM analyses were collected for waste characterization purposes only and results were below detection limits or natural background levels established by the Colorado Department of Public Health and Environment (CDPHE) for the requested radionuclides.



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Tank Battery Investigation

Weston mobilized to the Site on June 1, 2023, and again on June 7, 2023, with Ram-Co, to complete sampling of the tank battery. During the site visits, Ram-Co was observed decommissioning and removing the AST, the PWV, and the horizontal separator on-site. Weston visually inspected the area around the tank battery to determine the general condition of the Site and inventory any remaining on-site items.

After Ram-Co decommissioned and removed the equipment, Weston conducted soil screening and sample collection. Ram-Co assisted Weston in the sampling process by collecting soil with an excavator. Soil was screened at 10 locations at depths ranging from 2 ft to 6 ft below ground surface (bgs). Soils were screened in the field by a Weston scientist using a photoionization detector (PID) and a flame ionization detector (FID), and spoils were observed for visual or olfactory indications of impacts.

PWV Investigation – After decommissioning activities were completed, the PWV was investigated by collecting soil from the PWV base, as well as the four sidewalls of the PWV excavation.

Weston observed impacted soils (based on PID/FID readings, staining, or hydrocarbon odor) at the PWV (PWV01) base location (at 4 and 6 ft bgs) and at the west sidewall location (at 4 and 6 ft bgs). Impacted soils remain in-place both vertically and laterally at the former PWV. Impacts at the PWV were documented in COGIS following discovery, under Spill/Release #484700 and in the Spill/Release Report #403429365.

Weston directed Ram-Co to remove impacted soil from the PWV base location, focusing on removing the most heavily impacted soils first. A total of 10 cubic yards (cy) of soil were excavated and stored on-site pending disposal.

AST Investigation – After decommissioning activities were completed, the former AST (AST01) location was investigated by collecting soil from beneath the base of the respective structure and at the flowline riser location. Weston did not observe indications of impacts or a release associated with the former AST.

Separator Investigation – After decommissioning activities were completed, the horizontal separator (SEP01) was investigated by collecting soil from beneath the base of the respective structure at 2 and 4 ft bgs. Weston did not observe indications of impacts or a release associated with the former horizontal separator.

Flowline Investigation

Flowline Investigation – Two on-location flowlines were discovered during this investigation: between the horizontal separator and the AST (FL01), and between the horizontal separator and the PWV (FL02). Weston investigated the flowlines by screening soil at the flowline riser at each end point. On-site flowlines/screening locations were as follows:

- Flowline 1 – approximately 55 ft long, connecting the horizontal separator and AST
 - 322201_FL01_02@2' – riser at flowline connection point at horizontal separator
 - 322201_AST01_01@4' – riser at flowline connection point at AST
- Flowline 2 – approximately 25 ft long, connecting the horizontal separator and PWV
 - 322201_FL02_01@2' – riser at flowline connection point at horizontal separator



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- 322201_PWV01_E01@4' – riser at flowline connection point at PWV

Weston did not observe indications of impacts or a release associated with the on-location flowlines. The off-location flowline to the wellhead was documented as being abandoned in-place, per COGIS (Off-Location Flowline Report #403479053). Weston did not observe any flowline abandonment while on-site.

Spill Investigation

Spill Investigation – As described in the *Site Description* section above, multiple spills were noted during inspections at the Site during April 2014, October 2016, October 2019, and December 2020. Areas impacted by these spills included areas associated with the AST, PWV, on-location flowlines, and the wellhead. The scope of the investigation performed by Weston and described in the above sections is sufficient to investigate the spills associated with the AST, PWV, and on-location flowlines. Therefore, the conclusions and recommendations presented in this report are also applicable to the spills associated with the on-location equipment. Weston's investigation did not include the off-location wellhead or associated flowline to the remote tank battery.

Based on soil screening observations and ECMC sampling requirements, a total of five grab samples (one AST sample, two PWV samples, and two separator samples) were collected and submitted to Pace Analytical (Pace) for analysis. Soil samples were analyzed for ECMC Table 915-1 analytes, including total petroleum hydrocarbons (TPH) as total volatile petroleum hydrocarbons (TVPH), total extractable petroleum hydrocarbons (TEPH), and total recoverable petroleum hydrocarbons (TRPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); 1,2,4-trimethylbenzene (1,2,4-TMB); 1,3,5-trimethylbenzene (1,3,5-TMB); polycyclic aromatic hydrocarbons (PAHs); soil suitability for reclamation parameters, including electrical conductivity (EC), sodium adsorption ratio (SAR), hydrogen ion concentration (pH), and boron; and ECMC Table 915-1 metals analysis.

Excavations from decommissioning activities were backfilled by Ram-Co using uncontaminated on-site soil or clean backfill, as relevant. Soil sample locations were collected using a Geode[®] GPS receiver (sub-meter, sub-foot accuracy). Site condition photos were taken once work was completed. Soil sample and field screening locations are shown on the Sample Location Map (**Figure 2**).

According to Division of Water Resources (DWR) well permit data, a water well owned by Stohr, Cynthia (Permit #326566-, Receipt #10020241) and Thurman, Emmet (Permit #11880-, Receipt #9020915) are in the general area of the Site. The wells have recorded depth to water measurements of 220 and 30 ft bgs, respectively. However, these wells are screened at depths of 300 and 185 feet bgs, respectively, indicating that the wells are drilled for a deep confined aquifer. Construction information indicates that the static groundwater is likely to be greater than 100 feet bgs. All grab samples and field screening samples were field screened using a PID and/or FID, and screening results are provided in **Attachment C**.

A hand auger was used to collect a background soil sample from an area undisturbed by oil and gas activities. The background soil sample was submitted to the laboratory for soil reclamation parameter analysis (boron, EC, pH, and SAR) and ECMC Table 915-1 metals analysis by the U.S. Environmental Protection Agency (EPA) methods listed above.



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Post-Decommissioning Site Visit

Weston mobilized to the Site a final time on November 6, 2023, to complete a post-decommissioning site visit per ECMC request. Weston photographed the Site to document post-decommissioning site conditions, as shown in **Attachment A**. A site inventory was performed, noting the presence of minor debris (plastic sheeting) at the surface of the Site. The Site had been re-graded and leveled out to match the surrounding grade prior to the post-decommissioning Site visit except for one large pile of soil. Based on communication between the ECMC (James Hix) and the landowner, the soil pile consists of clean fill placed there by the landowner and is not related to oil and gas activity. All berms and other site features had been removed and no vegetation was visible on-site. The off-location flowline to the wellhead appeared to remain in-place.

RESULTS

Following receipt of the final laboratory reports, Weston performed Stage 2A data validation to determine the quality of the analytical data. The data validation evaluated sample-related quality control (QC) elements and assigned data validation qualifiers when QC element(s) did not meet the project-specified acceptance criteria. Qualified data are considered usable for project decision-making purposes with potential bias considered. Any rejected data (qualified R) are not usable due to serious deficiencies in meeting QC requirements, as the associated analyte may or may not be present in the Site sample. A copy of the data validation reports are included in **Attachment B**. All the analytical data in this data set were found to be usable.

Laboratory analytical results exceeded the ECMC Table 915-1 allowable concentration values for TPH, PAHs, SAR, and pH. Complete laboratory analytical results are tabulated in **Table 1**, and a summary of the results are discussed below. A copy of the laboratory reports are included in **Attachment D**.

TPH

Reported cumulative TPH concentrations exceeded ECMC Table 915-1 screening levels in the horizontal separator sample (322201_SEP01_B01@2') with a concentration of 1,813 milligrams per kilogram (mg/kg). All other reported TPH concentrations were below ECMC Table 915-1 screening levels with concentrations ranging from 7.18 mg/kg to 285.6 mg/kg.

Other Volatile Compounds (BTEX and TMBs)

Measured BTEX and TMB concentrations were below laboratory limits of detection (LODs) or ECMC Table 915-1 screening levels for all samples analyzed.

PAHs

Reported PAH concentrations for the horizontal separator sample (322201_SEP01_B01@2') exceeded ECMC Table 915-1 screening levels for Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene with concentrations of 5.67 mg/kg, 7.52 mg/kg, 9.04 mg/kg, 0.951 mg/kg, and 5.54 mg/kg, respectively. All other measured PAH concentrations were below laboratory LODs or ECMC Table 915-1 screening levels for all samples analyzed.



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Soil Suitability for Reclamation

The reported SAR calculation exceeded ECMC Table 915-1 allowable values in a PWV sidewall sample (322201_PWV01_W01@6') with a measurement of 6.48. The reported pH measurements exceeded the ECMC Table 915-1 screening levels in a PWV base sample (322201_PWV01_B01@6') and a PWV sidewall sample (322201_PWV01_W01@6') with pH measurements of 8.59 and 8.47, respectively. All other analytes were below laboratory LODs or ECMC Table 915-1 values for all samples analyzed.

Metals

Measured metals concentrations were below laboratory LODs or site-specific background concentrations (1.25 x average background concentrations) or the ECMC Table 915-1 cleanup values.

Field Screening Results

Soil samples were field screened using a MiniRAE 3000 PID and/or a TVA2020 PID/FID that were bump tested daily and calibrated as needed. Field screening results for collected soil samples and field screened soil samples are provided in **Attachment C**. A completed Tank Battery Closure Checklist, Partially Buried Vault (PBV) Closure Checklist, and the Flowline Closure Checklist are provided in **Attachment E**.

RECOMMENDATIONS

Weston observed indications that multiple legacy releases had occurred at the Site. Groundwater was not encountered at the Site and, based on DWR permit data, is expected to be at a depth greater than 100 ft bgs. Therefore, ECMC Table 915-1 Protection of Groundwater Soil Screening Levels (GW SSLs) are not applicable to this Site. Laboratory analytical results exceeded the ECMC Table 915-1 allowable concentrations for TPH, PAHs, SAR, and pH. Weston recommends that the impacted material left in place at the PWV and horizontal separator be excavated and disposed of off-site and be replaced with clean backfill.



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Sincerely,
Weston Solutions, Inc.

A handwritten signature in black ink, appearing to read "Andy Wanta".

Andy Wanta
Project Geologist

A handwritten signature in black ink, appearing to read "Jess Zielinski".

Jess Zielinski
Engineering Professional

A handwritten signature in black ink, appearing to read "Sammy Allen".

Sammy Allen
Project Manager

Attachments:

Figures

Figure 1 – Site Location Map

Figure 2 – Sample Location Map

Table

Table 1 – Laboratory Results Summary Table – Soil Samples

Attachment A: Photolog

Attachment B: Data Validation Reports

Attachment C: Field Screening Results

Attachment D: Laboratory Analytical Reports

Attachment E: Closure Checklists

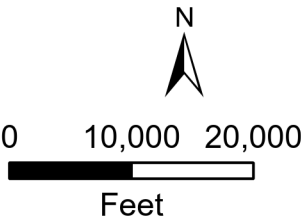
FIGURES


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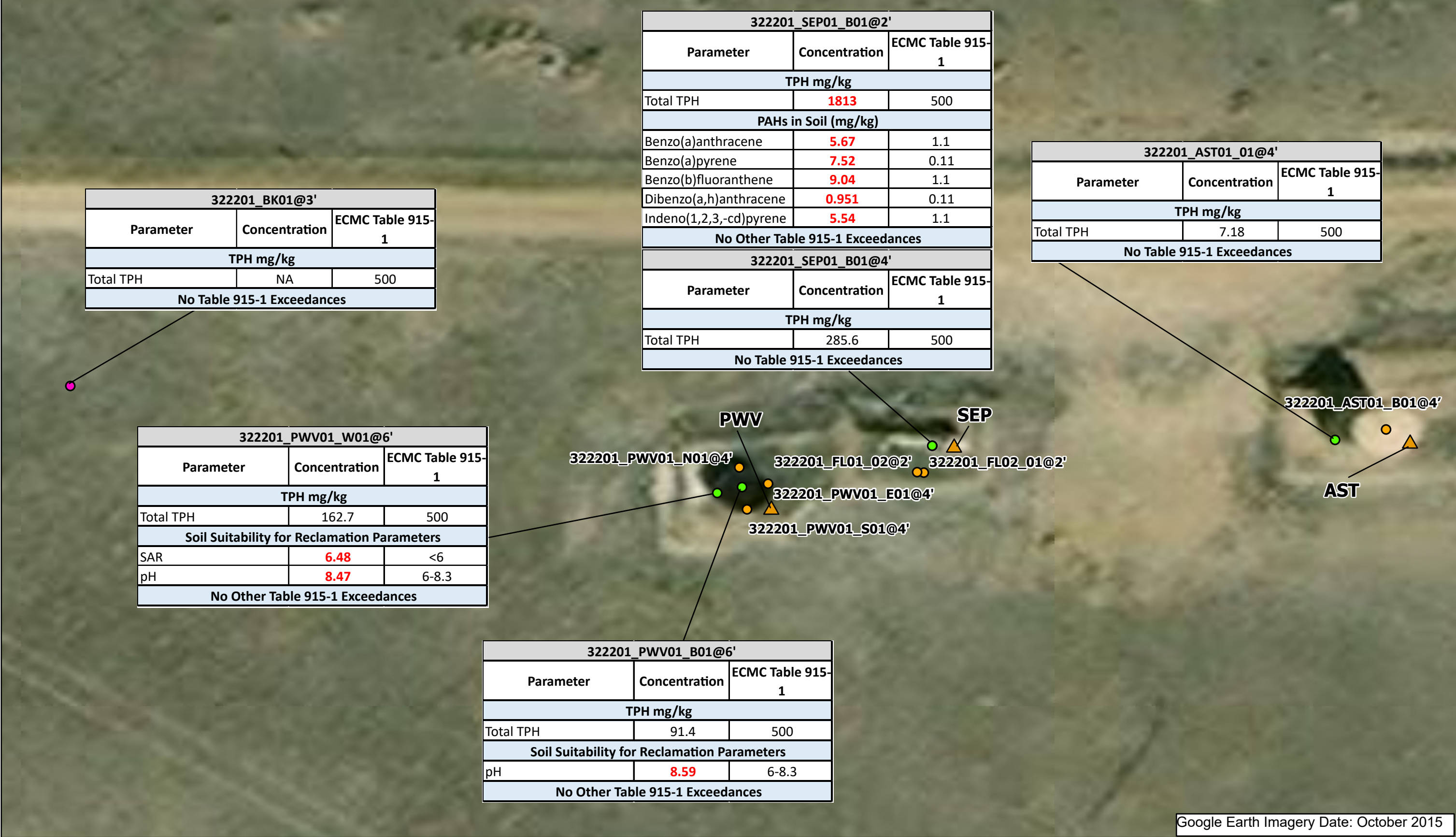
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● Site Location



REPORT DATE: December 2023	FIGURE NO: 1	Running Creek State #11 Tank Battery SITE LOCATION MAP LOCATION ID: 322201 FACILITY ID: 209678 ENERGY AND CARBON MANAGEMENT COMMISSION
PROJECT: ECMC Orphan Well Program	CLIENT NAME: ECMC	
		
SCALE: 1:189,000		

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TABLE

Laboratory Results Summary Table
Running Creek State #11 Tank Battery
Soil Samples

ECMC Soil Analytical Table - Running Creek State #11 Tank Battery			Organic Compounds in Soil (mg/kg)																								PAHs in Soil (mg/kg)											
ECMC Allowable Concentration (Soil) -->			500			500			500			500			1.2			490			5.8			58			30			27			1800			360		
Site Specific Background Concentration -->																																						
Location	Sample Date	Sample ID	TPH (sum of volatile, extractable, and recoverable hydrocarbons)			TPH (Total volatile [C6-C10] hydrocarbons)			TPH (total extractable [C10-C28] hydrocarbons)			TPH (total recoverable [C28-C36] hydrocarbons)			Benzene			Toluene			Ethylbenzene			Total Xylenes (sum of o-, m-, and p- isomers)			1,2,4-Trimethylbenzene			1,3,5-Trimethylbenzene			Anthracene			Acenaphthene		
			[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC			
Running Creek State #11 Tank Battery	6/7/2023	322201_AST01_01@4'	7.18			<0.100	U		<4.00	U		7.18			<0.00100	U		<0.00500	U		<0.002500	U		<0.006500	U		<0.00500	U		<0.00500	U		<0.00600	U		<0.00600	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_B01@6'	91.4			0.353			49.2			41.8			<0.00100	U		<0.00500	U		<0.002500	U		<0.006500	U		0.00665			<0.00500	U		<0.00600	U		<0.00600	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_W01@6'	162.7			0.391			73.9			88.4			0.00183			<0.00500	U		0.0104			0.0707			0.0445			0.0104			<0.00600	U		<0.00600	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_SEP01_B01@4'	285.6			<0.100	U		88.6			197			<0.00100	U		<0.00500	U		<0.002500	U		<0.006500	U		<0.00500	U		<0.00500	U		<0.00600	U		<0.00600	U	
Running Creek State #11 Tank Battery	6/1/2023	322201_SEP01_B01@2'	1813			<0.500	U		583			1230			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		0.343			0.192		
Running Creek State #11 Tank Battery	6/7/2023	322201_BK01@3'	NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA			NA		

Legend:
ECMC - Energy and Carbon Management Commission
Orange Highlight - ECMC Table 915-1 TPH, BTEX, PAH, metal exceedance
Yellow Highlight - ECMC Table 915-1 soil suitability exceedance
Grey Highlight - below laboratory detection limit
NA - not analyzed
mg/kg - milligrams per kilogram
mmhos/cm - milliohms per centimeter
[Conc] - reported concentration
Q - qualifier (reported by laboratory or data validation)
RC - reason code (reported by data validation)
*Per the Directors approval, the laboratory practical quantitation limit (“PQL”) for Chromium VI has been substituted for the Residential Soil Screening Level Concentration listed in Table 915-1.
**The Pace Analytical Lab Report refers to Electrical Conductivity (EC) as Specific Conductance (SC)
Note - Refer to Data Validation Report for Q and RC definitions

Laboratory Results Summary Table
Running Creek State #11 Tank Battery
Soil Samples

ECMC Soil Analytical Table - Running Creek State #11 Tank Battery			PAHs in Soil (mg/kg)																													
ECMC Allowable Concentration (Soil) -->			1.1			0.11			1.1			11			110			0.11			240			240			1.1			2		
Site Specific Background Concentration -->																																
Location	Sample Date	Sample ID	Benzo(a)anthracene			Benzo(a)pyrene			Benzo(b)fluoranthene			Benzo(k)fluoranthene			Chrysene			Dibenzo(a,h)anthracene			Fluoranthene			Fluorene			Indeno(1,2,3-cd)pyrene			Naphthalene		
			[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC
Running Creek State #11 Tank Battery	6/7/2023	322201_AST01_01@4'	<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.0200	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_B01@6'	<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		0.0325			<0.00600	U		<0.0200	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_W01@6'	<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		0.0581			<0.00600	U		0.072		
Running Creek State #11 Tank Battery	6/7/2023	322201_SEP01_B01@4'	<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.0200	U	
Running Creek State #11 Tank Battery	6/1/2023	322201_SEP01_B01@2'	5.67			7.52			9.04			2.54			5.64			0.951			7.23			0.0613			5.54			0.223		
Running Creek State #11 Tank Battery	6/7/2023	322201_BK01@3'	NA			NA			NA			NA			NA			NA			NA			NA			NA			NA		

Legend:
ECMC - Energy and Carbon Management Commission
Orange Highlight - ECMC Table 915-1 TPH, BTEX, PAH, metal exceedance
Yellow Highlight - ECMC Table 915-1 soil suitability exceedance
Grey Highlight - below laboratory detection limit
NA - not analyzed
mg/kg - milligrams per kilogram
mmhos/cm - milliohms per centimeter
[Conc] - reported concentration
Q - qualifier (reported by laboratory or data validation)
RC - reason code (reported by data validation)
*Per the Directors approval, the laboratory practical quantitation limit (“PQL”) for Chromium VI has been substituted for the Residential Soil Screening Level Concentration listed in Table 915-1.
**The Pace Analytical Lab Report refers to Electrical Conductivity (EC) as Specific Conductance (SC)
Note - Refer to Data Validation Report for Q and RC definitions

Laboratory Results Summary Table
Running Creek State #11 Tank Battery
Soil Samples

ECMC Soil Analytical Table - Running Creek State #11 Tank Battery			PAHs in Soil (mg/kg)									Soil Suitability for Reclamation Parameters									Metals (mg/kg)											
ECMC Allowable Concentration (Soil) -->			180			18			24			<4			<6			(6-8.3)			2			0.68			15000			71		
Site Specific Background Concentration -->																								4.4								
Location	Sample Date	Sample ID	Pyrene			1-Methylnaphthalene			2-Methylnaphthalene			Specific Conductance (SC) (mmhos/cm)			Sodium Adsorption Ratio (Calculation)			pH (pH units)			Boron (mg/L)			Arsenic			Barium			Cadmium		
			[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC
Running Creek State #11 Tank Battery	6/7/2023	322201_AST01_01@4'	<0.00600	U		<0.0200	U		<0.0200	U		0.216			0.483			8.05	J	H	0.221			2.03			93.4			<1.00	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_B01@6'	<0.00600	U		0.042			0.0402			0.314			1.95			8.59	J	H	1.35			1.68			62.0			<1.00	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_W01@6'	0.00836			0.19			0.298			0.880			6.48			8.47	J	H	1.86			<1.00	U		46.7			<1.00	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_SEP01_B01@4'	<0.00600	U		<0.0200	U		<0.0200	U		0.596			1.12			8.03	J	H	0.405			1.53			63.4			<1.00	U	
Running Creek State #11 Tank Battery	6/1/2023	322201_SEP01_B01@2'	6.65			0.036			0.0541			0.894			4.75			7.57	J	H	0.882			2.43			55.2			<1.00	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_BK01@3'	NA			NA			NA			0.067			0.04			7.33	J	H	<0.20	U		3.52			93.1			<1.00	U	

Legend:
ECMC - Energy and Carbon Management Commission
Orange Highlight - ECMC Table 915-1 TPH, BTEX, PAH, metal exceedance
Yellow Highlight - ECMC Table 915-1 soil suitability exceedance
Grey Highlight - below laboratory detection limit
NA - not analyzed
mg/kg - milligrams per kilogram
mmhos/cm - milliohms per centimeter
[Conc] - reported concentration
Q - qualifier (reported by laboratory or data validation)
RC - reason code (reported by data validation)
*Per the Directors approval, the laboratory practical quantitation limit (“PQL”) for Chromium VI has been substituted for the Residential Soil Screening Level Concentration listed in Table 915-1.
**The Pace Analytical Lab Report refers to Electrical Conductivity (EC) as Specific Conductance (SC)
Note - Refer to Data Validation Report for Q and RC definitions

Laboratory Results Summary Table
Running Creek State #11 Tank Battery
Soil Samples

ECMC Soil Analytical Table - Running Creek State #11 Tank Battery			Metals (mg/kg)																				
ECMC Allowable Concentration (Soil) -->			0.3*			3100			400			1500			390			390			23000		
Site Specific Background Concentration -->																							
Location	Sample Date	Sample ID	Chromium (VI)			Copper			Lead			Nickel			Selenium			Silver			Zinc		
			[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC	[Conc]	Q	RC
Running Creek State #11 Tank Battery	6/7/2023	322201_AST01_01@4'	<1.00	U		16.5			10.6			8.47			<2.50	U		<0.500	U		<25.0	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_B01@6'	<1.00	U		5.48			4.31			5.73			<2.50	U		<0.500	U		<25.0	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_PWV01_W01@6'	<1.00	U		10.3			6.15			5.33			<2.50	U		<0.500	U		<25.0	U	
Running Creek State #11 Tank Battery	6/7/2023	322201_SEP01_B01@4'	<1.00	U		5.79			4.98			6.60			<2.50	U		<0.500	U		<25.0	U	
Running Creek State #11 Tank Battery	6/1/2023	322201_SEP01_B01@2'	<1.00	U		8.18			8.56	J+	B	9.55			<2.50	U		<0.500	U		33.7		
Running Creek State #11 Tank Battery	6/7/2023	322201_BK01@3'	NA			14.0			10.5			10.2			<2.50	U		<0.500	U		47.3		

Legend:
ECMC - Energy and Carbon Management Commission
Orange Highlight - ECMC Table 915-1 TPH, BTEX, PAH, metal exceedance
Yellow Highlight - ECMC Table 915-1 soil suitability exceedance
Grey Highlight - below laboratory detection limit
NA - not analyzed
mg/kg - milligrams per kilogram
mmhos/cm - milliohms per centimeter
[Conc] - reported concentration
Q - qualifier (reported by laboratory or data validation)
RC - reason code (reported by data validation)
*Per the Directors approval, the laboratory practical quantitation limit (“PQL”) for Chromium VI has been substituted for the Residential Soil Screening Level Concentration listed in Table 915-1.
**The Pace Analytical Lab Report refers to Electrical Conductivity (EC) as Specific Conductance (SC)
Note - Refer to Data Validation Report for Q and RC definitions

ATTACHMENT A

PHOTOLOG

Photo Report for RUNNING CREEK STATE #11 Tank Battery

Photo Info	
Photo Type:	Overview
Photo Name:	AST
Direction:	S
Description:	AST
Photo Date/Time:	04/17/2023 12:06:00 PM
Photographer:	Zach Ashauer
Photo Info	
Photo Type:	Overview
Photo Name:	PWV and Separator
Direction:	E
Description:	PWV and Separator
Photo Date/Time:	04/17/2023 12:07:00 PM
Photographer:	Zach Ashauer





Photo Info		
Photo Type:	Overview	
Photo Name:	Riser	
Direction:	S	
Description:	Riser between AST and PWV	
Photo Date/Time:	04/17/2023 12:07:00 PM	
Photographer:	Zach Ashauer	
Photo Info		
Photo Type:	Sample Location	
Photo Name:	Sampling at Separator	
Direction:	SE	
Description:	Collecting sample at separator at 2 ft from excavator bucket	
Photo Date/Time:	06/01/2023 13:48:00 PM	
Photographer:	COGCC Admin	

Photo Info		
Photo Type:	Container	
Photo Name:	PWV	
Direction:	SW	
Description:	PWV prior to removal	
Photo Date/Time:	06/01/2023 13:58:00 PM	
Photographer:	COGCC Admin	
Photo Info		
Photo Type:	Overview	
Photo Name:	Sampling at Separator	
Direction:	SE	
Description:	Collecting sample at separator base location	
Photo Date/Time:	06/01/2023 13:48:00 PM	
Photographer:	COGCC Admin	

Photo Info		
Photo Type:	Overview	
Photo Name:	PWV removal	
Direction:	SW	
Description:	Ram-Co removing PWV	
Photo Date/Time:	06/01/2023 14:07:00 PM	
Photographer:	COGCC Admin	
Photo Info		
Photo Type:	Overview	
Photo Name:	Impacted area	
Direction:	SE	
Description:	Impacts discovered near AST. Flowline removal caused spill	
Photo Date/Time:	06/07/2023 09:45:00 AM	
Photographer:	COGCC Admin	

Photo Info		
Photo Type:	Overview	
Photo Name:	PWV base	
Direction:	NE	
Description:	PWV excavation	
Photo Date/Time:	06/07/2023 09:53:00 AM	
Photographer:	COGCC Admin	
Photo Info		
Photo Type:	Overview	
Photo Name:	Separator base	
Direction:	SE	
Description:	Excavation below separator	
Photo Date/Time:	06/07/2023 10:12:00 AM	
Photographer:	COGCC Admin	



Photo Info		
Photo Type:	Overview	
Photo Name:	PWV removal	
Direction:	S	
Description:	PWV removed	
Photo Date/Time:	06/07/2023 10:15:00 AM	
Photographer:	COGCC Admin	
Photo Info		
Photo Type:	Overview	
Photo Name:	Impacted soil removal	
Direction:	SW	
Description:	Removal of impacted soil	
Photo Date/Time:	06/07/2023 13:10:00 PM	
Photographer:	COGCC Admin	

Photo Info	
Photo Type:	Sample Location
Photo Name:	AST excavation
Direction:	N
Description:	Excavation at AST footprint
Photo Date/Time:	06/07/2023 09:33:00 AM
Photographer:	Nathan Fields






Photo Info		
Photo Type:	Overview	
Photo Name:	Post Decommissioning Site Overview	
Direction:	E	
Description:	Post decommissioning site overview	
Photo Date/Time:	11/06/2023 14:19:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Overview	
Photo Name:	Post Decommissioning Site Overview	
Direction:	S	
Description:	Post decommissioning site overview	
Photo Date/Time:	11/06/2023 14:22:00 PM	
Photographer:	Kyle Spivey	



Photo Info		
Photo Type:	Overview	
Photo Name:	Soil Mound	
Direction:	S	
Description:	Large mound of clean soil near the former AST location	
Photo Date/Time:	11/06/2023 14:26:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Overview	
Photo Name:	Soil Mound	
Direction:	E	
Description:	Large mound of clean soil near the former AST location	
Photo Date/Time:	11/06/2023 14:30:00 PM	
Photographer:	Kyle Spivey	



Photo Info		
Photo Type:	Overview	
Photo Name:	Post Decommissioning Site Overview	
Direction:	S	
Description:	Soil with dark staining remaining on site.	
Photo Date/Time:	11/06/2023 14:32:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Overview	
Photo Name:	Soil Mound	
Direction:	SW	
Description:	Mound of clean soil near the former AST location and overview of site	
Photo Date/Time:	11/06/2023 14:41:00 PM	
Photographer:	Kyle Spivey	





Photo Info		
Photo Type:	Overview	
Photo Name:	Soil Mound	
Direction:	E	
Description:	Large mound of clean soil near the former AST location. Plastic debris in foreground	
Photo Date/Time:	11/06/2023 14:42:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Overview	
Photo Name:	Post Decommissioning Site Overview	
Direction:	E	
Description:	Post decommissioning site overview	
Photo Date/Time:	11/06/2023 14:46:00 PM	
Photographer:	Kyle Spivey	

Photo Info		
Photo Type:	Overview	
Photo Name:	Soil Mound	
Direction:	E	
Description:	Large mound of clean soil located near the AST location	
Photo Date/Time:	11/06/2023 14:51:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Site Overview	
Photo Name:	Post Decommissioning Site Overview	
Direction:	N	
Description:	Post decommissioning overview near the former AST area	
Photo Date/Time:	11/06/2023 14:59:00 PM	
Photographer:	Kyle Spivey	

ATTACHMENT B

DATA VALIDATION REPORTS

DATA VALIDATION REPORT

Colorado Oil & Gas Conservation Commission Orphan Well Program

SAMPLE DELIVERY GROUP: L1606981

Prepared by
Weston Solutions, Inc
1536 Cole Blvd., Suite 375
Lakewood, CO 80401

June 12, 2023



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I. INTRODUCTION

Task Order Title: Running Creek-State #11 Tank Battery

Contract: 176679

Weston Work Order No.: 15970.004.015

Sample Delivery Group: L1606981

Project Manager: Sammy Allen

Matrix: SCM

QC Level: 2A

No. of Samples: 3

No. of Reanalyses/Dilutions: 0

Laboratory: Pace Analytical

TABLE I – SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection Time	Method
322201_TENORM_AST01	L1606981-01	SCM	04/17/2023 12:00	Radiochemistry by Methods: DOE Ga-01-R/901.1 HASL 300 Po-2RC
322201_TENORM_PWV01	L1606981-08	SCM	04/17/2023 12:10	Radiochemistry by Methods: DOE Ga-01-R/901.1 HASL 300 Po-2RC



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II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) L1598417:

- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- Custody seals were present and intact on the sample coolers upon receipt at the laboratory.



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TABLE II – DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected, as noted in the quantitation section of each method reviewed.	The analyte was analyzed for but was not detected, as noted in the sample results verification section of each method reviewed.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" identified as present, and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



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TABLE III – REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	Not applicable.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICS-A/ICS-AB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICP-MS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (bromofluorobenzene [BFB] or decafluorotriphenylphosphine [DFTPP]) was not compliant.	ICP-MS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



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Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated FB or EB as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
*II, *III	Other problems identified in the data are described in Section II "Sample Management" or Section III "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II "Sample Management" or Section III "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



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III. METHODS: DOE Ga-01-R/901.1 and HASL 300 Po-2RC

Z. Lawson of Weston Solutions, Inc. reviewed the SDG on June 12, 2023.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *Colorado Department of Natural Resources Colorado Oil and Gas Conservation Commission Orphan Well Program Quality Assurance Project Plan (QAPP) Revision 1 (2023)*, *Method DOE Ga-01-R/901.1*, and *Method HASL 300-Po-2RC*.

III.1. HOLDING TIMES

Analytical holding time for all analyses were met; no data qualification required.

III.2. TUNING AND CALIBRATION

Tuning and calibration is not verified at Level 2A validation.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

Site sample 322201_TENORM_AST01 is qualified as a non-detect (U) for Bismuth-214 at a concentration of 0.0355 picoCuries per gram (pCi/g) because the calculated normalized difference between the sample and method blank are not considered significantly different at the 1% level of confidence.

Site sample 322201_TENORM_AST01 is qualified as a non-detect (U) for Polonium-210 at a concentration of 0.498 pCi/g because the calculated normalized difference between the sample and method blank are not considered significantly different at the 1% level of confidence.

Site sample 322201_TENORM_PWV01 is qualified as a non-detect (U) for Lead-210 at a concentration of 0.176 pCi/g because the calculated normalized difference between the sample and method blank are not considered significantly different at the 1% level of confidence.

Site sample 322201_TENORM_PWV01 is qualified as a non-detect (U) for Polonium-210 at a concentration of 0.631 pCi/g because the calculated normalized difference between the sample and method blank are not considered significantly different at the 1% level of confidence.

III.3.2. LABORATORY CONTROL SAMPLES

LCS and LCSD recoveries were within the laboratory control limits. LCSD RPDs were within the laboratory control limits. No data qualification is required.

III.3.3. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on samples from this SDG. No data qualification is required.

III.3.4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS analyses were not performed on samples from this SDG. Accuracy and precision were evaluated based upon LCS/LCSD results.

III.4. SURROGATES

Surrogates are not a part of the methods utilized in these radiochemistry analyses.



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III.5. INTERNAL STANDARDS PERFORMANCE

Internal standards are not utilized in the methods in these radiochemistry analyses.

III.6. SAMPLE RESULT VERIFICATION

Sample results were not verified at Level 2A validation. Reported non-detects are valid to the minimum detectable activity (MDA).

III.7. FIELD QC SAMPLES

Weston evaluated field quality control (QC) samples and, if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Weston used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.7.1. TRIP BLANKS

No trip blanks were identified in this SDG.

III.7.2. FIELD AND EQUIPMENT BLANKS

No field blanks or equipment blanks were identified in this SDG.

III.7.3. FIELD DUPLICATES

No field duplicate samples were identified in this SDG.

DATA VALIDATION REPORT

Colorado Oil & Gas Conservation Commission Orphan Well Program

SAMPLE DELIVERY GROUP: L1622159

Prepared by
Weston Solutions, Inc
1536 Cole Blvd., Suite 375
Lakewood, CO 80401

July 12, 2023



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I. INTRODUCTION

Task Order Title: Running Creek State #11 Tank

Contract: 176679

Weston Work Order No.: 15970.004.015

Sample Delivery Group: L1622159

Project Manager: Sammy Allen

Matrix: Soil

QC Level: 2A

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: Pace Analytical

TABLE I – SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection Time	Method
322201_SEP01_B01@2'	L1622159-01	Soil	06/01/2023 13:45	Hexavalent Chromium (7199) pH (9045D) Specific Conductance (9050AMod) ICP Metals (6010B-NE493 Ch 2) ICPMS Metals (6020) TPH-GRO & VOCs (8260B) DRO/ORO (8015M) SVOCs (PAHs by 8270C-SIM)



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II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) L1622159:

- The laboratory received samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0 °C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.



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TABLE II – DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected, as noted in the quantitation section of each method reviewed.	The analyte was analyzed for but was not detected, as noted in the sample results verification section of each method reviewed.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" as present, and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



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TABLE III – REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	Not applicable.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990 .	Correlation coefficient (r) was <0.995 .
R	Calibration relative response factor (RRF) was <0.05 .	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.
+	False positive – reported compound was not present.	False positive – reported compound was not present.



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Reason Code	Organic	Inorganic
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated FB or EB as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management" or Section III "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management" or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



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III. EPA METHODS: 7199, 9045D, 9050AMod, 6010B-NE493 Ch 2, 6020A, 8260B, 8015M, 8270C-SIM

Z. Lawson of Weston Solutions, Inc. reviewed the SDG on July 12, 2023

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *Colorado Department of Natural Resources Colorado Oil and Gas Conservation Commission Orphan Well Program Quality Assurance Project Plan (QAPP) Revision 1 (2023)*, *EPA Method 7199*, *EPA Method 9045D*, *EPA Method 9050AMod*, *EPA Method 6010B-NE493 Ch2*, *EPA Method 6020A*, *EPA Method 8260B*, *EPA Method 8015M*, *EPA Method 8270C-SIM*, *National Functional Guidelines for Inorganic Superfund Data Review (2020)*, and *National Functional Guidelines for Organic Superfund Data Review (2020)*.

III.1. HOLDING TIMES

Analytical holding time for all analyses were met with the following exception(s):

The site sample was analyzed for pH (EPA Method 9045D) outside of the holding time. The pH value recorded for the associated sample is qualified as estimated (J).

III.2. TUNING AND CALIBRATION

Tuning and calibration is not verified at Level 2A validation.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

All method blanks were free from target compound contamination with the following exception(s):

The method blank analyzed for metals (EPA Method 6020A) has a trace detect for lead. The associated sample contained lead at a concentration less than 10x the amount present in the blank; therefore, the detected result for lead was qualified as estimated with a potential high bias (J+).

III.3.2 INTERFERENCE CHECK SAMPLES

Interference check standard (ICSA/ICSAB) recoveries are not evaluated at Level 2A validation.

III.3.3. LABORATORY CONTROL SAMPLES

Laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) recoveries were within the laboratory control limits. LCSD relative percent differences (RPDs) were within the laboratory control limits. No data qualification is required.

III.3.4. LABORATORY DUPLICATES

Laboratory duplicate analyses were performed for hexavalent chromium analysis (EPA Method 7199) from this SDG. Both parent and duplicate sample were non-detect; therefore, the duplicate relative percent difference (RPD) is zero which was within the laboratory control limits. No data qualification is required.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike analyses were not performed on samples present in this sample delivery group (SDG). No data qualification is required.



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III.3.6. SERIAL DILUTION

Serial dilution analysis was not required for this SDG. No data qualification is required.

III.4. SURROGATES

One surrogate was recovered above the laboratory control limits in the volatile analysis (EPA Method 8260B) for sample 322201_SEP01_B01@2'. All analytes were non-detect; therefore, no data qualification is required.

III.5. INTERANAL STANDARDS PERFORMANCE

The internal standard intensities are not evaluated at Level 2A validation.

III.6. SAMPLE RESULT VERIFICATION

Sample results were not verified at Level 2A validation. Reported non-detects are valid to the reporting detection limit (RDL).

All sample dilutions are included in Table IV below, RDLs were appropriately adjusted.

TABLE IV – SAMPLE DILUTIONS

Sample ID	Method	Dilution Factor
322201_SEP01_B01@2'	EPA Method 6020A	5x for all analytes
	EPA Method 8015M	10x for all analytes
	EPA Method 87270C-SIM	10x: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Fluoranthene, Indeno[1,2,3-cd]pyrene, Pyrene

III.7. FIELD QC SAMPLES

Weston evaluated field quality control (QC) samples and, if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Weston used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.7.1. TRIP BLANKS

No trip blanks were identified in this SDG.

III.7.2. FIELD AND EQUIPEMENT BLANKS

No field blanks or equipment blanks were identified in this SDG.

III.7.3. FIELD DUPLICATES

No field duplicate samples were identified in this SDG.

DATA VALIDATION REPORT

Colorado Oil & Gas Conservation Commission Orphan Well Program

SAMPLE DELIVERY GROUP: L1624309

Prepared by
Weston Solutions, Inc
1536 Cole Blvd., Suite 375
Lakewood, CO 80401

July 12, 2023



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I. INTRODUCTION

Task Order Title: Running Creek State #11 Tank Battery

Contract: 176679

Weston Work Order No.: 15970.004.015

Sample Delivery Group: L1624309

Project Manager: Sammy Allen

Matrix: Soil

QC Level: 2A

No. of Samples: 6

No. of Reanalyses/Dilutions: 0

Laboratory: Pace Analytical

TABLE I – SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection Time	Method
322201_BK01@3'	L1624309-01	Soil	06/07/2023 10:25	pH (9045D) Specific Conductance (9050AMod) ICP Metals (6010B-NE493 Ch 2) ICP-MS Metals (6020)
322201_TB01	L1624309-02	Water	06/07/2023	TPH GRO & VOCs (8260B)
322201_SEP01_B01@4'	L1624309-03	Soil	06/07/2023 11:50	Hexavalent Chromium (7199) pH (9045D) Specific Conductance (9050AMod) ICP Metals (6010B-NE493 Ch 2) ICP-MS Metals (6020) TPH-Low Fraction (8015D/GRO) VOCs (8260B) DRO/ORO (8015M) SVOCs (PAHs by 8270C-SIM)
322201_AST01_01@4'	L1624309-04	Soil	06/07/2023 12:00	Hexavalent Chromium (7199) pH (9045D) Specific Conductance (9050AMod) ICP Metals (6010B-NE493 Ch 2) ICP-MS Metals (6020) TPH-Low Fraction (8015D/GRO) VOCs (8260B) DRO/ORO (8015M)



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				SVOCs (PAHs by 8270C-SIM)
322201_PWV01_B01@6'	L1624309-05	Soil	06/07/2023 13:15	Hexavalent Chromium (7199) pH (9045D) Specific Conductance (9050AMod) ICP Metals (6010B-NE493 Ch 2) ICP-MS Metals (6020) TPH-Low Fraction (8015D/GRO) VOCs (8260B) DRO/ORO (8015M) SVOCs (PAHs by 8270C-SIM)
322201_PWV01_W01@6'	L1624309-06	Soil	06/07/2023 13:30	Hexavalent Chromium (7199) pH (9045D) Specific Conductance (9050AMod) ICP Metals (6010B-NE493 Ch 2) ICP-MS Metals (6020) TPH-Low Fraction (8015D/GRO) VOCs (8260B) DRO/ORO (8015M) SVOCs (PAHs by 8270C-SIM)



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II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form, and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) L1624309:

- The laboratory received samples in this SDG on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0 °C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.



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TABLE II – DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for but was not detected, as noted in the quantitation section of each method reviewed.	The analyte was analyzed for but was not detected, as noted in the sample results verification section of each method reviewed.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or "presumptively" identified as present, and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.



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TABLE III – REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	Not applicable.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICS-A/ICS-AB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICP-MS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (bromofluorobenzene [BFB] or decafluorotriphenylphosphine [DFTPP]) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.



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Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated FB or EB as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
\$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
*II, *III	Other problems identified in the data are described in Section II "Sample Management" or Section III "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II "Sample Management" or Section III "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.



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III. EPA METHODS: 7199, 9045D, 9050AMod, 6010B-NE493 Ch 2, 6020A, 8260B, 8015D/GRO 8015M, 8270C-SIM

Z. Lawson of Weston Solutions, Inc. reviewed the SDG on July 12, 2023.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *Colorado Department of Natural Resources Colorado Oil and Gas Conservation Commission Orphan Well Program Quality Assurance Project Plan (QAPP) Revision 1 (2023)*, *EPA Method 7199*, *EPA Method 9045D*, *EPA Method 9050AMod*, *EPA Method 6010B-NE493 Ch2*, *EPA Method 6020A*, *EPA Method 8260B*, *EPA Method 8015D/GRO*, *EPA Method 8015M*, *EPA Method 8270C-SIM*, *National Functional Guidelines for Inorganic Superfund Data Review (2020)*, and *National Functional Guidelines for Organic Superfund Data Review (2020)*.

III.1. HOLDING TIMES

Analytical holding time for all analyses were met with the following exception(s):

Samples analyzed for pH (EPA Method 9045D) were analyzed outside of the holding time. The pH value recorded for all associated samples is qualified as estimated (J).

III.2. TUNING AND CALIBRATION

Tuning and calibration is not verified at Level 2A validation.

III.3. QUALITY CONTROL SAMPLES

III.3.1. METHOD BLANKS

All method blanks were free from target compound contamination with the following exception(s):

The method blank analyzed for total-petroleum hydrocarbons (TPH) low fraction (EPA Method 8015D/GRO) has a trace detection for TPH. The associated samples contain TPH at concentrations greater than 5x the amount present in the blank; therefore, no data qualification is required.

III.3.2 INTERFERENCE CHECK SAMPLES

ICS-A/ICS-AB recoveries are not evaluated at Level 2A validation.

III.3.3. LABORATORY CONTROL SAMPLES

LCS and LCSD recoveries were within the laboratory control limits. LCSD RPDs were within the laboratory control limits. No data qualification is required.

III.3.4. LABORATORY DUPLICATES

Laboratory duplicate analyses were not performed on samples from this SDG. No data qualification is required.

III.3.5. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS analyses were performed for volatile organic compounds (VOCs) (EPA Method 8260B). Recoveries were within the laboratory control limits. MSD RPDs were within the laboratory control limits. No data qualification is required.



III.3.6. SERIAL DILUTION

Serial dilution analysis was not required for this SDG. No data qualification is required.

III.4. SURROGATES

Surrogates were within laboratory control limits, and/or diluted out. No data qualification is required.

III.5. INTERNAL STANDARDS PERFORMANCE

The internal standard intensities are not evaluated at Level 2A validation.

III.6. SAMPLE RESULT VERIFICATION

Sample results were not verified at Level 2A validation. Reported non-detects are valid to the reporting detection limit (RDL).

All sample dilutions are included in Table IV below, RDLs were appropriately adjusted.

TABLE IV – SAMPLE DILUTIONS

Sample ID	Method	Dilution Factor
322201_BK01@3'	EPA Method 6020A	5x for all analytes
322201_SEP01_B01@4'	EPA Method 6020A	5x for all analytes
	EPA Method 8015M	5x for C ₂₈ -C ₃₆ Motor Oil Range organics
322201_AST01_01@4'	EPA Method 6020A	5x for all analytes
322201_PWV01_B01@6'	EPA Method 6020A	5x for all analytes
322201_PWV01_W01@6'	EPA Method 6020A	5x for all analytes

III.7. FIELD QC SAMPLES

Weston evaluated field quality control (QC) samples and, if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Weston used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

III.7.1. TRIP BLANKS

The trip blank was analyzed for total petroleum hydrocarbons-gasoline-range organics (TPH-GRO) and VOCs. All analytes were non-detect; therefore, no data qualification is required.

III.7.2. FIELD AND EQUIPMENT BLANKS

No field blanks or equipment blanks were identified in this SDG.

III.7.3. FIELD DUPLICATES

No field duplicate samples were identified in this SDG.

ATTACHMENT C

FIELD SCREENING RESULTS

Sample ID	Sample Description	PID Reading (ppm)	FID Reading (ppm)	Screening Date
322201_SEP01_B01@2'	Separator - Base	2.2	4.1	6/1/2023
322201_SEP01_B01@4'	Separator - Base	11	37	6/7/2023
322201_FL01_02@2'	Flowline 1 - Connection Point	1.4	3.9	6/1/2023
322201_FL02_01@2'	Flowline 2 - Connection Point	0.6	1.8	6/1/2023
322201_AST01_01@4'	Flowline Connection Point at AST	6	9	6/7/2023
322201_AST01_B01@4'	Aboveground Storage Tank - Base	2.5	2.5	6/7/2023
322201_PWV01_B01@4'	Produced Water Vault - Base	400	2,000	6/7/2023
322201_PWV01_B01@6'	Produced Water Vault - Base	96	N/A*	6/7/2023
322201_PWV01_N01@4'	Produced Water Vault - North	6	N/A*	6/7/2023
322201_PWV01_E01@4'	Produced Water Vault - East	7	11	6/7/2023
322201_PWV01_S01@4'	Produced Water Vault - South	7	11	6/7/2023
322201_PWV01_W01@4'	Produced Water Vault - West	87	N/A*	6/7/2023
322201_PWV01_W01@6'	Produced Water Vault - West	49	N/A*	6/7/2023

Notes:



Highlighted cells indicate elevated PID/FID readings

N/A*

The TVA battery died and the screening was completed using a MiniRae PID

ATTACHMENT D

LABORATORY ANALYTICAL REPORTS

Colorado Oil & Gas Conservation

Sample Delivery Group: L1606981
Samples Received: 04/18/2023
Project Number:
Description: Running Creek-State #11 Tank Battery
Site: 322201
Report To: Jess Zielinski
1536 Cole Blvd Ste 375
Lakewood, CO 80401

Entire Report Reviewed By:



Donna Eidson
Project Manager

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

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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Gl: Glossary of Terms	9
Al: Accreditations & Locations	10
Sc: Sample Chain of Custody	11

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

SAMPLE SUMMARY

322201_TENORM_AST01 L1606981-01 Solids and Chemical Materials

Collected by
M. Worden

Collected date/time
04/17/23 12:00

Received date/time
04/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG2046048	1	04/20/23 09:39	04/21/23 12:18	ZRG	Mt. Juliet, TN
Radiochemistry by Method HASL 300 Po-2RC	WG2044665	1	04/19/23 13:00	04/26/23 16:41	RGT	Mt. Juliet, TN

322201_TENORM_PWV01 L1606981-08 Solids and Chemical Materials

Collected by
M. Worden

Collected date/time
04/17/23 12:10

Received date/time
04/18/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG2046048	1	04/20/23 09:39	04/21/23 12:25	DME	Mt. Juliet, TN
Radiochemistry by Method HASL 300 Po-2RC	WG2044665	1	04/19/23 13:00	04/26/23 16:41	RGT	Mt. Juliet, TN

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. 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.



Donna Eidson
Project Manager

Project Narrative

Analyzed as-is.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	-0.00269	U	0.0270	0.0849	04/21/2023 12:18	WG2046048
Radium-226 (186 KeV)	-0.129	U	0.146	0.309	04/21/2023 12:18	WG2046048
Bismuth-214 (Ra-226)	0.0355	J	0.0212	0.0361	04/21/2023 12:18	WG2046048
Lead-210	0.0983	U	1.20	2.26	04/21/2023 12:18	WG2046048

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Radiochemistry by Method HASL 300 Po-2RC

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Polonium-210	0.498		0.188	0.112	04/26/2023 16:41	WG2044665
(T) Polonium-209	47.2			20.0-110	04/26/2023 16:41	WG2044665

Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Actinium-228 (Ra-228)	-0.0311	U	0.0389	0.116	04/21/2023 12:25	WG2046048
Radium-226 (186 KeV)	-0.123	U	0.127	0.277	04/21/2023 12:25	WG2046048
Bismuth-214 (Ra-226)	0.00948	U	0.0242	0.0476	04/21/2023 12:25	WG2046048
Lead-210	0.176	J	0.227	0.401	04/21/2023 12:25	WG2046048

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Radiochemistry by Method HASL 300 Po-2RC

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Polonium-210	0.631		0.207	0.113	04/26/2023 16:41	WG2044665
(T) Polonium-209	43.1			20.0-110	04/26/2023 16:41	WG2044665

Method Blank (MB)

(MB) R3916565-2 04/21/23 18:23

Analyte	MB Result pCi/g	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/g
Actinium-228 (Ra-228)	-0.0797	⌋	0.145	0.379
Americium-241	-0.0754	⌋	0.0948	0.185
Bismuth-214 (Ra-226)	-0.0219	⌋	0.0911	0.212
Cesium-137	0.0472	⌋	0.0659	0.128
Cobalt-60	0.00570	⌋	0.0539	0.201
Lead-210	0.373	⌋	1.26	2.32
Radium-226 (186 KeV)	0.696	⌋	0.571	1.00

L1605831-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1605831-01 04/21/23 20:37 • (DUP) R3916565-3 04/24/23 10:33

Analyte	Original Result pCi/g	Original Uncertainty + / -	Original MDA pCi/g	DUP Result pCi/g	DUP Uncertainty + / -	DUP MDA pCi/g	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Actinium-228 (Ra-228)	-0.0264	0.0710	0.201	0.00423	0.0635	0.201	1	200	0.322	⌋	20	3
Bismuth-214 (Ra-226)	0.0568	0.0552	0.103	0.0130	0.0310	0.103	1	126	0.692	⌋	20	3
Lead-210	39.8	4.28	1.58	47.3	5.87	1.58	1	17.2	1.03	⌋	20	3
Radium-226 (186 KeV)	-0.205	0.260	0.556	0.259	0.306	0.556	1	200	1.15	⌋	20	3

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

(LCS) R3916565-1 04/21/23 18:06 • (LCSD) R3916565-4 04/24/23 11:39

Analyte	Spike Amount pCi/g	LCS Result pCi/g	LCSD Result pCi/g	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Americium-241	47.3	48.3	55.8	102	118	60.0-140			14.4	20
Cesium-137	72.4	76.3	83.6	105	115	80.0-120			9.15	20
Cobalt-60	86.9	89.8	102	103	117	80.0-120			12.4	20

1

Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3918908-1 04/26/23 16:41

	MB Result	MB Qualifier	MB Uncertainty	MB MDA
Analyte	pCi/g		+ / -	pCi/g
Polonium-210	0.265		0.160	0.140
(T) Polonium-209	39.9		39.9	

L1606967-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1606967-08 04/26/23 16:41 • (DUP) R3918908-5 04/26/23 16:41

	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
Analyte	pCi/g	+ / -	pCi/g	pCi/g	+ / -	pCi/g		%			%	
Polonium-210	0.631	0.207	0.132	0.224	0.143	0.132	1	95.2	1.62		20	3
(T) Polonium-209	48.9			40.8	40.8							

Laboratory Control Sample (LCS)

(LCS) R3918908-2 04/26/23 16:41

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	pCi/g	pCi/g	%	%	
Polonium-210	3.67	3.10	84.4	70.0-130	
(T) Polonium-209			51.4		

L1605831-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1605831-02 04/26/23 16:41 • (MS) R3918908-3 04/26/23 16:41 • (MSD) R3918908-4 04/26/23 16:41

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
Analyte	pCi/g	pCi/g	pCi/g	pCi/g	%	%		%			%		%
Polonium-210	3.52	194	179	198	0.000	114	1	60.0-140	V		10.1		20
(T) Polonium-209		88.4			71.3	71.0							

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

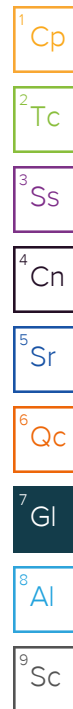
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
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.
U	Below Detectable Limits: Indicates that the analyte was not detected.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

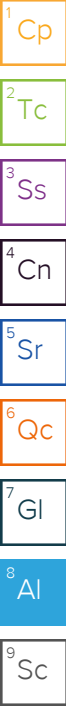
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



[illegible]

Colorado Oil & Gas Conservation

Sample Delivery Group: L1622159
Samples Received: 06/02/2023
Project Number: 475621
Description: Running Creek State #11 Tank

Report To: Jess Zielinski / Sammy Allen
1536 Cole Blvd, Suite 375
Lakewood, CO 80401

Entire Report Reviewed By:



Chris Ward
Project Manager

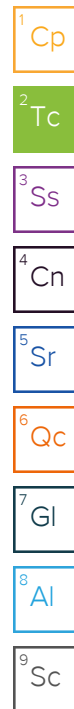
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory 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.com¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc

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SAMPLE SUMMARY

322201_SEP01_B01@2' L1622159-01 Solid

Collected by
NF/JZ

Collected date/time
06/01/23 13:45

Received date/time
06/02/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2071094	1	06/17/23 13:24	06/17/23 13:24	ZSA	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2071453	1	06/05/23 15:05	06/06/23 00:55	VSS	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2071233	1	06/05/23 08:47	06/05/23 13:48	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2071022	1	06/07/23 14:20	06/07/23 16:55	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2080732	1	06/22/23 11:02	06/22/23 22:31	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2071320	5	06/04/23 09:50	06/06/23 18:22	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2073580	1	06/06/23 10:33	06/08/23 01:50	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2071568	10	06/05/23 22:49	06/06/23 10:20	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2071269	1	06/04/23 21:04	06/05/23 11:00	DSH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2071269	10	06/04/23 21:04	06/08/23 05:41	DSH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

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⁷Gl

⁸Al

⁹Sc

ACCOUNT:

Colorado Oil & Gas Conservation

PROJECT:

475621

SDG:

L1622159

DATE/TIME:

07/03/23 11:40

PAGE:

3 of 18

CASE NARRATIVE

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



Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 06/23/23 10:07

Project Narrative

Report reissued 7/3 to update sample ID



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	4.75		1	06/17/2023 13:24	WG2071094

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/06/2023 00:55	WG2071453

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	RDL	Dilution	Analysis date / time	Batch
pH	7.57	T8		1	06/05/2023 13:48	WG2071233

Sample Narrative:

L1622159-01 WG2071233: 7.57 at 21.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	894		10.0	1	06/07/2023 16:55	WG2071022

Sample Narrative:

L1622159-01 WG2071022: at 25C

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.882		0.200	1	06/22/2023 22:31	WG2080732

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.43		1.00	5	06/06/2023 18:22	WG2071320
Barium	55.2		2.50	5	06/06/2023 18:22	WG2071320
Cadmium	ND		1.00	5	06/06/2023 18:22	WG2071320
Copper	8.18		5.00	5	06/06/2023 18:22	WG2071320
Lead	8.56	B	2.00	5	06/06/2023 18:22	WG2071320
Nickel	9.55		2.50	5	06/06/2023 18:22	WG2071320
Selenium	ND		2.50	5	06/06/2023 18:22	WG2071320
Silver	ND		0.500	5	06/06/2023 18:22	WG2071320
Zinc	33.7		25.0	5	06/06/2023 18:22	WG2071320

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/MS) Low Fraction	ND		0.500	1	06/08/2023 01:50	WG2073580
Benzene	ND		0.00100	1	06/08/2023 01:50	WG2073580
Toluene	ND		0.00500	1	06/08/2023 01:50	WG2073580
Ethylbenzene	ND		0.00100	1	06/08/2023 01:50	WG2073580
Xylenes, Total	ND		0.00300	1	06/08/2023 01:50	WG2073580
1,2,4-Trimethylbenzene	ND		0.00100	1	06/08/2023 01:50	WG2073580
1,3,5-Trimethylbenzene	ND		0.00100	1	06/08/2023 01:50	WG2073580
(S) Toluene-d8	94.3		75.0-131		06/08/2023 01:50	WG2073580
(S) 4-Bromofluorobenzene	91.3		67.0-138		06/08/2023 01:50	WG2073580

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
(S) 1,2-Dichloroethane-d4	132	J1	70.0-130		06/08/2023 01:50	WG2073580

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	583		40.0	10	06/06/2023 10:20	WG2071568
C28-C36 Motor Oil Range	1230		40.0	10	06/06/2023 10:20	WG2071568
(S) o-Terphenyl	81.5		18.0-148		06/06/2023 10:20	WG2071568

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.343		0.00600	1	06/05/2023 11:00	WG2071269
Acenaphthene	0.192		0.00600	1	06/05/2023 11:00	WG2071269
Benzo(a)anthracene	5.67		0.0600	10	06/08/2023 05:41	WG2071269
Benzo(a)pyrene	7.52		0.0600	10	06/08/2023 05:41	WG2071269
Benzo(b)fluoranthene	9.04		0.0600	10	06/08/2023 05:41	WG2071269
Benzo(k)fluoranthene	2.54		0.00600	1	06/05/2023 11:00	WG2071269
Chrysene	5.64		0.0600	10	06/08/2023 05:41	WG2071269
Dibenz(a,h)anthracene	0.951		0.00600	1	06/05/2023 11:00	WG2071269
Fluoranthene	7.23		0.0600	10	06/08/2023 05:41	WG2071269
Fluorene	0.0613		0.00600	1	06/05/2023 11:00	WG2071269
Indeno(1,2,3-cd)pyrene	5.54		0.0600	10	06/08/2023 05:41	WG2071269
Naphthalene	0.223		0.0200	1	06/05/2023 11:00	WG2071269
Pyrene	6.65		0.0600	10	06/08/2023 05:41	WG2071269
1-Methylnaphthalene	0.0360		0.0200	1	06/05/2023 11:00	WG2071269
2-Methylnaphthalene	0.0541		0.0200	1	06/05/2023 11:00	WG2071269
(S) p-Terphenyl-d14	61.0		23.0-120		06/05/2023 11:00	WG2071269
(S) p-Terphenyl-d14	73.8		23.0-120		06/08/2023 05:41	WG2071269
(S) Nitrobenzene-d5	74.4		14.0-149		06/05/2023 11:00	WG2071269
(S) Nitrobenzene-d5	60.4		14.0-149		06/08/2023 05:41	WG2071269
(S) 2-Fluorobiphenyl	56.8		34.0-125		06/05/2023 11:00	WG2071269
(S) 2-Fluorobiphenyl	63.5		34.0-125		06/08/2023 05:41	WG2071269

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3933071-1 06/06/23 00:42

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

L1622159-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1622159-01 06/06/23 00:55 • (DUP) R3933071-3 06/06/23 01:00

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

L1622284-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1622284-06 06/06/23 02:28 • (DUP) R3933071-8 06/06/23 02:33

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	47.1	P1	20

Laboratory Control Sample (LCS)

(LCS) R3933071-2 06/06/23 00:50

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

L1622162-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1622162-01 06/06/23 01:05 • (MS) R3933071-5 06/06/23 01:16 • (MSD) R3933071-6 06/06/23 01:21

	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	ND	18.8	17.4	93.9	86.9	1	75.0-125			7.74	20

L1622162-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1622162-01 06/06/23 01:05 • (MS) R3933071-7 06/06/23 01:26

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	641	ND	450	70.2	50	75.0-125	J6



L1622271-10 Original Sample (OS) • Duplicate (DUP)

(OS) L1622271-10 06/05/23 13:48 • (DUP) R3932888-2 06/05/23 13:48

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	pH	su		%		%
pH	7.76	7.75	1	0.129		1

Sample Narrative:

OS: 7.76 at 21.6C

DUP: 7.75 at 21.7C



L1622500-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1622500-04 06/05/23 13:48 • (DUP) R3932888-3 06/05/23 13:48

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	11.3	11.3	1	0.354		1

Sample Narrative:

OS: 11.33 at 21.4C

DUP: 11.29 at 21.7C

Laboratory Control Sample (LCS)

(LCS) R3932888-1 06/05/23 13:48

	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: 10.02 at 20.6C

Method Blank (MB)

(MB) R3933985-1 06/07/23 16:55

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

L1618383-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1618383-01 06/07/23 16:55 • (DUP) R3933985-3 06/07/23 16:55

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	333	319	1	4.29		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1621949-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1621949-12 06/07/23 16:55 • (DUP) R3933985-4 06/07/23 16:55

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	320	316	1	1.26		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3933985-2 06/07/23 16:55

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	318	97.2	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3940375-1 06/22/23 22:23

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) R3940375-2 06/22/23 22:26 • (LCSD) R3940375-3 06/22/23 22:28

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	1.11	1.10	111	110	80.0-120			0.950	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3933505-1 06/06/23 17:58

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	0.882	U	0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3933505-2 06/06/23 18:01

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	98.8	98.8	80.0-120	
Barium	100	91.3	91.3	80.0-120	
Cadmium	100	102	102	80.0-120	
Copper	100	93.5	93.5	80.0-120	
Lead	100	96.3	96.3	80.0-120	
Nickel	100	99.6	99.6	80.0-120	
Selenium	100	104	104	80.0-120	
Silver	20.0	19.1	95.5	80.0-120	
Zinc	100	96.0	96.0	80.0-120	

L1622271-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1622271-08 06/06/23 18:05 • (MS) R3933505-5 06/06/23 18:15 • (MSD) R3933505-6 06/06/23 18:18

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	5.02	98.1	94.5	93.1	89.5	5	75.0-125			3.73	20
Barium	100	424	473	525	48.6	101	5	75.0-125	U		10.5	20
Cadmium	100	ND	103	97.9	102	97.5	5	75.0-125			4.62	20
Copper	100	11.3	105	98.5	93.6	87.2	5	75.0-125			6.38	20
Lead	100	10.8	109	107	97.9	95.9	5	75.0-125			1.90	20
Nickel	100	15.2	110	104	94.5	88.4	5	75.0-125			5.76	20
Selenium	100	ND	101	96.8	101	96.5	5	75.0-125	E		4.13	20
Silver	20.0	ND	18.9	18.6	94.6	93.0	5	75.0-125			1.75	20
Zinc	100	48.9	144	136	95.4	87.4	5	75.0-125			5.74	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3934788-3 06/07/23 21:05

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/MS) Low Fraction	U		0.183	0.500
Benzene	U		0.000375	0.00100
Toluene	U		0.00123	0.00500
Ethylbenzene	U		0.000300	0.00100
Xylenes, Total	U		0.000500	0.00300
1,2,4-Trimethylbenzene	U		0.000211	0.00100
1,3,5-Trimethylbenzene	U		0.000266	0.00100
(S) Toluene-d8	97.4			75.0-131
(S) 4-Bromofluorobenzene	100			67.0-138
(S) 1,2-Dichloroethane-d4	114			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3934788-1 06/07/23 19:14

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0250	0.0244	97.6	70.0-123	
Toluene	0.0250	0.0215	86.0	75.0-121	
Ethylbenzene	0.0250	0.0222	88.8	74.0-126	
Xylenes, Total	0.0750	0.0686	91.5	72.0-127	
1,2,4-Trimethylbenzene	0.0250	0.0260	104	70.0-126	
1,3,5-Trimethylbenzene	0.0250	0.0254	102	73.0-127	
(S) Toluene-d8			97.4	75.0-131	
(S) 4-Bromofluorobenzene			99.7	67.0-138	
(S) 1,2-Dichloroethane-d4			126	70.0-130	

Laboratory Control Sample (LCS)

(LCS) R3934788-2 06/07/23 19:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/MS) Low Fraction	5.00	4.07	81.4	52.0-154	
(S) Toluene-d8			89.6	75.0-131	
(S) 4-Bromofluorobenzene			95.6	67.0-138	
(S) 1,2-Dichloroethane-d4			119	70.0-130	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3933249-1 06/06/23 07:38

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	63.1			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3933249-2 06/06/23 07:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.9	75.8	50.0-150	
(S) o-Terphenyl			89.8	18.0-148	

L1622078-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1622078-01 06/06/23 11:45 • (MS) R3933326-2 06/06/23 12:12 • (MSD) R3933326-1 06/06/23 11:59

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	47.4	ND	29.7	33.8	58.8	67.6	1	50.0-150			12.9	20
(S) o-Terphenyl					63.6	65.6		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) R3933876-2 06/05/23 03:49

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) p-Terphenyl-d14	92.1			23.0-120
(S) Nitrobenzene-d5	55.4			14.0-149
(S) 2-Fluorobiphenyl	72.3			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3933876-1 06/05/23 03:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0660	82.5	50.0-126	
Acenaphthene	0.0800	0.0607	75.9	50.0-120	
Benzo(a)anthracene	0.0800	0.0683	85.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0578	72.3	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0671	83.9	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0647	80.9	49.0-125	
Chrysene	0.0800	0.0705	88.1	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0646	80.7	47.0-125	
Fluoranthene	0.0800	0.0706	88.3	49.0-129	
Fluorene	0.0800	0.0680	85.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0674	84.3	46.0-125	
Naphthalene	0.0800	0.0567	70.9	50.0-120	
Pyrene	0.0800	0.0704	88.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0606	75.8	51.0-121	
2-Methylnaphthalene	0.0800	0.0618	77.3	50.0-120	

Laboratory Control Sample (LCS)

(LCS) R3933876-1 06/05/23 03:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			95.8	23.0-120	
(S) Nitrobenzene-d5			78.3	14.0-149	
(S) 2-Fluorobiphenyl			84.5	34.0-125	

L1621909-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1621909-09 06/05/23 06:25 • (MS) R3933876-3 06/05/23 06:45 • (MSD) R3933876-4 06/05/23 07:05

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0762	ND	0.0568	0.0582	74.7	73.1	1	10.0-145			2.43	30
Acenaphthene	0.0762	ND	0.0515	0.0423	67.8	53.1	1	14.0-127			19.6	27
Benzo(a)anthracene	0.0762	ND	0.0613	0.0697	80.7	87.6	1	10.0-139			12.8	30
Benzo(a)pyrene	0.0762	ND	0.0630	0.0719	82.9	90.3	1	10.0-141			13.2	31
Benzo(b)fluoranthene	0.0762	ND	0.0644	0.0759	84.7	95.4	1	10.0-140			16.4	36
Benzo(k)fluoranthene	0.0762	ND	0.0572	0.0636	75.3	79.9	1	10.0-137			10.6	31
Chrysene	0.0762	ND	0.0661	0.0759	87.0	95.4	1	10.0-145			13.8	30
Dibenz(a,h)anthracene	0.0762	ND	0.0553	0.0591	72.8	74.2	1	10.0-132			6.64	31
Fluoranthene	0.0762	ND	0.0736	0.0934	96.8	117	1	10.0-153			23.7	33
Fluorene	0.0762	ND	0.0562	0.0521	73.9	65.5	1	11.0-130			7.57	29
Indeno(1,2,3-cd)pyrene	0.0762	ND	0.0606	0.0700	79.7	87.9	1	10.0-137			14.4	32
Naphthalene	0.0762	ND	0.0498	0.0359	56.9	36.8	1	10.0-135		J3	32.4	27
Pyrene	0.0762	ND	0.0712	0.0892	93.7	112	1	10.0-148			22.4	35
1-Methylnaphthalene	0.0762	ND	0.0524	0.0397	65.2	46.3	1	10.0-142			27.6	28
2-Methylnaphthalene	0.0762	ND	0.0539	0.0407	59.5	40.2	1	10.0-137			27.9	28
(S) p-Terphenyl-d14					82.1	81.9		23.0-120				
(S) Nitrobenzene-d5					67.0	61.7		14.0-149				
(S) 2-Fluorobiphenyl					73.2	70.6		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

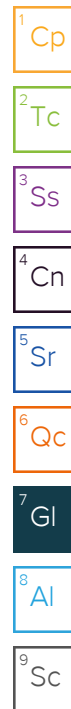
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

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

Abbreviations and Definitions

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

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
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.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122


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

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

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

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



Company Name/Address: Colorado Oil & Gas Conservation 1536 Cole Blvd, Suite 375 Lakewood, CO 80401		Billing Information: ATTN: Accounts Payable 1120 Lincoln St, Suite 801 Denver, CO 80203		Pres Chk		Analysis / Container / Preservative										Chain of Custody Page <u>1</u> of <u>1</u>  PEOPLE ADVANCING SCIENCE 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Alt: 800-767-5859 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf																																																																																																																																																																																																					
Report to: Sammy Allen / Jess Zielinski		Email To: List		City/State Collected: ENIZABETH, CO		Please Circle: PT MT CT ET		<div style="display: flex; justify-content: space-around;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Full 915 Suite</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Soil Suitability (EC, pH, SAR, boron, mtl)</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Trip Blank - BTEX, TMBs, TPH low frac</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TENORM - GSPEC - Ra/Pb</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">TENORM - PO-210</div> </div>										SDG # <u>41622159</u> Table # Acctnum: Template: Prelogin: PM: PB: Shipped Via:																																																																																																																																																																																																			
Project Description: Running Creek State #11 Tank		Client Project #		Lab Project # COILGASRCO-WESTON																																																																																																																																																																																																																	
Phone: 803.414.5429		Site/Facility ID # 322201		P.O. #																																																																																																																																																																																																																	
Collected by (print): N. Fields / J. Zielinski		Collected by (signature): <i>[Signature]</i>		Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input checked="" type="checkbox"/> Three Day <input checked="" type="checkbox"/> STD TAT		Quote #																																																																																																																																																																																																															
Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>		Date Results Needed		No. of Cntrs		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Sample ID</th> <th>Comp/Grab</th> <th>Matrix*</th> <th>Depth</th> <th>Date</th> <th>Time</th> <th colspan="10"></th> <th>Remarks</th> <th>Sample # (lab only)</th> </tr> <tr> <td>322201_ SEP01-B01 @ 2'</td> <td>Grab</td> <td>SS</td> <td>2'</td> <td>6/1/23</td> <td>1345</td> <td>3</td> <td>X</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>-01</td> </tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>322201_</td><td>Grab</td><td>SS</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>										Sample ID	Comp/Grab	Matrix*	Depth	Date	Time											Remarks	Sample # (lab only)	322201_ SEP01-B01 @ 2'	Grab	SS	2'	6/1/23	1345	3	X												-01	322201_	Grab	SS																		322201_	Grab	SS																		322201_	Grab	SS																		322201_	Grab	SS																		322201_	Grab	SS																		322201_	Grab	SS																		322201_	Grab	SS																		322201_	Grab	SS																	
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* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other		Remarks: Full 915 Suite includes BTEX, TMBs, PAHs, soil suitability parameters		pH _____ Temp _____ Flow _____ Other _____		Sample Receipt Checklist COC Seal Present/Intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Bottles arrive intact: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Correct bottles used: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Sufficient volume sent: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N If Applicable VOA Zero Headspace: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N Preservation Correct/Checked: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N RAD Screen <0.5 mR/hr: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N																																																																																																																																																																																																															
Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier		Tracking # <u>64815461995</u>		Trip Blank Received: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		HCL / MeOH TBR										If preservation required by Login: Date/Time																																																																																																																																																																																																					
Relinquished by: (Signature) <i>[Signature]</i>		Date: <u>6/1/23</u>		Time: <u>1615</u>		Received by: (Signature) <i>[Signature]</i>		Temp: <u>5.7°C</u>		Bottles Received: <u>3</u>		Hold:										Condition: <u>NCF / OK</u>																																																																																																																																																																																															
Relinquished by: (Signature) <i>[Signature]</i>		Date: <u>5/1/23</u>		Time: <u>1800</u>		Received by: (Signature)		Temp: <u>3.7±0.3</u>		Bottles Received:		Hold:										Condition:																																																																																																																																																																																															
Relinquished by: (Signature)		Date:		Time:		Received for lab by: (Signature)		Date:		Time:		Hold:										Condition:																																																																																																																																																																																															

Energy and Carbon Management Commission

Sample Delivery Group: L1624309
Samples Received: 06/09/2023
Project Number: 305168
Description: RUNNING CREEK STATE #11 Tank Battery

Report To: Sammy Allen
1536 Cole Blvd, Suite 375
Lakewood, CO 80401

Entire Report Reviewed By:



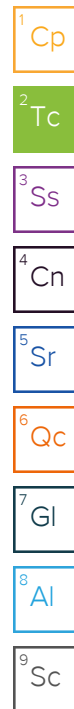
Chris Ward
Project Manager

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

Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

322201_BK01@3' L1624309-01 Solid

Collected by
M. Worden

Collected date/time
06/07/23 10:25

Received date/time
06/09/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2074484	1	06/15/23 13:13	06/15/23 13:13	SPL	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2074837	1	06/10/23 10:50	06/10/23 11:30	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2077375	1	06/14/23 15:00	06/14/23 17:17	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2074486	1	06/09/23 16:18	06/12/23 18:11	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2074815	5	06/10/23 13:48	06/11/23 12:35	SJM	Mt. Juliet, TN

¹ Cp

² Tc

³ Ss

⁴ Cn

322201_TB01 L1624309-02 GW

Collected by
M. Worden

Collected date/time
06/07/23 00:00

Received date/time
06/09/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260/8260B	WG2079317	1	06/17/23 13:36	06/17/23 13:36	JHH	Mt. Juliet, TN

⁵ Sr

⁶ Qc

⁷ Gl

322201_SEP01_B01@4' L1624309-03 Solid

Collected by
M. Worden

Collected date/time
06/07/23 11:50

Received date/time
06/09/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2074484	1	06/15/23 13:15	06/15/23 13:15	SPL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2075580	1	06/12/23 22:18	06/13/23 11:42	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2074837	1	06/10/23 10:50	06/10/23 11:30	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2077375	1	06/14/23 15:00	06/14/23 17:17	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2074486	1	06/09/23 16:18	06/12/23 18:13	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2074815	5	06/10/23 13:48	06/11/23 12:38	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2075983	1	06/12/23 08:48	06/12/23 17:54	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2075995	1	06/12/23 08:48	06/12/23 13:51	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2075727	1	06/13/23 00:46	06/13/23 12:41	KAP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2075727	5	06/13/23 00:46	06/13/23 15:37	JSS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2075745	1	06/13/23 05:52	06/13/23 16:34	MBE	Mt. Juliet, TN

⁸ Al

⁹ Sc

322201_AST01_01@4' L1624309-04 Solid

Collected by
M. Worden

Collected date/time
06/07/23 12:00

Received date/time
06/09/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2074484	1	06/15/23 13:18	06/15/23 13:18	SPL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2075580	1	06/12/23 22:18	06/13/23 11:47	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2074837	1	06/10/23 10:50	06/10/23 11:30	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2077375	1	06/14/23 15:00	06/14/23 17:17	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2074486	1	06/09/23 16:18	06/12/23 18:16	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2074815	5	06/10/23 13:48	06/11/23 12:48	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2075983	1	06/12/23 08:48	06/12/23 18:14	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2075995	1	06/12/23 08:48	06/12/23 14:11	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2075727	1	06/13/23 00:46	06/13/23 10:51	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2075745	1	06/13/23 05:52	06/13/23 13:17	DSH	Mt. Juliet, TN

Collected by
M. Worden

Collected date/time
06/07/23 13:15

Received date/time
06/09/23 09:00

322201_PWV01_B01@6' L1624309-05 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2074484	1	06/15/23 13:21	06/15/23 13:21	SPL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2075580	1	06/12/23 22:18	06/13/23 11:52	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2074837	1	06/10/23 10:50	06/10/23 11:30	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2077375	1	06/14/23 15:00	06/14/23 17:17	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2074486	1	06/09/23 16:18	06/12/23 18:19	ZSA	Mt. Juliet, TN

ACCOUNT:

Energy and Carbon Management Commission

PROJECT:

305168

SDG:

L1624309

DATE/TIME:

01/09/24 11:29

PAGE:

3 of 31

SAMPLE SUMMARY

322201_PWV01_B01@6' L1624309-05 Solid

Collected by
M. Worden

Collected date/time
06/07/23 13:15

Received date/time
06/09/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020	WG2074815	5	06/10/23 13:48	06/11/23 12:52	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2075983	1	06/12/23 08:48	06/12/23 18:35	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2075995	1	06/12/23 08:48	06/12/23 14:30	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2075727	1	06/13/23 00:46	06/13/23 11:04	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2075745	1	06/13/23 05:52	06/13/23 13:37	MBE	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

322201_PWV01_W01@6' L1624309-06 Solid

Collected by
M. Worden

Collected date/time
06/07/23 13:30

Received date/time
06/09/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2074484	1	06/15/23 13:23	06/15/23 13:23	SPL	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2075580	1	06/12/23 22:18	06/13/23 11:57	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2074837	1	06/10/23 10:50	06/10/23 11:30	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2077609	1	06/16/23 08:00	06/16/23 09:57	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2074486	1	06/09/23 16:18	06/12/23 18:22	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2074815	5	06/10/23 13:48	06/11/23 12:55	SJM	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG2075983	1	06/12/23 08:48	06/12/23 18:55	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2077495	1	06/12/23 08:48	06/14/23 18:55	KSD	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2075727	1	06/13/23 00:46	06/13/23 11:57	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2075745	1	06/13/23 05:52	06/13/23 15:15	MBE	Mt. Juliet, TN

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



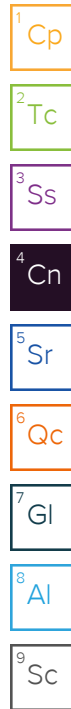
Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 06/19/23 13:07
Level II Report - Version 2: 06/21/23 14:13
Level II Report - Version 3: 10/14/23 15:59

Project Narrative

Report reissued 6/21 for updated sample IDs
Updated Sample IDs - Tony Gibson 10/14/23
Report reissued 1/9/24 for updated sample IDs



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	0.0377		1	06/15/2023 13:13	WG2074484

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.33	T8	1	06/10/2023 11:30	WG2074837

Sample Narrative:

L1624309-01 WG2074837: 7.33 at 20.4C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	umhos/cm		umhos/cm			
Specific Conductance	66.8		10.0	1	06/14/2023 17:17	WG2077375

Sample Narrative:

L1624309-01 WG2077375: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	mg/l		mg/l			
Hot Water Sol. Boron	ND		0.200	1	06/12/2023 18:11	WG2074486

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	mg/kg		mg/kg			
Arsenic	3.52		1.00	5	06/11/2023 12:35	WG2074815
Barium	93.1		2.50	5	06/11/2023 12:35	WG2074815
Cadmium	ND		1.00	5	06/11/2023 12:35	WG2074815
Copper	14.0		5.00	5	06/11/2023 12:35	WG2074815
Lead	10.5		2.00	5	06/11/2023 12:35	WG2074815
Nickel	10.2		2.50	5	06/11/2023 12:35	WG2074815
Selenium	ND		2.50	5	06/11/2023 12:35	WG2074815
Silver	ND		0.500	5	06/11/2023 12:35	WG2074815
Zinc	47.3		25.0	5	06/11/2023 12:35	WG2074815

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/MS) Low Fraction	ND		0.500	1	06/17/2023 13:36	WG2079317
Benzene	ND		0.00100	1	06/17/2023 13:36	WG2079317
Toluene	ND		0.00100	1	06/17/2023 13:36	WG2079317
Ethylbenzene	ND		0.00100	1	06/17/2023 13:36	WG2079317
Xylenes, Total	ND		0.00300	1	06/17/2023 13:36	WG2079317
1,2,4-Trimethylbenzene	ND		0.00100	1	06/17/2023 13:36	WG2079317
1,3,5-Trimethylbenzene	ND		0.00100	1	06/17/2023 13:36	WG2079317
(S) Toluene-d8	101		80.0-120		06/17/2023 13:36	WG2079317
(S) 4-Bromofluorobenzene	86.9		77.0-126		06/17/2023 13:36	WG2079317
(S) 1,2-Dichloroethane-d4	93.9		70.0-130		06/17/2023 13:36	WG2079317

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.12		1	06/15/2023 13:15	WG2074484

1
Cp

2
Tc

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/13/2023 11:42	WG2075580

3
Ss

4
Cn

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.03	T8	1	06/10/2023 11:30	WG2074837

5
Sr

6
Qc

Sample Narrative:

L1624309-03 WG2074837: 8.03 at 20.1C

7
Gl

8
Al

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	596		10.0	1	06/14/2023 17:17	WG2077375

9
Sc

Sample Narrative:

L1624309-03 WG2077375: at 25C

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.405		0.200	1	06/12/2023 18:13	WG2074486

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	1.53		1.00	5	06/11/2023 12:38	WG2074815
Barium	63.4		2.50	5	06/11/2023 12:38	WG2074815
Cadmium	ND		1.00	5	06/11/2023 12:38	WG2074815
Copper	5.79		5.00	5	06/11/2023 12:38	WG2074815
Lead	4.98		2.00	5	06/11/2023 12:38	WG2074815
Nickel	6.60		2.50	5	06/11/2023 12:38	WG2074815
Selenium	ND		2.50	5	06/11/2023 12:38	WG2074815
Silver	ND		0.500	5	06/11/2023 12:38	WG2074815
Zinc	ND		25.0	5	06/11/2023 12:38	WG2074815

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/12/2023 17:54	WG2075983
(S) a,a,a-Trifluorotoluene(FID)	97.8		77.0-120		06/12/2023 17:54	WG2075983

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/12/2023 13:51	WG2075995
Toluene	ND		0.00500	1	06/12/2023 13:51	WG2075995
Ethylbenzene	ND		0.00250	1	06/12/2023 13:51	WG2075995
Xylenes, Total	ND		0.00650	1	06/12/2023 13:51	WG2075995
1,2,4-Trimethylbenzene	ND		0.00500	1	06/12/2023 13:51	WG2075995
1,3,5-Trimethylbenzene	ND		0.00500	1	06/12/2023 13:51	WG2075995
(S) Toluene-d8	103		75.0-131		06/12/2023 13:51	WG2075995
(S) 4-Bromofluorobenzene	93.3		67.0-138		06/12/2023 13:51	WG2075995
(S) 1,2-Dichloroethane-d4	93.7		70.0-130		06/12/2023 13:51	WG2075995

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	88.6		4.00	1	06/13/2023 12:41	WG2075727
C28-C36 Motor Oil Range	197		20.0	5	06/13/2023 15:37	WG2075727
(S) o-Terphenyl	61.5		18.0-148		06/13/2023 15:37	WG2075727
(S) o-Terphenyl	74.9		18.0-148		06/13/2023 12:41	WG2075727

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Acenaphthene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Benzo(a)anthracene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Benzo(a)pyrene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Benzo(b)fluoranthene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Benzo(k)fluoranthene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Chrysene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Dibenz(a,h)anthracene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Fluoranthene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Fluorene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/13/2023 16:34	WG2075745
Naphthalene	ND		0.0200	1	06/13/2023 16:34	WG2075745
Pyrene	ND		0.00600	1	06/13/2023 16:34	WG2075745
1-Methylnaphthalene	ND		0.0200	1	06/13/2023 16:34	WG2075745
2-Methylnaphthalene	ND		0.0200	1	06/13/2023 16:34	WG2075745
(S) p-Terphenyl-d14	73.8		23.0-120		06/13/2023 16:34	WG2075745
(S) Nitrobenzene-d5	76.2		14.0-149		06/13/2023 16:34	WG2075745
(S) 2-Fluorobiphenyl	76.0		34.0-125		06/13/2023 16:34	WG2075745

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	0.483		1	06/15/2023 13:18	WG2074484

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/13/2023 11:47	WG2075580

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.05	T8	1	06/10/2023 11:30	WG2074837

Sample Narrative:
L1624309-04 WG2074837: 8.05 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	216		10.0	1	06/14/2023 17:17	WG2077375

Sample Narrative:
L1624309-04 WG2077375: at 25C

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.221		0.200	1	06/12/2023 18:16	WG2074486

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.03		1.00	5	06/11/2023 12:48	WG2074815
Barium	93.4		2.50	5	06/11/2023 12:48	WG2074815
Cadmium	ND		1.00	5	06/11/2023 12:48	WG2074815
Copper	16.5		5.00	5	06/11/2023 12:48	WG2074815
Lead	10.6		2.00	5	06/11/2023 12:48	WG2074815
Nickel	8.47		2.50	5	06/11/2023 12:48	WG2074815
Selenium	ND		2.50	5	06/11/2023 12:48	WG2074815
Silver	ND		0.500	5	06/11/2023 12:48	WG2074815
Zinc	ND		25.0	5	06/11/2023 12:48	WG2074815

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	06/12/2023 18:14	WG2075983
(S) a,a,a-Trifluorotoluene(FID)	98.1		77.0-120		06/12/2023 18:14	WG2075983

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/12/2023 14:11	WG2075995
Toluene	ND		0.00500	1	06/12/2023 14:11	WG2075995
Ethylbenzene	ND		0.00250	1	06/12/2023 14:11	WG2075995
Xylenes, Total	ND		0.00650	1	06/12/2023 14:11	WG2075995
1,2,4-Trimethylbenzene	ND		0.00500	1	06/12/2023 14:11	WG2075995
1,3,5-Trimethylbenzene	ND		0.00500	1	06/12/2023 14:11	WG2075995
(S) Toluene-d8	103		75.0-131		06/12/2023 14:11	WG2075995
(S) 4-Bromofluorobenzene	95.0		67.0-138		06/12/2023 14:11	WG2075995
(S) 1,2-Dichloroethane-d4	95.1		70.0-130		06/12/2023 14:11	WG2075995

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	06/13/2023 10:51	WG2075727
C28-C36 Motor Oil Range	7.18		4.00	1	06/13/2023 10:51	WG2075727
(S) o-Terphenyl	71.7		18.0-148		06/13/2023 10:51	WG2075727

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Acenaphthene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Benzo(a)anthracene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Benzo(a)pyrene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Benzo(b)fluoranthene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Benzo(k)fluoranthene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Chrysene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Dibenz(a,h)anthracene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Fluoranthene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Fluorene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/13/2023 13:17	WG2075745
Naphthalene	ND		0.0200	1	06/13/2023 13:17	WG2075745
Pyrene	ND		0.00600	1	06/13/2023 13:17	WG2075745
1-Methylnaphthalene	ND		0.0200	1	06/13/2023 13:17	WG2075745
2-Methylnaphthalene	ND		0.0200	1	06/13/2023 13:17	WG2075745
(S) p-Terphenyl-d14	88.2		23.0-120		06/13/2023 13:17	WG2075745
(S) Nitrobenzene-d5	81.0		14.0-149		06/13/2023 13:17	WG2075745
(S) 2-Fluorobiphenyl	80.9		34.0-125		06/13/2023 13:17	WG2075745

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.95		1	06/15/2023 13:21	WG2074484

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/13/2023 11:52	WG2075580

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.59	T8	1	06/10/2023 11:30	WG2074837

Sample Narrative:
L1624309-05 WG2074837: 8.59 at 19.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	314		10.0	1	06/14/2023 17:17	WG2077375

Sample Narrative:
L1624309-05 WG2077375: at 25C

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.35		0.200	1	06/12/2023 18:19	WG2074486

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	1.68		1.00	5	06/11/2023 12:52	WG2074815
Barium	62.0		2.50	5	06/11/2023 12:52	WG2074815
Cadmium	ND		1.00	5	06/11/2023 12:52	WG2074815
Copper	5.48		5.00	5	06/11/2023 12:52	WG2074815
Lead	4.31		2.00	5	06/11/2023 12:52	WG2074815
Nickel	5.73		2.50	5	06/11/2023 12:52	WG2074815
Selenium	ND		2.50	5	06/11/2023 12:52	WG2074815
Silver	ND		0.500	5	06/11/2023 12:52	WG2074815
Zinc	ND		25.0	5	06/11/2023 12:52	WG2074815

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.353		0.100	1	06/12/2023 18:35	WG2075983
(S) a,a,a-Trifluorotoluene(FID)	91.8		77.0-120		06/12/2023 18:35	WG2075983

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	06/12/2023 14:30	WG2075995
Toluene	ND		0.00500	1	06/12/2023 14:30	WG2075995
Ethylbenzene	ND		0.00250	1	06/12/2023 14:30	WG2075995
Xylenes, Total	ND		0.00650	1	06/12/2023 14:30	WG2075995
1,2,4-Trimethylbenzene	0.00665		0.00500	1	06/12/2023 14:30	WG2075995
1,3,5-Trimethylbenzene	ND		0.00500	1	06/12/2023 14:30	WG2075995
(S) Toluene-d8	107		75.0-131		06/12/2023 14:30	WG2075995
(S) 4-Bromofluorobenzene	102		67.0-138		06/12/2023 14:30	WG2075995
(S) 1,2-Dichloroethane-d4	97.2		70.0-130		06/12/2023 14:30	WG2075995

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	49.2		4.00	1	06/13/2023 11:04	WG2075727
C28-C36 Motor Oil Range	41.8		4.00	1	06/13/2023 11:04	WG2075727
(S) o-Terphenyl	77.3		18.0-148		06/13/2023 11:04	WG2075727

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Acenaphthene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Benzo(a)anthracene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Benzo(a)pyrene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Benzo(b)fluoranthene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Benzo(k)fluoranthene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Chrysene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Dibenz(a,h)anthracene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Fluoranthene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Fluorene	0.0325		0.00600	1	06/13/2023 13:37	WG2075745
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/13/2023 13:37	WG2075745
Naphthalene	ND		0.0200	1	06/13/2023 13:37	WG2075745
Pyrene	ND		0.00600	1	06/13/2023 13:37	WG2075745
1-Methylnaphthalene	0.0420		0.0200	1	06/13/2023 13:37	WG2075745
2-Methylnaphthalene	0.0402		0.0200	1	06/13/2023 13:37	WG2075745
(S) p-Terphenyl-d14	80.6		23.0-120		06/13/2023 13:37	WG2075745
(S) Nitrobenzene-d5	65.8		14.0-149		06/13/2023 13:37	WG2075745
(S) 2-Fluorobiphenyl	77.1		34.0-125		06/13/2023 13:37	WG2075745

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	6.48		1	06/15/2023 13:23	WG2074484

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	06/13/2023 11:57	WG2075580

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.47	T8	1	06/10/2023 11:30	WG2074837

Sample Narrative:

L1624309-06 WG2074837: 8.47 at 19.9C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	880		10.0	1	06/16/2023 09:57	WG2077609

Sample Narrative:

L1624309-06 WG2077609: at 25C

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.86		0.200	1	06/12/2023 18:22	WG2074486

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		1.00	5	06/11/2023 12:55	WG2074815
Barium	46.7		2.50	5	06/11/2023 12:55	WG2074815
Cadmium	ND		1.00	5	06/11/2023 12:55	WG2074815
Copper	10.3		5.00	5	06/11/2023 12:55	WG2074815
Lead	6.15		2.00	5	06/11/2023 12:55	WG2074815
Nickel	5.33		2.50	5	06/11/2023 12:55	WG2074815
Selenium	ND		2.50	5	06/11/2023 12:55	WG2074815
Silver	ND		0.500	5	06/11/2023 12:55	WG2074815
Zinc	ND		25.0	5	06/11/2023 12:55	WG2074815

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.391		0.100	1	06/12/2023 18:55	WG2075983
(S) a,a,a-Trifluorotoluene(FID)	92.2		77.0-120		06/12/2023 18:55	WG2075983

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00183		0.00100	1	06/14/2023 18:55	WG2077495
Toluene	ND		0.00500	1	06/14/2023 18:55	WG2077495
Ethylbenzene	0.0104		0.00250	1	06/14/2023 18:55	WG2077495
Xylenes, Total	0.0707		0.00650	1	06/14/2023 18:55	WG2077495
1,2,4-Trimethylbenzene	0.0445		0.00500	1	06/14/2023 18:55	WG2077495
1,3,5-Trimethylbenzene	0.0104		0.00500	1	06/14/2023 18:55	WG2077495
(S) Toluene-d8	104		75.0-131		06/14/2023 18:55	WG2077495
(S) 4-Bromofluorobenzene	106		67.0-138		06/14/2023 18:55	WG2077495
(S) 1,2-Dichloroethane-d4	101		70.0-130		06/14/2023 18:55	WG2077495

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	73.9		4.00	1	06/13/2023 11:57	WG2075727
C28-C36 Motor Oil Range	88.4		4.00	1	06/13/2023 11:57	WG2075727
(S) o-Terphenyl	143		18.0-148		06/13/2023 11:57	WG2075727

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Acenaphthene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Benzo(a)anthracene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Benzo(a)pyrene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Benzo(b)fluoranthene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Benzo(k)fluoranthene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Chrysene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Dibenz(a,h)anthracene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Fluoranthene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Fluorene	0.0581		0.00600	1	06/13/2023 15:15	WG2075745
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	06/13/2023 15:15	WG2075745
Naphthalene	0.0720		0.0200	1	06/13/2023 15:15	WG2075745
Pyrene	0.00836		0.00600	1	06/13/2023 15:15	WG2075745
1-Methylnaphthalene	0.190		0.0200	1	06/13/2023 15:15	WG2075745
2-Methylnaphthalene	0.298		0.0200	1	06/13/2023 15:15	WG2075745
(S) p-Terphenyl-d14	71.2		23.0-120		06/13/2023 15:15	WG2075745
(S) Nitrobenzene-d5	51.5		14.0-149		06/13/2023 15:15	WG2075745
(S) 2-Fluorobiphenyl	70.5		34.0-125		06/13/2023 15:15	WG2075745

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3936316-1 06/13/23 10:37

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

L1624258-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1624258-01 06/13/23 10:50 • (DUP) R3936316-3 06/13/23 10:55

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	mg/kg	mg/kg		%		%
Hexavalent Chromium	ND	ND	1	10.2		20

Laboratory Control Sample (LCS)

(LCS) R3936316-2 06/13/23 10:45

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.6	106	80.0-120	

L1624309-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624309-06 06/13/23 11:57 • (MS) R3936316-4 06/13/23 12:03 • (MSD) R3936316-5 06/13/23 12:08

	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	ND	17.0	18.3	82.9	89.5	1	75.0-125			7.43	20

L1624309-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1624309-06 06/13/23 11:57 • (MS) R3936316-6 06/13/23 12:13

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	ND	564	88.7	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1624182-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1624182-01 06/10/23 11:30 • (DUP) R3935163-2 06/10/23 11:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.64	7.60	1	0.525		1

Sample Narrative:

OS: 7.64 at 20.3C

DUP: 7.6 at 20.6C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1624256-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1624256-05 06/10/23 11:30 • (DUP) R3935163-3 06/10/23 11:30

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.68	7.70	1	0.260		1

Sample Narrative:

OS: 7.68 at 20.2C

DUP: 7.7 at 20.5C

Laboratory Control Sample (LCS)

(LCS) R3935163-1 06/10/23 11:30

	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: 10.03 at 20.2C

Method Blank (MB)

(MB) R3936836-1 06/14/23 17:17

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

L1624182-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1624182-02 06/14/23 17:17 • (DUP) R3936836-3 06/14/23 17:17

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	372	370	1	0.539		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1624258-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1624258-03 06/14/23 17:17 • (DUP) R3936836-4 06/14/23 17:17

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	187	189	1	0.851		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3936836-2 06/14/23 17:17

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	326	99.7	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) R3937525-1 06/16/23 09:57

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

L1624483-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1624483-01 06/16/23 09:57 • (DUP) R3937525-3 06/16/23 09:57

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	886	890	1	0.450		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1624496-16 Original Sample (OS) • Duplicate (DUP)

(OS) L1624496-16 06/16/23 09:57 • (DUP) R3937525-4 06/16/23 09:57

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	5340	5940	1	10.6		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3937525-2 06/16/23 09:57

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	319	97.6	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) R3935755-1 06/12/23 17:27

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) R3935755-2 06/12/23 17:30 • (LCSD) R3935755-3 06/12/23 17:32

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	1.10	1.15	110	115	80.0-120			5.09	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3935262-1 06/11/23 11:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	U		0.152	2.50
Cadmium	U		0.0855	1.00
Copper	U		0.133	5.00
Lead	U		0.0990	2.00
Nickel	U		0.197	2.50
Selenium	U		0.180	2.50
Silver	U		0.0865	0.500
Zinc	U		0.740	25.0

Laboratory Control Sample (LCS)

(LCS) R3935262-2 06/11/23 11:23

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	91.1	91.1	80.0-120	
Barium	100	84.9	84.9	80.0-120	
Cadmium	100	90.5	90.5	80.0-120	
Copper	100	86.6	86.6	80.0-120	
Lead	100	85.9	85.9	80.0-120	
Nickel	100	89.6	89.6	80.0-120	
Selenium	100	95.6	95.6	80.0-120	
Silver	20.0	17.7	88.5	80.0-120	
Zinc	100	86.4	86.4	80.0-120	

L1624258-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624258-01 06/11/23 11:27 • (MS) R3935262-5 06/11/23 11:37 • (MSD) R3935262-6 06/11/23 11:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	3.56	82.9	85.9	79.3	82.3	5	75.0-125			3.57	20
Barium	100	111	184	182	73.5	70.9	5	75.0-125	J6	J6	1.41	20
Cadmium	100	ND	83.9	87.3	83.6	87.0	5	75.0-125			3.96	20
Copper	100	14.5	90.7	92.1	76.3	77.6	5	75.0-125			1.45	20
Lead	100	15.9	87.7	90.0	71.7	74.1	5	75.0-125	J6	J6	2.62	20
Nickel	100	11.0	89.9	92.7	78.9	81.8	5	75.0-125			3.14	20
Selenium	100	ND	85.2	90.0	84.8	89.6	5	75.0-125			5.45	20
Silver	20.0	ND	16.6	17.0	83.1	85.2	5	75.0-125			2.51	20
Zinc	100	47.4	128	126	80.2	78.3	5	75.0-125			1.50	20

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3937105-1 06/12/23 13:07

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0238	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	98.4			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3937105-2 06/12/23 20:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.54	101	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			115	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3938082-3 06/17/23 10:09

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/MS) Low Fraction	U		0.108	0.500
Benzene	U		0.0000941	0.00100
Toluene	U		0.000278	0.00100
Ethylbenzene	U		0.000137	0.00100
Xylenes, Total	U		0.000174	0.00300
1,2,4-Trimethylbenzene	U		0.000322	0.00100
1,3,5-Trimethylbenzene	U		0.000104	0.00100
(S) Toluene-d8	99.6			80.0-120
(S) 4-Bromofluorobenzene	90.5			77.0-126
(S) 1,2-Dichloroethane-d4	94.5			70.0-130

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

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

(LCS) R3938082-1 06/17/23 07:58 • (LCSD) R3938082-4 06/17/23 10:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	0.00505	0.00487	101	97.4	70.0-123			3.63	20
Toluene	0.00500	0.00486	0.00487	97.2	97.4	79.0-120			0.206	20
Ethylbenzene	0.00500	0.00498	0.00478	99.6	95.6	79.0-123			4.10	20
Xylenes, Total	0.0150	0.0143	0.0140	95.3	93.3	79.0-123			2.12	20
1,2,4-Trimethylbenzene	0.00500	0.00482	0.00470	96.4	94.0	76.0-121			2.52	20
1,3,5-Trimethylbenzene	0.00500	0.00494	0.00484	98.8	96.8	76.0-122			2.04	20
(S) Toluene-d8				95.9	99.1	80.0-120				
(S) 4-Bromofluorobenzene				88.8	88.5	77.0-126				
(S) 1,2-Dichloroethane-d4				95.6	97.2	70.0-130				

Laboratory Control Sample (LCS)

(LCS) R3938082-2 06/17/23 09:25

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/MS) Low Fraction	5.00	5.26	105	66.0-132	
(S) Toluene-d8			95.8	80.0-120	
(S) 4-Bromofluorobenzene			108	77.0-126	
(S) 1,2-Dichloroethane-d4			102	70.0-130	

Method Blank (MB)

(MB) R3936625-3 06/12/23 11:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	103			75.0-131
(S) 4-Bromofluorobenzene	95.9			67.0-138
(S) 1,2-Dichloroethane-d4	93.0			70.0-130

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

(LCS) R3936625-1 06/12/23 09:35 • (LCSD) R3936625-2 06/12/23 09:54

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.123	0.127	98.4	102	70.0-123			3.20	20
Toluene	0.125	0.114	0.114	91.2	91.2	75.0-121			0.000	20
Ethylbenzene	0.125	0.122	0.123	97.6	98.4	74.0-126			0.816	20
Xylenes, Total	0.375	0.360	0.376	96.0	100	72.0-127			4.35	20
1,2,4-Trimethylbenzene	0.125	0.112	0.111	89.6	88.8	70.0-126			0.897	20
1,3,5-Trimethylbenzene	0.125	0.126	0.121	101	96.8	73.0-127			4.05	20
(S) Toluene-d8				96.0	99.1	75.0-131				
(S) 4-Bromofluorobenzene				98.9	99.2	67.0-138				
(S) 1,2-Dichloroethane-d4				103	107	70.0-130				

L1624309-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624309-04 06/12/23 14:11 • (MS) R3936625-4 06/12/23 19:47 • (MSD) R3936625-5 06/12/23 20:06

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	ND	0.144	0.170	115	136	1	10.0-149			16.6	37
Toluene	0.125	ND	0.144	0.168	115	134	1	10.0-156			15.4	38
Ethylbenzene	0.125	ND	0.144	0.176	115	141	1	10.0-160			20.0	38
Xylenes, Total	0.375	ND	0.441	0.499	118	133	1	10.0-160			12.3	38
1,2,4-Trimethylbenzene	0.125	ND	0.137	0.172	110	138	1	10.0-160			22.7	36
1,3,5-Trimethylbenzene	0.125	ND	0.150	0.185	120	148	1	10.0-160			20.9	38
(S) Toluene-d8					103	101		75.0-131				
(S) 4-Bromofluorobenzene					98.1	93.8		67.0-138				
(S) 1,2-Dichloroethane-d4					93.9	96.0		70.0-130				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3937091-3 06/14/23 18:17

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	105			75.0-131
(S) 4-Bromofluorobenzene	97.2			67.0-138
(S) 1,2-Dichloroethane-d4	96.5			70.0-130

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

(LCS) R3937091-1 06/14/23 17:01 • (LCSD) R3937091-2 06/14/23 17:20

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.128	0.140	102	112	70.0-123			8.96	20
Toluene	0.125	0.123	0.130	98.4	104	75.0-121			5.53	20
Ethylbenzene	0.125	0.132	0.142	106	114	74.0-126			7.30	20
Xylenes, Total	0.375	0.388	0.383	103	102	72.0-127			1.30	20
1,2,4-Trimethylbenzene	0.125	0.139	0.148	111	118	70.0-126			6.27	20
1,3,5-Trimethylbenzene	0.125	0.138	0.149	110	119	73.0-127			7.67	20
(S) Toluene-d8				103	99.9	75.0-131				
(S) 4-Bromofluorobenzene				100	105	67.0-138				
(S) 1,2-Dichloroethane-d4				103	104	70.0-130				

1
Cp

2
Tc

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Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Method Blank (MB)

(MB) R3936152-1 06/13/23 07:35

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	80.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3936152-2 06/13/23 07:48

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	51.0	102	50.0-150	
(S) o-Terphenyl			118	18.0-148	

L1624094-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624094-04 06/13/23 08:27 • (MS) R3936152-3 06/13/23 08:40 • (MSD) R3936152-4 06/13/23 08:53

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	49.0	ND	36.7	33.6	74.9	68.9	1	50.0-150			8.82	20
(S) o-Terphenyl					77.8	73.7		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3937301-2 06/13/23 10:00

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.00230	0.00600
Acenaphthene	U		0.00209	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
(S) p-Terphenyl-d14	93.5			23.0-120
(S) Nitrobenzene-d5	82.9			14.0-149
(S) 2-Fluorobiphenyl	87.8			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3937301-1 06/13/23 09:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0673	84.1	50.0-126	
Acenaphthene	0.0800	0.0696	87.0	50.0-120	
Benzo(a)anthracene	0.0800	0.0637	79.6	45.0-120	
Benzo(a)pyrene	0.0800	0.0664	83.0	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0728	91.0	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0662	82.8	49.0-125	
Chrysene	0.0800	0.0739	92.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0689	86.1	47.0-125	
Fluoranthene	0.0800	0.0733	91.6	49.0-129	
Fluorene	0.0800	0.0757	94.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0706	88.3	46.0-125	
Naphthalene	0.0800	0.0753	94.1	50.0-120	
Pyrene	0.0800	0.0758	94.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0745	93.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0778	97.3	50.0-120	

Laboratory Control Sample (LCS)

(LCS) R3937301-1 06/13/23 09:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			93.3	23.0-120	
(S) Nitrobenzene-d5			88.5	14.0-149	
(S) 2-Fluorobiphenyl			90.8	34.0-125	

L1624361-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1624361-01 06/13/23 14:16 • (MS) R3937301-3 06/13/23 14:36 • (MSD) R3937301-4 06/13/23 14:55

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0799	ND	0.0610	0.0537	76.3	67.1	1	10.0-145			12.7	30
Acenaphthene	0.0799	ND	0.0614	0.0562	76.8	70.3	1	14.0-127			8.84	27
Benzo(a)anthracene	0.0799	ND	0.0674	0.0559	84.3	69.9	1	10.0-139			18.7	30
Benzo(a)pyrene	0.0799	ND	0.0722	0.0549	90.3	68.6	1	10.0-141			27.2	31
Benzo(b)fluoranthene	0.0799	ND	0.0803	0.0484	100	60.5	1	10.0-140		J3	49.6	36
Benzo(k)fluoranthene	0.0799	ND	0.0647	0.0482	80.9	60.3	1	10.0-137			29.2	31
Chrysene	0.0799	ND	0.0876	0.0569	110	71.1	1	10.0-145		J3	42.5	30
Dibenz(a,h)anthracene	0.0799	ND	0.0579	0.0484	72.4	60.5	1	10.0-132			17.9	31
Fluoranthene	0.0799	ND	0.135	0.0629	169	78.6	1	10.0-153	J5	J3	72.9	33
Fluorene	0.0799	ND	0.0652	0.0610	81.5	76.3	1	11.0-130			6.66	29
Indeno(1,2,3-cd)pyrene	0.0799	ND	0.0747	0.0521	93.4	65.1	1	10.0-137		J3	35.6	32
Naphthalene	0.0799	ND	0.0668	0.0611	83.5	76.4	1	10.0-135			8.91	27
Pyrene	0.0799	ND	0.117	0.0576	146	72.0	1	10.0-148		J3	68.0	35
1-Methylnaphthalene	0.0799	ND	0.0682	0.0609	85.3	76.1	1	10.0-142			11.3	28
2-Methylnaphthalene	0.0799	ND	0.0707	0.0636	88.4	79.5	1	10.0-137			10.6	28
(S) p-Terphenyl-d14					78.8	68.9		23.0-120				
(S) Nitrobenzene-d5					79.9	73.4		14.0-149				
(S) 2-Fluorobiphenyl					83.3	74.0		34.0-125				

Cp

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

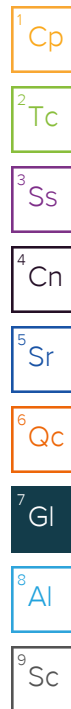
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

Abbreviations and Definitions

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

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

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

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

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



Company Name/Address: Colorado Oil & Gas Conservation 1536 Cole Blvd, Suite 375 Lakewood, CO 80401		Billing Information: ATTN: Accounts Payable 1120 Lincoln St, Suite 801 Denver, CO 80203		Chain of Custody Page <u> 1 </u> of <u> 1 </u>													
Report to: Sammy Allen / Jess Zielinski		Email To: List		Analysis / Container / Preservative													
Project Description: Running Creek State #11 Tank Battery		City/State Collected:		Please Circle: PT <u> M </u> CT <u> E </u> T													
Phone: 803.414.5429		Client Project #		Lab Project #													
Collected by (print): <i>M. Worden</i>		Site/Facility ID #		P.O. #													
Collected by (signature): <i>[Signature]</i>		Rush? (Lab MUST Be Notified)		Quote #													
Packed on Ice N <u> </u> Y <u> X </u>		Same Day <u> </u> Five Day <u> X </u>		Date Results Needed													
Next Day <u> </u> 5 Day (Rad Only) <u> </u>		Two Day <u> </u> 10 Day (Rad Only) <u> </u>		Three Day <u> </u>													
Sample ID		Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Full 915 Suite		Soil Suitability (EC, pH, SAR, boron, mtl)		Trip Blank - BTEX, TMBs, TPH low frac		TENORM - GSPEC - Ra/Pb		TENORM - PO-210	
322201_ BKO1-@3	Grab	SS	3	6/7/23	1025	2		X									
322201_ TBO1	Grab	SS TB	1	6/7/23	0000	2			X								
322201_ SEPO1-B@4	Grab	SS	4	6/7/23	1150	3	X										
322201_ ASTOL O1@4	Grab	SS	4	6/7/23	1200	3	X										
322201_ PWV01-B01@6	Grab	SS	6	6/7/23	1315	3	X										
322201_ PWV01-W01@6	Grab	SS	6	6/7/23	1330	3	X										
322201_	Grab	SS															
322201_	Grab	SS															
322201_	Grab	SS															
322201_	Grab	SS															
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other <u> TB </u>		Remarks: Full 915 Suite includes BTEX, TMBs, PAHs, soil suitability parameters		pH <u> </u> Temp <u> </u> Flow <u> </u> Other <u> </u>		Sample Receipt Checklist COC Seal Present/Intact: <u> NP </u> COC Signed/Accurate: <u> Y </u> Bottles arrive intact: <u> Y </u> Correct bottles used: <u> Y </u> Sufficient volume sent: <u> Y </u> If Applicable VOA Zero Headspace: <u> Y </u> Preservation Correct/Checked: <u> Y </u> RAD Screen <0.5 mR/hr: <u> Y </u>											
Samples returned via: <u> UPS </u> <u> FedEx </u> <u> Courier </u>		Tracking # <u> 6481 5466 2292 </u>		Trip Blank Received: <u> Yes </u> / <u> No </u> <u> HCL / MeOH </u> <u> TBR </u>		Temp: <u> 15.4°C </u> Bottles Received: <u> 14 </u>		If preservation required by Login: Date/Time									
Relinquished by: (Signature) <i>[Signature]</i>		Date: <u> 6/7/23 </u> Time: <u> 3:00 </u>		Received by: (Signature) <i>[Signature]</i>		Date: <u> 6-7-23 </u> Time: <u> 18:00 </u>		Received for lab by: (Signature) <u> g </u> <u> 10 </u>		Date: <u> 6/8/23 </u> Time: <u> 9:00 </u>		Hold:		Condition: <u> NCF / OK </u>			

ATTACHMENT E

CLOSURE CHECKLISTS

Buried or Partially Buried Vessel Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):	<input type="checkbox"/>	Pit Closure	<input type="checkbox"/>	Wellhead Closure	<input checked="" type="checkbox"/>	Flowline Closure	<input checked="" type="checkbox"/>	Tank Battery Closure
Site Name & COGCC Facility Number: Running Creek State #11 Tank Battery (209678)		Date: 6/7/2023						Remediation Project #: -
Associated Wells: Running Creek State #11 (OWP)		Age of Site: 36 years						Number of Photos Attached: 23
Location: (GPS coordinates of vault or southeastern tank berm for multiple) 39.53544078, -104.56393876		Estimated Facility Size (acres): 0.3						

General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)

Site is generally free of debris and the oil and gas infrastructure (AST, PWV, and separator) were removed from the site. Staining, olfactory presence of contamination, or elevated PID/FID readings were discovered at the PWV.

USCS Soil Type: SM	Estimated Depth to Groundwater: 40 ft
-----------------------	--

Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)

Laboratory analysis of 322201_PWV01_B01@6' and 322201_PWV01_W01@6' indicated exceedances of ECOM Table 915-1 values. Depth of impacts are unknown at all locations - delineated PWV01_B01 and PWV01_W01 locations during mobilization and impacted soils continued laterally and vertically. Impacts removed at PWV01_B01 location to 6', but continues past this for unknown horizontal.

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)

None encountered

Buried or Partially Buried Vessels

Tank Contents	Produced water							
Size (barrels)	100 bbls							
Age	Unknown							
Construction Material	Fiberglass							
Visual Integrity of Tank	Fair							
Condition of Tank Footprint	Impacted							
PID Readings	400 ppm (highest)							
Condition of dump line	Unknown							
PID Readings	7-400 ppm							
Sample taken? Location/Sample ID#	322201_PWV01_B01@6' and 322201_PWV01_W01@6'							
Photo Number(s)	-							

Other observations regarding partially buried vessels:

PWV is open top and netted

Summary

Was impacted soil identified?	
<input type="checkbox"/> No	<input type="checkbox"/> Yes - less than 10 cubic yards
<input checked="" type="checkbox"/> Yes - more than 10 cubic yards	
Total number of samples field screened: 7	Total number of samples collected: 2
Highest PID Reading: 400 ppm	Total number of samples submitted to lab for analysis: 2
If more than 10 cubic yards of impacted soil were observed:	
Vertical extent: >6' at PWV01_B01 and PWV01_W01	Estimated spill volume: >10 cy
Lateral extent: Unknown	Volume of soil removed: 10 cy
Is additional investigation required?	
No	
Was groundwater encountered during the investigation?	
<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - not impacted or in contact with impacted soils <input type="checkbox"/> Yes - groundwater impacted and/or in contact with impacted soils	
Measured depth to groundwater: -	Was remedial groundwater removal conducted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Date Groundwater was encountered: -	Commencement date of removal: -
Sheen on groundwater? <input type="checkbox"/> Yes <input type="checkbox"/> No	Volume of groundwater removed prior to sampling: -
Free product observed? <input type="checkbox"/> Yes <input type="checkbox"/> No	Volume of groundwater removed post sampling: -
Total number of samples collected: -	Total Volume of groundwater removed: -
Total number of samples submitted to lab for analysis: -	

Flowline Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional Attachments:	<input checked="" type="checkbox"/>	Tank Battery Closure	<input type="checkbox"/>	Wellhead Closure	<input type="checkbox"/>	Pit Closure	<input checked="" type="checkbox"/>	Partially Buried Vault Closure
Site Name & COGCC Facility Number: Running Creek State #11 Tank Battery (209678)		Date: June 7, 2023					Remediation Project #: -	
Associated Wells: Running Creek State #11 (OWP)		Age of Site: 36 years					Number of Photos Attached: 23	
Starting point: (GPS coordinates and descriptions) FL01 - 39.53544746, -104.56384271; FL02 - 39.53544715, -104.56383828								
End point: (GPS coordinates and descriptions) FL01 - 39.53544746, -104.56384271; FL02 - 39.53544715, -104.56383828								
USCS Soil Type: SM					Estimated Depth to Groundwater: 40 ft			
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None encountered +								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None encountered								
Flowlines								
Flowline type	On Site (FL01)	On Site (FL02)						
Depth	2'	2'						
Age	Unknown	Unknown						
Length	~40 ft	~80 ft						
Construction Material	Unknown	Unknown						
Were flowlines pulled?	Yes - see below	Yes - see below						
Visual Integrity of lines	Unknown	Unknown						
Visual impacts if trenched	None	None						
PID Readings if trenched	1.4 ppm	0.6 ppm						
Sample taken? Location/Sample ID#	-	-						
Photo Number(s)	-	-						
Other observations regarding on location flowlines: No soil impacts observed at FL01 or FL02. ff-location flowline remains in-place. Removal/abandonment of on-location flowlines not observed, but suspected to have been removed.								
Summary								
Was impacted soil identified? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - less than 10 cubic yards <input type="checkbox"/> Yes - more than 10 cubic yards								
Total number of samples field screened: 2					Total number of samples collected: 0			
Highest PID Reading: 1.4 ppm					Total number of samples submitted to lab for analysis: 0			
If more than 10 cubic yards of impacted soil were observed:								
Vertical extent: -					Estimated spill volume: -			
Lateral extent: -					Volume of soil removed: -			
Is additional investigation required? No								
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - not impacted or in contact with impacted soils <input type="checkbox"/> Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater: -					Was remedial groundwater removal conducted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Date Groundwater was encountered: -					Commencement date of removal: -			
Sheen on groundwater? <input type="checkbox"/> Yes <input type="checkbox"/> No					Volume of groundwater removed prior to sampling: -			
Free product observed? <input type="checkbox"/> Yes <input type="checkbox"/> No					Volume of groundwater removed post sampling: -			
Total number of samples collected: -					Total Volume of groundwater removed: -			
Total number of samples submitted to lab for analysis: -								

Third Party Operator									
Removal Date									
Sample taken? Location/Sample ID									
PID Readings									
Photo Number(s)									
Other Facility Equipment									
Equipment type									
Equipment Condition									
Age									
Soil impacts observed during									
PID Readings									
Sample taken? Location/Sample ID									
Photo Number(s)									
Other observations regarding other facility or third party equipment:									
Summary									
Was impacted soil identified? <input checked="" type="checkbox"/> No Yes - less than 10 cubic yards Yes - more than 10 cubic yards									
Total number of samples field screened: 4					Total number of samples collected: 2				
Highest PID Reading: 11 ppm					Total number of samples submitted to lab for analysis: 2				
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent:					Estimated spill volume:				
Lateral extent:					Volume of soil removed:				
Is additional investigation required? No									
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater: -					Was remedial groundwater removal conducted? Yes <input checked="" type="checkbox"/> No				
Date Groundwater was encountered: -					Commencement date of removal: -				
Sheen on groundwater? Yes No					Volume of groundwater removed prior to sampling: -				
Free product observed? Yes No					Volume of groundwater removed post sampling: -				
Total number of samples collected: -					Total Volume of groundwater removed: -				
Total number of samples submitted to lab for analysis: -									