



Weston Solutions, Inc.
1536 Cole Blvd. Bldg 4, Suite 375
Lakewood, CO 80401
303-729-6100
WestonSolutions.com



April 18, 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.: 15970.004.012

Re: Site Investigation Report for the Northrup #1-14 and #2-14 Tank Battery (67N57W/14SENW) Location (Location ID #327106, Facility ID #246371 and #270349)

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 Northrup #1-14 and #2-14 Tank Battery (67N57W/14SENW) (Site) and associated flowlines in Weld 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 in Weld County near the town of Stoneham, CO. The Global Positioning System (GPS) coordinates are 40.575269°N, 103.726781°W. The Site is located approximately 0.72 miles (mi) southwest of the intersection of County Road 82 and County Road 143 and is surrounded by cropland (**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 and associated shed, vertical separator and associated shed, pit (#111625), on- and off-location wellheads, and on- and off-location flowlines. According to COGIS, the Location ID for the Site is listed as Active as of October 17, 2023. According to a Field Operations Notice (#403257998), the on-location flowlines were scheduled to be removed on January 2, 2023. According to an inspection on November 27, 2023 (following Weston's investigation; Field Inspection Form #696305440 and #696305442), the wells appeared to be disconnected from the flowlines and all production equipment was noted as having been removed from the locations, although a gas line remained onsite. The inspector noted that the flowlines appeared to have been removed and that the only remaining onsite infrastructure included a wellhead and sign.

The oil and gas wells, Northrup #1-14 (OWP) (API 05-123-14168) and Northrup #2-14 (OWP) (API 05-123-21877) were last operated by Smith Energy Corporation (Operator ID #70385), and the drilling operations were completed in 1991 and 2004, respectively. The Northrup #1-14 (OWP) and Northrup #2-14 (OWP) oil and gas wells are located approximately 75 feet northwest and 1,400 feet north of the AST at the Northrup #1-14 and #2-14 Tank Battery, respectively. According to COGIS, the Northrup #1-14 (OWP) and Northrup #2-14 (OWP) wells are listed as Shut In as of June 1, 2018. According to COGIS, the pit is unlined and has an area of 20 feet (ft) by 20 ft. A site inspection performed on September 1, 2016, confirmed that the pit was still active. The pit is located to the south of the PWV. According to COGIS, the Site is located within a Colorado Parks and Wildlife (CPW) Mapped High Priority Habitats (HPH) area, including Mule Deer Severe Winter Range and Pronghorn Winter Concentration.

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According to COGIS, during an inspection performed on September 1, 2016 (Field Inspection Form #684902185), stained soil was discovered around the horizontal and vertical separators. Recommendations were to remove/remediate the stained soil, and to securely fasten all valves, pipes, and fittings to ensure good mechanical condition. During the same inspection, stained soil was discovered around the pit. Recommendations were to remove/remediate the stained soil. During an inspection performed on August 29, 2018 (Field Inspection Form #691200386), it was noted that all previous corrective actions appeared to have been addressed.

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 surface impacted soils at the tank battery which appeared to be indicative of a release.

SITE INVESTIGATION ACTIVITIES AND METHODOLOGY

Weston mobilized to the Site on July 13, 2023, to complete an initial site visit and technologically enhanced naturally occurring radioactive material (TENORM) sampling. Weston mobilized to the Site on September 13, 2023, to complete flowline screening and tank battery sampling. Weston mobilized to the Site a final time on October 26, to complete a post-decommissioning site visit and pit sampling, per ECMC request. ECMC's contractor Ram-Co Services, LLC (Ram-Co) was on-site during the July and September mobilizations to decommission the tank battery and assist Weston with sampling 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 July 13, 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: two wells, one AST, one PWV, one horizontal separator and associated shed, one vertical separator and associated shed, on-site flowline risers, and a pit. Weston noted that the pit appeared to be split into two separate sections by an earthen berm; the pit may have been split for separate use as a skim pit and production pit. While on-site, Weston noted signs of impacts, including black, oily soil on the edges of the pit.

Weston collected a waste sample from the PWV and the AST for TENORM analysis. Two TENORM samples were collected and submitted to Pace Analytical Services (Pace) for analysis. The laboratory report for the TENORM sample (L1635712) 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.

Tank Battery Investigation

Weston mobilized to the Site on September 13, 2023, with Ram-Co, to complete sampling of the tank battery. During the site visit, Ram-Co was observed decommissioning and removing the horizontal separator and associated shed (SEP01), the vertical separator and associated shed (SEP02), the AST



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(AST01), and the PWV (PWV01) on-site. Weston visually inspected the area around the tank battery to determine the general condition of the Site and inventory and 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 26 locations at depths ranging from 2 ft to 10 ft below ground surface (bgs). Soil was 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 6, 8, and 10 ft bgs). Impacted soils were removed to a depth of 10 ft bgs, but impacts appear to extend beyond 10 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 #485186 and in the Spill/Release Report #403531665.

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. 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) and the vertical separator (SEP02) were investigated by collecting soil from beneath the base of the respective structures at 2 ft bgs. Weston did not observe indications of impacts or a release associated with the former horizontal and vertical separators.

Flowline Investigation

Flowline Investigation – Four on-location and one off-location flowlines were investigated as follows: between the Northrup #1-14 (OWP) wellhead and the horizontal separator (SEP01) (FL01), between the Northrup #2-14 (OWP) wellhead and the horizontal separator (SEP01) (FL02), between the horizontal separator (SEP01) and the vertical separator (SEP02) (FL03), between the vertical separator (SEP02) and the AST (FL04), and between the vertical separator (SEP02) and the PWV (FL05). 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 85 ft long, connecting the on-location Northrup #1-14 (OWP) wellhead to the horizontal separator (SEP01)
 - 327106_FL01_01@2' – riser at flowline connection point at Northrup #1-14 (OWP) wellhead
 - 327106_FL01_02@4', 6', and 9' – riser at flowline connection point at horizontal separator (SEP01)



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- Flowline 2 – approximately 1,350 ft long, connecting the off-location Northrup #2-14 (OWP) wellhead to the horizontal separator (SEP01)
 - 327106_FL02_01@4' – riser at flowline connection point at horizontal separator (SEP01)
 - 327106_FL02_02@3' – 200 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_03@5' – 400 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_04@5' – 600 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_05@5' – 800 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_06@5' – 1,000 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_07@4' – 1,200 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_08@5' – 1,350 ft from horizontal separator (SEP01) along flowline
 - 327106_FL02_09@5' – riser at flowline connection point at Northrup #2-14 (OWP) wellhead
- Flowline 3 – approximately 100 ft long, connecting the horizontal separator (SEP01) and vertical separator (SEP02)
 - 327106_FL01_02@4', 6', and 9' – riser at flowline connection point at horizontal separator (SEP01)
 - 327106_FL03_02@3' – riser at flowline connection point at vertical separator (SEP02)
- Flowline 4 – approximately 35 ft long, connecting the vertical separator (SEP02) to the AST
 - 327106_FL04_01@4' – riser at flowline connection point at vertical separator (SEP02)
 - 327106_FL04_02@4' – riser at flowline connection point at AST
- Flowline 5 – approximately 25 ft long, connecting the vertical separator (SEP02) to the PWV
 - 327106_FL05_01@4' – riser at flowline connection point at vertical separator (SEP02)
 - 327106_PWV01_E01@6' – riser at flowline connection point at PWV

Weston observed impacted soils (based on PID/FID readings, staining, or hydrocarbon odor) at flowline connection point for the horizontal separator (SEP01) (327106_FL01_02). Impacted soils were noted down to a depth of approximately 9 ft bgs and did not appear to extend further down. Impacted soils were not removed from this location as 10 cubic yards of impacted soil had already been removed from the PWV base location. Impacted soils remain in-place at this location.

Weston observed the removal of the on-location flowlines (FL01, FL03, FL04, and FL05) while on-site. The off-location flowline to the Northrup #2-14 (OWP) wellhead (FL02) was documented as being removed, per COGIS (Field Inspection Form #696305440). Weston did not observe any flowline abandonment of the off-location flowline (FL02) while on-site.

Spill Investigation

As described in the *Site Description* section above, spills were noted during inspections at the Site during September 2016 and October 2023. Areas impacted by these spills included areas associated with the horizontal and vertical separators, and the pit. The scope of the investigation performed by Weston and described in the above and below sections is sufficient to investigate the spill associated with the horizontal and vertical separators. Although Weston did collect samples from the pit location, these samples are not considered sufficient to characterize any potential impacts associated with the pit. Therefore, the conclusions and recommendations presented in this report are also applicable to the spills associated with the on-location equipment, but not the pit.



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Based on soil screening observations and ECMC sampling requirements, a total of six grab samples (one AST sample, two PWV samples, two separator samples, and one flowline sample) were collected and submitted to 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 xylene (BTEX); 1,2,4-trimethylbenzene (1,2,4-TMB); 1,3,5-trimethylbenzene (1,3,5-TMB); and 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. All grab samples and field screening samples were field screened using a PID and/or FID, and screening results are provided in **Attachment C**.

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 Tank Battery Sample Location Map (**Figure 2**) and the Flowline Sample Location Map (**Figure 3**).

According to the Division of Water Resources (DWR) well permit data, three water wells owned by the State Board of Land Commissioners (Permit #289884-A, Receipt #0051055B), Northrup, Stanley (Permit #283290-, Receipt #3645841), and Northrup, Stanley (Permit #259555-, Receipt #0528390) are in the general area of the Site. The wells are screened from 20 to 60 ft bgs, 21 to 61 ft bgs, and 50 to 60 ft bgs, respectively. The recorded depth to water measurements are 21, 29, and 10 ft bgs, respectively. The Site is approximately 25 to 50 feet higher in elevation than the wells described above. Based on this data the depth to groundwater at the Site is assumed to be greater than 35 ft bgs.

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.

Post-Decommissioning Site Visit and Pit Sampling

Weston mobilized to the Site a final time on October 26, 2023, to complete a post-decommissioning site visit and pit sampling, 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 a wellhead, related pipe, and the wellhead sign. The Site had been smoothed out and all berms had been knocked down. The former pit was not visible as the berms had been removed. Although COGIS indicated only one pit registered to the Site, Weston observed two pits separated by an earthen berm during the initial site visit. Therefore, Weston investigated the two sections as separate pits. Per ECMC request, Weston conducted soil screening and sample collection at the related pits. A hand auger was used to collect the former pit samples from each section of the pits. Fill material was discovered to a depth of 3 ft bgs, so soils were collected from a depth of 4 ft bgs to evaluate soil from the former pit. Soils were screened in the field by a Weston scientist using a PID and FID. No elevated PID or FID readings were noted. Grab samples were collected from the center of each section of the former pit (FP01 and FP02) and submitted to Pace for analysis of ECMC Table 915-1 analytes, as listed above. The hand auger locations were backfilled using soil cuttings.



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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 Residential Soil Screening Levels (SSLs) for SAR, pH, boron, and arsenic. 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 were below ECMC Table 915-1 screening levels in all samples submitted for laboratory analysis, with concentrations ranging from 0 milligrams per kilogram (mg/kg) to 308.04 mg/kg.

Other Volatile Compounds (BTEX and TMBs)

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

PAHs

Reported PAH concentrations were below laboratory LOD or ECMC Table 915-1 screening levels for all samples analyzed.

Soil Suitability for Reclamation

The reported SAR calculation were outside of the ECMC Table 915-1 allowable values in a flowline sample (327106_FL01_02@9') with a measurement of 6.48. The reported pH measurements were outside of the ECMC Table 915-1 Soil Suitability for Reclamation levels in two samples, as shown in **Table 1**. Soil pH measurements ranged from 7.90 to 9.11 in the samples analyzed. The reported boron concentration exceeded ECMC Table 915-1 allowable values in the AST sample (327106_AST01_B01@2') with a concentration of 2.88 milligrams per Liter (mg/L). All other analytes were below laboratory LOD or ECMC Table 915-1 values for all samples analyzed.

Metals

The reported arsenic concentration exceeded ECMC Table 915-1 screening levels in the horizontal separator base sample (327106_SEP01_B01@2') with a concentration of 6.87 mg/kg. All other measured metals concentrations were below laboratory LOD or site-specific background concentrations (1.25 x the average background concentration) or the ECMC Table 915-1 cleanup levels.



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Field Screening Results

Soil samples were field screened using a MiniRAE 3000 PID and 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 but, based on DWR permit data, it is expected to be greater than 35 ft bgs. Therefore, ECMC Table 915-1 Protection of Groundwater Soil Screening Levels (SSLs) are not applicable to this Site, and Residential SSLs were used. Laboratory analytical results exceeded ECMC Table 915-1 allowable levels for SAR, pH, boron, and arsenic. Based on field observations (including elevated PID/FID readings, which are included in **Attachment C**) and the reported exceedances listed above, impacted soils remain in place at the flowline connection to the horizontal separator (FL01_02) and the PWV. Weston recommends that the impacted soils be excavated, removed from the Site for off-site disposal, and replaced with clean fill. Weston recommends that any remaining oil and gas infrastructure at the Site be removed.



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Sincerely,
Weston Solutions, Inc.

Andy Wanta
Project Geologist

Jess Zielinski
Engineering Professional

Sammy Allen
Project Manager

Attachments:

Figures

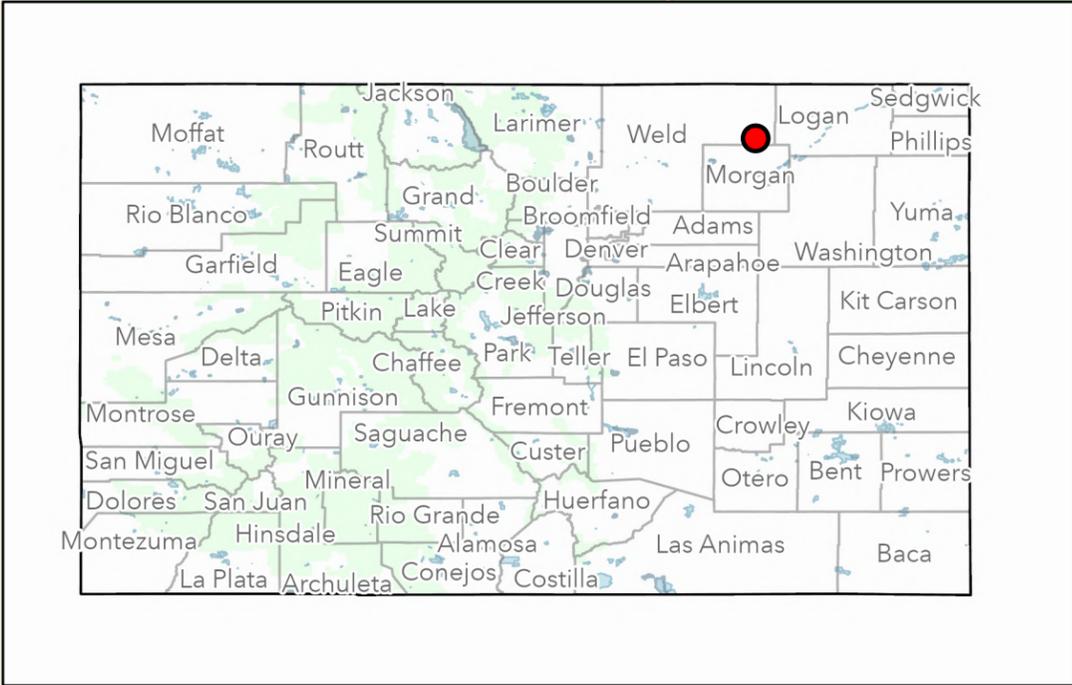
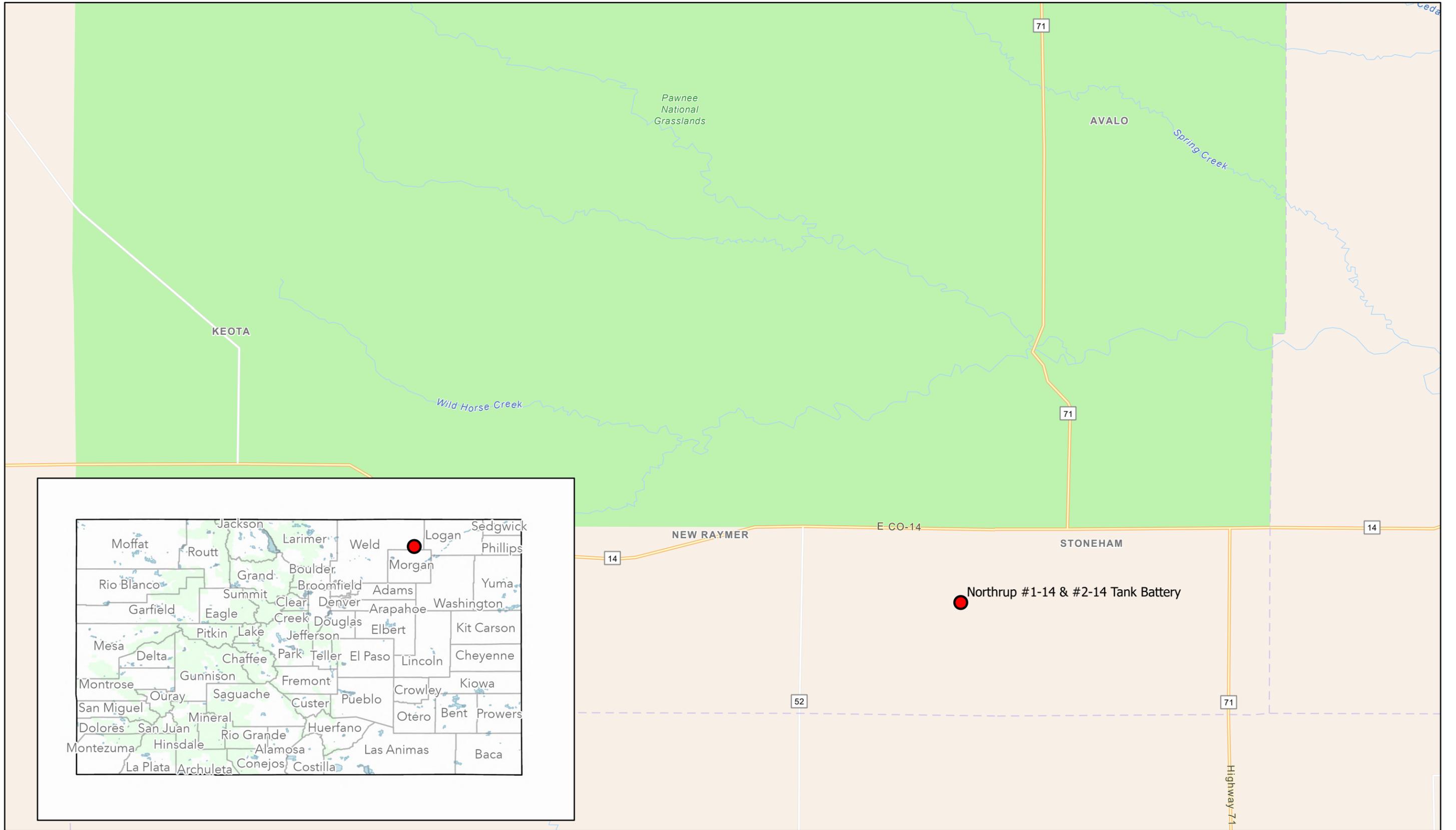
- Figure 1 – Site Location Map
- Figure 2 – Tank Battery Sample Location Map
- Figure 3 – Flowline Sample Location Map

Table

- Table 1 – Laboratory Results Summary Table – Soil Samples

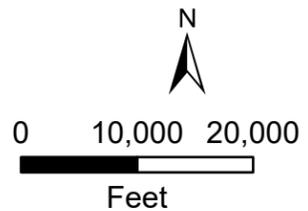
- Attachment A: Photolog
- Attachment B: Data Validation Reports
- Attachment C: Field Screening Results
- Attachment D: Laboratory Analytical Reports
- Attachment E: Closure Checklists

FIGURES



Legend

- Site Location



REPORT DATE: February 2024	FIGURE NO: 1
PROJECT: ECMC Orphan Well Program	CLIENT NAME: ECMC
	SCALE: 1:189,000

Northrup #1-14 & #2-14 Tank Battery	
SITE LOCATION MAP	
LOCATION ID: 327106	
FACILITY ID: 246371	
ENERGY AND CARBON MANAGEMENT COMMISSION	

327106_BK01@3'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	NA	500
Soil Suitability for Reclamation Parameters		
pH	8.71	6-8.3
No Other Table 915-1 Exceedances		

327106_FL01_02@9'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	5.06	500
Soil Suitability for Reclamation Parameters		
SAR	6.48	<6
No Other Table 915-1 Exceedances		

327106_FL02_03@5'

327106_SEP01_B01@2'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	67.6	500
Metals (mg/kg)		
Arsenic	6.87	5.20
No Other Table 915-1 Exceedances		

327106_PWV01_B01@10'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	308.04	500
No Table 915-1 Exceedances		

Produced Water Vault

Northrup 1-14 (OWP)

327106_PWV01_W01@6'
327106_PWV01_S01@6'

327106_FL01_01@2'
327106_FL03_02@3'

Aboveground Storage Tank

327106_AST01_B01@2'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	25.24	500
Soil Suitability for Reclamation Parameters		
pH	9.11	6-8.3
Boron (mg/L)	2.88	2
No Other Table 915-1 Exceedances		

327106_FP01@4'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	165.7	500
No Table 915-1 Exceedances		

Pit

SEP02

327106_FL04_02@4'

327106_FL04_01@4'

327106_FP02@4'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	56.9	500
No Table 915-1 Exceedances		

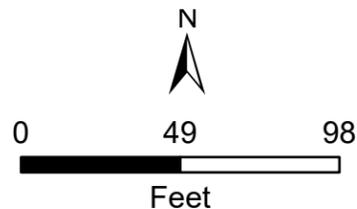
327106_PWV01_E01@6'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	52.5	500
No Table 915-1 Exceedances		

327106_SEP02_B01@2'		
Parameter	Concentration	ECMC Table 915-1
TPH mg/kg		
Total TPH	0.0	500
No Table 915-1 Exceedances		

Google Earth Imagery Date: October 2015

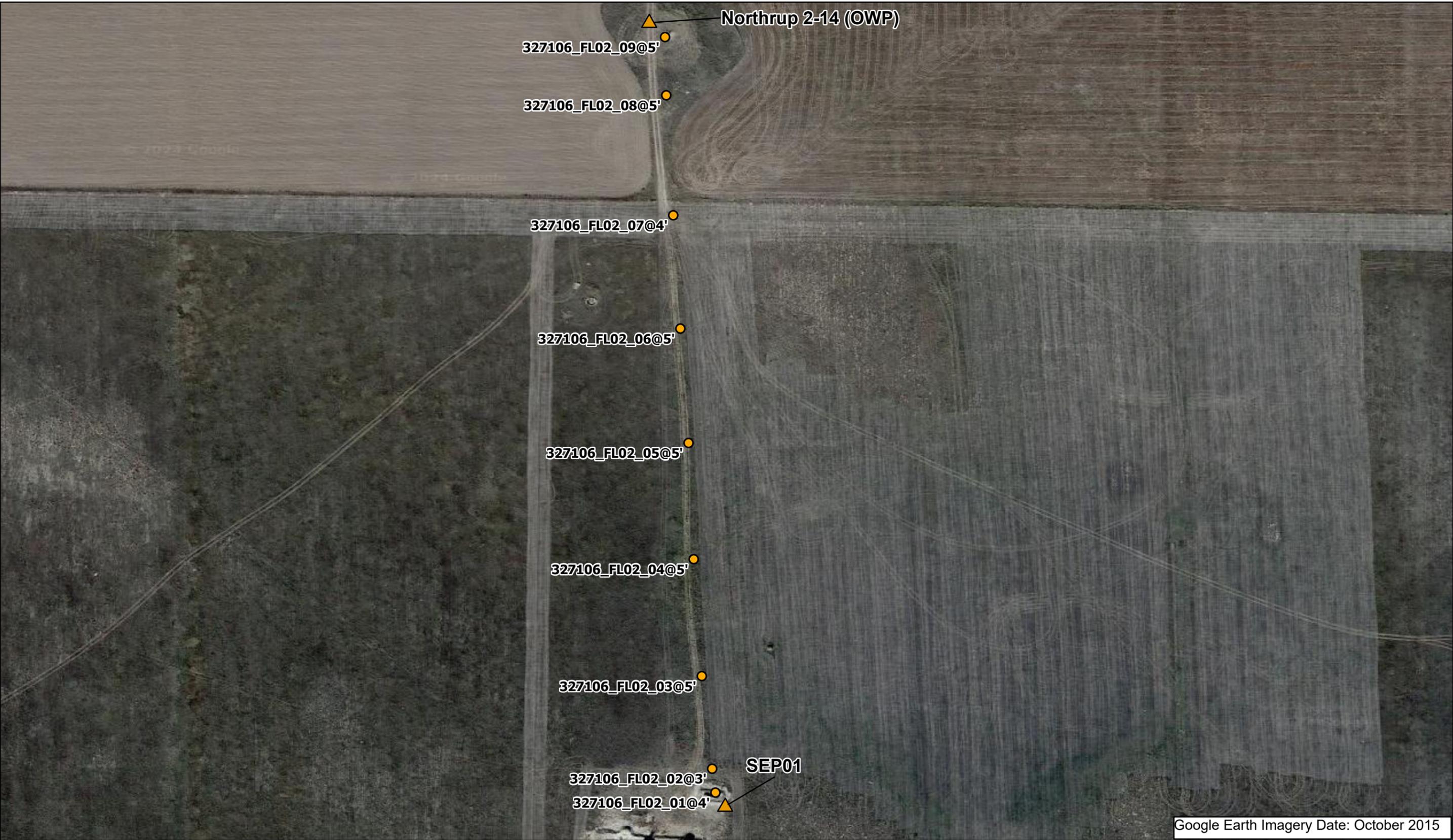
Legend

- Field Screened Sample Location
- Lab Analyzed Sample Location
- Background Sample Location
- ▲ Tank Battery Equipment Location



REPORT DATE: February 2024	FIGURE NO: 2
PROJECT: 15970.004.012	CLIENT NAME: ECMC
	SCALE: 1:675

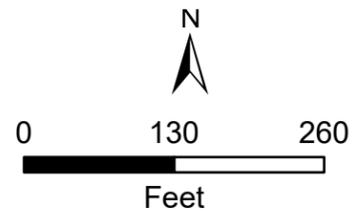
Northrup #1-14 & #2-14 Tank Battery
TANK BATTERY SAMPLE LOCATION MAP
LOCATION ID: 327106
FACILITY ID: 246371
ENERGY AND CARBON MANAGEMENT COMMISSION



Google Earth Imagery Date: October 2015

Legend

- Field Screened Sample Location
- ▲ Tank Battery Equipment Location



REPORT DATE: February 2024	FIGURE NO: 3
PROJECT: 15970.004.012	CLIENT NAME: ECMC
	SCALE: 1:1,900

Northrup #1-14 & #2-14 Tank Battery
 FLOWLINE SAMPLE LOCATION MAP
 LOCATION ID: 327106
 FACILITY ID: 246371
 ENERGY AND CARBON MANAGEMENT COMMISSION

TABLE

**Laboratory Results Summary Table
Northrup #1-14 #2-14 Tank Battery
Soil Samples**

ECMC Soil Analytical Table - Northrup #1-14 & #2-14 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			
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_AST01_B01@2'	25.24			<0.500	U		8.04			17.2			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_FL01_02@9'	5.06			<0.500	U		<4.00	U		5.06			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_B01@10'	308.04			3.04	J+	S	193			112			0.00111	J+	S	<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		0.0925	J+	S	<0.00600	R	S	0.0101	J-	S
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_E01@6'	52.5			<0.500	U		12.7			39.8			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP01_B01@2'	67.6			<0.500	U		21.1			46.5			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP02_B01@2'	0			<0.500	U		<4.00	U		<4.00	U		<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP01@4'	165.7			<0.500	U		37.7			128			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP02@4'	56.9			<0.500	U		<20.0	U		56.9			<0.00100	U		<0.00500	U		<0.00100	U		<0.00300	U		<0.00100	U		<0.00100	U		<0.00600	U		<0.00600	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_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/com - millimhos 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
Northrup #1-14 #2-14 Tank Battery
Soil Samples**

ECMC Soil Analytical Table - Northrup #1-14 & #2-14 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
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_AST01_B01@2'	<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	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_FL01_02@9'	<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	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_B01@10'	<0.00600	R	S	<0.00600	R	S	<0.00600	R	S	<0.00600	R	S	0.00618	J-	S	<0.00600	R	S	0.00684	J-	S	0.042	J-	S	<0.00600	R	S	<0.0200	R	S
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_E01@6'	<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	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP01_B01@2'	<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	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP02_B01@2'	<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	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP01@4'	<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		0.0142			<0.00600	U		<0.00600	U		<0.00600	U		<0.00600	U		<0.0200	U	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP02@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	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_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/com - millimhos 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
Northrup #1-14 #2-14 Tank Battery
Soil Samples**

ECMC Soil Analytical Table - Northrup #1-14 & #2-14 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 -->																		8.71						5.20								
Location	Sample Date	Sample ID	Pyrene			1-Methylnaphthalene			2-Methylnaphthalene			Electrical Conductivity (EC) (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
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_AST01_B01@2'	<0.00600	U		<0.0200	U		<0.0200	U		0.515			1.83			9.11	J	H	2.88			3.38			201			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_FL01_02@9'	<0.00600	U		<0.0200	U		<0.0200	U		1.17			6.48			8.61	J	H	0.882			2.25			144			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_B01@10'	0.0089	J-	S	0.465	J-	S	0.0268	J-	S	0.581			5			8.7	J	H	0.839			2.73			208			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_E01@6'	<0.00600	U		<0.0200	U		<0.0200	U		0.565			2.85			8.16	J	H	0.752			3.34			193			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP01_B01@2'	<0.00600	U		<0.0200	U		<0.0200	U		0.518			2.29			8.34	J	H	0.772			6.87			203			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP02_B01@2'	<0.00600	U		<0.0200	U		<0.0200	U		0.14			0.104			8.12	J	H	<0.20	U		2.52			116			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP01@4'	<0.00600	U		<0.0200	U		<0.0200	U		0.680			1.610			7.90	J	H	0.92			2.19			96.5			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP02@4'	<0.00600	U		<0.0200	U		<0.0200	U		0.379			2.320			8.25	J	H	1.09			2.39			104			<1.00	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_BK01@3'	NA			NA			NA			0.926			5.53			8.71	J	H	0.883			4.16			326			<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 - millimhos 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
Northrup #1-14 #2-14 Tank Battery
Soil Samples**

ECMC Soil Analytical Table - Northrup #1-14 & #2-14 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
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_AST01_B01@2'	<1.00	U		9.06			9.36			8.16			<2.50	U		<0.500	U		34.1		
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_FL01_02@9'	<1.00	U		<5.00	U		7.03			4.12			<2.50	U		<0.500	U		<25.0	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_B01@10'	<1.00	U		5			6.64			4.83			<2.50	U		<0.500	U		<25.0	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_PWV01_E01@6'	<1.00	U		7.46			9.89			6.42			<2.50	U		<0.500	U		29.6		
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP01_B01@2'	<1.00	U		15.1			13.4			17.8			<2.50	U		<0.500	U		124		
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_SEP02_B01@2'	<1.00	U		8.98			8.59			8.22			<2.50	U		<0.500	U		37.5		
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP01@4'	<1.00	U		5.36			8.71			5.09			<2.50	U		<0.500	U		<25.0	U	
Northrup #1-14 & #2-14 Tank Battery	10/26/2023	327106_FP02@4'	<1.00	U		5.44			6.73			3.71			<2.50	U		<0.500	U		<25.0	U	
Northrup #1-14 & #2-14 Tank Battery	9/13/2023	327106_BK01@3'	NA			6.77			8.41			6.95			<2.50	U		<0.500	U		28		

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/com - millimhos 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 Northrup #1-14 & #2-14 Tank Battery

Photo Info		
Photo Type:	Overview	
Photo Name:	AST and Vertical Separator with Associated Shed Overview	
Direction:	S	
Description:	AST and vertical separator with associated shed	
Photo Date/Time:	07/13/2023 12:44:00 PM	
Photographer:	Nathan Fields	
Photo Info		
Photo Type:	Overview	
Photo Name:	Horizontal Separator Overview	
Direction:	E	
Description:	Horizontal separator with associated shed	
Photo Date/Time:	07/13/2023 12:46:00 PM	
Photographer:	Nathan Fields	

Photo Info		
Photo Type:	Overview	
Photo Name:	Wellhead Overview	
Direction:	W	
Description:	Wellhead location	
Photo Date/Time:	07/13/2023 12:46:00 PM	
Photographer:	Nathan Fields	

Photo Info		
Photo Type:	Overview	
Photo Name:	Wellhead and Wellhead Sign	
Direction:	SW	
Description:	Sign in good condition	
Photo Date/Time:	07/13/2023 12:47:00 PM	
Photographer:	Nathan Fields	

Photo Info		
Photo Type:	Sample Location	
Photo Name:	TENORM Sample Collection	
Direction:	E	
Description:	Ram-Co collecting TENORM sample from hatch of PWV	
Photo Date/Time:	07/13/2023 12:48:00 PM	
Photographer:	Nathan Fields	
Photo Info		
Photo Type:	Overview	
Photo Name:	Pit Overview	
Direction:	NE	
Description:	Impacts observed in pit	
Photo Date/Time:	07/13/2023 12:49:00 PM	
Photographer:	Nathan Fields	

Photo Info		
Photo Type:	Overview	
Photo Name:	Impacts at Pit	
Direction:	S	
Description:	Evidence of impacts at pit	
Photo Date/Time:	07/13/2023 12:50:00 PM	
Photographer:	Nathan Fields	

Photo Info		
Photo Type:	Overview	
Photo Name:	AST and Vertical Separator Overview	
Direction:	E	
Description:	Vertical separator with associated shed and AST in background	
Photo Date/Time:	07/13/2023 12:50:00 PM	
Photographer:	Nathan Fields	

Photo Info	
Photo Type:	Sample Location
Photo Name:	AST TENORM Sampling
Direction:	SE
Description:	Prior to collection of TENORM sample at AST
Photo Date/Time:	07/13/2023 12:51:00 PM
Photographer:	Nathan Fields



Photo Info	
Photo Type:	Overview
Photo Name:	Vertical Separator Overview
Direction:	SW
Description:	Vertical separator with associated shed
Photo Date/Time:	07/13/2023 12:51:00 PM
Photographer:	Nathan Fields



Photo Info	
Photo Type:	Overview
Photo Name:	Northrup #2-14 (OWP) Wellhead
Direction:	SW
Description:	Wellhead at tank battery with sign
Photo Date/Time:	09/13/2023 08:55:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Overview
Photo Name:	Northrup #2-14 (OWP) Wellhead
Direction:	E
Description:	Wellhead north of tank battery
Photo Date/Time:	09/13/2023 08:57:00 AM
Photographer:	COGCC Admin



Photo Info		
Photo Type:	Overview	
Photo Name:	Northrup #1-14 (OWP) Wellhead	
Direction:	W	
Description:	Wellhead at tank battery with sign	
Photo Date/Time:	09/13/2023 09:11:00 AM	
Photographer:	COGCC Admin	

Photo Info		
Photo Type:	Sample Location	
Photo Name:	PWV Excavation	
Direction:	S	
Description:	PWV excavation	
Photo Date/Time:	09/13/2023 09:15:00 AM	
Photographer:	COGCC Admin	

Photo Info	
Photo Type:	Container
Photo Name:	Removed PWV
Direction:	S
Description:	PWV removed from original location
Photo Date/Time:	09/13/2203 09:20:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Container
Photo Name:	PWV Holes
Direction:	N
Description:	Holes in side of PWV
Photo Date/Time:	09/13/2023 09:22:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Overview
Photo Name:	Horizontal Separator with Associated Shed
Direction:	E
Description:	Horizontal separator in-place
Photo Date/Time:	09/13/2023 10:48:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Container
Photo Name:	Separator Associated Shed
Direction:	E
Description:	Separator associated shed showing possible riser and components inside
Photo Date/Time:	09/13/2023 10:50:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Container
Photo Name:	Horizontal Separator Overview
Direction:	W
Description:	Horizontal separator with associated shed
Photo Date/Time:	09/13/2023 10:53:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Container
Photo Name:	Horizontal Separator Decommissioning
Direction:	NW
Description:	Inside components of horizontal separator
Photo Date/Time:	09/13/2023 10:55:00 AM
Photographer:	COGCC Admin



Photo Info		
Photo Type:	Overview	
Photo Name:	Debris Onsite	
Direction:	S	
Description:	Debris pile onsite before mobilization	
Photo Date/Time:	09/13/2023 10:57:00 AM	
Photographer:	COGCC Admin	

Photo Info		
Photo Type:	Overview	
Photo Name:	Debris Onsite	
Direction:	E	
Description:	Debris onsite before mobilization	
Photo Date/Time:	09/13/2023 10:58:00 AM	
Photographer:	COGCC Admin	

Photo Info	
Photo Type:	Sample Location
Photo Name:	Sampling at Wellhead
Direction:	W
Description:	Riser at wellhead excavation
Photo Date/Time:	09/13/2023 11:00:00 AM
Photographer:	COGCC Admin
	

Photo Info	
Photo Type:	Sample Location
Photo Name:	Sampling at Separator
Direction:	E
Description:	Excavation showing risers to the separator
Photo Date/Time:	09/13/2023 11:16:00 AM
Photographer:	COGCC Admin
	

Photo Info	
Photo Type:	Sample Location
Photo Name:	Separator Excavation
Direction:	W
Description:	Risers to separator from Northrup #1-14 (OWP) wellhead
Photo Date/Time:	09/13/2023 11:25:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Separator Excavation
Direction:	E
Description:	Horizontal separator base excavation
Photo Date/Time:	09/13/2023 11:30:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Flowline Excavation
Direction:	N
Description:	Risers from vertical separator to AST (FL04_01) excavation
Photo Date/Time:	09/13/2023 11:44:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Separator Excavation
Direction:	N
Description:	Excavation of sample location for vertical separator base
Photo Date/Time:	09/13/2023 11:52:00 AM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	PWV Excavation
Direction:	S
Description:	Excavation of sample location for PWV base
Photo Date/Time:	09/13/2023 12:07:00 PM
Photographer:	COGCC Admin
	

Photo Info	
Photo Type:	Overview
Photo Name:	Flowline excavation
Direction:	N
Description:	Excavation at flowline riser
Photo Date/Time:	09/13/2023 12:26:00 PM
Photographer:	COGCC Admin
	

Photo Info	
Photo Type:	Sample Location
Photo Name:	AST Excavation
Direction:	NE
Description:	Excavation showing the location where the riser from the vertical separator entered the AST
Photo Date/Time:	09/13/2023 13:42:00 PM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	AST Excavation
Direction:	NE
Description:	Excavation below the base of the removed AST
Photo Date/Time:	09/13/2023 13:44:00 PM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Flowline Excavation
Direction:	E
Description:	Excavation at Northrup #1-14 (OWP) wellhead riser at horizontal separator (FL01_02)
Photo Date/Time:	09/13/2023 13:52:00 PM
Photographer:	COGCC Admin
	

Photo Info	
Photo Type:	Sample Location
Photo Name:	PWV Excavation
Direction:	W
Description:	Excavation showing vertical depth of elevated PID/FID readings at PWV base
Photo Date/Time:	09/13/2023 13:56:00 PM
Photographer:	COGCC Admin
	

Photo Info	
Photo Type:	Sample Location
Photo Name:	Flowline Excavation
Direction:	N
Description:	Excavation of flowline from Northrup #2-14 (OWP) wellhead to horizontal separator (FL02)
Photo Date/Time:	09/13/2023 14:22:00 PM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Flowline Excavation
Direction:	N
Description:	Excavation of flowline (FL02)
Photo Date/Time:	09/13/2023 14:24:00 PM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Flowline Excavation
Direction:	N
Description:	Excavation of flowline (FL02_04)
Photo Date/Time:	09/13/2023 14:32:00 PM
Photographer:	COGCC Admin



Photo Info	
Photo Type:	Sample Location
Photo Name:	Flowline Excavation
Direction:	NE
Description:	Excavation of flowline (FL02_05)
Photo Date/Time:	09/13/2023 14:38:00 PM
Photographer:	COGCC Admin



Photo Info		
Photo Type:	Overview	
Photo Name:	Horizontal Separator Location Overview	
Direction:	SE	
Description:	Smoothed out soil at the approximate location of the horizontal separator	
Photo Date/Time:	10/26/2023 12:21:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Overview	
Photo Name:	Overview of Site	
Direction:	S	
Description:	Site overview showing AST, vertical separator, PWV, and former pit locations	
Photo Date/Time:	10/26/2023 13:22:00 PM	
Photographer:	Kyle Spivey	

Photo Info		
Photo Type:	Overview	
Photo Name:	Overview of Site	
Direction:	SW	
Description:	Post-decommissioning site overview	
Photo Date/Time:	10/26/2023 13:24:00 PM	
Photographer:	Kyle Spivey	
Photo Info		
Photo Type:	Overview	
Photo Name:	Former Pit, PWV, and Wellhead Locations	
Direction:	NE	
Description:	Approximate location of former pit, PWV, and Northrup #1-14 (OWP) wellhead post-decommissioning	
Photo Date/Time:	10/26/2023 13:25:00 PM	
Photographer:	Kyle Spivey	

Photo Info	
Photo Type:	Overview
Photo Name:	Former Pit, Vertical Separator, and AST Location
Direction:	E
Description:	Approximate location of former pit, vertical separator, and the AST post-decommissioning
Photo Date/Time:	10/26/2023 13:27:00 PM
Photographer:	Kyle Spivey
	

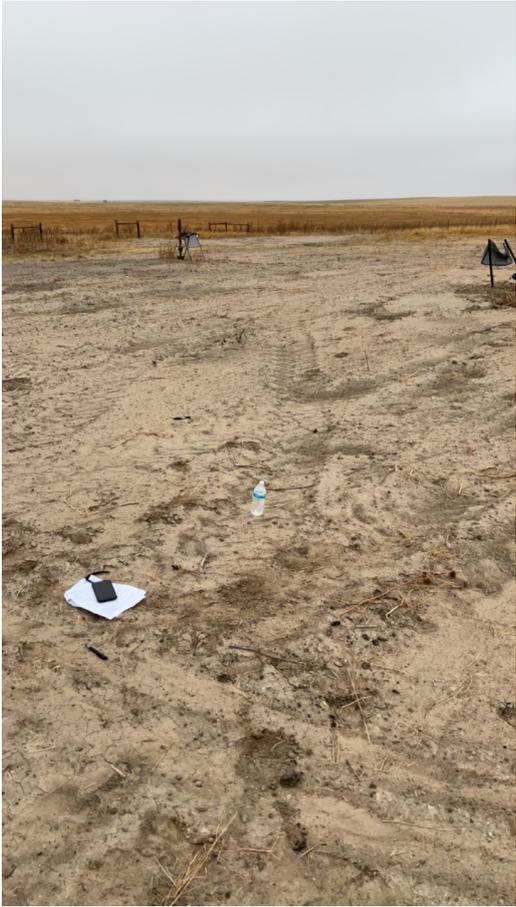
Photo Info	
Photo Type:	Sample Location
Photo Name:	Former Pit Backfill
Direction:	NE
Description:	Former pit location has been backfilled and loosely graded. No obvious visual signs of the pit location.
Photo Date/Time:	10/26/2023 13:42:00 PM
Photographer:	Kyle Spivey
	

Photo Info		
Photo Type:	Sample Location	
Photo Name:	Former Pit Locations	
Direction:	NE	
Description:	Former pit locations during post-decommissioning visit	
Photo Date/Time:	10/26/2023 13:55:00 PM	
Photographer:	Kyle spivey	

Photo Info		
Photo Type:	Overview	
Photo Name:	Wellhead Location	
Direction:	SW	
Description:	Northrup #1-14 (OWP) wellhead still in-place	
Photo Date/Time:	10/26/2023 13:57:00 PM	
Photographer:	Kyle Spivey	

Photo Info	
Photo Type:	Overview
Photo Name:	Wellhead and Pipe Location
Direction:	SW
Description:	Wellhead sign and pipe still sticking out of the ground
Photo Date/Time:	10/26/2023 13:59:00 PM
Photographer:	Kyle Spivey



ATTACHMENT B

DATA VALIDATION REPORTS

DATA VALIDATION REPORT

Energy and Carbon Management Commission Orphaned Well Program

SAMPLE DELIVERY GROUP: L1635712

Prepared by
Weston Solutions, Inc.
1536 Cole Blvd., Bldg 4, Suite 375
Lakewood, CO 80401

September 5, 2023



Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com

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 1400 Weston Way
 West Chester, PA 19380
 610-701-3000 • Fax 610-701-3186
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I. INTRODUCTION

Task Order Title: NORTHROP #1-14 & #2-14 Tank Battery_NORTHROP-67N57W 14SENV

Contract: 176679

Weston Work Order No.: 15970.004.012

Sample Delivery Group: L1635712

Project Manager: Sammy Allen

Matrix: Soil

QC Level: 2A

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: Pace Analytical

TABLE I – SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection Time	Method
327106_TENORM_AST01	L1635712-01	Soil	07/13/2023 13:15	Radiochemistry by Method DOE Ga-01-R/901.1 (21 day) Radiochemistry by Method HASL 300 Po-2RC
327106_TENORM_PWV01	L1635712-02	Soil	07/13/2023 11:50	Gravimetric Analysis – Dissolved Solids by Method 2540 C-2011 Gravimetric Analysis – Suspended Solids by Method 2540 D-2015 Radiochemistry by Method 904-9320 (TENORM) Radiochemistry by Method ASTM D7535-09 (TENORM) Radiochemistry by Method HASL 300 Po-2RC (TENORM) Radiochemistry by Method SM7500Ra B M (TENORM)



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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) L1635712:

- 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 (QC) 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 QC criteria. The analyte may or may not be present in the sample.



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/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/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.	Inductively coupled plasma- mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (bromofluorobenzene [BFB] or difluorotriphenyl phosphine [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. METHODS: 2540 C-2011, 2540 D-2015, 904-9320, ASTM D7535-09, HASL 300 Po-2RC, SM7500Ra B M, Ga-01-R/901.1

Zachary Lawson of Weston Solutions, Inc., reviewed the SDG on September 5, 2023.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *Colorado Department of Natural Resources Energy and Carbon Management Commission Orphan Well Program Quality Assurance Project Plan (QAPP) Revision 1 (2023)*, Dissolved Solids by *Gravimetric Analysis Method 2540 C-2011*, Suspended Solids by *Gravimetric Analysis Method 2540 D-2015*, Radiochemistry Methods *904-9320*, *ASTM D7535-09*, *HASL 300 Po-2RC*, and *SM7500 Ra B M (TENORM)*, and Radiochemistry by Method *DOE Ga-01-R/901.1*.

III.1 HOLDING TIMES

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

III.2 TUNING AND CALIBRATION

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

III.3 QUALITY CONTROL SAMPLES

III.3.1 METHOD BLANKS

Site sample 327106_TENORM_AST01 is qualified as a non-detect (U) for Lead-210 at a concentration of 0.258 picoCurie 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 327106_TENORM_AST01 is qualified as a non-detect (U) for Polonium-210 at a concentration of 0.312 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 relative percent differences (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 were utilized in these analyses.

III.5 INTERNAL STANDARDS PERFORMANCE

The internal standards are not utilized in these analyses.



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1400 Weston Way
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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 QC samples and, if necessary, qualified samples 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

Energy and Carbon Management Commission Orphan Well Program

SAMPLE DELIVERY GROUP: L1656376

Prepared by
Weston Solutions, Inc.
1536 Cole Blvd., Bldg 4, Suite 375
Lakewood, CO 80401

October 17, 2023



Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com

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 1400 Weston Way
 West Chester, PA 19380
 610-701-3000 • Fax 610-701-3186
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I. INTRODUCTION

Task Order Title: Northrup #1-14 & 2-14 Tank Battery

Contract: 176679

Weston Work Order No.: 15970.004.012

Sample Delivery Group: L1656376

Project Manager: Sammy Allen

Matrix: Soil

QC Level: 2A

No. of Samples: 7

No. of Reanalyses/Dilutions: 0

Laboratory: Pace Analytical

TABLE I – SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection Time	Method
327106_SEP01_B01@2'	L1656376-01	Soil	09/13/2023 11:25	Hexavalent Chromium (7199) Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020) Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) & Volatile Organic Compounds (VOCs) (8260B) Diesel Range Organics (DRO)/Oil Range Organics (ORO) (8015M) Semivolatile Organic Compounds (SVOCs) (Polycyclic Aromatic Hydrocarbons [PAHs] by 8270C-SIM)



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Sample Name	Lab Sample Name	Matrix	Collection Time	Method
327106_SEP02_B01@2'	L1656376-02	Soil	09/13/2023 11:45	Hexavalent Chromium (7199) Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020) Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) & Volatile Organic Compounds (VOCs) (8260B) Diesel Range Organics (DRO)/Oil Range Organics (ORO) (8015M) Semivolatile Organic Compounds (SVOCs) (Polycyclic Aromatic Hydrocarbons [PAHs] by 8270C-SIM)
327106_PWV01_E01@6'	L1656376-03	Soil	09/13/2023 12:15	Hexavalent Chromium (7199) Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020) Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) & Volatile Organic Compounds (VOCs) (8260B) Diesel Range Organics (DRO)/Oil Range Organics (ORO) (8015M) Semivolatile Organic Compounds (SVOCs) (Polycyclic Aromatic Hydrocarbons [PAHs] by 8270C-SIM)



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Sample Name	Lab Sample Name	Matrix	Collection Time	Method
327106_AST01_B01@2'	L1656376-04	Soil	09/13/2023 12:40	Hexavalent Chromium (7199) Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020) Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) & Volatile Organic Compounds (VOCs) (8260B) Diesel Range Organics (DRO)/Oil Range Organics (ORO) (8015M) Semivolatile Organic Compounds (SVOCs) (Polycyclic Aromatic Hydrocarbons [PAHs] by 8270C-SIM)
327106_FL01_02@9'	L1656376-05	Soil	09/13/2023 13:35	Hexavalent Chromium (7199) Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020) Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) & Volatile Organic Compounds (VOCs) (8260B) Diesel Range Organics (DRO)/Oil Range Organics (ORO) (8015M) Semivolatile Organic Compounds (SVOCs) (Polycyclic Aromatic Hydrocarbons [PAHs] by 8270C-SIM)



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Sample Name	Lab Sample Name	Matrix	Collection Time	Method
327106_PWV01_B01@10'	L1656376-06	Soil	09/13/2023 13:45	Hexavalent Chromium (7199) Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020) Total Petroleum Hydrocarbons – Gasoline Range Organics (TPH-GRO) & Volatile Organic Compounds (VOCs) (8260B) Diesel Range Organics (DRO)/Oil Range Organics (ORO) (8015M) Semivolatile Organic Compounds (SVOCs) (Polycyclic Aromatic Hydrocarbons [PAHs] by 8270C-SIM)
327106_BK01@3'	L1656376-07	Soil	09/13/2023 14:00	Hydrogen Ion Concentration (pH) (9045D) Specific Conductance (9050AMod) Inductively Coupled Plasma (ICP) Metals (6010B-NE493 Ch 2) ICP–Mass Spectrometry (ICP-MS) Metals (6020)



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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) L1656376:

- 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.



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 less than (<) 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 spectrometry (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.



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Reason Code	Organic	Inorganic
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.
-	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, 6020, 8260B, 8015M, 8270C-SIM

Zachary Lawson of Weston Solutions, Inc., reviewed the SDG on October 17, 2023.

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *Colorado Department of Natural Resources Energy and Carbon Management 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 Ch 2, EPA Method 6020, EPA Method 8260B, EPA Method 8015M, EPA Method 8270C-SIM, *National Functional Guidelines for Inorganic Superfund Methods Data Review (2020)*, and *National Functional Guidelines for Organic Superfund Methods Data Review (2020)*.

III.1 HOLDING TIMES

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

Samples analyzed for hydrogen ion concentration (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 are 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. No data qualification is required.

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 the following methods: Hexavalent Chromium (EPA Method 7199), pH (EPA Method 9045D), and Specific Conductance (EPA Method 9050AMod). The sample duplicate RPD values were within laboratory control limits; therefore, no data qualification is required.

III.3.5 MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Matrix spike (MS) analyses were performed for Hexavalent Chromium (EPA Method 7199). The percent recoveries and duplicate RPD values were within laboratory control limits; therefore, no data qualification is required.

III.3.6 SERIAL DILUTION

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



Weston Solutions, Inc.
1400 Weston Way
West Chester, PA 19380
610-701-3000 • Fax 610-701-3186
www.westonsolutions.com.

III.4 SURROGATES

Sample 327106_PWV01_B01@10' contained the following surrogate outliers:

- EPA Method 8260B, surrogate 4-bromofluorobenzene (263%) recovered greater than the control limit (67-138%). The samples results were qualified as estimated with a potential high bias (J+) for detects. Non-detects were not qualified.
- EPA Method 8270C-SIM, surrogate nitrobenzene-d5 (0%) recovered less than the control limit (14-149%). The sample results were qualified estimated with a potential low bias (J-) for detects and qualified as rejected and unusable (R) for non-detects.

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 site samples were diluted 5x for ICP-MS analysis. Additionally, samples 327106_SEP01_B01@2' and 327106_PWV01_B01@10' were diluted 10x for EPA Method 8015M. RDLs were appropriately adjusted.

III.7 FIELD QC SAMPLES

Weston evaluated field quality control (QC) samples and, if necessary, qualified samples 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

A trip blank was listed on the COC, however, zero sample containers were submitted to the laboratory for analysis.

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
327106_AST01_B01@2'	Aboveground Storage Tank - Base	2.9	0	9/13/2023
327106_SEP01_B01@2'	Horizontal Separator - Base	3.3	0	9/13/2023
327106_SEP02_B01@2'	Vertical Separator - Base	3.3	0	9/13/2023
327106_PWV01_B01@6'	Produced Water Vault - Base	33	39	9/13/2023
327106_PWV01_B01@8'	Produced Water Vault - Base	24	27	9/13/2023
327106_PWV01_B01@10'	Produced Water Vault - Base	216	312	9/13/2023
327106_PWV01_S01@6'	Produced Water Vault - South	3.3	1.5	9/13/2023
327106_PWV01_E01@6'	Produced Water Vault - East	3.9	0	9/13/2023
327106_PWV01_N01@6'	Produced Water Vault - North	3.4	0	9/13/2023
327106_PWV01_W01@6'	Produced Water Vault - West	2.6	0	9/13/2023
327106_FL01_01@2'	Flowline 1 - Connection Point at Northrup #1-14 (OWP) Wellhead	2.9	0	9/13/2023
327106_FL01_02@4'	Flowline 1 - Connection Point at Horizontal Separator	9.1	21	9/13/2023
327106_FL01_02@6'	Flowline 1 - Connection Point at Horizontal Separator	9	10	9/13/2023
327106_FL01_02@9'	Flowline 1 - Connection Point at Horizontal Separator	3.6	0	9/13/2023
327106_FL02_01@4'	Flowline 2 - Connection Point at Horizontal Separator	3.4	0	9/13/2023
327106_FL02_02@3'	Flowline 2 - 200 ft from Horizontal Separator Along Flowline	4.5	0	9/13/2023
327106_FL02_03@5'	Flowline 2 - 400 ft from Horizontal Separator along Flowline	4.5	0.5	9/13/2023
327106_FL02_04@5'	Flowline 2 - 600 ft from Horizontal Separator along Flowline	3.5	0	9/13/2023
327106_FL02_05@5'	Flowline 2 - 800 ft from Horizontal Separator along Flowline	3.7	0	9/13/2023
327106_FL02_06@5'	Flowline 2 - 1,000 ft from Horizontal Separator along Flowline	3.5	1.3	9/13/2023
327106_FL02_07@4'	Flowline 2 - 1,200 ft from Horizontal Separator along Flowline	3.6	0.1	9/13/2023
327106_FL02_08@5'	Flowline 2 - 1,350 ft from Horizontal Separator along Flowline	3.7	0.8	9/13/2023
327106_FL02_09@5'	Flowline 2 - Connection Point at Northrup #2-14 (OWP) Wellhead	3.5	0.3	9/13/2023
327106_FL03_02@3'	Flowline 3 - Connection Point at Vertical Separator	5.1	0	9/13/2023
327106_FL04_01@4'	Flowline 4 - Connection Point at Vertical Separator	3.8	0	9/13/2023
327106_FL04_02@4'	Flowline 4 - Connection Point at AST	3.6	0	9/13/2023
327106_FL05_01@4'	Flowline 5 - Connection Point at Vertical Separator	3.3	0	9/13/2023
327106_FP01@3'	Former Pit 1	-0.8	7.3	10/26/2023
327106_FP01@4'	Former Pit 1	-0.9	7.8	10/26/2023
327106_FP02@3'	Former Pit 2	-0.9	8.0	10/26/2023
327106_FP02@4'	Former Pit 2	-0.9	7.1	10/26/2023
Notes:	Highlighted cells indicate elevated PID/FID readings			

ATTACHMENT D

LABORATORY ANALYTICAL REPORTS

Colorado Oil & Gas Conservation

Sample Delivery Group: L1635712
Samples Received: 07/14/2023
Project Number:
Description:
Site: 327106
Report To: Jess Zielinski / Sammy Allen
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 National

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

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SAMPLE SUMMARY

327106_TENORM_AST01 L1635712-01 Solids and Chemical Materials

Collected by Nate Fields Collected date/time 07/13/23 13:15 Received date/time 07/14/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method DOE Ga-01-R/901.1 (21 day)	WG2093552	1	07/17/23 10:50	07/19/23 08:55	ZRG	Mt. Juliet, TN
Radiochemistry by Method HASL 300 Po-2RC	WG2101720	1	07/26/23 16:48	08/01/23 19:18	RGT	Mt. Juliet, TN

327106_TENORM_PWV01 L1635712-02 Non-Potable Water

Collected by Nate Fields Collected date/time 07/13/23 13:00 Received date/time 07/14/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2097711	1	07/19/23 14:39	07/19/23 16:30	ARD	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2015	WG2097705	1	07/20/23 08:17	07/20/23 09:28	ARD	Mt. Juliet, TN
Radiochemistry by Method 904-9320 (TENORM)	WG2100379	1	07/24/23 09:27	08/01/23 21:06	SNR	Mt. Juliet, TN
Radiochemistry by Method ASTM D7535-09 (TENORM)	WG2097930	1	07/20/23 09:20	07/31/23 18:37	SNR	Mt. Juliet, TN
Radiochemistry by Method HASL 300 Po-2RC (TENORM)	WG2101719	1	07/26/23 14:59	07/28/23 14:58	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M (TENORM)	WG2099485	1	07/24/23 16:02	07/27/23 10:07	RGT	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All 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



Report Revision History

Level II Report - Version 1: 08/16/23 09:32

Project Narrative

Added pCi/l conversions per customer request

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)	0.0171	<u>U</u>	0.0323	0.0937	07/19/2023 08:55	WG2093552
Radium-226 (186 KeV)	0.0192	<u>U</u>	0.130	0.259	07/19/2023 08:55	WG2093552
Bismuth-214 (Ra-226)	0.0271	<u>U</u>	0.0331	0.0694	07/19/2023 08:55	WG2093552
Lead-210	0.258	<u>J</u>	0.226	0.397	07/19/2023 08:55	WG2093552

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

Radiochemistry by Method HASL 300 Po-2RC

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/g		+ / -	pCi/g	date / time	
Polonium-210	0.312		0.193	0.196	08/01/2023 19:18	WG2101720
(T) Polonium-209	32.1			20.0-110	08/01/2023 19:18	WG2101720

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Dissolved Solids	58100		200	1	07/19/2023 16:30	WG2097711

Gravimetric Analysis by Method 2540 D-2015

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Suspended Solids	213		15.6	1	07/20/2023 09:28	WG2097705

Radiochemistry by Method 904-9320 (TENORM)

Analyte	Result	Result	Qualifier	Uncertainty	MDA	MDA	Analysis Date	Batch
	pCi/l	pCi/g		+ / -	pCi/l	pCi/g	date / time	
RADIUM-228	4.10	0.0704		0.645	1.06	0.0182	08/01/2023 21:06	WG2100379
(T) Barium	85.2				30.0-143		08/01/2023 21:06	WG2100379
(T) Yttrium	115				30.0-136		08/01/2023 21:06	WG2100379

Radiochemistry by Method ASTM D7535-09 (TENORM)

Analyte	Result	Result	Qualifier	Uncertainty	MDA	MDA	Analysis Date	Batch
	pCi/l	pCi/g		+ / -	pCi/l	pCi/g	date / time	
Lead-210	5.57	0.0955		1.49	2.67	0.0458	07/31/2023 18:37	WG2097930
(T) Lead Carrier	90.2				30.0-110		07/31/2023 18:37	WG2097930

Radiochemistry by Method HASL 300 Po-2RC (TENORM)

Analyte	Result	Result	Qualifier	Uncertainty	MDA	MDA	Analysis Date	Batch
	pCi/L	pCi/g		+ / -	pCi/L	pCi/g	date / time	
Polonium-210	2.73	0.0468		1.00	0.670	0.0115	07/28/2023 14:58	WG2101719
(T) Polonium-209	52.3				20.0-110		07/28/2023 14:58	WG2101719

Radiochemistry by Method SM7500Ra B M (TENORM)

Analyte	Result	Result	Qualifier	Uncertainty	MDA	MDA	Analysis Date	Batch
	pCi/l	pCi/g		+ / -	pCi/l	pCi/g	date / time	
RADIUM-226	7.91	0.136		1.08	0.250	0.00429	07/27/2023 10:07	WG2099485
(T) Barium-133	106				30.0-143		07/27/2023 10:07	WG2099485

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3951120-1 07/19/23 16:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U		10.0	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

L1635264-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1635264-01 07/19/23 16:30 • (DUP) R3951120-3 07/19/23 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	87.0	94.0	1	7.73	J3	5

L1635305-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1635305-02 07/19/23 16:30 • (DUP) R3951120-4 07/19/23 16:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	333	348	1	4.41		5

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3951120-2 07/19/23 16:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800	8640	98.2	77.3-123	

Method Blank (MB)

(MB) R3951153-1 07/20/23 09:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Suspended Solids	U		2.50	2.50

¹Cp

²Tc

³Ss

L1635217-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1635217-01 07/20/23 09:28 • (DUP) R3951153-3 07/20/23 09:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Suspended Solids	640	595	1	7.29	<u>J3</u>	5

⁴Cn

⁵Sr

L1636251-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1636251-01 07/20/23 09:28 • (DUP) R3951153-4 07/20/23 09:28

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Suspended Solids	120	128	1	6.45	<u>P1</u>	5

⁶Qc

⁷Gl

⁸Al

Laboratory Control Sample (LCS)

(LCS) R3951153-2 07/20/23 09:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Suspended Solids	773	780	101	85.7-114	

⁹Sc

Method Blank (MB)

(MB) R3960756-5 08/04/23 21:36

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-228	-0.0374	<u>U</u>	0.248	0.225
(T) Barium	110		110	
(T) Yttrium	103		103	

L1636842-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1636842-04 08/01/23 21:06 • (DUP) R3960756-2 08/01/23 21:06

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.02	0.328	0.577	1.46	0.295	0.577	1	35.0	0.984		20	3
(T) Barium	116			114	114							
(T) Yttrium	103			111	111							

Laboratory Control Sample (LCS)

(LCS) R3960756-1 08/01/23 21:06

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.39	87.8	80.0-120	
(T) Barium			122		
(T) Yttrium			109		

L1636842-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1636842-12 08/01/23 21:06 • (MS) R3960756-6 08/11/23 16:39 • (MSD) R3960756-7 08/11/23 16:39

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	1.18	13.6	16.1	74.6	89.4	1	70.0-130			16.7		20
(T) Barium		107			75.8	77.5							
(T) Yttrium		110			100	118							



Method Blank (MB)

(MB) R3957487-1 07/31/23 15:17

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Lead-210	1.36		0.362	0.643
<i>(T) Lead Carrier</i>	91.5		91.5	

L1635811-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1635811-08 08/01/23 04:38 • (DUP) R3957487-5 07/31/23 18:37

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Lead-210	2.28	1.06	2.04	5.58	1.56	2.04	1	83.8	1.75		20	3
<i>(T) Lead Carrier</i>	60.5			83.8	83.8							

Laboratory Control Sample (LCS)

(LCS) R3957487-2 07/31/23 15:17

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead-210	18.2	20.7	114	54.0-149	
<i>(T) Lead Carrier</i>			90.9		

L1635720-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635720-02 07/31/23 21:57 • (MS) R3957487-3 07/31/23 15:17 • (MSD) R3957487-4 07/31/23 15:17

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Lead-210	72.9	237	319	322	113	116	1	36.0-152			0.749		20
<i>(T) Lead Carrier</i>		87.2			87.5	89.2							

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3951347-1 07/20/23 10:37

Analyte	MB Result pCi/g	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/g
Actinium-228 (Ra-228)	-0.0126	☹	0.106	0.299
Americium-241	-0.0330	☹	0.0606	0.120
Bismuth-214 (Ra-226)	-0.00799	☹	0.0740	0.174
Cesium-137	-0.0146	☹	0.0389	0.0837
Cobalt-60	0.0215	☹	0.0271	0.0797
Lead-210	-0.460	☹	0.855	1.75
Radium-226 (186 KeV)	0.0200	☹	0.598	1.08

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1629646-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1629646-01 07/20/23 10:09 • (DUP) R3951347-2 07/20/23 11:38

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)	1.12	0.261	0.399	1.09	0.186	0.399	1	3.16	0.109		20	3
Bismuth-214 (Ra-226)	0.630	0.175	0.274	0.716	0.122	0.274	1	12.9	0.407		20	3
Lead-210	-25.6	0.710	1.31	0.463	0.710	1.31	1	200	0.210	☹	20	3
Radium-226 (186 KeV)	2.67	0.639	0.804	3.27	0.639	0.804	1	20.3	0.567		20	3

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

(LCS) R3951347-3 07/20/23 12:20 • (LCSD) R3951347-4 07/20/23 12:47

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	48.9	48.4	103	102	60.0-140			1.01	20
Cesium-137	72.4	79.5	79.0	110	109	80.0-120			0.618	20
Cobalt-60	86.9	89.8	89.0	103	102	80.0-120			0.906	20

Method Blank (MB)

(MB) R3958272-1 08/01/23 15:29

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/g		+ / -	pCi/g
Polonium-210	0.318		0.158	0.117
(T) Polonium-209	48.7		48.7	

L1635433-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1635433-03 08/01/23 15:29 • (DUP) R3958272-5 08/01/23 15:29

Analyte	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
	pCi/g	+ / -	pCi/g	pCi/g	+ / -	pCi/g		%			%	
Polonium-210	17.3	2.30	0.524	19.2	1.91	0.524	1	10.4	0.636		20	3
(T) Polonium-209	11.2			18.8	18.8					C2		

Laboratory Control Sample (LCS)

(LCS) R3958272-2 08/01/23 15:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/g	pCi/g	%	%	
Polonium-210	3.64	4.71	129	70.0-130	
(T) Polonium-209			36.8		

L1635433-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635433-01 08/01/23 15:29 • (MS) R3958272-3 08/01/23 15:29 • (MSD) R3958272-4 08/01/23 15:29

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/g	pCi/g	pCi/g	pCi/g	%	%		%			%		%
Polonium-210	3.51	22.1	31.2	27.5	258	154	1	60.0-140	V	V	12.3		20
(T) Polonium-209		25.8			24.0	24.4							

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3961116-5 07/28/23 23:46

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/L		+ / -	pCi/L
Polonium-210	0.114	<u>U</u>	0.264	0.566
(T) Polonium-209	50.1		50.1	

L1635720-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1635720-02 07/28/23 14:58 • (DUP) R3961116-4 07/28/23 11:06

Analyte	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
	pCi/L	+ / -	pCi/L	pCi/L	+ / -	pCi/L		%			%	
Polonium-210	148	7.23	0.816	196	8.05	0.816	1	28.1	4.47	<u>J3</u>	20	3
(T) Polonium-209	52.1			55.8	55.8							

Laboratory Control Sample (LCS)

(LCS) R3961116-1 07/28/23 11:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/L	pCi/L	%	%	
Polonium-210	18.2	17.0	93.6	70.0-130	
(T) Polonium-209			51.6		

L1635384-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1635384-04 07/28/23 11:06 • (MS) R3961116-2 07/28/23 11:06 • (MSD) R3961116-3 07/28/23 11:06

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/L	pCi/L	pCi/L	pCi/L	%	%		%			%		%
Polonium-210	18.2	139	135	135	0.000	0.000	1	60.0-140	<u>V</u>	<u>V</u>	0.518		20
(T) Polonium-209		57.3			53.0	55.5							

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3955523-1 07/27/23 10:07

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-226	0.00286	<u>U</u>	0.0676	0.129
(T) Barium-133	60.8		60.8	

L1637654-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1637654-01 07/27/23 10:07 • (DUP) R3955523-5 07/27/23 10:07

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.380	0.291	0.337	0.0586	0.342	0.337	1	147	0.717	<u>U</u>	20	3
(T) Barium-133	87.2			61.5	61.5							

Laboratory Control Sample (LCS)

(LCS) R3955523-2 07/27/23 10:07

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.01	4.50	89.8	80.0-120	
(T) Barium-133			54.1		

L1634409-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1634409-01 07/27/23 10:07 • (MS) R3955523-3 07/27/23 10:07 • (MSD) R3955523-4 07/27/23 10:07

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	20.0	0.332	18.8	18.4	92.4	90.3	1	75.0-125			2.26		20
(T) Barium-133		84.8			74.2	71.9							

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.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
(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
C2	Tracer recovery limits have been exceeded; values are outside lower control limits.
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.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
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.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
 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**

Project Description: **Northrup #1-14 & #2-24 Tank Battery**

City/State Collected: _____ Please Circle: PT MT CT ET

Phone: **803.414.5429** Client Project # _____ Lab Project # **COILGASRCO-WESTON**

Collected by (print): *Nate Fields* Site/Facility ID # **327106** P.O. # _____

Collected by (signature): *Nate Fields* **Rush?** (Lab MUST Be Notified)

Immediately Packed on Ice N Y

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

Quote # _____ Date Results Needed _____

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Full 915 Suite	Soil Suitability (EC, pH, SAR, boron, mtls)	Trip Blank - BTEX, TMBs, TPH low frac	TENORM - GSPEC - Ra/Pb	TENORM - PO-210	Remarks	Sample # (lab only)
327106_TENORM_ASTOI	Grab	SS	—	7/13/23	1315	4				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
327106_TENORM-PWVOI	Grab	SS	—	7/13/23	1300	4				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											

* 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**

Samples returned via: UPS FedEx Courier _____

Tracking # **64815465 1023**

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist

COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N

If Applicable

VOA Zero Headspace: Y N
 Preservation Correct/Checked: Y N
 RAD Screen <0.5 mR/hr: Y N

Relinquished by: (Signature) *Nate Fields* Date: **7/13/23** Time: **1545** Received by: (Signature) *Christopher J. Gallin* Trip Blank Received: Yes No
 HCL / MeOH TBR

Relinquished by: (Signature) *Christopher J. Gallin* Date: **7-13-23** Time: **18:00** Received by: (Signature) *FedEx* Temp: **2.9±0** °C Bottles Received: **8** If preservation required by Login: Date/Time

Relinquished by: (Signature) _____ Date: _____ Time: _____ Received for lab by: (Signature) *Christopher J. Gallin* (19) Date: **7/14/23** Time: **0900** Hold: _____ Condition: **NCF / OK**

Colorado Oil & Gas Conservation

Sample Delivery Group: L1656376
Samples Received: 09/15/2023
Project Number:
Description: Northrup #1-14 & 2-14 Tank Battery
Site: 327106
Report To: Jess Zielinski
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.com

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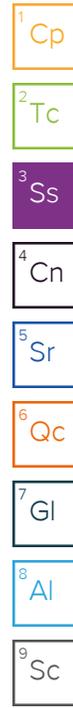


SAMPLE SUMMARY

327106_SEP01_B01@2' L1656376-01 Solid

Collected by Nate Fields Collected date/time 09/13/23 11:25 Received date/time 09/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:40	09/22/23 11:40	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2135448	1	09/20/23 02:54	09/20/23 11:10	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 10:49	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 12:47	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2139565	1	09/20/23 14:32	09/26/23 18:24	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2137327	5	09/24/23 14:10	09/25/23 01:10	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2137341	1	09/23/23 08:13	09/23/23 23:31	JCH	Mt. Juliet, TN



327106_SEP02_B01@2' L1656376-02 Solid

Collected by Nate Fields Collected date/time 09/13/23 11:45 Received date/time 09/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:43	09/22/23 11:43	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2135448	1	09/20/23 02:54	09/20/23 11:26	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 10:51	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 12:50	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2139565	1	09/20/23 14:32	09/26/23 18:48	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2137327	1	09/24/23 14:10	09/24/23 23:06	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2137341	1	09/23/23 08:13	09/23/23 23:48	JCH	Mt. Juliet, TN

327106_PWV01_E01@6' L1656376-03 Solid

Collected by Nate Fields Collected date/time 09/13/23 12:15 Received date/time 09/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:46	09/22/23 11:46	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2135448	1	09/20/23 02:54	09/20/23 11:31	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 10:54	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 12:54	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2139565	1	09/20/23 14:32	09/26/23 19:12	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2137327	1	09/24/23 14:10	09/25/23 00:58	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2137341	1	09/23/23 08:13	09/24/23 00:06	JCH	Mt. Juliet, TN

327106_AST01_B01@2' L1656376-04 Solid

Collected by Nate Fields Collected date/time 09/13/23 12:40 Received date/time 09/15/23 09:00

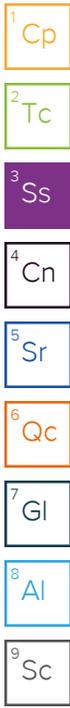
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:49	09/22/23 11:49	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2135448	1	09/20/23 02:54	09/20/23 11:36	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 10:57	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 12:57	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2140338	1	09/20/23 14:32	09/27/23 17:52	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2137327	1	09/24/23 14:10	09/25/23 00:45	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2137341	1	09/23/23 08:13	09/24/23 00:24	JCH	Mt. Juliet, TN

SAMPLE SUMMARY

327106_FL01_02@9' L1656376-05 Solid

Collected by: Nate Fields
 Collected date/time: 09/13/23 13:35
 Received date/time: 09/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:51	09/22/23 11:51	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2135448	1	09/20/23 02:54	09/20/23 11:42	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 11:00	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 13:00	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2140338	1	09/20/23 14:32	09/27/23 18:16	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2137327	1	09/24/23 14:10	09/24/23 23:56	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2137341	1	09/23/23 08:13	09/24/23 00:41	JCH	Mt. Juliet, TN



327106_PWV01_B01@10' L1656376-06 Solid

Collected by: Nate Fields
 Collected date/time: 09/13/23 13:45
 Received date/time: 09/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:54	09/22/23 11:54	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2135957	1	09/20/23 12:56	09/21/23 07:09	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 11:03	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 13:04	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2140338	1	09/20/23 14:32	09/27/23 18:40	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2137327	5	09/24/23 14:10	09/25/23 01:35	KAP	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2137341	1	09/23/23 08:13	09/24/23 00:59	JCH	Mt. Juliet, TN

327106_BK01@3' L1656376-07 Solid

Collected by: Nate Fields
 Collected date/time: 09/13/23 14:00
 Received date/time: 09/15/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2135296	1	09/22/23 11:57	09/22/23 11:57	CCE	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2135582	1	09/20/23 08:13	09/20/23 12:39	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2135610	1	09/22/23 08:10	09/22/23 11:24	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2135300	1	09/21/23 15:26	09/22/23 11:06	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2135395	5	09/20/23 08:12	09/22/23 13:07	JPD	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager

Report Revision History

Level II Report - Version 1: 09/28/23 13:23

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.29		1	09/22/2023 11:40	WG2135296

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/20/2023 11:10	WG2135448

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.34	<u>T8</u>	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-01 WG2135582: 8.34 at 22.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	518		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-01 WG2135610: 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	0.772		0.200	1	09/22/2023 10:49	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.87		1.00	5	09/22/2023 12:47	WG2135395
Barium	203		2.50	5	09/22/2023 12:47	WG2135395
Cadmium	ND		1.00	5	09/22/2023 12:47	WG2135395
Copper	15.1		5.00	5	09/22/2023 12:47	WG2135395
Lead	13.4		2.00	5	09/22/2023 12:47	WG2135395
Nickel	17.8		2.50	5	09/22/2023 12:47	WG2135395
Selenium	ND		2.50	5	09/22/2023 12:47	WG2135395
Silver	ND		0.500	5	09/22/2023 12:47	WG2135395
Zinc	124		25.0	5	09/22/2023 12:47	WG2135395

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	09/26/2023 18:24	WG2139565
Benzene	ND		0.00100	1	09/26/2023 18:24	WG2139565
Toluene	ND		0.00500	1	09/26/2023 18:24	WG2139565
Ethylbenzene	ND		0.00100	1	09/26/2023 18:24	WG2139565
Xylenes, Total	ND		0.00300	1	09/26/2023 18:24	WG2139565
1,2,4-Trimethylbenzene	ND		0.00100	1	09/26/2023 18:24	WG2139565
1,3,5-Trimethylbenzene	ND		0.00100	1	09/26/2023 18:24	WG2139565
(S) Toluene-d8	113		75.0-131		09/26/2023 18:24	WG2139565
(S) 4-Bromofluorobenzene	95.3		67.0-138		09/26/2023 18:24	WG2139565



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	120		70.0-130		09/26/2023 18:24	WG2139565

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	21.1		20.0	5	09/25/2023 01:10	WG2137327
C28-C36 Motor Oil Range	46.5		20.0	5	09/25/2023 01:10	WG2137327
(S) o-Terphenyl	36.9		18.0-148		09/25/2023 01:10	WG2137327

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	09/23/2023 23:31	WG2137341
Acenaphthene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Benzo(a)anthracene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Benzo(a)pyrene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Benzo(b)fluoranthene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Benzo(k)fluoranthene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Chrysene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Dibenz(a,h)anthracene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Fluoranthene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Fluorene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/23/2023 23:31	WG2137341
Naphthalene	ND		0.0200	1	09/23/2023 23:31	WG2137341
Pyrene	ND		0.00600	1	09/23/2023 23:31	WG2137341
1-Methylnaphthalene	ND		0.0200	1	09/23/2023 23:31	WG2137341
2-Methylnaphthalene	ND		0.0200	1	09/23/2023 23:31	WG2137341
(S) p-Terphenyl-d14	64.1		23.0-120		09/23/2023 23:31	WG2137341
(S) Nitrobenzene-d5	73.9		14.0-149		09/23/2023 23:31	WG2137341
(S) 2-Fluorobiphenyl	61.2		34.0-125		09/23/2023 23:31	WG2137341

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	0.104		1	09/22/2023 11:43	WG2135296

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/20/2023 11:26	WG2135448

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.12	<u>T8</u>	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-02 WG2135582: 8.12 at 22.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	140		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-02 WG2135610: 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	ND		0.200	1	09/22/2023 10:51	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.52		1.00	5	09/22/2023 12:50	WG2135395
Barium	116		2.50	5	09/22/2023 12:50	WG2135395
Cadmium	ND		1.00	5	09/22/2023 12:50	WG2135395
Copper	8.98		5.00	5	09/22/2023 12:50	WG2135395
Lead	8.59		2.00	5	09/22/2023 12:50	WG2135395
Nickel	8.22		2.50	5	09/22/2023 12:50	WG2135395
Selenium	ND		2.50	5	09/22/2023 12:50	WG2135395
Silver	ND		0.500	5	09/22/2023 12:50	WG2135395
Zinc	37.5		25.0	5	09/22/2023 12:50	WG2135395

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	09/26/2023 18:48	WG2139565
Benzene	ND		0.00100	1	09/26/2023 18:48	WG2139565
Toluene	ND		0.00500	1	09/26/2023 18:48	WG2139565
Ethylbenzene	ND		0.00100	1	09/26/2023 18:48	WG2139565
Xylenes, Total	ND		0.00300	1	09/26/2023 18:48	WG2139565
1,2,4-Trimethylbenzene	ND		0.00100	1	09/26/2023 18:48	WG2139565
1,3,5-Trimethylbenzene	ND		0.00100	1	09/26/2023 18:48	WG2139565
(S) Toluene-d8	109		75.0-131		09/26/2023 18:48	WG2139565
(S) 4-Bromofluorobenzene	97.6		67.0-138		09/26/2023 18:48	WG2139565

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) 1,2-Dichloroethane-d4	116		70.0-130		09/26/2023 18:48	WG2139565

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		4.00	1	09/24/2023 23:06	WG2137327
C28-C36 Motor Oil Range	ND		4.00	1	09/24/2023 23:06	WG2137327
(S) o-Terphenyl	42.2		18.0-148		09/24/2023 23:06	WG2137327

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Acenaphthene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Benzo(a)anthracene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Benzo(a)pyrene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Benzo(b)fluoranthene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Benzo(k)fluoranthene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Chrysene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Dibenz(a,h)anthracene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Fluoranthene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Fluorene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/23/2023 23:48	WG2137341
Naphthalene	ND		0.0200	1	09/23/2023 23:48	WG2137341
Pyrene	ND		0.00600	1	09/23/2023 23:48	WG2137341
1-Methylnaphthalene	ND		0.0200	1	09/23/2023 23:48	WG2137341
2-Methylnaphthalene	ND		0.0200	1	09/23/2023 23:48	WG2137341
(S) p-Terphenyl-d14	71.8		23.0-120		09/23/2023 23:48	WG2137341
(S) Nitrobenzene-d5	81.6		14.0-149		09/23/2023 23:48	WG2137341
(S) 2-Fluorobiphenyl	81.7		34.0-125		09/23/2023 23:48	WG2137341

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.85		1	09/22/2023 11:46	WG2135296

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/20/2023 11:31	WG2135448

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.16	<u>T8</u>	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-03 WG2135582: 8.16 at 22.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	565		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-03 WG2135610: 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	0.752		0.200	1	09/22/2023 10:54	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.34		1.00	5	09/22/2023 12:54	WG2135395
Barium	193		2.50	5	09/22/2023 12:54	WG2135395
Cadmium	ND		1.00	5	09/22/2023 12:54	WG2135395
Copper	7.46		5.00	5	09/22/2023 12:54	WG2135395
Lead	9.89		2.00	5	09/22/2023 12:54	WG2135395
Nickel	6.42		2.50	5	09/22/2023 12:54	WG2135395
Selenium	ND		2.50	5	09/22/2023 12:54	WG2135395
Silver	ND		0.500	5	09/22/2023 12:54	WG2135395
Zinc	29.6		25.0	5	09/22/2023 12:54	WG2135395

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	09/26/2023 19:12	WG2139565
Benzene	ND		0.00100	1	09/26/2023 19:12	WG2139565
Toluene	ND		0.00500	1	09/26/2023 19:12	WG2139565
Ethylbenzene	ND		0.00100	1	09/26/2023 19:12	WG2139565
Xylenes, Total	ND		0.00300	1	09/26/2023 19:12	WG2139565
1,2,4-Trimethylbenzene	ND		0.00100	1	09/26/2023 19:12	WG2139565
1,3,5-Trimethylbenzene	ND		0.00100	1	09/26/2023 19:12	WG2139565
(S) Toluene-d8	109		75.0-131		09/26/2023 19:12	WG2139565
(S) 4-Bromofluorobenzene	98.3		67.0-138		09/26/2023 19:12	WG2139565



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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) 1,2-Dichloroethane-d4	116		70.0-130		09/26/2023 19:12	WG2139565

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	12.7		4.00	1	09/25/2023 00:58	WG2137327
C28-C36 Motor Oil Range	39.8		4.00	1	09/25/2023 00:58	WG2137327
(S) o-Terphenyl	34.5		18.0-148		09/25/2023 00:58	WG2137327

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Acenaphthene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Benzo(a)anthracene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Benzo(a)pyrene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Benzo(b)fluoranthene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Benzo(k)fluoranthene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Chrysene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Dibenz(a,h)anthracene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Fluoranthene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Fluorene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/24/2023 00:06	WG2137341
Naphthalene	ND		0.0200	1	09/24/2023 00:06	WG2137341
Pyrene	ND		0.00600	1	09/24/2023 00:06	WG2137341
1-Methylnaphthalene	ND		0.0200	1	09/24/2023 00:06	WG2137341
2-Methylnaphthalene	ND		0.0200	1	09/24/2023 00:06	WG2137341
(S) p-Terphenyl-d14	82.1		23.0-120		09/24/2023 00:06	WG2137341
(S) Nitrobenzene-d5	78.7		14.0-149		09/24/2023 00:06	WG2137341
(S) 2-Fluorobiphenyl	59.7		34.0-125		09/24/2023 00:06	WG2137341

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	1.83		1	09/22/2023 11:49	WG2135296

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/20/2023 11:36	WG2135448

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	9.11	<u>T8</u>	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-04 WG2135582: 9.11 at 22.1C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	515		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-04 WG2135610: 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	2.88		0.200	1	09/22/2023 10:57	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	3.38		1.00	5	09/22/2023 12:57	WG2135395
Barium	201		2.50	5	09/22/2023 12:57	WG2135395
Cadmium	ND		1.00	5	09/22/2023 12:57	WG2135395
Copper	9.06		5.00	5	09/22/2023 12:57	WG2135395
Lead	9.36		2.00	5	09/22/2023 12:57	WG2135395
Nickel	8.16		2.50	5	09/22/2023 12:57	WG2135395
Selenium	ND		2.50	5	09/22/2023 12:57	WG2135395
Silver	ND		0.500	5	09/22/2023 12:57	WG2135395
Zinc	34.1		25.0	5	09/22/2023 12:57	WG2135395

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	09/27/2023 17:52	WG2140338
Benzene	ND		0.00100	1	09/27/2023 17:52	WG2140338
Toluene	ND		0.00500	1	09/27/2023 17:52	WG2140338
Ethylbenzene	ND		0.00100	1	09/27/2023 17:52	WG2140338
Xylenes, Total	ND		0.00300	1	09/27/2023 17:52	WG2140338
1,2,4-Trimethylbenzene	ND		0.00100	1	09/27/2023 17:52	WG2140338
1,3,5-Trimethylbenzene	ND		0.00100	1	09/27/2023 17:52	WG2140338
(S) Toluene-d8	110		75.0-131		09/27/2023 17:52	WG2140338
(S) 4-Bromofluorobenzene	96.9		67.0-138		09/27/2023 17:52	WG2140338

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) 1,2-Dichloroethane-d4	113		70.0-130		09/27/2023 17:52	WG2140338

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	8.04		4.00	1	09/25/2023 00:45	WG2137327
C28-C36 Motor Oil Range	17.2		4.00	1	09/25/2023 00:45	WG2137327
(S) o-Terphenyl	35.9		18.0-148		09/25/2023 00:45	WG2137327

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Acenaphthene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Benzo(a)anthracene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Benzo(a)pyrene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Benzo(b)fluoranthene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Benzo(k)fluoranthene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Chrysene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Dibenz(a,h)anthracene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Fluoranthene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Fluorene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/24/2023 00:24	WG2137341
Naphthalene	ND		0.0200	1	09/24/2023 00:24	WG2137341
Pyrene	ND		0.00600	1	09/24/2023 00:24	WG2137341
1-Methylnaphthalene	ND		0.0200	1	09/24/2023 00:24	WG2137341
2-Methylnaphthalene	ND		0.0200	1	09/24/2023 00:24	WG2137341
(S) p-Terphenyl-d14	75.2		23.0-120		09/24/2023 00:24	WG2137341
(S) Nitrobenzene-d5	76.6		14.0-149		09/24/2023 00:24	WG2137341
(S) 2-Fluorobiphenyl	67.0		34.0-125		09/24/2023 00:24	WG2137341

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	09/22/2023 11:51	WG2135296

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/20/2023 11:42	WG2135448

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.61	<u>T8</u>	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-05 WG2135582: 8.61 at 22C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	1170		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-05 WG2135610: 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	09/22/2023 11:00	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.25		1.00	5	09/22/2023 13:00	WG2135395
Barium	144		2.50	5	09/22/2023 13:00	WG2135395
Cadmium	ND		1.00	5	09/22/2023 13:00	WG2135395
Copper	ND		5.00	5	09/22/2023 13:00	WG2135395
Lead	7.03		2.00	5	09/22/2023 13:00	WG2135395
Nickel	4.12		2.50	5	09/22/2023 13:00	WG2135395
Selenium	ND		2.50	5	09/22/2023 13:00	WG2135395
Silver	ND		0.500	5	09/22/2023 13:00	WG2135395
Zinc	ND		25.0	5	09/22/2023 13:00	WG2135395

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	09/27/2023 18:16	WG2140338
Benzene	ND		0.00100	1	09/27/2023 18:16	WG2140338
Toluene	ND		0.00500	1	09/27/2023 18:16	WG2140338
Ethylbenzene	ND		0.00100	1	09/27/2023 18:16	WG2140338
Xylenes, Total	ND		0.00300	1	09/27/2023 18:16	WG2140338
1,2,4-Trimethylbenzene	ND		0.00100	1	09/27/2023 18:16	WG2140338
1,3,5-Trimethylbenzene	ND		0.00100	1	09/27/2023 18:16	WG2140338
(S) Toluene-d8	111		75.0-131		09/27/2023 18:16	WG2140338
(S) 4-Bromofluorobenzene	101		67.0-138		09/27/2023 18:16	WG2140338



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	114		70.0-130		09/27/2023 18:16	WG2140338

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	09/24/2023 23:56	WG2137327
C28-C36 Motor Oil Range	5.06		4.00	1	09/24/2023 23:56	WG2137327
(S) o-Terphenyl	42.7		18.0-148		09/24/2023 23:56	WG2137327

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	09/24/2023 00:41	WG2137341
Acenaphthene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Benzo(a)anthracene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Benzo(a)pyrene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Benzo(b)fluoranthene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Benzo(k)fluoranthene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Chrysene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Dibenz(a,h)anthracene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Fluoranthene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Fluorene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/24/2023 00:41	WG2137341
Naphthalene	ND		0.0200	1	09/24/2023 00:41	WG2137341
Pyrene	ND		0.00600	1	09/24/2023 00:41	WG2137341
1-Methylnaphthalene	ND		0.0200	1	09/24/2023 00:41	WG2137341
2-Methylnaphthalene	ND		0.0200	1	09/24/2023 00:41	WG2137341
(S) p-Terphenyl-d14	48.9		23.0-120		09/24/2023 00:41	WG2137341
(S) Nitrobenzene-d5	57.4		14.0-149		09/24/2023 00:41	WG2137341
(S) 2-Fluorobiphenyl	43.6		34.0-125		09/24/2023 00:41	WG2137341

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.00		1	09/22/2023 11:54	WG2135296

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	09/21/2023 07:09	WG2135957

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70	<u>T8</u>	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-06 WG2135582: 8.7 at 21.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	581		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-06 WG2135610: 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	0.839		0.200	1	09/22/2023 11:03	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.73		1.00	5	09/22/2023 13:04	WG2135395
Barium	208		2.50	5	09/22/2023 13:04	WG2135395
Cadmium	ND		1.00	5	09/22/2023 13:04	WG2135395
Copper	5.00		5.00	5	09/22/2023 13:04	WG2135395
Lead	6.64		2.00	5	09/22/2023 13:04	WG2135395
Nickel	4.83		2.50	5	09/22/2023 13:04	WG2135395
Selenium	ND		2.50	5	09/22/2023 13:04	WG2135395
Silver	ND		0.500	5	09/22/2023 13:04	WG2135395
Zinc	ND		25.0	5	09/22/2023 13:04	WG2135395

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	3.04		0.500	1	09/27/2023 18:40	WG2140338
Benzene	0.00111		0.00100	1	09/27/2023 18:40	WG2140338
Toluene	ND		0.00500	1	09/27/2023 18:40	WG2140338
Ethylbenzene	ND		0.00100	1	09/27/2023 18:40	WG2140338
Xylenes, Total	ND		0.00300	1	09/27/2023 18:40	WG2140338
1,2,4-Trimethylbenzene	ND		0.00100	1	09/27/2023 18:40	WG2140338
1,3,5-Trimethylbenzene	0.0925		0.00100	1	09/27/2023 18:40	WG2140338
(S) Toluene-d8	108		75.0-131		09/27/2023 18:40	WG2140338
(S) 4-Bromofluorobenzene	263	<u>J1</u>	67.0-138		09/27/2023 18:40	WG2140338

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) 1,2-Dichloroethane-d4	113		70.0-130		09/27/2023 18:40	WG2140338

Sample Narrative:

L1656376-06 WG2140338: Surrogate failure due to matrix interference

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	193		20.0	5	09/25/2023 01:35	WG2137327
C28-C36 Motor Oil Range	112		20.0	5	09/25/2023 01:35	WG2137327
(S) o-Terphenyl	44.5		18.0-148		09/25/2023 01:35	WG2137327

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Acenaphthene	0.0101		0.00600	1	09/24/2023 00:59	WG2137341
Benzo(a)anthracene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Benzo(a)pyrene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Benzo(b)fluoranthene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Benzo(k)fluoranthene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Chrysene	0.00618		0.00600	1	09/24/2023 00:59	WG2137341
Dibenz(a,h)anthracene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Fluoranthene	0.00684		0.00600	1	09/24/2023 00:59	WG2137341
Fluorene	0.0420		0.00600	1	09/24/2023 00:59	WG2137341
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	09/24/2023 00:59	WG2137341
Naphthalene	ND		0.0200	1	09/24/2023 00:59	WG2137341
Pyrene	0.00890		0.00600	1	09/24/2023 00:59	WG2137341
1-Methylnaphthalene	0.465		0.0200	1	09/24/2023 00:59	WG2137341
2-Methylnaphthalene	0.0268		0.0200	1	09/24/2023 00:59	WG2137341
(S) p-Terphenyl-d14	60.7		23.0-120		09/24/2023 00:59	WG2137341
(S) Nitrobenzene-d5	0.000	<u>J2</u>	14.0-149		09/24/2023 00:59	WG2137341
(S) 2-Fluorobiphenyl	53.8		34.0-125		09/24/2023 00:59	WG2137341

Sample Narrative:

L1656376-06 WG2137341: Surrogate failure due to matrix interference

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.53		1	09/22/2023 11:57	WG2135296

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

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.71	T8	1	09/20/2023 12:39	WG2135582

Sample Narrative:

L1656376-07 WG2135582: 8.71 at 21.9C

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Specific Conductance	926		10.0	1	09/22/2023 11:24	WG2135610

Sample Narrative:

L1656376-07 WG2135610: at 25C

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.883		0.200	1	09/22/2023 11:06	WG2135300

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.16		1.00	5	09/22/2023 13:07	WG2135395
Barium	326		2.50	5	09/22/2023 13:07	WG2135395
Cadmium	ND		1.00	5	09/22/2023 13:07	WG2135395
Copper	6.77		5.00	5	09/22/2023 13:07	WG2135395
Lead	8.41		2.00	5	09/22/2023 13:07	WG2135395
Nickel	6.95		2.50	5	09/22/2023 13:07	WG2135395
Selenium	ND		2.50	5	09/22/2023 13:07	WG2135395
Silver	ND		0.500	5	09/22/2023 13:07	WG2135395
Zinc	28.0		25.0	5	09/22/2023 13:07	WG2135395

Method Blank (MB)

(MB) R3975384-1 09/20/23 10:21

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1656256-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1656256-02 09/20/23 10:50 • (DUP) R3975384-3 09/20/23 10:55

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	2.76		20

L1656436-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1656436-08 09/20/23 12:54 • (DUP) R3975384-8 09/20/23 12:59

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

Laboratory Control Sample (LCS)

(LCS) R3975384-2 09/20/23 10:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	10.4	104	80.0-120	

L1656376-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1656376-05 09/20/23 11:42 • (MS) R3975384-4 09/20/23 11:47 • (MSD) R3975384-5 09/20/23 11:52

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	21.0	21.2	105	106	1	75.0-125			1.36	20

L1656376-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1656376-05 09/20/23 11:42 • (MS) R3975384-6 09/20/23 11:57

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	646	ND	795	123	50	75.0-125	

Method Blank (MB)

(MB) R3975927-1 09/21/23 06:57

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1656376-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1656376-06 09/21/23 07:09 • (DUP) R3975927-3 09/21/23 07:14

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

L1656646-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1656646-02 09/21/23 10:17 • (DUP) R3975927-8 09/21/23 10:33

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

Laboratory Control Sample (LCS)

(LCS) R3975927-2 09/21/23 07:04

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	10.2	102	80.0-120	

L1656642-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1656642-02 09/21/23 07:42 • (MS) R3975927-5 09/21/23 07:52 • (MSD) R3975927-6 09/21/23 07:57

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	2.85	ND	14.3	0.000	1	75.0-125	<u>J6</u>	<u>J3 J6</u>	200	20

L1656642-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1656642-02 09/21/23 07:42 • (MS) R3975927-7 09/21/23 09:31

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	631	ND	476	75.4	50	75.0-125	

L1656081-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1656081-01 09/20/23 12:39 • (DUP) R3975368-2 09/20/23 12:39

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.91	7.92	1	0.126		1

Sample Narrative:

OS: 7.91 at 22.4C
DUP: 7.92 at 21.9C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1656376-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1656376-06 09/20/23 12:39 • (DUP) R3975368-3 09/20/23 12:39

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.70	8.68	1	0.230		1

Sample Narrative:

OS: 8.7 at 21.8C
DUP: 8.68 at 21.8C

Laboratory Control Sample (LCS)

(LCS) R3975368-1 09/20/23 12:39

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

Sample Narrative:

LCS: 10 at 21.7C

Method Blank (MB)

(MB) R3976440-1 09/22/23 11:24

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

Sample Narrative:

BLANK: at 25C

L1656376-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1656376-06 09/22/23 11:24 • (DUP) R3976440-3 09/22/23 11:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	581	577	1	0.691		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1656436-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1656436-08 09/22/23 11:24 • (DUP) R3976440-4 09/22/23 11:24

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	500	505	1	0.995		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3976440-2 09/22/23 11:24

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	732	701	95.8	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3976540-1 09/22/23 10:40

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) R3976540-2 09/22/23 10:43 • (LCSD) R3976540-3 09/22/23 10:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.03	1.06	103	106	80.0-120			3.27	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3976494-1 09/22/23 12:08

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3976494-2 09/22/23 12:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	105	105	80.0-120	
Barium	100	102	102	80.0-120	
Cadmium	100	103	103	80.0-120	
Copper	100	99.6	99.6	80.0-120	
Lead	100	105	105	80.0-120	
Nickel	100	105	105	80.0-120	
Selenium	100	105	105	80.0-120	
Silver	20.0	20.5	102	80.0-120	
Zinc	100	100	100	80.0-120	

⁷Gl

⁸Al

⁹Sc

L1656552-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1656552-01 09/22/23 12:15 • (MS) R3976494-5 09/22/23 12:24 • (MSD) R3976494-6 09/22/23 12:27

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	6.94	117	114	110	107	5	75.0-125			2.13	20
Cadmium	100	ND	110	109	110	109	5	75.0-125			0.861	20
Copper	100	25.7	131	130	105	104	5	75.0-125			0.913	20
Lead	100	20.1	135	125	114	105	5	75.0-125			7.44	20
Nickel	100	18.6	121	117	103	98.7	5	75.0-125			3.34	20
Selenium	100	ND	115	114	114	113	5	75.0-125			0.568	20
Silver	20.0	ND	21.5	21.7	107	108	5	75.0-125			0.598	20
Zinc	100	75.0	172	165	97.2	89.8	5	75.0-125			4.38	20

Method Blank (MB)

(MB) R3978139-3 09/26/23 13:52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	110			75.0-131
(S) 4-Bromofluorobenzene	98.9			67.0-138
(S) 1,2-Dichloroethane-d4	106			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3978139-1 09/26/23 10:55

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Benzene	0.0250	0.0264	106	70.0-123	
Toluene	0.0250	0.0239	95.6	75.0-121	
Ethylbenzene	0.0250	0.0228	91.2	74.0-126	
Xylenes, Total	0.0750	0.0701	93.5	72.0-127	
1,2,4-Trimethylbenzene	0.0250	0.0268	107	70.0-126	
1,3,5-Trimethylbenzene	0.0250	0.0266	106	73.0-127	
(S) Toluene-d8			105	75.0-131	
(S) 4-Bromofluorobenzene			93.0	67.0-138	
(S) 1,2-Dichloroethane-d4			115	70.0-130	

Laboratory Control Sample (LCS)

(LCS) R3978139-2 09/26/23 11:44

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
TPH (GC/MS) Low Fraction	5.00	4.17	83.4	52.0-154	
(S) Toluene-d8			109	75.0-131	
(S) 4-Bromofluorobenzene			106	67.0-138	
(S) 1,2-Dichloroethane-d4			104	70.0-130	

Method Blank (MB)

(MB) R3978865-3 09/27/23 15:51

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	111			75.0-131
(S) 4-Bromofluorobenzene	101			67.0-138
(S) 1,2-Dichloroethane-d4	105			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3978865-1 09/27/23 12:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
TPH (GC/MS) Low Fraction	5.00	4.32	86.4	52.0-154	
(S) Toluene-d8			109	75.0-131	
(S) 4-Bromofluorobenzene			104	67.0-138	
(S) 1,2-Dichloroethane-d4			102	70.0-130	

Laboratory Control Sample (LCS)

(LCS) R3978865-2 09/27/23 14:38

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
Benzene	0.0250	0.0224	89.6	70.0-123	
Toluene	0.0250	0.0210	84.0	75.0-121	
Ethylbenzene	0.0250	0.0204	81.6	74.0-126	
Xylenes, Total	0.0750	0.0618	82.4	72.0-127	
1,2,4-Trimethylbenzene	0.0250	0.0231	92.4	70.0-126	
1,3,5-Trimethylbenzene	0.0250	0.0226	90.4	73.0-127	
(S) Toluene-d8			106	75.0-131	
(S) 4-Bromofluorobenzene			95.8	67.0-138	
(S) 1,2-Dichloroethane-d4			109	70.0-130	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3977200-1 09/24/23 21:26

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	49.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3977200-2 09/24/23 21:39

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
C10-C28 Diesel Range	50.0	29.4	58.8	50.0-150	
(S) o-Terphenyl			55.4	18.0-148	

L1656360-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1656360-06 09/24/23 23:18 • (MS) R3977200-3 09/24/23 23:31 • (MSD) R3977200-4 09/24/23 23:43

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	50.0	ND	25.7	31.6	44.8	56.6	1	50.0-150	J6	J3	20.6	20
(S) o-Terphenyl					37.4	45.8		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) R3977603-2 09/23/23 20:16

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	93.2			23.0-120
(S) Nitrobenzene-d5	95.0			14.0-149
(S) 2-Fluorobiphenyl	68.1			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3977603-1 09/23/23 19:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0741	92.6	50.0-126	
Acenaphthene	0.0800	0.0666	83.3	50.0-120	
Benzo(a)anthracene	0.0800	0.0803	100	45.0-120	
Benzo(a)pyrene	0.0800	0.0786	98.2	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0784	98.0	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0782	97.8	49.0-125	
Chrysene	0.0800	0.0787	98.4	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0801	100	47.0-125	
Fluoranthene	0.0800	0.0757	94.6	49.0-129	
Fluorene	0.0800	0.0847	106	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0877	110	46.0-125	
Naphthalene	0.0800	0.0729	91.1	50.0-120	
Pyrene	0.0800	0.0817	102	43.0-123	
1-Methylnaphthalene	0.0800	0.0729	91.1	51.0-121	
2-Methylnaphthalene	0.0800	0.0706	88.3	50.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977603-1 09/23/23 19:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			92.8	23.0-120	
(S) Nitrobenzene-d5			95.3	14.0-149	
(S) 2-Fluorobiphenyl			79.4	34.0-125	

L1656394-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1656394-01 09/24/23 02:10 • (MS) R3977603-3 09/24/23 02:27 • (MSD) R3977603-4 09/24/23 02:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Anthracene	0.0800	ND	0.0547	0.0563	68.4	70.4	1	10.0-145			2.88	30
Acenaphthene	0.0800	ND	0.0501	0.0520	62.6	65.0	1	14.0-127			3.72	27
Benzo(a)anthracene	0.0800	ND	0.0622	0.0644	77.8	80.5	1	10.0-139			3.48	30
Benzo(a)pyrene	0.0800	ND	0.0679	0.0692	84.9	86.5	1	10.0-141			1.90	31
Benzo(b)fluoranthene	0.0800	ND	0.0638	0.0646	79.8	80.7	1	10.0-140			1.25	36
Benzo(k)fluoranthene	0.0800	ND	0.0591	0.0604	73.9	75.5	1	10.0-137			2.18	31
Chrysene	0.0800	ND	0.0651	0.0658	81.4	82.3	1	10.0-145			1.07	30
Dibenz(a,h)anthracene	0.0800	ND	0.0617	0.0511	77.1	63.9	1	10.0-132			18.8	31
Fluoranthene	0.0800	ND	0.0517	0.0528	64.6	66.0	1	10.0-153			2.11	33
Fluorene	0.0800	ND	0.0573	0.0581	71.6	72.6	1	11.0-130			1.39	29
Indeno(1,2,3-cd)pyrene	0.0800	ND	0.0690	0.0696	86.3	87.0	1	10.0-137			0.866	32
Naphthalene	0.0800	ND	0.0595	0.0590	74.4	73.8	1	10.0-135			0.844	27
Pyrene	0.0800	ND	0.0566	0.0610	70.8	76.3	1	10.0-148			7.48	35
1-Methylnaphthalene	0.0800	ND	0.0655	0.0653	81.9	81.6	1	10.0-142			0.306	28
2-Methylnaphthalene	0.0800	ND	0.0681	0.0584	77.6	65.4	1	10.0-137			15.3	28
(S) p-Terphenyl-d14					68.8	74.8		23.0-120				
(S) Nitrobenzene-d5					93.5	95.0		14.0-149				
(S) 2-Fluorobiphenyl					55.6	67.4		34.0-125				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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



Qualifier Description

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

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

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

Report to: **Sammy Allen / Jess Zielinski**

Project Description: **Northrup #1-14 & #2-24 Tank Battery**

City/State Collected: **Stanhurp CO**

Please Circle: **PT** (MT) CT ET

Phone: **803.414.5429**

Client Project #: _____

Lab Project #: **COILGASRCO-WESTON**

Collected by (print): **Nate Fields**

Site/Facility ID #: **327106**

Collected by (signature): *Nate Fields*

Rush? (Lab MUST Be Notified)
 ___ Same Day ___ Five Day
 ___ Next Day ___ 5 Day (Rad Only)
 ___ Two Day ___ 10 Day (Rad Only)
 ___ Three Day **Std**

Quote # _____

Date Results Needed _____

Immediately Packed on Ice N ___ Y

No. of Cntrs _____

Analysis / Container / Preservative									
Full 915 Suite	Soil Suitability (EC, pH, SAR, boron, mtls)	Trip Blank - BTEX, TMBs, TPH low frac						TENORM - GSPEC - Ra/Pb	TENORM - PO-210

Chain of Custody Page ___ of ___

Pace
 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/hubs/pas-standard-terms.pdf>

SDG # **1656376**
G155

Acctnum: _____

Template: _____

Prelogin: _____

PM: _____

PB: _____

Shipped Via: _____

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	Cntrs	Full 915 Suite	Soil Suitability (EC, pH, SAR, boron, mtls)	Trip Blank - BTEX, TMBs, TPH low frac	TENORM - GSPEC - Ra/Pb	TENORM - PO-210	Remarks	Sample # (lab only)
327106_SE PO1_B01@2'	Grab	SS	2	9/13/23	1125	3	<input checked="" type="checkbox"/>						-01
327106_SE PO2_B01@2'	Grab	SS	2	9/13/23	1145	3	<input checked="" type="checkbox"/>						-02
327106_PW VO1_E01@6'	Grab	SS	6	9/13/23	1215	3	<input checked="" type="checkbox"/>						-03
327106_ASTO1_B01@2'	Grab	SS	2	9/13/23	1240	3	<input checked="" type="checkbox"/>						-04
327106_FL01-02@9'	Grab	SS	9	9/13/23	1335	3	<input checked="" type="checkbox"/>						-05
327106_PW VO1-B01@10'	Grab	SS	10	9/13/23	1345	3	<input checked="" type="checkbox"/>						-06
327106_BR01@3'	Grab	SS	3	9/13/23	1400	2		<input checked="" type="checkbox"/>					-07
327106_TB01	Grab	SS	—	9/13/23	—	2			<input checked="" type="checkbox"/>				
327106_	Grab	SS											
327106_	Grab	SS											

* 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**

Samples returned via: ___ UPS ___ FedEx ___ Courier _____

Tracking # **6841 8349 6289**

Relinquished by: (Signature) *Ken S. Eng* Date: **9/14/23** Time: **1130**

Received by: (Signature) *[Signature]* Trip Blank Received: Yes/No **No**

Relinquished by: (Signature) *[Signature]* Date: **9-14-23** Time: **18:00**

Received by: (Signature) *[Signature]* Trip Blank Received: Yes/No **No**

Relinquished by: (Signature) _____ Date: _____ Time: _____

Received for lab by: (Signature) *[Signature]* Trip Blank Received: Yes/No **No**

Date: **9-15-23** Time: **02:00**

Temp: _____ °C Bottles Received: **448 5.340 = 5.3**

If preservation required by Login: Date/Time _____

Hold: _____ Condition: **NCF / OK**

Sample Receipt Checklist
 COC Seal Present/Intact: Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero Headpace: Y N
 Preservation Correct/Checked: Y N
 RAD Screen <0.5 mR/hr: Y N

Colorado Oil & Gas Conservation

Sample Delivery Group: L1671531
Samples Received: 10/28/2023
Project Number:
Description: Northrup #1-14 & #2-24 Tank Battery
Site: 327106
Report To: Sammy Allen / Jess Zielinski
1536 Cole Blvd, Suite 375
Lakewood, CO 80401

Entire Report Reviewed By:



Chris Ward
Project Manager

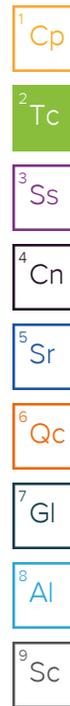
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

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SAMPLE SUMMARY

327106_FP01@4' L1671531-01 Solid

Collected by: Kyle Spivey
 Collected date/time: 10/26/23 15:38
 Received date/time: 10/28/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2163189	1	11/04/23 17:03	11/04/23 17:03	DJS	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2162017	1	11/01/23 08:44	11/06/23 09:59	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2162160	1	11/02/23 15:30	11/02/23 15:45	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2162654	1	11/01/23 12:00	11/02/23 17:26	BJM	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2165170	1	11/06/23 12:33	11/06/23 21:03	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2162736	5	11/02/23 10:59	11/02/23 16:53	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164129	1	10/26/23 15:38	11/03/23 21:14	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2163701	5	11/04/23 07:05	11/04/23 12:42	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2163714	1	11/03/23 16:09	11/04/23 03:48	NWH	Mt. Juliet, TN



327106_FP02@4' L1671531-02 Solid

Collected by: Kyle Spivey
 Collected date/time: 10/26/23 16:10
 Received date/time: 10/28/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG2163189	1	11/04/23 17:42	11/04/23 17:42	DJS	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG2162017	1	11/01/23 08:44	11/06/23 10:09	SET	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG2162659	1	11/02/23 15:30	11/02/23 15:45	EPW	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG2163769	1	11/05/23 12:30	11/05/23 13:00	EPW	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG2165170	1	11/06/23 12:33	11/06/23 21:09	DJS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2162736	5	11/02/23 10:59	11/02/23 16:56	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG2164129	1	10/26/23 16:10	11/03/23 21:36	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG2163701	5	11/04/23 07:05	11/04/23 12:54	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG2163715	1	11/03/23 16:34	11/04/23 07:53	AMM	Mt. Juliet, TN

327106_TB02 L1671531-03 GW

Collected by: Kyle Spivey
 Collected date/time: 10/26/23 00:00
 Received date/time: 10/28/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260/8260B	WG2163229	1	11/02/23 13:14	11/02/23 13:14	ACG	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	1.61		1	11/04/2023 17:03	WG2163189

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	11/06/2023 09:59	WG2162017

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.90	<u>T8</u>	1	11/02/2023 15:45	WG2162160

Sample Narrative:

L1671531-01 WG2162160: 7.9 at 18.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	680		10.0	1	11/02/2023 17:26	WG2162654

Sample Narrative:

L1671531-01 WG2162654: 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	0.924		0.200	1	11/06/2023 21:03	WG2165170

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.19		1.00	5	11/02/2023 16:53	WG2162736
Barium	96.5		2.50	5	11/02/2023 16:53	WG2162736
Cadmium	ND		1.00	5	11/02/2023 16:53	WG2162736
Copper	5.36		5.00	5	11/02/2023 16:53	WG2162736
Lead	8.71		2.00	5	11/02/2023 16:53	WG2162736
Nickel	5.09		2.50	5	11/02/2023 16:53	WG2162736
Selenium	ND		2.50	5	11/02/2023 16:53	WG2162736
Silver	ND		0.500	5	11/02/2023 16:53	WG2162736
Zinc	ND		25.0	5	11/02/2023 16:53	WG2162736

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	11/03/2023 21:14	WG2164129
Benzene	ND		0.00100	1	11/03/2023 21:14	WG2164129
Toluene	ND		0.00500	1	11/03/2023 21:14	WG2164129
Ethylbenzene	ND		0.00100	1	11/03/2023 21:14	WG2164129
Xylenes, Total	ND		0.00300	1	11/03/2023 21:14	WG2164129
1,2,4-Trimethylbenzene	ND		0.00100	1	11/03/2023 21:14	WG2164129
1,3,5-Trimethylbenzene	ND		0.00100	1	11/03/2023 21:14	WG2164129
(S) Toluene-d8	103		75.0-131		11/03/2023 21:14	WG2164129
(S) 4-Bromofluorobenzene	104		67.0-138		11/03/2023 21:14	WG2164129

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) 1,2-Dichloroethane-d4	117		70.0-130		11/03/2023 21:14	WG2164129

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	37.7		20.0	5	11/04/2023 12:42	WG2163701
C28-C36 Motor Oil Range	128		20.0	5	11/04/2023 12:42	WG2163701
(S) o-Terphenyl	49.7		18.0-148		11/04/2023 12:42	WG2163701

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Acenaphthene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Benzo(a)anthracene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Benzo(a)pyrene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Benzo(b)fluoranthene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Benzo(k)fluoranthene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Chrysene	0.0142		0.00600	1	11/04/2023 03:48	WG2163714
Dibenz(a,h)anthracene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Fluoranthene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Fluorene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/04/2023 03:48	WG2163714
Naphthalene	ND		0.0200	1	11/04/2023 03:48	WG2163714
Pyrene	ND		0.00600	1	11/04/2023 03:48	WG2163714
1-Methylnaphthalene	ND		0.0200	1	11/04/2023 03:48	WG2163714
2-Methylnaphthalene	ND		0.0200	1	11/04/2023 03:48	WG2163714
(S) p-Terphenyl-d14	60.8		23.0-120		11/04/2023 03:48	WG2163714
(S) Nitrobenzene-d5	64.1		14.0-149		11/04/2023 03:48	WG2163714
(S) 2-Fluorobiphenyl	51.5		34.0-125		11/04/2023 03:48	WG2163714

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.32		1	11/04/2023 17:42	WG2163189

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	ND		1.00	1	11/06/2023 10:09	WG2162017

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.25	<u>T8</u>	1	11/02/2023 15:45	WG2162659

Sample Narrative:

L1671531-02 WG2162659: 8.25 at 19.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	379		10.0	1	11/05/2023 13:00	WG2163769

Sample Narrative:

L1671531-02 WG2163769: 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	1.09		0.200	1	11/06/2023 21:09	WG2165170

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.39		1.00	5	11/02/2023 16:56	WG2162736
Barium	104		2.50	5	11/02/2023 16:56	WG2162736
Cadmium	ND		1.00	5	11/02/2023 16:56	WG2162736
Copper	5.44		5.00	5	11/02/2023 16:56	WG2162736
Lead	6.73		2.00	5	11/02/2023 16:56	WG2162736
Nickel	3.71		2.50	5	11/02/2023 16:56	WG2162736
Selenium	ND		2.50	5	11/02/2023 16:56	WG2162736
Silver	ND		0.500	5	11/02/2023 16:56	WG2162736
Zinc	ND		25.0	5	11/02/2023 16:56	WG2162736

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	11/03/2023 21:36	WG2164129
Benzene	ND		0.00100	1	11/03/2023 21:36	WG2164129
Toluene	ND		0.00500	1	11/03/2023 21:36	WG2164129
Ethylbenzene	ND		0.00100	1	11/03/2023 21:36	WG2164129
Xylenes, Total	ND		0.00300	1	11/03/2023 21:36	WG2164129
1,2,4-Trimethylbenzene	ND		0.00100	1	11/03/2023 21:36	WG2164129
1,3,5-Trimethylbenzene	ND		0.00100	1	11/03/2023 21:36	WG2164129
(S) Toluene-d8	104		75.0-131		11/03/2023 21:36	WG2164129
(S) 4-Bromofluorobenzene	98.8		67.0-138		11/03/2023 21:36	WG2164129



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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) 1,2-Dichloroethane-d4	118		70.0-130		11/03/2023 21:36	WG2164129

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
C10-C28 Diesel Range	ND		20.0	5	11/04/2023 12:54	WG2163701
C28-C36 Motor Oil Range	56.9		20.0	5	11/04/2023 12:54	WG2163701
(S) o-Terphenyl	24.8		18.0-148		11/04/2023 12:54	WG2163701

Sample Narrative:

L1671531-02 WG2163701: Cannot run at lower dilution due to viscosity of extract

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Acenaphthene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Benzo(a)anthracene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Benzo(a)pyrene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Benzo(b)fluoranthene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Benzo(k)fluoranthene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Chrysene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Dibenz(a,h)anthracene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Fluoranthene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Fluorene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/04/2023 07:53	WG2163715
Naphthalene	ND		0.0200	1	11/04/2023 07:53	WG2163715
Pyrene	ND		0.00600	1	11/04/2023 07:53	WG2163715
1-Methylnaphthalene	ND		0.0200	1	11/04/2023 07:53	WG2163715
2-Methylnaphthalene	ND		0.0200	1	11/04/2023 07:53	WG2163715
(S) p-Terphenyl-d14	72.7		23.0-120		11/04/2023 07:53	WG2163715
(S) Nitrobenzene-d5	53.7		14.0-149		11/04/2023 07:53	WG2163715
(S) 2-Fluorobiphenyl	73.0		34.0-125		11/04/2023 07:53	WG2163715

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/MS) Low Fraction	ND		0.500	1	11/02/2023 13:14	WG2163229
Benzene	ND		0.00100	1	11/02/2023 13:14	WG2163229
Toluene	ND		0.00100	1	11/02/2023 13:14	WG2163229
Ethylbenzene	ND		0.00100	1	11/02/2023 13:14	WG2163229
Xylenes, Total	ND		0.00300	1	11/02/2023 13:14	WG2163229
1,2,4-Trimethylbenzene	ND		0.00100	1	11/02/2023 13:14	WG2163229
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2023 13:14	WG2163229
(S) Toluene-d8	103		80.0-120		11/02/2023 13:14	WG2163229
(S) 4-Bromofluorobenzene	97.2		77.0-126		11/02/2023 13:14	WG2163229
(S) 1,2-Dichloroethane-d4	104		70.0-130		11/02/2023 13:14	WG2163229

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3995906-1 11/06/23 08:23

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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1671524-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1671524-02 11/06/23 09:07 • (DUP) R3995906-7 11/06/23 09:12

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Hexavalent Chromium	ND	ND	1	1.31		20

L1671531-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1671531-01 11/06/23 09:59 • (DUP) R3995906-8 11/06/23 10:04

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

Laboratory Control Sample (LCS)

(LCS) R3995906-2 11/06/23 08:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Hexavalent Chromium	10.0	8.73	87.3	80.0-120	

L1671519-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1671519-01 11/06/23 08:36 • (MS) R3995906-3 11/06/23 08:41 • (MSD) R3995906-4 11/06/23 08:46

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Hexavalent Chromium	20.0	ND	13.9	14.5	66.9	69.7	1	75.0-125	<u>J6</u>	<u>J6</u>	4.02	20

L1671519-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1671519-01 11/06/23 08:36 • (MS) R3995906-5 11/06/23 08:51

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Hexavalent Chromium	641	ND	557	86.8	50	75.0-125	

L1670951-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1670951-01 11/02/23 15:45 • (DUP) R3994714-2 11/02/23 15:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	8.22	8.20	1	0.244		1

Sample Narrative:

OS: 8.22 at 20.3C

DUP: 8.2 at 20.4C

L1671215-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1671215-02 11/02/23 15:45 • (DUP) R3994714-3 11/02/23 15:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
pH	3.99	3.98	1	0.251		1

Sample Narrative:

OS: 3.99 at 19.3C

DUP: 3.98 at 19.5C

Laboratory Control Sample (LCS)

(LCS) R3994714-1 11/02/23 15:45

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

Sample Narrative:

LCS: 10 at 20.3C



L1671594-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1671594-01 11/02/23 15:45 • (DUP) R3994707-2 11/02/23 15:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	7.58	7.62	1	0.526		1

Sample Narrative:

OS: 7.58 at 19.5C
DUP: 7.62 at 18.8C

L1671597-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1671597-03 11/02/23 15:45 • (DUP) R3994707-3 11/02/23 15:45

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
su	su			%		%
pH	5.82	5.84	1	0.343		1

Sample Narrative:

OS: 5.82 at 18.9C
DUP: 5.84 at 18.8C

Laboratory Control Sample (LCS)

(LCS) R3994707-1 11/02/23 15:45

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

Sample Narrative:

LCS: 10.02 at 18.9C



Method Blank (MB)

(MB) R3994759-1 11/02/23 17:26

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

Sample Narrative:

BLANK: at 25C

L1671074-15 Original Sample (OS) • Duplicate (DUP)

(OS) L1671074-15 11/02/23 17:26 • (DUP) R3994759-3 11/02/23 17:26

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	2520	2510	1	0.239		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1671533-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1671533-01 11/02/23 17:26 • (DUP) R3994759-4 11/02/23 17:26

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Specific Conductance	74.7	74.8	1	0.134		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3994759-2 11/02/23 17:26

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	327	348	106	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) R3995608-1 11/05/23 13:00

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

Sample Narrative:

BLANK: at 25C

L1671287-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1671287-06 11/05/23 13:00 • (DUP) R3995608-3 11/05/23 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	1200	1170	1	2.62		20

Sample Narrative:

OS: at 25C
DUP: at 25C

L1671529-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1671529-02 11/05/23 13:00 • (DUP) R3995608-4 11/05/23 13:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Specific Conductance	103	103	1	0.584		20

Sample Narrative:

OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3995608-2 11/05/23 13:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Specific Conductance	327	331	101	85.0-115	

Sample Narrative:

LCS: at 25C



Method Blank (MB)

(MB) R3996295-1 11/06/23 20:29

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) R3996295-2 11/06/23 20:32 • (LCSD) R3996295-3 11/06/23 20:35

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	1.18	1.19	118	119	80.0-120			0.216	20

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

Method Blank (MB)

(MB) R3994731-1 11/02/23 16:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00
Barium	0.581	J	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

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3994731-2 11/02/23 16:33

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	96.8	96.8	80.0-120	
Barium	100	92.1	92.1	80.0-120	
Cadmium	100	94.0	94.0	80.0-120	
Copper	100	89.9	89.9	80.0-120	
Lead	100	96.0	96.0	80.0-120	
Nickel	100	96.4	96.4	80.0-120	
Selenium	100	99.7	99.7	80.0-120	
Silver	20.0	18.8	94.1	80.0-120	
Zinc	100	93.1	93.1	80.0-120	

⁷Gl

⁸Al

⁹Sc

L1672543-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1672543-03 11/02/23 16:36 • (MS) R3994731-5 11/02/23 16:46 • (MSD) R3994731-6 11/02/23 16:50

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	ND	96.5	85.0	95.5	84.0	5	75.0-125			12.7	20
Barium	100	5.15	98.9	90.5	93.8	85.3	5	75.0-125			8.89	20
Cadmium	100	ND	94.2	87.9	94.2	87.9	5	75.0-125			6.90	20
Copper	100	ND	98.0	92.7	93.1	87.7	5	75.0-125			5.62	20
Lead	100	3.07	96.0	89.8	92.9	86.7	5	75.0-125			6.69	20
Nickel	100	ND	99.4	89.4	99.1	89.0	5	75.0-125			10.7	20
Selenium	100	ND	87.4	75.4	87.4	75.4	5	75.0-125			14.7	20
Silver	20.0	ND	19.1	17.9	95.3	89.5	5	75.0-125			6.31	20
Zinc	100	ND	97.6	91.5	92.8	86.8	5	75.0-125			6.41	20

Method Blank (MB)

(MB) R3995243-3 11/02/23 12:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	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	106			80.0-120
(S) 4-Bromofluorobenzene	93.8			77.0-126
(S) 1,2-Dichloroethane-d4	100			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3995243-1 11/02/23 11:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Benzene	0.00500	0.00575	115	70.0-123	
Toluene	0.00500	0.00557	111	79.0-120	
Ethylbenzene	0.00500	0.00541	108	79.0-123	
Xylenes, Total	0.0150	0.0156	104	79.0-123	
1,2,4-Trimethylbenzene	0.00500	0.00519	104	76.0-121	
1,3,5-Trimethylbenzene	0.00500	0.00524	105	76.0-122	
(S) Toluene-d8			103	80.0-120	
(S) 4-Bromofluorobenzene			96.0	77.0-126	
(S) 1,2-Dichloroethane-d4			103	70.0-130	

Laboratory Control Sample (LCS)

(LCS) R3995243-2 11/02/23 11:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
TPH (GC/MS) Low Fraction	5.00	4.91	98.2	66.0-132	
(S) Toluene-d8			104	80.0-120	
(S) 4-Bromofluorobenzene			97.8	77.0-126	
(S) 1,2-Dichloroethane-d4			105	70.0-130	

Method Blank (MB)

(MB) R3995420-4 11/03/23 16:21

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	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	107			75.0-131
(S) 4-Bromofluorobenzene	99.6			67.0-138
(S) 1,2-Dichloroethane-d4	97.3			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

(LCS) R3995420-1 11/03/23 12:22 • (LCSD) R3995420-2 11/03/23 12:44

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Benzene	0.0250	0.0259	0.0250	104	100	70.0-123			3.54	20
Toluene	0.0250	0.0242	0.0235	96.8	94.0	75.0-121			2.94	20
Ethylbenzene	0.0250	0.0245	0.0238	98.0	95.2	74.0-126			2.90	20
Xylenes, Total	0.0750	0.0737	0.0729	98.3	97.2	72.0-127			1.09	20
1,2,4-Trimethylbenzene	0.0250	0.0242	0.0242	96.8	96.8	70.0-126			0.000	20
1,3,5-Trimethylbenzene	0.0250	0.0243	0.0244	97.2	97.6	73.0-127			0.411	20
(S) Toluene-d8				109	104	75.0-131				
(S) 4-Bromofluorobenzene				102	101	67.0-138				
(S) 1,2-Dichloroethane-d4				117	105	70.0-130				

Laboratory Control Sample (LCS)

(LCS) R3995420-3 11/03/23 13:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
TPH (GC/MS) Low Fraction	5.00	5.12	102	52.0-154	
(S) Toluene-d8			101	75.0-131	
(S) 4-Bromofluorobenzene			105	67.0-138	
(S) 1,2-Dichloroethane-d4			113	70.0-130	

Method Blank (MB)

(MB) R3995466-1 11/04/23 11:47

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
<i>(S) o-Terphenyl</i>	64.7			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3995466-2 11/04/23 12:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/kg	mg/kg	%	%	
C10-C28 Diesel Range	50.0	28.3	56.6	50.0-150	
<i>(S) o-Terphenyl</i>			58.0	18.0-148	

L1671422-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1671422-05 11/04/23 13:19 • (MS) R3995467-1 11/04/23 13:31 • (MSD) R3995467-2 11/04/23 13:43

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
C10-C28 Diesel Range	47.9	ND	ND	ND	0.000	183	50	50.0-150	<u>J6</u>	<u>J3 J5</u>	200	20
<i>(S) o-Terphenyl</i>					27.6	31.7		18.0-148	<u>J7</u>	<u>J7</u>		

Sample Narrative:

OS: Cannot run at lower dilution due to viscosity of extract

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3995718-2 11/03/23 22:36

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	83.5			23.0-120
(S) Nitrobenzene-d5	60.6			14.0-149
(S) 2-Fluorobiphenyl	66.1			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3995718-1 11/03/23 22:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0663	82.9	50.0-126	
Acenaphthene	0.0800	0.0645	80.6	50.0-120	
Benzo(a)anthracene	0.0800	0.0752	94.0	45.0-120	
Benzo(a)pyrene	0.0800	0.0687	85.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0698	87.3	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0675	84.4	49.0-125	
Chrysene	0.0800	0.0733	91.6	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0727	90.9	47.0-125	
Fluoranthene	0.0800	0.0768	96.0	49.0-129	
Fluorene	0.0800	0.0684	85.5	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0813	102	46.0-125	
Naphthalene	0.0800	0.0610	76.3	50.0-120	
Pyrene	0.0800	0.0728	91.0	43.0-123	
1-Methylnaphthalene	0.0800	0.0669	83.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0649	81.1	50.0-120	

Laboratory Control Sample (LCS)

(LCS) R3995718-1 11/03/23 22:19

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			85.7	23.0-120	
(S) Nitrobenzene-d5			67.6	14.0-149	
(S) 2-Fluorobiphenyl			68.0	34.0-125	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3996558-2 11/04/23 01:21

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	90.3			23.0-120
(S) Nitrobenzene-d5	46.2			14.0-149
(S) 2-Fluorobiphenyl	74.7			34.0-125

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3996558-1 11/04/23 01:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0580	72.5	50.0-126	
Acenaphthene	0.0800	0.0628	78.5	50.0-120	
Benzo(a)anthracene	0.0800	0.0611	76.4	45.0-120	
Benzo(a)pyrene	0.0800	0.0583	72.9	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0673	84.1	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0606	75.8	49.0-125	
Chrysene	0.0800	0.0686	85.8	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0700	87.5	47.0-125	
Fluoranthene	0.0800	0.0709	88.6	49.0-129	
Fluorene	0.0800	0.0721	90.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0691	86.4	46.0-125	
Naphthalene	0.0800	0.0571	71.4	50.0-120	
Pyrene	0.0800	0.0614	76.8	43.0-123	
1-Methylnaphthalene	0.0800	0.0600	75.0	51.0-121	
2-Methylnaphthalene	0.0800	0.0604	75.5	50.0-120	

Laboratory Control Sample (LCS)

(LCS) R3996558-1 11/04/23 01:02

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			88.1	23.0-120	
(S) Nitrobenzene-d5			47.1	14.0-149	
(S) 2-Fluorobiphenyl			79.3	34.0-125	

L1671587-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1671587-13 11/04/23 05:16 • (MS) R3996558-3 11/04/23 05:36 • (MSD) R3996558-4 11/04/23 05:55

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	0.0780	0.00716	0.0651	0.0668	74.3	76.5	1	10.0-145			2.58	30
Acenaphthene	0.0780	0.0242	0.0744	0.0769	64.4	67.6	1	14.0-127			3.30	27
Benzo(a)anthracene	0.0780	ND	0.0593	0.0613	72.6	75.2	1	10.0-139			3.32	30
Benzo(a)pyrene	0.0780	ND	0.0586	0.0621	75.1	79.6	1	10.0-141			5.80	31
Benzo(b)fluoranthene	0.0780	ND	0.0585	0.0614	75.0	78.7	1	10.0-140			4.84	36
Benzo(k)fluoranthene	0.0780	ND	0.0561	0.0606	71.9	77.7	1	10.0-137			7.71	31
Chrysene	0.0780	ND	0.0651	0.0663	83.5	85.0	1	10.0-145			1.83	30
Dibenz(a,h)anthracene	0.0780	ND	0.0602	0.0628	77.2	80.5	1	10.0-132			4.23	31
Fluoranthene	0.0780	ND	0.0695	0.0721	82.5	85.8	1	10.0-153			3.67	33
Fluorene	0.0780	0.0331	0.0892	0.0903	71.9	73.3	1	11.0-130			1.23	29
Indeno(1,2,3-cd)pyrene	0.0780	ND	0.0615	0.0650	78.8	83.3	1	10.0-137			5.53	32
Naphthalene	0.0780	7.99	6.51	6.53	0.000	0.000	1	10.0-135	<u>EV</u>	<u>EV</u>	0.307	27
Pyrene	0.0780	0.00704	0.0621	0.0642	70.6	73.3	1	10.0-148			3.33	35
1-Methylnaphthalene	0.0780	2.82	2.27	2.30	0.000	0.000	1	10.0-142	<u>V</u>	<u>V</u>	1.31	28
2-Methylnaphthalene	0.0780	6.14	4.96	4.99	0.000	0.000	1	10.0-137	<u>EV</u>	<u>EV</u>	0.603	28
(S) p-Terphenyl-d14					80.2	81.7		23.0-120				
(S) Nitrobenzene-d5					72.1	72.2		14.0-149				
(S) 2-Fluorobiphenyl					71.0	72.4		34.0-125				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
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.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
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

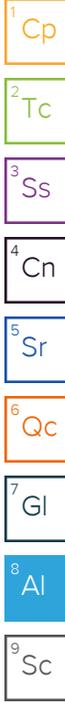
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

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

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace
 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/hubs/pas-standard-terms.pdf>

Report to: **Sammy Allen / Jess Zielinski**

Email To: **List**

Project Description: **Northrup #1-14 & #2-24 Tank Battery**

City/State Collected: **Stoneham, CO**

Please Circle: PT MT CT ET

Phone: **803.414.5429**

Client Project #

Lab Project # **COILGASRCO-WESTON**

Collected by (print): **Kyle Spivey**

Site/Facility ID # **327106**

P.O. #

Collected by (signature): **Kyle Spivey**

Rush? (Lab MUST Be Notified)

___ Same Day ___ Five Day
 ___ Next Day ___ 5 Day (Rad Only)
 ___ Two Day ___ 10 Day (Rad Only)
 ___ Three Day **STD**

Date Results Needed

Immediately Packed on Ice N ___ Y

Quote #

No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Full 915 Suite	Soil Suitability (EC, pH, SAR, boron, mtis)	Trip Blank - BTEX, TMBs, TPH low frac	TENORM - GSPEC - Ra/Pb	TENORM - PO-210	Remarks	Sample # (lab only)
327106_FPO1@4'	Grab	SS	4'	10/26/23	1538	3	<input checked="" type="checkbox"/>						01
327106_FPO2@4'	Grab	SS	4'	10/26/23	1610	3	<input checked="" type="checkbox"/>						02
327106_TB01	Grab	SS	—	10/26/23	—	2		<input checked="" type="checkbox"/>					03
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											
327106_	Grab	SS											

* 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 _____

Samples returned via: ___ UPS ___ FedEx ___ Courier

Tracking # **7123 3304 6862**

Sample Receipt Checklist

COC Seal Present/Intact: ___ NP ___ N

COC Signed/Accurate: ___ NP ___ N

Bottles arrive intact: ___ NP ___ N

Correct bottles used: ___ NP ___ N

Sufficient volume sent: ___ NP ___ N

If Applicable

VOA Zero Headspace: ___ NP ___ N

Preservation Correct/Checked: ___ NP ___ N

RAD Screen <0.5 mR/hr: ___ NP ___ N

Relinquished by: (Signature) **Kyle Spivey** Date: **10/27/23** Time: **1300**

Received by: (Signature) **[Signature]** Trip Blank Received: **Yes/No** **Yes** **No**

Relinquished by: (Signature) **[Signature]** Date: **10-27-23** Time: **18:00**

Received by: (Signature) **[Signature]** Temp: **0.1 °C** Bottles Received: **6**

Relinquished by: (Signature) **[Signature]** Date: **10/28/23** Time: **0900**

Received for lab by: (Signature) **[Signature]** Date: **10/28/23** Time: **0900**

Hold: _____ Condition: **NCF** **OK**

ATTACHMENT E

CLOSURE CHECKLISTS

Flowline Closure Checklist

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

Additional Attachments:	<input checked="" type="checkbox"/>	Tank Battery Closure		Wellhead Closure	<input checked="" type="checkbox"/>	Pit Closure	<input checked="" type="checkbox"/>	Partially Buried Vault Closure	
Site Name & COGCC Facility Number: Northrup #1-14 & #2-14 Tank Battery		Date: November 14, 2023				Remediation Project #: -			
Associated Wells: Northrup #1-14 (OWP)		Age of Site:				Number of Photos Attached: 47			

Starting point: (GPS coordinates and descriptions)
 FL01 - 40.57557087, -103.72674302; FL02 - 40.57912462, -103.7269289; FL03 - 40.57557087, -103.72674302; FL04 - 40.57535077, -103.72688514; FL05 - 40.57536611, -103.72707445

End point: (GPS coordinates and descriptions)
 FL01 - 40.57545076, -103.72698952; FL02 - 40.57559464, -103.72669208; FL03 - 40.57536469, -103.72698163; FL04 - 40.57533305, -103.72700477; FL05 - 40.57540785, -103.72710728

USCS Soil Type: SM Estimated Depth to Groundwater: 20

Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
 Yes, impacts observed at riser to wellhead. Impacts left in place. +

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
 None observed

Flowlines								
Flowline type	On-location (FL01)	Off-location (FL02)	On-location (FL03)	On-location (FL04)	On-location (FL05)			
Depth	2	4	3	4	4			
Age	Unknown	Unknown	Unknown	Unknown	Unknown			
Length	85	1350	100	35	25			
Construction Material	steel	Steel	Steel	Steel	Steel			
Were flowlines pulled?	Unknown	Unknown	Unknown	Unknown	Unknown			
Visual Integrity of lines	Unknown	Unknown	Unknown	Unknown	Unknown			
Visual impacts if trenched	None observed	Impacts at wellhead	None observed	None observed	None observed			
PID Readings if trenched	0 - 21	0 - 4.5	0 - 5.5	0 - 3.8	0 - 3.3			
Sample taken? Location/Sample ID#	FL01_02@9'	-	-	-	-			
Photo Number(s)	-	-	-	-	-			

Other observations regarding on location flowlines:
 Ram-Co indicated that they pulled the flowlines but it was not observed. Impacts left in place at this location

Summary

Was impacted soil identified?
 No Yes - less than 10 cubic yards Yes - more than 10 cubic yards

Total number of samples field screened: 17 Total number of samples collected: 1

Highest PID Reading: 21 Total number of samples submitted to lab for analysis: 1

If more than 10 cubic yards of impacted soil were observed:
 Vertical extent: 4 ft Estimated spill volume: <10 cy
 Lateral extent: Unknown Volume of soil removed: 0

Is additional investigation required?
 No

Was groundwater encountered during the investigation?
 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 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: -

Tank Battery Closure Checklist

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

Additional attachments (optional):	✗	Pit Closure		Wellhead Closure	✗	Flowline Closure	✗	Partially Buried Vault Closure
------------------------------------	---	-------------	--	------------------	---	------------------	---	--------------------------------

Site Name & COGCC Facility Number: Northrup #1-14 & #2-14 Tank Battery	Date: November 14, 2023	Remediation Project #: -
Associated Wells: Northrup #1-14 (OWP)	Age of Site: 32	Number of Photos Attached: 47
Location: (GPS coordinates of southeaster berm) 40.575269°, -103.726781°		Estimated Facility Size (acres): 0.75

General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)
 Good, no impacts observed at AST or separators

USCS Soil Type: SM	Estimated Depth to Groundwater: 20
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Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
 None observed

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
 None observed

Tanks

Tank Contents	Unknown							
Size (barrels)	300 bbl							
Age	Unknown							
Construction Materials	Steel							
Tank Type (AST/PBI, etc.)	AST							
Visual Integrity of Tank	Good							
Condition of Tank Footprint	Good							
PID Readings	0 - 2.9							
Soil impacts present at valves or hatches?	None							
PID Readings	0 - 2.9							
Sample taken? Location/Sample ID #	AST01_B01@2'							
Photo Number(s)	-							

Other observations regarding tanks:
 No impacts observed at AST

Separators

Separator size	Unknown	Unknown						
Vertical or Horizontal	Vertical (SEP01)	Horiz (SEP02)						
Age	Unknown	Unknown						
Soil impacts observed? If yes,	None	None						
PID Readings	0 - 3.3	0 - 3.3						
Sample taken? Location/Sample ID #	SEP01_B01@2'	SEP02_B01@2'						
Photo Number(s)	-	-						

Other observations regarding separators:
 No impacts observed at separators

Third Party Equipment

Type								
Age								

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: 2	Total number of samples collected: 2
Highest PID Reading: 3.3	Total number of samples submitted to lab for analysis: 2
If more than 10 cubic yards of impacted soil were observed: N/A	
Vertical extent: N/A	Estimated spill volume: 0
Lateral extent: N/A	Volume of soil removed: 0
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 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: -	

Buried or Partially Buried Vessel Closure Checklist

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

Additional attachments (optional):	<input checked="" 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: Northrup #1-14 & #2-14 Tank Battery		Date: 11/14/2023		Remediation Project #: -				
Associated Wells: Northrup #1-14 (OWP)		Age of Site: 32		Number of Photos Attached: 47				
Location: (GPS coordinates of vault or southeastern tank berm for multiple) 40.575408°, -103.727108°				Estimated Facility Size (acres): 0.75				

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

Good, a hole was observed in the PWV and there were impacts observed at the PWV

USCS Soil Type: SM	Estimated Depth to Groundwater: 20
-----------------------	---------------------------------------

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

Yes - Impacted soils observed at the PWV base

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

None observed

Buried or Partially Buried Vessels

Tank Contents	Produced water							
Size (barrels)	100 bbl							
Age	Unknown							
Construction Material	Fiberglass							
Visual Integrity of Tank	Hole on side							
Condition of Tank Footprint	Impacts observed							
PID Readings	24 - 312							
Condition of dump line	Good							
PID Readings	24 - 312							
Sample taken? Location Sample ID#	PWV01_B01@10', PWV01_E01@6'							
Photo Number(s)	-							

Other observations regarding partially buried vessels:

Impacts observed at the PWV base. Ram-Co indicated that 10 cy of impacted material was removed from this location

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: 312	Total number of samples submitted to lab for analysis: 2
If more than 10 cubic yards of impacted soil were observed: Yes	
Vertical extent: 10+ ft bgs	Estimated spill volume: >10cy
Lateral extent: unknown	Volume of soil removed: 10cy
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 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: -	