Incident Number: nAPP2411337548

Release Assessment and Closure

Red Deer CTB

Section 35, Township 15 South, Range 28 East

Facility ID: fAPP2211037291

County: Chaves

Vertex File Number: 24E-01863

Prepared for:
Mack Energy Corporation

Prepared by:
Vertex Resource Services Inc.

Date:
July 2024

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Release Assessment and Closure
Red Deer CTB
Section 35, Township 15 South, Range 28 East
Facility ID: fAPP2211037291
County: Chaves

Prepared for:
Mack Energy Corporation
11344 Lovington Highway
Artesia, New Mexico 88210

New Mexico Oil Conservation Division – District 2
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_____ _____

Sally Carttar, BA
PROJECT MANAGER, REPORT REVIEW

Date

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1.0 Introduction

Mack Energy Corporation (Mack Energy) retained Vertex Resource Services Inc. (Vertex) to conduct a Release Assessment and Closure for a release that occurred on April 21, 2024, at Red Deer CTB, Facility ID fAPP2211037291 (hereafter referred to as the "site"). Mack submitted an initial C-141 Release Notification (Appendix A) to New Mexico Oil Conservation Division (NMOCD) District 2 on April 26, 2024. Incident ID number nAPP2411337548 was assigned to this incident.

This report provides a description of the release assessment and remediation activities associated with the site. The information presented demonstrates that closure criteria established in Table I of 19.15.29.12 of the *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) related to NMOCD has been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NMOCD for closure of this release, with the understanding that restoration of the release site will be completed following remediation activities as per NMAC 19.15.29.13.

2.0 Incident Description

The release occurred on April 21, 2024, due to a fire that started in the separator and melted surrounding poly flowlines. The incident was reported on April 22, 2024, and involved the release of approximately 99 barrels (bbl.) of produced water and 40 bbls of crude oil both on and off the constructed pad. Additional details relevant to the release are presented in the C-141 Report.

3.0 Site Characteristics

The site is located approximately 16 miles east of Lake Arthur, New Mexico. The legal location for the site is Section 35, Township 15 South, Range 28 East in Chaves County, New Mexico. The release area is located on State of New Mexico property. An aerial photograph and site schematic are presented on Figure 1.

The location is typical of oil and gas exploration and production sites in the Permian Basin, and is currently used for oil and gas production and storage. The following sections specifically describe the release area around the separators within and surrounding the lined containment (Figure 1).

The surrounding landscape is associated with flood plains and swales with elevations ranging between 2,840 and 4,500 feet. The climate is semiarid with average annual precipitation ranging between 8 and 12 inches. Using information from the United States Department of Agriculture, the dominant vegetation was determined to be alkali sacaton and black or blue gramas. Historic plant communities vary greatly within the ecological site depending largely on salinity and depth of the local gypsum horizon (United States Department of Agriculture, Natural Resources Conservation Service, 2024). Limited to no vegetation is allowed to grow on the compacted production pad, right-of-way and access road.

The surface geology at the site primarily comprises Qp – Piedmont alluvial deposits from the Holocene to lower Pleistocene (New Mexico Bureau of Geology and Mineral Resources, 2024), and the soil at the site is characterized as loamy (United States Department of Agriculture, Natural Resources Conservation Service, 2024). The soil is

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characterized as well-drained with a runoff class of medium. According to data provided by the Bureau of Land Management, the karst geology potential for the site is medium (United States Department of the Interior, Bureau of Land Management, 2018); however, due to the proximity of apparent karst features noted in aerial imagery, the karst potential will be considered high for closure criteria determination.

4.0 Closure Criteria Determination

The nearest active well to the site is a New Mexico Office of the State Engineer registered livestock well located approximately 3.1 miles northwest of the site (United States Geological Survey, 2024). Information pertaining to the depth to groundwater determination is included in Appendix B.

There is no surface water present at the site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 738 feet northeast of the site (United States Fish and Wildlife Service, 2024).

At the site, there are no continuously flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC. No lakebeds, sinkholes, playa lakes or other critical water or community features exist near the site as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

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Table 1. Closure Criteria Determination			
Site Name: Red Deer CTB			
Spill Coordinates: 32.97728, -104.09668		**X: 584407**	**Y: 3649130**
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater (nearest reference)	**125**	feet
	Distance between release and nearest DTGW reference	**16,373**	feet
		3.10	miles
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	738	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	7,086	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	40,978	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	5,697	feet
	ii) Within 1000 feet of any fresh water well or spring		feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	**149**	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	**115,503**	feet
9	Within an unstable area (Karst Map)	**High**	Critical High Medium Low
	Distance between release and nearest unstable area	**4,139**	feet
10	Within a 100-year Floodplain	500	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	**6,968**	feet
11	Soil Type	loamy	
12	Ecological Classification	R070BB006NM and Gyp Upland	
13	Geology	Qp - Piedmont alluvial deposits	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'

The closure criteria determined for the site are associated with the following constituent concentration limits as presented in Table 2.

Table 2. Closure Criteria for Soils Impacted by a Release

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
< 50 feet	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

TDS – total dissolved solids
TPH – total petroleum hydrocarbons, GRO – gas range organics, DRO – diesel range organics, MRO – motor oil range organics
BTEX – benzene, toluene, ethylbenzene and xylenes

5.0 Remedial Actions Taken

An initial site inspection of the release area was completed on April 22, 2024, which identified the area of the release specified in the initial C-141 Report, estimated the approximate volume of the release and white lined the area required for the One Call request. The impacted area was determined to be approximately 10,855 square feet. The Daily Field Reports (DFRs) associated with the site inspection are included in Appendix C. Characterization sampling results are presented in Table 3.

Remediation efforts began on April 25, 2024, and were finalized on July 1, 2024. Vertex personnel supervised the excavation of impacted soils. Field screening was completed on a total of 155 sample points and consisted of analysis using a Photo Ionization Detector (volatile hydrocarbons), Dexsil Petroflag using EPA SW-846 Method 9074 (extractable hydrocarbons) and silver nitrate titration (chlorides). Field screening results were used to identify areas requiring further remediation. Soils were removed to a depth of 2 to 8 feet below ground surface (bgs). Impacted soil was transported by a licensed waste hauler and disposed of at an approved waste management facility as stipulated by the Form C-138 Request for Approval to Accept Solid Waste – New Mexico filed with the NMOCD. Field screening results and DFRs documenting various phases of the remediation are presented in Appendix C.

Notifications of confirmatory sampling were provided to the NMOCD as required and are included in Appendix D. Confirmatory composite samples, each representative of no more than 200 square feet, were collected from the base and walls of the excavation. A total of 173 samples, including 41 testpit samples, were collected for laboratory analysis following NMOCD soil sampling procedures. Samples were submitted to an accredited laboratory under chain-of-custody protocols and analyzed for BTEX (EPA Method 8021B), total petroleum hydrocarbons (GRO, DRO, MRO – EPA Method 8015D) and total chlorides (EPA Method 300.0). Confirmatory sampling laboratory results are presented in Table 4, and the laboratory data reports are included in Appendix E. All confirmatory samples collected and analyzed were below closure criteria for the site.

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6.0 Closure Request

The release was fully remediated and backfilled by July 1, 2024, with clean and uncontaminated earthen material sourced locally. Vertex recommends no additional remediation actions to address the impacted area at the site. Laboratory analysis of the confirmation samples collected shows confirmatory values below NMOCD reclamation closure criteria for areas with depth to the groundwater below 50 ft bgs. There are no anticipated risks to human, ecological, or hydrological receptors at the site.

Vertex requests that this remediation closure report for the open incident be approved as all closure requirements outlined in Subsection E of 19.15.29.12 NMAC have been met. Mack Energy certifies that all information in this report and the appendices is correct and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain Remediation Closure Approval.

Should you have any questions or concerns, please do not hesitate to contact Sally Carttar at 575.361.3561 or scarttar@vertex.ca.

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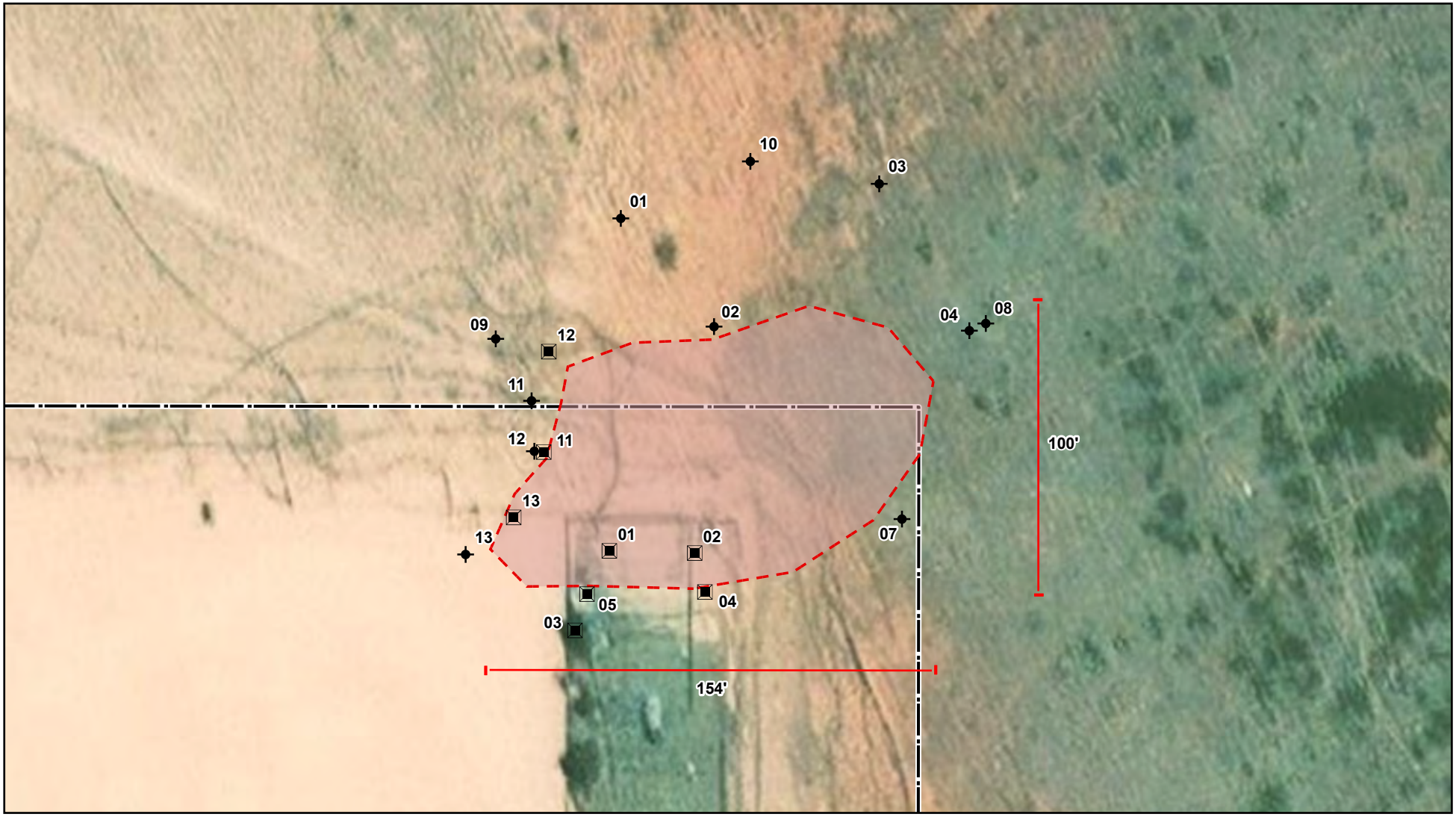
8.0 Limitations

This report has been prepared for the sole benefit of Mack Energy Corporation. This document may not be used by any other person or entity, except the New Mexico Oil Conservation Division and the State Land Office of New Mexico, without the express written consent of Vertex Resource Services Inc. (Vertex) and Mack Energy Corporation. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff following generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgment of Vertex based on the data collected during the assessment. Due to the nature of the assessment and the data available, Vertex cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be considered legal advice.

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FIGURES



Testpit Outside of Containment (Prefixed by "TP24-")

Containment Testpit (Prefixed by "TP24-")

Approximate Lease Boundary

Approximate Release Area (~ 10,855 sq. ft.)

VERTEX

0 25 50 ft

NAD 1983 UTM Zone 13N

Date: May 14/24

Map Center:
Lat/Long
32.977476°,-104.096584°

N

Characterization Sampling Site Schematic
Red Deer CTB

FIGURE:
1

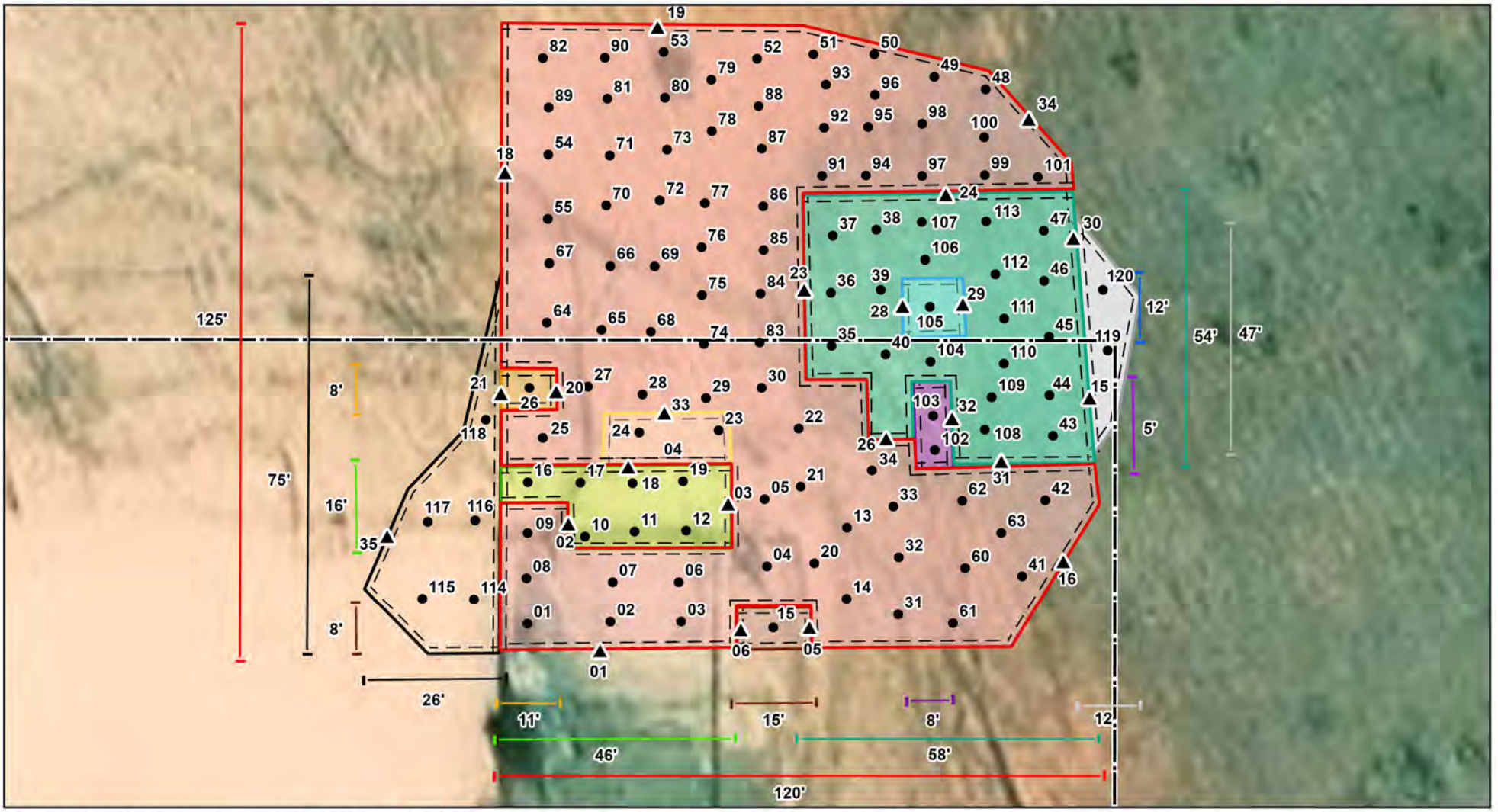
MACK Energy Corporation

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Georeferenced image from Esri, 2023. Approximate site boundary from imagery by Vertex Professional Services Ltd. (Vertex), 2024. Site features from GPS, Vertex, 2024.

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- Base Sample (Excavated) (Prefixed by "BES24-")
- Wall Sample (Excavated) (Prefixed by "WES24-")
- Approximate Lease Boundary
- Excavation to 0.5' bgs (~990 sq.ft.)
- Excavation to 2' bgs (~ 10,068 sq. ft.)
- Excavation to 2.5' bgs (~ 124 sq. ft.)
- Excavation to 2.5' bgs (~ 640 sq. ft.)
- Excavation to 2.5' bgs (~ 256 sq. ft.)
- Excavation to 3' bgs (~ 2,607 sq. ft.)
- Excavation to 4' bgs (~ 130 sq. ft.)
- Excavation to 6.5' bgs (~ 87 sq. ft.)
- Excavation to 8' bgs (~ 144 sq. ft.)
- Surface Sampling Area (~323 sq.ft.)

Total Excavation Area: ~ 15,369 sq. ft.

VERTEX

0 5 10 20 ft

NAD 1983 UTM Zone 13N

Date: Jul 03/24

Map Center:
Lat/Long
32.977441°,-104.096606°

N

Confirmation Sampling Site Schematic
Red Deer CTB

FIGURE: 2

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Note: Georeferenced image from Esri, 2023. Approximate site boundary from imagery by Vertex Professional Services Ltd. (Vertex), 2024. Site features from GPS, Vertex, 2024.

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TABLES

Client Name: Mack Energy Corporation
Site Name: Red Deer CTB
NMOCD Tracking #: nAPP2411337548
Project #: 24E-01863
Lab Reports: 885-3536-1, 885-3594-1, 885-3829-1, and 885-4193-1

Table 3. Characterization Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening		Petroleum Hydrocarbons							Inorganic
					Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Delineation samples inside containment area												
TP24-01	0	April 25, 2024	2,000	4,463	0.35	21.45	**200**	**5,200**	**2,900**	**5,400**	**8,300**	**4,500**
	1	April 26, 2024	26	720	ND	ND	ND	ND	ND	ND	ND	560
	2	April 25, 2024	66	273	ND	ND	ND	ND	ND	ND	ND	87
	4	April 25, 2024	35	258	ND	ND	ND	ND	ND	ND	ND	ND
TP24-02	0	April 25, 2024	2,000	8,495	0.23	36.63	**330**	**7,000**	**3,800**	**7,330**	**11,130**	**8,600**
	2	April 25, 2024	31	353	ND	ND	ND	ND	ND	ND	ND	310
	4	April 25, 2024	61	300	ND	ND	ND	ND	ND	ND	ND	ND
TP24-03	0	April 25, 2024	73	315	ND	ND	ND	ND	ND	ND	ND	130
	2	April 25, 2024	30	175	ND	ND	ND	ND	ND	ND	ND	ND
	4	April 25, 2024	31	138	ND	ND	ND	ND	ND	ND	ND	ND
TP24-04	0	April 25, 2024	44	208	ND	ND	ND	ND	ND	ND	ND	83
	1	April 26, 2024	16	310	ND	ND	ND	ND	ND	ND	ND	130
	2	April 25, 2024	37	200	ND	ND	ND	ND	ND	ND	ND	62
	4	April 25, 2024	17	125	ND	ND	ND	ND	ND	ND	ND	ND
TP24-05	0	April 26, 2024	78	400	ND	ND	ND	10	ND	10	10	150
	1	April 26, 2024	23	325	ND	ND	ND	ND	ND	ND	ND	120
	2	April 26, 2024	40	245	ND	ND	ND	ND	ND	ND	ND	ND
	4	April 26, 2024	27	220	ND	ND	ND	ND	ND	ND	ND	ND
Delineation samples outside containment area												
TP24-01	0	May 1, 2024	83	175	ND	ND	ND	ND	ND	ND	ND	ND
	2	May 1, 2024	22	153	ND	ND	ND	ND	ND	ND	ND	ND
TP24-02	0	May 1, 2024	174	225	ND	ND	ND	14	ND	14	14	220
	2	May 1, 2024	31	200	ND	ND	ND	ND	ND	ND	ND	ND
TP24-03	0	May 1, 2024	90	90	ND	ND	ND	ND	ND	ND	ND	61
	2	May 1, 2024	38	155	ND	ND	ND	ND	ND	ND	ND	ND
TP24-04	0	May 1, 2024	216	180	ND	ND	ND	13	ND	13	13	170
	2	May 1, 2024			ND	ND	ND	ND	ND	ND	ND	ND
TP24-07	0	May 1, 2024	142	180	ND	ND	ND	ND	ND	ND	ND	84
	2	May 1, 2024	68	125	ND	ND	ND	ND	ND	ND	ND	ND
TP24-08	0	May 1, 2024	85	170	ND	ND	ND	ND	ND	ND	ND	ND
	2	May 1, 2024	43	88	ND	ND	ND	ND	ND	ND	ND	ND
TP24-09	0	May 1, 2024	376	146	ND	ND	ND	32	ND	32	32	ND
	2	May 1, 2024	48	115	ND	ND	ND	ND	ND	ND	ND	63
TP24-11	0	May 7, 2024	78	272	ND	ND	ND	ND	ND	ND	ND	140
	2	May 7, 2024	-	230	ND	ND	ND	ND	ND	ND	ND	ND
	4	May 7, 2024	-	286	ND	ND	ND	ND	ND	ND	ND	ND
TP24-12	0	May 7, 2024	-	286	ND	ND	ND	ND	ND	ND	ND	ND
	2	May 7, 2024	-	128	ND	ND	ND	ND	ND	ND	ND	ND
	4	May 7, 2024	-	162	ND	ND	ND	ND	ND	ND	ND	ND
TP24-13	0	May 8, 2024	-	417	ND	ND	ND	ND	ND	ND	ND	ND
	2	May 8, 2024	-	355	ND	ND	ND	ND	ND	ND	ND	ND
	4	May 8, 2024	-	215	ND	ND	ND	ND	ND	ND	ND	ND

"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
Bold and green shaded indicates exceedance outside of OCD Reclamation Criteria

Client Name: Mack Energy Corporation
Site Name: Red Deer CTB
NMOCD Tracking #: nAPP2411337548
Project #: 24E-01863
Lab Reports: 885-3735-1, 885-3829-1, 885-3900-1, 885-3901-1, 885-3967-1, 885-3973-1, 885-4068-1, 885-4193-1, and 885-5007-1, 885-7336-1, 885-6499-1

Table 4. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Excavation Wall Samples													
WES24-01	0-2	April 30, 2024	0	26	333	ND	ND	ND	ND	ND	ND	ND	110
WES24-02	0-3	May 1, 2024	0	12	410	ND	ND	ND	ND	ND	ND	ND	ND
WES24-03	0-3	May 1, 2024	0	97	185	ND	ND	ND	21	ND	21	21	190
WES24-04	0-3	May 2, 2024	-	71	243	ND	ND	ND	ND	ND	ND	ND	99
WES24-05	0-2.5	May 2, 2024	-	30	193	ND	ND	ND	ND	ND	ND	ND	ND
WES24-06	0-2.5	May 2, 2024	-	8	185	ND	ND	ND	ND	ND	ND	ND	ND
WES24-15	0-2	May 2, 2024	-	92	200	ND	ND	ND	ND	ND	ND	ND	ND
WES24-16	0-2	May 2, 2024	-	38	165	ND	ND	ND	ND	ND	ND	ND	140
WES24-18	0-2	May 2, 2024	-	61	133	ND	ND	ND	ND	ND	ND	ND	ND
WES24-19	0-2	May 2, 2024	-	52	0	ND	ND	ND	ND	ND	ND	ND	ND
WES24-20	0-6.5	May 7, 2024	0	-	182	ND	ND	ND	ND	ND	ND	ND	320
WES24-21	0-6.5	May 7, 2024	0	91	372	ND	ND	ND	ND	ND	ND	ND	270
WES24-23	0-3	May 8, 2024	0	-	497	ND	ND	ND	ND	ND	ND	ND	280
WES24-24	0-3	May 8, 2024	0	-	147	ND	ND	ND	ND	ND	ND	ND	ND
WES24-26	0-3	May 8, 2024	0	-	447	ND	ND	ND	ND	ND	ND	ND	330
WES24-28	0-8	May 9, 2024	0	-	167	ND	ND	ND	ND	ND	ND	ND	260
WES24-29	0-8	May 9, 2024	0	-	110	ND	ND	ND	ND	ND	ND	ND	ND
WES24-30	0-3	May 15, 2024	-	-	372	ND	ND	ND	ND	ND	ND	ND	ND
WES24-31	(2-3)	May 15, 2024	-	-	372	ND	ND	ND	ND	ND	ND	ND	ND
WES24-32	(3-4)	May 15, 2024	-	-	287	ND	ND	ND	ND	ND	ND	ND	ND
WES24-33	(2-2.5)	May 15, 2024	-	-	312	ND	ND	ND	ND	ND	ND	ND	ND
WES24-34	0-2	May 20, 2024	0	32	215	ND	ND	ND	ND	ND	ND	ND	ND
WES24-35	0-0.5	July 1, 2024	0	118	435	ND	MD	ND	19	ND	19	19	190
Excavation Base Samples													
BES24-01	2	April 30, 2024	0	41	246	ND	ND	ND	ND	ND	ND	ND	ND
BES24-02	2	April 30, 2024	0	43	278	ND	ND	ND	ND	ND	ND	ND	84
BES24-03	2	April 30, 2024	0	37	253	ND	ND	ND	ND	ND	ND	ND	74
BES24-04	2	May 1, 2024	0	51	353	ND	ND	ND	ND	ND	ND	ND	110
BES24-05	2	May 1, 2024	0	52	463	ND	ND	ND	ND	ND	ND	ND	220
BES24-06	2	April 30, 2024	0	53	268	ND	ND	ND	ND	ND	ND	ND	110
BES24-07	2	April 30, 2024	0	35	315	ND	ND	ND	ND	ND	ND	ND	150
BES24-08	2	April 30, 2024	0	36	228	ND	ND	ND	ND	ND	ND	ND	66
BES24-09	2	April 30, 2024	0	37	198	ND	ND	ND	ND	ND	ND	ND	69
BES24-10	3	May 1, 2024	0	50	248	ND	ND	ND	ND	ND	ND	ND	87
BES24-11	3	May 1, 2024	0	25	210	ND	ND	ND	ND	ND	ND	ND	ND
BES24-12	3	May 1, 2024	0	47	213	ND	ND	ND	15	ND	15	15	ND
BES24-13	2	May 1, 2024	0	84	580	ND	ND	ND	12	ND	12	12	320
BES24-14	2	May 1, 2024	0	83	375	ND	ND	ND	22	ND	22	22	110
BES24-15	2.5	May 1, 2024	0	39	305	ND	ND	ND	ND	ND	ND	ND	120
BES24-16	3	April 30, 2024	0	20	155	ND	ND	ND	ND	ND	ND	ND	ND
BES24-17	3	April 30, 2024	0	29	150	ND	ND	ND	ND	ND	ND	ND	ND
BES24-18	3	April 30, 2024	0	60	228	ND	ND	ND	ND	ND	ND	ND	ND
BES24-19	3	May 1, 2024	0	20	253	ND	ND	ND	ND	ND	ND	ND	ND
BES24-20	2	May 1, 2024	0	63	500	ND	ND	ND	10	ND	10	10	240
BES24-21	2	May 2, 2024	-	19	325	ND	ND	ND	ND	ND	ND	ND	240
BES24-22	2	May 2, 2024	-	79	460	ND	ND	ND	ND	ND	ND	ND	280
BES24-23	2.5	May 3, 2024	-	87	180	ND	ND	ND	ND	ND	ND	ND	140
BES24-24	2.5	May 3, 2024	-	39	185	ND	ND	ND	ND	ND	ND	ND	82
BES24-25	2	May 2, 2024	-	25	348	ND	ND	ND	ND	ND	ND	ND	230
BES24-26	6.5	May 6, 2024	0	92	570	ND	ND	ND	ND	ND	ND	ND	470
BES24-27	2.5	May 3, 2024	-	53	573	ND	ND	ND	ND	ND	ND	ND	430
BES24-28	2.5	May 3, 2024	-	39	345	ND	ND	ND	ND	ND	ND	ND	250
BES24-29	2	May 2, 2024	-	43	565	ND	ND	ND	ND	ND	ND	ND	540

VERTEX

Client Name: Mack Energy Corporation
Site Name: Red Deer CTB
NMOCD Tracking #: nAPP2411337548
Project #: 24E-01863
Lab Reports: 885-3735-1, 885-3829-1, 885-3900-1, 885-3901-1, 885-3967-1, 885-3973-1, 885-4068-1, 885-4193-1, and 885-5007-1, 885-7336-1, 885-6499-1

Table 4. Confirmatory Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Excavation Base Samples													
BES24-30	2	May 2, 2024	-	109	490	ND	ND	ND	80	ND	80	80	380
BES24-31	1	May 2, 2024	-	60	313	ND	ND	ND	ND	ND	ND	ND	100
BES24-32	1	May 2, 2024	-	97	575	ND	ND	ND	19	ND	19	19	300
BES24-33	1	May 2, 2024	-	72	333	ND	ND	ND	ND	ND	ND	ND	120
BES24-34	1	May 2, 2024	-	24	298	ND	ND	ND	ND	ND	ND	ND	90
BES24-35	3	May 6, 2024	0	94	232	ND	ND	ND	ND	ND	ND	ND	300
BES24-36	3	May 6, 2024	0	54	507	ND	ND	ND	ND	ND	ND	ND	460
BES24-37	3	May 10, 2024	-	-	290	ND	ND	ND	ND	ND	ND	ND	ND
BES24-38	3	May 10, 2024	-	-	272	ND	ND	ND	ND	ND	ND	ND	ND
BES24-39	3	May 6, 2024	0	59	337	ND	ND	ND	ND	ND	ND	ND	410
BES24-40	3	May 10, 2024	-	-	287	ND	ND	ND	ND	ND	ND	ND	ND
BES24-41	2	May 2, 2024	-	59	190	ND	ND	ND	ND	ND	ND	ND	ND
BES24-42	2	May 2, 2024	-	38	175	ND	ND	ND	ND	ND	ND	ND	ND
BES24-43	2	May 2, 2024	-	43	203	ND	ND	ND	ND	ND	ND	ND	ND
BES24-44	3	May 10, 2024	-	-	245	ND	ND	ND	13	ND	13	13	ND
BES24-45	2	May 2, 2024	-	48	183	ND	ND	ND	ND	ND	ND	ND	ND
BES24-46	2	May 2, 2024	-	58	128	ND	ND	ND	ND	ND	ND	ND	ND
BES24-47	2	May 2, 2024	-	55	90	ND	ND	ND	ND	ND	ND	ND	ND
BES24-48	2	May 2, 2024	-	70	123	ND	ND	ND	ND	ND	ND	ND	ND
BES24-49	2	May 2, 2024	-	58	110	ND	ND	ND	ND	ND	ND	ND	ND
BES24-50	2	May 2, 2024	-	62	113	ND	ND	ND	ND	ND	ND	ND	65
BES24-51	2	May 2, 2024	-	63	130	ND	ND	ND	ND	ND	ND	ND	ND
BES24-52	2	May 2, 2024	-	42	120	ND	ND	ND	ND	ND	ND	ND	ND
BES24-53	2	May 3, 2024	-	35	135	ND	ND	ND	ND	ND	ND	ND	ND
BES24-54	2	May 3, 2024	-	34	190	ND	ND	ND	ND	ND	ND	ND	ND
BES24-55	2	May 3, 2024	-	36	213	ND	ND	ND	ND	ND	ND	ND	ND
BES24-60	1	May 2, 2024	-	35	275	ND	ND	ND	ND	ND	ND	ND	150
BES24-61	1	May 2, 2024	-	40	135	ND	ND	ND	ND	ND	ND	ND	ND
BES24-62	1	May 2, 2024	-	34	320	ND	ND	ND	ND	ND	ND	ND	100
BES24-63	1	May 3, 2024	-	64	243	ND	ND	ND	ND	ND	ND	ND	120
BES24-64	2	May 6, 2024	0	0	187	ND	ND	ND	ND	ND	ND	ND	ND
BES24-65	2	May 6, 2024	0	19	420	ND	ND	ND	ND	ND	ND	ND	120
BES24-66	2	May 6, 2024	0	19	132	ND	ND	ND	ND	ND	ND	ND	ND
BES24-67	2	May 6, 2024	0	0	98	ND	ND	ND	ND	ND	ND	ND	ND
BES24-68	2	May 6, 2024	0	10	112	ND	ND	ND	ND	ND	ND	ND	ND
BES24-69	2	May 6, 2024	0	8	187	ND	ND	ND	ND	ND	ND	ND	ND
BES24-70	2	May 7, 2024	0	25	132	ND	ND	ND	ND	ND	ND	ND	ND
BES24-71	2	May 7, 2024	0	-	197	ND	ND	ND	ND	ND	ND	ND	ND
BES24-72	2	May 7, 2024	0	-	112	ND	ND	ND	ND	ND	ND	ND	ND
BES24-73	2	May 7, 2024	0	-	212	ND	ND	ND	ND	ND	ND	ND	ND
BES24-74	2	May 7, 2024	0	43	430	ND	ND	ND	13	ND	13	13	210
BES24-75	2	May 7, 2024	0	-	272	ND	ND	ND	ND	ND	ND	ND	200
BES24-76	2	May 7, 2024	0	33	305	ND	ND	ND	ND	ND	ND	ND	150
BES24-77	2	May 7, 2024	0	-	270	ND	ND	ND	ND	ND	ND	ND	190
BES24-78	2	May 7, 2024	0	13	185	ND	ND	ND	ND	ND	ND	ND	ND
BES24-79	2	May 7, 2024	0	-	155	ND	ND	ND	ND	ND	ND	ND	ND
BES24-80	2	May 7, 2024	0	17	215	ND	ND	ND	ND	ND	ND	ND	ND
BES24-81	2	May 7, 2024	0	-	228	ND	ND	ND	ND	ND	ND	ND	ND
BES24-82	2	May 7, 2024	0	13	227	ND	ND	ND	ND	ND	ND	ND	62
BES24-83	2	May 7, 2024	0	-	395	ND	ND	ND	ND	ND	ND	ND	170
BES24-84	2	May 7, 2024	0	-	167	ND	ND	ND	ND	ND	ND	ND	ND
BES24-85	2	May 7, 2024	0	-	180	ND	ND	ND	ND	ND	ND	ND	ND
BES24-86	2	May 7, 2024	0	-	180	ND	ND	ND	ND	ND	ND	ND	ND
BES24-87	2	May 8, 2024	0	0	190	ND	ND	ND	ND	ND	ND	ND	ND
BES24-88	2	May 8, 2024	0	-	150	ND	ND	ND	ND	ND	ND	ND	ND
BES24-89	2	May 8, 2024	0	0	172	ND	ND	ND	ND	ND	ND	ND	ND
BES24-90	2	May 8, 2024	0	-	150	ND	ND	ND	ND	ND	ND	ND	ND
BES24-91	2	May 8, 2024	0	21	157	ND	ND	ND	ND	ND	ND	ND	ND

Client Name: Mack Energy Corporation
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			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Excavation Base Samples													
BES24-92	2	May 8, 2024	0	-	165	ND	ND	ND	ND	ND	ND	ND	ND
BES24-93	2	May 8, 2024	0	6	140	ND	ND	ND	ND	ND	ND	ND	ND
BES24-94	2	May 8, 2024	0	-	147	ND	ND	ND	ND	ND	ND	ND	ND
BES24-95	2	May 8, 2024	0	21	182	ND	ND	ND	ND	ND	ND	ND	ND
BES24-96	2	May 8, 2024	0	-	205	ND	ND	ND	ND	ND	ND	ND	ND
BES24-97	2	May 8, 2024	0	0	140	ND	ND	ND	ND	ND	ND	ND	ND
BES24-98	2	May 8, 2024	0	-	185	ND	ND	ND	ND	ND	ND	ND	ND
BES24-99	2	May 8, 2024	0	122	495	ND	ND	ND	26	42	68	68	190
BES24-100	2	May 8, 2024	0	-	247	ND	ND	ND	ND	ND	ND	ND	100
BES24-101	2	May 8, 2024	0	-	197	ND	ND	ND	ND	ND	ND	ND	88
BES24-102	4	May 9, 2024	0	42	465	ND	ND	ND	ND	ND	ND	ND	120
BES24-103	4	May 9, 2024	0	23	222	ND	ND	ND	ND	ND	ND	ND	ND
BES24-104	3	May 15, 2024	0	9	423	ND	ND	ND	ND	ND	ND	ND	ND
BES24-105	8	May 9, 2024	0	43	522	ND	ND	ND	ND	ND	ND	ND	200
BES24-106	3	May 8, 2024	0	-	472	ND	ND	ND	ND	ND	ND	ND	110
BES24-107	3	May 8, 2024	0	-	200	ND	ND	ND	ND	ND	ND	ND	ND
BES24-108	3	May 8, 2024	0	-	202	ND	ND	ND	ND	ND	ND	ND	ND
BES24-109	3	May 8, 2024	0	77	201	ND	ND	ND	ND	ND	ND	ND	60
BES24-110	3	May 8, 2024	0	-	252	ND	ND	ND	ND	ND	ND	ND	ND
BES24-111	3	May 8, 2024	0	-	167	ND	ND	ND	ND	ND	ND	ND	ND
BES24-112	3	May 8, 2024	0	-	105	ND	ND	ND	ND	ND	ND	ND	ND
BES24-113	3	May 8, 2024	0	-	120	ND	ND	ND	ND	ND	ND	ND	ND
BES24-114	0-0.5	July 1, 2024	0	57	523	ND	ND	ND	ND	ND	ND	ND	260
BES24-115	0-0.5	July 1, 2024	0	167	575	ND	ND	ND	12	ND	12	12	330
BES24-116	0-0.5	July 1, 2024	0	90	538	ND	ND	ND	ND	ND	ND	ND	270
BES24-117	0-0.5	July 1, 2024	0	91	390	ND	ND	ND	ND	ND	ND	ND	200
BES24-118	0-0.5	June 18, 2024	0	24	457	ND	ND	ND	ND	ND	ND	ND	200
BES24-119	0-0.5	June 18, 2024	0	17	217	ND	ND	ND	ND	ND	ND	ND	ND
BES24-120	0-0.5	June 18, 2024	0	18	220	ND	ND	ND	ND	ND	ND	ND	ND

"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
Bold and green shaded indicates exceedance outside of NMOCD Reclamation Closure Criteria

APPENDIX A - NMOCD C-141 Report

MACK Energy Corporation

Liquid Volume Release Report

Liquid Release Volume Calculator							
Date:	22-Apr-24						
Site or Line Name:	Red Deer CTB						
Soil Type	Porosity	Length	Width	Depth (.083 per inch)	Cubic Feet	Estimated Barrels	Soil Type
Clay	0.15				0	0.00	Clay
Sandy Clay	0.12	100	50	1	5000	106.95	Sandy Clay
Silt	0.16				0	0.00	Silt
Fine Sand	0.16				0	0.00	Fine Sand
Medium Sand	0.25				0	0.00	Medium Sand
Coarse Sand	0.26				0	0.00	Coarse Sand
Gravely Sand	0.26				0	0.00	Gravely Sand
Fine Gravel	0.26				0	0.00	Fine Gravel
Medium Gravel	0.20				0	0.00	Medium Gravel
Coarse Gravel	0.18	150	80	0.083	996	31.96	Coarse Gravel
Sandstone	0.25				0	0.00	Sandstone
Siltstone	0.18				0	0.00	Siltstone
Limestone	0.13				0	0.00	Limestone
Basalt	0.19				0	0.00	Basalt
Standing Liquids	X				0	0.00	Standing Liquids
					Total est. barrels	138.91	

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District IV
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Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 337709

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337709
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Received**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	Red Deer CTB
Date Release Discovered	04/21/2024
Surface Owner	State

Incident Details	
Please answer all the questions in this group.	
Incident Type	Fire
Did this release result in a fire or is the result of a fire	Yes
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Cause: Fire | Separator | Crude Oil | Released: 40 BBL | Recovered: 0 BBL | Lost: 40 BBL.
Produced Water Released (bbls) Details	Cause: Fire | Flow Line - Production | Produced Water | Released: 99 BBL | Recovered: 0 BBL | Lost: 99 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337709
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more;** **(2) an unauthorized release of a volume that:** **(a) results in a fire or is the result of a fire.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 04/25/2024

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337709
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	*Not answered.*
What method was used to determine the depth to ground water	*Not answered.*
Did this release impact groundwater or surface water	*Not answered.*
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	*Not answered.*
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	*Not answered.*
An occupied permanent residence, school, hospital, institution, or church	*Not answered.*
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	*Not answered.*
Any other fresh water well or spring	*Not answered.*
Incorporated municipal boundaries or a defined municipal fresh water well field	*Not answered.*
A wetland	*Not answered.*
A subsurface mine	*Not answered.*
An (non-karst) unstable area	*Not answered.*
Categorize the risk of this well / site being in a karst geology	*Not answered.*
A 100-year floodplain	*Not answered.*
Did the release impact areas not on an exploration, development, production, or storage site	*Not answered.*

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	No
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

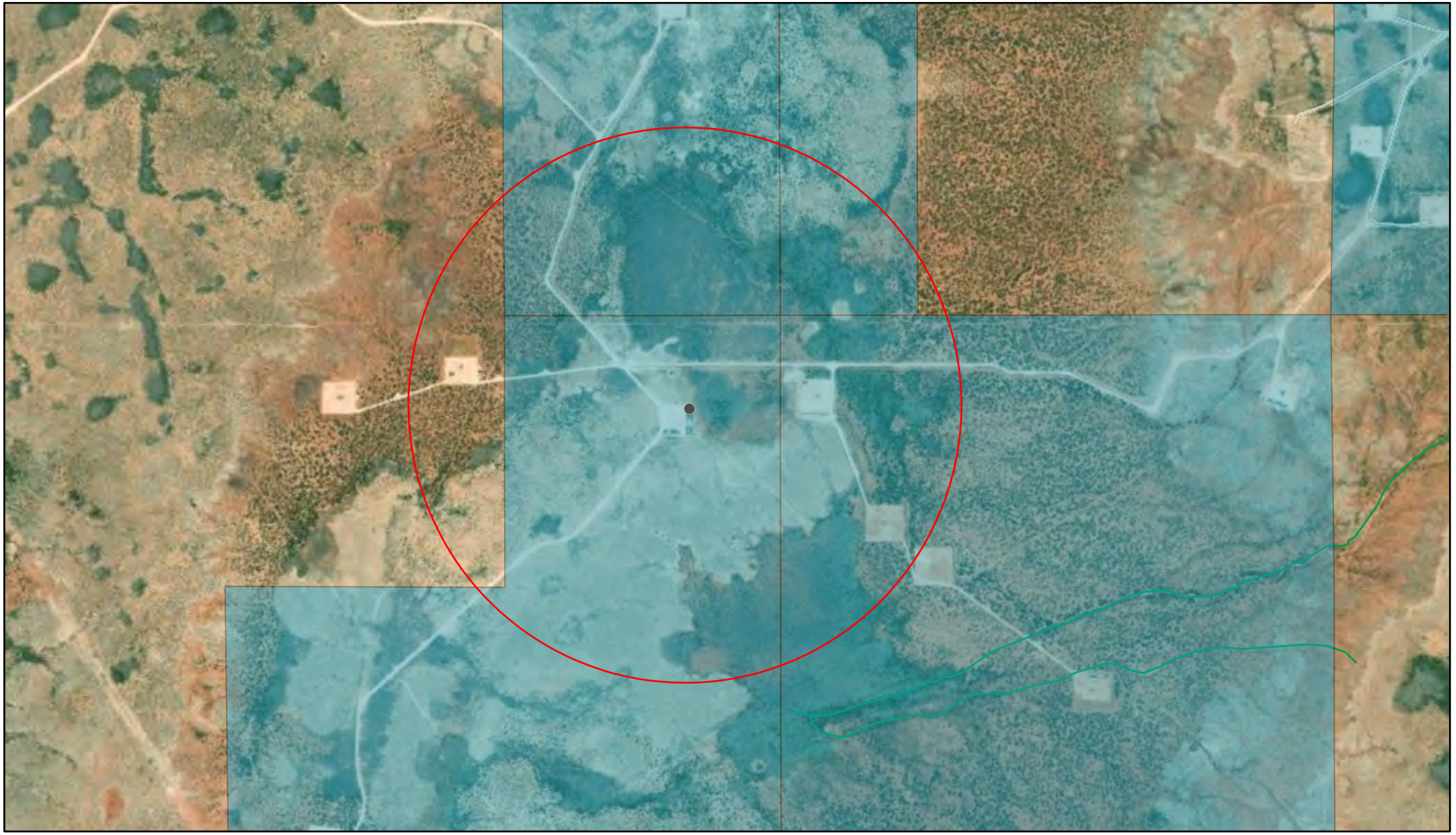
Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337709
	Action Type: [C-141] Initial C-141 (C-141-v-Initial)

CONDITIONS

Created By	Condition	Condition Date
scwells	None	4/26/2024

APPENDIX B – Closure Criteria Research Documentation

OSE POD Location Map - Red Deer



5/6/2024, 2:44:44 PM

OSE District Boundary

New Mexico State Trust Lands

Both Estates

NHD Flowlines

Stream River

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Esri, HERE, iPC, Esri, HERE, Garmin, iPC, Maxar

Online web user

This is an unofficial map from the OSE's online application.

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in me

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 64	q 16	q 4	Sec	Tws	Rng	X	Y
RA 08333	RA	STK	1.47	BOGLE FARMS	CH	RA 08333						1	2	26	15S	28E	584050	3650815*
LWD 03198	RA	PLS	4.95	BOGLE FARMS	CH	LWD 03198 POD1								31	15S	29E	587101	3648631*
LWD 03197	RA	PLS	4.95	BOGLE FARMS	CH	LWD 03197 POD1								30	15S	29E	587075	3650222*
RA 12007	RA	EXP	0	MACK ENERGY	CH	RA 12007 POD1					4	2	3	19	15S	29E	586999	3651508
RA 12006	RA	EXP	0	MACK ENERGY	CH	RA 12006 POD1					2	2	3	19	15S	29E	587049	3651703
LWD 03199	RA	PLS	8.2	BOGLE FARMS	CH	LWD 03199 POD1								32	15S	29E	588712	3648646*
RA 08334	RA	STK	1.88	BOGLE FARMS	CH	RA 08334								21	15S	28E	580629	3651787*
RA 08226	RA	STK	1.34	BOGLE FARMS	ED	RA 08226						1	2	12	16S	28E	581557	3645357*
RA 12428	RA	STK	3	BOGLE LTD.	CH	RA 12428				Shallow	4	2	1	21	15S	28E	580579	3652317

Record Count: 9

UTMNAD83 Radius Search (in meters):

Easting (X): 584407 **Northing (Y):** 3649130 **Radius:** 5000

Sorted by: Distance

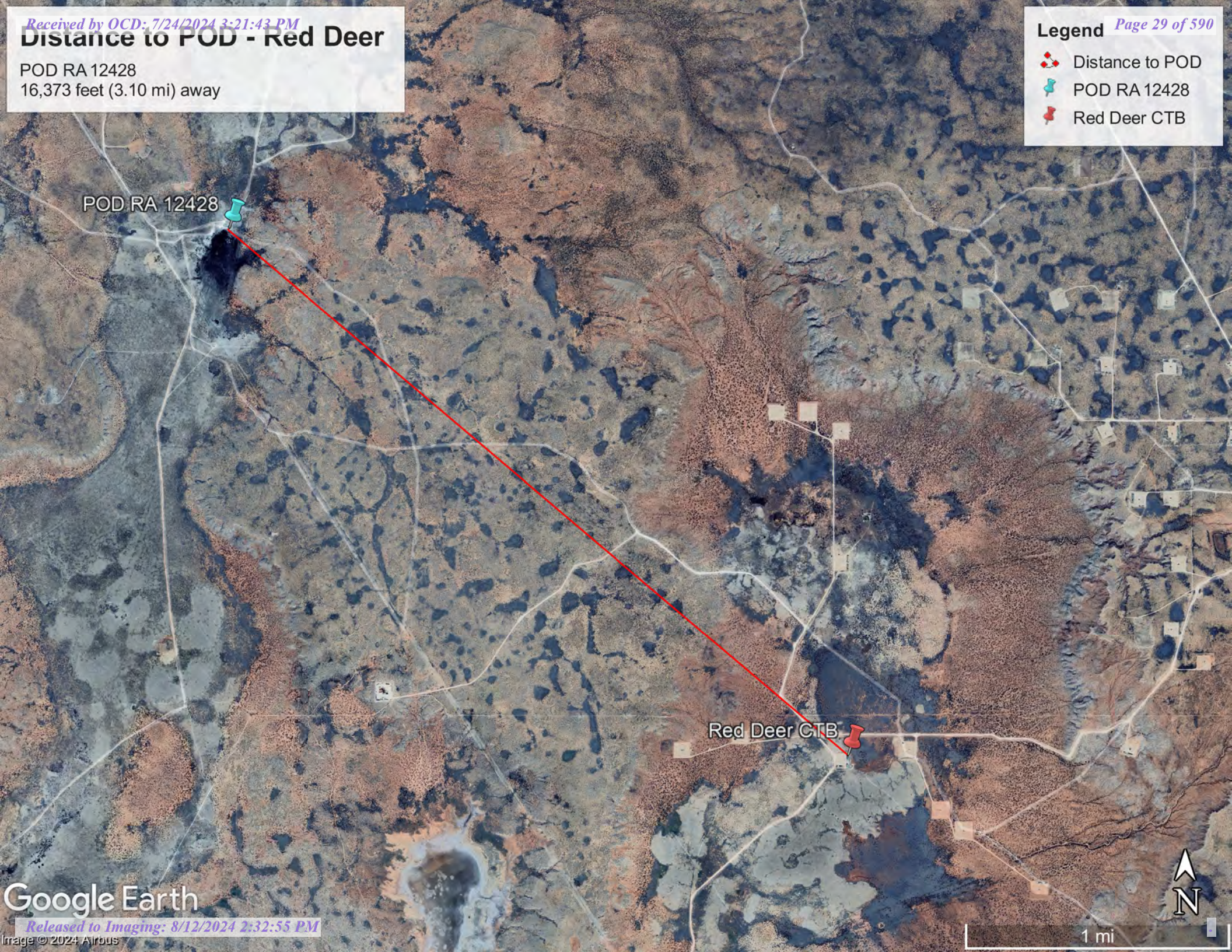
***UTM location was derived from PLSS - see Help**

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Distance to POD - Red Deer

POD RA 12428
16,373 feet (3.10 mi) away



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National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information | Geographic Area: United States | GO

Click to hideNews Bulletins

- Explore the *NEW* USGS National Water Dashboard interactive map to access real-time water data from over 13,500 stations nationwide.
- Full News

USGS 324935104040401 17S.29E.22.112311

Available data for this site SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:
Latitude 32°49'35", Longitude 104°04'04" NAD27
Eddy County, New Mexico , Hydrologic Unit 13060011
Well depth: not determined.
Land surface altitude: 3,541 feet above NAVD88.
Well completed in "Other aquifers" (N9999OTHER) national aquifer.
Well completed in "San Andres Limestone" (313SADR) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1948-11-29	1948-11-29	1

Revisions	Unavailable (site:0) (timeseries:0)

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

---

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U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=324935104040401

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2024-05-06 17:20:38 EDT
0.28 0.26 caww01

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information | Geographic Area: United States | GO

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- Full News

USGS 324936104040501 17S.29E.22.11124

Available data for this site SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:
Latitude 32°49'36", Longitude 104°04'05" NAD27
Eddy County, New Mexico , Hydrologic Unit 13060011
Well depth: not determined.
Land surface altitude: 3,541 feet above NAVD88.
Well completed in "Other aquifers" (N9999OTHER) national aquifer.
Well completed in "San Andres Limestone" (313SADR) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1983-04-14	1983-04-14	1

Revisions	Unavailable (site:0) (timeseries:0)

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

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U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=324936104040501

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2024-05-06 17:35:49 EDT
0.28 0.26 caww01

National Water Information System: Map View

Sites | Map Layers

Search Results

Export Sites

Site Number	Site Name
324935104040401	17S.29E.22.112311
324936104040501	17S.29E.22.11124



Search Parameters

Explanation of Symbols

Received by OCD: 7/24/2024 3:21:43 PM

U.S. Fish and Wildlife Service
National Wetlands Inventory

02 - Watercourse - Red Deer
737.9 feet (0.14 mi) away



May 6, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

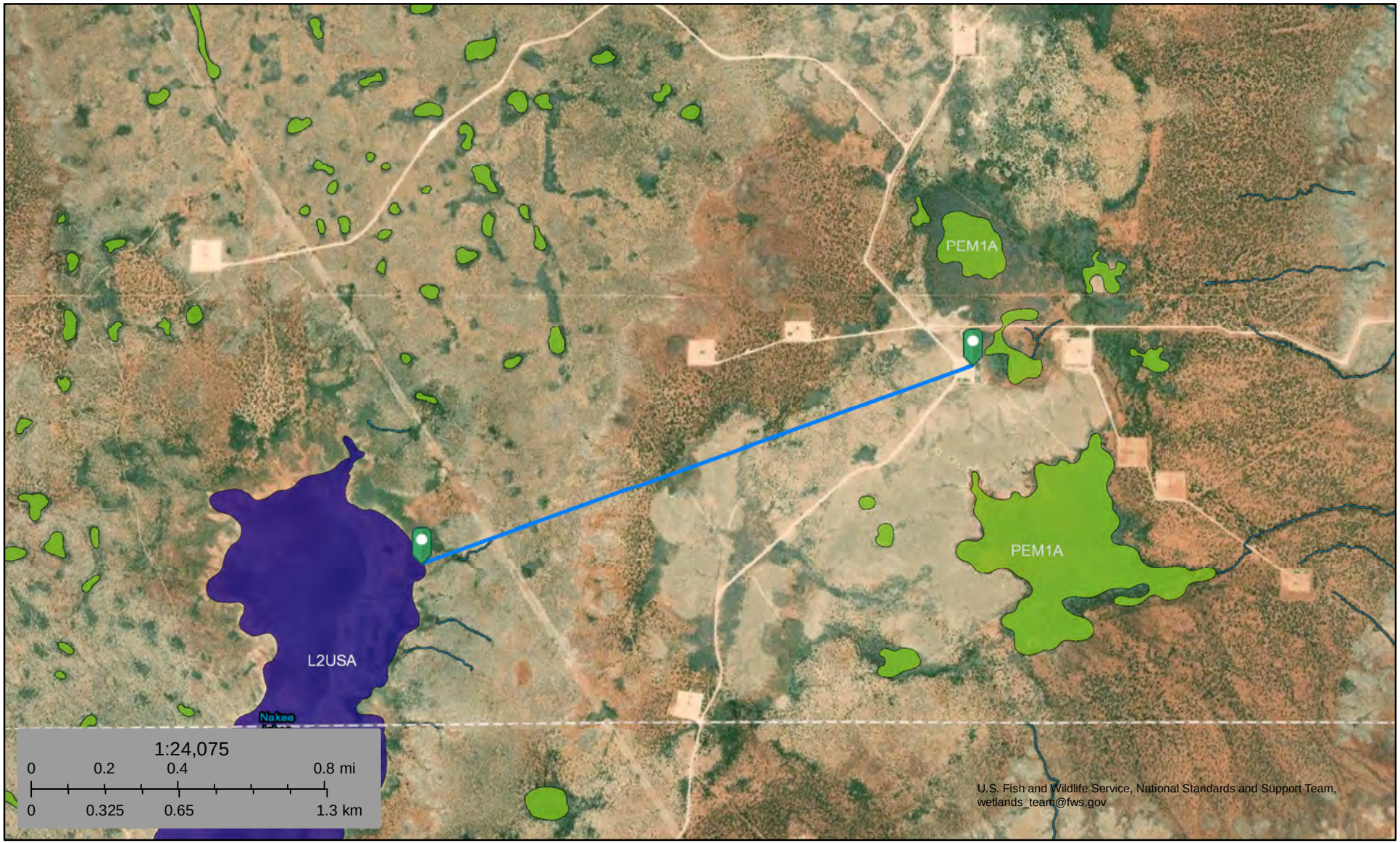
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U.S. Fish and Wildlife Service
National Wetlands Inventory

03 - Lakebed - Red Deer
7,086' (1.34 mi) away



May 6, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

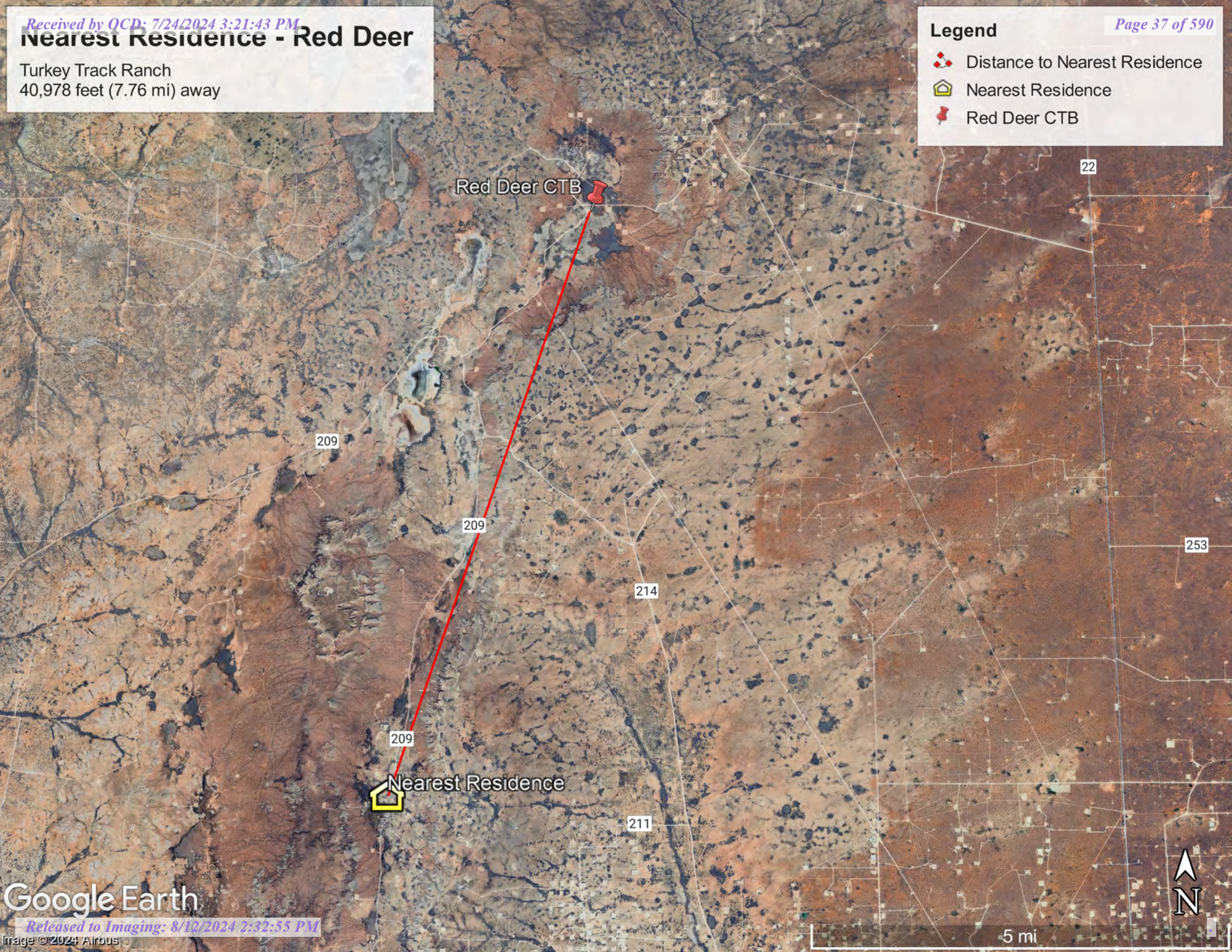
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

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Received by OCD: 7/24/2024 3:21:43 PM

Nearest Residence - Red Deer

Turkey Track Ranch
40,978 feet (7.76 mi) away

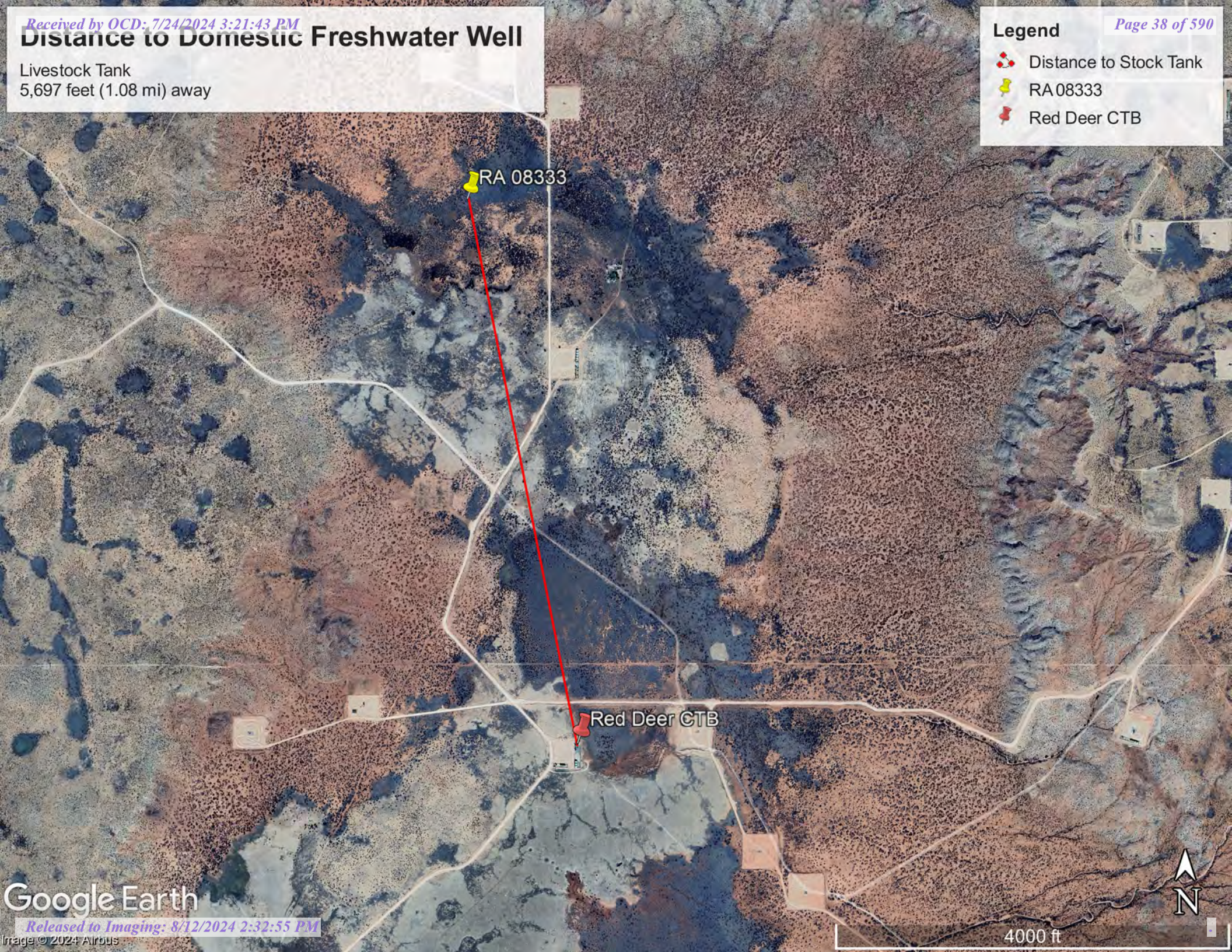


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Distance to Domestic Freshwater Well

Livestock Tank
5,697 feet (1.08 mi) away



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New Mexico Office of the State Engineer
Water Right Summary

WR File Number: RA 08333 **Subbasin:** RA **Cross Reference:** -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: DCL DECLARATION

Total Acres: 0 **Subfile:** - **Header:** -

Total Diversion: 1.47 **Cause/Case:** -

Owner: BOGLE FARMS

Contact: STUART BOGLE

Documents on File

Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
245912	DCL	1991-07-10	DCL	PRC	RA 08333	T	0	1.47	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
RA 08333				1	2	26	15S	28E	584050	3650815*	

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

Priority Summary

Priority	Status	Acres	Diversion	Pod Number
12/31/1914	DCL	0	1.47	RA 08333

Place of Use

Q 256	Q 64	Q16	Q4	Sec	Tws	Rng	Acres	Diversion	CU	Use	Priority	Status	Other Location Desc
	1	2	26	15S	28E		0	1.47		STK	12/31/1914	DCL	

Source

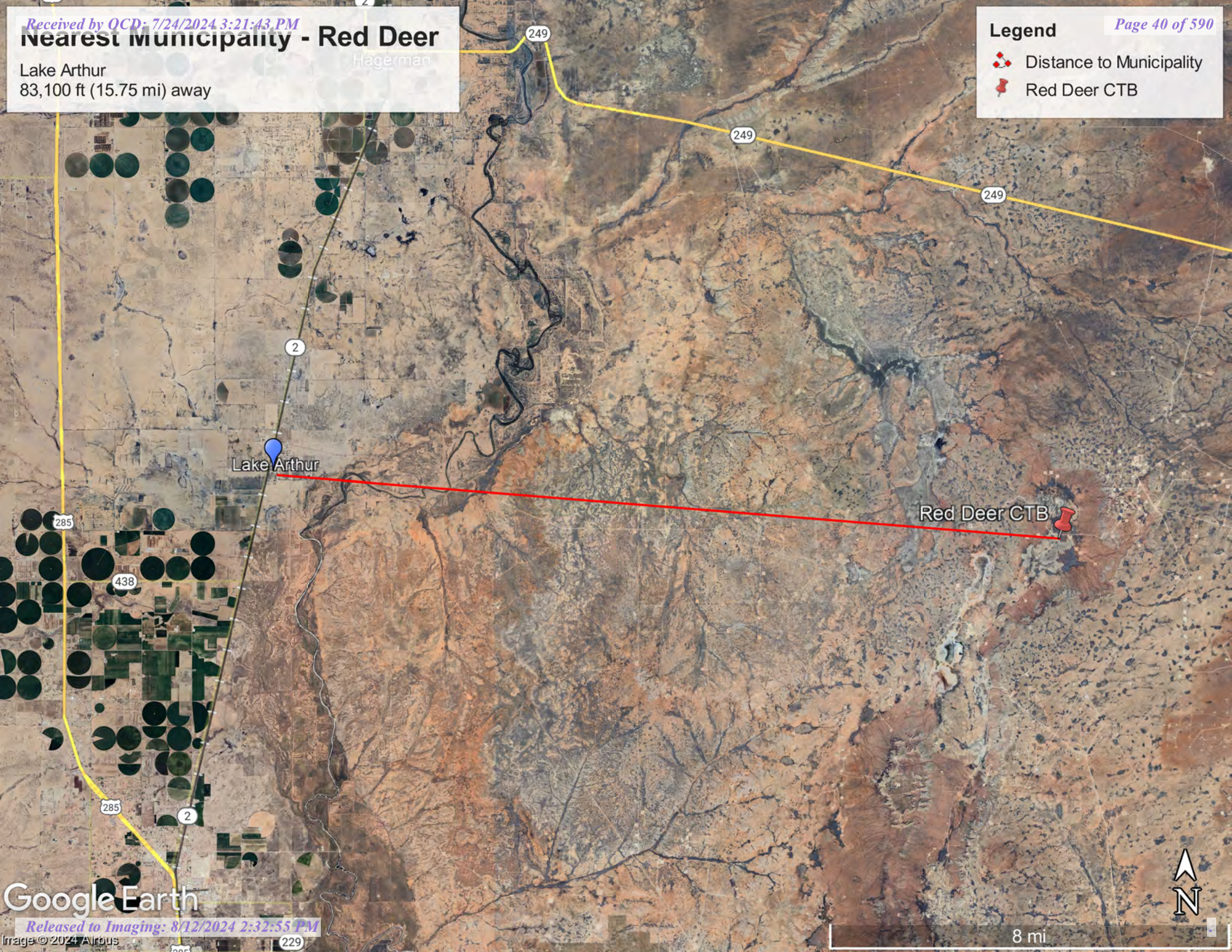
Acres	Diversion	CU	Use	Priority	Source	Description
0	1.47		STK	12/31/1914	GW	SHALLOW

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Nearest Municipality - Red Deer

Lake Arthur
83,100 ft (15.75 mi) away



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U.S. Fish and Wildlife Service
National Wetlands Inventory

07 - Wetland - Red Deer
149 ft (0.03 mi) away



May 6, 2024

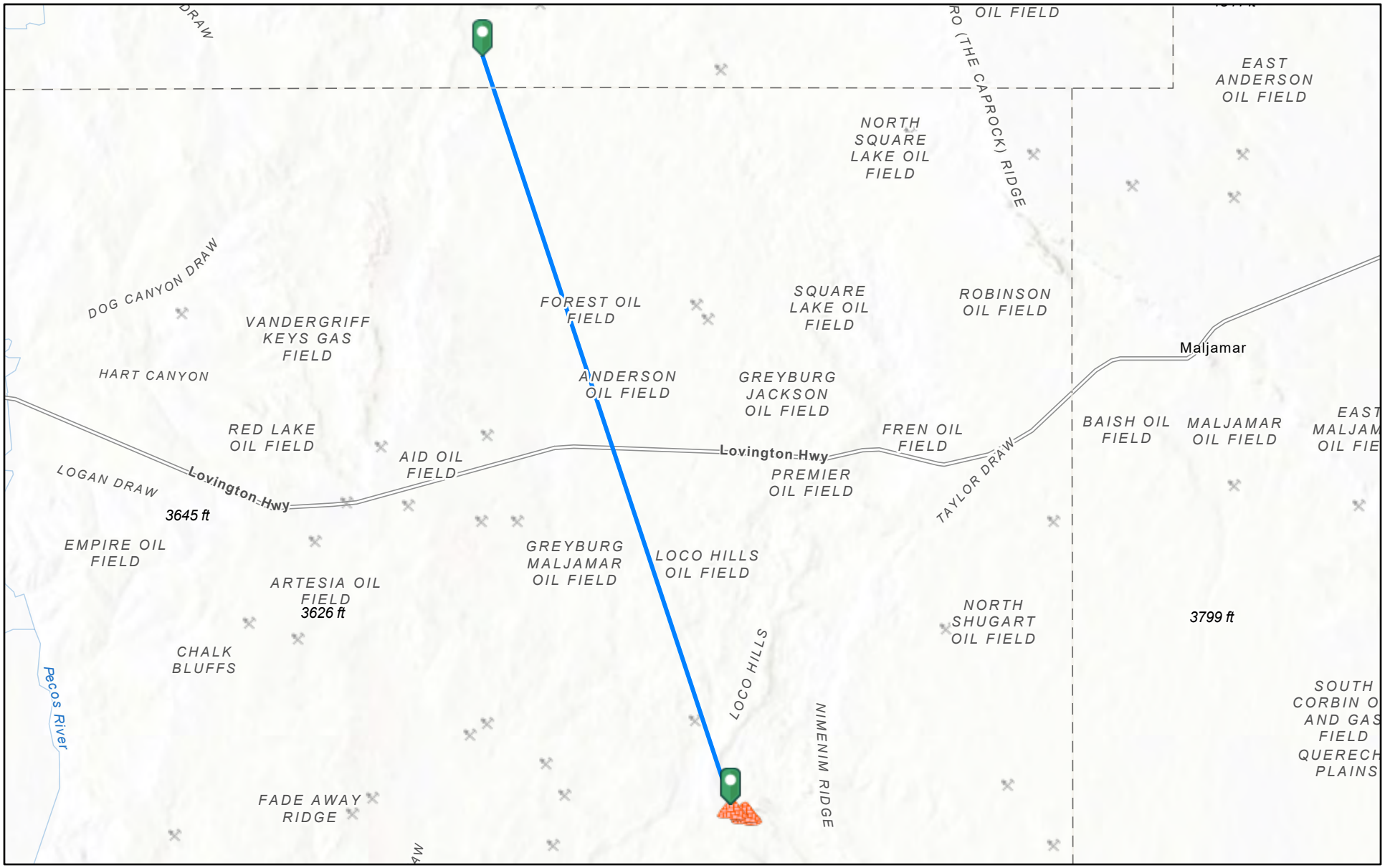
Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Active Subsurface Mines in New Mexico - Red Deer - 115,503' (22mi) away



5/6/2024, 5:15:48 PM

1:288,895

0 2 4 8 mi

0 3.25 6.5 13 km

Registered Mines

Aggregate, Stone etc.

Aggregate, Stone etc.

Aggregate, Stone etc.

Aggregate, Stone etc.

Potash

Esri, NASA, NGA, USGS, Texas Parks & Wildlife, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS

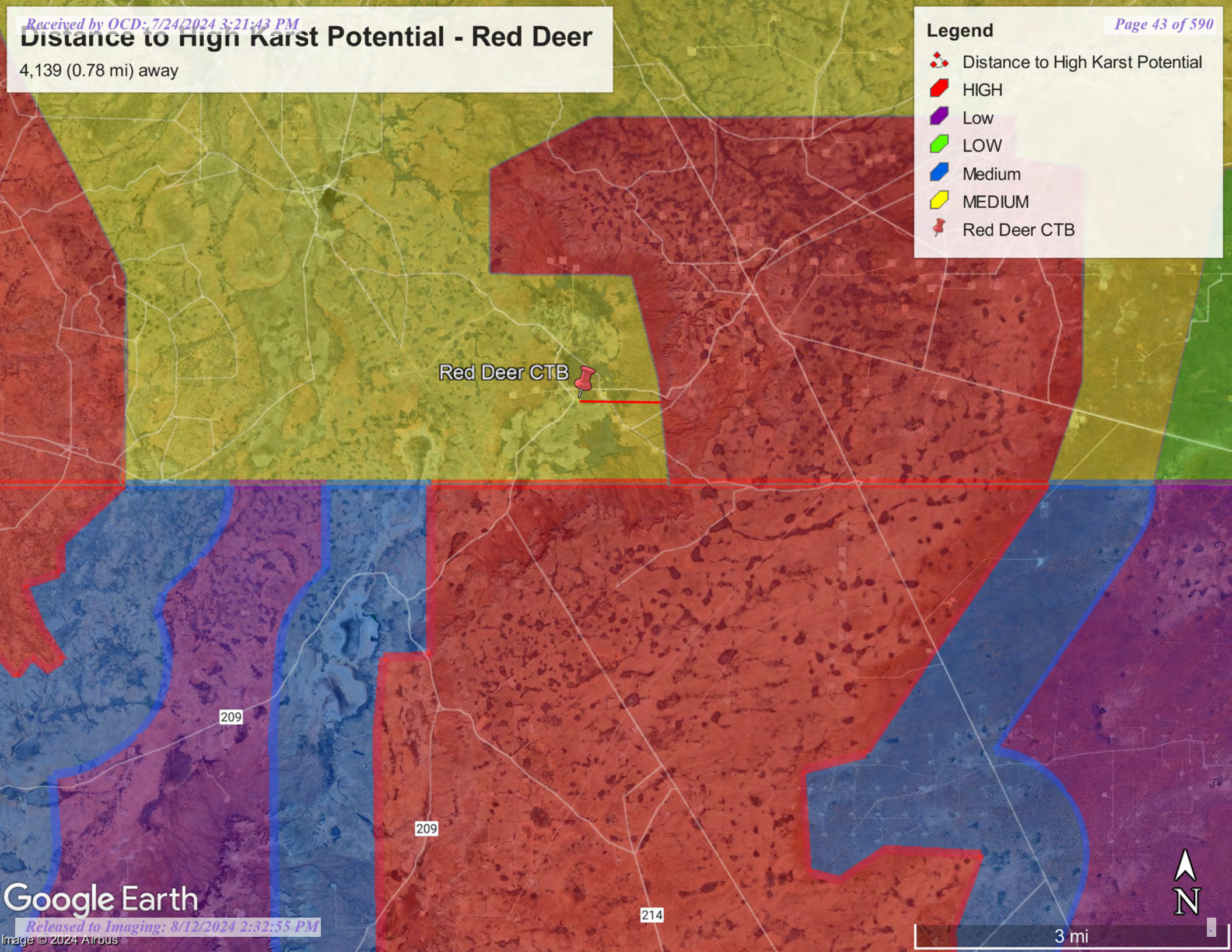
EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e577974664d689b47790897ca2795)

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Distance to High Karst Potential - Red Deer

4,139 (0.78 mi) away

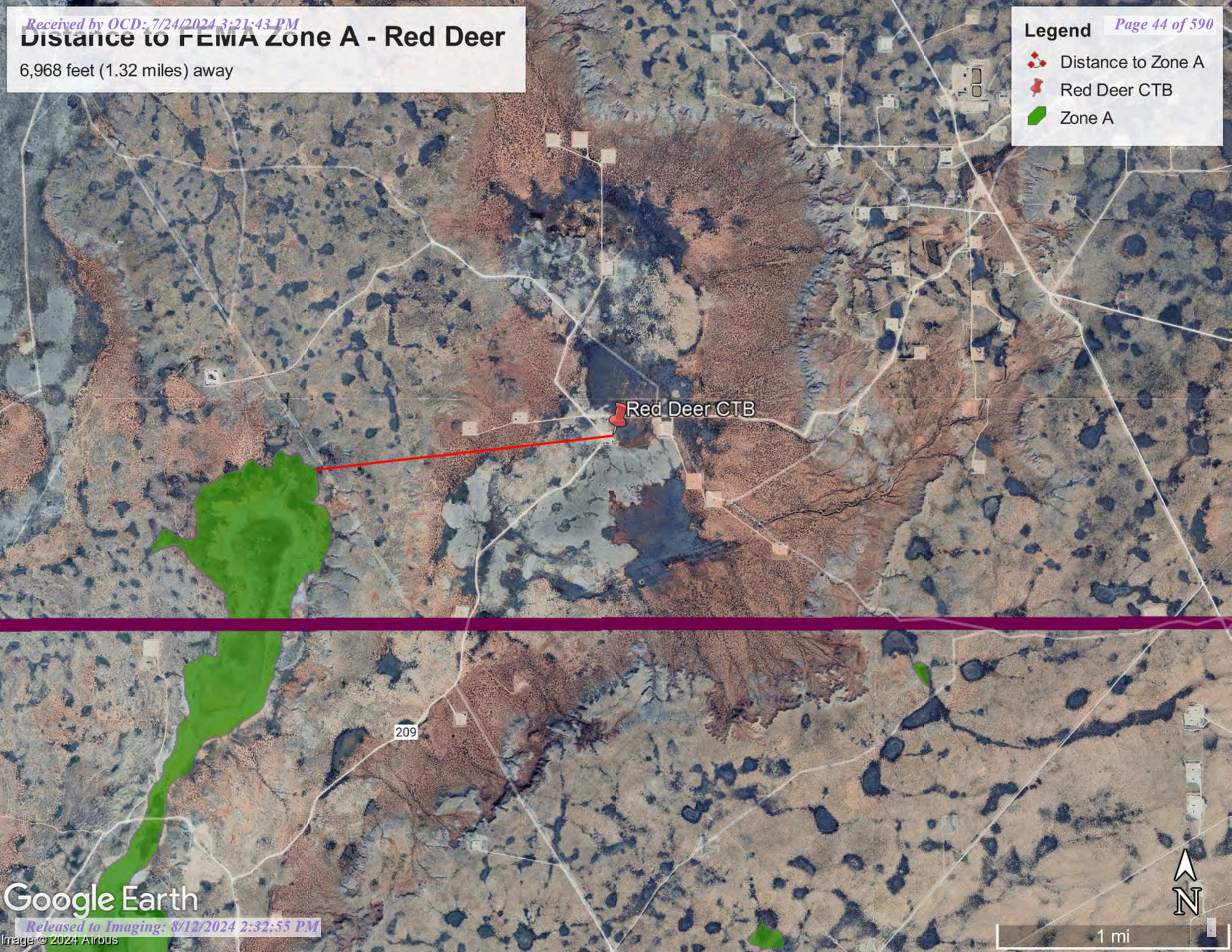


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Distance to FEMA Zone A - Red Deer

6,968 feet (1.32 miles) away



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Received by OCD: 7/24/2024 3:21:43 PM

National Flood Hazard Layer FIRMette

FEMA

104°6'7"W 32°58'53"N



104°5'29"W 32°58'23"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/7/2024 at 4:13 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Chaves County, New Mexico, Southern Part

Mack Energy - Red Deer



May 7, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

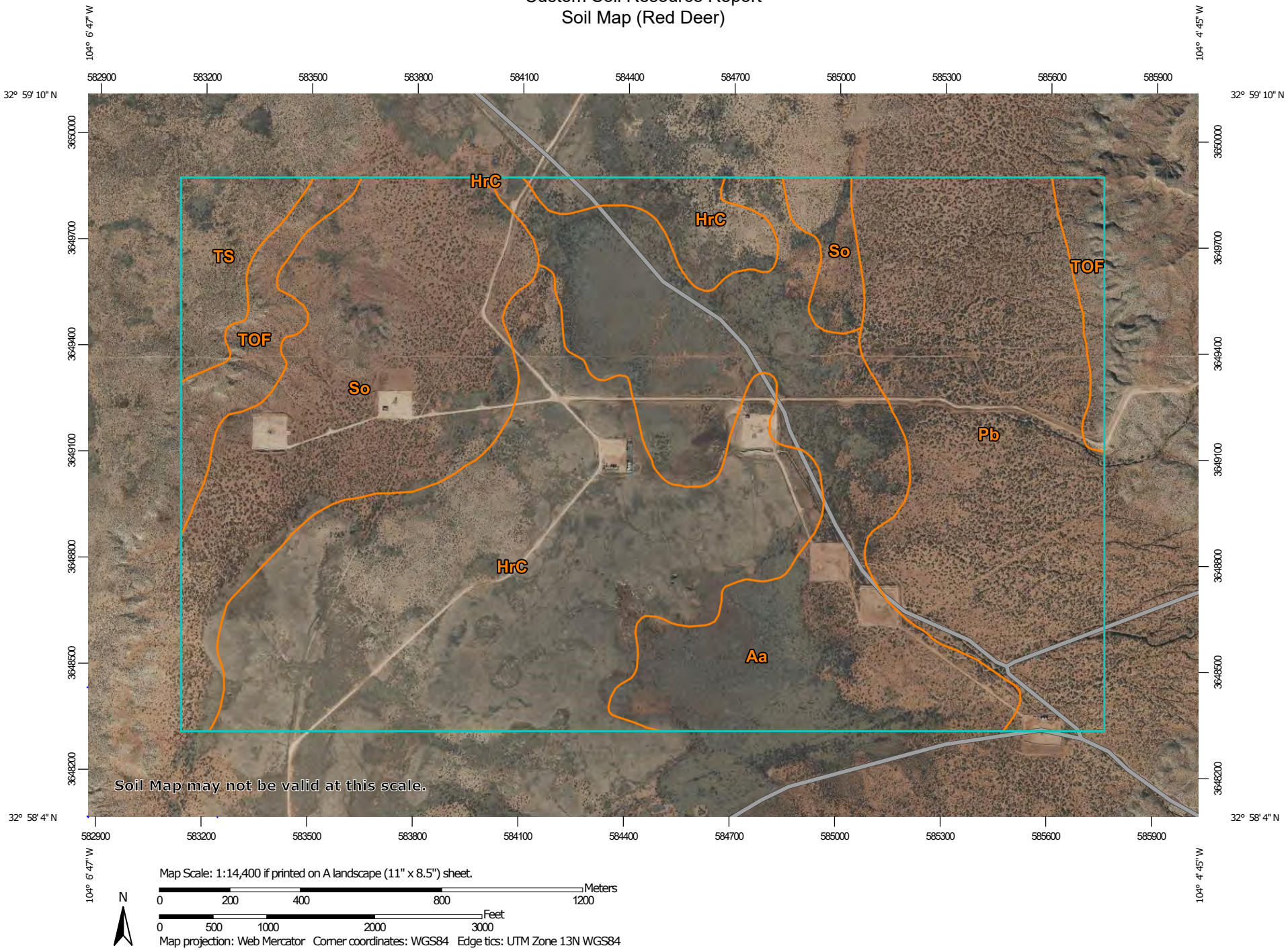
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Red Deer)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Chaves County, New Mexico, Southern Part
Survey Area Data: Version 18, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Red Deer)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Aa	Alama loam	231.2	22.7%
HrC	Holloman-Gypsum land complex, 3 to 5 percent slopes	307.1	30.1%
Pb	Pajarito-Pintura complex	212.8	20.9%
So	Sotim fine sandy loam	192.1	18.8%
TOF	Torriorthents, very steep	46.1	4.5%
TS	Tencee-Sotim association	29.7	2.9%
Totals for Area of Interest		**1,019.0**	**100.0%**

Map Unit Descriptions (Red Deer)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Chaves County, New Mexico, Southern Part

Aa—Alama loam

Map Unit Setting

National map unit symbol: 1w6g
Elevation: 3,200 to 4,200 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 59 to 65 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Alama and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alama

Setting

Landform: Flood plains, swales
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 3 inches: loam
H2 - 3 to 58 inches: clay loam
H3 - 58 to 69 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Minor Components

Pajarito
Percent of map unit: 5 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Berino
Percent of map unit: 5 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Pintura
Percent of map unit: 4 percent
Ecological site: R070BD005NM - Deep Sand
Hydric soil rating: No

Playa
Percent of map unit: 1 percent
Landform: Flood-plain playas
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R070BC017NM - Bottomland
Hydric soil rating: Yes

HrC—Holloman-Gypsum land complex, 3 to 5 percent slopes

Map Unit Setting
National map unit symbol: 1w7b
Elevation: 2,840 to 4,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 195 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition
Holloman and similar soils: 45 percent
Gypsum land: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Holloman

Setting
Landform: Plains, basin floors, valley floors
Landform position (three-dimensional): Riser, rise
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Mixed alluvium and/or eolian deposits derived from sedimentary rock

Typical profile

H1 - 0 to 6 inches: loam
H2 - 6 to 10 inches: gypsiferous material

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 4 to 20 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 75 percent
Maximum salinity: Slightly saline to strongly saline (4.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 6.0
Available water supply, 0 to 60 inches: Very low (about 0.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R070BB006NM - Gyp Upland
Hydric soil rating: No

Description of Gypsum Land

Setting

Landform: Plains, basin floors, valley floors
Landform position (three-dimensional): Riser, rise
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium and/or eolian deposits derived from sedimentary rock

Typical profile

H1 - 0 to 60 inches: gypsiferous material

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: 0 inches to paralithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 80 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 6.0

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Minor Components

Balmorhea

Percent of map unit: 15 percent
Ecological site: R070BC033NM - Salty Bottomland
Hydric soil rating: No

Pb—Pajarito-Pintura complex

Map Unit Setting

National map unit symbol: 1w7s
Elevation: 3,300 to 3,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 59 to 65 degrees F
Frost-free period: 200 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Pajarito and similar soils: 55 percent
Pintura and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pajarito

Setting

Landform: Plains, terraces, alluvial fans
Landform position (three-dimensional): Side slope, base slope, crest, rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium and/or eolian deposits derived from sedimentary rock

Typical profile

H1 - 0 to 5 inches: fine sandy loam
H2 - 5 to 46 inches: fine sandy loam
H3 - 46 to 60 inches: fine sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Description of Pintura

Setting
Landform: Dunes
Landform position (three-dimensional): Head slope, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed eolian deposits derived from sedimentary rock

Typical profile
H1 - 0 to 3 inches: loamy fine sand
H2 - 3 to 38 inches: loamy fine sand
H3 - 38 to 60 inches: fine sand

Properties and qualities
Slope: 3 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 7 percent
Maximum salinity: Very slightly saline to strongly saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 3.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: R070BD005NM - Deep Sand
Hydric soil rating: No

Minor Components

Alama
Percent of map unit: 5 percent
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Simona
Percent of map unit: 5 percent
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Berino

Percent of map unit: 5 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

So—Sotim fine sandy loam

Map Unit Setting

National map unit symbol: 1w8c
Elevation: 3,200 to 4,500 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 59 to 65 degrees F
Frost-free period: 190 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Sotim and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sotim

Setting

Landform: Plains, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium and/or eolian deposits derived from sedimentary rock

Typical profile

H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 70 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 9 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Russler

Percent of map unit: 4 percent
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Gypsum land

Percent of map unit: 4 percent
Hydric soil rating: No

Tencee

Percent of map unit: 3 percent
Ecological site: R070BC025NM - Shallow
Hydric soil rating: No

Reeves

Percent of map unit: 3 percent
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Ravine

Percent of map unit: 1 percent
Landform: Streams, arroyos, perenial streams, ravines
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R070BC033NM - Salty Bottomland
Hydric soil rating: Yes

TOF—Torriorthents, very steep

Map Unit Setting

National map unit symbol: 1w8d
Elevation: 2,840 to 4,500 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 190 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Torriorthents: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Torriorthents

Setting

Landform: Escarpments, scarps
Landform position (three-dimensional): Free face
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Mixed alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

H1 - 0 to 6 inches: gravelly loam
H2 - 6 to 20 inches: gravelly sandy clay loam
H3 - 20 to 24 inches: bedrock

Properties and qualities

Slope: 30 to 80 percent
Depth to restrictive feature: 10 to 60 inches to lithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Calcium carbonate, maximum content: 7 percent
Gypsum, maximum content: 3 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydric soil rating: No

Minor Components

Ima

Percent of map unit: 8 percent
Ecological site: R070BY055NM - Sandy Plains
Hydric soil rating: No

Rock outcrop

Percent of map unit: 7 percent
Hydric soil rating: No

TS—Tencee-Sotim association

Map Unit Setting

National map unit symbol: 1w8f
Elevation: 3,200 to 6,000 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 55 to 65 degrees F

Frost-free period: 140 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Tencee and similar soils: 50 percent
Sotim and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tencee

Setting

Landform: Hillslopes, low hills
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, base slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous alluvium and/or eolian deposits derived from sedimentary rock

Typical profile

H1 - 0 to 2 inches: gravelly fine sandy loam
H2 - 2 to 9 inches: very gravelly loam
H3 - 9 to 13 inches: cemented material

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 45 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Very low (about 0.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R070BC025NM - Shallow
Hydric soil rating: No

Description of Sotim

Setting

Landform: Plains, alluvial fans
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Mixed alluvium and/or eolian deposits derived from sedimentary rock

Typical profile

H1 - 0 to 7 inches: fine sandy loam
H2 - 7 to 70 inches: clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Gypsum, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Simona

Percent of map unit: 5 percent
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Berino

Percent of map unit: 5 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Pecos

Percent of map unit: 5 percent
Ecological site: R070BC008NM - Draw
Hydric soil rating: No

Rock outcrop

Percent of map unit: 4 percent
Ecological site: R042CY158NM - Very Shallow
Hydric soil rating: No

Playa

Percent of map unit: 1 percent
Landform: Flood-plain playas
Landform position (three-dimensional): Dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R070BC017NM - Bottomland
Hydric soil rating: Yes

Custom Soil Resource Report

Soil Information for All Uses

Ecological Sites

Individual soil map unit components can be correlated to a particular ecological site. The Ecological Site Assessment section includes ecological site descriptions, plant growth curves, state and transition models, and selected National Plants database information.

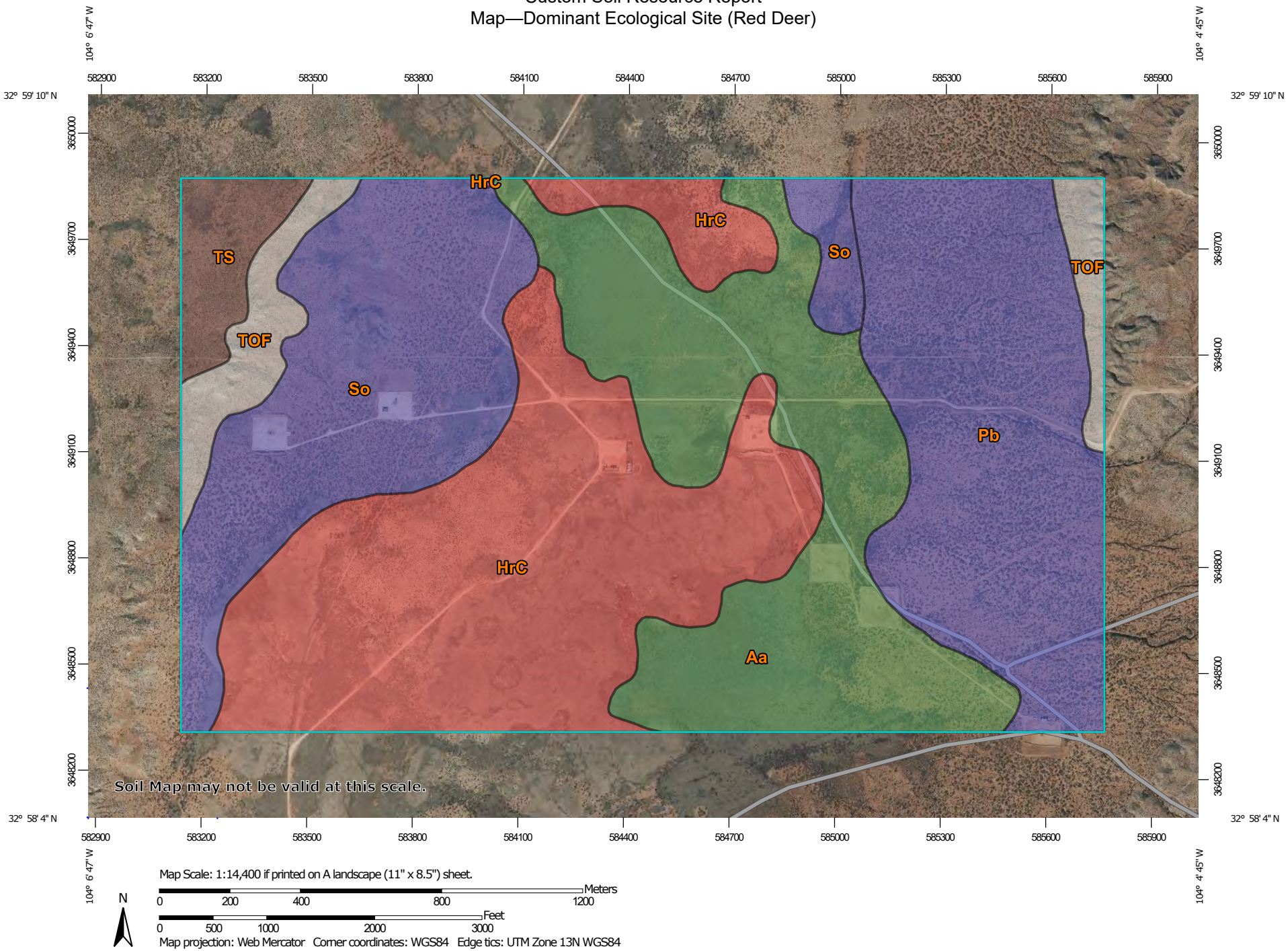
All Ecological Sites — (Red Deer)

An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site ID" is the symbol assigned to a particular ecological site.

The map identifies the dominant ecological site for each map unit, aggregated by dominant condition. Other ecological sites may occur within each map unit. Each map unit typically consists of one or more components (soils and/or miscellaneous areas). Each soil component is associated with an ecological site. Miscellaneous areas, such as rock outcrop, sand dunes, and badlands, have little or no soil material and support little or no vegetation and therefore are not linked to an ecological site. The table below the map lists all of the ecological sites for each map unit component in your area of interest.

Custom Soil Resource Report
Map—Dominant Ecological Site (Red Deer)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- R070BB006NM
- R070BC007NM
- R070BC025NM
- R070BD004NM
- Not rated or not available

Soil Rating Lines
- R070BB006NM
- R070BC007NM
- R070BC025NM
- R070BD004NM
- Not rated or not available

Soil Rating Points
- R070BB006NM
- R070BC007NM
- R070BC025NM
- R070BD004NM
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Chaves County, New Mexico, Southern Part
Survey Area Data: Version 18, Sep 7, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 12, 2022—Dec 2, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Ecological Sites by Map Unit Component (Red Deer)

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
Aa	Alama loam	Alama (85%)	R070BC007NM — Loamy	231.2	22.7%
		Berino (5%)	R070BD004NM — Sandy		
		Pajarito (5%)	R070BD004NM — Sandy		
		Pintura (4%)	R070BD005NM — Deep Sand		
		Playa (1%)	R070BC017NM — Bottomland		
HrC	Holloman-Gypsum land complex, 3 to 5 percent slopes	Holloman (45%)	R070BB006NM — Gyp Upland	307.1	30.1%
		Gypsum land (40%)			
		Balmorhea (15%)	R070BC033NM — Salty Bottomland		
Pb	Pajarito-Pintura complex	Pajarito (55%)	R070BD004NM — Sandy	212.8	20.9%
		Pintura (30%)	R070BD005NM — Deep Sand		
		Alama (5%)	R070BC007NM — Loamy		
		Berino (5%)	R070BD004NM — Sandy		
		Simona (5%)	R070BD002NM — Shallow Sandy		
So	Sotim fine sandy loam	Sotim (85%)	R070BD004NM — Sandy	192.1	18.8%
		Gypsum land (4%)			
		Russler (4%)	R070BC007NM — Loamy		
		Reeves (3%)	R070BC007NM — Loamy		
		Tencee (3%)	R070BC025NM — Shallow		
		Ravine (1%)	R070BC033NM — Salty Bottomland		
TOF	Torriorthents, very steep	Torriorthents (85%)		46.1	4.5%
		Ima (8%)	R070BY055NM — Sandy Plains		
		Rock outcrop (7%)			
TS	Tencee-Sotim association	Tencee (50%)	R070BC025NM — Shallow	29.7	2.9%

Custom Soil Resource Report

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
		Sotim (30%)	R070BD004NM — Sandy		
		Berino (5%)	R070BD004NM — Sandy		
		Pecos (5%)	R070BC008NM — Draw		
		Simona (5%)	R070BD002NM — Shallow Sandy		
		Rock outcrop (4%)	R042CY158NM — Very Shallow		
		Playa (1%)	R070BC017NM — Bottomland		
Totals for Area of Interest				**1,019.0**	**100.0%**

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USDA Natural Resources Conservation Service

Ecological site R070BB006NM
Gyp Upland

Accessed: 05/08/2024

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on valley floors, plains, fan piedmonts, piedmont slopes or relic lakebeds on basins. The parent material consists of mixed alluvium and or eolian deposits derived from sedimentary rock or residuum weathered from gypsum. Slopes range from 0 to 35 percent and average less than 8 percent. The soil does not meet hydric critera, the calcium carbonate equivalent with in the control section is less than 20 percent and gypsum percent greater than 40 percent. Elevations range from 2,800 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Fan remnant (3) Basin-floor remnant
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	None to occasional
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None to rare
Elevation	2,800–5,000 ft
Slope	0–35%
Aspect	Aspect is not a significant factor

Climatic features

The frost free season ranges from180 to 221 days between early April and late October. The optimum growing season of the major native warm season plants coincides with the summer rains during June, July, August, and September. However, plants can make some growth at any time during the frost free period when moisture is available and minimum daily temperatures stay above 51 degrees F.

Vegetation on this site will be limited to plants which can take advantage of moisture at the time it falls, since the

soil profiles have large amounts of available water for short periods of time and then rapidly dry. The majority of precipitation comes in the form of high intensity, short duration thunderstorms. Little or no available moisture can be stored in the soil profiles of this site. Strong winds from the southwest blow during January through June which accelerate soil drying within the plant root zone and further discourage cool season plant growth or occupancy of the site.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

Table 3. Representative climatic features

Frost-free period (average)	221 days
Freeze-free period (average)	240 days
Precipitation total (average)	13 in

Influencing water features

This site is not influenced by water from wetlands or streams.

Soil features

Soils are shallow to moderately deep to gypsum material. Surface and subsurface textures range from loam, fine sandy loam or sandy loam. Substratum is a dense layers of soft or cemented gypsum material and gypsiferous earth at various depths. The gypsum materials commonly outcrop to the surface as inclusions of raw gypsumland which are void of vegetation and not part of the ecological site. In the lower part of the profile the semi indurated gypsum and caliche make up about 75 percent of the mass and are restrictive to root development. The plant, soil, air, water relationship is poor. The site has a droughty appearance because of the soils inability to support a dense stand of vegetation. If unprotected by plant cover or organic residue, the soil becomes easily wind blown and water eroded.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic Soils:
Holloman
Alamogordo
Aztec
Cottonwood
McCullough
Malargo
Reeves
Reflection
Yesum

Table 4. Representative soil features

Surface texture	(1) Gypsiferous fine sandy loam (2) Loam (3) Sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderate

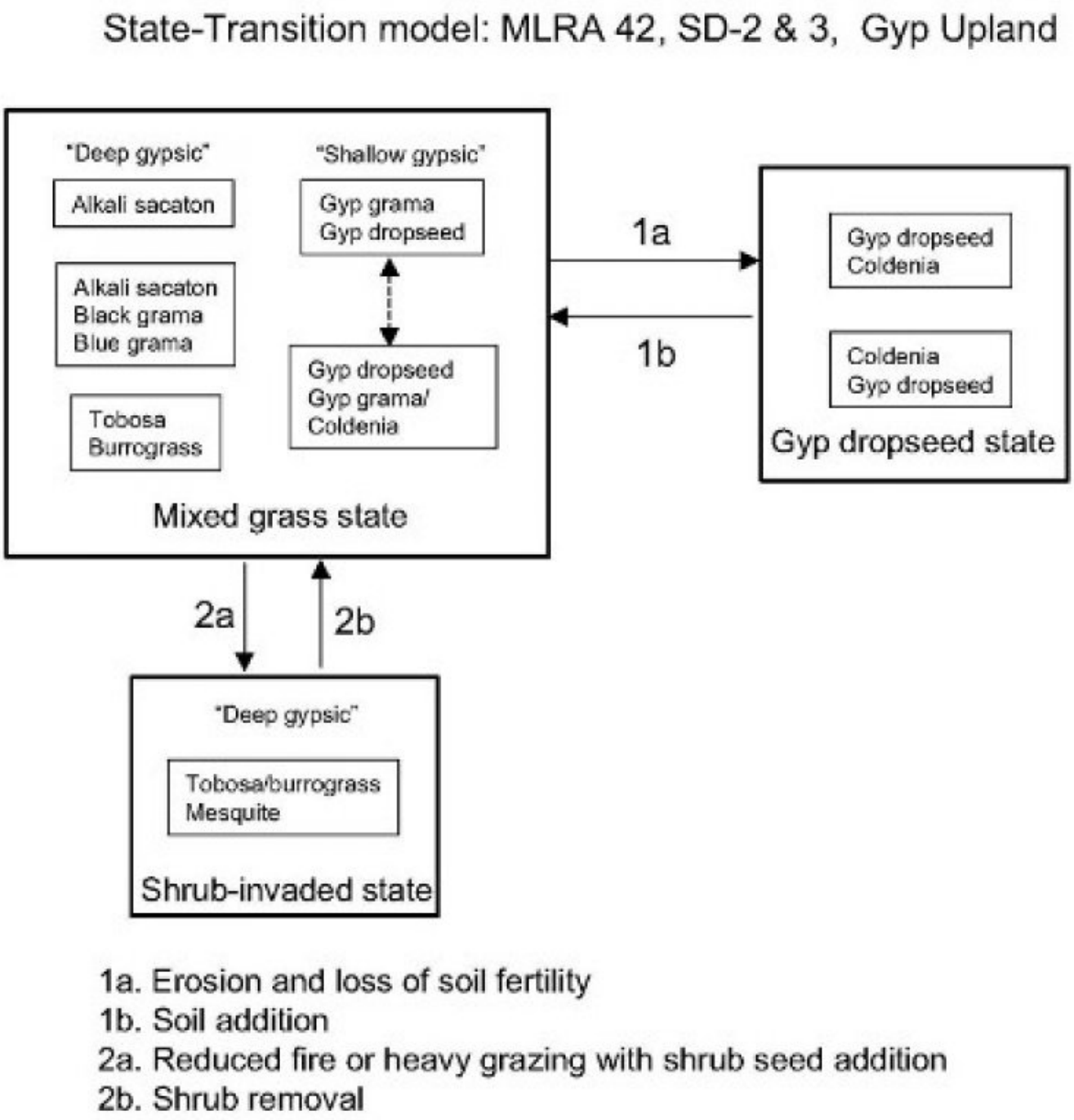
Soil depth	25–72 in
Surface fragment cover <=3"	0–3%
Surface fragment cover >3"	0–1%
Available water capacity (0-40in)	4–8 in
Calcium carbonate equivalent (0-40in)	5–30%
Electrical conductivity (0-40in)	2–16 mmhos/cm
Sodium adsorption ratio (0-40in)	0–1
Soil reaction (1:1 water) (0-40in)	7.4–8.6
Subsurface fragment volume <=3" (Depth not specified)	0–8%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Overview

The vegetation of this site often intergrades with that of Loamy sites, depending on the amounts of gypsum, soil texture, and depths of gypsic horizons. Low-lying areas where run-in water occurs behave like draws. Areas where gypsum outcrops are exposed harbor little vegetation. Gyp Uplands may intergrade with the Salt Flats site depending on salinity levels. Thus, the vegetation of this site is very patchy, variable, and difficult to characterize. The historic plant community types that are likely to be associated with the gyp uplands site include 1) an alkali sacaton (*Sporobolus airoides*) and black grama (*Bouteloua eriopoda*) or blue grama (*B. gracilis*)-dominated community associated with soils having relatively deep (> 10 “) gypsic horizons and 2) a gyp grama (*Bouteloua breviseta*) and gyp dropseed (*Sporobolus nealleyi*)-dominated community on soils with shallow (< 10”) gypsic horizons. Tobosa (*Pleuraphis mutica*), burrograss (*Scleropogon brevifolius*), and/or saltbush (*Atriplex canescens*) may also dominate depending on texture, land-use history, or other features. The subshrub Coldenia (Coldenia spp) increasingly dominates sites with very shallow gypsic horizons as grasses decline. Gyp upland sites are susceptible to erosion when vegetation cover is reduced due to drought and overgrazing. Mesquite (*Prosopis glandulosa*) may invade soils with deeper gypsic horizons within the site that are dominated by tobosa or burrograss. Erosion of A horizons bring gypsic horizons closer to the surface and can shift community composition to dominance by gyp dropseed, coldenia, and bare soil.

State and transition model



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

This site has a grassland aspect with patches of bare or lichen covered soil surface exposed between patches of vegetation. The potential plant community is dominated by alkali sacaton, short and mid grass perennials and forbs, with half shrubs and shrubs sparsely and evenly distributed. Mixed grassland State: Alkali sacaton, black grama, and blue grama (only in SD-3) dominate soils that have relatively deep gypsic horizons that are deeper than 10" (e.g. Reeves series). Saltbush may be an abundant shrub. Alkali sacaton cover may be continuous in run-in settings surrounded by sparsely vegetated areas (alkali sacaton community). On fine-silty or fine loamy calcareous gypsid soils (e.g. Milner or Reeves series), tobosa or burrograss may be dominant. Dominance by burrograss or tobosa

might represent grazing-induced retrogression from an alkali sacaton-grama community type on these soils, but this has not been confirmed. In some cases, saltbush may be extremely dominant, (e.g. Malargo series) but it is not clear why. Gyp grama, black grama, and gyp dropseed dominate soils with shallow gypsic horizons and gyp dropseed, mormon tea (Ephedra spp.), and coldenia tend to dominate where the gypsic horizon is shallowest (< 3”). These communities exhibit low production, perhaps due to the comparatively shallow infiltration in gypsic soil and other chemical properties (Campbell and Campbell 1938). Outcrops of gypsum, often revealing a whitish floury mass at the surface, may be devoid of vegetation. Heavy grazing may reduce grama grasses and increase the dominance of gyp dropseed and coldenia, but it is important to recognize that these plants may dominate some patches without heavy grazing. Soil degradation due to surface compaction and reduced infiltration may be important on this site and result in reduced grass cover. Slight variations in the depth to the gypsic horizon, whether human induced or not, exert a powerful control on plant community composition. Where gypsic horizons are deep, soil texture or soil chemistry may govern composition. Diagnosis: Soils with deeper gypsic horizons should have continuous grass cover with a high representation of alkali sacaton and black grama. Shallower soils should have gyp grama and black grama but gyp outcrops will be dominated by gyp dropseeds or coldenia. Depending upon the depths to a gypsic horizon, large (< 1 m) bare patches may be common but they should not be common where the depth to gypsic horizon is greater than 5”. This site has a grassland aspect with patches of bare or lichen covered soil surface exposed between patches of vegetation. The potential plant community is dominated by alkali sacaton, short and mid grass perennials and forbs, with half shrubs and shrubs sparsely and evenly distributed.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	300	470	640
Forb	45	71	96
Shrub/Vine	30	47	64
Total	**375**	**588**	**800**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	25%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	16%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	57%

Figure 5. Plant community growth curve (percent production by month). NM2806, R042XC006NM Gyp Upland HCPC. R042XC006NM Gyp Upland HCPC Warm Season Plant Community.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	10	10	25	30	15	5	0	0

State 2
Transition to gyp dropseed

Community 2.1
Transition to gyp dropseed

Transition to gyp dropseed state (1a): Reduced grass cover caused by poor grazing management and/or drought may result in erosion of surface horizons. As the depth to the gypsic horizon decreases, plant communities will become increasingly dominated by gyp dropseed and/or coldenia. Mechanical disturbance of the soil surface and soil degradation may contribute to this effect. Key indicators of approach to transition: Increased bare ground, pedestalling, water flow patterns, blowouts, and eventually the loss of the A horizon.

State 3
Transition to shrub-invaded state

Community 3.1
Transition to shrub-invaded state

Transition to shrub-invaded state (2a): Reduced grass cover in deep gypsic soils may result in mesquite invasion. Key indicators of approach to transition: Increasing bare ground, presence of mesquite seedlings. Shrub-invaded: On deep gypsic soils and soils with less strong gypsic horizons (i.e. have a lower percentage of gypsum) within this site, mesquite may invade and cause some reduction in grass cover due to competition with grasses. These communities are dominated by tobosa or burrograss. Saltbush may also be an important component. It is not known if shrub presence and resulting erosion may result in the loss of dominant perennial grasses across broad areas on gypsic soils. As soil characteristics grade toward those of the loamy ecological site, widespread grass loss may be increasingly probable. Diagnosis: Moderate densities of mesquite, bare ground patches associated with mesquite patches.

State 4
Transition to mixed grassland (2b)

Community 4.1
Transition to mixed grassland (2b)

Transition to mixed grassland (2b): Shrub removal may result in the eventual recovery of perennial grasses. Gyp dropseed: These communities are dominated by gyp dropseed or coldenia, and often exhibit high amounts of bare ground and exposed gypsum at the surface. Gyp grama, black grama, and alkali sacaton may persist in small patches, especially in low-lying spots receiving run-in water and/or in which soils are protected from erosion. The frequency with which these community types represent degradation from mixed grassland due to poor management versus “natural” is unknown. The conditions under which gyp dropseed and coldenia dominate are unknown. Diagnosis: Dominance by gyp dropseed or coldenia, high amounts of bare ground, sometimes associated with a high cover of microbiotic crusts.

State 5
Transition to mixed grassland (1b)

Community 5.1
Transition to mixed grassland (1b)

Transition to mixed grassland (1b): Restoration or recovery of a non-gypsic A horizon would be required. Information sources and theoretical background: Communities, states, and transitions are based upon information in the ecological site description and observations by Brandon Bestelmeyer, Jornada Experimental Range and David Trujillo, NRCS. Information on the the role of gypsum in concert with soil chemical features in determining plant composition is sorely needed.

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)

Grass/Grasslike					
1	**Warm Season**			266–323	
	alkali sacaton	SPAI	*Sporobolus airoides*	266–323	–
2	**Warm Season**			29–88	
	black grama	BOER4	*Bouteloua eriopoda*	29–88	–
3	**Warm Season**			6–59	
	gypsum grama	BOBR	*Bouteloua breviseta*	6–59	–
4	**Warm Season**			18–88	
	bush muhly	MUPO2	*Muhlenbergia porteri*	18–88	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	18–88	–
5	**Warm Season**			6–18	
	gyp dropseed	SPNE	*Sporobolus nealleyi*	6–18	–
6	**Warm Season**			6–18	
	sand dropseed	SPCR	*Sporobolus cryptandrus*	6–18	–
7	**Warm Season**			6–18	
	blue grama	BOGR2	*Bouteloua gracilis*	6–18	–
8	**Warm Season**			18–88	
	threeawn	ARIST	*Aristida*	18–88	–
	low woollygrass	DAPU7	*Dasyochloa pulchella*	18–88	–
	ear muhly	MUAR	*Muhlenbergia arenacea*	18–88	–
Shrub/Vine					
9	**Shrub**			18–41	
	fourwing saltbush	ATCA2	*Atriplex canescens*	18–41	–
	jointfir	EPHED	*Ephedra*	18–41	–
	littleleaf sumac	RHMI3	*Rhus microphylla*	18–41	–
10	**Shrub**			6–18	
	javelina bush	COER5	*Condalia ericoides*	6–18	–
	knifeleaf condalia	COSP3	*Condalia spathulata*	6–18	–
	crown of thorns	KOSP	*Koeberlinia spinosa*	6–18	–
11	**Cactus**			6–18	
	pricklypear	OPUNT	*Opuntia*	6–18	–
	yucca	YUCCA	*Yucca*	6–18	–
Forb					
12	**Forb**			29–59	
	woody crinklemat	TICAC	*Tiquilia canescens var. canescens*	29–59	–
13	**Forb**			6–88	
	Forb, annual	2FA	*Forb, annual*	6–88	–
	trailing windmills	ALIN	*Allionia incarnata*	6–88	–
	daisy	CHRYS2	*Chrysanthemum*	6–88	–
	golden tickseed	COTI3	*Coreopsis tinctoria*	6–88	–
	leatherweed	CRPOP	*Croton pottsii var. pottsii*	6–88	–
	Seven River Hills buckwheat	ERGY	*Eriogonum gypsophilum*	6–88	–

	blazingstar	MENTZ	*Mentzelia*	6–88	–
	fiddleleaf	NAMA4	*Nama*	6–88	–
	whitest evening primrose	OEAL	*Oenothera albicaulis*	6–88	–
	beardtongue	PENST	*Penstemon*	6–88	–
	Texan phacelia	PHINT	*Phacelia integrifolia var. texana*	6–88	–
	white milkwort	POAL4	*Polygala alba*	6–88	–
	desert unicorn-plant	PRAL4	*Proboscidea althaeifolia*	6–88	–
	whitestem paperflower	PSCO2	*Psilostrophe cooperi*	6–88	–
	threadleaf ragwort	SEFLF	*Senecio flaccidus var. flaccidus*	6–88	–
	Hopi tea greenthread	THME	*Thelesperma megapotamicum*	6–88	–

Animal community

This site provides habitats which support a resident animal community that is characterized by coyote, hooded skunk, desert cottontail, whitethroated woodrat, sparrow hawk, cactus wern, scaled quail, logggerhead shrike, mourning dove, and a number of ground nesting birds including, varied bunting, grasshopper sparrow, and Baird's sparrow Texas horned lizard, lesser earless lizard, and western diamondback rattlesnake.

Fourwing saltbush, littleleaf sumac, spiny allthorn, common javilinabush, and knifeleaf condalia provide protective cover for scaled quail. Seed, green herbage and fruit from a variety of grasses, forbs and shrubs provide food for a number of birds and mamals, including scaled and Gambel’s quail, mourning dove and prairie dogs. The fruit of tesajo cactus is relished by quail.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series Hydrologic Group
Cottonwood C
Holloman C
Yesum B
Alamogordo B
Aztec C
Malargo B
Reeves C
Reflection B

Recreational uses

This site offers recreation potential for hiking, horseback riding, rock, gem, and mineral collecting, nature observation and photography, and quail, dove, and predator hunting.
During years of abundant moisture, a colorful array of wildflowers can be observed from spring through fall.

Wood products

This site provides little or no wood products other than curiosities and small furniture which can be made from the roots and stems of mesquite where it has invaded the site. The woody pods of devils claw are also used in curiosities.

Other products

This site is suitable for grazing during all seasons of the year. Care must be taken to leave enough vegetation cover for soil protection during windy and rainy periods or severe soil erosion will result. About 300 pounds per acre of total vegetation and litter is minimal for soil protection. This site is best suited and most efficiently utilized by cattle. It can also be utilized by small numbers of goats and sheep in combination with cattle where control or protection from predators can be provided. Grazing management that results in a mosaic of use patterns provides diversity for wildlife.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index Ac/AUM
100 - 76 5.5 – 8.0
75 – 51 7.5 – 11.0
50 – 26 11.0 – 15.0
25 – 0 25.0 +

Type locality

Location 1: Eddy County, NM	
Township/Range/Section	T26S R24E S27

Other references

Contributors

Don Sylvester
Dr. Brandon Bestelmeyer

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

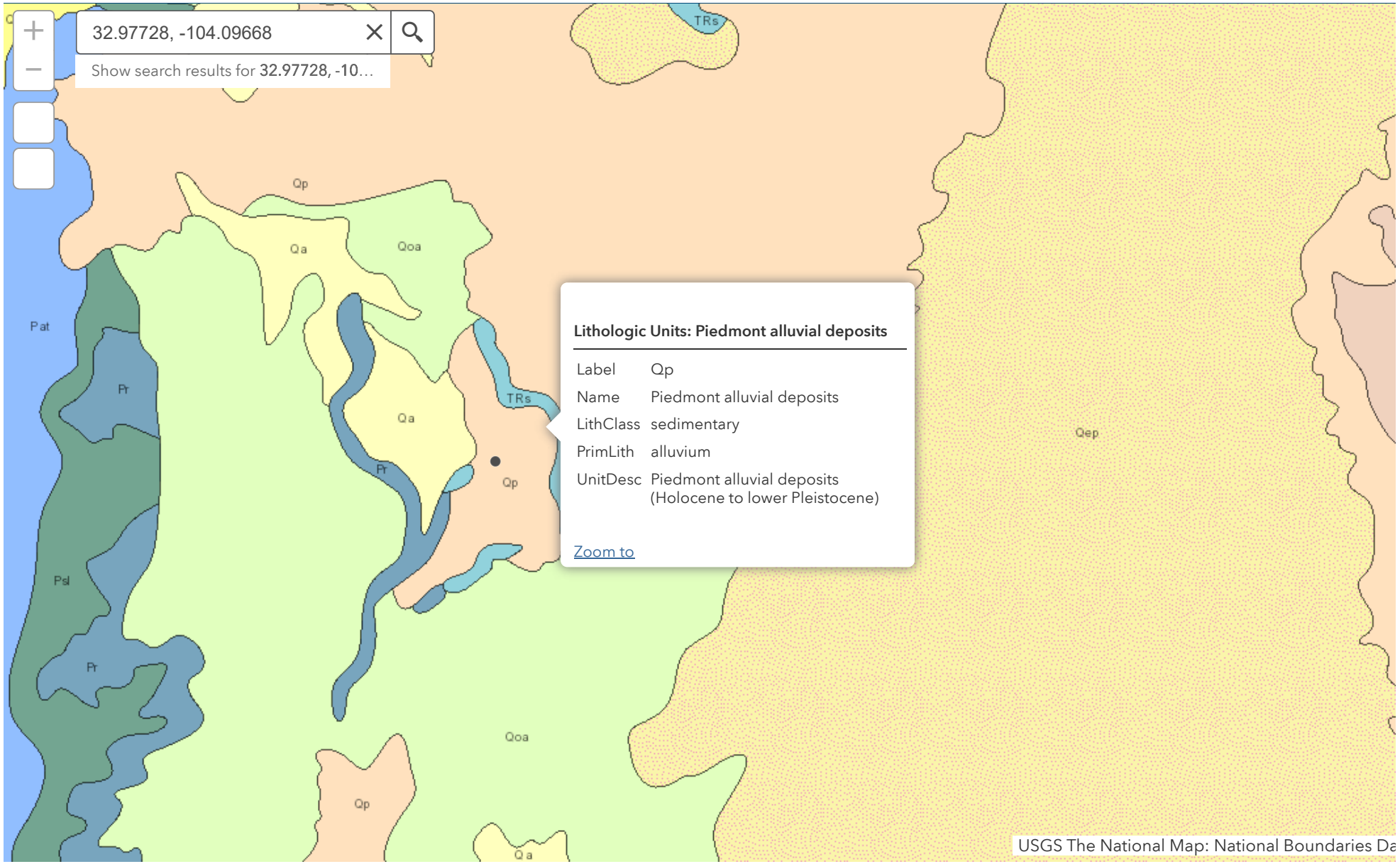
14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

17. **Perennial plant reproductive capability:**

NMBGMR Interactive Resources Map



2mi

-103.949 32.984 Degrees

App State

Click to restore the map extent and layers visibility where you left off.

APPENDIX C – Daily Field Reports

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	4/22/2024
Site Location Name:	Red Deer CTB	Report Run Date:	4/23/2024 12:30 AM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/22/2024 10:30 AM
Departed Site	4/22/2024 3:30 PM

Field Notes

11:55 Completed safety paperwork upon arrival to site

13:22 *incredibly poor cell service on site

13:24 On site to GPS release area and obtain initial surface contamination samples as well as photo documentation.

13:24 GPS:
Logged entire affected area including spray over.
Logged actual fluid footprint.
Logged large burnt grass area.
Logged release area within containment.

15:08 811 corners at end of photos

15:10 Hard to tell between burnt grass, melted poly line and actual fluid footprint to determine a proper boundary of release extent.

Next Steps & Recommendations

1 Submit 1 call

Daily Site Visit Report

Site Photos

Viewing Direction: Northeast	**Viewing Direction**: North
	
Assumed point of release - heater treater	Immediate release area west of containment.
Viewing Direction: East	**Viewing Direction**: Northeast
	
Immediate release area west of containment	Immediate release area west of containment

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: East
	
Immediate release area west of containment	Engulfed piping/instrumentation to be hauled off site
Viewing Direction: Southeast	**Viewing Direction**: North
	
Immediate release area west of containment, and north edge of pad	Immediate off pad spray over on northwest side

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: East
	
Immediate off pad spray over on northwest side	Close up of spray over on top of poly lines

Viewing Direction: Southeast	**Viewing Direction**: South
	
Spray over reaches approximately 75’ northwest	Spray over reaches approximately 75’ north of release

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: East
	
Approximately 10 poly lines in release area on north side of pad, off site	Fluid accumulation on north side of pad, off site (smaller area than spray over)
Viewing Direction: East	**Viewing Direction**: Southeast
	
Fluid accumulation on north side of pad, off site (smaller area than spray over)	Fluid accumulation on north side of pad, off site (smaller area than spray over)

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: South
	
Fluid accumulation on north side of pad, off site (smaller area than spray over) as well as melted poly lines	Fluid accumulation on north side of pad, off site (smaller area than spray over) as well as melted poly lines
Viewing Direction: South	**Viewing Direction**: South
	
Fluid accumulation on north side of pad, off site (smaller area than spray over) as well as melted poly lines	Fluid accumulation on north side of pad, off site (smaller area than spray over) as well as melted poly lines

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: South
	
Fluid accumulation on north side of pad, off site (smaller area than spray over) as well as melted poly lines	Fluid accumulation on north side of pad, off site (smaller area than spray over) as well as melted poly lines
Viewing Direction: Southwest	**Viewing Direction**: West
	
Fluid accumulation on northeast side of pad, off site (smaller area than spray over) as well as melted poly lines	Affected vegetation approximately 30’ northeast of northeast fence corner

Daily Site Visit Report

Viewing Direction: North



Burnt grass area that extends approximately 100’ north / northeast off site

Viewing Direction: Northeast



Burnt grass area that extends approximately 100’ north / northeast off site

Viewing Direction: East



Burnt grass area that extends approximately 100’ north / northeast off site

Viewing Direction: Southwest



Burnt grass extent

Daily Site Visit Report

Viewing Direction: Southeast	**Viewing Direction**: West
	
Burnt grass extent	Burnt grass extent
Viewing Direction: West	**Viewing Direction**: West
	
Natural game trail prevented further burn	Immediate east side of containment and release area

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: North
	
Immediate east side of containment and release area	Immediate east side of containment and release area
Viewing Direction: North	**Viewing Direction**: North
	
Immediate east side of containment and release area	Standing fluid in low area on immediate east side of containment

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: West
	
Release area	Release area
Viewing Direction: North	**Viewing Direction**: North
	
Release area	Inside containment- east side

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: North
	
Inside containment- middle	Inside containment- west side
Viewing Direction: South	**Viewing Direction**: Northwest
	
Burnt liner	Northwest corner

Daily Site Visit Report

Viewing Direction: Northeast



Northeast corner

Viewing Direction: Southeast



Northwest locate

Viewing Direction: Southwest



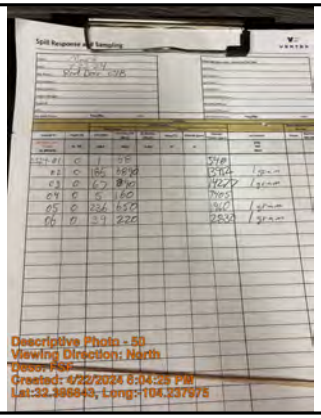
Northeast locate

Viewing Direction: Northwest



Southeast locate

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: North
	
Southwest locate	FSF

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Austin Harris

Signature: 

Signature

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	4/25/2024
Site Location Name:	Red Deer CTB	Report Run Date:	4/26/2024 12:38 AM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/25/2024 8:12 AM
Departed Site	4/25/2024 3:51 PM

Field Notes

18:31 Arrived at approximately 8:15, on site to begin delineation of containment on northern portion of tank battery

Assessed site for hazards and filled out safety paperwork.

Conducted safety meeting with Bullseye backhoe operator and discussed what areas to target for sampling.

I marked the test pit sample area with white paint for a visual reference for digging

18:33 Collected TP24-01 through TP24-04 at 0', 2', and 4' depths.

Each sample tested for CL and TPH.

All samples passed field screening criteria except TP24-01 at 0' and TP24-02 at 0', which tested out of spec for TPH.

18:33 All collected sample were jarred and will be sent for laboratory analysis

Next Steps & Recommendations

1 Return to site to collect another delineation sample point and begin excavation of the tested area

Daily Site Visit Report

Daily Site Visit Report

Site Photos

Viewing Direction: South



TP24-01 sampled at 0', 2', and 4'

Viewing Direction: Southwest



TP24-02 sampled at 0', 2', and 4'

Viewing Direction: Northeast



TP24-02 sampled at 0', 2', and 4'

Viewing Direction: South



TP24-03 sampled at 0', 2', and 4'

Daily Site Visit Report

Viewing Direction: Southeast	**Viewing Direction**: West
	
TP24-03 sampled at 0', 2', and 4'	TP24-04 sampled at 0', 2', and 4'
Viewing Direction: East	**Viewing Direction**: South
	
TP24-04 sampled at 0', 2', and 4'	Overview of area sampled

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: Northeast
	
Overview of area sampled	Overview of area sampled
Viewing Direction: East	**Viewing Direction**: North
	
Overview of area sampled	Overview of area sampled

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Andrew Ludvik

Signature:



Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	4/26/2024
Site Location Name:	Red Deer CTB	Report Run Date:	4/27/2024 12:48 AM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	4/26/2024 8:25 AM
Departed Site	4/26/2024 5:31 PM

Field Notes

8:39 Arrived at approximately 8:25 on site to continue delineation of containment on northern portion of tank battery. Goal is to dig another test pit north of TP24-03. After field screening results, I can determine the size proposed excavation.

Assessed site for hazards and filled out safety paperwork.
Conducted safety meeting with Bullseye backhoe operator and discussed what area to dig TP24-05.

14:04 Collected TP24-05 at 0', 1' 2', and 4' depths.

Collected TP24-01 and TP24-04 at 1' depth.

Each sample tested for CL and TPH.

All samples passed field screening criteria except TP24-01 at 1' which tested out of spec for CL.

All collected sample were jarred and will be sent for laboratory analysis

Daily Site Visit Report

17:59 Excavator operator arrived on site at approximately 1:15, informed him of the boundaries of excavation and to target 1' depth. Also informed Bullseye that the apparent contaminated areas beyond the containment wall needed to be scraped.

The operator started scraping around the outside perimeter. Excavation began approximately 2:55 pm

18:01 Bullseye stopped excavating at approximately 4pm, with a little under 50% of the area to be excavated completed.

Next Steps & Recommendations

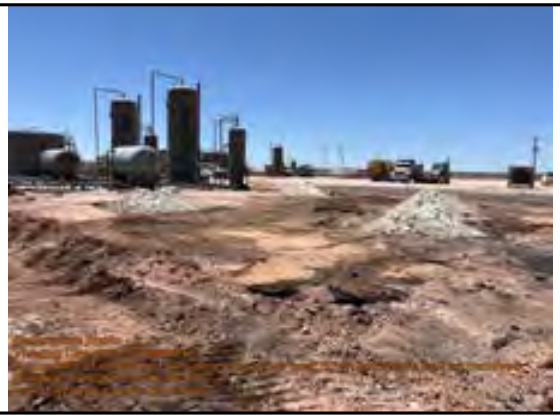
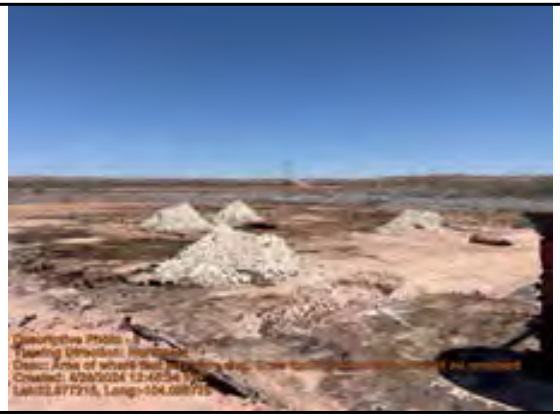
1 Complete remainder of excavation and collect confirmation samples

Daily Site Visit Report

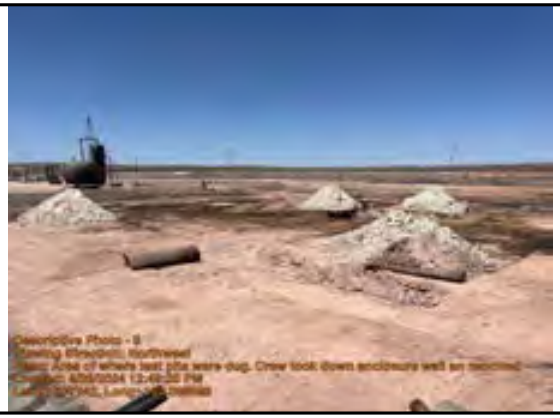
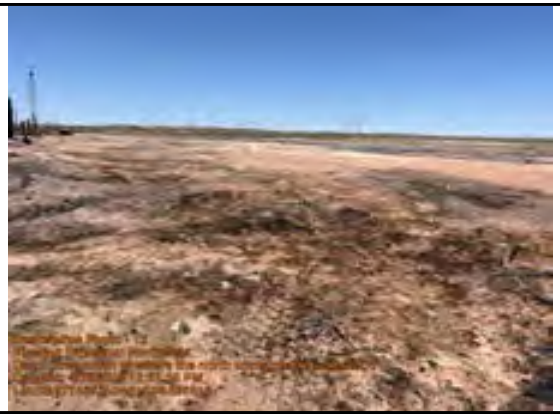
Site Photos

Viewing Direction: South	**Viewing Direction**: West
	
TP24-05 sampled at 0’, 1’, 2, and 4’ depths	TP24-05 sampled at 0’, 1’, 2, and 4’ depths
Viewing Direction: East	**Viewing Direction**: South
	
TP24-04 sampled at 1’ depth	TP24-01 sampled at 1’ depth

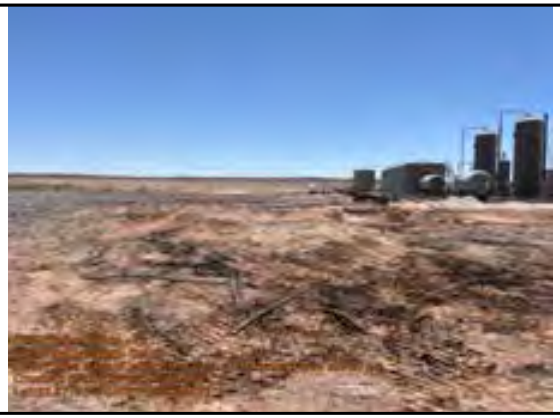
Daily Site Visit Report

Viewing Direction: Southeast	**Viewing Direction**: Southwest
	
Area of where test pits were dug. Crew took down enclosure wall an removed liner and equipment	Area of where test pits were dug. Crew took down enclosure wall an removed liner and equipment
Viewing Direction: Northeast	**Viewing Direction**: Northeast
	
Area of where test pits were dug. TP24-05 was dug north of TP24-03.	Area of where test pits were dug. Crew took down enclosure wall an removed liner and equipment

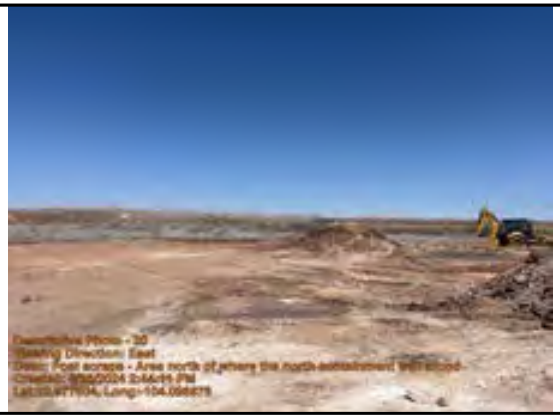
Daily Site Visit Report

Viewing Direction: Northwest	**Viewing Direction**: West
	
Area of where test pits were dug. Crew took down enclosure wall an removed liner and equipment	Area where free standing liquids were scraped and disposed. This is approximately ten feet from the exterior of where the northeast containment wall stood
Viewing Direction: Northwest	**Viewing Direction**: Northwest
	
Area north of where the north containment wall stood	Area north of where the north containment wall stood

Daily Site Visit Report

Viewing Direction: Northeast	**Viewing Direction**: North
	
Area north of where the north containment wall stood	Area west of where the west containment wall stood
Viewing Direction: Northwest	**Viewing Direction**: South
	
Area west of where the west containment wall stood	Area east of where the east containment wall stood

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: Northwest
	
Area east of where the east containment wall stood	Post scrape - Area west of where the west containment wall stood
Viewing Direction: North	**Viewing Direction**: East
	
Post scrape - Area northwest of where the northwest corner containment wall stood	Post scrape - Area north of where the north containment wall stood

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: Southwest
	
Post scrape - Area north of where the north containment wall stood	Post scrape - Area east of where the east containment wall stood
Viewing Direction: East	**Viewing Direction**: North
	
Excavation progress at 1’ depth	Excavation progress at 1’ depth

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: West
	
Excavation progress at 1’ depth	Excavation progress at 1’ depth
Viewing Direction: West	**Viewing Direction**: Southwest
	
Excavation progress at 1’ depth	Excavation progress at 1’ depth

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Andrew Ludvik

Signature: 

Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	5/6/2024
Site Location Name:	Brainard 11 G Fed Com #3	Report Run Date:	5/7/2024 2:05 AM
Client Contact Name:	Matt Buckles	API #:	30-015-35744
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	5/6/2024 8:20 AM
Departed Site	5/6/2024 5:15 PM

Field Notes

19:45 Arrived on site and filled out the safety paperwork. Crew was already on site loading a belly dump from the soil pile upon arrival.

19:48 Resampled BES24-26, 35, 37,38,39, and 40 at 3’ bgs. All samples met criteria. Sample BES24-26 needed to be taken down to 6.5’ bgs to meet criteria. 1’ increments were used until a clean sample was obtained.

19:49 Collected samples BES24-64 through BES24-69 at 2’ bgs.

19:50 Crew finished excavating the east side of excavation down to 3’ bgs. The ramp that was being used in the middle of the exaction pit was taken down to 2’bgs

19:54 All samples were tested for chlorides using silver nitrate titration and TPH with the petroflag. Samples that exceeded criteria were resampled and met criteria. In total, 19 confirmation samples were collected from the excavated pit, 13 samples were jarred to be sent to Eurofins laboratory for further analysis.

19:56 The Bullseye crew left the site for the day while I was busy screening samples and I was unable to confirm the amount of belly dumps that were loaded for the day. I will confirm with the crew the exact amount of trucks that were loaded tomorrow morning.

Next Steps & Recommendations

1 Continue confirmation sampling.

Daily Site Visit Report

Site Photos

Viewing Direction: Northeast



Northwest portion of the excavation area has been brought down to 2’ bgs.

Viewing Direction: Northwest



Southeastern excavation area.

Viewing Direction: Southwest



Eastern excavation area at 3’ bgs.

Viewing Direction: Southeast



Northwest excavation area at 2’ bgs.

Daily Site Visit Report

Viewing Direction: Southwest



BES24-26 at 6.5’ bgs. Sample location was taken down in 1’ increments until a clean sample was obtained. BES24-26 started the day at 2.5’ bgs.

Viewing Direction: West



Excavation ramp was taken down to 2’ bgs.

Viewing Direction: North



Spoil pile

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Rewis

Signature:



Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	5/7/2024
Site Location Name:	Red Deer CTB	Report Run Date:	5/8/2024 2:55 AM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	5/7/2024 8:00 AM
Departed Site	5/7/2024 5:40 PM

Field Notes

20:40 Arrived on site, safety paperwork was filled out and held safety meeting with the Bullseye crew.

20:42 Obtained samples BES24-70 through BES24-86, WS24-20 and WES24-21, TP24-1 and TP24-2. Samples were tested for chlorides and TPH. All samples met criteria.

20:44 I'm total, 29 samples were collected and 25 samples were jarred in preparation to be sent to Eurofins laboratory.

20:49 The crew from Bullseye loaded 18 belly dumps from the soil pile today, approximately 360 cubic yards. Yesterday, 20 belly dumps were loaded for a total of 400 cubic yards. An estimated 1,480 cubic yards of soil has been removed from the site.

20:50 The walls inside of the excavation area still needs to be sampled.

Next Steps & Recommendations

1 Finish confirmation sampling.

Daily Site Visit Report

Site Photos

Viewing Direction: Northeast	**Viewing Direction**: North
	
Southwest side of the excavation area.	Two test pits, TP24-1 and TP24-2, were tested at 0', 2',and 4'. Test pits are located off the western excavation boundary. All samples met criteria.

Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: Northwest
	
WES24-20, and 21 were collected at the BES24 -26 sample location. Both wall samples met criteria.	3’ bgs pit on the east portion of the excavation.
Viewing Direction: West	**Viewing Direction**: South
	
2’ bgs pit located on the northern portion of the excavation.	2.5’bgs pit on the southwest portion of the excavation.

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: North
	
2.5’ bgs pit on the southern portion of the excavation.	Soil pile at the end of the day. It is estimated that it will be completely removed tomorrow per Chet from Bullseye.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Rewis

Signature:



Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	5/8/2024
Site Location Name:	Red Deer CTB	Report Run Date:	5/9/2024 11:52 PM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	5/8/2024 8:05 AM
Departed Site	5/8/2024 4:50 PM

Field Notes

11:11 Arrived on site completed safety paperwork and held safety meeting with excavation crew from Bullseye.

11:12 Collected samples BES24-87 through BES24-113, WES24-23 through WES24-27, and TP24-03 at 0’ 2’ and 4’. 35 samples collected and 32 samples met criteria.

11:13 BES24-102,103, and 105 exceeded criteria. Will inform the excavation crew tomorrow to dig out the area until we can hit clean samples.

11:14 All samples were tested for chlorides using silver nitrate titration, 12 samples were tested for tph using the petroflag.

11:16 32 samples were jarred in preparation to be sent to the lab. 24 hr rush turnaround will be used.

Next Steps & Recommendations

1 Continue confirmation sampling.

Daily Site Visit Report

Site Photos

Viewing Direction: Northwest	**Viewing Direction**: West
	
3’ bgs pit on the east portion of the excavation. 3 samples exceeded criteria in this area. Will inform the excavation crew tomorrow to remove the soil until we hit a clean surface.	2.5’ pit on the south portion of the excavation.

Daily Site Visit Report

Viewing Direction: Southwest



2.5’ piton the south western portion of the excavation.

Viewing Direction: North



No soil was removed from the soil pile today.

Viewing Direction: East



Confirmation sampling had been completed on the northern 2’ pit. All samples met criteria.

Viewing Direction: North



Excavator flattened and removed the light top soil on the western side of the excavation to help with dust control from high winds.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Rewis

Signature:



Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	5/9/2024
Site Location Name:	Red Deer CTB	Report Run Date:	5/10/2024 12:23 AM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	5/9/2024 8:10 AM
Departed Site	5/9/2024 3:15 PM

Field Notes

14:18 Arrived on site completed safety paperwork and held safety brief with the crew from Bullseye.

18:06 On site to resample 3 spots that exceeded criteria. With the help of the excavator, a trench was dug for BES24-102, and 103 was brought down to 4’ bgs. BES24-105 was brought down to 8’ bgs to meet criteria. See photos below.

18:23 13 samples in total were collected today. Only 5 samples were jarred to be sent to Eurofins with a 24hr turn around time.

18:02 All samples were tested for chlorides using silver nitrate titration and 3 sample for tph using the petroflag. All samples met criteria.

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: North	**Viewing Direction**: Southwest
	
A 22’x9’x1’ trench was dug out at 4’bgs for sample BES24-102, and 103 to meet criteria. The base and walls of the trench met criteria.	A 15’x 11’x 6’ hole was dug out for BES24-105 to meet criteria. Base sits at 8’bgs. The base and walls met criteria.

Daily Site Visit Report

Viewing Direction: North



Soil pile from todays excavation. Currently not sitting on a liner but will be moved to the soil pile tomorrow when bullseye can get a front loader to move it.

Viewing Direction: Northeast



Excavation area from the southwest corner

Viewing Direction: West



Southern excavation boundary where the 2.5’bgs pit is located.

Viewing Direction: Northwest



Excavation area from southeast corner.

Daily Site Visit Report

Viewing Direction: West

Excavation area from the middle of the western boundary.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Rewis

Signature:



Daily Site Visit Report

Client:	Mack Energy Corporation	Inspection Date:	5/10/2024
Site Location Name:	Red Deer CTB	Report Run Date:	5/12/2024 12:42 AM
Client Contact Name:	Matt Buckles	API #:	
Client Contact Phone #:	575-748-1288		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	5/10/2024 12:45 PM
Departed Site	5/10/2024 4:07 PM

Field Notes

15:30 Arrived on site, completed safety paperwork and held safety brief with bullseye crew that was on site.

15:31 On site to resample BES24-37, 38, 40, and 44. Original samples came back from the lab exceeding criteria.

15:33 All 4 samples were screened for chlorides only using silver nitrate titration since the original samples met criteria for TPH. All resamples met criteria for chlorides during the field screen.

15:37 Measured every dimension of the excavation including the various pits inside the excavation, with a wheel for mapping purposes. The measurements will be cross referenced with the coordinates from the photos taken in the DFR and NavCam for accuracy.

Next Steps & Recommendations

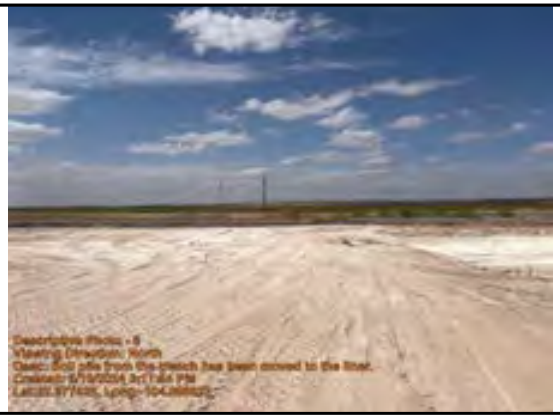
1

Daily Site Visit Report

Site Photos

Viewing Direction: Northwest	**Viewing Direction**: Northeast
	
Southeast excavation corner.	Southwest excavation corner.
Viewing Direction: Southeast	**Viewing Direction**: South
	
Northwest excavation corner.	Middle of the northern excavation border.

Daily Site Visit Report

Viewing Direction: Southwest	**Viewing Direction**: Southwest
	
Northeast excavation corner.	Resample location for BES24,37,38 and 40. Samples passed field screen for chlorides.
Viewing Direction: North	**Viewing Direction**: North
	
Resample location for BES24-44.	Soil pile from the trench has been moved to the liner.

Daily Site Visit Report

Viewing Direction: Northwest	**Viewing Direction**: West
	
Soil pile at the end of the day.	Middle of the east excavation boundary.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: John Rewis

Signature:



APPENDIX D – Notifications

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 337655

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337655
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Notification Accepted**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	3,000
What is the estimated number of samples that will be gathered	17
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	04/29/2024
Time sampling will commence	11:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337655
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	4/25/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 337658

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337658
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Notification Accepted**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	3,000
What is the estimated number of samples that will be gathered	17
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	04/30/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337658
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	4/25/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 337670

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337670
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Notification Accepted**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	3,000
What is the estimated number of samples that will be gathered	17
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/01/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 337670
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	4/25/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 339162

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 339162
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	10,000
What is the estimated number of samples that will be gathered	50
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/02/2024
Time sampling will commence	01:10 PM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 339162
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	4/30/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 339165

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 339165
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	10,000
What is the estimated number of samples that will be gathered	50
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/03/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 339165

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 339165
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	4/30/2024

District I
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District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 339818

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 339818
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	10,000
What is the estimated number of samples that will be gathered	50
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/06/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575.361.3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
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1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 339818
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/1/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 340766

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 340766
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/07/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 340766

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 340766
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/3/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 340767

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 340767
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/08/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 340767
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/3/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 340768

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 340768
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/09/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access off Turkey Track Rd 209

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 340768
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/3/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 341938

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 341938
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/10/2024
Time sampling will commence	08:30 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from Turkey Track Rd 209

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
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District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator:	OGRID:
MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	13837
	Action Number: 341938
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/8/2024

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 342968

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 342968
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/15/2024
Time sampling will commence	12:15 PM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 342968

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 342968
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/10/2024

District I
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 342969

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 342969
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/16/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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State of New Mexico
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Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 342969

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 342969
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/10/2024

District I
1625 N. French Dr., Hobbs, NM 88240
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Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 342970

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 342970
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/17/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access off 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
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District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 342970

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 342970
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/10/2024

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Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 344992

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 344992
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	15,000
What is the estimated number of samples that will be gathered	75
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/20/2024
Time sampling will commence	08:30 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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1000 Rio Brazos Rd., Aztec, NM 87410
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1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 344992
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/16/2024

District I
1625 N. French Dr., Hobbs, NM 88240
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811 S. First St., Artesia, NM 88210
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District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 345356

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 345356
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	2,000
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	05/21/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
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1000 Rio Brazos Rd., Aztec, NM 87410
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1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 345356

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 345356
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	5/17/2024

District I
1625 N. French Dr., Hobbs, NM 88240
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811 S. First St., Artesia, NM 88210
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 353398

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 353398
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,400
What is the estimated number of samples that will be gathered	7
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	06/17/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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Santa Fe, NM 87505

CONDITIONS

Action 353398

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 353398
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	6/12/2024

District I
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 357313

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 357313
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Initial C-141 Approved**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Site Name	**Red Deer CTB**
Date Release Discovered	**04/21/2024**
Surface Owner	**State**

Sampling Event General Information *Please answer all the questions in this group.*	
What is the sampling surface area in square feet	1,600
What is the estimated number of samples that will be gathered	9
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	07/01/2024
Time sampling will commence	08:00 AM
Please provide any information necessary for observers to contact samplers	Sally Carttar 575-361-3561
Please provide any information necessary for navigation to sampling site	Access from CR 209 Turkey Track Rd

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
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CONDITIONS

Action 357313

CONDITIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 357313
	Action Type: [NOTIFY] Notification Of Sampling (C-141N)

CONDITIONS

Created By	Condition	Condition Date
scarttar	Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.	6/25/2024

APPENDIX E – Laboratory Data Reports and Chain of Custody Forms

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/6/2024 11:52:05 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3536-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
5/6/2024 11:52:05 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3536-1

Table of Contents

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Definitions/Glossary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

GC Semi VOA

Qualifier	Qualifier Description
D	Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.
S1-	Surrogate recovery exceeds control limits, low biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3536-1

Job ID: 885-3536-1 Eurofins Albuquerque

Job Narrative
885-3536-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 4/27/2024 7:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.6°C.

Gasoline Range Organics
Method 8015D_GRO: Internal standard responses were outside of acceptance limits for the following sample: TP24-02 0.0' (885-3536-4). The sample(s) shows evidence of matrix interference.

Method 8015D_GRO: Internal standard responses were outside of acceptance limits for the following sample: TP24-01 0.0' (885-3536-1). The sample(s) shows evidence of matrix interference.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
Method 8021B: Internal standard responses were outside of acceptance limits for the following sample: TP24-02 0.0' (885-3536-4). The sample(s) shows evidence of matrix interference.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
Method 8015D_DRO: The following samples were diluted due to the nature of the sample matrix: TP24-01 0.0' (885-3536-1) and TP24-02 0.0' (885-3536-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-01 0.0'

Date Collected: 04/25/24 09:10
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	200		27		mg/Kg		04/29/24 08:34	04/29/24 12:17	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*282*	*S1+*	*15 - 244*	*04/29/24 08:34*	*04/29/24 12:17*	*5*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.35		0.13		mg/Kg		04/29/24 08:34	04/29/24 12:17	5
Ethylbenzene	7.4		0.27		mg/Kg		04/29/24 08:34	04/29/24 12:17	5
Toluene	4.2		0.27		mg/Kg		04/29/24 08:34	04/29/24 12:17	5
Xylenes, Total	9.5		0.53		mg/Kg		04/29/24 08:34	04/29/24 12:17	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*129*		*39 - 146*	*04/29/24 08:34*	*04/29/24 12:17*	*5*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	5200		180		mg/Kg		04/29/24 08:52	04/29/24 12:06	20
Motor Oil Range Organics [C28-C40]	2900		890		mg/Kg		04/29/24 08:52	04/29/24 12:06	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*0*	*D S1-*	*62 - 134*	*04/29/24 08:52*	*04/29/24 12:06*	*20*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4500		300		mg/Kg		04/29/24 13:18	04/30/24 21:48	100

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-01 2.0'

Date Collected: 04/25/24 09:25
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.2		mg/Kg		04/29/24 08:34	04/29/24 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*04/29/24 08:34*	*04/29/24 12:41*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.026		mg/Kg		04/29/24 08:34	04/29/24 12:41	1
Ethylbenzene	ND		0.052		mg/Kg		04/29/24 08:34	04/29/24 12:41	1
Toluene	ND		0.052		mg/Kg		04/29/24 08:34	04/29/24 12:41	1
Xylenes, Total	ND		0.10		mg/Kg		04/29/24 08:34	04/29/24 12:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/29/24 08:34*	*04/29/24 12:41*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		04/29/24 08:52	04/29/24 12:49	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/29/24 08:52	04/29/24 12:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*04/29/24 08:52*	*04/29/24 12:49*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**87**		60		mg/Kg		04/29/24 13:18	04/29/24 17:29	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-01 4.0'

Date Collected: 04/25/24 09:35
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.4		mg/Kg		04/29/24 08:34	04/29/24 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*04/29/24 08:34*	*04/29/24 13:05*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.027		mg/Kg		04/29/24 08:34	04/29/24 13:05	1
Ethylbenzene	ND		0.054		mg/Kg		04/29/24 08:34	04/29/24 13:05	1
Toluene	ND		0.054		mg/Kg		04/29/24 08:34	04/29/24 13:05	1
Xylenes, Total	ND		0.11		mg/Kg		04/29/24 08:34	04/29/24 13:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*04/29/24 08:34*	*04/29/24 13:05*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		04/29/24 08:52	04/29/24 12:59	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		04/29/24 08:52	04/29/24 12:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*04/29/24 08:52*	*04/29/24 12:59*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/29/24 13:18	04/29/24 17:42	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-02 0.0'

Date Collected: 04/25/24 09:40
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	330		26		mg/Kg		04/29/24 08:34	04/29/24 13:28	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*418*	*S1+*	*15 - 244*	*04/29/24 08:34*	*04/29/24 13:28*	*5*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	0.23		0.13		mg/Kg		04/29/24 08:34	04/29/24 13:28	5
Ethylbenzene	13		0.26		mg/Kg		04/29/24 08:34	04/29/24 13:28	5
Toluene	5.4		0.26		mg/Kg		04/29/24 08:34	04/29/24 13:28	5
Xylenes, Total	18		0.52		mg/Kg		04/29/24 08:34	04/29/24 13:28	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*153*	*S1+*	*39 - 146*	*04/29/24 08:34*	*04/29/24 13:28*	*5*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	7000		190		mg/Kg		04/29/24 08:52	04/29/24 12:28	20
Motor Oil Range Organics [C28-C40]	3800		930		mg/Kg		04/29/24 08:52	04/29/24 12:28	20

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*0*	*D S1-*	*62 - 134*	*04/29/24 08:52*	*04/29/24 12:28*	*20*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8600		300		mg/Kg		04/29/24 13:18	04/30/24 22:03	100

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-02 2.0'

Date Collected: 04/25/24 09:45
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.6		mg/Kg		04/29/24 08:34	04/29/24 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*04/29/24 08:34*	*04/29/24 13:52*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.028		mg/Kg		04/29/24 08:34	04/29/24 13:52	1
Ethylbenzene	ND		0.056		mg/Kg		04/29/24 08:34	04/29/24 13:52	1
Toluene	ND		0.056		mg/Kg		04/29/24 08:34	04/29/24 13:52	1
Xylenes, Total	ND		0.11		mg/Kg		04/29/24 08:34	04/29/24 13:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*04/29/24 08:34*	*04/29/24 13:52*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		04/29/24 08:52	04/29/24 13:10	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/29/24 08:52	04/29/24 13:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*04/29/24 08:52*	*04/29/24 13:10*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**310**		60		mg/Kg		04/29/24 13:18	04/30/24 03:35	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-02 4.0'

Date Collected: 04/25/24 09:50
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		04/29/24 08:34	04/29/24 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*04/29/24 08:34*	*04/29/24 14:15*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/29/24 08:34	04/29/24 14:15	1
Ethylbenzene	ND		0.048		mg/Kg		04/29/24 08:34	04/29/24 14:15	1
Toluene	ND		0.048		mg/Kg		04/29/24 08:34	04/29/24 14:15	1
Xylenes, Total	ND		0.095		mg/Kg		04/29/24 08:34	04/29/24 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/29/24 08:34*	*04/29/24 14:15*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		04/29/24 08:52	04/30/24 15:36	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		04/29/24 08:52	04/30/24 15:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*04/29/24 08:52*	*04/30/24 15:36*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/29/24 13:18	04/29/24 18:44	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-03 0.0'

Date Collected: 04/25/24 10:00
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		04/29/24 08:34	04/29/24 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*04/29/24 08:34*	*04/29/24 14:39*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/29/24 08:34	04/29/24 14:39	1
Ethylbenzene	ND		0.048		mg/Kg		04/29/24 08:34	04/29/24 14:39	1
Toluene	ND		0.048		mg/Kg		04/29/24 08:34	04/29/24 14:39	1
Xylenes, Total	ND		0.097		mg/Kg		04/29/24 08:34	04/29/24 14:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*04/29/24 08:34*	*04/29/24 14:39*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		04/29/24 08:52	04/29/24 13:31	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		04/29/24 08:52	04/29/24 13:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*	*04/29/24 08:52*	*04/29/24 13:31*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		60		mg/Kg		04/29/24 13:18	04/29/24 18:56	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-03 2.0'
Date Collected: 04/25/24 10:05
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-8
Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.8		mg/Kg		04/29/24 08:34	04/29/24 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*04/29/24 08:34*	*04/29/24 15:02*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.029		mg/Kg		04/29/24 08:34	04/29/24 15:02	1
Ethylbenzene	ND		0.058		mg/Kg		04/29/24 08:34	04/29/24 15:02	1
Toluene	ND		0.058		mg/Kg		04/29/24 08:34	04/29/24 15:02	1
Xylenes, Total	ND		0.12		mg/Kg		04/29/24 08:34	04/29/24 15:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/29/24 08:34*	*04/29/24 15:02*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		04/29/24 08:52	04/29/24 13:42	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		04/29/24 08:52	04/29/24 13:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*04/29/24 08:52*	*04/29/24 13:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/29/24 13:18	04/29/24 19:08	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-03 4.0'
Date Collected: 04/25/24 10:15
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-9
Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		6.5		mg/Kg		04/29/24 08:34	04/29/24 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*15 - 244*	*04/29/24 08:34*	*04/29/24 15:26*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.033		mg/Kg		04/29/24 08:34	04/29/24 15:26	1
Ethylbenzene	ND		0.065		mg/Kg		04/29/24 08:34	04/29/24 15:26	1
Toluene	ND		0.065		mg/Kg		04/29/24 08:34	04/29/24 15:26	1
Xylenes, Total	ND		0.13		mg/Kg		04/29/24 08:34	04/29/24 15:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*04/29/24 08:34*	*04/29/24 15:26*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		04/29/24 08:52	04/29/24 13:53	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		04/29/24 08:52	04/29/24 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*04/29/24 08:52*	*04/29/24 13:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/29/24 13:18	04/29/24 19:21	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-04 0.0'

Date Collected: 04/25/24 11:00
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-10

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.0		mg/Kg		04/29/24 08:34	04/29/24 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*04/29/24 08:34*	*04/29/24 15:49*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		04/29/24 08:34	04/29/24 15:49	1
Ethylbenzene	ND		0.040		mg/Kg		04/29/24 08:34	04/29/24 15:49	1
Toluene	ND		0.040		mg/Kg		04/29/24 08:34	04/29/24 15:49	1
Xylenes, Total	ND		0.081		mg/Kg		04/29/24 08:34	04/29/24 15:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*04/29/24 08:34*	*04/29/24 15:49*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		04/29/24 08:52	04/29/24 14:03	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/29/24 08:52	04/29/24 14:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*04/29/24 08:52*	*04/29/24 14:03*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**83**		60		mg/Kg		04/29/24 13:18	04/29/24 19:33	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-04 2.0
Date Collected: 04/25/24 11:10
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-11
Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		04/29/24 08:34	04/29/24 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*04/29/24 08:34*	*04/29/24 16:36*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		04/29/24 08:34	04/29/24 16:36	1
Ethylbenzene	ND		0.049		mg/Kg		04/29/24 08:34	04/29/24 16:36	1
Toluene	ND		0.049		mg/Kg		04/29/24 08:34	04/29/24 16:36	1
Xylenes, Total	ND		0.097		mg/Kg		04/29/24 08:34	04/29/24 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*04/29/24 08:34*	*04/29/24 16:36*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		04/29/24 08:52	04/29/24 14:14	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/29/24 08:52	04/29/24 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*04/29/24 08:52*	*04/29/24 14:14*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**62**		60		mg/Kg		04/29/24 13:18	04/29/24 19:45	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-04 4.0

Date Collected: 04/25/24 11:20
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-12

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.6		mg/Kg		04/29/24 08:34	04/29/24 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*15 - 244*	*04/29/24 08:34*	*04/29/24 16:59*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.028		mg/Kg		04/29/24 08:34	04/29/24 16:59	1
Ethylbenzene	ND		0.056		mg/Kg		04/29/24 08:34	04/29/24 16:59	1
Toluene	ND		0.056		mg/Kg		04/29/24 08:34	04/29/24 16:59	1
Xylenes, Total	ND		0.11		mg/Kg		04/29/24 08:34	04/29/24 16:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*04/29/24 08:34*	*04/29/24 16:59*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		04/29/24 08:52	04/29/24 14:25	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		04/29/24 08:52	04/29/24 14:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*101*		*62 - 134*	*04/29/24 08:52*	*04/29/24 14:25*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/29/24 13:18	04/29/24 19:58	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4020/1-A
Matrix: Solid
Analysis Batch: 4103

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4020

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		04/29/24 08:34	04/29/24 11:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*15 - 244*	*04/29/24 08:34*	*04/29/24 11:54*	*1*

Lab Sample ID: LCS 885-4020/2-A
Matrix: Solid
Analysis Batch: 4103

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4020

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	24.3		mg/Kg		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*199*		*15 - 244*

Lab Sample ID: 885-3536-2 MS
Matrix: Solid
Analysis Batch: 4103

Client Sample ID: TP24-01 2.0'
Prep Type: Total/NA
Prep Batch: 4020

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		26.1	26.6		mg/Kg		102	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*205*		*15 - 244*

Lab Sample ID: 885-3536-2 MSD
Matrix: Solid
Analysis Batch: 4103

Client Sample ID: TP24-01 2.0'
Prep Type: Total/NA
Prep Batch: 4020

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		26.1	26.6		mg/Kg		102	70 - 130	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*208*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4020/1-A
Matrix: Solid
Analysis Batch: 4104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4020

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/29/24 08:34	04/29/24 11:54	1
Ethylbenzene	ND		0.050		mg/Kg		04/29/24 08:34	04/29/24 11:54	1
Toluene	ND		0.050		mg/Kg		04/29/24 08:34	04/29/24 11:54	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-4020/1-A
Matrix: Solid
Analysis Batch: 4104

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4020

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		04/29/24 08:34	04/29/24 11:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/29/24 08:34*	*04/29/24 11:54*	*1*

Lab Sample ID: LCS 885-4020/3-A
Matrix: Solid
Analysis Batch: 4104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4020

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.933		mg/Kg		93	70 - 130		
Ethylbenzene			1.00	0.893		mg/Kg		89	70 - 130		
m,p-Xylene			2.00	1.83		mg/Kg		92	70 - 130		
o-Xylene			1.00	0.890		mg/Kg		89	70 - 130		
Toluene			1.00	0.883		mg/Kg		88	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*

Lab Sample ID: 885-3536-3 MS
Matrix: Solid
Analysis Batch: 4104

Client Sample ID: TP24-01 4.0'
Prep Type: Total/NA
Prep Batch: 4020

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		1.08	1.01		mg/Kg		93	70 - 130		
Ethylbenzene	ND		1.08	0.976		mg/Kg		90	70 - 130		
m,p-Xylene	ND		2.16	1.99		mg/Kg		91	70 - 130		
o-Xylene	ND		1.08	0.963		mg/Kg		89	70 - 130		
Toluene	ND		1.08	0.967		mg/Kg		89	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*

Lab Sample ID: 885-3536-3 MSD
Matrix: Solid
Analysis Batch: 4104

Client Sample ID: TP24-01 4.0'
Prep Type: Total/NA
Prep Batch: 4020

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		1.08	0.992		mg/Kg		92	70 - 130	1	20
Ethylbenzene	ND		1.08	0.975		mg/Kg		90	70 - 130	0	20
m,p-Xylene	ND		2.16	1.98		mg/Kg		91	70 - 130	0	20
o-Xylene	ND		1.08	0.976		mg/Kg		90	70 - 130	1	20
Toluene	ND		1.08	0.961		mg/Kg		89	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4023/1-A
Matrix: Solid
Analysis Batch: 4095

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4023

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		04/29/24 08:52	04/29/24 11:45	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		04/29/24 08:52	04/29/24 11:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*04/29/24 08:52*	*04/29/24 11:45*	*1*

Lab Sample ID: LCS 885-4023/2-A
Matrix: Solid
Analysis Batch: 4095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4023

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	48.5		mg/Kg		97	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*

Lab Sample ID: 885-3536-12 MS
Matrix: Solid
Analysis Batch: 4095

Client Sample ID: TP24-04 4.0
Prep Type: Total/NA
Prep Batch: 4023

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		42.7	41.1		mg/Kg		96	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*

Lab Sample ID: 885-3536-12 MSD
Matrix: Solid
Analysis Batch: 4095

Client Sample ID: TP24-04 4.0
Prep Type: Total/NA
Prep Batch: 4023

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		45.2	44.9		mg/Kg		99	44 - 136	9	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*85*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4051/1-A
Matrix: Solid
Analysis Batch: 4079

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4051

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		04/29/24 13:18	04/29/24 16:52	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-4051/2-A
Matrix: Solid
Analysis Batch: 4079

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4051

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	15.0	14.7		mg/Kg		98	90 - 110

Lab Sample ID: MRL 885-4079/10
Matrix: Solid
Analysis Batch: 4079

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	0.500	0.576		mg/L		115	50 - 150

Lab Sample ID: MRL 885-4137/3
Matrix: Solid
Analysis Batch: 4137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	0.500	0.537		mg/L		107	50 - 150

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

GC VOA

Prep Batch: 4020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	5035	
885-3536-2	TP24-01 2.0'	Total/NA	Solid	5035	
885-3536-3	TP24-01 4.0'	Total/NA	Solid	5035	
885-3536-4	TP24-02 0.0'	Total/NA	Solid	5035	
885-3536-5	TP24-02 2.0'	Total/NA	Solid	5035	
885-3536-6	TP24-02 4.0'	Total/NA	Solid	5035	
885-3536-7	TP24-03 0.0'	Total/NA	Solid	5035	
885-3536-8	TP24-03 2.0'	Total/NA	Solid	5035	
885-3536-9	TP24-03 4.0'	Total/NA	Solid	5035	
885-3536-10	TP24-04 0.0'	Total/NA	Solid	5035	
885-3536-11	TP24-04 2.0	Total/NA	Solid	5035	
885-3536-12	TP24-04 4.0	Total/NA	Solid	5035	
MB 885-4020/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4020/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4020/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-3536-2 MS	TP24-01 2.0'	Total/NA	Solid	5035	
885-3536-2 MSD	TP24-01 2.0'	Total/NA	Solid	5035	
885-3536-3 MS	TP24-01 4.0'	Total/NA	Solid	5035	
885-3536-3 MSD	TP24-01 4.0'	Total/NA	Solid	5035	

Analysis Batch: 4103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	8015D	4020
885-3536-2	TP24-01 2.0'	Total/NA	Solid	8015D	4020
885-3536-3	TP24-01 4.0'	Total/NA	Solid	8015D	4020
885-3536-4	TP24-02 0.0'	Total/NA	Solid	8015D	4020
885-3536-5	TP24-02 2.0'	Total/NA	Solid	8015D	4020
885-3536-6	TP24-02 4.0'	Total/NA	Solid	8015D	4020
885-3536-7	TP24-03 0.0'	Total/NA	Solid	8015D	4020
885-3536-8	TP24-03 2.0'	Total/NA	Solid	8015D	4020
885-3536-9	TP24-03 4.0'	Total/NA	Solid	8015D	4020
885-3536-10	TP24-04 0.0'	Total/NA	Solid	8015D	4020
885-3536-11	TP24-04 2.0	Total/NA	Solid	8015D	4020
885-3536-12	TP24-04 4.0	Total/NA	Solid	8015D	4020
MB 885-4020/1-A	Method Blank	Total/NA	Solid	8015D	4020
LCS 885-4020/2-A	Lab Control Sample	Total/NA	Solid	8015D	4020
885-3536-2 MS	TP24-01 2.0'	Total/NA	Solid	8015D	4020
885-3536-2 MSD	TP24-01 2.0'	Total/NA	Solid	8015D	4020

Analysis Batch: 4104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	8021B	4020
885-3536-2	TP24-01 2.0'	Total/NA	Solid	8021B	4020
885-3536-3	TP24-01 4.0'	Total/NA	Solid	8021B	4020
885-3536-4	TP24-02 0.0'	Total/NA	Solid	8021B	4020
885-3536-5	TP24-02 2.0'	Total/NA	Solid	8021B	4020
885-3536-6	TP24-02 4.0'	Total/NA	Solid	8021B	4020
885-3536-7	TP24-03 0.0'	Total/NA	Solid	8021B	4020
885-3536-8	TP24-03 2.0'	Total/NA	Solid	8021B	4020
885-3536-9	TP24-03 4.0'	Total/NA	Solid	8021B	4020
885-3536-10	TP24-04 0.0'	Total/NA	Solid	8021B	4020

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

GC VOA (Continued)

Analysis Batch: 4104 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-11	TP24-04 2.0	Total/NA	Solid	8021B	4020
885-3536-12	TP24-04 4.0	Total/NA	Solid	8021B	4020
MB 885-4020/1-A	Method Blank	Total/NA	Solid	8021B	4020
LCS 885-4020/3-A	Lab Control Sample	Total/NA	Solid	8021B	4020
885-3536-3 MS	TP24-01 4.0'	Total/NA	Solid	8021B	4020
885-3536-3 MSD	TP24-01 4.0'	Total/NA	Solid	8021B	4020

GC Semi VOA

Prep Batch: 4023

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	SHAKE	
885-3536-2	TP24-01 2.0'	Total/NA	Solid	SHAKE	
885-3536-3	TP24-01 4.0'	Total/NA	Solid	SHAKE	
885-3536-4	TP24-02 0.0'	Total/NA	Solid	SHAKE	
885-3536-5	TP24-02 2.0'	Total/NA	Solid	SHAKE	
885-3536-6	TP24-02 4.0'	Total/NA	Solid	SHAKE	
885-3536-7	TP24-03 0.0'	Total/NA	Solid	SHAKE	
885-3536-8	TP24-03 2.0'	Total/NA	Solid	SHAKE	
885-3536-9	TP24-03 4.0'	Total/NA	Solid	SHAKE	
885-3536-10	TP24-04 0.0'	Total/NA	Solid	SHAKE	
885-3536-11	TP24-04 2.0	Total/NA	Solid	SHAKE	
885-3536-12	TP24-04 4.0	Total/NA	Solid	SHAKE	
MB 885-4023/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4023/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3536-12 MS	TP24-04 4.0	Total/NA	Solid	SHAKE	
885-3536-12 MSD	TP24-04 4.0	Total/NA	Solid	SHAKE	

Analysis Batch: 4095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	8015D	4023
885-3536-2	TP24-01 2.0'	Total/NA	Solid	8015D	4023
885-3536-3	TP24-01 4.0'	Total/NA	Solid	8015D	4023
885-3536-4	TP24-02 0.0'	Total/NA	Solid	8015D	4023
885-3536-5	TP24-02 2.0'	Total/NA	Solid	8015D	4023
885-3536-7	TP24-03 0.0'	Total/NA	Solid	8015D	4023
885-3536-8	TP24-03 2.0'	Total/NA	Solid	8015D	4023
885-3536-9	TP24-03 4.0'	Total/NA	Solid	8015D	4023
885-3536-10	TP24-04 0.0'	Total/NA	Solid	8015D	4023
885-3536-11	TP24-04 2.0	Total/NA	Solid	8015D	4023
885-3536-12	TP24-04 4.0	Total/NA	Solid	8015D	4023
MB 885-4023/1-A	Method Blank	Total/NA	Solid	8015D	4023
LCS 885-4023/2-A	Lab Control Sample	Total/NA	Solid	8015D	4023
885-3536-12 MS	TP24-04 4.0	Total/NA	Solid	8015D	4023
885-3536-12 MSD	TP24-04 4.0	Total/NA	Solid	8015D	4023

Analysis Batch: 4140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-6	TP24-02 4.0'	Total/NA	Solid	8015D	4023

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

HPLC/IC

Prep Batch: 4051

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	300_Prep	
885-3536-2	TP24-01 2.0'	Total/NA	Solid	300_Prep	
885-3536-3	TP24-01 4.0'	Total/NA	Solid	300_Prep	
885-3536-4	TP24-02 0.0'	Total/NA	Solid	300_Prep	
885-3536-5	TP24-02 2.0'	Total/NA	Solid	300_Prep	
885-3536-6	TP24-02 4.0'	Total/NA	Solid	300_Prep	
885-3536-7	TP24-03 0.0'	Total/NA	Solid	300_Prep	
885-3536-8	TP24-03 2.0'	Total/NA	Solid	300_Prep	
885-3536-9	TP24-03 4.0'	Total/NA	Solid	300_Prep	
885-3536-10	TP24-04 0.0'	Total/NA	Solid	300_Prep	
885-3536-11	TP24-04 2.0	Total/NA	Solid	300_Prep	
885-3536-12	TP24-04 4.0	Total/NA	Solid	300_Prep	
MB 885-4051/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4051/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 4079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-2	TP24-01 2.0'	Total/NA	Solid	300.0	4051
885-3536-3	TP24-01 4.0'	Total/NA	Solid	300.0	4051
885-3536-5	TP24-02 2.0'	Total/NA	Solid	300.0	4051
885-3536-6	TP24-02 4.0'	Total/NA	Solid	300.0	4051
885-3536-7	TP24-03 0.0'	Total/NA	Solid	300.0	4051
885-3536-8	TP24-03 2.0'	Total/NA	Solid	300.0	4051
885-3536-9	TP24-03 4.0'	Total/NA	Solid	300.0	4051
885-3536-10	TP24-04 0.0'	Total/NA	Solid	300.0	4051
885-3536-11	TP24-04 2.0	Total/NA	Solid	300.0	4051
885-3536-12	TP24-04 4.0	Total/NA	Solid	300.0	4051
MB 885-4051/1-A	Method Blank	Total/NA	Solid	300.0	4051
LCS 885-4051/2-A	Lab Control Sample	Total/NA	Solid	300.0	4051
MRL 885-4079/10	Lab Control Sample	Total/NA	Solid	300.0	

Analysis Batch: 4137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3536-1	TP24-01 0.0'	Total/NA	Solid	300.0	4051
885-3536-4	TP24-02 0.0'	Total/NA	Solid	300.0	4051
MRL 885-4137/3	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-01 0.0'
Date Collected: 04/25/24 09:10
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		5	4103	JP	EET ALB	04/29/24 12:17
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		5	4104	JP	EET ALB	04/29/24 12:17
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		20	4095	JU	EET ALB	04/29/24 12:06
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		100	4137	SS	EET ALB	04/30/24 21:48

Client Sample ID: TP24-01 2.0'
Date Collected: 04/25/24 09:25
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 12:41
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 12:41
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 12:49
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 17:29

Client Sample ID: TP24-01 4.0'
Date Collected: 04/25/24 09:35
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 13:05
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 13:05
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 12:59
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 17:42

Client Sample ID: TP24-02 0.0'
Date Collected: 04/25/24 09:40
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		5	4103	JP	EET ALB	04/29/24 13:28

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-02 0.0'
Date Collected: 04/25/24 09:40
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		5	4104	JP	EET ALB	04/29/24 13:28
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		20	4095	JU	EET ALB	04/29/24 12:28
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		100	4137	SS	EET ALB	04/30/24 22:03

Client Sample ID: TP24-02 2.0'
Date Collected: 04/25/24 09:45
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 13:52
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 13:52
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 13:10
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/30/24 03:35

Client Sample ID: TP24-02 4.0'
Date Collected: 04/25/24 09:50
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 14:15
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 14:15
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 15:36
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 18:44

Client Sample ID: TP24-03 0.0'
Date Collected: 04/25/24 10:00
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 14:39
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 14:39

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-03 0.0'
Date Collected: 04/25/24 10:00
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 13:31
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 18:56

Client Sample ID: TP24-03 2.0'
Date Collected: 04/25/24 10:05
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 15:02
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 15:02
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 13:42
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 19:08

Client Sample ID: TP24-03 4.0'
Date Collected: 04/25/24 10:15
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 15:26
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 15:26
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 13:53
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 19:21

Client Sample ID: TP24-04 0.0'
Date Collected: 04/25/24 11:00
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 15:49
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 15:49
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 14:03

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Client Sample ID: TP24-04 0.0'
Date Collected: 04/25/24 11:00
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 19:33

Client Sample ID: TP24-04 2.0
Date Collected: 04/25/24 11:10
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-11
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 16:36
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 16:36
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 14:14
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 19:45

Client Sample ID: TP24-04 4.0
Date Collected: 04/25/24 11:20
Date Received: 04/27/24 07:35

Lab Sample ID: 885-3536-12
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8015D		1	4103	JP	EET ALB	04/29/24 16:59
Total/NA	Prep	5035			4020	JR	EET ALB	04/29/24 08:34
Total/NA	Analysis	8021B		1	4104	JP	EET ALB	04/29/24 16:59
Total/NA	Prep	SHAKE			4023	JU	EET ALB	04/29/24 08:52
Total/NA	Analysis	8015D		1	4095	JU	EET ALB	04/29/24 14:25
Total/NA	Prep	300_Prep			4051	KB	EET ALB	04/29/24 13:18
Total/NA	Analysis	300.0		20	4079	RC	EET ALB	04/29/24 19:58

Laboratory References:
EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3536-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: On File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: AL

On Ice: ☒ Yes ☐ No

# of Coolers: 1 4 oz

Cooler Temp(Including CF): 5.5+0.1=5.6 (°C)

HALL ENVIRONMENTAL ANALYSIS LABO

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87

Tel. 505-345-3975 Fax 505-345-4107

885-3536 COC

Analysis Request

Date	Time	Matrix	Sample Name		Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4-25-24	910	Soil	TP24-01	0.5'	4 oz	ICE											
	925		TP24-01	2.0'													
	935		TP24-01	4.0'													
	940		TP24-02	0.5'													
	945		TP24-02	2.0'													
	950		TP24-02	4.0'													
	1000		TP24-03	0.5'													
	1005		TP24-03	2.0'													
	1015		TP24-03	4.0'													
	1100		TP24-04	0.5'													
	1110		TP24-04	2.0'													
↓	1120	↓	TP24-04	4.0'	↓	↓	↓	↓	↓					↓			

Date	Time	Relinquished by	Received by	Via	Date	Time
			[illegible]		4/26/24	900
4/26/24	900	[illegible]	[illegible]	Courier	4/27/24	7:35

Remarks: cc: Sally Carttar (scarttar@vertexca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3536-1

Login Number: 3536 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Rojas, Juan

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

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ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/6/2024 12:00:16 PM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3594-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
5/6/2024 12:00:16 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3594-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3594-1
Project/Site: Red Deer CTB

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3594-1

Job ID: 885-3594-1 Eurofins Albuquerque

Job Narrative
885-3594-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 4/30/2024 7:47 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.6°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24-05 0.0'

Date Collected: 04/26/24 09:05
Date Received: 04/30/24 07:47

Lab Sample ID: 885-3594-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		04/30/24 10:02	04/30/24 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*04/30/24 10:02*	*04/30/24 18:17*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		04/30/24 10:02	04/30/24 18:17	1
Ethylbenzene	ND		0.042		mg/Kg		04/30/24 10:02	04/30/24 18:17	1
Toluene	ND		0.042		mg/Kg		04/30/24 10:02	04/30/24 18:17	1
Xylenes, Total	ND		0.083		mg/Kg		04/30/24 10:02	04/30/24 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*04/30/24 10:02*	*04/30/24 18:17*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**10**		8.9		mg/Kg		04/30/24 09:35	04/30/24 13:29	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		04/30/24 09:35	04/30/24 13:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*04/30/24 09:35*	*04/30/24 13:29*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**150**		60		mg/Kg		04/30/24 10:19	04/30/24 15:54	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24-05 1.0'

Date Collected: 04/26/24 09:10
Date Received: 04/30/24 07:47

Lab Sample ID: 885-3594-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		04/30/24 10:02	04/30/24 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*04/30/24 10:02*	*04/30/24 18:41*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		04/30/24 10:02	04/30/24 18:41	1
Ethylbenzene	ND		0.046		mg/Kg		04/30/24 10:02	04/30/24 18:41	1
Toluene	ND		0.046		mg/Kg		04/30/24 10:02	04/30/24 18:41	1
Xylenes, Total	ND		0.092		mg/Kg		04/30/24 10:02	04/30/24 18:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*04/30/24 10:02*	*04/30/24 18:41*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		04/30/24 09:35	04/30/24 13:40	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		04/30/24 09:35	04/30/24 13:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*04/30/24 09:35*	*04/30/24 13:40*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		60		mg/Kg		04/30/24 10:19	04/30/24 17:15	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24-05 2.0'

Date Collected: 04/26/24 09:20
Date Received: 04/30/24 07:47

Lab Sample ID: 885-3594-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.0		mg/Kg		04/30/24 10:02	04/30/24 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*04/30/24 10:02*	*04/30/24 19:04*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		04/30/24 10:02	04/30/24 19:04	1
Ethylbenzene	ND		0.040		mg/Kg		04/30/24 10:02	04/30/24 19:04	1
Toluene	ND		0.040		mg/Kg		04/30/24 10:02	04/30/24 19:04	1
Xylenes, Total	ND		0.079		mg/Kg		04/30/24 10:02	04/30/24 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*	*04/30/24 10:02*	*04/30/24 19:04*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		04/30/24 09:35	04/30/24 13:51	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/30/24 09:35	04/30/24 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*04/30/24 09:35*	*04/30/24 13:51*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/30/24 10:19	04/30/24 17:30	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24-05 4.0'

Date Collected: 04/26/24 09:25
Date Received: 04/30/24 07:47

Lab Sample ID: 885-3594-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		04/30/24 10:02	04/30/24 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*04/30/24 10:02*	*04/30/24 19:28*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		04/30/24 10:02	04/30/24 19:28	1
Ethylbenzene	ND		0.043		mg/Kg		04/30/24 10:02	04/30/24 19:28	1
Toluene	ND		0.043		mg/Kg		04/30/24 10:02	04/30/24 19:28	1
Xylenes, Total	ND		0.086		mg/Kg		04/30/24 10:02	04/30/24 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/30/24 10:02*	*04/30/24 19:28*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		04/30/24 09:35	04/30/24 14:02	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		04/30/24 09:35	04/30/24 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*04/30/24 09:35*	*04/30/24 14:02*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		04/30/24 10:19	04/30/24 17:45	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24-01 1.0'

Date Collected: 04/26/24 09:55
Date Received: 04/30/24 07:47

Lab Sample ID: 885-3594-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.5		mg/Kg		04/30/24 10:13	04/30/24 23:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*04/30/24 10:13*	*04/30/24 23:22*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		04/30/24 10:13	04/30/24 23:22	1
Ethylbenzene	ND		0.045		mg/Kg		04/30/24 10:13	04/30/24 23:22	1
Toluene	ND		0.045		mg/Kg		04/30/24 10:13	04/30/24 23:22	1
Xylenes, Total	ND		0.090		mg/Kg		04/30/24 10:13	04/30/24 23:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/30/24 10:13*	*04/30/24 23:22*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		04/30/24 09:35	04/30/24 14:12	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		04/30/24 09:35	04/30/24 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*04/30/24 09:35*	*04/30/24 14:12*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**560**		60		mg/Kg		04/30/24 10:19	04/30/24 18:00	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24--04 1.0'

Date Collected: 04/26/24 10:00
Date Received: 04/30/24 07:47

Lab Sample ID: 885-3594-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		6.1		mg/Kg		04/30/24 10:13	04/30/24 23:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*04/30/24 10:13*	*04/30/24 23:45*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.030		mg/Kg		04/30/24 10:13	04/30/24 23:45	1
Ethylbenzene	ND		0.061		mg/Kg		04/30/24 10:13	04/30/24 23:45	1
Toluene	ND		0.061		mg/Kg		04/30/24 10:13	04/30/24 23:45	1
Xylenes, Total	ND		0.12		mg/Kg		04/30/24 10:13	04/30/24 23:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*04/30/24 10:13*	*04/30/24 23:45*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		04/30/24 09:35	04/30/24 14:23	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		04/30/24 09:35	04/30/24 14:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*04/30/24 09:35*	*04/30/24 14:23*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**130**		60		mg/Kg		04/30/24 10:19	04/30/24 18:46	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4096/1-A
Matrix: Solid
Analysis Batch: 4124

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4096

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		04/30/24 09:32	04/30/24 11:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*04/30/24 09:32*	*04/30/24 11:15*	*1*

Lab Sample ID: LCS 885-4096/2-A
Matrix: Solid
Analysis Batch: 4124

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4096

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.2		mg/Kg		101	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*205*		*15 - 244*

Lab Sample ID: MB 885-4100/1-A
Matrix: Solid
Analysis Batch: 4124

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4100

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		04/30/24 10:13	04/30/24 22:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*04/30/24 10:13*	*04/30/24 22:58*	*1*

Lab Sample ID: LCS 885-4100/2-A
Matrix: Solid
Analysis Batch: 4124

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4100

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.1		mg/Kg		100	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*207*		*15 - 244*

Lab Sample ID: 885-3594-5 MS
Matrix: Solid
Analysis Batch: 4124

Client Sample ID: TP24-01 1.0'
Prep Type: Total/NA
Prep Batch: 4100

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		22.5	22.1		mg/Kg		99	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*205*		*15 - 244*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Method: 8015D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: 885-3594-5 MSD
Matrix: Solid
Analysis Batch: 4124

Client Sample ID: TP24-01 1.0'
Prep Type: Total/NA
Prep Batch: 4100

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		22.5	22.7		mg/Kg		101	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*212*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4096/1-A
Matrix: Solid
Analysis Batch: 4125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4096

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/30/24 09:32	04/30/24 11:15	1
Ethylbenzene	ND		0.050		mg/Kg		04/30/24 09:32	04/30/24 11:15	1
Toluene	ND		0.050		mg/Kg		04/30/24 09:32	04/30/24 11:15	1
Xylenes, Total	ND		0.10		mg/Kg		04/30/24 09:32	04/30/24 11:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*04/30/24 09:32*	*04/30/24 11:15*	*1*

Lab Sample ID: LCS 885-4096/3-A
Matrix: Solid
Analysis Batch: 4125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4096

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.974		mg/Kg		97	70 - 130
Ethylbenzene	1.00	0.928		mg/Kg		93	70 - 130
m,p-Xylene	2.00	1.89		mg/Kg		94	70 - 130
o-Xylene	1.00	0.926		mg/Kg		93	70 - 130
Toluene	1.00	0.923		mg/Kg		92	70 - 130
Xylenes, Total	3.00	2.81		mg/Kg		94	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*39 - 146*

Lab Sample ID: MB 885-4100/1-A
Matrix: Solid
Analysis Batch: 4125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4100

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		04/30/24 10:13	04/30/24 22:58	1
Ethylbenzene	ND		0.050		mg/Kg		04/30/24 10:13	04/30/24 22:58	1
Toluene	ND		0.050		mg/Kg		04/30/24 10:13	04/30/24 22:58	1
Xylenes, Total	ND		0.10		mg/Kg		04/30/24 10:13	04/30/24 22:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*04/30/24 10:13*	*04/30/24 22:58*	*1*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: LCS 885-4100/3-A
Matrix: Solid
Analysis Batch: 4125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4100

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.984		mg/Kg		98	70 - 130		
Ethylbenzene			1.00	0.926		mg/Kg		93	70 - 130		
m,p-Xylene			2.00	1.88		mg/Kg		94	70 - 130		
o-Xylene			1.00	0.921		mg/Kg		92	70 - 130		
Toluene			1.00	0.931		mg/Kg		93	70 - 130		
Xylenes, Total			3.00	2.80		mg/Kg		93	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*

Lab Sample ID: 885-3594-6 MS
Matrix: Solid
Analysis Batch: 4125

Client Sample ID: TP24--04 1.0'
Prep Type: Total/NA
Prep Batch: 4100

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		1.21	1.16		mg/Kg		95	70 - 130		
Ethylbenzene	ND		1.21	1.10		mg/Kg		91	70 - 130		
m,p-Xylene	ND		2.43	2.22		mg/Kg		90	70 - 130		
o-Xylene	ND		1.21	1.09		mg/Kg		90	70 - 130		
Toluene	ND		1.21	1.11		mg/Kg		91	70 - 130		
Xylenes, Total	ND		3.64	3.32		mg/Kg		90	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*39 - 146*

Lab Sample ID: 885-3594-6 MSD
Matrix: Solid
Analysis Batch: 4125

Client Sample ID: TP24--04 1.0'
Prep Type: Total/NA
Prep Batch: 4100

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		1.21	1.13		mg/Kg		93	70 - 130	2	20
Ethylbenzene	ND		1.21	1.10		mg/Kg		91	70 - 130	1	20
m,p-Xylene	ND		2.43	2.23		mg/Kg		90	70 - 130	0	20
o-Xylene	ND		1.21	1.11		mg/Kg		91	70 - 130	1	20
Toluene	ND		1.21	1.07		mg/Kg		88	70 - 130	3	20
Xylenes, Total	ND		3.64	3.33		mg/Kg		91	70 - 130	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*39 - 146*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4098/1-A
Matrix: Solid
Analysis Batch: 4140

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4098

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		04/30/24 09:35	04/30/24 11:53	1

Eurofins Albuquerque

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-4098/1-A
Matrix: Solid
Analysis Batch: 4140

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4098

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		04/30/24 09:35	04/30/24 11:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*86*		*62 - 134*	*04/30/24 09:35*	*04/30/24 11:53*	*1*

Lab Sample ID: LCS 885-4098/2-A
Matrix: Solid
Analysis Batch: 4140

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4098

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	49.0		mg/Kg		98	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*

Lab Sample ID: 885-3594-6 MS
Matrix: Solid
Analysis Batch: 4140

Client Sample ID: TP24--04 1.0'
Prep Type: Total/NA
Prep Batch: 4098

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		46.5	45.6		mg/Kg		98	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*

Lab Sample ID: 885-3594-6 MSD
Matrix: Solid
Analysis Batch: 4140

Client Sample ID: TP24--04 1.0'
Prep Type: Total/NA
Prep Batch: 4098

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		45.8	46.8		mg/Kg		102	44 - 136	3	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4101/1-A
Matrix: Solid
Analysis Batch: 4137

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4101

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		04/30/24 10:19	04/30/24 12:48	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-4101/2-A
Matrix: Solid
Analysis Batch: 4137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4101

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.2		mg/Kg		95	90 - 110		

Lab Sample ID: 885-3594-1 MS
Matrix: Solid
Analysis Batch: 4137

Client Sample ID: TP24-05 0.0'
Prep Type: Total/NA
Prep Batch: 4101

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	150		29.9	178	4	mg/Kg		104	50 - 150		

Lab Sample ID: 885-3594-1 MSD
Matrix: Solid
Analysis Batch: 4137

Client Sample ID: TP24-05 0.0'
Prep Type: Total/NA
Prep Batch: 4101

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	150		29.9	180	4	mg/Kg		107	50 - 150	1	20

Lab Sample ID: MRL 885-4137/3
Matrix: Solid
Analysis Batch: 4137

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.537		mg/L		107	50 - 150		

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

GC VOA

Prep Batch: 4096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	5035	
885-3594-2	TP24-05 1.0'	Total/NA	Solid	5035	
885-3594-3	TP24-05 2.0'	Total/NA	Solid	5035	
885-3594-4	TP24-05 4.0'	Total/NA	Solid	5035	
MB 885-4096/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4096/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4096/3-A	Lab Control Sample	Total/NA	Solid	5035	

Prep Batch: 4100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-5	TP24-01 1.0'	Total/NA	Solid	5035	
885-3594-6	TP24--04 1.0'	Total/NA	Solid	5035	
MB 885-4100/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4100/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4100/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-3594-5 MS	TP24-01 1.0'	Total/NA	Solid	5035	
885-3594-5 MSD	TP24-01 1.0'	Total/NA	Solid	5035	
885-3594-6 MS	TP24--04 1.0'	Total/NA	Solid	5035	
885-3594-6 MSD	TP24--04 1.0'	Total/NA	Solid	5035	

Analysis Batch: 4124

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	8015D	4096
885-3594-2	TP24-05 1.0'	Total/NA	Solid	8015D	4096
885-3594-3	TP24-05 2.0'	Total/NA	Solid	8015D	4096
885-3594-4	TP24-05 4.0'	Total/NA	Solid	8015D	4096
885-3594-5	TP24-01 1.0'	Total/NA	Solid	8015D	4100
885-3594-6	TP24--04 1.0'	Total/NA	Solid	8015D	4100
MB 885-4096/1-A	Method Blank	Total/NA	Solid	8015D	4096
MB 885-4100/1-A	Method Blank	Total/NA	Solid	8015D	4100
LCS 885-4096/2-A	Lab Control Sample	Total/NA	Solid	8015D	4096
LCS 885-4100/2-A	Lab Control Sample	Total/NA	Solid	8015D	4100
885-3594-5 MS	TP24-01 1.0'	Total/NA	Solid	8015D	4100
885-3594-5 MSD	TP24-01 1.0'	Total/NA	Solid	8015D	4100

Analysis Batch: 4125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	8021B	4096
885-3594-2	TP24-05 1.0'	Total/NA	Solid	8021B	4096
885-3594-3	TP24-05 2.0'	Total/NA	Solid	8021B	4096
885-3594-4	TP24-05 4.0'	Total/NA	Solid	8021B	4096
885-3594-5	TP24-01 1.0'	Total/NA	Solid	8021B	4100
885-3594-6	TP24--04 1.0'	Total/NA	Solid	8021B	4100
MB 885-4096/1-A	Method Blank	Total/NA	Solid	8021B	4096
MB 885-4100/1-A	Method Blank	Total/NA	Solid	8021B	4100
LCS 885-4096/3-A	Lab Control Sample	Total/NA	Solid	8021B	4096
LCS 885-4100/3-A	Lab Control Sample	Total/NA	Solid	8021B	4100
885-3594-6 MS	TP24--04 1.0'	Total/NA	Solid	8021B	4100
885-3594-6 MSD	TP24--04 1.0'	Total/NA	Solid	8021B	4100

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

GC Semi VOA

Prep Batch: 4098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	SHAKE	
885-3594-2	TP24-05 1.0'	Total/NA	Solid	SHAKE	
885-3594-3	TP24-05 2.0'	Total/NA	Solid	SHAKE	
885-3594-4	TP24-05 4.0'	Total/NA	Solid	SHAKE	
885-3594-5	TP24-01 1.0'	Total/NA	Solid	SHAKE	
885-3594-6	TP24--04 1.0'	Total/NA	Solid	SHAKE	
MB 885-4098/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4098/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3594-6 MS	TP24--04 1.0'	Total/NA	Solid	SHAKE	
885-3594-6 MSD	TP24--04 1.0'	Total/NA	Solid	SHAKE	

Analysis Batch: 4140

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	8015D	4098
885-3594-2	TP24-05 1.0'	Total/NA	Solid	8015D	4098
885-3594-3	TP24-05 2.0'	Total/NA	Solid	8015D	4098
885-3594-4	TP24-05 4.0'	Total/NA	Solid	8015D	4098
885-3594-5	TP24-01 1.0'	Total/NA	Solid	8015D	4098
885-3594-6	TP24--04 1.0'	Total/NA	Solid	8015D	4098
MB 885-4098/1-A	Method Blank	Total/NA	Solid	8015D	4098
LCS 885-4098/2-A	Lab Control Sample	Total/NA	Solid	8015D	4098
885-3594-6 MS	TP24--04 1.0'	Total/NA	Solid	8015D	4098
885-3594-6 MSD	TP24--04 1.0'	Total/NA	Solid	8015D	4098

HPLC/IC

Prep Batch: 4101

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	300_Prep	
885-3594-2	TP24-05 1.0'	Total/NA	Solid	300_Prep	
885-3594-3	TP24-05 2.0'	Total/NA	Solid	300_Prep	
885-3594-4	TP24-05 4.0'	Total/NA	Solid	300_Prep	
885-3594-5	TP24-01 1.0'	Total/NA	Solid	300_Prep	
885-3594-6	TP24--04 1.0'	Total/NA	Solid	300_Prep	
MB 885-4101/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4101/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3594-1 MS	TP24-05 0.0'	Total/NA	Solid	300_Prep	
885-3594-1 MSD	TP24-05 0.0'	Total/NA	Solid	300_Prep	

Analysis Batch: 4137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1	TP24-05 0.0'	Total/NA	Solid	300.0	4101
885-3594-2	TP24-05 1.0'	Total/NA	Solid	300.0	4101
885-3594-3	TP24-05 2.0'	Total/NA	Solid	300.0	4101
885-3594-4	TP24-05 4.0'	Total/NA	Solid	300.0	4101
885-3594-5	TP24-01 1.0'	Total/NA	Solid	300.0	4101
885-3594-6	TP24--04 1.0'	Total/NA	Solid	300.0	4101
MB 885-4101/1-A	Method Blank	Total/NA	Solid	300.0	4101
LCS 885-4101/2-A	Lab Control Sample	Total/NA	Solid	300.0	4101
MRL 885-4137/3	Lab Control Sample	Total/NA	Solid	300.0	
885-3594-1 MS	TP24-05 0.0'	Total/NA	Solid	300.0	4101

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

HPLC/IC (Continued)

Analysis Batch: 4137 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3594-1 MSD	TP24-05 0.0'	Total/NA	Solid	300.0	4101

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Client Sample ID: TP24-05 0.0'

Lab Sample ID: 885-3594-1
Matrix: Solid
Date Collected: 04/26/24 09:05
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8015D		1	4124	JP	EET ALB	04/30/24 18:17
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8021B		1	4125	JP	EET ALB	04/30/24 18:17
Total/NA	Prep	SHAKE			4098	JU	EET ALB	04/30/24 09:35
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 13:29
Total/NA	Prep	300_Prep			4101	KB	EET ALB	04/30/24 10:19
Total/NA	Analysis	300.0		20	4137	SS	EET ALB	04/30/24 15:54

Client Sample ID: TP24-05 1.0'

Lab Sample ID: 885-3594-2
Matrix: Solid
Date Collected: 04/26/24 09:10
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8015D		1	4124	JP	EET ALB	04/30/24 18:41
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8021B		1	4125	JP	EET ALB	04/30/24 18:41
Total/NA	Prep	SHAKE			4098	JU	EET ALB	04/30/24 09:35
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 13:40
Total/NA	Prep	300_Prep			4101	KB	EET ALB	04/30/24 10:19
Total/NA	Analysis	300.0		20	4137	SS	EET ALB	04/30/24 17:15

Client Sample ID: TP24-05 2.0'

Lab Sample ID: 885-3594-3
Matrix: Solid
Date Collected: 04/26/24 09:20
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8015D		1	4124	JP	EET ALB	04/30/24 19:04
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8021B		1	4125	JP	EET ALB	04/30/24 19:04
Total/NA	Prep	SHAKE			4098	JU	EET ALB	04/30/24 09:35
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 13:51
Total/NA	Prep	300_Prep			4101	KB	EET ALB	04/30/24 10:19
Total/NA	Analysis	300.0		20	4137	SS	EET ALB	04/30/24 17:30

Client Sample ID: TP24-05 4.0'

Lab Sample ID: 885-3594-4
Matrix: Solid
Date Collected: 04/26/24 09:25
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8015D		1	4124	JP	EET ALB	04/30/24 19:28

Lab Chronicle

Client: Vertex
Job ID: 885-3594-1
Project/Site: Red Deer CTB

Client Sample ID: TP24-05 4.0'
Lab Sample ID: 885-3594-4
Date Collected: 04/26/24 09:25
Matrix: Solid
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4096	JP	EET ALB	04/30/24 10:02
Total/NA	Analysis	8021B		1	4125	JP	EET ALB	04/30/24 19:28
Total/NA	Prep	SHAKE			4098	JU	EET ALB	04/30/24 09:35
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 14:02
Total/NA	Prep	300_Prep			4101	KB	EET ALB	04/30/24 10:19
Total/NA	Analysis	300.0		20	4137	SS	EET ALB	04/30/24 17:45

Client Sample ID: TP24-01 1.0'
Lab Sample ID: 885-3594-5
Date Collected: 04/26/24 09:55
Matrix: Solid
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4100	JP	EET ALB	04/30/24 10:13
Total/NA	Analysis	8015D		1	4124	JP	EET ALB	04/30/24 23:22
Total/NA	Prep	5035			4100	JP	EET ALB	04/30/24 10:13
Total/NA	Analysis	8021B		1	4125	JP	EET ALB	04/30/24 23:22
Total/NA	Prep	SHAKE			4098	JU	EET ALB	04/30/24 09:35
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 14:12
Total/NA	Prep	300_Prep			4101	KB	EET ALB	04/30/24 10:19
Total/NA	Analysis	300.0		20	4137	SS	EET ALB	04/30/24 18:00

Client Sample ID: TP24--04 1.0'
Lab Sample ID: 885-3594-6
Date Collected: 04/26/24 10:00
Matrix: Solid
Date Received: 04/30/24 07:47

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4100	JP	EET ALB	04/30/24 10:13
Total/NA	Analysis	8015D		1	4124	JP	EET ALB	04/30/24 23:45
Total/NA	Prep	5035			4100	JP	EET ALB	04/30/24 10:13
Total/NA	Analysis	8021B		1	4125	JP	EET ALB	04/30/24 23:45
Total/NA	Prep	SHAKE			4098	JU	EET ALB	04/30/24 09:35
Total/NA	Analysis	8015D		1	4140	JU	EET ALB	04/30/24 14:23
Total/NA	Prep	300_Prep			4101	KB	EET ALB	04/30/24 10:19
Total/NA	Analysis	300.0		20	4137	SS	EET ALB	04/30/24 18:46

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3594-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: AL

On Ice: ☒ Yes ☐ No Morty

# of Coolers: 1

Cooler Temp(Including CF): 4.6 + 0 = 4.6 (°C)

HALL ENVIRONMENTAL ANALYSIS LABOR
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 8710
Tel. 505-345-3975 Fax 505-345-4107

685-3594 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4-26-24	0905	Soil	TP24-05 0.0'	4oz	ICE	1										
	0910		TP24-05 1.0'			2										
	0920		TP24-05 2.0'			3										
	0925		TP24-05 4.0'			4										
	0955		TP24-01 1.0'			5										
	1000		TP24-04 1.0'			6										

Date	Time	Relinquished by	Received by	Via	Date	Time
					4/29/24	945
4/29/24	1710			courier	4/30/24	7:47

Remarks: Direct Bill Mack
CC: Sally Carttar
scarttar@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3594-1

Login Number: 3594 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	True	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/6/2024 12:48:11 PM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3735-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



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5/6/2024 12:48:11 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3735-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3735-1
Project/Site: Red Deer CTB

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3735-1

Job ID: 885-3735-1 Eurofins Albuquerque

Job Narrative
885-3735-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/2/2024 7:55 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.3°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
Method 8015D_DRO: Surrogate recovery was outside acceptance limits for the following matrix spike/matrix spike duplicate (MS/MSD) sample: (885-3735-B- A MS). The parent sample's surrogate recovery was within limits. The MS/MSD sample has been qualified and reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-01 2'

Date Collected: 04/30/24 08:05
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/02/24 09:56	05/02/24 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*15 - 244*	*05/02/24 09:56*	*05/02/24 18:25*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/02/24 09:56	05/02/24 18:25	1
Ethylbenzene	ND		0.042		mg/Kg		05/02/24 09:56	05/02/24 18:25	1
Toluene	ND		0.042		mg/Kg		05/02/24 09:56	05/02/24 18:25	1
Xylenes, Total	ND		0.085		mg/Kg		05/02/24 09:56	05/02/24 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/02/24 09:56*	*05/02/24 18:25*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		05/02/24 12:13	05/02/24 20:37	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		05/02/24 12:13	05/02/24 20:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*77*		*62 - 134*	*05/02/24 12:13*	*05/02/24 20:37*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/02/24 13:07	05/02/24 17:23	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-02 2'

Date Collected: 04/30/24 08:15
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.5		mg/Kg		05/02/24 09:56	05/02/24 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/02/24 09:56*	*05/02/24 18:48*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/02/24 09:56	05/02/24 18:48	1
Ethylbenzene	ND		0.045		mg/Kg		05/02/24 09:56	05/02/24 18:48	1
Toluene	ND		0.045		mg/Kg		05/02/24 09:56	05/02/24 18:48	1
Xylenes, Total	ND		0.090		mg/Kg		05/02/24 09:56	05/02/24 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/02/24 09:56*	*05/02/24 18:48*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/02/24 12:13	05/02/24 20:49	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/02/24 12:13	05/02/24 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*81*		*62 - 134*	*05/02/24 12:13*	*05/02/24 20:49*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**84**		61		mg/Kg		05/02/24 13:07	05/02/24 17:35	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-07 2'

Date Collected: 04/30/24 08:25
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/02/24 09:56	05/02/24 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/02/24 09:56*	*05/02/24 19:11*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/02/24 09:56	05/02/24 19:11	1
Ethylbenzene	ND		0.050		mg/Kg		05/02/24 09:56	05/02/24 19:11	1
Toluene	ND		0.050		mg/Kg		05/02/24 09:56	05/02/24 19:11	1
Xylenes, Total	ND		0.10		mg/Kg		05/02/24 09:56	05/02/24 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/02/24 09:56*	*05/02/24 19:11*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/02/24 12:13	05/02/24 21:01	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/02/24 12:13	05/02/24 21:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*81*		*62 - 134*	*05/02/24 12:13*	*05/02/24 21:01*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**150**		60		mg/Kg		05/02/24 13:07	05/02/24 17:48	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-08 2'

Date Collected: 04/30/24 08:35
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/02/24 09:56	05/02/24 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/02/24 09:56*	*05/02/24 19:35*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/02/24 09:56	05/02/24 19:35	1
Ethylbenzene	ND		0.043		mg/Kg		05/02/24 09:56	05/02/24 19:35	1
Toluene	ND		0.043		mg/Kg		05/02/24 09:56	05/02/24 19:35	1
Xylenes, Total	ND		0.087		mg/Kg		05/02/24 09:56	05/02/24 19:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/02/24 09:56*	*05/02/24 19:35*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		05/02/24 12:13	05/02/24 21:13	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/02/24 12:13	05/02/24 21:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*05/02/24 12:13*	*05/02/24 21:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**66**		61		mg/Kg		05/02/24 13:07	05/02/24 18:27	20

Client Sample Results

Client: Vertex
Job ID: 885-3735-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-09 2'
Lab Sample ID: 885-3735-5
Date Collected: 04/30/24 08:45
Matrix: Solid
Date Received: 05/02/24 07:55

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/02/24 09:56	05/02/24 19:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/02/24 09:56*	*05/02/24 19:58*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/02/24 09:56	05/02/24 19:58	1
Ethylbenzene	ND		0.042		mg/Kg		05/02/24 09:56	05/02/24 19:58	1
Toluene	ND		0.042		mg/Kg		05/02/24 09:56	05/02/24 19:58	1
Xylenes, Total	ND		0.085		mg/Kg		05/02/24 09:56	05/02/24 19:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/02/24 09:56*	*05/02/24 19:58*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/02/24 12:13	05/02/24 21:26	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/02/24 12:13	05/02/24 21:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*	*05/02/24 12:13*	*05/02/24 21:26*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**69**		60		mg/Kg		05/02/24 13:07	05/02/24 18:40	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-16 3'

Date Collected: 04/30/24 08:55
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/02/24 09:56	05/02/24 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/02/24 09:56*	*05/02/24 20:21*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/02/24 09:56	05/02/24 20:21	1
Ethylbenzene	ND		0.042		mg/Kg		05/02/24 09:56	05/02/24 20:21	1
Toluene	ND		0.042		mg/Kg		05/02/24 09:56	05/02/24 20:21	1
Xylenes, Total	ND		0.084		mg/Kg		05/02/24 09:56	05/02/24 20:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/02/24 09:56*	*05/02/24 20:21*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.6		mg/Kg		05/02/24 12:13	05/02/24 21:38	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		05/02/24 12:13	05/02/24 21:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*	*05/02/24 12:13*	*05/02/24 21:38*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/02/24 13:07	05/02/24 18:53	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-17 3'

Date Collected: 04/30/24 09:05
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		05/02/24 09:56	05/02/24 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/02/24 09:56*	*05/02/24 20:45*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/02/24 09:56	05/02/24 20:45	1
Ethylbenzene	ND		0.046		mg/Kg		05/02/24 09:56	05/02/24 20:45	1
Toluene	ND		0.046		mg/Kg		05/02/24 09:56	05/02/24 20:45	1
Xylenes, Total	ND		0.093		mg/Kg		05/02/24 09:56	05/02/24 20:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/02/24 09:56*	*05/02/24 20:45*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/02/24 10:08	05/03/24 15:20	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/02/24 10:08	05/03/24 15:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*103*		*62 - 134*	*05/02/24 10:08*	*05/03/24 15:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/02/24 15:59	05/02/24 21:27	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-03 2'

Date Collected: 04/30/24 13:00
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-8

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/02/24 09:56	05/02/24 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/02/24 09:56*	*05/02/24 21:08*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/02/24 09:56	05/02/24 21:08	1
Ethylbenzene	ND		0.050		mg/Kg		05/02/24 09:56	05/02/24 21:08	1
Toluene	ND		0.050		mg/Kg		05/02/24 09:56	05/02/24 21:08	1
Xylenes, Total	ND		0.10		mg/Kg		05/02/24 09:56	05/02/24 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/02/24 09:56*	*05/02/24 21:08*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		05/02/24 12:13	05/02/24 21:50	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/02/24 12:13	05/02/24 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*05/02/24 12:13*	*05/02/24 21:50*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**74**		60		mg/Kg		05/02/24 13:07	05/02/24 19:06	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-06 2'

Date Collected: 04/30/24 13:10
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-9

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		6.6		mg/Kg		05/02/24 09:56	05/02/24 21:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/02/24 09:56*	*05/02/24 21:55*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.033		mg/Kg		05/02/24 09:56	05/02/24 21:55	1
Ethylbenzene	ND		0.066		mg/Kg		05/02/24 09:56	05/02/24 21:55	1
Toluene	ND		0.066		mg/Kg		05/02/24 09:56	05/02/24 21:55	1
Xylenes, Total	ND		0.13		mg/Kg		05/02/24 09:56	05/02/24 21:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/02/24 09:56*	*05/02/24 21:55*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/02/24 10:08	05/02/24 23:04	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/02/24 10:08	05/02/24 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*71*		*62 - 134*	*05/02/24 10:08*	*05/02/24 23:04*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		05/02/24 15:59	05/02/24 22:06	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-18 3'

Date Collected: 04/30/24 13:40
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-10
Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		05/02/24 09:56	05/02/24 22:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/02/24 09:56*	*05/02/24 22:42*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/02/24 09:56	05/02/24 22:42	1
Ethylbenzene	ND		0.046		mg/Kg		05/02/24 09:56	05/02/24 22:42	1
Toluene	ND		0.046		mg/Kg		05/02/24 09:56	05/02/24 22:42	1
Xylenes, Total	ND		0.092		mg/Kg		05/02/24 09:56	05/02/24 22:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/02/24 09:56*	*05/02/24 22:42*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/02/24 10:08	05/02/24 23:41	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/02/24 10:08	05/02/24 23:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*85*		*62 - 134*	*05/02/24 10:08*	*05/02/24 23:41*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/02/24 15:59	05/02/24 22:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: WES24-01 0-2'

Date Collected: 04/30/24 13:45
Date Received: 05/02/24 07:55

Lab Sample ID: 885-3735-11

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		6.4		mg/Kg		05/02/24 09:56	05/02/24 23:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/02/24 09:56*	*05/02/24 23:06*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.032		mg/Kg		05/02/24 09:56	05/02/24 23:06	1
Ethylbenzene	ND		0.064		mg/Kg		05/02/24 09:56	05/02/24 23:06	1
Toluene	ND		0.064		mg/Kg		05/02/24 09:56	05/02/24 23:06	1
Xylenes, Total	ND		0.13		mg/Kg		05/02/24 09:56	05/02/24 23:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/02/24 09:56*	*05/02/24 23:06*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/02/24 10:08	05/02/24 23:53	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/02/24 10:08	05/02/24 23:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*85*		*62 - 134*	*05/02/24 10:08*	*05/02/24 23:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		05/02/24 15:59	05/02/24 22:31	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4245/1-A
Matrix: Solid
Analysis Batch: 4316

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4245

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/02/24 09:56	05/02/24 14:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/02/24 09:56*	*05/02/24 14:07*	*1*

Lab Sample ID: LCS 885-4245/2-A
Matrix: Solid
Analysis Batch: 4316

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4245

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.0		mg/Kg		100	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*202*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4245/1-A
Matrix: Solid
Analysis Batch: 4317

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4245

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/02/24 09:56	05/02/24 14:07	1
Ethylbenzene	ND		0.050		mg/Kg		05/02/24 09:56	05/02/24 14:07	1
Toluene	ND		0.050		mg/Kg		05/02/24 09:56	05/02/24 14:07	1
Xylenes, Total	ND		0.10		mg/Kg		05/02/24 09:56	05/02/24 14:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/02/24 09:56*	*05/02/24 14:07*	*1*

Lab Sample ID: LCS 885-4245/3-A
Matrix: Solid
Analysis Batch: 4317

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4245

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.967		mg/Kg		97	70 - 130		
Ethylbenzene			1.00	0.905		mg/Kg		91	70 - 130		
m,p-Xylene			2.00	1.85		mg/Kg		92	70 - 130		
o-Xylene			1.00	0.906		mg/Kg		91	70 - 130		
Toluene			1.00	0.903		mg/Kg		90	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4246/1-A
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4246

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/02/24 10:08	05/02/24 22:39	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/02/24 10:08	05/02/24 22:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*78*		*62 - 134*	*05/02/24 10:08*	*05/02/24 22:39*	*1*

Lab Sample ID: LCS 885-4246/2-A
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4246

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	44.1		mg/Kg		88	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*

Lab Sample ID: 885-3735-9 MS
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: BES24-06 2'
Prep Type: Total/NA
Prep Batch: 4246

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		45.9	40.2		mg/Kg		88	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*

Lab Sample ID: 885-3735-9 MSD
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: BES24-06 2'
Prep Type: Total/NA
Prep Batch: 4246

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		49.7	45.0		mg/Kg		91	44 - 136	11	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*

Lab Sample ID: MB 885-4263/1-A
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4263

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/02/24 12:13	05/02/24 17:33	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/02/24 12:13	05/02/24 17:33	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-4263/1-A
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4263

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	104		62 - 134	05/02/24 12:13	05/02/24 17:33	1

Lab Sample ID: LCS 885-4263/2-A
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4263

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	44.3		mg/Kg		89	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	106		62 - 134

Lab Sample ID: 885-3735-8 MS
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: BES24-03 2'
Prep Type: Total/NA
Prep Batch: 4263

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	44	S1-	62 - 134

Lab Sample ID: 885-3735-8 MSD
Matrix: Solid
Analysis Batch: 4310

Client Sample ID: BES24-03 2'
Prep Type: Total/NA
Prep Batch: 4263

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		47.5	42.7		mg/Kg					

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Di-n-octyl phthalate (Surr)	89		62 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4273/1-A
Matrix: Solid
Analysis Batch: 4296

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4273

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/02/24 13:07	05/02/24 13:50	1

Lab Sample ID: LCS 885-4273/2-A
Matrix: Solid
Analysis Batch: 4296

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4273

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.0		mg/Kg		93	90 - 110		

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 885-4290/1-A
Matrix: Solid
Analysis Batch: 4296

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4290

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/02/24 15:59	05/02/24 21:01	1

Lab Sample ID: LCS 885-4290/2-A
Matrix: Solid
Analysis Batch: 4296

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4290

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.0		mg/Kg		93	90 - 110		

Lab Sample ID: 885-3735-7 MS
Matrix: Solid
Analysis Batch: 4296

Client Sample ID: BES24-17 3'
Prep Type: Total/NA
Prep Batch: 4290

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	ND		30.2	ND		mg/Kg		NC	50 - 150		

Lab Sample ID: 885-3735-7 MSD
Matrix: Solid
Analysis Batch: 4296

Client Sample ID: BES24-17 3'
Prep Type: Total/NA
Prep Batch: 4290

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		29.8	ND		mg/Kg		NC	50 - 150	NC	20

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

GC VOA

Prep Batch: 4245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	5035	
885-3735-2	BES24-02 2'	Total/NA	Solid	5035	
885-3735-3	BES24-07 2'	Total/NA	Solid	5035	
885-3735-4	BES24-08 2'	Total/NA	Solid	5035	
885-3735-5	BES24-09 2'	Total/NA	Solid	5035	
885-3735-6	BES24-16 3'	Total/NA	Solid	5035	
885-3735-7	BES24-17 3'	Total/NA	Solid	5035	
885-3735-8	BES24-03 2'	Total/NA	Solid	5035	
885-3735-9	BES24-06 2'	Total/NA	Solid	5035	
885-3735-10	BES24-18 3'	Total/NA	Solid	5035	
885-3735-11	WES24-01 0-2'	Total/NA	Solid	5035	
MB 885-4245/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4245/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4245/3-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 4316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	8015D	4245
885-3735-2	BES24-02 2'	Total/NA	Solid	8015D	4245
885-3735-3	BES24-07 2'	Total/NA	Solid	8015D	4245
885-3735-4	BES24-08 2'	Total/NA	Solid	8015D	4245
885-3735-5	BES24-09 2'	Total/NA	Solid	8015D	4245
885-3735-6	BES24-16 3'	Total/NA	Solid	8015D	4245
885-3735-7	BES24-17 3'	Total/NA	Solid	8015D	4245
885-3735-8	BES24-03 2'	Total/NA	Solid	8015D	4245
885-3735-9	BES24-06 2'	Total/NA	Solid	8015D	4245
885-3735-10	BES24-18 3'	Total/NA	Solid	8015D	4245
885-3735-11	WES24-01 0-2'	Total/NA	Solid	8015D	4245
MB 885-4245/1-A	Method Blank	Total/NA	Solid	8015D	4245
LCS 885-4245/2-A	Lab Control Sample	Total/NA	Solid	8015D	4245

Analysis Batch: 4317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	8021B	4245
885-3735-2	BES24-02 2'	Total/NA	Solid	8021B	4245
885-3735-3	BES24-07 2'	Total/NA	Solid	8021B	4245
885-3735-4	BES24-08 2'	Total/NA	Solid	8021B	4245
885-3735-5	BES24-09 2'	Total/NA	Solid	8021B	4245
885-3735-6	BES24-16 3'	Total/NA	Solid	8021B	4245
885-3735-7	BES24-17 3'	Total/NA	Solid	8021B	4245
885-3735-8	BES24-03 2'	Total/NA	Solid	8021B	4245
885-3735-9	BES24-06 2'	Total/NA	Solid	8021B	4245
885-3735-10	BES24-18 3'	Total/NA	Solid	8021B	4245
885-3735-11	WES24-01 0-2'	Total/NA	Solid	8021B	4245
MB 885-4245/1-A	Method Blank	Total/NA	Solid	8021B	4245
LCS 885-4245/3-A	Lab Control Sample	Total/NA	Solid	8021B	4245

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

GC Semi VOA

Prep Batch: 4246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-7	BES24-17 3'	Total/NA	Solid	SHAKE	
885-3735-9	BES24-06 2'	Total/NA	Solid	SHAKE	
885-3735-10	BES24-18 3'	Total/NA	Solid	SHAKE	
885-3735-11	WES24-01 0-2'	Total/NA	Solid	SHAKE	
MB 885-4246/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4246/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3735-9 MS	BES24-06 2'	Total/NA	Solid	SHAKE	
885-3735-9 MSD	BES24-06 2'	Total/NA	Solid	SHAKE	

Prep Batch: 4263

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	SHAKE	
885-3735-2	BES24-02 2'	Total/NA	Solid	SHAKE	
885-3735-3	BES24-07 2'	Total/NA	Solid	SHAKE	
885-3735-4	BES24-08 2'	Total/NA	Solid	SHAKE	
885-3735-5	BES24-09 2'	Total/NA	Solid	SHAKE	
885-3735-6	BES24-16 3'	Total/NA	Solid	SHAKE	
885-3735-8	BES24-03 2'	Total/NA	Solid	SHAKE	
MB 885-4263/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4263/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3735-8 MS	BES24-03 2'	Total/NA	Solid	SHAKE	
885-3735-8 MSD	BES24-03 2'	Total/NA	Solid	SHAKE	

Analysis Batch: 4310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	8015D	4263
885-3735-2	BES24-02 2'	Total/NA	Solid	8015D	4263
885-3735-3	BES24-07 2'	Total/NA	Solid	8015D	4263
885-3735-4	BES24-08 2'	Total/NA	Solid	8015D	4263
885-3735-5	BES24-09 2'	Total/NA	Solid	8015D	4263
885-3735-6	BES24-16 3'	Total/NA	Solid	8015D	4263
885-3735-8	BES24-03 2'	Total/NA	Solid	8015D	4263
885-3735-9	BES24-06 2'	Total/NA	Solid	8015D	4246
885-3735-10	BES24-18 3'	Total/NA	Solid	8015D	4246
885-3735-11	WES24-01 0-2'	Total/NA	Solid	8015D	4246
MB 885-4246/1-A	Method Blank	Total/NA	Solid	8015D	4246
MB 885-4263/1-A	Method Blank	Total/NA	Solid	8015D	4263
LCS 885-4246/2-A	Lab Control Sample	Total/NA	Solid	8015D	4246
LCS 885-4263/2-A	Lab Control Sample	Total/NA	Solid	8015D	4263
885-3735-8 MS	BES24-03 2'	Total/NA	Solid	8015D	4263
885-3735-8 MSD	BES24-03 2'	Total/NA	Solid	8015D	4263
885-3735-9 MS	BES24-06 2'	Total/NA	Solid	8015D	4246
885-3735-9 MSD	BES24-06 2'	Total/NA	Solid	8015D	4246

Analysis Batch: 4383

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-7	BES24-17 3'	Total/NA	Solid	8015D	4246

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

HPLC/IC

Prep Batch: 4273

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	300_Prep	
885-3735-2	BES24-02 2'	Total/NA	Solid	300_Prep	
885-3735-3	BES24-07 2'	Total/NA	Solid	300_Prep	
885-3735-4	BES24-08 2'	Total/NA	Solid	300_Prep	
885-3735-5	BES24-09 2'	Total/NA	Solid	300_Prep	
885-3735-6	BES24-16 3'	Total/NA	Solid	300_Prep	
885-3735-8	BES24-03 2'	Total/NA	Solid	300_Prep	
MB 885-4273/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4273/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 4290

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-7	BES24-17 3'	Total/NA	Solid	300_Prep	
885-3735-9	BES24-06 2'	Total/NA	Solid	300_Prep	
885-3735-10	BES24-18 3'	Total/NA	Solid	300_Prep	
885-3735-11	WES24-01 0-2'	Total/NA	Solid	300_Prep	
MB 885-4290/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4290/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3735-7 MS	BES24-17 3'	Total/NA	Solid	300_Prep	
885-3735-7 MSD	BES24-17 3'	Total/NA	Solid	300_Prep	

Analysis Batch: 4296

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3735-1	BES24-01 2'	Total/NA	Solid	300.0	4273
885-3735-2	BES24-02 2'	Total/NA	Solid	300.0	4273
885-3735-3	BES24-07 2'	Total/NA	Solid	300.0	4273
885-3735-4	BES24-08 2'	Total/NA	Solid	300.0	4273
885-3735-5	BES24-09 2'	Total/NA	Solid	300.0	4273
885-3735-6	BES24-16 3'	Total/NA	Solid	300.0	4273
885-3735-7	BES24-17 3'	Total/NA	Solid	300.0	4290
885-3735-8	BES24-03 2'	Total/NA	Solid	300.0	4273
885-3735-9	BES24-06 2'	Total/NA	Solid	300.0	4290
885-3735-10	BES24-18 3'	Total/NA	Solid	300.0	4290
885-3735-11	WES24-01 0-2'	Total/NA	Solid	300.0	4290
MB 885-4273/1-A	Method Blank	Total/NA	Solid	300.0	4273
MB 885-4290/1-A	Method Blank	Total/NA	Solid	300.0	4290
LCS 885-4273/2-A	Lab Control Sample	Total/NA	Solid	300.0	4273
LCS 885-4290/2-A	Lab Control Sample	Total/NA	Solid	300.0	4290
885-3735-7 MS	BES24-17 3'	Total/NA	Solid	300.0	4290
885-3735-7 MSD	BES24-17 3'	Total/NA	Solid	300.0	4290

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-01 2'

Lab Sample ID: 885-3735-1
Matrix: Solid
Date Collected: 04/30/24 08:05
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 18:25
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 18:25
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 20:37
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 17:23

Client Sample ID: BES24-02 2'

Lab Sample ID: 885-3735-2
Matrix: Solid
Date Collected: 04/30/24 08:15
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 18:48
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 18:48
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 20:49
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 17:35

Client Sample ID: BES24-07 2'

Lab Sample ID: 885-3735-3
Matrix: Solid
Date Collected: 04/30/24 08:25
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 19:11
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 19:11
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 21:01
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 17:48

Client Sample ID: BES24-08 2'

Lab Sample ID: 885-3735-4
Matrix: Solid
Date Collected: 04/30/24 08:35
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 19:35

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-08 2'

Lab Sample ID: 885-3735-4
Matrix: Solid
Date Collected: 04/30/24 08:35
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 19:35
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 21:13
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 18:27

Client Sample ID: BES24-09 2'

Lab Sample ID: 885-3735-5
Matrix: Solid
Date Collected: 04/30/24 08:45
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 19:58
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 19:58
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 21:26
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 18:40

Client Sample ID: BES24-16 3'

Lab Sample ID: 885-3735-6
Matrix: Solid
Date Collected: 04/30/24 08:55
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 20:21
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 20:21
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 21:38
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 18:53

Client Sample ID: BES24-17 3'

Lab Sample ID: 885-3735-7
Matrix: Solid
Date Collected: 04/30/24 09:05
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 20:45
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 20:45

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Client Sample ID: BES24-17 3'

Lab Sample ID: 885-3735-7
Matrix: Solid
Date Collected: 04/30/24 09:05
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4246	DH	EET ALB	05/02/24 10:08
Total/NA	Analysis	8015D		1	4383	JU	EET ALB	05/03/24 15:20
Total/NA	Prep	300_Prep			4290	RC	EET ALB	05/02/24 15:59
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 21:27

Client Sample ID: BES24-03 2'

Lab Sample ID: 885-3735-8
Matrix: Solid
Date Collected: 04/30/24 13:00
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 21:08
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 21:08
Total/NA	Prep	SHAKE			4263	JU	EET ALB	05/02/24 12:13
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 21:50
Total/NA	Prep	300_Prep			4273	RC	EET ALB	05/02/24 13:07
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 19:06

Client Sample ID: BES24-06 2'

Lab Sample ID: 885-3735-9
Matrix: Solid
Date Collected: 04/30/24 13:10
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 21:55
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 21:55
Total/NA	Prep	SHAKE			4246	DH	EET ALB	05/02/24 10:08
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 23:04
Total/NA	Prep	300_Prep			4290	RC	EET ALB	05/02/24 15:59
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 22:06

Client Sample ID: BES24-18 3'

Lab Sample ID: 885-3735-10
Matrix: Solid
Date Collected: 04/30/24 13:40
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 22:42
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 22:42
Total/NA	Prep	SHAKE			4246	DH	EET ALB	05/02/24 10:08
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 23:41

Lab Chronicle

Client: Vertex
Job ID: 885-3735-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-18 3'
Lab Sample ID: 885-3735-10
Date Collected: 04/30/24 13:40
Matrix: Solid
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4290	RC	EET ALB	05/02/24 15:59
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 22:19

Client Sample ID: WES24-01 0-2'
Lab Sample ID: 885-3735-11
Date Collected: 04/30/24 13:45
Matrix: Solid
Date Received: 05/02/24 07:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8015D		1	4316	JP	EET ALB	05/02/24 23:06
Total/NA	Prep	5035			4245	JP	EET ALB	05/02/24 09:56
Total/NA	Analysis	8021B		1	4317	JP	EET ALB	05/02/24 23:06
Total/NA	Prep	SHAKE			4246	DH	EET ALB	05/02/24 10:08
Total/NA	Analysis	8015D		1	4310	JU	EET ALB	05/02/24 23:53
Total/NA	Prep	300_Prep			4290	RC	EET ALB	05/02/24 15:59
Total/NA	Analysis	300.0		20	4296	JT	EET ALB	05/02/24 22:31

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3735-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy) On File

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: AL

On Ice: ☐ Yes ☐ No

# of Coolers: 1 (Yes)

Cooler Temp(Including CF): 0.3-0.3 (°C)

HALL ENVIRONMENTAL ANALYSIS LABOR

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 8710: 885-3735 COC

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4-30-24	0805	Soil	BES24-01 [redacted] 1/2'	4oz	ICE	1										
	0815		BES24-02 [redacted] 2'			2										
	0825		BES24-07 [redacted] 2'			3										
	0835		BES24-08 [redacted] 2'			4										
	0845		BES24-09 [redacted] 2'			5										
	0855		BES24-16 [redacted] 3'			6										
	0905		BES24-17 [redacted] 3'			7										
	1300		BES24-03 [redacted] 2'			8										
	1310		BES24-06 [redacted] 2'			9										
	1340		BES24-18 [redacted] 3'			10										
	1345		WES24-01 [redacted] 2'			11										
						+2 5/2/24										

Date	Time	Relinquished by	Received by	Via	Date	Time
			[redacted]	courier	5/2/24	7:55
Date	Time	Relinquished by	Received by	Via	Date	Time

Remarks: cc: Scarttar@vertex.ca

If necessary samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3735-1

Login Number: 3735 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/11/2024 12:18:35 PM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3829-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
5/11/2024 12:18:35 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3829-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3829-1
Project/Site: Red Deer CTB

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3829-1

Job ID: 885-3829-1 Eurofins Albuquerque

Job Narrative
885-3829-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/3/2024 7:30 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.4°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
Method 8015D_DRO: The continuing calibration verification (CCV) associated with batch 885-4499 recovered outside acceptance criteria, low biased, for Di-n-octyl phthalate (Surr). Samples with low Di-n-octyl phthalate (Surr) will be re-analyzed. The following samples are associated TP24-07 0' (885-3829-21), TP24-07 2' (885-3829-22), TP24-08 0' (885-3829-23), TP24-08 2' (885-3829-24), TP24-09 0' (885-3829-25), TP24-09 2' (885-3829-26), (LCS 885-4401/2-A) and (MB 885-4401/1-A).

Method 8015D_DRO: The continuing calibration verification (CCV) associated with batch 885-4500 recovered outside acceptance criteria, low biased, for Di-n-octyl phthalate (Surr). Samples with Di-n-octyl phthalate (Surr) in normal range will still be reported. .The following samples are associated BHS24-12 3.0' (885-3829-5), (CCV 885-4500/2) and (CCV 885-4500/8), CCV 885-4500/26.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-04 2.0'

Date Collected: 05/01/24 08:40
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/06/24 23:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/03/24 11:22*	*05/06/24 23:46*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/06/24 23:46	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/06/24 23:46	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/06/24 23:46	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/06/24 23:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/03/24 11:22*	*05/06/24 23:46*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		05/06/24 10:34	05/06/24 21:39	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/06/24 10:34	05/06/24 21:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/06/24 10:34*	*05/06/24 21:39*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		05/06/24 14:46	05/06/24 19:24	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-05 2.0'

Date Collected: 05/01/24 08:45
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/03/24 11:22*	*05/07/24 00:56*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 00:56	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 00:56	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 00:56	1
Xylenes, Total	ND		0.098		mg/Kg		05/03/24 11:22	05/07/24 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/03/24 11:22*	*05/07/24 00:56*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		05/06/24 10:34	05/06/24 21:52	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/06/24 10:34	05/06/24 21:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/06/24 10:34*	*05/06/24 21:52*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		60		mg/Kg		05/06/24 14:46	05/06/24 19:36	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-10 3.0'

Date Collected: 05/01/24 08:50
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 11:22	05/07/24 02:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/03/24 11:22*	*05/07/24 02:06*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 02:06	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 02:06	1
Toluene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 02:06	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 02:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/03/24 11:22*	*05/07/24 02:06*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/06/24 10:34	05/06/24 22:04	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/06/24 10:34	05/06/24 22:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*05/06/24 10:34*	*05/06/24 22:04*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	87		60		mg/Kg		05/06/24 14:46	05/06/24 19:49	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-11 3.0'

Date Collected: 05/01/24 08:55
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 11:22	05/07/24 02:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/03/24 11:22*	*05/07/24 02:30*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 02:30	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 02:30	1
Toluene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 02:30	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 02:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/03/24 11:22*	*05/07/24 02:30*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/06/24 10:34	05/06/24 22:16	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/06/24 10:34	05/06/24 22:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/06/24 10:34*	*05/06/24 22:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 20:01	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-12 3.0'

Date Collected: 05/01/24 09:00
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 02:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/03/24 11:22*	*05/07/24 02:53*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 02:53	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 02:53	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 02:53	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 02:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/03/24 11:22*	*05/07/24 02:53*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**15**		9.4		mg/Kg		05/09/24 16:14	05/09/24 17:40	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/09/24 16:14	05/09/24 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*05/09/24 16:14*	*05/09/24 17:40*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 20:13	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-19 3.0'

Date Collected: 05/01/24 09:05
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/03/24 11:22*	*05/07/24 03:17*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 03:17	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 03:17	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 03:17	1
Xylenes, Total	ND		0.097		mg/Kg		05/03/24 11:22	05/07/24 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/03/24 11:22*	*05/07/24 03:17*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/06/24 10:34	05/06/24 22:41	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:34	05/06/24 22:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*05/06/24 10:34*	*05/06/24 22:41*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 20:26	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-13 2.0'

Date Collected: 05/01/24 12:05
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 03:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/03/24 11:22*	*05/07/24 03:41*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 03:41	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 03:41	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 03:41	1
Xylenes, Total	ND		0.098		mg/Kg		05/03/24 11:22	05/07/24 03:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/03/24 11:22*	*05/07/24 03:41*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**12**		9.6		mg/Kg		05/06/24 10:34	05/06/24 22:53	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:34	05/06/24 22:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/06/24 10:34*	*05/06/24 22:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**320**		60		mg/Kg		05/06/24 14:46	05/06/24 20:38	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-14 2.0'

Date Collected: 05/01/24 12:10
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-8

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/03/24 11:22	05/07/24 04:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/03/24 11:22*	*05/07/24 04:04*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 04:04	1
Ethylbenzene	ND		0.047		mg/Kg		05/03/24 11:22	05/07/24 04:04	1
Toluene	ND		0.047		mg/Kg		05/03/24 11:22	05/07/24 04:04	1
Xylenes, Total	ND		0.094		mg/Kg		05/03/24 11:22	05/07/24 04:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/03/24 11:22*	*05/07/24 04:04*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**22**		9.3		mg/Kg		05/06/24 10:34	05/06/24 23:05	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/06/24 10:34	05/06/24 23:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/06/24 10:34*	*05/06/24 23:05*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**110**		60		mg/Kg		05/06/24 14:46	05/06/24 20:50	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-15 2.5'

Date Collected: 05/01/24 14:00
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-9

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 11:22	05/07/24 04:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/03/24 11:22*	*05/07/24 04:28*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 04:28	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 04:28	1
Toluene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 04:28	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 04:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/03/24 11:22*	*05/07/24 04:28*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		05/06/24 10:34	05/06/24 23:17	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		05/06/24 10:34	05/06/24 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/06/24 10:34*	*05/06/24 23:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		60		mg/Kg		05/06/24 14:46	05/06/24 21:03	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-20 2.0'

Date Collected: 05/01/24 12:15
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-10

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/03/24 11:22	05/07/24 04:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/03/24 11:22*	*05/07/24 04:51*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 04:51	1
Ethylbenzene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 04:51	1
Toluene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 04:51	1
Xylenes, Total	ND		0.095		mg/Kg		05/03/24 11:22	05/07/24 04:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/03/24 11:22*	*05/07/24 04:51*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**10**		9.9		mg/Kg		05/06/24 10:34	05/06/24 23:30	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:34	05/06/24 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/06/24 10:34*	*05/06/24 23:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**240**		60		mg/Kg		05/06/24 14:46	05/06/24 21:15	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: WES24-02 3.0'

Date Collected: 05/01/24 14:10
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-11

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 05:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/03/24 11:22*	*05/07/24 05:38*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 05:38	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 05:38	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 05:38	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 05:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/03/24 11:22*	*05/07/24 05:38*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/06/24 10:34	05/06/24 23:54	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:34	05/06/24 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/06/24 10:34*	*05/06/24 23:54*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 21:52	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: WES24-03 3.0'

Date Collected: 05/01/24 14:15
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-12

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 06:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/03/24 11:22*	*05/07/24 06:02*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 06:02	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 06:02	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 06:02	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 06:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/03/24 11:22*	*05/07/24 06:02*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**21**		9.1		mg/Kg		05/06/24 10:34	05/07/24 00:06	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/06/24 10:34	05/07/24 00:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/06/24 10:34*	*05/07/24 00:06*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		60		mg/Kg		05/06/24 14:46	05/06/24 22:05	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24--01 0'

Date Collected: 05/01/24 10:00
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-13

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 11:22	05/07/24 06:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/03/24 11:22*	*05/07/24 06:25*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 06:25	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 06:25	1
Toluene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 06:25	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 06:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/03/24 11:22*	*05/07/24 06:25*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/06/24 10:34	05/07/24 00:19	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:34	05/07/24 00:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*71*		*62 - 134*	*05/06/24 10:34*	*05/07/24 00:19*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 22:17	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-01 2'

Date Collected: 05/01/24 10:15
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-14

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 06:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/03/24 11:22*	*05/07/24 06:49*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 06:49	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 06:49	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 06:49	1
Xylenes, Total	ND		0.098		mg/Kg		05/03/24 11:22	05/07/24 06:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/03/24 11:22*	*05/07/24 06:49*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/06/24 10:34	05/07/24 00:31	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:34	05/07/24 00:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*05/06/24 10:34*	*05/07/24 00:31*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 22:54	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-02 0'

Date Collected: 05/01/24 10:30
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-15

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 11:22	05/07/24 07:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/03/24 11:22*	*05/07/24 07:12*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/07/24 07:12	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 07:12	1
Toluene	ND		0.050		mg/Kg		05/03/24 11:22	05/07/24 07:12	1
Xylenes, Total	ND		0.099		mg/Kg		05/03/24 11:22	05/07/24 07:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/03/24 11:22*	*05/07/24 07:12*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**14**		9.9		mg/Kg		05/06/24 10:34	05/07/24 00:43	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:34	05/07/24 00:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*75*		*62 - 134*	*05/06/24 10:34*	*05/07/24 00:43*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**220**		60		mg/Kg		05/06/24 14:46	05/06/24 23:06	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-02 2'

Date Collected: 05/01/24 10:45
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-16

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/03/24 11:22	05/07/24 07:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/03/24 11:22*	*05/07/24 07:36*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 07:36	1
Ethylbenzene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 07:36	1
Toluene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 07:36	1
Xylenes, Total	ND		0.096		mg/Kg		05/03/24 11:22	05/07/24 07:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/03/24 11:22*	*05/07/24 07:36*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/06/24 10:34	05/07/24 00:55	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:34	05/07/24 00:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*05/06/24 10:34*	*05/07/24 00:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 14:46	05/06/24 23:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-03 0'

Date Collected: 05/01/24 11:00
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-17

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/03/24 11:22	05/07/24 07:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/03/24 11:22*	*05/07/24 07:59*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/03/24 11:22	05/07/24 07:59	1
Ethylbenzene	ND		0.047		mg/Kg		05/03/24 11:22	05/07/24 07:59	1
Toluene	ND		0.047		mg/Kg		05/03/24 11:22	05/07/24 07:59	1
Xylenes, Total	ND		0.094		mg/Kg		05/03/24 11:22	05/07/24 07:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/03/24 11:22*	*05/07/24 07:59*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/06/24 10:34	05/07/24 01:07	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/06/24 10:34	05/07/24 01:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*65*		*62 - 134*	*05/06/24 10:34*	*05/07/24 01:07*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**61**		60		mg/Kg		05/06/24 14:46	05/07/24 00:20	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-03 2'

Date Collected: 05/01/24 11:15
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-18

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/03/24 11:22	05/07/24 08:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/03/24 11:22*	*05/07/24 08:23*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 08:23	1
Ethylbenzene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 08:23	1
Toluene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 08:23	1
Xylenes, Total	ND		0.096		mg/Kg		05/03/24 11:22	05/07/24 08:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/03/24 11:22*	*05/07/24 08:23*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/06/24 10:34	05/07/24 01:20	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/06/24 10:34	05/07/24 01:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*86*		*62 - 134*	*05/06/24 10:34*	*05/07/24 01:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 15:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-04 0'

Date Collected: 05/01/24 11:30
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-19

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 11:22	05/07/24 08:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*15 - 244*	*05/03/24 11:22*	*05/07/24 08:46*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 08:46	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 08:46	1
Toluene	ND		0.049		mg/Kg		05/03/24 11:22	05/07/24 08:46	1
Xylenes, Total	ND		0.097		mg/Kg		05/03/24 11:22	05/07/24 08:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/03/24 11:22*	*05/07/24 08:46*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**13**		9.8		mg/Kg		05/06/24 10:34	05/07/24 01:32	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/06/24 10:34	05/07/24 01:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*77*		*62 - 134*	*05/06/24 10:34*	*05/07/24 01:32*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**170**		60		mg/Kg		05/07/24 10:09	05/07/24 15:34	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-04 2'

Date Collected: 05/01/24 11:45
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-20

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/03/24 11:22	05/07/24 09:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*15 - 244*	*05/03/24 11:22*	*05/07/24 09:10*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 11:22	05/07/24 09:10	1
Ethylbenzene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 09:10	1
Toluene	ND		0.048		mg/Kg		05/03/24 11:22	05/07/24 09:10	1
Xylenes, Total	ND		0.096		mg/Kg		05/03/24 11:22	05/07/24 09:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/03/24 11:22*	*05/07/24 09:10*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		05/06/24 10:34	05/07/24 01:44	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/06/24 10:34	05/07/24 01:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/06/24 10:34*	*05/07/24 01:44*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 15:49	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-07 0'

Date Collected: 05/01/24 12:00
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-21

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/03/24 14:29	05/06/24 13:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*15 - 244*	*05/03/24 14:29*	*05/06/24 13:14*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 14:29	05/06/24 13:14	1
Ethylbenzene	ND		0.048		mg/Kg		05/03/24 14:29	05/06/24 13:14	1
Toluene	ND		0.048		mg/Kg		05/03/24 14:29	05/06/24 13:14	1
Xylenes, Total	ND		0.096		mg/Kg		05/03/24 14:29	05/06/24 13:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/03/24 14:29*	*05/06/24 13:14*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/06/24 10:19	05/06/24 18:42	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:19	05/06/24 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*05/06/24 10:19*	*05/06/24 18:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**84**		60		mg/Kg		05/07/24 10:09	05/07/24 16:04	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-07 2'

Date Collected: 05/01/24 12:15
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-22

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 14:29	05/06/24 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/03/24 14:29*	*05/06/24 14:20*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 14:29	05/06/24 14:20	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 14:29	05/06/24 14:20	1
Toluene	ND		0.050		mg/Kg		05/03/24 14:29	05/06/24 14:20	1
Xylenes, Total	ND		0.10		mg/Kg		05/03/24 14:29	05/06/24 14:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*05/03/24 14:29*	*05/06/24 14:20*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.6		mg/Kg		05/06/24 10:19	05/06/24 19:06	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		05/06/24 10:19	05/06/24 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*05/06/24 10:19*	*05/06/24 19:06*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 16:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-08 0'

Date Collected: 05/01/24 12:30
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-23

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/03/24 14:29	05/06/24 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/03/24 14:29*	*05/06/24 15:25*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/03/24 14:29	05/06/24 15:25	1
Ethylbenzene	ND		0.047		mg/Kg		05/03/24 14:29	05/06/24 15:25	1
Toluene	ND		0.047		mg/Kg		05/03/24 14:29	05/06/24 15:25	1
Xylenes, Total	ND		0.094		mg/Kg		05/03/24 14:29	05/06/24 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*05/03/24 14:29*	*05/06/24 15:25*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		05/06/24 10:19	05/06/24 19:30	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/06/24 10:19	05/06/24 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*05/06/24 10:19*	*05/06/24 19:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 16:35	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-08 2'

Date Collected: 05/01/24 12:45
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-24

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 14:29	05/06/24 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/03/24 14:29*	*05/06/24 15:47*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 14:29	05/06/24 15:47	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 14:29	05/06/24 15:47	1
Toluene	ND		0.049		mg/Kg		05/03/24 14:29	05/06/24 15:47	1
Xylenes, Total	ND		0.098		mg/Kg		05/03/24 14:29	05/06/24 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/03/24 14:29*	*05/06/24 15:47*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		05/06/24 10:19	05/06/24 19:53	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/06/24 10:19	05/06/24 19:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/06/24 10:19*	*05/06/24 19:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 16:50	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-09 0'

Date Collected: 05/01/24 13:00
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-25

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/03/24 14:29	05/06/24 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/03/24 14:29*	*05/06/24 16:08*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/03/24 14:29	05/06/24 16:08	1
Ethylbenzene	ND		0.049		mg/Kg		05/03/24 14:29	05/06/24 16:08	1
Toluene	ND		0.049		mg/Kg		05/03/24 14:29	05/06/24 16:08	1
Xylenes, Total	ND		0.097		mg/Kg		05/03/24 14:29	05/06/24 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*05/03/24 14:29*	*05/06/24 16:08*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**32**		9.9		mg/Kg		05/06/24 10:19	05/07/24 16:21	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:19	05/07/24 16:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*74*		*62 - 134*	*05/06/24 10:19*	*05/07/24 16:21*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 17:05	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-09 2'

Date Collected: 05/01/24 13:15
Date Received: 05/03/24 07:30

Lab Sample ID: 885-3829-26

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 14:29	05/06/24 16:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/03/24 14:29*	*05/06/24 16:30*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 14:29	05/06/24 16:30	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 14:29	05/06/24 16:30	1
Toluene	ND		0.050		mg/Kg		05/03/24 14:29	05/06/24 16:30	1
Xylenes, Total	ND		0.10		mg/Kg		05/03/24 14:29	05/06/24 16:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*39 - 146*	*05/03/24 14:29*	*05/06/24 16:30*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/06/24 10:19	05/07/24 16:44	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:19	05/07/24 16:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*63*		*62 - 134*	*05/06/24 10:19*	*05/07/24 16:44*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**63**		60		mg/Kg		05/07/24 10:09	05/07/24 18:21	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4337/1-A
Matrix: Solid
Analysis Batch: 4497

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4337

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 11:22	05/06/24 23:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*15 - 244*	*05/03/24 11:22*	*05/06/24 23:22*	*1*

Lab Sample ID: LCS 885-4337/2-A
Matrix: Solid
Analysis Batch: 4497

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4337

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	26.3		mg/Kg		105	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*208*		*15 - 244*

Lab Sample ID: 885-3829-1 MS
Matrix: Solid
Analysis Batch: 4497

Client Sample ID: BES24-04 2.0'
Prep Type: Total/NA
Prep Batch: 4337

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		24.5	25.1		mg/Kg		102	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*204*		*15 - 244*

Lab Sample ID: 885-3829-1 MSD
Matrix: Solid
Analysis Batch: 4497

Client Sample ID: BES24-04 2.0'
Prep Type: Total/NA
Prep Batch: 4337

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		24.7	25.5		mg/Kg		103	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*207*		*15 - 244*

Lab Sample ID: MB 885-4356/1-A
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4356

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/03/24 14:29	05/06/24 12:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/03/24 14:29*	*05/06/24 12:09*	*1*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8015D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: LCS 885-4356/2-A
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4356

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.2		mg/Kg		101	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*215*		*15 - 244*

Lab Sample ID: 885-3829-21 MS
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: TP24-07 0'
Prep Type: Total/NA
Prep Batch: 4356

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		23.9	26.1		mg/Kg		102	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*229*		*15 - 244*

Lab Sample ID: 885-3829-21 MSD
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: TP24-07 0'
Prep Type: Total/NA
Prep Batch: 4356

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		23.8	25.6		mg/Kg		100	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*219*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4337/1-A
Matrix: Solid
Analysis Batch: 4498

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4337

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 11:22	05/06/24 23:22	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 11:22	05/06/24 23:22	1
Toluene	ND		0.050		mg/Kg		05/03/24 11:22	05/06/24 23:22	1
Xylenes, Total	ND		0.10		mg/Kg		05/03/24 11:22	05/06/24 23:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*39 - 146*	*05/03/24 11:22*	*05/06/24 23:22*	*1*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 885-4337/3-A
Matrix: Solid
Analysis Batch: 4498

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4337

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.991		mg/Kg		99	70 - 130		
Ethylbenzene			1.00	0.933		mg/Kg		93	70 - 130		
m,p-Xylene			2.00	1.88		mg/Kg		94	70 - 130		
o-Xylene			1.00	0.927		mg/Kg		93	70 - 130		
Toluene			1.00	0.930		mg/Kg		93	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*

Lab Sample ID: 885-3829-2 MS
Matrix: Solid
Analysis Batch: 4498

Client Sample ID: BES24-05 2.0'
Prep Type: Total/NA
Prep Batch: 4337

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.975	0.924		mg/Kg		95	70 - 130		
Ethylbenzene	ND		0.975	0.895		mg/Kg		92	70 - 130		
m,p-Xylene	ND		1.95	1.79		mg/Kg		91	70 - 130		
o-Xylene	ND		0.975	0.885		mg/Kg		91	70 - 130		
Toluene	ND		0.975	0.883		mg/Kg		89	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*

Lab Sample ID: 885-3829-2 MSD
Matrix: Solid
Analysis Batch: 4498

Client Sample ID: BES24-05 2.0'
Prep Type: Total/NA
Prep Batch: 4337

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.979	0.926		mg/Kg		95	70 - 130	0	20
Ethylbenzene	ND		0.979	0.893		mg/Kg		91	70 - 130	0	20
m,p-Xylene	ND		1.96	1.79		mg/Kg		90	70 - 130	0	20
o-Xylene	ND		0.979	0.883		mg/Kg		90	70 - 130	0	20
Toluene	ND		0.979	0.871		mg/Kg		88	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*

Lab Sample ID: MB 885-4356/1-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4356

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/03/24 14:29	05/06/24 12:09	1
Ethylbenzene	ND		0.050		mg/Kg		05/03/24 14:29	05/06/24 12:09	1
Toluene	ND		0.050		mg/Kg		05/03/24 14:29	05/06/24 12:09	1
Xylenes, Total	ND		0.10		mg/Kg		05/03/24 14:29	05/06/24 12:09	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-4356/1-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4356

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	87		39 - 146	05/03/24 14:29	05/06/24 12:09	1

Lab Sample ID: LCS 885-4356/3-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.956		mg/Kg		96	70 - 130
Ethylbenzene	1.00	0.953		mg/Kg		95	70 - 130
m,p-Xylene	2.00	1.90		mg/Kg		95	70 - 130
o-Xylene	1.00	0.944		mg/Kg		94	70 - 130
Toluene	1.00	0.955		mg/Kg		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		39 - 146

Lab Sample ID: 885-3829-22 MS
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: TP24-07 2'
Prep Type: Total/NA
Prep Batch: 4356

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	ND		0.989	0.906		mg/Kg		92	70 - 130
Ethylbenzene	ND		0.989	0.921		mg/Kg		93	70 - 130
m,p-Xylene	ND		1.98	1.82		mg/Kg		92	70 - 130
o-Xylene	ND		0.989	0.907		mg/Kg		92	70 - 130
Toluene	ND		0.989	0.913		mg/Kg		92	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	85		39 - 146

Lab Sample ID: 885-3829-22 MSD
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: TP24-07 2'
Prep Type: Total/NA
Prep Batch: 4356

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.990	0.880		mg/Kg		89	70 - 130	3	20
Ethylbenzene	ND		0.990	0.905		mg/Kg		91	70 - 130	2	20
m,p-Xylene	ND		1.98	1.80		mg/Kg		91	70 - 130	1	20
o-Xylene	ND		0.990	0.897		mg/Kg		91	70 - 130	1	20
Toluene	ND		0.990	0.899		mg/Kg		91	70 - 130	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	85		39 - 146

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4401/1-A
Matrix: Solid
Analysis Batch: 4499

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4401

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/06/24 10:19	05/06/24 16:44	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:19	05/06/24 16:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/06/24 10:19*	*05/06/24 16:44*	*1*

Lab Sample ID: LCS 885-4401/2-A
Matrix: Solid
Analysis Batch: 4499

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4401

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	47.6		mg/Kg		95	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*104*		*62 - 134*

Lab Sample ID: MB 885-4402/1-A
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4402

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/06/24 10:34	05/06/24 21:15	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:34	05/06/24 21:15	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/06/24 10:34*	*05/06/24 21:15*	*1*

Lab Sample ID: LCS 885-4402/2-A
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4402

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	47.0		mg/Kg		94	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*112*		*62 - 134*

Lab Sample ID: 885-3829-20 MS
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: TP24-04 2'
Prep Type: Total/NA
Prep Batch: 4402

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		44.2	36.2		mg/Kg		82	44 - 136		

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 885-3829-20 MS
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: TP24-04 2'
Prep Type: Total/NA
Prep Batch: 4402

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*105*		*62 - 134*

Lab Sample ID: 885-3829-20 MSD
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: TP24-04 2'
Prep Type: Total/NA
Prep Batch: 4402

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		44.8	38.2		mg/Kg		85	44 - 136	5	32

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Di-n-octyl phthalate (Surr)	*105*		*62 - 134*

Lab Sample ID: MB 885-4702/1-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4702

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/09/24 16:14	05/09/24 17:15	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 16:14	05/09/24 17:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/09/24 16:14*	*05/09/24 17:15*	*1*

Lab Sample ID: LCS 885-4702/2-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4702

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	47.7		mg/Kg		95	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*122*		*62 - 134*

Lab Sample ID: 885-3829-5 MS
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: BES24-12 3.0'
Prep Type: Total/NA
Prep Batch: 4702

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	15		45.8	50.4		mg/Kg		77	44 - 136		

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*116*		*62 - 134*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 885-3829-5 MSD
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: BES24-12 3.0'
Prep Type: Total/NA
Prep Batch: 4702

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	15		43.1	45.7		mg/Kg		71	44 - 136	10	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*121*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4438/1-A
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4438

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/06/24 14:46	05/06/24 18:35	1

Lab Sample ID: LCS 885-4438/2-A
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4438

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	13.9		mg/Kg		93	90 - 110		

Lab Sample ID: 885-3829-13 MS
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: TP24--01 0'
Prep Type: Total/NA
Prep Batch: 4438

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	ND		30.0	ND		mg/Kg		NC	50 - 150		

Lab Sample ID: 885-3829-13 MSD
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: TP24--01 0'
Prep Type: Total/NA
Prep Batch: 4438

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		29.9	ND		mg/Kg		NC	50 - 150	NC	20

Lab Sample ID: 885-3829-16 MS
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: TP24-02 2'
Prep Type: Total/NA
Prep Batch: 4438

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	ND		30.0	ND		mg/Kg		NC	50 - 150		

Lab Sample ID: 885-3829-16 MSD
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: TP24-02 2'
Prep Type: Total/NA
Prep Batch: 4438

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		30.1	ND		mg/Kg		NC	50 - 150	NC	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 885-4445/21
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			05/06/24 09:10	1

Lab Sample ID: MRL 885-4445/20
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.513		mg/L		103	50 - 150		

Lab Sample ID: MB 885-4483/1-A
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4483

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/07/24 10:09	05/07/24 14:46	1

Lab Sample ID: LCS 885-4483/2-A
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4483

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	13.8		mg/Kg		92	90 - 110		

Lab Sample ID: 885-3829-25 MS
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: TP24-09 0'
Prep Type: Total/NA
Prep Batch: 4483

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	ND		30.1	71.2		mg/Kg		NC	50 - 150		

Lab Sample ID: 885-3829-25 MSD
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: TP24-09 0'
Prep Type: Total/NA
Prep Batch: 4483

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		30.2	83.0		mg/Kg		NC	50 - 150	15	20

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

GC VOA

Prep Batch: 4337

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	5030C	
885-3829-2	BES24-05 2.0'	Total/NA	Solid	5030C	
885-3829-3	BES24-10 3.0'	Total/NA	Solid	5030C	
885-3829-4	BES24-11 3.0'	Total/NA	Solid	5030C	
885-3829-5	BES24-12 3.0'	Total/NA	Solid	5030C	
885-3829-6	BES24-19 3.0'	Total/NA	Solid	5030C	
885-3829-7	BES24-13 2.0'	Total/NA	Solid	5030C	
885-3829-8	BES24-14 2.0'	Total/NA	Solid	5030C	
885-3829-9	BES24-15 2.5'	Total/NA	Solid	5030C	
885-3829-10	BES24-20 2.0'	Total/NA	Solid	5030C	
885-3829-11	WES24-02 3.0'	Total/NA	Solid	5030C	
885-3829-12	WES24-03 3.0'	Total/NA	Solid	5030C	
885-3829-13	TP24--01 0'	Total/NA	Solid	5030C	
885-3829-14	TP24-01 2'	Total/NA	Solid	5030C	
885-3829-15	TP24-02 0'	Total/NA	Solid	5030C	
885-3829-16	TP24-02 2'	Total/NA	Solid	5030C	
885-3829-17	TP24-03 0'	Total/NA	Solid	5030C	
885-3829-18	TP24-03 2'	Total/NA	Solid	5030C	
885-3829-19	TP24-04 0'	Total/NA	Solid	5030C	
885-3829-20	TP24-04 2'	Total/NA	Solid	5030C	
MB 885-4337/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-4337/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-4337/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-3829-1 MS	BES24-04 2.0'	Total/NA	Solid	5030C	
885-3829-1 MSD	BES24-04 2.0'	Total/NA	Solid	5030C	
885-3829-2 MS	BES24-05 2.0'	Total/NA	Solid	5030C	
885-3829-2 MSD	BES24-05 2.0'	Total/NA	Solid	5030C	

Prep Batch: 4356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-21	TP24-07 0'	Total/NA	Solid	5030C	
885-3829-22	TP24-07 2'	Total/NA	Solid	5030C	
885-3829-23	TP24-08 0'	Total/NA	Solid	5030C	
885-3829-24	TP24-08 2'	Total/NA	Solid	5030C	
885-3829-25	TP24-09 0'	Total/NA	Solid	5030C	
885-3829-26	TP24-09 2'	Total/NA	Solid	5030C	
MB 885-4356/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-4356/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-4356/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-3829-21 MS	TP24-07 0'	Total/NA	Solid	5030C	
885-3829-21 MSD	TP24-07 0'	Total/NA	Solid	5030C	
885-3829-22 MS	TP24-07 2'	Total/NA	Solid	5030C	
885-3829-22 MSD	TP24-07 2'	Total/NA	Solid	5030C	

Analysis Batch: 4491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-21	TP24-07 0'	Total/NA	Solid	8015D	4356
885-3829-22	TP24-07 2'	Total/NA	Solid	8015D	4356
885-3829-23	TP24-08 0'	Total/NA	Solid	8015D	4356
885-3829-24	TP24-08 2'	Total/NA	Solid	8015D	4356
885-3829-25	TP24-09 0'	Total/NA	Solid	8015D	4356

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

GC VOA (Continued)

Analysis Batch: 4491 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-26	TP24-09 2'	Total/NA	Solid	8015D	4356
MB 885-4356/1-A	Method Blank	Total/NA	Solid	8015D	4356
LCS 885-4356/2-A	Lab Control Sample	Total/NA	Solid	8015D	4356
885-3829-21 MS	TP24-07 0'	Total/NA	Solid	8015D	4356
885-3829-21 MSD	TP24-07 0'	Total/NA	Solid	8015D	4356

Analysis Batch: 4492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-21	TP24-07 0'	Total/NA	Solid	8021B	4356
885-3829-22	TP24-07 2'	Total/NA	Solid	8021B	4356
885-3829-23	TP24-08 0'	Total/NA	Solid	8021B	4356
885-3829-24	TP24-08 2'	Total/NA	Solid	8021B	4356
885-3829-25	TP24-09 0'	Total/NA	Solid	8021B	4356
885-3829-26	TP24-09 2'	Total/NA	Solid	8021B	4356
MB 885-4356/1-A	Method Blank	Total/NA	Solid	8021B	4356
LCS 885-4356/3-A	Lab Control Sample	Total/NA	Solid	8021B	4356
885-3829-22 MS	TP24-07 2'	Total/NA	Solid	8021B	4356
885-3829-22 MSD	TP24-07 2'	Total/NA	Solid	8021B	4356

Analysis Batch: 4497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	8015D	4337
885-3829-2	BES24-05 2.0'	Total/NA	Solid	8015D	4337
885-3829-3	BES24-10 3.0'	Total/NA	Solid	8015D	4337
885-3829-4	BES24-11 3.0'	Total/NA	Solid	8015D	4337
885-3829-5	BES24-12 3.0'	Total/NA	Solid	8015D	4337
885-3829-6	BES24-19 3.0'	Total/NA	Solid	8015D	4337
885-3829-7	BES24-13 2.0'	Total/NA	Solid	8015D	4337
885-3829-8	BES24-14 2.0'	Total/NA	Solid	8015D	4337
885-3829-9	BES24-15 2.5'	Total/NA	Solid	8015D	4337
885-3829-10	BES24-20 2.0'	Total/NA	Solid	8015D	4337
885-3829-11	WES24-02 3.0'	Total/NA	Solid	8015D	4337
885-3829-12	WES24-03 3.0'	Total/NA	Solid	8015D	4337
885-3829-13	TP24--01 0'	Total/NA	Solid	8015D	4337
885-3829-14	TP24-01 2'	Total/NA	Solid	8015D	4337
885-3829-15	TP24-02 0'	Total/NA	Solid	8015D	4337
885-3829-16	TP24-02 2'	Total/NA	Solid	8015D	4337
885-3829-17	TP24-03 0'	Total/NA	Solid	8015D	4337
885-3829-18	TP24-03 2'	Total/NA	Solid	8015D	4337
885-3829-19	TP24-04 0'	Total/NA	Solid	8015D	4337
885-3829-20	TP24-04 2'	Total/NA	Solid	8015D	4337
MB 885-4337/1-A	Method Blank	Total/NA	Solid	8015D	4337
LCS 885-4337/2-A	Lab Control Sample	Total/NA	Solid	8015D	4337
885-3829-1 MS	BES24-04 2.0'	Total/NA	Solid	8015D	4337
885-3829-1 MSD	BES24-04 2.0'	Total/NA	Solid	8015D	4337

Analysis Batch: 4498

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	8021B	4337
885-3829-2	BES24-05 2.0'	Total/NA	Solid	8021B	4337
885-3829-3	BES24-10 3.0'	Total/NA	Solid	8021B	4337

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

GC VOA (Continued)

Analysis Batch: 4498 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-4	BES24-11 3.0'	Total/NA	Solid	8021B	4337
885-3829-5	BES24-12 3.0'	Total/NA	Solid	8021B	4337
885-3829-6	BES24-19 3.0'	Total/NA	Solid	8021B	4337
885-3829-7	BES24-13 2.0'	Total/NA	Solid	8021B	4337
885-3829-8	BES24-14 2.0'	Total/NA	Solid	8021B	4337
885-3829-9	BES24-15 2.5'	Total/NA	Solid	8021B	4337
885-3829-10	BES24-20 2.0'	Total/NA	Solid	8021B	4337
885-3829-11	WES24-02 3.0'	Total/NA	Solid	8021B	4337
885-3829-12	WES24-03 3.0'	Total/NA	Solid	8021B	4337
885-3829-13	TP24--01 0'	Total/NA	Solid	8021B	4337
885-3829-14	TP24-01 2'	Total/NA	Solid	8021B	4337
885-3829-15	TP24-02 0'	Total/NA	Solid	8021B	4337
885-3829-16	TP24-02 2'	Total/NA	Solid	8021B	4337
885-3829-17	TP24-03 0'	Total/NA	Solid	8021B	4337
885-3829-18	TP24-03 2'	Total/NA	Solid	8021B	4337
885-3829-19	TP24-04 0'	Total/NA	Solid	8021B	4337
885-3829-20	TP24-04 2'	Total/NA	Solid	8021B	4337
MB 885-4337/1-A	Method Blank	Total/NA	Solid	8021B	4337
LCS 885-4337/3-A	Lab Control Sample	Total/NA	Solid	8021B	4337
885-3829-2 MS	BES24-05 2.0'	Total/NA	Solid	8021B	4337
885-3829-2 MSD	BES24-05 2.0'	Total/NA	Solid	8021B	4337

GC Semi VOA

Prep Batch: 4401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-21	TP24-07 0'	Total/NA	Solid	SHAKE	
885-3829-22	TP24-07 2'	Total/NA	Solid	SHAKE	
885-3829-23	TP24-08 0'	Total/NA	Solid	SHAKE	
885-3829-24	TP24-08 2'	Total/NA	Solid	SHAKE	
885-3829-25	TP24-09 0'	Total/NA	Solid	SHAKE	
885-3829-26	TP24-09 2'	Total/NA	Solid	SHAKE	
MB 885-4401/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4401/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Prep Batch: 4402

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	SHAKE	
885-3829-2	BES24-05 2.0'	Total/NA	Solid	SHAKE	
885-3829-3	BES24-10 3.0'	Total/NA	Solid	SHAKE	
885-3829-4	BES24-11 3.0'	Total/NA	Solid	SHAKE	
885-3829-6	BES24-19 3.0'	Total/NA	Solid	SHAKE	
885-3829-7	BES24-13 2.0'	Total/NA	Solid	SHAKE	
885-3829-8	BES24-14 2.0'	Total/NA	Solid	SHAKE	
885-3829-9	BES24-15 2.5'	Total/NA	Solid	SHAKE	
885-3829-10	BES24-20 2.0'	Total/NA	Solid	SHAKE	
885-3829-11	WES24-02 3.0'	Total/NA	Solid	SHAKE	
885-3829-12	WES24-03 3.0'	Total/NA	Solid	SHAKE	
885-3829-13	TP24--01 0'	Total/NA	Solid	SHAKE	
885-3829-14	TP24-01 2'	Total/NA	Solid	SHAKE	
885-3829-15	TP24-02 0'	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

GC Semi VOA (Continued)

Prep Batch: 4402 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-16	TP24-02 2'	Total/NA	Solid	SHAKE	
885-3829-17	TP24-03 0'	Total/NA	Solid	SHAKE	
885-3829-18	TP24-03 2'	Total/NA	Solid	SHAKE	
885-3829-19	TP24-04 0'	Total/NA	Solid	SHAKE	
885-3829-20	TP24-04 2'	Total/NA	Solid	SHAKE	
MB 885-4402/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4402/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3829-20 MS	TP24-04 2'	Total/NA	Solid	SHAKE	
885-3829-20 MSD	TP24-04 2'	Total/NA	Solid	SHAKE	

Analysis Batch: 4444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	8015D	4402
885-3829-2	BES24-05 2.0'	Total/NA	Solid	8015D	4402
885-3829-3	BES24-10 3.0'	Total/NA	Solid	8015D	4402
885-3829-4	BES24-11 3.0'	Total/NA	Solid	8015D	4402
885-3829-6	BES24-19 3.0'	Total/NA	Solid	8015D	4402
885-3829-7	BES24-13 2.0'	Total/NA	Solid	8015D	4402
885-3829-8	BES24-14 2.0'	Total/NA	Solid	8015D	4402
885-3829-9	BES24-15 2.5'	Total/NA	Solid	8015D	4402
885-3829-10	BES24-20 2.0'	Total/NA	Solid	8015D	4402
885-3829-11	WES24-02 3.0'	Total/NA	Solid	8015D	4402
885-3829-12	WES24-03 3.0'	Total/NA	Solid	8015D	4402
885-3829-13	TP24--01 0'	Total/NA	Solid	8015D	4402
885-3829-14	TP24-01 2'	Total/NA	Solid	8015D	4402
885-3829-15	TP24-02 0'	Total/NA	Solid	8015D	4402
885-3829-16	TP24-02 2'	Total/NA	Solid	8015D	4402
885-3829-17	TP24-03 0'	Total/NA	Solid	8015D	4402
885-3829-18	TP24-03 2'	Total/NA	Solid	8015D	4402
885-3829-19	TP24-04 0'	Total/NA	Solid	8015D	4402
885-3829-20	TP24-04 2'	Total/NA	Solid	8015D	4402
MB 885-4402/1-A	Method Blank	Total/NA	Solid	8015D	4402
LCS 885-4402/2-A	Lab Control Sample	Total/NA	Solid	8015D	4402
885-3829-20 MS	TP24-04 2'	Total/NA	Solid	8015D	4402
885-3829-20 MSD	TP24-04 2'	Total/NA	Solid	8015D	4402

Analysis Batch: 4499

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-21	TP24-07 0'	Total/NA	Solid	8015D	4401
885-3829-22	TP24-07 2'	Total/NA	Solid	8015D	4401
885-3829-23	TP24-08 0'	Total/NA	Solid	8015D	4401
885-3829-24	TP24-08 2'	Total/NA	Solid	8015D	4401
MB 885-4401/1-A	Method Blank	Total/NA	Solid	8015D	4401
LCS 885-4401/2-A	Lab Control Sample	Total/NA	Solid	8015D	4401

Analysis Batch: 4500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-25	TP24-09 0'	Total/NA	Solid	8015D	4401
885-3829-26	TP24-09 2'	Total/NA	Solid	8015D	4401

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

GC Semi VOA

Analysis Batch: 4691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-5	BES24-12 3.0'	Total/NA	Solid	8015D	4702
MB 885-4702/1-A	Method Blank	Total/NA	Solid	8015D	4702
LCS 885-4702/2-A	Lab Control Sample	Total/NA	Solid	8015D	4702
885-3829-5 MS	BES24-12 3.0'	Total/NA	Solid	8015D	4702
885-3829-5 MSD	BES24-12 3.0'	Total/NA	Solid	8015D	4702

Prep Batch: 4702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-5	BES24-12 3.0'	Total/NA	Solid	SHAKE	
MB 885-4702/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4702/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3829-5 MS	BES24-12 3.0'	Total/NA	Solid	SHAKE	
885-3829-5 MSD	BES24-12 3.0'	Total/NA	Solid	SHAKE	

HPLC/IC

Prep Batch: 4438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	300_Prep	
885-3829-2	BES24-05 2.0'	Total/NA	Solid	300_Prep	
885-3829-3	BES24-10 3.0'	Total/NA	Solid	300_Prep	
885-3829-4	BES24-11 3.0'	Total/NA	Solid	300_Prep	
885-3829-5	BES24-12 3.0'	Total/NA	Solid	300_Prep	
885-3829-6	BES24-19 3.0'	Total/NA	Solid	300_Prep	
885-3829-7	BES24-13 2.0'	Total/NA	Solid	300_Prep	
885-3829-8	BES24-14 2.0'	Total/NA	Solid	300_Prep	
885-3829-9	BES24-15 2.5'	Total/NA	Solid	300_Prep	
885-3829-10	BES24-20 2.0'	Total/NA	Solid	300_Prep	
885-3829-11	WES24-02 3.0'	Total/NA	Solid	300_Prep	
885-3829-12	WES24-03 3.0'	Total/NA	Solid	300_Prep	
885-3829-13	TP24--01 0'	Total/NA	Solid	300_Prep	
885-3829-14	TP24-01 2'	Total/NA	Solid	300_Prep	
885-3829-15	TP24-02 0'	Total/NA	Solid	300_Prep	
885-3829-16	TP24-02 2'	Total/NA	Solid	300_Prep	
885-3829-17	TP24-03 0'	Total/NA	Solid	300_Prep	
MB 885-4438/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4438/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3829-13 MS	TP24--01 0'	Total/NA	Solid	300_Prep	
885-3829-13 MSD	TP24--01 0'	Total/NA	Solid	300_Prep	
885-3829-16 MS	TP24-02 2'	Total/NA	Solid	300_Prep	
885-3829-16 MSD	TP24-02 2'	Total/NA	Solid	300_Prep	

Analysis Batch: 4445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-1	BES24-04 2.0'	Total/NA	Solid	300.0	4438
885-3829-2	BES24-05 2.0'	Total/NA	Solid	300.0	4438
885-3829-3	BES24-10 3.0'	Total/NA	Solid	300.0	4438
885-3829-4	BES24-11 3.0'	Total/NA	Solid	300.0	4438
885-3829-5	BES24-12 3.0'	Total/NA	Solid	300.0	4438
885-3829-6	BES24-19 3.0'	Total/NA	Solid	300.0	4438
885-3829-7	BES24-13 2.0'	Total/NA	Solid	300.0	4438

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

HPLC/IC (Continued)

Analysis Batch: 4445 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-8	BES24-14 2.0'	Total/NA	Solid	300.0	4438
885-3829-9	BES24-15 2.5'	Total/NA	Solid	300.0	4438
885-3829-10	BES24-20 2.0'	Total/NA	Solid	300.0	4438
885-3829-11	WES24-02 3.0'	Total/NA	Solid	300.0	4438
885-3829-12	WES24-03 3.0'	Total/NA	Solid	300.0	4438
885-3829-13	TP24--01 0'	Total/NA	Solid	300.0	4438
885-3829-14	TP24-01 2'	Total/NA	Solid	300.0	4438
885-3829-15	TP24-02 0'	Total/NA	Solid	300.0	4438
885-3829-16	TP24-02 2'	Total/NA	Solid	300.0	4438
885-3829-17	TP24-03 0'	Total/NA	Solid	300.0	4438
MB 885-4438/1-A	Method Blank	Total/NA	Solid	300.0	4438
MB 885-4445/21	Method Blank	Total/NA	Solid	300.0	
LCS 885-4438/2-A	Lab Control Sample	Total/NA	Solid	300.0	4438
MRL 885-4445/20	Lab Control Sample	Total/NA	Solid	300.0	
885-3829-13 MS	TP24--01 0'	Total/NA	Solid	300.0	4438
885-3829-13 MSD	TP24--01 0'	Total/NA	Solid	300.0	4438
885-3829-16 MS	TP24-02 2'	Total/NA	Solid	300.0	4438
885-3829-16 MSD	TP24-02 2'	Total/NA	Solid	300.0	4438

Prep Batch: 4483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-18	TP24-03 2'	Total/NA	Solid	300_Prep	
885-3829-19	TP24-04 0'	Total/NA	Solid	300_Prep	
885-3829-20	TP24-04 2'	Total/NA	Solid	300_Prep	
885-3829-21	TP24-07 0'	Total/NA	Solid	300_Prep	
885-3829-22	TP24-07 2'	Total/NA	Solid	300_Prep	
885-3829-23	TP24-08 0'	Total/NA	Solid	300_Prep	
885-3829-24	TP24-08 2'	Total/NA	Solid	300_Prep	
885-3829-25	TP24-09 0'	Total/NA	Solid	300_Prep	
885-3829-26	TP24-09 2'	Total/NA	Solid	300_Prep	
MB 885-4483/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4483/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3829-25 MS	TP24-09 0'	Total/NA	Solid	300_Prep	
885-3829-25 MSD	TP24-09 0'	Total/NA	Solid	300_Prep	

Analysis Batch: 4548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3829-18	TP24-03 2'	Total/NA	Solid	300.0	4483
885-3829-19	TP24-04 0'	Total/NA	Solid	300.0	4483
885-3829-20	TP24-04 2'	Total/NA	Solid	300.0	4483
885-3829-21	TP24-07 0'	Total/NA	Solid	300.0	4483
885-3829-22	TP24-07 2'	Total/NA	Solid	300.0	4483
885-3829-23	TP24-08 0'	Total/NA	Solid	300.0	4483
885-3829-24	TP24-08 2'	Total/NA	Solid	300.0	4483
885-3829-25	TP24-09 0'	Total/NA	Solid	300.0	4483
885-3829-26	TP24-09 2'	Total/NA	Solid	300.0	4483
MB 885-4483/1-A	Method Blank	Total/NA	Solid	300.0	4483
LCS 885-4483/2-A	Lab Control Sample	Total/NA	Solid	300.0	4483
885-3829-25 MS	TP24-09 0'	Total/NA	Solid	300.0	4483
885-3829-25 MSD	TP24-09 0'	Total/NA	Solid	300.0	4483

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-04 2.0'

Lab Sample ID: 885-3829-1
Matrix: Solid
Date Collected: 05/01/24 08:40
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/06/24 23:46
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/06/24 23:46
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 21:39
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 19:24

Client Sample ID: BES24-05 2.0'

Lab Sample ID: 885-3829-2
Matrix: Solid
Date Collected: 05/01/24 08:45
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 00:56
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 00:56
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 21:52
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 19:36

Client Sample ID: BES24-10 3.0'

Lab Sample ID: 885-3829-3
Matrix: Solid
Date Collected: 05/01/24 08:50
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 02:06
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 02:06
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 22:04
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 19:49

Client Sample ID: BES24-11 3.0'

Lab Sample ID: 885-3829-4
Matrix: Solid
Date Collected: 05/01/24 08:55
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 02:30

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-11 3.0'

Lab Sample ID: 885-3829-4
Matrix: Solid
Date Collected: 05/01/24 08:55
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 02:30
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 22:16
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 20:01

Client Sample ID: BES24-12 3.0'

Lab Sample ID: 885-3829-5
Matrix: Solid
Date Collected: 05/01/24 09:00
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 02:53
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 02:53
Total/NA	Prep	SHAKE			4702	JU	EET ALB	05/09/24 16:14
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 17:40
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 20:13

Client Sample ID: BES24-19 3.0'

Lab Sample ID: 885-3829-6
Matrix: Solid
Date Collected: 05/01/24 09:05
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 03:17
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 03:17
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 22:41
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 20:26

Client Sample ID: BES24-13 2.0'

Lab Sample ID: 885-3829-7
Matrix: Solid
Date Collected: 05/01/24 12:05
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 03:41
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 03:41

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: BES24-13 2.0'

Lab Sample ID: 885-3829-7
Matrix: Solid
Date Collected: 05/01/24 12:05
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 22:53
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 20:38

Client Sample ID: BES24-14 2.0'

Lab Sample ID: 885-3829-8
Matrix: Solid
Date Collected: 05/01/24 12:10
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 04:04
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 04:04
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 23:05
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 20:50

Client Sample ID: BES24-15 2.5'

Lab Sample ID: 885-3829-9
Matrix: Solid
Date Collected: 05/01/24 14:00
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 04:28
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 04:28
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 23:17
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 21:03

Client Sample ID: BES24-20 2.0'

Lab Sample ID: 885-3829-10
Matrix: Solid
Date Collected: 05/01/24 12:15
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 04:51
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 04:51
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 23:30

Lab Chronicle

Client: Vertex
Job ID: 885-3829-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-20 2.0'
Lab Sample ID: 885-3829-10
Date Collected: 05/01/24 12:15
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 21:15

Client Sample ID: WES24-02 3.0'
Lab Sample ID: 885-3829-11
Date Collected: 05/01/24 14:10
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 05:38
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 05:38
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 23:54
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 21:52

Client Sample ID: WES24-03 3.0'
Lab Sample ID: 885-3829-12
Date Collected: 05/01/24 14:15
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 06:02
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 06:02
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 00:06
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 22:05

Client Sample ID: TP24--01 0'
Lab Sample ID: 885-3829-13
Date Collected: 05/01/24 10:00
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 06:25
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 06:25
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 00:19
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 22:17

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-01 2'
Lab Sample ID: 885-3829-14
Date Collected: 05/01/24 10:15
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 06:49
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 06:49
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 00:31
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 22:54

Client Sample ID: TP24-02 0'
Lab Sample ID: 885-3829-15
Date Collected: 05/01/24 10:30
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 07:12
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 07:12
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 00:43
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 23:06

Client Sample ID: TP24-02 2'
Lab Sample ID: 885-3829-16
Date Collected: 05/01/24 10:45
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 07:36
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 07:36
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 00:55
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 23:19

Client Sample ID: TP24-03 0'
Lab Sample ID: 885-3829-17
Date Collected: 05/01/24 11:00
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 07:59

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Client Sample ID: TP24-03 0'

Lab Sample ID: 885-3829-17
Matrix: Solid
Date Collected: 05/01/24 11:00
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 07:59
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 01:07
Total/NA	Prep	300_Prep			4438	KB	EET ALB	05/06/24 14:46
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/07/24 00:20

Client Sample ID: TP24-03 2'

Lab Sample ID: 885-3829-18
Matrix: Solid
Date Collected: 05/01/24 11:15
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 08:23
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 08:23
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 01:20
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 15:19

Client Sample ID: TP24-04 0'

Lab Sample ID: 885-3829-19
Matrix: Solid
Date Collected: 05/01/24 11:30
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 08:46
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 08:46
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 01:32
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 15:34

Client Sample ID: TP24-04 2'

Lab Sample ID: 885-3829-20
Matrix: Solid
Date Collected: 05/01/24 11:45
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8015D		1	4497	JP	EET ALB	05/07/24 09:10
Total/NA	Prep	5030C			4337	JP	EET ALB	05/03/24 11:22
Total/NA	Analysis	8021B		1	4498	JP	EET ALB	05/07/24 09:10

Lab Chronicle

Client: Vertex
Job ID: 885-3829-1
Project/Site: Red Deer CTB

Client Sample ID: TP24-04 2'
Lab Sample ID: 885-3829-20
Date Collected: 05/01/24 11:45
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4402	DH	EET ALB	05/06/24 10:34
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/07/24 01:44
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 15:49

Client Sample ID: TP24-07 0'
Lab Sample ID: 885-3829-21
Date Collected: 05/01/24 12:00
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/06/24 13:14
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/06/24 13:14
Total/NA	Prep	SHAKE			4401	DH	EET ALB	05/06/24 10:19
Total/NA	Analysis	8015D		1	4499	JU	EET ALB	05/06/24 18:42
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 16:04

Client Sample ID: TP24-07 2'
Lab Sample ID: 885-3829-22
Date Collected: 05/01/24 12:15
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/06/24 14:20
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/06/24 14:20
Total/NA	Prep	SHAKE			4401	DH	EET ALB	05/06/24 10:19
Total/NA	Analysis	8015D		1	4499	JU	EET ALB	05/06/24 19:06
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 16:19

Client Sample ID: TP24-08 0'
Lab Sample ID: 885-3829-23
Date Collected: 05/01/24 12:30
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/06/24 15:25
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/06/24 15:25
Total/NA	Prep	SHAKE			4401	DH	EET ALB	05/06/24 10:19
Total/NA	Analysis	8015D		1	4499	JU	EET ALB	05/06/24 19:30

Lab Chronicle

Client: Vertex
Job ID: 885-3829-1
Project/Site: Red Deer CTB

Client Sample ID: TP24-08 0'
Lab Sample ID: 885-3829-23
Date Collected: 05/01/24 12:30
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 16:35

Client Sample ID: TP24-08 2'
Lab Sample ID: 885-3829-24
Date Collected: 05/01/24 12:45
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/06/24 15:47
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/06/24 15:47
Total/NA	Prep	SHAKE			4401	DH	EET ALB	05/06/24 10:19
Total/NA	Analysis	8015D		1	4499	JU	EET ALB	05/06/24 19:53
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 16:50

Client Sample ID: TP24-09 0'
Lab Sample ID: 885-3829-25
Date Collected: 05/01/24 13:00
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/06/24 16:08
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/06/24 16:08
Total/NA	Prep	SHAKE			4401	DH	EET ALB	05/06/24 10:19
Total/NA	Analysis	8015D		1	4500	JU	EET ALB	05/07/24 16:21
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 17:05

Client Sample ID: TP24-09 2'
Lab Sample ID: 885-3829-26
Date Collected: 05/01/24 13:15
Matrix: Solid
Date Received: 05/03/24 07:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/06/24 16:30
Total/NA	Prep	5030C			4356	JP	EET ALB	05/03/24 14:29
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/06/24 16:30
Total/NA	Prep	SHAKE			4401	DH	EET ALB	05/06/24 10:19
Total/NA	Analysis	8015D		1	4500	JU	EET ALB	05/07/24 16:44
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 18:21

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3829-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: On File

Phone #:

email or Fax#:

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard ☒ Rush 48 hour 24 hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: AL

On Ice: ☑ Yes ☐ No (Yes)

# of Coolers: 1

Cooler Temp(including CF): 0.6 - 0.2 = 0.4 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORA
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107
885-3829 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH (8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-1-24	0840	Soil	BES24-04 2.0'	4oz	ICE	-1										
	0845		BES24-05 2.0'			-2										
	0850		BES24-10 3.0'			-3										
	0855		BES24-11 3.0'			-4										
	0900		BES24-12 3.0'			-5										
	0905		BES24-19 3.0'			-6										
	1205		BES24-13 2.0'			-7										
	1210		BES24-14 2.0'			-8										
	1400		BES24-15 2.5'			-9										
	1215		BES24-20 2.0'			-10										
	1410		WES24-02 3.0'			-11										
	1415		WES24-03 3.0'			-12										

Date	Time	Relinquished by	Received by	Via	Date	Time
					5/2/24	945
5/2/24	1100			courier	5/3/24	7:30

Remarks: CC: SCarttar@Vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex ~~(XTO)~~ Mark Energy

Mailing Address: On File

Phone #: On File

email or Fax#: Scarttar@vertex.ca

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other ☐ EDD (Type)

Turn-Around Time: ☐ Standard ☑ Rush 48 hour ~~3-4 business~~

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: Wyatt Wadleigh

On Ice: ☑ Yes ☐ No 409

# of Coolers: 1

Cooler Temp(including CF): 0.6-0.2=0.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
05/01/24	10 00	Soil	TP24-01 0	1, 4oz jar		-13	X	X					X			
05/01/24	10 15	Soil	TP24-01 2ft	1, 4oz jar		-14	X	X					X			
05/01/24	10 30	Soil	TP24-02 0	1, 4oz jar		-15	X	X					X			
05/01/24	10 45	Soil	TP24-02 2 ft	1, 4oz jar		-16	X	X					X			
05/01/24	11 00	Soil	TP24-03 0	1, 4oz jar		-17	X	X					X			
05/01/24	11 15	Soil	TP24-03 2ft	1, 4oz jar		-18	X	X					X			
05/01/24	11 30	Soil	TP24-04 0	1, 4oz jar		-19	X	X					X			
05/01/24	11 45	Soil	TP24-04 2ft	1, 4oz jar		-20	X	X					X			
05/01/24	12 00	Soil	TP24-07 0	1, 4oz jar		-21	X	X					X			
05/01/24	12 15	Soil	TP24-07 2ft	1, 4oz jar		-22	X	X					X			
05/01/24	12 30	Soil	TP24-08 0	1, 4oz jar		-23	X	X					X			
05/01/24	12 45	Soil	TP24-08 2ft	1, 4oz jar		-24	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
		Wyatt Wadleigh			5/2/24	945
5/2/24	1946			Courier	5/3/24	7:30

Remarks: Please CC wwadleigh@vertex.ca

Cost center Number:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

5/11/2024

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (~~XTO~~) MACK Energy

Mailing Address: On File

Phone #: On File

email or Fax#: Scarttar@vertex.ca

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard ☑ Rush 24 hour TAT (48hr)

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: Wyatt Wadleigh

On Ice: ☑ Yes ☐ No (Y/N)

# of Coolers: 1

Cooler Temp (Including CF): 0.6 - 0.2 = 0.4 °C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel: 505-345-3975 Fax: 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
05/01/24	13 00	Soil	TP24-09 0	1, 4oz jar		-25	X	X					X			
05/01/24	13 15	Soil	TP24-09 2ft	1, 4oz jar		-26	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
		Wyatt Wadleigh			5/2/24	945
5/2/24	1900			courier	5/3/24	7:30

Remarks: Please CC wwadleigh@vertex.ca
Cost center Number

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3829-1

Login Number: 3829 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Proctor, Nancy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/13/2024 9:18:12 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3900-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

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Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



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5/13/2024 9:18:12 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Released to Imaging: 8/12/2024 2:32:55 PM

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3900-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3900-1
Project/Site: Red Deer CTB

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3900-1

Job ID: 885-3900-1 Eurofins Albuquerque

Job Narrative
885-3900-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/4/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.8°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
Method 300_OF28D_PREC: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 885-4496 and analytical batch 885-4540 were outside control limits for one or more analytes. See QC Sample Results for detail. Dilution of spiked sample is suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-41 2ft

Date Collected: 05/02/24 13:15
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.2		mg/Kg		05/06/24 10:06	05/06/24 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/06/24 10:06*	*05/06/24 17:53*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.026		mg/Kg		05/06/24 10:06	05/06/24 17:53	1
Ethylbenzene	ND		0.052		mg/Kg		05/06/24 10:06	05/06/24 17:53	1
Toluene	ND		0.052		mg/Kg		05/06/24 10:06	05/06/24 17:53	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 10:06	05/06/24 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/06/24 10:06*	*05/06/24 17:53*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/07/24 09:32	05/07/24 19:06	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/07/24 09:32	05/07/24 19:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/07/24 09:32*	*05/07/24 19:06*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 20:07	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-42 2ft

Date Collected: 05/02/24 13:20
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		05/06/24 10:06	05/06/24 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/06/24 10:06*	*05/06/24 18:17*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/06/24 10:06	05/06/24 18:17	1
Ethylbenzene	ND		0.046		mg/Kg		05/06/24 10:06	05/06/24 18:17	1
Toluene	ND		0.046		mg/Kg		05/06/24 10:06	05/06/24 18:17	1
Xylenes, Total	ND		0.091		mg/Kg		05/06/24 10:06	05/06/24 18:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/06/24 10:06*	*05/06/24 18:17*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/07/24 09:32	05/07/24 19:18	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 09:32	05/07/24 19:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*05/07/24 09:32*	*05/07/24 19:18*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 20:52	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-43 2ft

Date Collected: 05/02/24 13:25
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/06/24 10:06	05/06/24 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/06/24 10:06*	*05/06/24 18:40*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/06/24 10:06	05/06/24 18:40	1
Ethylbenzene	ND		0.048		mg/Kg		05/06/24 10:06	05/06/24 18:40	1
Toluene	ND		0.048		mg/Kg		05/06/24 10:06	05/06/24 18:40	1
Xylenes, Total	ND		0.095		mg/Kg		05/06/24 10:06	05/06/24 18:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/06/24 10:06*	*05/06/24 18:40*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/07/24 09:32	05/07/24 19:30	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 09:32	05/07/24 19:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/07/24 09:32*	*05/07/24 19:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 10:09	05/07/24 21:07	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-44 2ft

Date Collected: 05/02/24 13:30
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.4		mg/Kg		05/06/24 10:06	05/06/24 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/06/24 10:06*	*05/06/24 19:04*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/06/24 10:06	05/06/24 19:04	1
Ethylbenzene	ND		0.044		mg/Kg		05/06/24 10:06	05/06/24 19:04	1
Toluene	ND		0.044		mg/Kg		05/06/24 10:06	05/06/24 19:04	1
Xylenes, Total	ND		0.087		mg/Kg		05/06/24 10:06	05/06/24 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/06/24 10:06*	*05/06/24 19:04*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/07/24 09:32	05/07/24 19:43	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 09:32	05/07/24 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/07/24 09:32*	*05/07/24 19:43*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1500**		59		mg/Kg		05/07/24 10:09	05/07/24 21:23	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-45 2ft

Date Collected: 05/02/24 13:35
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.5		mg/Kg		05/06/24 10:06	05/06/24 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/06/24 10:06*	*05/06/24 19:27*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/06/24 10:06	05/06/24 19:27	1
Ethylbenzene	ND		0.045		mg/Kg		05/06/24 10:06	05/06/24 19:27	1
Toluene	ND		0.045		mg/Kg		05/06/24 10:06	05/06/24 19:27	1
Xylenes, Total	ND		0.090		mg/Kg		05/06/24 10:06	05/06/24 19:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/06/24 10:06*	*05/06/24 19:27*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/07/24 09:32	05/07/24 19:55	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/07/24 09:32	05/07/24 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/07/24 09:32*	*05/07/24 19:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		59		mg/Kg		05/07/24 10:09	05/07/24 21:38	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-46 2ft

Date Collected: 05/02/24 13:40
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/06/24 10:06	05/06/24 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/06/24 10:06*	*05/06/24 19:51*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/06/24 10:06	05/06/24 19:51	1
Ethylbenzene	ND		0.049		mg/Kg		05/06/24 10:06	05/06/24 19:51	1
Toluene	ND		0.049		mg/Kg		05/06/24 10:06	05/06/24 19:51	1
Xylenes, Total	ND		0.098		mg/Kg		05/06/24 10:06	05/06/24 19:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/06/24 10:06*	*05/06/24 19:51*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/07/24 09:32	05/07/24 20:07	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 09:32	05/07/24 20:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/07/24 09:32*	*05/07/24 20:07*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 14:57	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-47 2ft

Date Collected: 05/02/24 13:45
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/06/24 10:52	05/07/24 00:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/06/24 10:52*	*05/07/24 00:06*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/06/24 10:52	05/07/24 00:06	1
Ethylbenzene	ND		0.047		mg/Kg		05/06/24 10:52	05/07/24 00:06	1
Toluene	ND		0.047		mg/Kg		05/06/24 10:52	05/07/24 00:06	1
Xylenes, Total	ND		0.094		mg/Kg		05/06/24 10:52	05/07/24 00:06	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*39 - 146*	*05/06/24 10:52*	*05/07/24 00:06*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/07/24 09:32	05/07/24 20:20	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 09:32	05/07/24 20:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*05/07/24 09:32*	*05/07/24 20:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 16:01	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-48 2ft

Date Collected: 05/02/24 13:50
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-8

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		12		mg/Kg		05/06/24 10:52	05/07/24 00:28	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/06/24 10:52*	*05/07/24 00:28*	*2*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.062		mg/Kg		05/06/24 10:52	05/07/24 00:28	2
Ethylbenzene	ND		0.12		mg/Kg		05/06/24 10:52	05/07/24 00:28	2
Toluene	ND		0.12		mg/Kg		05/06/24 10:52	05/07/24 00:28	2
Xylenes, Total	ND		0.25		mg/Kg		05/06/24 10:52	05/07/24 00:28	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*05/06/24 10:52*	*05/07/24 00:28*	*2*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		05/07/24 09:32	05/07/24 20:32	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/07/24 09:32	05/07/24 20:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/07/24 09:32*	*05/07/24 20:32*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		05/07/24 12:04	05/07/24 16:40	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-49 2ft

Date Collected: 05/02/24 13:55
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-9

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/06/24 10:52	05/07/24 00:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 10:52*	*05/07/24 00:50*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/06/24 10:52	05/07/24 00:50	1
Ethylbenzene	ND		0.043		mg/Kg		05/06/24 10:52	05/07/24 00:50	1
Toluene	ND		0.043		mg/Kg		05/06/24 10:52	05/07/24 00:50	1
Xylenes, Total	ND		0.087		mg/Kg		05/06/24 10:52	05/07/24 00:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*39 - 146*	*05/06/24 10:52*	*05/07/24 00:50*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.8		mg/Kg		05/07/24 09:32	05/07/24 20:44	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		05/07/24 09:32	05/07/24 20:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/07/24 09:32*	*05/07/24 20:44*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 16:53	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-50 2ft

Date Collected: 05/02/24 14:00
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-10

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.3		mg/Kg		05/06/24 10:52	05/07/24 01:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*05/06/24 10:52*	*05/07/24 01:12*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.026		mg/Kg		05/06/24 10:52	05/07/24 01:12	1
Ethylbenzene	ND		0.053		mg/Kg		05/06/24 10:52	05/07/24 01:12	1
Toluene	ND		0.053		mg/Kg		05/06/24 10:52	05/07/24 01:12	1
Xylenes, Total	ND		0.11		mg/Kg		05/06/24 10:52	05/07/24 01:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*05/06/24 10:52*	*05/07/24 01:12*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/07/24 09:32	05/07/24 20:57	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 09:32	05/07/24 20:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/07/24 09:32*	*05/07/24 20:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**65**		60		mg/Kg		05/07/24 12:04	05/07/24 17:06	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-51 2ft

Date Collected: 05/02/24 14:05
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-11

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/06/24 10:52	05/07/24 01:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/06/24 10:52*	*05/07/24 01:33*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/06/24 10:52	05/07/24 01:33	1
Ethylbenzene	ND		0.048		mg/Kg		05/06/24 10:52	05/07/24 01:33	1
Toluene	ND		0.048		mg/Kg		05/06/24 10:52	05/07/24 01:33	1
Xylenes, Total	ND		0.096		mg/Kg		05/06/24 10:52	05/07/24 01:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/06/24 10:52*	*05/07/24 01:33*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		05/07/24 09:32	05/07/24 21:09	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/07/24 09:32	05/07/24 21:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/07/24 09:32*	*05/07/24 21:09*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 17:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-52 2ft

Date Collected: 05/02/24 14:30
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-12

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/06/24 10:52	05/07/24 02:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*05/06/24 10:52*	*05/07/24 02:38*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/06/24 10:52	05/07/24 02:38	1
Ethylbenzene	ND		0.047		mg/Kg		05/06/24 10:52	05/07/24 02:38	1
Toluene	ND		0.047		mg/Kg		05/06/24 10:52	05/07/24 02:38	1
Xylenes, Total	ND		0.093		mg/Kg		05/06/24 10:52	05/07/24 02:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*05/06/24 10:52*	*05/07/24 02:38*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/07/24 09:32	05/07/24 21:21	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 09:32	05/07/24 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/07/24 09:32*	*05/07/24 21:21*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 17:57	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: WES24-15 0-2

Date Collected: 05/02/24 14:10
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-13

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		22		mg/Kg		05/06/24 10:52	05/07/24 03:44	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 10:52*	*05/07/24 03:44*	*2*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.11		mg/Kg		05/06/24 10:52	05/07/24 03:44	2
Ethylbenzene	ND		0.22		mg/Kg		05/06/24 10:52	05/07/24 03:44	2
Toluene	ND		0.22		mg/Kg		05/06/24 10:52	05/07/24 03:44	2
Xylenes, Total	ND		0.45		mg/Kg		05/06/24 10:52	05/07/24 03:44	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/06/24 10:52*	*05/07/24 03:44*	*2*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		05/07/24 09:32	05/07/24 21:34	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/07/24 09:32	05/07/24 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*05/07/24 09:32*	*05/07/24 21:34*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 18:10	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: WES24-16 0-2

Date Collected: 05/02/24 14:15
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-14

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/06/24 10:52	05/07/24 04:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/06/24 10:52*	*05/07/24 04:05*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/06/24 10:52	05/07/24 04:05	1
Ethylbenzene	ND		0.042		mg/Kg		05/06/24 10:52	05/07/24 04:05	1
Toluene	ND		0.042		mg/Kg		05/06/24 10:52	05/07/24 04:05	1
Xylenes, Total	ND		0.083		mg/Kg		05/06/24 10:52	05/07/24 04:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*05/06/24 10:52*	*05/07/24 04:05*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		05/07/24 09:32	05/07/24 21:46	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/07/24 09:32	05/07/24 21:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*	*05/07/24 09:32*	*05/07/24 21:46*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**140**		60		mg/Kg		05/07/24 12:04	05/07/24 18:23	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: WES24-17 0-2

Date Collected: 05/02/24 14:20
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-15

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/06/24 10:52	05/07/24 04:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/06/24 10:52*	*05/07/24 04:27*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/06/24 10:52	05/07/24 04:27	1
Ethylbenzene	ND		0.048		mg/Kg		05/06/24 10:52	05/07/24 04:27	1
Toluene	ND		0.048		mg/Kg		05/06/24 10:52	05/07/24 04:27	1
Xylenes, Total	ND		0.097		mg/Kg		05/06/24 10:52	05/07/24 04:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*05/06/24 10:52*	*05/07/24 04:27*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/07/24 09:32	05/07/24 21:58	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 09:32	05/07/24 21:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*87*		*62 - 134*	*05/07/24 09:32*	*05/07/24 21:58*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1900**		60		mg/Kg		05/07/24 12:04	05/07/24 18:36	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: WES24-18 0-2

Date Collected: 05/02/24 14:25
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3900-16

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.1		mg/Kg		05/06/24 10:52	05/07/24 04:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/06/24 10:52*	*05/07/24 04:49*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/06/24 10:52	05/07/24 04:49	1
Ethylbenzene	ND		0.041		mg/Kg		05/06/24 10:52	05/07/24 04:49	1
Toluene	ND		0.041		mg/Kg		05/06/24 10:52	05/07/24 04:49	1
Xylenes, Total	ND		0.083		mg/Kg		05/06/24 10:52	05/07/24 04:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*05/06/24 10:52*	*05/07/24 04:49*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/07/24 09:32	05/07/24 22:11	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 09:32	05/07/24 22:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*05/07/24 09:32*	*05/07/24 22:11*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/07/24 12:04	05/07/24 18:49	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4395/1-A
Matrix: Solid
Analysis Batch: 4451

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4395

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/06/24 10:06	05/06/24 11:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*15 - 244*	*05/06/24 10:06*	*05/06/24 11:36*	*1*

Lab Sample ID: LCS 885-4395/2-A
Matrix: Solid
Analysis Batch: 4451

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4395

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	24.6		mg/Kg		98	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*204*		*15 - 244*

Lab Sample ID: MB 885-4404/1-A
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4404

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/06/24 10:52	05/06/24 23:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*05/06/24 10:52*	*05/06/24 23:45*	*1*

Lab Sample ID: LCS 885-4404/2-A
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4404

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	22.7		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*212*		*15 - 244*

Lab Sample ID: 885-3900-11 MS
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: BES24-51 2ft
Prep Type: Total/NA
Prep Batch: 4404

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		24.1	22.6		mg/Kg		94	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*214*		*15 - 244*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Method: 8015D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: 885-3900-11 MSD
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: BES24-51 2ft
Prep Type: Total/NA
Prep Batch: 4404

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		24.1	21.1		mg/Kg		88	70 - 130	7	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*202*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4395/1-A
Matrix: Solid
Analysis Batch: 4452

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4395

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/06/24 10:06	05/06/24 11:36	1
Ethylbenzene	ND		0.050		mg/Kg		05/06/24 10:06	05/06/24 11:36	1
Toluene	ND		0.050		mg/Kg		05/06/24 10:06	05/06/24 11:36	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 10:06	05/06/24 11:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*39 - 146*	*05/06/24 10:06*	*05/06/24 11:36*	*1*

Lab Sample ID: LCS 885-4395/3-A
Matrix: Solid
Analysis Batch: 4452

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4395

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.908		mg/Kg		91	70 - 130
Ethylbenzene	1.00	0.884		mg/Kg		88	70 - 130
m,p-Xylene	2.00	1.79		mg/Kg		89	70 - 130
o-Xylene	1.00	0.878		mg/Kg		88	70 - 130
Toluene	1.00	0.871		mg/Kg		87	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*

Lab Sample ID: MB 885-4404/1-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4404

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/06/24 10:52	05/06/24 23:45	1
Ethylbenzene	ND		0.050		mg/Kg		05/06/24 10:52	05/06/24 23:45	1
Toluene	ND		0.050		mg/Kg		05/06/24 10:52	05/06/24 23:45	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 10:52	05/06/24 23:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*05/06/24 10:52*	*05/06/24 23:45*	*1*

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QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 885-4404/3-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4404

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.888		mg/Kg		89	70 - 130		
Ethylbenzene			1.00	0.922		mg/Kg		92	70 - 130		
m,p-Xylene			2.00	1.83		mg/Kg		92	70 - 130		
o-Xylene			1.00	0.929		mg/Kg		93	70 - 130		
Toluene			1.00	0.906		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*

Lab Sample ID: 885-3900-12 MS
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: BES24-52 2ft
Prep Type: Total/NA
Prep Batch: 4404

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.934	0.804		mg/Kg		86	70 - 130		
Ethylbenzene	ND		0.934	0.825		mg/Kg		88	70 - 130		
m,p-Xylene	ND		1.87	1.65		mg/Kg		88	70 - 130		
o-Xylene	ND		0.934	0.829		mg/Kg		89	70 - 130		
Toluene	ND		0.934	0.818		mg/Kg		88	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*

Lab Sample ID: 885-3900-12 MSD
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: BES24-52 2ft
Prep Type: Total/NA
Prep Batch: 4404

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.934	0.801		mg/Kg		86	70 - 130	0	20
Ethylbenzene	ND		0.934	0.823		mg/Kg		88	70 - 130	0	20
m,p-Xylene	ND		1.87	1.64		mg/Kg		88	70 - 130	0	20
o-Xylene	ND		0.934	0.830		mg/Kg		89	70 - 130	0	20
Toluene	ND		0.934	0.811		mg/Kg		87	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4476/1-A
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4476

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/07/24 09:32	05/07/24 18:41	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/07/24 09:32	05/07/24 18:41	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-4476/1-A
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4476

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	93		62 - 134	05/07/24 09:32	05/07/24 18:41	1

Lab Sample ID: LCS 885-4476/2-A
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4476

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	50.0	41.0		mg/Kg		82	60 - 135

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	108		62 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4483/1-A
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4483

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5	mg/Kg		05/07/24 10:09	05/07/24 14:46	1

Lab Sample ID: LCS 885-4483/2-A
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4483

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	15.0	13.8		mg/Kg		92	90 - 110

Lab Sample ID: 885-3900-5 MS
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: BES24-45 2ft
Prep Type: Total/NA
Prep Batch: 4483

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	ND		29.9	ND		mg/Kg		NC	50 - 150

Lab Sample ID: 885-3900-5 MSD
Matrix: Solid
Analysis Batch: 4548

Client Sample ID: BES24-45 2ft
Prep Type: Total/NA
Prep Batch: 4483

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		30.1	ND		mg/Kg		NC	50 - 150	NC	20

Lab Sample ID: MB 885-4496/1-A
Matrix: Solid
Analysis Batch: 4540

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4496

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5	mg/Kg		05/07/24 12:04	05/07/24 12:53	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-4496/2-A
Matrix: Solid
Analysis Batch: 4540

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4496

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.0		mg/Kg		93	90 - 110		

Lab Sample ID: 885-3900-7 MS
Matrix: Solid
Analysis Batch: 4540

Client Sample ID: BES24-47 2ft
Prep Type: Total/NA
Prep Batch: 4496

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	ND		30.1	71.1		mg/Kg		NC	50 - 150		

Lab Sample ID: 885-3900-7 MSD
Matrix: Solid
Analysis Batch: 4540

Client Sample ID: BES24-47 2ft
Prep Type: Total/NA
Prep Batch: 4496

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	ND		29.9	70.2		mg/Kg		NC	50 - 150	1	20

Lab Sample ID: MB 885-4540/18
Matrix: Solid
Analysis Batch: 4540

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			05/07/24 09:41	1

Lab Sample ID: MRL 885-4540/17
Matrix: Solid
Analysis Batch: 4540

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.520		mg/L		104	50 - 150		

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

GC VOA

Prep Batch: 4395

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	5035	
885-3900-2	BES24-42 2ft	Total/NA	Solid	5035	
885-3900-3	BES24-43 2ft	Total/NA	Solid	5035	
885-3900-4	BES24-44 2ft	Total/NA	Solid	5035	
885-3900-5	BES24-45 2ft	Total/NA	Solid	5035	
885-3900-6	BES24-46 2ft	Total/NA	Solid	5035	
MB 885-4395/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4395/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4395/3-A	Lab Control Sample	Total/NA	Solid	5035	

Prep Batch: 4404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-7	BES24-47 2ft	Total/NA	Solid	5035	
885-3900-8	BES24-48 2ft	Total/NA	Solid	5035	
885-3900-9	BES24-49 2ft	Total/NA	Solid	5035	
885-3900-10	BES24-50 2ft	Total/NA	Solid	5035	
885-3900-11	BES24-51 2ft	Total/NA	Solid	5035	
885-3900-12	BES24-52 2ft	Total/NA	Solid	5035	
885-3900-13	WES24-15 0-2	Total/NA	Solid	5035	
885-3900-14	WES24-16 0-2	Total/NA	Solid	5035	
885-3900-15	WES24-17 0-2	Total/NA	Solid	5035	
885-3900-16	WES24-18 0-2	Total/NA	Solid	5035	
MB 885-4404/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4404/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4404/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-3900-11 MS	BES24-51 2ft	Total/NA	Solid	5035	
885-3900-11 MSD	BES24-51 2ft	Total/NA	Solid	5035	
885-3900-12 MS	BES24-52 2ft	Total/NA	Solid	5035	
885-3900-12 MSD	BES24-52 2ft	Total/NA	Solid	5035	

Analysis Batch: 4451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	8015D	4395
885-3900-2	BES24-42 2ft	Total/NA	Solid	8015D	4395
885-3900-3	BES24-43 2ft	Total/NA	Solid	8015D	4395
885-3900-4	BES24-44 2ft	Total/NA	Solid	8015D	4395
885-3900-5	BES24-45 2ft	Total/NA	Solid	8015D	4395
885-3900-6	BES24-46 2ft	Total/NA	Solid	8015D	4395
MB 885-4395/1-A	Method Blank	Total/NA	Solid	8015D	4395
LCS 885-4395/2-A	Lab Control Sample	Total/NA	Solid	8015D	4395

Analysis Batch: 4452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	8021B	4395
885-3900-2	BES24-42 2ft	Total/NA	Solid	8021B	4395
885-3900-3	BES24-43 2ft	Total/NA	Solid	8021B	4395
885-3900-4	BES24-44 2ft	Total/NA	Solid	8021B	4395
885-3900-5	BES24-45 2ft	Total/NA	Solid	8021B	4395
885-3900-6	BES24-46 2ft	Total/NA	Solid	8021B	4395
MB 885-4395/1-A	Method Blank	Total/NA	Solid	8021B	4395
LCS 885-4395/3-A	Lab Control Sample	Total/NA	Solid	8021B	4395

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

GC VOA

Analysis Batch: 4491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-7	BES24-47 2ft	Total/NA	Solid	8015D	4404
885-3900-8	BES24-48 2ft	Total/NA	Solid	8015D	4404
885-3900-9	BES24-49 2ft	Total/NA	Solid	8015D	4404
885-3900-10	BES24-50 2ft	Total/NA	Solid	8015D	4404
885-3900-11	BES24-51 2ft	Total/NA	Solid	8015D	4404
885-3900-12	BES24-52 2ft	Total/NA	Solid	8015D	4404
885-3900-13	WES24-15 0-2	Total/NA	Solid	8015D	4404
885-3900-14	WES24-16 0-2	Total/NA	Solid	8015D	4404
885-3900-15	WES24-17 0-2	Total/NA	Solid	8015D	4404
885-3900-16	WES24-18 0-2	Total/NA	Solid	8015D	4404
MB 885-4404/1-A	Method Blank	Total/NA	Solid	8015D	4404
LCS 885-4404/2-A	Lab Control Sample	Total/NA	Solid	8015D	4404
885-3900-11 MS	BES24-51 2ft	Total/NA	Solid	8015D	4404
885-3900-11 MSD	BES24-51 2ft	Total/NA	Solid	8015D	4404

Analysis Batch: 4492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-7	BES24-47 2ft	Total/NA	Solid	8021B	4404
885-3900-8	BES24-48 2ft	Total/NA	Solid	8021B	4404
885-3900-9	BES24-49 2ft	Total/NA	Solid	8021B	4404
885-3900-10	BES24-50 2ft	Total/NA	Solid	8021B	4404
885-3900-11	BES24-51 2ft	Total/NA	Solid	8021B	4404
885-3900-12	BES24-52 2ft	Total/NA	Solid	8021B	4404
885-3900-13	WES24-15 0-2	Total/NA	Solid	8021B	4404
885-3900-14	WES24-16 0-2	Total/NA	Solid	8021B	4404
885-3900-15	WES24-17 0-2	Total/NA	Solid	8021B	4404
885-3900-16	WES24-18 0-2	Total/NA	Solid	8021B	4404
MB 885-4404/1-A	Method Blank	Total/NA	Solid	8021B	4404
LCS 885-4404/3-A	Lab Control Sample	Total/NA	Solid	8021B	4404
885-3900-12 MS	BES24-52 2ft	Total/NA	Solid	8021B	4404
885-3900-12 MSD	BES24-52 2ft	Total/NA	Solid	8021B	4404

GC Semi VOA

Prep Batch: 4476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	SHAKE	
885-3900-2	BES24-42 2ft	Total/NA	Solid	SHAKE	
885-3900-3	BES24-43 2ft	Total/NA	Solid	SHAKE	
885-3900-4	BES24-44 2ft	Total/NA	Solid	SHAKE	
885-3900-5	BES24-45 2ft	Total/NA	Solid	SHAKE	
885-3900-6	BES24-46 2ft	Total/NA	Solid	SHAKE	
885-3900-7	BES24-47 2ft	Total/NA	Solid	SHAKE	
885-3900-8	BES24-48 2ft	Total/NA	Solid	SHAKE	
885-3900-9	BES24-49 2ft	Total/NA	Solid	SHAKE	
885-3900-10	BES24-50 2ft	Total/NA	Solid	SHAKE	
885-3900-11	BES24-51 2ft	Total/NA	Solid	SHAKE	
885-3900-12	BES24-52 2ft	Total/NA	Solid	SHAKE	
885-3900-13	WES24-15 0-2	Total/NA	Solid	SHAKE	
885-3900-14	WES24-16 0-2	Total/NA	Solid	SHAKE	
885-3900-15	WES24-17 0-2	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

GC Semi VOA (Continued)

Prep Batch: 4476 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-16	WES24-18 0-2	Total/NA	Solid	SHAKE	
MB 885-4476/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4476/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 4522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	8015D	4476
885-3900-2	BES24-42 2ft	Total/NA	Solid	8015D	4476
885-3900-3	BES24-43 2ft	Total/NA	Solid	8015D	4476
885-3900-4	BES24-44 2ft	Total/NA	Solid	8015D	4476
885-3900-5	BES24-45 2ft	Total/NA	Solid	8015D	4476
885-3900-6	BES24-46 2ft	Total/NA	Solid	8015D	4476
885-3900-7	BES24-47 2ft	Total/NA	Solid	8015D	4476
885-3900-8	BES24-48 2ft	Total/NA	Solid	8015D	4476
885-3900-9	BES24-49 2ft	Total/NA	Solid	8015D	4476
885-3900-10	BES24-50 2ft	Total/NA	Solid	8015D	4476
885-3900-11	BES24-51 2ft	Total/NA	Solid	8015D	4476
885-3900-12	BES24-52 2ft	Total/NA	Solid	8015D	4476
885-3900-13	WES24-15 0-2	Total/NA	Solid	8015D	4476
885-3900-14	WES24-16 0-2	Total/NA	Solid	8015D	4476
885-3900-15	WES24-17 0-2	Total/NA	Solid	8015D	4476
885-3900-16	WES24-18 0-2	Total/NA	Solid	8015D	4476
MB 885-4476/1-A	Method Blank	Total/NA	Solid	8015D	4476
LCS 885-4476/2-A	Lab Control Sample	Total/NA	Solid	8015D	4476

HPLC/IC

Prep Batch: 4483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	300_Prep	
885-3900-2	BES24-42 2ft	Total/NA	Solid	300_Prep	
885-3900-3	BES24-43 2ft	Total/NA	Solid	300_Prep	
885-3900-4	BES24-44 2ft	Total/NA	Solid	300_Prep	
885-3900-5	BES24-45 2ft	Total/NA	Solid	300_Prep	
MB 885-4483/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4483/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3900-5 MS	BES24-45 2ft	Total/NA	Solid	300_Prep	
885-3900-5 MSD	BES24-45 2ft	Total/NA	Solid	300_Prep	

Prep Batch: 4496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-6	BES24-46 2ft	Total/NA	Solid	300_Prep	
885-3900-7	BES24-47 2ft	Total/NA	Solid	300_Prep	
885-3900-8	BES24-48 2ft	Total/NA	Solid	300_Prep	
885-3900-9	BES24-49 2ft	Total/NA	Solid	300_Prep	
885-3900-10	BES24-50 2ft	Total/NA	Solid	300_Prep	
885-3900-11	BES24-51 2ft	Total/NA	Solid	300_Prep	
885-3900-12	BES24-52 2ft	Total/NA	Solid	300_Prep	
885-3900-13	WES24-15 0-2	Total/NA	Solid	300_Prep	
885-3900-14	WES24-16 0-2	Total/NA	Solid	300_Prep	
885-3900-15	WES24-17 0-2	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

HPLC/IC (Continued)

Prep Batch: 4496 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-16	WES24-18 0-2	Total/NA	Solid	300_Prep	
MB 885-4496/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4496/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3900-7 MS	BES24-47 2ft	Total/NA	Solid	300_Prep	
885-3900-7 MSD	BES24-47 2ft	Total/NA	Solid	300_Prep	

Analysis Batch: 4540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-6	BES24-46 2ft	Total/NA	Solid	300.0	4496
885-3900-7	BES24-47 2ft	Total/NA	Solid	300.0	4496
885-3900-8	BES24-48 2ft	Total/NA	Solid	300.0	4496
885-3900-9	BES24-49 2ft	Total/NA	Solid	300.0	4496
885-3900-10	BES24-50 2ft	Total/NA	Solid	300.0	4496
885-3900-11	BES24-51 2ft	Total/NA	Solid	300.0	4496
885-3900-12	BES24-52 2ft	Total/NA	Solid	300.0	4496
885-3900-13	WES24-15 0-2	Total/NA	Solid	300.0	4496
885-3900-14	WES24-16 0-2	Total/NA	Solid	300.0	4496
885-3900-15	WES24-17 0-2	Total/NA	Solid	300.0	4496
885-3900-16	WES24-18 0-2	Total/NA	Solid	300.0	4496
MB 885-4496/1-A	Method Blank	Total/NA	Solid	300.0	4496
MB 885-4540/18	Method Blank	Total/NA	Solid	300.0	
LCS 885-4496/2-A	Lab Control Sample	Total/NA	Solid	300.0	4496
MRL 885-4540/17	Lab Control Sample	Total/NA	Solid	300.0	
885-3900-7 MS	BES24-47 2ft	Total/NA	Solid	300.0	4496
885-3900-7 MSD	BES24-47 2ft	Total/NA	Solid	300.0	4496

Analysis Batch: 4548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3900-1	BES24-41 2ft	Total/NA	Solid	300.0	4483
885-3900-2	BES24-42 2ft	Total/NA	Solid	300.0	4483
885-3900-3	BES24-43 2ft	Total/NA	Solid	300.0	4483
885-3900-4	BES24-44 2ft	Total/NA	Solid	300.0	4483
885-3900-5	BES24-45 2ft	Total/NA	Solid	300.0	4483
MB 885-4483/1-A	Method Blank	Total/NA	Solid	300.0	4483
LCS 885-4483/2-A	Lab Control Sample	Total/NA	Solid	300.0	4483
885-3900-5 MS	BES24-45 2ft	Total/NA	Solid	300.0	4483
885-3900-5 MSD	BES24-45 2ft	Total/NA	Solid	300.0	4483

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-41 2ft

Lab Sample ID: 885-3900-1
Matrix: Solid
Date Collected: 05/02/24 13:15
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8015D		1	4451	JP	EET ALB	05/06/24 17:53
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8021B		1	4452	JP	EET ALB	05/06/24 17:53
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 19:06
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 20:07

Client Sample ID: BES24-42 2ft

Lab Sample ID: 885-3900-2
Matrix: Solid
Date Collected: 05/02/24 13:20
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8015D		1	4451	JP	EET ALB	05/06/24 18:17
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8021B		1	4452	JP	EET ALB	05/06/24 18:17
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 19:18
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 20:52

Client Sample ID: BES24-43 2ft

Lab Sample ID: 885-3900-3
Matrix: Solid
Date Collected: 05/02/24 13:25
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8015D		1	4451	JP	EET ALB	05/06/24 18:40
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8021B		1	4452	JP	EET ALB	05/06/24 18:40
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 19:30
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 21:07

Client Sample ID: BES24-44 2ft

Lab Sample ID: 885-3900-4
Matrix: Solid
Date Collected: 05/02/24 13:30
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8015D		1	4451	JP	EET ALB	05/06/24 19:04

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: BES24-44 2ft

Lab Sample ID: 885-3900-4
Matrix: Solid
Date Collected: 05/02/24 13:30
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8021B		1	4452	JP	EET ALB	05/06/24 19:04
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 19:43
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 21:23

Client Sample ID: BES24-45 2ft

Lab Sample ID: 885-3900-5
Matrix: Solid
Date Collected: 05/02/24 13:35
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8015D		1	4451	JP	EET ALB	05/06/24 19:27
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8021B		1	4452	JP	EET ALB	05/06/24 19:27
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 19:55
Total/NA	Prep	300_Prep			4483	RC	EET ALB	05/07/24 10:09
Total/NA	Analysis	300.0		20	4548	RC	EET ALB	05/07/24 21:38

Client Sample ID: BES24-46 2ft

Lab Sample ID: 885-3900-6
Matrix: Solid
Date Collected: 05/02/24 13:40
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8015D		1	4451	JP	EET ALB	05/06/24 19:51
Total/NA	Prep	5035			4395	JP	EET ALB	05/06/24 10:06
Total/NA	Analysis	8021B		1	4452	JP	EET ALB	05/06/24 19:51
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 20:07
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 14:57

Client Sample ID: BES24-47 2ft

Lab Sample ID: 885-3900-7
Matrix: Solid
Date Collected: 05/02/24 13:45
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 00:06
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 00:06

Lab Chronicle

Client: Vertex
Job ID: 885-3900-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-47 2ft
Lab Sample ID: 885-3900-7
Date Collected: 05/02/24 13:45
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 20:20
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 16:01

Client Sample ID: BES24-48 2ft
Lab Sample ID: 885-3900-8
Date Collected: 05/02/24 13:50
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		2	4491	JP	EET ALB	05/07/24 00:28
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		2	4492	JP	EET ALB	05/07/24 00:28
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 20:32
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 16:40

Client Sample ID: BES24-49 2ft
Lab Sample ID: 885-3900-9
Date Collected: 05/02/24 13:55
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 00:50
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 00:50
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 20:44
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 16:53

Client Sample ID: BES24-50 2ft
Lab Sample ID: 885-3900-10
Date Collected: 05/02/24 14:00
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 01:12
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 01:12
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 20:57

Lab Chronicle

Client: Vertex
Job ID: 885-3900-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-50 2ft
Lab Sample ID: 885-3900-10
Date Collected: 05/02/24 14:00
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 17:06

Client Sample ID: BES24-51 2ft
Lab Sample ID: 885-3900-11
Date Collected: 05/02/24 14:05
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 01:33
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 01:33
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 21:09
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 17:19

Client Sample ID: BES24-52 2ft
Lab Sample ID: 885-3900-12
Date Collected: 05/02/24 14:30
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 02:38
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 02:38
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 21:21
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 17:57

Client Sample ID: WES24-15 0-2
Lab Sample ID: 885-3900-13
Date Collected: 05/02/24 14:10
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		2	4491	JP	EET ALB	05/07/24 03:44
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		2	4492	JP	EET ALB	05/07/24 03:44
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 21:34
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 18:10

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Client Sample ID: WES24-16 0-2

Lab Sample ID: 885-3900-14

Date Collected: 05/02/24 14:15
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 04:05
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 04:05
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 21:46
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 18:23

Client Sample ID: WES24-17 0-2

Lab Sample ID: 885-3900-15

Date Collected: 05/02/24 14:20
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 04:27
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 04:27
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 21:58
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 18:36

Client Sample ID: WES24-18 0-2

Lab Sample ID: 885-3900-16

Date Collected: 05/02/24 14:25
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 04:49
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 04:49
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 22:11
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 18:49

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3900-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: On File

Phone #: On File

email or Fax#: Scarttar@vertex.ca

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other ☐ EDD (Type)

Turn-Around Time: ☐ Standard ☑ Rush 24 Hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: Wyatt Wadleigh

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 3.9 - 0.1 = 3.8°C

HALL ENVIRONMENTAL ANALYSIS LABOR
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 871
Tel 505-345-3975 Fax 505-345-4107

885-3900 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	9260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
05/02/24	13 15	Soil	BES24-41 2ft	1, 4oz jar		1	X	X					X			
05/02/24	13 20	Soil	BES24-42 2ft	1, 4oz jar		2	X	X					X			
05/02/24	13 25	Soil	BES24-43 2ft	1, 4oz jar		3	X	X					X			
05/02/24	13 30	Soil	BES24-44 2ft	1, 4oz jar		4	X	X					X			
05/02/24	13 35	Soil	BES24-45 2ft	1, 4oz jar		5	X	X					X			
05/02/24	13 40	Soil	BES24-46 2ft	1, 4oz jar		6	X	X					X			
05/02/24	13 45	Soil	BES24-47 2ft	1, 4oz jar		7	X	X					X			
05/02/24	13 50	Soil	BES24-48 2ft	1, 4oz jar		8	X	X					X			
05/02/24	13 55	Soil	BES24-49 2ft	1, 4oz jar		9	X	X					X			
05/02/24	14 00	Soil	BES24-50 2ft	1, 4oz jar		10	X	X					X			
05/02/24	14 05	Soil	BES24-51 2ft	1, 4oz jar		11	X	X					X			
05/02/24	14 30	Soil	BES24-52 2ft	1, 4oz jar		12	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
		Wyatt Wadleigh			5/3/24	930
5/3/24	1600			courier	5/4/24	8:00

Remarks: Please CC wwadleigh@vertex.ca
Cost center Number: NA

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel 505-345-3975 Fax 505-345-4107

Client: Vertex (Mack Energy)

Mailing Address: On File

Phone #: On File

email or Fax#: Scarttar@vertex.ca

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other ☐ EDD (Type)

Turn-Around Time: ☐ Standard ☒ Rush 24 hr

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: Wyatt Wadleigh

On Ice: ☒ Yes ☐ No marty

# of Coolers: 1

Cooler Temp (including CF): 3.9-0.1=3.8°c

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
05/02/24	14 10	Soil	WES24-15 0-2	1, 4oz jar		13	X	X					X			
05/02/24	14 15	Soil	WES24-16 0-2	1, 4oz jar		14	X	X					X			
05/02/24	14 20	Soil	WES24-17 0-2	1, 4oz jar		15	X	X					X			
05/02/24	14 25	Soil	WES24-18 0-2	1, 4oz jar		16	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
		Wyatt Wadleigh			5/3/24	930
5/3/24	1900			courier	5/4/24	8:00

Remarks: Please CC wwadleigh@vertex.ca

Cost center Number: NA

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3900-1

Login Number: 3900 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/13/2024 9:18:12 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3901-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
5/13/2024 9:18:12 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3901-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3901-1
Project/Site: Red Deer CTB

Qualifiers

GC VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3901-1

Job ID: 885-3901-1 Eurofins Albuquerque

Job Narrative
885-3901-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/4/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.8°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: WES24-06 2.5'

Date Collected: 05/02/24 13:15
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.4		mg/Kg		05/06/24 10:52	05/07/24 05:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*15 - 244*	*05/06/24 10:52*	*05/07/24 05:33*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/06/24 10:52	05/07/24 05:33	1
Ethylbenzene	ND		0.044		mg/Kg		05/06/24 10:52	05/07/24 05:33	1
Toluene	ND		0.044		mg/Kg		05/06/24 10:52	05/07/24 05:33	1
Xylenes, Total	ND		0.087		mg/Kg		05/06/24 10:52	05/07/24 05:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*05/06/24 10:52*	*05/07/24 05:33*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		05/06/24 10:01	05/06/24 16:43	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/06/24 10:01	05/06/24 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*106*		*62 - 134*	*05/06/24 10:01*	*05/06/24 16:43*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 11:54	05/06/24 16:56	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-21 2.0'

Date Collected: 05/02/24 13:20
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.8		mg/Kg		05/06/24 10:52	05/07/24 05:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/06/24 10:52*	*05/07/24 05:54*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.029		mg/Kg		05/06/24 10:52	05/07/24 05:54	1
Ethylbenzene	ND		0.058		mg/Kg		05/06/24 10:52	05/07/24 05:54	1
Toluene	ND		0.058		mg/Kg		05/06/24 10:52	05/07/24 05:54	1
Xylenes, Total	ND		0.12		mg/Kg		05/06/24 10:52	05/07/24 05:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/06/24 10:52*	*05/07/24 05:54*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/06/24 10:01	05/06/24 17:08	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/06/24 10:01	05/06/24 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*101*		*62 - 134*	*05/06/24 10:01*	*05/06/24 17:08*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**240**		61		mg/Kg		05/06/24 11:54	05/06/24 17:08	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-22 2.0'

Date Collected: 05/02/24 13:25
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		7.3		mg/Kg		05/06/24 11:10	05/07/24 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/06/24 11:10*	*05/07/24 13:25*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.037		mg/Kg		05/06/24 11:10	05/07/24 13:25	1
Ethylbenzene	ND		0.073		mg/Kg		05/06/24 11:10	05/07/24 13:25	1
Toluene	ND		0.073		mg/Kg		05/06/24 11:10	05/07/24 13:25	1
Xylenes, Total	ND		0.15		mg/Kg		05/06/24 11:10	05/07/24 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/06/24 11:10*	*05/07/24 13:25*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/06/24 10:01	05/06/24 17:20	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:01	05/06/24 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/06/24 10:01*	*05/06/24 17:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**280**		60		mg/Kg		05/06/24 11:54	05/06/24 17:21	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: WES24-04 3.0'

Date Collected: 05/02/24 13:30
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		05/06/24 11:10	05/07/24 13:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/06/24 11:10*	*05/07/24 13:48*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND	F1	0.025		mg/Kg		05/06/24 11:10	05/07/24 13:48	1
Ethylbenzene	ND	F1	0.049		mg/Kg		05/06/24 11:10	05/07/24 13:48	1
Toluene	ND	F1	0.049		mg/Kg		05/06/24 11:10	05/07/24 13:48	1
Xylenes, Total	ND	F1	0.099		mg/Kg		05/06/24 11:10	05/07/24 13:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/06/24 11:10*	*05/07/24 13:48*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/06/24 10:01	05/06/24 17:33	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:01	05/06/24 17:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/06/24 10:01*	*05/06/24 17:33*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**99**		60		mg/Kg		05/06/24 11:54	05/06/24 17:33	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: WES24-05 2.5'

Date Collected: 05/02/24 13:35
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.6		mg/Kg		05/06/24 11:10	05/07/24 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 11:10*	*05/07/24 14:12*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.028		mg/Kg		05/06/24 11:10	05/07/24 14:12	1
Ethylbenzene	ND		0.056		mg/Kg		05/06/24 11:10	05/07/24 14:12	1
Toluene	ND		0.056		mg/Kg		05/06/24 11:10	05/07/24 14:12	1
Xylenes, Total	ND		0.11		mg/Kg		05/06/24 11:10	05/07/24 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/06/24 11:10*	*05/07/24 14:12*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/06/24 10:01	05/06/24 17:45	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:01	05/06/24 17:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/06/24 10:01*	*05/06/24 17:45*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/06/24 11:54	05/06/24 17:45	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-25 2.0'

Date Collected: 05/02/24 13:40
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		05/06/24 11:10	05/07/24 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 11:10*	*05/07/24 14:35*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/06/24 11:10	05/07/24 14:35	1
Ethylbenzene	ND		0.046		mg/Kg		05/06/24 11:10	05/07/24 14:35	1
Toluene	ND		0.046		mg/Kg		05/06/24 11:10	05/07/24 14:35	1
Xylenes, Total	ND		0.092		mg/Kg		05/06/24 11:10	05/07/24 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/06/24 11:10*	*05/07/24 14:35*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/06/24 10:01	05/06/24 17:57	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/06/24 10:01	05/06/24 17:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/06/24 10:01*	*05/06/24 17:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**230**		60		mg/Kg		05/06/24 11:54	05/06/24 17:58	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-29 2.0'

Date Collected: 05/02/24 13:50
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		7.3		mg/Kg		05/06/24 11:10	05/07/24 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 11:10*	*05/07/24 14:59*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.037		mg/Kg		05/06/24 11:10	05/07/24 14:59	1
Ethylbenzene	ND		0.073		mg/Kg		05/06/24 11:10	05/07/24 14:59	1
Toluene	ND		0.073		mg/Kg		05/06/24 11:10	05/07/24 14:59	1
Xylenes, Total	ND		0.15		mg/Kg		05/06/24 11:10	05/07/24 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/06/24 11:10*	*05/07/24 14:59*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/06/24 10:01	05/06/24 18:22	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/06/24 10:01	05/06/24 18:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/06/24 10:01*	*05/06/24 18:22*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**540**		60		mg/Kg		05/07/24 12:04	05/07/24 19:01	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-30 2.0'

Date Collected: 05/02/24 14:00
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-8

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.2		mg/Kg		05/06/24 11:10	05/07/24 15:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/06/24 11:10*	*05/07/24 15:22*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.026		mg/Kg		05/06/24 11:10	05/07/24 15:22	1
Ethylbenzene	ND		0.052		mg/Kg		05/06/24 11:10	05/07/24 15:22	1
Toluene	ND		0.052		mg/Kg		05/06/24 11:10	05/07/24 15:22	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 11:10	05/07/24 15:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/06/24 11:10*	*05/07/24 15:22*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**80**		9.9		mg/Kg		05/06/24 10:01	05/06/24 18:34	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/06/24 10:01	05/06/24 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/06/24 10:01*	*05/06/24 18:34*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**380**		60		mg/Kg		05/07/24 12:04	05/07/24 19:14	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-31 1.0'

Date Collected: 05/02/24 14:05
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-9

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		05/06/24 11:10	05/07/24 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/06/24 11:10*	*05/07/24 15:46*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/06/24 11:10	05/07/24 15:46	1
Ethylbenzene	ND		0.046		mg/Kg		05/06/24 11:10	05/07/24 15:46	1
Toluene	ND		0.046		mg/Kg		05/06/24 11:10	05/07/24 15:46	1
Xylenes, Total	ND		0.093		mg/Kg		05/06/24 11:10	05/07/24 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/06/24 11:10*	*05/07/24 15:46*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.1		mg/Kg		05/06/24 10:01	05/06/24 18:47	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/06/24 10:01	05/06/24 18:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*05/06/24 10:01*	*05/06/24 18:47*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**100**		60		mg/Kg		05/07/24 12:04	05/07/24 19:27	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-32 1.0'

Date Collected: 05/02/24 14:10
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-10

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		6.4		mg/Kg		05/06/24 11:10	05/07/24 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 11:10*	*05/07/24 16:09*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.032		mg/Kg		05/06/24 11:10	05/07/24 16:09	1
Ethylbenzene	ND		0.064		mg/Kg		05/06/24 11:10	05/07/24 16:09	1
Toluene	ND		0.064		mg/Kg		05/06/24 11:10	05/07/24 16:09	1
Xylenes, Total	ND		0.13		mg/Kg		05/06/24 11:10	05/07/24 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/06/24 11:10*	*05/07/24 16:09*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**19**		9.1		mg/Kg		05/07/24 09:32	05/07/24 22:23	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/07/24 09:32	05/07/24 22:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/07/24 09:32*	*05/07/24 22:23*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**300**		60		mg/Kg		05/07/24 12:04	05/07/24 19:40	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-33 1.0'

Date Collected: 05/02/24 14:20
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-11

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.5		mg/Kg		05/06/24 11:10	05/07/24 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/06/24 11:10*	*05/07/24 16:33*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.027		mg/Kg		05/06/24 11:10	05/07/24 16:33	1
Ethylbenzene	ND		0.055		mg/Kg		05/06/24 11:10	05/07/24 16:33	1
Toluene	ND		0.055		mg/Kg		05/06/24 11:10	05/07/24 16:33	1
Xylenes, Total	ND		0.11		mg/Kg		05/06/24 11:10	05/07/24 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/06/24 11:10*	*05/07/24 16:33*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/07/24 09:32	05/07/24 22:35	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/07/24 09:32	05/07/24 22:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/07/24 09:32*	*05/07/24 22:35*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		60		mg/Kg		05/07/24 12:04	05/07/24 19:53	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-34 1.0'

Date Collected: 05/02/24 14:30
Date Received: 05/04/24 08:00

Lab Sample ID: 885-3901-12

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/06/24 11:10	05/07/24 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/06/24 11:10*	*05/07/24 16:56*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/06/24 11:10	05/07/24 16:56	1
Ethylbenzene	ND		0.050		mg/Kg		05/06/24 11:10	05/07/24 16:56	1
Toluene	ND		0.050		mg/Kg		05/06/24 11:10	05/07/24 16:56	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 11:10	05/07/24 16:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/06/24 11:10*	*05/07/24 16:56*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/07/24 09:32	05/07/24 22:48	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 09:32	05/07/24 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/07/24 09:32*	*05/07/24 22:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**90**		60		mg/Kg		05/07/24 12:04	05/07/24 20:32	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4404/1-A
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4404

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/06/24 10:52	05/06/24 23:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*05/06/24 10:52*	*05/06/24 23:45*	*1*

Lab Sample ID: LCS 885-4404/2-A
Matrix: Solid
Analysis Batch: 4491

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4404

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	22.7		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*212*		*15 - 244*

Lab Sample ID: MB 885-4405/1-A
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4405

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/06/24 11:10	05/07/24 13:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/06/24 11:10*	*05/07/24 13:01*	*1*

Lab Sample ID: LCS 885-4405/2-A
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4405

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.4		mg/Kg		102	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*211*		*15 - 244*

Lab Sample ID: 885-3901-3 MS
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: BES24-22 2.0'
Prep Type: Total/NA
Prep Batch: 4405

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		36.5	35.0		mg/Kg		96	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*206*		*15 - 244*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Method: 8015D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: 885-3901-3 MSD
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: BES24-22 2.0'
Prep Type: Total/NA
Prep Batch: 4405

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		36.5	34.5		mg/Kg		94	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*208*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4404/1-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4404

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/06/24 10:52	05/06/24 23:45	1
Ethylbenzene	ND		0.050		mg/Kg		05/06/24 10:52	05/06/24 23:45	1
Toluene	ND		0.050		mg/Kg		05/06/24 10:52	05/06/24 23:45	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 10:52	05/06/24 23:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*05/06/24 10:52*	*05/06/24 23:45*	*1*

Lab Sample ID: LCS 885-4404/3-A
Matrix: Solid
Analysis Batch: 4492

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4404

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.888		mg/Kg		89	70 - 130		
Ethylbenzene			1.00	0.922		mg/Kg		92	70 - 130		
m,p-Xylene			2.00	1.83		mg/Kg		92	70 - 130		
o-Xylene			1.00	0.929		mg/Kg		93	70 - 130		
Toluene			1.00	0.906		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*

Lab Sample ID: MB 885-4405/1-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4405

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/06/24 11:10	05/07/24 13:01	1
Ethylbenzene	ND		0.050		mg/Kg		05/06/24 11:10	05/07/24 13:01	1
Toluene	ND		0.050		mg/Kg		05/06/24 11:10	05/07/24 13:01	1
Xylenes, Total	ND		0.10		mg/Kg		05/06/24 11:10	05/07/24 13:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/06/24 11:10*	*05/07/24 13:01*	*1*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 885-4405/3-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4405

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.979		mg/Kg		98	70 - 130		
Ethylbenzene			1.00	0.935		mg/Kg		94	70 - 130		
m,p-Xylene			2.00	1.87		mg/Kg		93	70 - 130		
o-Xylene			1.00	0.919		mg/Kg		92	70 - 130		
Toluene			1.00	0.919		mg/Kg		92	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*39 - 146*

Lab Sample ID: 885-3901-4 MS
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: WES24-04 3.0'
Prep Type: Total/NA
Prep Batch: 4405

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND	F1	0.986	0.899		mg/Kg		91	70 - 130		
Ethylbenzene	ND	F1	0.986	0.874		mg/Kg		89	70 - 130		
m,p-Xylene	ND	F1	1.97	1.74		mg/Kg		87	70 - 130		
o-Xylene	ND	F1	0.986	0.858		mg/Kg		87	70 - 130		
Toluene	ND	F1	0.986	0.860		mg/Kg		87	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*

Lab Sample ID: 885-3901-4 MSD
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: WES24-04 3.0'
Prep Type: Total/NA
Prep Batch: 4405

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND	F1	0.986	0.883		mg/Kg		90	70 - 130	2	20
Ethylbenzene	ND	F1	0.986	0.857		mg/Kg		87	70 - 130	2	20
m,p-Xylene	ND	F1	1.97	1.75		mg/Kg		88	70 - 130	1	20
o-Xylene	ND	F1	0.986	0.854		mg/Kg		87	70 - 130	1	20
Toluene	ND	F1	0.986	0.835		mg/Kg		85	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*39 - 146*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4394/1-A
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4394

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/06/24 10:01	05/06/24 12:18	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/06/24 10:01	05/06/24 12:18	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-4394/1-A
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4394

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	104		62 - 134	05/06/24 10:01	05/06/24 12:18	1

Lab Sample ID: LCS 885-4394/2-A
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4394

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	48.7		mg/Kg		97	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	108		62 - 134

Lab Sample ID: 885-3901-9 MS
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: BES24-31 1.0'
Prep Type: Total/NA
Prep Batch: 4394

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		47.3	45.5		mg/Kg		96	44 - 136		

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	86		62 - 134

Lab Sample ID: 885-3901-9 MSD
Matrix: Solid
Analysis Batch: 4444

Client Sample ID: BES24-31 1.0'
Prep Type: Total/NA
Prep Batch: 4394

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		47.9	49.7		mg/Kg		104	44 - 136	9	32

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Di-n-octyl phthalate (Surr)	85		62 - 134

Lab Sample ID: MB 885-4476/1-A
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4476

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/07/24 09:32	05/07/24 18:41	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/07/24 09:32	05/07/24 18:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	93		62 - 134	05/07/24 09:32	05/07/24 18:41	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCS 885-4476/2-A
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4476

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	41.0		mg/Kg		82	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*108*		*62 - 134*

Lab Sample ID: 885-3901-12 MS
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: BES24-34 1.0'
Prep Type: Total/NA
Prep Batch: 4476

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		45.9	44.2		mg/Kg		96	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*114*		*62 - 134*

Lab Sample ID: 885-3901-12 MSD
Matrix: Solid
Analysis Batch: 4522

Client Sample ID: BES24-34 1.0'
Prep Type: Total/NA
Prep Batch: 4476

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		49.3	45.0		mg/Kg		91	44 - 136	2	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*109*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4415/1-A
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4415

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/06/24 11:54	05/06/24 12:17	1

Lab Sample ID: LCS 885-4415/2-A
Matrix: Solid
Analysis Batch: 4445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4415

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	13.8		mg/Kg		92	90 - 110		

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 885-3901-6 MS — **Client Sample ID: BES24-25 2.0'**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4445 — **Prep Batch: 4415**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	230		29.9	271	4	mg/Kg		140	50 - 150		

Lab Sample ID: 885-3901-6 MSD — **Client Sample ID: BES24-25 2.0'**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4445 — **Prep Batch: 4415**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	230		30.1	283	4	mg/Kg		177	50 - 150	4	20

Lab Sample ID: MB 885-4445/21 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4445

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			05/06/24 09:10	1

Lab Sample ID: MRL 885-4445/20 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4445

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.513		mg/L		103	50 - 150		

Lab Sample ID: MB 885-4496/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4540 — **Prep Batch: 4496**

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/07/24 12:04	05/07/24 12:53	1

Lab Sample ID: LCS 885-4496/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4540 — **Prep Batch: 4496**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.0		mg/Kg		93	90 - 110		

Lab Sample ID: MB 885-4540/18 — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4540

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			05/07/24 09:41	1

Lab Sample ID: MRL 885-4540/17 — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 4540

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.520		mg/L		104	50 - 150		

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

GC VOA

Prep Batch: 4404

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	5035	
885-3901-2	BES24-21 2.0'	Total/NA	Solid	5035	
MB 885-4404/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4404/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4404/3-A	Lab Control Sample	Total/NA	Solid	5035	

Prep Batch: 4405

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-3	BES24-22 2.0'	Total/NA	Solid	5035	
885-3901-4	WES24-04 3.0'	Total/NA	Solid	5035	
885-3901-5	WES24-05 2.5'	Total/NA	Solid	5035	
885-3901-6	BES24-25 2.0'	Total/NA	Solid	5035	
885-3901-7	BES24-29 2.0'	Total/NA	Solid	5035	
885-3901-8	BES24-30 2.0'	Total/NA	Solid	5035	
885-3901-9	BES24-31 1.0'	Total/NA	Solid	5035	
885-3901-10	BES24-32 1.0'	Total/NA	Solid	5035	
885-3901-11	BES24-33 1.0'	Total/NA	Solid	5035	
885-3901-12	BES24-34 1.0'	Total/NA	Solid	5035	
MB 885-4405/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4405/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4405/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-3901-3 MS	BES24-22 2.0'	Total/NA	Solid	5035	
885-3901-3 MSD	BES24-22 2.0'	Total/NA	Solid	5035	
885-3901-4 MS	WES24-04 3.0'	Total/NA	Solid	5035	
885-3901-4 MSD	WES24-04 3.0'	Total/NA	Solid	5035	

Analysis Batch: 4491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	8015D	4404
885-3901-2	BES24-21 2.0'	Total/NA	Solid	8015D	4404
MB 885-4404/1-A	Method Blank	Total/NA	Solid	8015D	4404
LCS 885-4404/2-A	Lab Control Sample	Total/NA	Solid	8015D	4404

Analysis Batch: 4492

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	8021B	4404
885-3901-2	BES24-21 2.0'	Total/NA	Solid	8021B	4404
MB 885-4404/1-A	Method Blank	Total/NA	Solid	8021B	4404
LCS 885-4404/3-A	Lab Control Sample	Total/NA	Solid	8021B	4404

Analysis Batch: 4541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-3	BES24-22 2.0'	Total/NA	Solid	8015D	4405
885-3901-4	WES24-04 3.0'	Total/NA	Solid	8015D	4405
885-3901-5	WES24-05 2.5'	Total/NA	Solid	8015D	4405
885-3901-6	BES24-25 2.0'	Total/NA	Solid	8015D	4405
885-3901-7	BES24-29 2.0'	Total/NA	Solid	8015D	4405
885-3901-8	BES24-30 2.0'	Total/NA	Solid	8015D	4405
885-3901-9	BES24-31 1.0'	Total/NA	Solid	8015D	4405
885-3901-10	BES24-32 1.0'	Total/NA	Solid	8015D	4405
885-3901-11	BES24-33 1.0'	Total/NA	Solid	8015D	4405

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

GC VOA (Continued)

Analysis Batch: 4541 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-12	BES24-34 1.0'	Total/NA	Solid	8015D	4405
MB 885-4405/1-A	Method Blank	Total/NA	Solid	8015D	4405
LCS 885-4405/2-A	Lab Control Sample	Total/NA	Solid	8015D	4405
885-3901-3 MS	BES24-22 2.0'	Total/NA	Solid	8015D	4405
885-3901-3 MSD	BES24-22 2.0'	Total/NA	Solid	8015D	4405

Analysis Batch: 4542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-3	BES24-22 2.0'	Total/NA	Solid	8021B	4405
885-3901-4	WES24-04 3.0'	Total/NA	Solid	8021B	4405
885-3901-5	WES24-05 2.5'	Total/NA	Solid	8021B	4405
885-3901-6	BES24-25 2.0'	Total/NA	Solid	8021B	4405
885-3901-7	BES24-29 2.0'	Total/NA	Solid	8021B	4405
885-3901-8	BES24-30 2.0'	Total/NA	Solid	8021B	4405
885-3901-9	BES24-31 1.0'	Total/NA	Solid	8021B	4405
885-3901-10	BES24-32 1.0'	Total/NA	Solid	8021B	4405
885-3901-11	BES24-33 1.0'	Total/NA	Solid	8021B	4405
885-3901-12	BES24-34 1.0'	Total/NA	Solid	8021B	4405
MB 885-4405/1-A	Method Blank	Total/NA	Solid	8021B	4405
LCS 885-4405/3-A	Lab Control Sample	Total/NA	Solid	8021B	4405
885-3901-4 MS	WES24-04 3.0'	Total/NA	Solid	8021B	4405
885-3901-4 MSD	WES24-04 3.0'	Total/NA	Solid	8021B	4405

GC Semi VOA

Prep Batch: 4394

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	SHAKE	
885-3901-2	BES24-21 2.0'	Total/NA	Solid	SHAKE	
885-3901-3	BES24-22 2.0'	Total/NA	Solid	SHAKE	
885-3901-4	WES24-04 3.0'	Total/NA	Solid	SHAKE	
885-3901-5	WES24-05 2.5'	Total/NA	Solid	SHAKE	
885-3901-6	BES24-25 2.0'	Total/NA	Solid	SHAKE	
885-3901-7	BES24-29 2.0'	Total/NA	Solid	SHAKE	
885-3901-8	BES24-30 2.0'	Total/NA	Solid	SHAKE	
885-3901-9	BES24-31 1.0'	Total/NA	Solid	SHAKE	
MB 885-4394/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4394/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3901-9 MS	BES24-31 1.0'	Total/NA	Solid	SHAKE	
885-3901-9 MSD	BES24-31 1.0'	Total/NA	Solid	SHAKE	

Analysis Batch: 4444

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	8015D	4394
885-3901-2	BES24-21 2.0'	Total/NA	Solid	8015D	4394
885-3901-3	BES24-22 2.0'	Total/NA	Solid	8015D	4394
885-3901-4	WES24-04 3.0'	Total/NA	Solid	8015D	4394
885-3901-5	WES24-05 2.5'	Total/NA	Solid	8015D	4394
885-3901-6	BES24-25 2.0'	Total/NA	Solid	8015D	4394
885-3901-7	BES24-29 2.0'	Total/NA	Solid	8015D	4394
885-3901-8	BES24-30 2.0'	Total/NA	Solid	8015D	4394

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

GC Semi VOA (Continued)

Analysis Batch: 4444 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-9	BES24-31 1.0'	Total/NA	Solid	8015D	4394
MB 885-4394/1-A	Method Blank	Total/NA	Solid	8015D	4394
LCS 885-4394/2-A	Lab Control Sample	Total/NA	Solid	8015D	4394
885-3901-9 MS	BES24-31 1.0'	Total/NA	Solid	8015D	4394
885-3901-9 MSD	BES24-31 1.0'	Total/NA	Solid	8015D	4394

Prep Batch: 4476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-10	BES24-32 1.0'	Total/NA	Solid	SHAKE	
885-3901-11	BES24-33 1.0'	Total/NA	Solid	SHAKE	
885-3901-12	BES24-34 1.0'	Total/NA	Solid	SHAKE	
MB 885-4476/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4476/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3901-12 MS	BES24-34 1.0'	Total/NA	Solid	SHAKE	
885-3901-12 MSD	BES24-34 1.0'	Total/NA	Solid	SHAKE	

Analysis Batch: 4522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-10	BES24-32 1.0'	Total/NA	Solid	8015D	4476
885-3901-11	BES24-33 1.0'	Total/NA	Solid	8015D	4476
885-3901-12	BES24-34 1.0'	Total/NA	Solid	8015D	4476
MB 885-4476/1-A	Method Blank	Total/NA	Solid	8015D	4476
LCS 885-4476/2-A	Lab Control Sample	Total/NA	Solid	8015D	4476
885-3901-12 MS	BES24-34 1.0'	Total/NA	Solid	8015D	4476
885-3901-12 MSD	BES24-34 1.0'	Total/NA	Solid	8015D	4476

HPLC/IC

Prep Batch: 4415

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	300_Prep	
885-3901-2	BES24-21 2.0'	Total/NA	Solid	300_Prep	
885-3901-3	BES24-22 2.0'	Total/NA	Solid	300_Prep	
885-3901-4	WES24-04 3.0'	Total/NA	Solid	300_Prep	
885-3901-5	WES24-05 2.5'	Total/NA	Solid	300_Prep	
885-3901-6	BES24-25 2.0'	Total/NA	Solid	300_Prep	
MB 885-4415/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4415/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-3901-6 MS	BES24-25 2.0'	Total/NA	Solid	300_Prep	
885-3901-6 MSD	BES24-25 2.0'	Total/NA	Solid	300_Prep	

Analysis Batch: 4445

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-1	WES24-06 2.5'	Total/NA	Solid	300.0	4415
885-3901-2	BES24-21 2.0'	Total/NA	Solid	300.0	4415
885-3901-3	BES24-22 2.0'	Total/NA	Solid	300.0	4415
885-3901-4	WES24-04 3.0'	Total/NA	Solid	300.0	4415
885-3901-5	WES24-05 2.5'	Total/NA	Solid	300.0	4415
885-3901-6	BES24-25 2.0'	Total/NA	Solid	300.0	4415
MB 885-4415/1-A	Method Blank	Total/NA	Solid	300.0	4415
MB 885-4445/21	Method Blank	Total/NA	Solid	300.0	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

HPLC/IC (Continued)

Analysis Batch: 4445 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 885-4415/2-A	Lab Control Sample	Total/NA	Solid	300.0	4415
MRL 885-4445/20	Lab Control Sample	Total/NA	Solid	300.0	
885-3901-6 MS	BES24-25 2.0'	Total/NA	Solid	300.0	4415
885-3901-6 MSD	BES24-25 2.0'	Total/NA	Solid	300.0	4415

Prep Batch: 4496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-7	BES24-29 2.0'	Total/NA	Solid	300_Prep	
885-3901-8	BES24-30 2.0'	Total/NA	Solid	300_Prep	
885-3901-9	BES24-31 1.0'	Total/NA	Solid	300_Prep	
885-3901-10	BES24-32 1.0'	Total/NA	Solid	300_Prep	
885-3901-11	BES24-33 1.0'	Total/NA	Solid	300_Prep	
885-3901-12	BES24-34 1.0'	Total/NA	Solid	300_Prep	
MB 885-4496/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4496/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 4540

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3901-7	BES24-29 2.0'	Total/NA	Solid	300.0	4496
885-3901-8	BES24-30 2.0'	Total/NA	Solid	300.0	4496
885-3901-9	BES24-31 1.0'	Total/NA	Solid	300.0	4496
885-3901-10	BES24-32 1.0'	Total/NA	Solid	300.0	4496
885-3901-11	BES24-33 1.0'	Total/NA	Solid	300.0	4496
885-3901-12	BES24-34 1.0'	Total/NA	Solid	300.0	4496
MB 885-4496/1-A	Method Blank	Total/NA	Solid	300.0	4496
MB 885-4540/18	Method Blank	Total/NA	Solid	300.0	
LCS 885-4496/2-A	Lab Control Sample	Total/NA	Solid	300.0	4496
MRL 885-4540/17	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: WES24-06 2.5'

Lab Sample ID: 885-3901-1
Matrix: Solid
Date Collected: 05/02/24 13:15
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 05:33
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 05:33
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 16:43
Total/NA	Prep	300_Prep			4415	SS	EET ALB	05/06/24 11:54
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 16:56

Client Sample ID: BES24-21 2.0'

Lab Sample ID: 885-3901-2
Matrix: Solid
Date Collected: 05/02/24 13:20
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8015D		1	4491	JP	EET ALB	05/07/24 05:54
Total/NA	Prep	5035			4404	JP	EET ALB	05/06/24 10:52
Total/NA	Analysis	8021B		1	4492	JP	EET ALB	05/07/24 05:54
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 17:08
Total/NA	Prep	300_Prep			4415	SS	EET ALB	05/06/24 11:54
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 17:08

Client Sample ID: BES24-22 2.0'

Lab Sample ID: 885-3901-3
Matrix: Solid
Date Collected: 05/02/24 13:25
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 13:25
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 13:25
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 17:20
Total/NA	Prep	300_Prep			4415	SS	EET ALB	05/06/24 11:54
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 17:21

Client Sample ID: WES24-04 3.0'

Lab Sample ID: 885-3901-4
Matrix: Solid
Date Collected: 05/02/24 13:30
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 13:48

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: WES24-04 3.0'

Lab Sample ID: 885-3901-4
Matrix: Solid
Date Collected: 05/02/24 13:30
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 13:48
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 17:33
Total/NA	Prep	300_Prep			4415	SS	EET ALB	05/06/24 11:54
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 17:33

Client Sample ID: WES24-05 2.5'

Lab Sample ID: 885-3901-5
Matrix: Solid
Date Collected: 05/02/24 13:35
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 14:12
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 14:12
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 17:45
Total/NA	Prep	300_Prep			4415	SS	EET ALB	05/06/24 11:54
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 17:45

Client Sample ID: BES24-25 2.0'

Lab Sample ID: 885-3901-6
Matrix: Solid
Date Collected: 05/02/24 13:40
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 14:35
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 14:35
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 17:57
Total/NA	Prep	300_Prep			4415	SS	EET ALB	05/06/24 11:54
Total/NA	Analysis	300.0		20	4445	RC	EET ALB	05/06/24 17:58

Client Sample ID: BES24-29 2.0'

Lab Sample ID: 885-3901-7
Matrix: Solid
Date Collected: 05/02/24 13:50
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 14:59
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 14:59

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-29 2.0'

Lab Sample ID: 885-3901-7
Date Collected: 05/02/24 13:50
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 18:22
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 19:01

Client Sample ID: BES24-30 2.0'

Lab Sample ID: 885-3901-8
Date Collected: 05/02/24 14:00
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 15:22
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 15:22
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 18:34
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 19:14

Client Sample ID: BES24-31 1.0'

Lab Sample ID: 885-3901-9
Date Collected: 05/02/24 14:05
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 15:46
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 15:46
Total/NA	Prep	SHAKE			4394	JU	EET ALB	05/06/24 10:01
Total/NA	Analysis	8015D		1	4444	JU	EET ALB	05/06/24 18:47
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 19:27

Client Sample ID: BES24-32 1.0'

Lab Sample ID: 885-3901-10
Date Collected: 05/02/24 14:10
Matrix: Solid
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 16:09
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 16:09
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 22:23

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Client Sample ID: BES24-32 1.0'

Lab Sample ID: 885-3901-10
Matrix: Solid
Date Collected: 05/02/24 14:10
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 19:40

Client Sample ID: BES24-33 1.0'

Lab Sample ID: 885-3901-11
Matrix: Solid
Date Collected: 05/02/24 14:20
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 16:33
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 16:33
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 22:35
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 19:53

Client Sample ID: BES24-34 1.0'

Lab Sample ID: 885-3901-12
Matrix: Solid
Date Collected: 05/02/24 14:30
Date Received: 05/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/07/24 16:56
Total/NA	Prep	5035			4405	JP	EET ALB	05/06/24 11:10
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/07/24 16:56
Total/NA	Prep	SHAKE			4476	DH	EET ALB	05/07/24 09:32
Total/NA	Analysis	8015D		1	4522	JU	EET ALB	05/07/24 22:48
Total/NA	Prep	300_Prep			4496	RC	EET ALB	05/07/24 12:04
Total/NA	Analysis	300.0		20	4540	SS	EET ALB	05/07/24 20:32

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3901-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: or File

Phone #:

email or Fax#:

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard ☒ Rush 24 hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carrthar

Sampler: AL

On Ice: ☑ Yes ☐ No monty

# of Coolers: 1

Cooler Temp(including CF): 2.9 - 0.1 = 2.8 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

885-3901 COC

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5/2/24	1315	soil	WES24-06 2.5'	4 oz	ICE	1										
	1320		BES24-21 2.0'			2										
	1325		BES24-22 2.0'			3										
	1330		WES24-04 3.0'			4										
	1335		WES24-05 2.5'			5										
	1340		BES24-25 2.0'			6										
	1350		BES24-29 2.0'			7										
	1400		BES24-30 2.0'			8										
	1405		BES24-31 1.0'			9										
	1410		BES24-32 1.0'			10										
	1420		BES24-33 1.0'			11										
	1430		BES24-34 1.0'			12										

Date	Time	Relinquished by	Received by	Via	Date	Time
					5/3/24	0830
5/3/24	1900			courier	5/4/24	8:00

Remarks: cc: Scarrthar @ Vertex

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3901-1

Login Number: 3901 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/13/2024 1:23:02 PM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3967-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



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5/13/2024 1:23:02 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3967-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3967-1
Project/Site: Red Deer CTB

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3967-1

Job ID: 885-3967-1 Eurofins Albuquerque

Job Narrative
885-3967-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/7/2024 7:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-60 1.0'

Date Collected: 05/03/24 09:45
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/07/24 09:52	05/08/24 03:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/07/24 09:52*	*05/08/24 03:07*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/07/24 09:52	05/08/24 03:07	1
Ethylbenzene	ND		0.047		mg/Kg		05/07/24 09:52	05/08/24 03:07	1
Toluene	ND		0.047		mg/Kg		05/07/24 09:52	05/08/24 03:07	1
Xylenes, Total	ND		0.094		mg/Kg		05/07/24 09:52	05/08/24 03:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/07/24 09:52*	*05/08/24 03:07*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/07/24 15:42	05/08/24 12:14	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 15:42	05/08/24 12:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*117*		*62 - 134*	*05/07/24 15:42*	*05/08/24 12:14*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**150**		60		mg/Kg		05/08/24 08:45	05/08/24 10:51	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-61 1.0'

Date Collected: 05/03/24 09:50
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.8		mg/Kg		05/07/24 09:52	05/08/24 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/07/24 09:52*	*05/08/24 03:30*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/07/24 09:52	05/08/24 03:30	1
Ethylbenzene	ND		0.038		mg/Kg		05/07/24 09:52	05/08/24 03:30	1
Toluene	ND		0.038		mg/Kg		05/07/24 09:52	05/08/24 03:30	1
Xylenes, Total	ND		0.077		mg/Kg		05/07/24 09:52	05/08/24 03:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/07/24 09:52*	*05/08/24 03:30*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/07/24 15:42	05/08/24 12:51	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 15:42	05/08/24 12:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*104*		*62 - 134*	*05/07/24 15:42*	*05/08/24 12:51*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/08/24 08:45	05/08/24 11:28	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-62 1.0'

Date Collected: 05/03/24 09:55
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/07/24 09:52	05/08/24 03:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*05/07/24 09:52*	*05/08/24 03:54*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/07/24 09:52	05/08/24 03:54	1
Ethylbenzene	ND		0.043		mg/Kg		05/07/24 09:52	05/08/24 03:54	1
Toluene	ND		0.043		mg/Kg		05/07/24 09:52	05/08/24 03:54	1
Xylenes, Total	ND		0.087		mg/Kg		05/07/24 09:52	05/08/24 03:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/07/24 09:52*	*05/08/24 03:54*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/07/24 15:42	05/08/24 13:03	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 15:42	05/08/24 13:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*81*		*62 - 134*	*05/07/24 15:42*	*05/08/24 13:03*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**100**		59		mg/Kg		05/08/24 08:45	05/08/24 11:40	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-23 2.5'

Date Collected: 05/03/24 13:00
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/07/24 09:52	05/08/24 04:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/07/24 09:52*	*05/08/24 04:17*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/07/24 09:52	05/08/24 04:17	1
Ethylbenzene	ND		0.043		mg/Kg		05/07/24 09:52	05/08/24 04:17	1
Toluene	ND		0.043		mg/Kg		05/07/24 09:52	05/08/24 04:17	1
Xylenes, Total	ND		0.086		mg/Kg		05/07/24 09:52	05/08/24 04:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/07/24 09:52*	*05/08/24 04:17*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/07/24 15:42	05/08/24 13:16	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 15:42	05/08/24 13:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*	*05/07/24 15:42*	*05/08/24 13:16*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**140**		60		mg/Kg		05/08/24 08:45	05/08/24 11:52	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-24 2.5'

Date Collected: 05/03/24 13:05
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.8		mg/Kg		05/07/24 09:52	05/08/24 04:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/07/24 09:52*	*05/08/24 04:41*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/07/24 09:52	05/08/24 04:41	1
Ethylbenzene	ND		0.038		mg/Kg		05/07/24 09:52	05/08/24 04:41	1
Toluene	ND		0.038		mg/Kg		05/07/24 09:52	05/08/24 04:41	1
Xylenes, Total	ND		0.077		mg/Kg		05/07/24 09:52	05/08/24 04:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/07/24 09:52*	*05/08/24 04:41*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/07/24 15:42	05/08/24 13:28	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 15:42	05/08/24 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*99*		*62 - 134*	*05/07/24 15:42*	*05/08/24 13:28*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**82**		60		mg/Kg		05/08/24 08:45	05/08/24 12:05	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-27 2.5'

Date Collected: 05/03/24 13:15
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.7		mg/Kg		05/07/24 09:52	05/08/24 05:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/07/24 09:52*	*05/08/24 05:04*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/07/24 09:52	05/08/24 05:04	1
Ethylbenzene	ND		0.037		mg/Kg		05/07/24 09:52	05/08/24 05:04	1
Toluene	ND		0.037		mg/Kg		05/07/24 09:52	05/08/24 05:04	1
Xylenes, Total	ND		0.073		mg/Kg		05/07/24 09:52	05/08/24 05:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/07/24 09:52*	*05/08/24 05:04*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/07/24 15:42	05/08/24 13:40	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 15:42	05/08/24 13:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/07/24 15:42*	*05/08/24 13:40*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**430**		60		mg/Kg		05/08/24 08:45	05/08/24 12:42	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-28 2.5'

Date Collected: 05/03/24 13:20
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3967-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/07/24 09:52	05/08/24 05:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/07/24 09:52*	*05/08/24 05:51*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/07/24 09:52	05/08/24 05:51	1
Ethylbenzene	ND		0.043		mg/Kg		05/07/24 09:52	05/08/24 05:51	1
Toluene	ND		0.043		mg/Kg		05/07/24 09:52	05/08/24 05:51	1
Xylenes, Total	ND		0.086		mg/Kg		05/07/24 09:52	05/08/24 05:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/07/24 09:52*	*05/08/24 05:51*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/07/24 15:42	05/08/24 13:53	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 15:42	05/08/24 13:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*100*		*62 - 134*	*05/07/24 15:42*	*05/08/24 13:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**250**		60		mg/Kg		05/08/24 08:45	05/08/24 12:54	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4478/1-A
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4478

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/07/24 09:52	05/08/24 02:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/07/24 09:52*	*05/08/24 02:43*	*1*

Lab Sample ID: LCS 885-4478/2-A
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4478

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	24.2		mg/Kg		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*207*		*15 - 244*

Lab Sample ID: 885-3967-1 MS
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: BES24-60 1.0'
Prep Type: Total/NA
Prep Batch: 4478

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		23.4	22.2		mg/Kg		95	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*205*		*15 - 244*

Lab Sample ID: 885-3967-1 MSD
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: BES24-60 1.0'
Prep Type: Total/NA
Prep Batch: 4478

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		23.4	22.7		mg/Kg		97	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*212*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4478/1-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4478

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/07/24 09:52	05/08/24 02:43	1
Ethylbenzene	ND		0.050		mg/Kg		05/07/24 09:52	05/08/24 02:43	1
Toluene	ND		0.050		mg/Kg		05/07/24 09:52	05/08/24 02:43	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-4478/1-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4478

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		05/07/24 09:52	05/08/24 02:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/07/24 09:52*	*05/08/24 02:43*	*1*

Lab Sample ID: LCS 885-4478/3-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4478

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.900		mg/Kg		90	70 - 130		
Ethylbenzene			1.00	0.860		mg/Kg		86	70 - 130		
m,p-Xylene			2.00	1.74		mg/Kg		87	70 - 130		
o-Xylene			1.00	0.855		mg/Kg		86	70 - 130		
Toluene			1.00	0.863		mg/Kg		86	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*

Lab Sample ID: 885-3967-2 MS
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: BES24-61 1.0'
Prep Type: Total/NA
Prep Batch: 4478

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.769	0.724		mg/Kg		94	70 - 130		
Ethylbenzene	ND		0.769	0.686		mg/Kg		89	70 - 130		
m,p-Xylene	ND		1.54	1.39		mg/Kg		90	70 - 130		
o-Xylene	ND		0.769	0.687		mg/Kg		89	70 - 130		
Toluene	ND		0.769	0.682		mg/Kg		89	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*

Lab Sample ID: 885-3967-2 MSD
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: BES24-61 1.0'
Prep Type: Total/NA
Prep Batch: 4478

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.769	0.705		mg/Kg		92	70 - 130	3	20
Ethylbenzene	ND		0.769	0.690		mg/Kg		90	70 - 130	1	20
m,p-Xylene	ND		1.54	1.40		mg/Kg		91	70 - 130	1	20
o-Xylene	ND		0.769	0.683		mg/Kg		89	70 - 130	1	20
Toluene	ND		0.769	0.672		mg/Kg		87	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4532/1-A
Matrix: Solid
Analysis Batch: 4625

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4532

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/07/24 15:42	05/08/24 11:50	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/07/24 15:42	05/08/24 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*107*		*62 - 134*	*05/07/24 15:42*	*05/08/24 11:50*	*1*

Lab Sample ID: LCS 885-4532/2-A
Matrix: Solid
Analysis Batch: 4625

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4532

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	42.3		mg/Kg		85	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*113*		*62 - 134*

Lab Sample ID: 885-3967-1 MS
Matrix: Solid
Analysis Batch: 4625

Client Sample ID: BES24-60 1.0'
Prep Type: Total/NA
Prep Batch: 4532

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		47.6	37.4		mg/Kg		79	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*101*		*62 - 134*

Lab Sample ID: 885-3967-1 MSD
Matrix: Solid
Analysis Batch: 4625

Client Sample ID: BES24-60 1.0'
Prep Type: Total/NA
Prep Batch: 4532

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		48.0	48.3		mg/Kg		101	44 - 136	25	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*115*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4554/1-A
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4554

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/08/24 08:45	05/08/24 09:48	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-4554/2-A
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4554

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	15.0	14.9		mg/Kg		99	90 - 110

Lab Sample ID: MRL 885-4554/3-A
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4554

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	1.50	1.63		mg/L		109	50 - 150

Lab Sample ID: MB 885-4644/29
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	mg/Kg			05/08/24 14:22	1

Lab Sample ID: MRL 885-4644/63
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	0.500	0.549		mg/L		110	50 - 150

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

GC VOA

Prep Batch: 4478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	5035	
885-3967-2	BES24-61 1.0'	Total/NA	Solid	5035	
885-3967-3	BES24-62 1.0'	Total/NA	Solid	5035	
885-3967-4	BES24-23 2.5'	Total/NA	Solid	5035	
885-3967-5	BES24-24 2.5'	Total/NA	Solid	5035	
885-3967-6	BES24-27 2.5'	Total/NA	Solid	5035	
885-3967-7	BES24-28 2.5'	Total/NA	Solid	5035	
MB 885-4478/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4478/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4478/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-3967-1 MS	BES24-60 1.0'	Total/NA	Solid	5035	
885-3967-1 MSD	BES24-60 1.0'	Total/NA	Solid	5035	
885-3967-2 MS	BES24-61 1.0'	Total/NA	Solid	5035	
885-3967-2 MSD	BES24-61 1.0'	Total/NA	Solid	5035	

Analysis Batch: 4541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	8015D	4478
885-3967-2	BES24-61 1.0'	Total/NA	Solid	8015D	4478
885-3967-3	BES24-62 1.0'	Total/NA	Solid	8015D	4478
885-3967-4	BES24-23 2.5'	Total/NA	Solid	8015D	4478
885-3967-5	BES24-24 2.5'	Total/NA	Solid	8015D	4478
885-3967-6	BES24-27 2.5'	Total/NA	Solid	8015D	4478
885-3967-7	BES24-28 2.5'	Total/NA	Solid	8015D	4478
MB 885-4478/1-A	Method Blank	Total/NA	Solid	8015D	4478
LCS 885-4478/2-A	Lab Control Sample	Total/NA	Solid	8015D	4478
885-3967-1 MS	BES24-60 1.0'	Total/NA	Solid	8015D	4478
885-3967-1 MSD	BES24-60 1.0'	Total/NA	Solid	8015D	4478

Analysis Batch: 4542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	8021B	4478
885-3967-2	BES24-61 1.0'	Total/NA	Solid	8021B	4478
885-3967-3	BES24-62 1.0'	Total/NA	Solid	8021B	4478
885-3967-4	BES24-23 2.5'	Total/NA	Solid	8021B	4478
885-3967-5	BES24-24 2.5'	Total/NA	Solid	8021B	4478
885-3967-6	BES24-27 2.5'	Total/NA	Solid	8021B	4478
885-3967-7	BES24-28 2.5'	Total/NA	Solid	8021B	4478
MB 885-4478/1-A	Method Blank	Total/NA	Solid	8021B	4478
LCS 885-4478/3-A	Lab Control Sample	Total/NA	Solid	8021B	4478
885-3967-2 MS	BES24-61 1.0'	Total/NA	Solid	8021B	4478
885-3967-2 MSD	BES24-61 1.0'	Total/NA	Solid	8021B	4478

GC Semi VOA

Prep Batch: 4532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	SHAKE	
885-3967-2	BES24-61 1.0'	Total/NA	Solid	SHAKE	
885-3967-3	BES24-62 1.0'	Total/NA	Solid	SHAKE	
885-3967-4	BES24-23 2.5'	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

GC Semi VOA (Continued)

Prep Batch: 4532 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-5	BES24-24 2.5'	Total/NA	Solid	SHAKE	
885-3967-6	BES24-27 2.5'	Total/NA	Solid	SHAKE	
885-3967-7	BES24-28 2.5'	Total/NA	Solid	SHAKE	
MB 885-4532/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4532/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-3967-1 MS	BES24-60 1.0'	Total/NA	Solid	SHAKE	
885-3967-1 MSD	BES24-60 1.0'	Total/NA	Solid	SHAKE	

Analysis Batch: 4625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	8015D	4532
885-3967-2	BES24-61 1.0'	Total/NA	Solid	8015D	4532
885-3967-3	BES24-62 1.0'	Total/NA	Solid	8015D	4532
885-3967-4	BES24-23 2.5'	Total/NA	Solid	8015D	4532
885-3967-5	BES24-24 2.5'	Total/NA	Solid	8015D	4532
885-3967-6	BES24-27 2.5'	Total/NA	Solid	8015D	4532
885-3967-7	BES24-28 2.5'	Total/NA	Solid	8015D	4532
MB 885-4532/1-A	Method Blank	Total/NA	Solid	8015D	4532
LCS 885-4532/2-A	Lab Control Sample	Total/NA	Solid	8015D	4532
885-3967-1 MS	BES24-60 1.0'	Total/NA	Solid	8015D	4532
885-3967-1 MSD	BES24-60 1.0'	Total/NA	Solid	8015D	4532

HPLC/IC

Prep Batch: 4554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	300_Prep	
885-3967-2	BES24-61 1.0'	Total/NA	Solid	300_Prep	
885-3967-3	BES24-62 1.0'	Total/NA	Solid	300_Prep	
885-3967-4	BES24-23 2.5'	Total/NA	Solid	300_Prep	
885-3967-5	BES24-24 2.5'	Total/NA	Solid	300_Prep	
885-3967-6	BES24-27 2.5'	Total/NA	Solid	300_Prep	
885-3967-7	BES24-28 2.5'	Total/NA	Solid	300_Prep	
MB 885-4554/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4554/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
MRL 885-4554/3-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 4644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3967-1	BES24-60 1.0'	Total/NA	Solid	300.0	4554
885-3967-2	BES24-61 1.0'	Total/NA	Solid	300.0	4554
885-3967-3	BES24-62 1.0'	Total/NA	Solid	300.0	4554
885-3967-4	BES24-23 2.5'	Total/NA	Solid	300.0	4554
885-3967-5	BES24-24 2.5'	Total/NA	Solid	300.0	4554
885-3967-6	BES24-27 2.5'	Total/NA	Solid	300.0	4554
885-3967-7	BES24-28 2.5'	Total/NA	Solid	300.0	4554
MB 885-4554/1-A	Method Blank	Total/NA	Solid	300.0	4554
MB 885-4644/29	Method Blank	Total/NA	Solid	300.0	
LCS 885-4554/2-A	Lab Control Sample	Total/NA	Solid	300.0	4554
MRL 885-4554/3-A	Lab Control Sample	Total/NA	Solid	300.0	4554
MRL 885-4644/63	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-60 1.0'

Lab Sample ID: 885-3967-1
Matrix: Solid
Date Collected: 05/03/24 09:45
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 03:07
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 03:07
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 12:14
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 10:51

Client Sample ID: BES24-61 1.0'

Lab Sample ID: 885-3967-2
Matrix: Solid
Date Collected: 05/03/24 09:50
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 03:30
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 03:30
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 12:51
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 11:28

Client Sample ID: BES24-62 1.0'

Lab Sample ID: 885-3967-3
Matrix: Solid
Date Collected: 05/03/24 09:55
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 03:54
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 03:54
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 13:03
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 11:40

Client Sample ID: BES24-23 2.5'

Lab Sample ID: 885-3967-4
Matrix: Solid
Date Collected: 05/03/24 13:00
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 04:17

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Client Sample ID: BES24-23 2.5'

Lab Sample ID: 885-3967-4
Matrix: Solid
Date Collected: 05/03/24 13:00
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 04:17
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 13:16
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 11:52

Client Sample ID: BES24-24 2.5'

Lab Sample ID: 885-3967-5
Matrix: Solid
Date Collected: 05/03/24 13:05
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 04:41
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 04:41
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 13:28
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 12:05

Client Sample ID: BES24-27 2.5'

Lab Sample ID: 885-3967-6
Matrix: Solid
Date Collected: 05/03/24 13:15
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 05:04
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 05:04
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 13:40
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 12:42

Client Sample ID: BES24-28 2.5'

Lab Sample ID: 885-3967-7
Matrix: Solid
Date Collected: 05/03/24 13:20
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 05:51
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 05:51

Lab Chronicle

Client: Vertex
Job ID: 885-3967-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-28 2.5'
Lab Sample ID: 885-3967-7

Date Collected: 05/03/24 13:20
Matrix: Solid
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 13:53
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 12:54

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3967-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: On File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 hour

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: AL

On Ice: ☐ Yes ☐ No

# of Coolers: 1 (Thermometer)

Cooler Temp (Including CF): 1.0+0 = 1.0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109 505-345-3975 COC
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH: 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-3-24	0945	soil	BES24-60 1.0'	4oz	ICE	1										
	0950		BES24-61 1.0'			2										
	0955		BES24-62 1.0'			3										
	1300		BES24-23 2.5'			4										
	1305		BES24-24 2.5'			5										
	1315		BES24-27 2.5'			6										
	1320		BES24-28 2.5'			7										

Date	Time	Relinquished by	Received by	Via	Date	Time
					5/6/24	1130
5/6/24	1900					

Date	Time	Relinquished by	Received by	Via	Date	Time
				courier	5/7/24	7:40

Remarks: cc: scarttar@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3967-1

Login Number: 3967 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/13/2024 1:23:37 PM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-3973-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



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Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-3973-1

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Definitions/Glossary

Client: Vertex Job ID: 885-3973-1
Project/Site: Red Deer CTB

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-3973-1

Job ID: 885-3973-1 Eurofins Albuquerque

Job Narrative
885-3973-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/7/2024 7:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Client Sample ID: WES24-19 0-2'

Date Collected: 05/03/24 10:00
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3973-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/07/24 09:52	05/08/24 06:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/07/24 09:52*	*05/08/24 06:15*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/07/24 09:52	05/08/24 06:15	1
Ethylbenzene	ND		0.039		mg/Kg		05/07/24 09:52	05/08/24 06:15	1
Toluene	ND		0.039		mg/Kg		05/07/24 09:52	05/08/24 06:15	1
Xylenes, Total	ND		0.078		mg/Kg		05/07/24 09:52	05/08/24 06:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/07/24 09:52*	*05/08/24 06:15*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/07/24 15:42	05/08/24 14:05	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/07/24 15:42	05/08/24 14:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*105*		*62 - 134*	*05/07/24 15:42*	*05/08/24 14:05*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		05/08/24 08:45	05/08/24 13:06	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Client Sample ID: BES24-53 2ft

Date Collected: 05/03/24 10:05
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3973-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/07/24 09:52	05/08/24 06:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/07/24 09:52*	*05/08/24 06:38*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/07/24 09:52	05/08/24 06:38	1
Ethylbenzene	ND		0.047		mg/Kg		05/07/24 09:52	05/08/24 06:38	1
Toluene	ND		0.047		mg/Kg		05/07/24 09:52	05/08/24 06:38	1
Xylenes, Total	ND		0.094		mg/Kg		05/07/24 09:52	05/08/24 06:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/07/24 09:52*	*05/08/24 06:38*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/07/24 15:42	05/08/24 14:17	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/07/24 15:42	05/08/24 14:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*114*		*62 - 134*	*05/07/24 15:42*	*05/08/24 14:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/08/24 08:45	05/08/24 13:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Client Sample ID: BES24-54 2ft

Date Collected: 05/03/24 10:10
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3973-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		05/07/24 09:52	05/08/24 07:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/07/24 09:52*	*05/08/24 07:02*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/07/24 09:52	05/08/24 07:02	1
Ethylbenzene	ND		0.047		mg/Kg		05/07/24 09:52	05/08/24 07:02	1
Toluene	ND		0.047		mg/Kg		05/07/24 09:52	05/08/24 07:02	1
Xylenes, Total	ND		0.094		mg/Kg		05/07/24 09:52	05/08/24 07:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/07/24 09:52*	*05/08/24 07:02*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/07/24 15:42	05/08/24 14:30	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/07/24 15:42	05/08/24 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*106*		*62 - 134*	*05/07/24 15:42*	*05/08/24 14:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/08/24 08:45	05/08/24 13:31	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Client Sample ID: BES24-55 2ft

Date Collected: 05/03/24 10:15
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3973-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.1		mg/Kg		05/07/24 09:52	05/08/24 07:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/07/24 09:52*	*05/08/24 07:26*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/07/24 09:52	05/08/24 07:26	1
Ethylbenzene	ND		0.041		mg/Kg		05/07/24 09:52	05/08/24 07:26	1
Toluene	ND		0.041		mg/Kg		05/07/24 09:52	05/08/24 07:26	1
Xylenes, Total	ND		0.083		mg/Kg		05/07/24 09:52	05/08/24 07:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/07/24 09:52*	*05/08/24 07:26*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/07/24 15:42	05/08/24 14:42	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 15:42	05/08/24 14:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*	*05/07/24 15:42*	*05/08/24 14:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/08/24 08:45	05/08/24 13:44	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Client Sample ID: BES24-63 2ft

Date Collected: 05/03/24 10:20
Date Received: 05/07/24 07:40

Lab Sample ID: 885-3973-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/07/24 09:52	05/08/24 07:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/07/24 09:52*	*05/08/24 07:49*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/07/24 09:52	05/08/24 07:49	1
Ethylbenzene	ND		0.042		mg/Kg		05/07/24 09:52	05/08/24 07:49	1
Toluene	ND		0.042		mg/Kg		05/07/24 09:52	05/08/24 07:49	1
Xylenes, Total	ND		0.085		mg/Kg		05/07/24 09:52	05/08/24 07:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/07/24 09:52*	*05/08/24 07:49*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/07/24 15:42	05/09/24 12:39	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/07/24 15:42	05/09/24 12:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*64*		*62 - 134*	*05/07/24 15:42*	*05/09/24 12:39*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		60		mg/Kg		05/08/24 08:45	05/08/24 13:56	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4478/1-A
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4478

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/07/24 09:52	05/08/24 02:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/07/24 09:52*	*05/08/24 02:43*	*1*

Lab Sample ID: LCS 885-4478/2-A
Matrix: Solid
Analysis Batch: 4541

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4478

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	24.2		mg/Kg		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*207*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4478/1-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4478

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/07/24 09:52	05/08/24 02:43	1
Ethylbenzene	ND		0.050		mg/Kg		05/07/24 09:52	05/08/24 02:43	1
Toluene	ND		0.050		mg/Kg		05/07/24 09:52	05/08/24 02:43	1
Xylenes, Total	ND		0.10		mg/Kg		05/07/24 09:52	05/08/24 02:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/07/24 09:52*	*05/08/24 02:43*	*1*

Lab Sample ID: LCS 885-4478/3-A
Matrix: Solid
Analysis Batch: 4542

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4478

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.900		mg/Kg		90	70 - 130		
Ethylbenzene			1.00	0.860		mg/Kg		86	70 - 130		
m,p-Xylene			2.00	1.74		mg/Kg		87	70 - 130		
o-Xylene			1.00	0.855		mg/Kg		86	70 - 130		
Toluene			1.00	0.863		mg/Kg		86	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4532/1-A
Matrix: Solid
Analysis Batch: 4625

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4532

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/07/24 15:42	05/08/24 11:50	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/07/24 15:42	05/08/24 11:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*107*		*62 - 134*	*05/07/24 15:42*	*05/08/24 11:50*	*1*

Lab Sample ID: LCS 885-4532/2-A
Matrix: Solid
Analysis Batch: 4625

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4532

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	42.3		mg/Kg		85	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*113*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4554/1-A
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4554

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/08/24 08:45	05/08/24 09:48	1

Lab Sample ID: LCS 885-4554/2-A
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4554

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.9		mg/Kg		99	90 - 110		

Lab Sample ID: MRL 885-4554/3-A
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4554

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			1.50	1.63		mg/L		109	50 - 150		

Lab Sample ID: MB 885-4644/29
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			05/08/24 14:22	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MRL 885-4644/63
Matrix: Solid
Analysis Batch: 4644

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	0.500	0.549		mg/L		110	50 - 150

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

GC VOA

Prep Batch: 4478

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	5035	
885-3973-2	BES24-53 2ft	Total/NA	Solid	5035	
885-3973-3	BES24-54 2ft	Total/NA	Solid	5035	
885-3973-4	BES24-55 2ft	Total/NA	Solid	5035	
885-3973-5	BES24-63 2ft	Total/NA	Solid	5035	
MB 885-4478/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4478/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4478/3-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 4541

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	8015D	4478
885-3973-2	BES24-53 2ft	Total/NA	Solid	8015D	4478
885-3973-3	BES24-54 2ft	Total/NA	Solid	8015D	4478
885-3973-4	BES24-55 2ft	Total/NA	Solid	8015D	4478
885-3973-5	BES24-63 2ft	Total/NA	Solid	8015D	4478
MB 885-4478/1-A	Method Blank	Total/NA	Solid	8015D	4478
LCS 885-4478/2-A	Lab Control Sample	Total/NA	Solid	8015D	4478

Analysis Batch: 4542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	8021B	4478
885-3973-2	BES24-53 2ft	Total/NA	Solid	8021B	4478
885-3973-3	BES24-54 2ft	Total/NA	Solid	8021B	4478
885-3973-4	BES24-55 2ft	Total/NA	Solid	8021B	4478
885-3973-5	BES24-63 2ft	Total/NA	Solid	8021B	4478
MB 885-4478/1-A	Method Blank	Total/NA	Solid	8021B	4478
LCS 885-4478/3-A	Lab Control Sample	Total/NA	Solid	8021B	4478

GC Semi VOA

Prep Batch: 4532

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	SHAKE	
885-3973-2	BES24-53 2ft	Total/NA	Solid	SHAKE	
885-3973-3	BES24-54 2ft	Total/NA	Solid	SHAKE	
885-3973-4	BES24-55 2ft	Total/NA	Solid	SHAKE	
885-3973-5	BES24-63 2ft	Total/NA	Solid	SHAKE	
MB 885-4532/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4532/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 4625

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	8015D	4532
885-3973-2	BES24-53 2ft	Total/NA	Solid	8015D	4532
885-3973-3	BES24-54 2ft	Total/NA	Solid	8015D	4532
885-3973-4	BES24-55 2ft	Total/NA	Solid	8015D	4532
MB 885-4532/1-A	Method Blank	Total/NA	Solid	8015D	4532
LCS 885-4532/2-A	Lab Control Sample	Total/NA	Solid	8015D	4532

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

GC Semi VOA

Analysis Batch: 4697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-5	BES24-63 2ft	Total/NA	Solid	8015D	4532

HPLC/IC

Prep Batch: 4554

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	300_Prep	
885-3973-2	BES24-53 2ft	Total/NA	Solid	300_Prep	
885-3973-3	BES24-54 2ft	Total/NA	Solid	300_Prep	
885-3973-4	BES24-55 2ft	Total/NA	Solid	300_Prep	
885-3973-5	BES24-63 2ft	Total/NA	Solid	300_Prep	
MB 885-4554/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4554/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
MRL 885-4554/3-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 4644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-3973-1	WES24-19 0-2'	Total/NA	Solid	300.0	4554
885-3973-2	BES24-53 2ft	Total/NA	Solid	300.0	4554
885-3973-3	BES24-54 2ft	Total/NA	Solid	300.0	4554
885-3973-4	BES24-55 2ft	Total/NA	Solid	300.0	4554
885-3973-5	BES24-63 2ft	Total/NA	Solid	300.0	4554
MB 885-4554/1-A	Method Blank	Total/NA	Solid	300.0	4554
MB 885-4644/29	Method Blank	Total/NA	Solid	300.0	
LCS 885-4554/2-A	Lab Control Sample	Total/NA	Solid	300.0	4554
MRL 885-4554/3-A	Lab Control Sample	Total/NA	Solid	300.0	4554
MRL 885-4644/63	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-3973-1

Client Sample ID: WES24-19 0-2'

Lab Sample ID: 885-3973-1
Matrix: Solid
Date Collected: 05/03/24 10:00
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 06:15
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 06:15
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 14:05
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 13:06

Client Sample ID: BES24-53 2ft

Lab Sample ID: 885-3973-2
Matrix: Solid
Date Collected: 05/03/24 10:05
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 06:38
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 06:38
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 14:17
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 13:19

Client Sample ID: BES24-54 2ft

Lab Sample ID: 885-3973-3
Matrix: Solid
Date Collected: 05/03/24 10:10
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 07:02
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 07:02
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 14:30
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 13:31

Client Sample ID: BES24-55 2ft

Lab Sample ID: 885-3973-4
Matrix: Solid
Date Collected: 05/03/24 10:15
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 07:26

Lab Chronicle

Client: Vertex
Job ID: 885-3973-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-55 2ft
Lab Sample ID: 885-3973-4
Date Collected: 05/03/24 10:15
Matrix: Solid
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 07:26
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4625	JU	EET ALB	05/08/24 14:42
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 13:44

Client Sample ID: BES24-63 2ft
Lab Sample ID: 885-3973-5
Date Collected: 05/03/24 10:20
Matrix: Solid
Date Received: 05/07/24 07:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8015D		1	4541	JP	EET ALB	05/08/24 07:49
Total/NA	Prep	5035			4478	JP	EET ALB	05/07/24 09:52
Total/NA	Analysis	8021B		1	4542	JP	EET ALB	05/08/24 07:49
Total/NA	Prep	SHAKE			4532	SB	EET ALB	05/07/24 15:42
Total/NA	Analysis	8015D		1	4697	JU	EET ALB	05/09/24 12:39
Total/NA	Prep	300_Prep			4554	RC	EET ALB	05/08/24 08:45
Total/NA	Analysis	300.0		20	4644	JT	EET ALB	05/08/24 13:56

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex Job ID: 885-3973-1
Project/Site: Red Deer CTB

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)

Mailing Address: On File

Phone #: On File

email or Fax#: Scarttar@vertex.ca

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard ☑ Rush 24 hr

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: Wyatt Wadleigh

On Ice: ☑ Yes ☐ No

# of Coolers: 1 (M6.47)

Cooler Temp(including CF): 1.0-0=1.0

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel 505-345-3975 Fax 505-345-4107

885-3973 COC

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	F, Br, NO3, NO2, PO4, SO4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
05/03/24	10 00	Soil	WES24-19	1, 4oz jar		1	X	X					X			
05/03/24	10 05	Soil	BES24-53 2ft	1, 4oz jar		2	X	X					X			
05/03/24	10 10	Soil	BES24-54 2ft	1, 4oz jar		3	X	X					X			
05/03/24	10 15	Soil	BES24-55 2ft	1, 4oz jar		4	X	X					X			
05/03/24	10 20	Soil	BES24-63 2ft	1, 4oz jar		5	X	X					X			

Analysis Request

Date	Time	Relinquished by	Received by	Via	Date	Time
		Wyatt Wadleigh			5/6/24	1530
5/6/24	1900				5/7/24	7:40

Remarks: Please CC wwadleigh@vertex.ca
Cost center Number: NA

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-3973-1

Login Number: 3973 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/13/2024 11:38:10 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-4068-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
5/13/2024 11:38:10 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-4068-1

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Definitions/Glossary

Client: Vertex Job ID: 885-4068-1
Project/Site: Red Deer CTB

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-4068-1

Job ID: 885-4068-1 Eurofins Albuquerque

Job Narrative
885-4068-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/8/2024 7:25 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.4°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 26 - 6.5'

Date Collected: 05/06/24 14:00
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.6		mg/Kg		05/08/24 12:04	05/08/24 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*15 - 244*	*05/08/24 12:04*	*05/08/24 14:02*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/08/24 12:04	05/08/24 14:02	1
Ethylbenzene	ND		0.036		mg/Kg		05/08/24 12:04	05/08/24 14:02	1
Toluene	ND		0.036		mg/Kg		05/08/24 12:04	05/08/24 14:02	1
Xylenes, Total	ND		0.072		mg/Kg		05/08/24 12:04	05/08/24 14:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*	*05/08/24 12:04*	*05/08/24 14:02*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/08/24 12:16	05/08/24 20:09	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/08/24 12:16	05/08/24 20:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/08/24 12:16*	*05/08/24 20:09*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**470**		60		mg/Kg		05/09/24 10:06	05/09/24 15:15	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 35 - 3'

Date Collected: 05/06/24 09:00
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/08/24 12:04	05/08/24 14:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/08/24 12:04*	*05/08/24 14:26*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/08/24 12:04	05/08/24 14:26	1
Ethylbenzene	ND		0.039		mg/Kg		05/08/24 12:04	05/08/24 14:26	1
Toluene	ND		0.039		mg/Kg		05/08/24 12:04	05/08/24 14:26	1
Xylenes, Total	ND		0.078		mg/Kg		05/08/24 12:04	05/08/24 14:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/08/24 12:04*	*05/08/24 14:26*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.7		mg/Kg		05/08/24 12:16	05/08/24 20:32	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		05/08/24 12:16	05/08/24 20:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/08/24 12:16*	*05/08/24 20:32*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**300**		60		mg/Kg		05/09/24 10:06	05/09/24 15:30	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 36 - 3'

Date Collected: 05/06/24 09:10
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.1		mg/Kg		05/08/24 12:04	05/08/24 14:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/08/24 12:04*	*05/08/24 14:50*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/08/24 12:04	05/08/24 14:50	1
Ethylbenzene	ND		0.041		mg/Kg		05/08/24 12:04	05/08/24 14:50	1
Toluene	ND		0.041		mg/Kg		05/08/24 12:04	05/08/24 14:50	1
Xylenes, Total	ND		0.081		mg/Kg		05/08/24 12:04	05/08/24 14:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/08/24 12:04*	*05/08/24 14:50*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		05/08/24 12:16	05/08/24 20:56	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/08/24 12:16	05/08/24 20:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/08/24 12:16*	*05/08/24 20:56*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**460**		60		mg/Kg		05/09/24 10:06	05/09/24 15:45	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 37 - 3'

Date Collected: 05/06/24 15:45
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/08/24 12:04	05/08/24 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/08/24 12:04*	*05/08/24 16:24*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/08/24 12:04	05/08/24 16:24	1
Ethylbenzene	ND		0.039		mg/Kg		05/08/24 12:04	05/08/24 16:24	1
Toluene	ND		0.039		mg/Kg		05/08/24 12:04	05/08/24 16:24	1
Xylenes, Total	ND		0.078		mg/Kg		05/08/24 12:04	05/08/24 16:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/08/24 12:04*	*05/08/24 16:24*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/08/24 12:16	05/08/24 21:20	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/08/24 12:16	05/08/24 21:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/08/24 12:16*	*05/08/24 21:20*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**650**		60		mg/Kg		05/09/24 10:06	05/09/24 16:00	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 38 - 3'

Date Collected: 05/06/24 15:30
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.6		mg/Kg		05/08/24 12:04	05/08/24 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*15 - 244*	*05/08/24 12:04*	*05/08/24 16:47*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/08/24 12:04	05/08/24 16:47	1
Ethylbenzene	ND		0.036		mg/Kg		05/08/24 12:04	05/08/24 16:47	1
Toluene	ND		0.036		mg/Kg		05/08/24 12:04	05/08/24 16:47	1
Xylenes, Total	ND		0.073		mg/Kg		05/08/24 12:04	05/08/24 16:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/08/24 12:04*	*05/08/24 16:47*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.2		mg/Kg		05/08/24 12:16	05/08/24 21:44	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/08/24 12:16	05/08/24 21:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/08/24 12:16*	*05/08/24 21:44*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**860**		60		mg/Kg		05/09/24 10:06	05/09/24 16:15	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 39 - 3'

Date Collected: 05/06/24 09:40
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.0		mg/Kg		05/08/24 12:04	05/08/24 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/08/24 12:04*	*05/08/24 17:11*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/08/24 12:04	05/08/24 17:11	1
Ethylbenzene	ND		0.040		mg/Kg		05/08/24 12:04	05/08/24 17:11	1
Toluene	ND		0.040		mg/Kg		05/08/24 12:04	05/08/24 17:11	1
Xylenes, Total	ND		0.081		mg/Kg		05/08/24 12:04	05/08/24 17:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/08/24 12:04*	*05/08/24 17:11*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/08/24 12:16	05/08/24 22:07	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/08/24 12:16	05/08/24 22:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/08/24 12:16*	*05/08/24 22:07*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**410**		60		mg/Kg		05/09/24 10:06	05/09/24 16:30	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 40 - 3'

Date Collected: 05/06/24 09:50
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.8		mg/Kg		05/08/24 12:04	05/08/24 17:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/08/24 12:04*	*05/08/24 17:34*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/08/24 12:04	05/08/24 17:34	1
Ethylbenzene	ND		0.038		mg/Kg		05/08/24 12:04	05/08/24 17:34	1
Toluene	ND		0.038		mg/Kg		05/08/24 12:04	05/08/24 17:34	1
Xylenes, Total	ND		0.076		mg/Kg		05/08/24 12:04	05/08/24 17:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/08/24 12:04*	*05/08/24 17:34*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/08/24 12:16	05/08/24 22:31	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/08/24 12:16	05/08/24 22:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/08/24 12:16*	*05/08/24 22:31*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**650**		60		mg/Kg		05/09/24 10:06	05/09/24 16:45	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 64 - 2'

Date Collected: 05/06/24 13:30
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-8

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/08/24 12:04	05/08/24 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/08/24 12:04*	*05/08/24 17:58*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/08/24 12:04	05/08/24 17:58	1
Ethylbenzene	ND		0.042		mg/Kg		05/08/24 12:04	05/08/24 17:58	1
Toluene	ND		0.042		mg/Kg		05/08/24 12:04	05/08/24 17:58	1
Xylenes, Total	ND		0.085		mg/Kg		05/08/24 12:04	05/08/24 17:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/08/24 12:04*	*05/08/24 17:58*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/08/24 12:16	05/08/24 22:55	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/08/24 12:16	05/08/24 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/08/24 12:16*	*05/08/24 22:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 10:06	05/09/24 17:46	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 65 - 2'

Date Collected: 05/06/24 13:40
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-9

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.0		mg/Kg		05/08/24 12:04	05/08/24 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/08/24 12:04*	*05/08/24 18:21*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/08/24 12:04	05/08/24 18:21	1
Ethylbenzene	ND		0.040		mg/Kg		05/08/24 12:04	05/08/24 18:21	1
Toluene	ND		0.040		mg/Kg		05/08/24 12:04	05/08/24 18:21	1
Xylenes, Total	ND		0.081		mg/Kg		05/08/24 12:04	05/08/24 18:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/08/24 12:04*	*05/08/24 18:21*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/08/24 12:16	05/08/24 23:18	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/08/24 12:16	05/08/24 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*94*		*62 - 134*	*05/08/24 12:16*	*05/08/24 23:18*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**120**		60		mg/Kg		05/09/24 10:06	05/09/24 18:01	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 66 - 2'

Date Collected: 05/06/24 13:50
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-10

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.6		mg/Kg		05/08/24 12:04	05/08/24 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/08/24 12:04*	*05/08/24 18:44*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/08/24 12:04	05/08/24 18:44	1
Ethylbenzene	ND		0.036		mg/Kg		05/08/24 12:04	05/08/24 18:44	1
Toluene	ND		0.036		mg/Kg		05/08/24 12:04	05/08/24 18:44	1
Xylenes, Total	ND		0.072		mg/Kg		05/08/24 12:04	05/08/24 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/08/24 12:04*	*05/08/24 18:44*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		05/08/24 12:16	05/08/24 23:42	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/08/24 12:16	05/08/24 23:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/08/24 12:16*	*05/08/24 23:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 10:06	05/09/24 18:16	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 67 - 2'

Date Collected: 05/06/24 14:00
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-11

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.7		mg/Kg		05/08/24 12:04	05/08/24 19:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/08/24 12:04*	*05/08/24 19:31*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/08/24 12:04	05/08/24 19:31	1
Ethylbenzene	ND		0.037		mg/Kg		05/08/24 12:04	05/08/24 19:31	1
Toluene	ND		0.037		mg/Kg		05/08/24 12:04	05/08/24 19:31	1
Xylenes, Total	ND		0.073		mg/Kg		05/08/24 12:04	05/08/24 19:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/08/24 12:04*	*05/08/24 19:31*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.9		mg/Kg		05/08/24 12:16	05/09/24 00:29	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		05/08/24 12:16	05/09/24 00:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/08/24 12:16*	*05/09/24 00:29*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		59		mg/Kg		05/09/24 10:06	05/09/24 18:32	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 68 - 2

Date Collected: 05/06/24 15:40
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-12

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/08/24 12:04	05/08/24 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/08/24 12:04*	*05/08/24 19:55*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/08/24 12:04	05/08/24 19:55	1
Ethylbenzene	ND		0.042		mg/Kg		05/08/24 12:04	05/08/24 19:55	1
Toluene	ND		0.042		mg/Kg		05/08/24 12:04	05/08/24 19:55	1
Xylenes, Total	ND		0.084		mg/Kg		05/08/24 12:04	05/08/24 19:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/08/24 12:04*	*05/08/24 19:55*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/08/24 12:16	05/09/24 00:53	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/08/24 12:16	05/09/24 00:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/08/24 12:16*	*05/09/24 00:53*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 10:06	05/09/24 18:47	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 69 - 2'

Date Collected: 05/06/24 14:10
Date Received: 05/08/24 07:25

Lab Sample ID: 885-4068-13

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/08/24 12:04	05/08/24 20:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/08/24 12:04*	*05/08/24 20:18*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/08/24 12:04	05/08/24 20:18	1
Ethylbenzene	ND		0.043		mg/Kg		05/08/24 12:04	05/08/24 20:18	1
Toluene	ND		0.043		mg/Kg		05/08/24 12:04	05/08/24 20:18	1
Xylenes, Total	ND		0.087		mg/Kg		05/08/24 12:04	05/08/24 20:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/08/24 12:04*	*05/08/24 20:18*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/08/24 12:16	05/09/24 01:17	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/08/24 12:16	05/09/24 01:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*05/08/24 12:16*	*05/09/24 01:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		05/09/24 10:06	05/09/24 19:32	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4587/1-A
Matrix: Solid
Analysis Batch: 4672

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4587

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/08/24 12:04	05/08/24 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*15 - 244*	*05/08/24 12:04*	*05/08/24 13:39*	*1*

Lab Sample ID: LCS 885-4587/2-A
Matrix: Solid
Analysis Batch: 4672

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4587

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.4		mg/Kg		101	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*211*		*15 - 244*

Lab Sample ID: 885-4068-1 MS
Matrix: Solid
Analysis Batch: 4672

Client Sample ID: BES24 - 26 - 6.5'
Prep Type: Total/NA
Prep Batch: 4587

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		17.9	18.0		mg/Kg		100	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*215*		*15 - 244*

Lab Sample ID: 885-4068-1 MSD
Matrix: Solid
Analysis Batch: 4672

Client Sample ID: BES24 - 26 - 6.5'
Prep Type: Total/NA
Prep Batch: 4587

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		17.9	17.4		mg/Kg		97	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*209*		*15 - 244*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4587/1-A
Matrix: Solid
Analysis Batch: 4673

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4587

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/08/24 12:04	05/08/24 13:39	1
Ethylbenzene	ND		0.050		mg/Kg		05/08/24 12:04	05/08/24 13:39	1
Toluene	ND		0.050		mg/Kg		05/08/24 12:04	05/08/24 13:39	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-4587/1-A
Matrix: Solid
Analysis Batch: 4673

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4587

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		05/08/24 12:04	05/08/24 13:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/08/24 12:04*	*05/08/24 13:39*	*1*

Lab Sample ID: LCS 885-4587/3-A
Matrix: Solid
Analysis Batch: 4673

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4587

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.915		mg/Kg		91	70 - 130		
Ethylbenzene			1.00	0.887		mg/Kg		89	70 - 130		
m,p-Xylene			2.00	1.80		mg/Kg		90	70 - 130		
o-Xylene			1.00	0.870		mg/Kg		87	70 - 130		
Toluene			1.00	0.869		mg/Kg		87	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*

Lab Sample ID: 885-4068-2 MS
Matrix: Solid
Analysis Batch: 4673

Client Sample ID: BES24 - 35 - 3'
Prep Type: Total/NA
Prep Batch: 4587

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.778	0.707		mg/Kg		91	70 - 130		
Ethylbenzene	ND		0.778	0.673		mg/Kg		86	70 - 130		
m,p-Xylene	ND		1.56	1.37		mg/Kg		88	70 - 130		
o-Xylene	ND		0.778	0.670		mg/Kg		86	70 - 130		
Toluene	ND		0.778	0.671		mg/Kg		86	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*

Lab Sample ID: 885-4068-2 MSD
Matrix: Solid
Analysis Batch: 4673

Client Sample ID: BES24 - 35 - 3'
Prep Type: Total/NA
Prep Batch: 4587

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.778	0.694		mg/Kg		89	70 - 130	2	20
Ethylbenzene	ND		0.778	0.668		mg/Kg		86	70 - 130	1	20
m,p-Xylene	ND		1.56	1.35		mg/Kg		87	70 - 130	1	20
o-Xylene	ND		0.778	0.663		mg/Kg		85	70 - 130	1	20
Toluene	ND		0.778	0.661		mg/Kg		85	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4590/1-A
Matrix: Solid
Analysis Batch: 4658

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4590

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/08/24 12:16	05/08/24 19:21	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/08/24 12:16	05/08/24 19:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/08/24 12:16*	*05/08/24 19:21*	*1*

Lab Sample ID: LCS 885-4590/2-A
Matrix: Solid
Analysis Batch: 4658

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4590

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	51.9		mg/Kg		104	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*115*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4662/2-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4662

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		05/09/24 10:06	05/09/24 14:00	1

Lab Sample ID: LCS 885-4662/3-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4662

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.1		mg/Kg		94	90 - 110		

Lab Sample ID: MRL 885-4662/1-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4662

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			0.500	0.527		mg/L		105	50 - 150		

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

GC VOA

Prep Batch: 4587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	5035	
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	5035	
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	5035	
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	5035	
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	5035	
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	5035	
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	5035	
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	5035	
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	5035	
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	5035	
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	5035	
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	5035	
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	5035	
MB 885-4587/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4587/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4587/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-4068-1 MS	BES24 - 26 - 6.5'	Total/NA	Solid	5035	
885-4068-1 MSD	BES24 - 26 - 6.5'	Total/NA	Solid	5035	
885-4068-2 MS	BES24 - 35 - 3'	Total/NA	Solid	5035	
885-4068-2 MSD	BES24 - 35 - 3'	Total/NA	Solid	5035	

Analysis Batch: 4672

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	8015D	4587
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	8015D	4587
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	8015D	4587
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	8015D	4587
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	8015D	4587
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	8015D	4587
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	8015D	4587
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	8015D	4587
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	8015D	4587
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	8015D	4587
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	8015D	4587
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	8015D	4587
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	8015D	4587
MB 885-4587/1-A	Method Blank	Total/NA	Solid	8015D	4587
LCS 885-4587/2-A	Lab Control Sample	Total/NA	Solid	8015D	4587
885-4068-1 MS	BES24 - 26 - 6.5'	Total/NA	Solid	8015D	4587
885-4068-1 MSD	BES24 - 26 - 6.5'	Total/NA	Solid	8015D	4587

Analysis Batch: 4673

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	8021B	4587
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	8021B	4587
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	8021B	4587
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	8021B	4587
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	8021B	4587
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	8021B	4587
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	8021B	4587
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	8021B	4587

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

GC VOA (Continued)

Analysis Batch: 4673 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	8021B	4587
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	8021B	4587
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	8021B	4587
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	8021B	4587
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	8021B	4587
MB 885-4587/1-A	Method Blank	Total/NA	Solid	8021B	4587
LCS 885-4587/3-A	Lab Control Sample	Total/NA	Solid	8021B	4587
885-4068-2 MS	BES24 - 35 - 3'	Total/NA	Solid	8021B	4587
885-4068-2 MSD	BES24 - 35 - 3'	Total/NA	Solid	8021B	4587

GC Semi VOA

Prep Batch: 4590

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	SHAKE	
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	SHAKE	
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	SHAKE	
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	SHAKE	
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	SHAKE	
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	SHAKE	
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	SHAKE	
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	SHAKE	
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	SHAKE	
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	SHAKE	
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	SHAKE	
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	SHAKE	
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	SHAKE	
MB 885-4590/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4590/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 4658

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	8015D	4590
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	8015D	4590
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	8015D	4590
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	8015D	4590
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	8015D	4590
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	8015D	4590
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	8015D	4590
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	8015D	4590
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	8015D	4590
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	8015D	4590
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	8015D	4590
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	8015D	4590
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	8015D	4590
MB 885-4590/1-A	Method Blank	Total/NA	Solid	8015D	4590
LCS 885-4590/2-A	Lab Control Sample	Total/NA	Solid	8015D	4590

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

HPLC/IC

Prep Batch: 4662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	300_Prep	
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	300_Prep	
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	300_Prep	
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	300_Prep	
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	300_Prep	
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	300_Prep	
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	300_Prep	
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	300_Prep	
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	300_Prep	
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	300_Prep	
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	300_Prep	
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	300_Prep	
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	300_Prep	
MB 885-4662/2-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4662/3-A	Lab Control Sample	Total/NA	Solid	300_Prep	
MRL 885-4662/1-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 4713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4068-1	BES24 - 26 - 6.5'	Total/NA	Solid	300.0	4662
885-4068-2	BES24 - 35 - 3'	Total/NA	Solid	300.0	4662
885-4068-3	BES24 - 36 - 3'	Total/NA	Solid	300.0	4662
885-4068-4	BES24 - 37 - 3'	Total/NA	Solid	300.0	4662
885-4068-5	BES24 - 38 - 3'	Total/NA	Solid	300.0	4662
885-4068-6	BES24 - 39 - 3'	Total/NA	Solid	300.0	4662
885-4068-7	BES24 - 40 - 3'	Total/NA	Solid	300.0	4662
885-4068-8	BES24 - 64 - 2'	Total/NA	Solid	300.0	4662
885-4068-9	BES24 - 65 - 2'	Total/NA	Solid	300.0	4662
885-4068-10	BES24 - 66 - 2'	Total/NA	Solid	300.0	4662
885-4068-11	BES24 - 67 - 2'	Total/NA	Solid	300.0	4662
885-4068-12	BES24 - 68 - 2	Total/NA	Solid	300.0	4662
885-4068-13	BES24 - 69 - 2'	Total/NA	Solid	300.0	4662
MB 885-4662/2-A	Method Blank	Total/NA	Solid	300.0	4662
LCS 885-4662/3-A	Lab Control Sample	Total/NA	Solid	300.0	4662
MRL 885-4662/1-A	Lab Control Sample	Total/NA	Solid	300.0	4662

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 26 - 6.5'

Lab Sample ID: 885-4068-1
Matrix: Solid
Date Collected: 05/06/24 14:00
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 14:02
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 14:02
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 20:09
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 15:15

Client Sample ID: BES24 - 35 - 3'

Lab Sample ID: 885-4068-2
Matrix: Solid
Date Collected: 05/06/24 09:00
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 14:26
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 14:26
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 20:32
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 15:30

Client Sample ID: BES24 - 36 - 3'

Lab Sample ID: 885-4068-3
Matrix: Solid
Date Collected: 05/06/24 09:10
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 14:50
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 14:50
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 20:56
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 15:45

Client Sample ID: BES24 - 37 - 3'

Lab Sample ID: 885-4068-4
Matrix: Solid
Date Collected: 05/06/24 15:45
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 16:24

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 37 - 3'

Lab Sample ID: 885-4068-4
Matrix: Solid
Date Collected: 05/06/24 15:45
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 16:24
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 21:20
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 16:00

Client Sample ID: BES24 - 38 - 3'

Lab Sample ID: 885-4068-5
Matrix: Solid
Date Collected: 05/06/24 15:30
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 16:47
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 16:47
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 21:44
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 16:15

Client Sample ID: BES24 - 39 - 3'

Lab Sample ID: 885-4068-6
Matrix: Solid
Date Collected: 05/06/24 09:40
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 17:11
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 17:11
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 22:07
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 16:30

Client Sample ID: BES24 - 40 - 3'

Lab Sample ID: 885-4068-7
Matrix: Solid
Date Collected: 05/06/24 09:50
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 17:34
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 17:34

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 40 - 3'

Lab Sample ID: 885-4068-7
Matrix: Solid
Date Collected: 05/06/24 09:50
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 22:31
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 16:45

Client Sample ID: BES24 - 64 - 2'

Lab Sample ID: 885-4068-8
Matrix: Solid
Date Collected: 05/06/24 13:30
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 17:58
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 17:58
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 22:55
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 17:46

Client Sample ID: BES24 - 65 - 2'

Lab Sample ID: 885-4068-9
Matrix: Solid
Date Collected: 05/06/24 13:40
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 18:21
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 18:21
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 23:18
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 18:01

Client Sample ID: BES24 - 66 - 2'

Lab Sample ID: 885-4068-10
Matrix: Solid
Date Collected: 05/06/24 13:50
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 18:44
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 18:44
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/08/24 23:42

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Client Sample ID: BES24 - 66 - 2'

Lab Sample ID: 885-4068-10
Matrix: Solid
Date Collected: 05/06/24 13:50
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 18:16

Client Sample ID: BES24 - 67 - 2'

Lab Sample ID: 885-4068-11
Matrix: Solid
Date Collected: 05/06/24 14:00
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 19:31
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 19:31
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/09/24 00:29
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 18:32

Client Sample ID: BES24 - 68 - 2

Lab Sample ID: 885-4068-12
Matrix: Solid
Date Collected: 05/06/24 15:40
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 19:55
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 19:55
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/09/24 00:53
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 18:47

Client Sample ID: BES24 - 69 - 2'

Lab Sample ID: 885-4068-13
Matrix: Solid
Date Collected: 05/06/24 14:10
Date Received: 05/08/24 07:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8015D		1	4672	JP	EET ALB	05/08/24 20:18
Total/NA	Prep	5035			4587	JP	EET ALB	05/08/24 12:04
Total/NA	Analysis	8021B		1	4673	JP	EET ALB	05/08/24 20:18
Total/NA	Prep	SHAKE			4590	JU	EET ALB	05/08/24 12:16
Total/NA	Analysis	8015D		1	4658	JU	EET ALB	05/09/24 01:17
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 10:06
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 19:32

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4068-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Mack Energy (Direct Bill)

Mailing Address: on File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 Hr

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carthar

Sampler: John Rawis

On Ice: ☒ Yes ☐ No

# of Coolers: 1 4oz

Cooler Temp(Including CF): 2.4+0=2.4 (°C)

HALL ENVIRONMENTAL ANALYSIS LABOR
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 8711
Tel. 505-345-3975 Fax 505-345-4107

685-4056 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH (8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-6-24	1400	Soil	BES24-26 6.5'	4oz Jar	Ice	-1										
	0400		BES24-35 3'			-2										
	0910		BES24-36 3'			-3										
	1545		BES24-37 3'			-4										
	1530		BES24-38 3'			-5										
	0940		BES24-39 3'			-6										
	0950		BES24-40 3'			-7										
	1330		BES24-64 2'			-8										
	1340		BES24-65 2'			-9										
	1350		BES24-66 2'			-10										
	1400		BES24-67 2'			-11										
↓	1540	↓	BES24-68 2'	↓	↓	-12	↓	↓					↓			

Date	Time	Relinquished by	Received by	Via	Date	Time
					5/7/24	1000
5/7/24	1900			Courier	5/8/24	7:25

Remarks: Direct Bill to Mack Attn: Matt Buckles
cc: Sally Carthar, scarthar@vertex.ca
jrewis@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Mack Energy

Mailing Address: on File

Phone #:

email or Fax#:

QA/QC Package
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 24 hr

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally CarHar

Sampler: John Lewis

On Ice: ☑ Yes ☐ No

# of Coolers: 1 4091

Cooler Temp (including CF): 2.4-0.2=2.4 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-6-24	1410	Soil	BES24-69 2'	4oz Jar	ICE	-13	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
					5/7/24	1000
Date	Time	Relinquished by	Received by	Via	Date	Time
					5/8/24	7:25

Remarks: Direct Bill to Mack
Attn: Matt Buckles
cc: SCarHar@vertex.ca
JLewis@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-4068-1

Login Number: 4068 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Lowman, Nick

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	True	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 5/13/2024 11:58:27 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-4193-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
5/13/2024 11:58:27 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-4193-1

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Definitions/Glossary

Client: Vertex Job ID: 885-4193-1
Project/Site: Red Deer CTB

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

GC Semi VOA

Qualifier	Qualifier Description
S1-	Surrogate recovery exceeds control limits, low biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-4193-1

Job ID: 885-4193-1 Eurofins Albuquerque

Job Narrative
885-4193-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/9/2024 7:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.0°C and 1.6°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-70 2'

Date Collected: 05/07/24 09:00
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.1		mg/Kg		05/09/24 10:48	05/09/24 13:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/09/24 10:48*	*05/09/24 13:02*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 10:48	05/09/24 13:02	1
Ethylbenzene	ND		0.041		mg/Kg		05/09/24 10:48	05/09/24 13:02	1
Toluene	ND		0.041		mg/Kg		05/09/24 10:48	05/09/24 13:02	1
Xylenes, Total	ND		0.082		mg/Kg		05/09/24 10:48	05/09/24 13:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*39 - 146*	*05/09/24 10:48*	*05/09/24 13:02*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/09/24 14:09	05/09/24 18:57	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/09/24 14:09	05/09/24 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/09/24 14:09*	*05/09/24 18:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		05/09/24 16:24	05/09/24 20:48	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-71 2'

Date Collected: 05/07/24 09:10
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-2

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/09/24 10:48	05/09/24 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/09/24 10:48*	*05/09/24 13:25*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 10:48	05/09/24 13:25	1
Ethylbenzene	ND		0.039		mg/Kg		05/09/24 10:48	05/09/24 13:25	1
Toluene	ND		0.039		mg/Kg		05/09/24 10:48	05/09/24 13:25	1
Xylenes, Total	ND		0.078		mg/Kg		05/09/24 10:48	05/09/24 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/09/24 10:48*	*05/09/24 13:25*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/09/24 14:09	05/09/24 19:36	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/09/24 14:09	05/09/24 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*05/09/24 14:09*	*05/09/24 19:36*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:24	05/09/24 21:03	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-72 2'

Date Collected: 05/07/24 09:20
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-3

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/09/24 10:48	05/09/24 13:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/09/24 10:48*	*05/09/24 13:49*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/09/24 10:48	05/09/24 13:49	1
Ethylbenzene	ND		0.043		mg/Kg		05/09/24 10:48	05/09/24 13:49	1
Toluene	ND		0.043		mg/Kg		05/09/24 10:48	05/09/24 13:49	1
Xylenes, Total	ND		0.087		mg/Kg		05/09/24 10:48	05/09/24 13:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/09/24 10:48*	*05/09/24 13:49*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/09/24 14:09	05/09/24 19:49	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 14:09	05/09/24 19:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*	*05/09/24 14:09*	*05/09/24 19:49*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:24	05/09/24 21:18	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-73 2'

Date Collected: 05/07/24 09:30
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-4

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.0		mg/Kg		05/09/24 10:48	05/09/24 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/09/24 10:48*	*05/09/24 14:12*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 10:48	05/09/24 14:12	1
Ethylbenzene	ND		0.040		mg/Kg		05/09/24 10:48	05/09/24 14:12	1
Toluene	ND		0.040		mg/Kg		05/09/24 10:48	05/09/24 14:12	1
Xylenes, Total	ND		0.080		mg/Kg		05/09/24 10:48	05/09/24 14:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/09/24 10:48*	*05/09/24 14:12*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/09/24 14:09	05/09/24 20:03	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/09/24 14:09	05/09/24 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*05/09/24 14:09*	*05/09/24 20:03*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		59		mg/Kg		05/09/24 16:24	05/09/24 21:33	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-74 2'

Date Collected: 05/07/24 09:40
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-5

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.7		mg/Kg		05/09/24 10:48	05/09/24 14:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/09/24 10:48*	*05/09/24 14:36*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/09/24 10:48	05/09/24 14:36	1
Ethylbenzene	ND		0.037		mg/Kg		05/09/24 10:48	05/09/24 14:36	1
Toluene	ND		0.037		mg/Kg		05/09/24 10:48	05/09/24 14:36	1
Xylenes, Total	ND		0.073		mg/Kg		05/09/24 10:48	05/09/24 14:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/09/24 10:48*	*05/09/24 14:36*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**13**		9.4		mg/Kg		05/09/24 14:09	05/09/24 20:15	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/09/24 14:09	05/09/24 20:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*05/09/24 14:09*	*05/09/24 20:15*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**210**		60		mg/Kg		05/09/24 16:24	05/09/24 21:49	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-75 2'

Date Collected: 05/07/24 09:50
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-6

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/09/24 10:48	05/09/24 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/09/24 10:48*	*05/09/24 14:59*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/09/24 10:48	05/09/24 14:59	1
Ethylbenzene	ND		0.043		mg/Kg		05/09/24 10:48	05/09/24 14:59	1
Toluene	ND		0.043		mg/Kg		05/09/24 10:48	05/09/24 14:59	1
Xylenes, Total	ND		0.086		mg/Kg		05/09/24 10:48	05/09/24 14:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/09/24 10:48*	*05/09/24 14:59*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/09/24 14:09	05/09/24 20:28	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 14:09	05/09/24 20:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*	*05/09/24 14:09*	*05/09/24 20:28*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**200**		60		mg/Kg		05/09/24 16:24	05/09/24 22:04	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-76 2'

Date Collected: 05/07/24 10:00
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-7

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.8		mg/Kg		05/09/24 10:48	05/09/24 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/09/24 10:48*	*05/09/24 15:23*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.024		mg/Kg		05/09/24 10:48	05/09/24 15:23	1
Ethylbenzene	ND		0.048		mg/Kg		05/09/24 10:48	05/09/24 15:23	1
Toluene	ND		0.048		mg/Kg		05/09/24 10:48	05/09/24 15:23	1
Xylenes, Total	ND		0.096		mg/Kg		05/09/24 10:48	05/09/24 15:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/09/24 10:48*	*05/09/24 15:23*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.8		mg/Kg		05/09/24 14:09	05/09/24 20:42	1
Motor Oil Range Organics [C28-C40]	ND		44		mg/Kg		05/09/24 14:09	05/09/24 20:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*05/09/24 14:09*	*05/09/24 20:42*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**150**		61		mg/Kg		05/09/24 16:24	05/09/24 22:19	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-77 2'

Date Collected: 05/07/24 10:05
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-8

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.1		mg/Kg		05/09/24 10:48	05/09/24 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*15 - 244*	*05/09/24 10:48*	*05/09/24 15:46*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/09/24 10:48	05/09/24 15:46	1
Ethylbenzene	ND		0.041		mg/Kg		05/09/24 10:48	05/09/24 15:46	1
Toluene	ND		0.041		mg/Kg		05/09/24 10:48	05/09/24 15:46	1
Xylenes, Total	ND		0.083		mg/Kg		05/09/24 10:48	05/09/24 15:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/09/24 10:48*	*05/09/24 15:46*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/09/24 14:09	05/09/24 20:55	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 14:09	05/09/24 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*93*		*62 - 134*	*05/09/24 14:09*	*05/09/24 20:55*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		60		mg/Kg		05/09/24 16:29	05/09/24 23:35	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-78 2'

Date Collected: 05/07/24 10:10
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-9

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.7		mg/Kg		05/09/24 10:48	05/09/24 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*15 - 244*	*05/09/24 10:48*	*05/09/24 16:09*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.029		mg/Kg		05/09/24 10:48	05/09/24 16:09	1
Ethylbenzene	ND		0.057		mg/Kg		05/09/24 10:48	05/09/24 16:09	1
Toluene	ND		0.057		mg/Kg		05/09/24 10:48	05/09/24 16:09	1
Xylenes, Total	ND		0.11		mg/Kg		05/09/24 10:48	05/09/24 16:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*39 - 146*	*05/09/24 10:48*	*05/09/24 16:09*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/09/24 14:09	05/09/24 21:08	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/09/24 14:09	05/09/24 21:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*05/09/24 14:09*	*05/09/24 21:08*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:29	05/10/24 00:20	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-79 2'

Date Collected: 05/07/24 10:20
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-10

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/09/24 10:48	05/09/24 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/09/24 10:48*	*05/09/24 16:33*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/09/24 10:48	05/09/24 16:33	1
Ethylbenzene	ND		0.042		mg/Kg		05/09/24 10:48	05/09/24 16:33	1
Toluene	ND		0.042		mg/Kg		05/09/24 10:48	05/09/24 16:33	1
Xylenes, Total	ND		0.083		mg/Kg		05/09/24 10:48	05/09/24 16:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/09/24 10:48*	*05/09/24 16:33*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/09/24 14:09	05/09/24 21:21	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/09/24 14:09	05/09/24 21:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*	*05/09/24 14:09*	*05/09/24 21:21*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:29	05/10/24 01:06	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-80 2'

Date Collected: 05/07/24 10:30
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-11

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.6		mg/Kg		05/09/24 10:48	05/09/24 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/09/24 10:48*	*05/09/24 17:20*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		05/09/24 10:48	05/09/24 17:20	1
Ethylbenzene	ND		0.046		mg/Kg		05/09/24 10:48	05/09/24 17:20	1
Toluene	ND		0.046		mg/Kg		05/09/24 10:48	05/09/24 17:20	1
Xylenes, Total	ND		0.092		mg/Kg		05/09/24 10:48	05/09/24 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*	*05/09/24 10:48*	*05/09/24 17:20*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/09/24 14:09	05/09/24 21:34	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/09/24 14:09	05/09/24 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*90*		*62 - 134*	*05/09/24 14:09*	*05/09/24 21:34*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		05/09/24 16:29	05/10/24 01:21	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-81 2'

Date Collected: 05/07/24 10:40
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-12

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/09/24 10:48	05/09/24 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*15 - 244*	*05/09/24 10:48*	*05/09/24 17:43*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 10:48	05/09/24 17:43	1
Ethylbenzene	ND		0.039		mg/Kg		05/09/24 10:48	05/09/24 17:43	1
Toluene	ND		0.039		mg/Kg		05/09/24 10:48	05/09/24 17:43	1
Xylenes, Total	ND		0.079		mg/Kg		05/09/24 10:48	05/09/24 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*39 - 146*	*05/09/24 10:48*	*05/09/24 17:43*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		05/09/24 14:09	05/09/24 21:47	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/09/24 14:09	05/09/24 21:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*05/09/24 14:09*	*05/09/24 21:47*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:29	05/10/24 02:07	20

Client Sample Results

Client: Vertex
Job ID: 885-4193-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-82 2'
Lab Sample ID: 885-4193-13
Date Collected: 05/07/24 12:00
Matrix: Solid
Date Received: 05/09/24 07:45

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/09/24 10:48	05/09/24 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/09/24 10:48*	*05/09/24 18:07*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/09/24 10:48	05/09/24 18:07	1
Ethylbenzene	ND		0.043		mg/Kg		05/09/24 10:48	05/09/24 18:07	1
Toluene	ND		0.043		mg/Kg		05/09/24 10:48	05/09/24 18:07	1
Xylenes, Total	ND		0.086		mg/Kg		05/09/24 10:48	05/09/24 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*39 - 146*	*05/09/24 10:48*	*05/09/24 18:07*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/09/24 14:09	05/09/24 22:00	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/09/24 14:09	05/09/24 22:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*79*		*62 - 134*	*05/09/24 14:09*	*05/09/24 22:00*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**62**		60		mg/Kg		05/09/24 16:29	05/10/24 02:21	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-83 2'

Date Collected: 05/07/24 12:10
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-14

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.5		mg/Kg		05/09/24 11:37	05/09/24 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*35 - 166*	*05/09/24 11:37*	*05/09/24 13:24*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/09/24 11:37	05/09/24 13:24	1
Ethylbenzene	ND		0.045		mg/Kg		05/09/24 11:37	05/09/24 13:24	1
Toluene	ND		0.045		mg/Kg		05/09/24 11:37	05/09/24 13:24	1
Xylenes, Total	ND		0.089		mg/Kg		05/09/24 11:37	05/09/24 13:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/09/24 11:37*	*05/09/24 13:24*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/09/24 14:09	05/09/24 22:13	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/09/24 14:09	05/09/24 22:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*	*05/09/24 14:09*	*05/09/24 22:13*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**170**		60		mg/Kg		05/09/24 16:29	05/10/24 02:37	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-84 2'

Date Collected: 05/07/24 12:20
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-15

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/09/24 11:37	05/09/24 13:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*05/09/24 11:37*	*05/09/24 13:46*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/09/24 11:37	05/09/24 13:46	1
Ethylbenzene	ND		0.042		mg/Kg		05/09/24 11:37	05/09/24 13:46	1
Toluene	ND		0.042		mg/Kg		05/09/24 11:37	05/09/24 13:46	1
Xylenes, Total	ND		0.084		mg/Kg		05/09/24 11:37	05/09/24 13:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/09/24 11:37*	*05/09/24 13:46*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/09/24 14:09	05/09/24 22:26	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 14:09	05/09/24 22:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*05/09/24 14:09*	*05/09/24 22:26*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:29	05/10/24 02:52	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-85 2'

Date Collected: 05/07/24 12:30
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-16

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.4		mg/Kg		05/09/24 11:37	05/09/24 14:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*35 - 166*	*05/09/24 11:37*	*05/09/24 14:08*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/09/24 11:37	05/09/24 14:08	1
Ethylbenzene	ND		0.044		mg/Kg		05/09/24 11:37	05/09/24 14:08	1
Toluene	ND		0.044		mg/Kg		05/09/24 11:37	05/09/24 14:08	1
Xylenes, Total	ND		0.088		mg/Kg		05/09/24 11:37	05/09/24 14:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*05/09/24 11:37*	*05/09/24 14:08*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/09/24 14:09	05/09/24 22:39	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/09/24 14:09	05/09/24 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*88*		*62 - 134*	*05/09/24 14:09*	*05/09/24 22:39*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:29	05/10/24 03:07	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-86 2'

Date Collected: 05/07/24 12:40
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-17

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/09/24 11:37	05/09/24 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*35 - 166*	*05/09/24 11:37*	*05/09/24 14:30*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/09/24 11:37	05/09/24 14:30	1
Ethylbenzene	ND		0.039		mg/Kg		05/09/24 11:37	05/09/24 14:30	1
Toluene	ND		0.039		mg/Kg		05/09/24 11:37	05/09/24 14:30	1
Xylenes, Total	ND		0.077		mg/Kg		05/09/24 11:37	05/09/24 14:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*39 - 146*	*05/09/24 11:37*	*05/09/24 14:30*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/09/24 14:09	05/09/24 22:52	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/09/24 14:09	05/09/24 22:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*72*		*62 - 134*	*05/09/24 14:09*	*05/09/24 22:52*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:29	05/10/24 03:23	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: WES24-20 6.5'

Date Collected: 05/07/24 14:00
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-18

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.8		mg/Kg		05/09/24 11:37	05/09/24 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*05/09/24 11:37*	*05/09/24 14:51*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/09/24 11:37	05/09/24 14:51	1
Ethylbenzene	ND		0.038		mg/Kg		05/09/24 11:37	05/09/24 14:51	1
Toluene	ND		0.038		mg/Kg		05/09/24 11:37	05/09/24 14:51	1
Xylenes, Total	ND		0.077		mg/Kg		05/09/24 11:37	05/09/24 14:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*05/09/24 11:37*	*05/09/24 14:51*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.4		mg/Kg		05/09/24 14:09	05/09/24 23:04	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		05/09/24 14:09	05/09/24 23:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*81*		*62 - 134*	*05/09/24 14:09*	*05/09/24 23:04*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**320**		60		mg/Kg		05/09/24 16:29	05/10/24 03:37	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: WES24-21 6.5'

Date Collected: 05/07/24 14:30
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-19

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.1		mg/Kg		05/09/24 11:37	05/09/24 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*35 - 166*	*05/09/24 11:37*	*05/09/24 15:13*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 11:37	05/09/24 15:13	1
Ethylbenzene	ND		0.041		mg/Kg		05/09/24 11:37	05/09/24 15:13	1
Toluene	ND		0.041		mg/Kg		05/09/24 11:37	05/09/24 15:13	1
Xylenes, Total	ND		0.082		mg/Kg		05/09/24 11:37	05/09/24 15:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/09/24 11:37*	*05/09/24 15:13*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.5		mg/Kg		05/09/24 14:09	05/09/24 23:17	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/09/24 14:09	05/09/24 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*	*05/09/24 14:09*	*05/09/24 23:17*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**270**		60		mg/Kg		05/09/24 16:31	05/10/24 03:53	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-11 0'

Date Collected: 05/07/24 15:00
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-20

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.3		mg/Kg		05/09/24 11:37	05/09/24 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*35 - 166*	*05/09/24 11:37*	*05/09/24 15:35*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.022		mg/Kg		05/09/24 11:37	05/09/24 15:35	1
Ethylbenzene	ND		0.043		mg/Kg		05/09/24 11:37	05/09/24 15:35	1
Toluene	ND		0.043		mg/Kg		05/09/24 11:37	05/09/24 15:35	1
Xylenes, Total	ND		0.086		mg/Kg		05/09/24 11:37	05/09/24 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*05/09/24 11:37*	*05/09/24 15:35*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/09/24 14:09	05/09/24 23:30	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/09/24 14:09	05/09/24 23:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*66*		*62 - 134*	*05/09/24 14:09*	*05/09/24 23:30*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**140**		60		mg/Kg		05/09/24 16:31	05/10/24 04:08	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-11 2'

Date Collected: 05/07/24 15:05
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-21

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/09/24 11:37	05/09/24 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*35 - 166*	*05/09/24 11:37*	*05/09/24 15:56*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 11:37	05/09/24 15:56	1
Ethylbenzene	ND		0.039		mg/Kg		05/09/24 11:37	05/09/24 15:56	1
Toluene	ND		0.039		mg/Kg		05/09/24 11:37	05/09/24 15:56	1
Xylenes, Total	ND		0.079		mg/Kg		05/09/24 11:37	05/09/24 15:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*85*		*39 - 146*	*05/09/24 11:37*	*05/09/24 15:56*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		05/09/24 13:49	05/10/24 00:21	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		05/09/24 13:49	05/10/24 00:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*79*		*62 - 134*	*05/09/24 13:49*	*05/10/24 00:21*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:59	05/10/24 04:23	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-11 4'

Date Collected: 05/07/24 15:10
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-22

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.9		mg/Kg		05/09/24 11:37	05/09/24 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*35 - 166*	*05/09/24 11:37*	*05/09/24 16:18*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.020		mg/Kg		05/09/24 11:37	05/09/24 16:18	1
Ethylbenzene	ND		0.039		mg/Kg		05/09/24 11:37	05/09/24 16:18	1
Toluene	ND		0.039		mg/Kg		05/09/24 11:37	05/09/24 16:18	1
Xylenes, Total	ND		0.079		mg/Kg		05/09/24 11:37	05/09/24 16:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*39 - 146*	*05/09/24 11:37*	*05/09/24 16:18*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/09/24 13:49	05/10/24 00:34	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 13:49	05/10/24 00:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*05/09/24 13:49*	*05/10/24 00:34*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:59	05/10/24 09:01	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-12 0'

Date Collected: 05/07/24 15:15
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-23

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.7		mg/Kg		05/09/24 11:37	05/09/24 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*35 - 166*	*05/09/24 11:37*	*05/09/24 16:40*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/09/24 11:37	05/09/24 16:40	1
Ethylbenzene	ND		0.037		mg/Kg		05/09/24 11:37	05/09/24 16:40	1
Toluene	ND		0.037		mg/Kg		05/09/24 11:37	05/09/24 16:40	1
Xylenes, Total	ND		0.073		mg/Kg		05/09/24 11:37	05/09/24 16:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*39 - 146*	*05/09/24 11:37*	*05/09/24 16:40*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/09/24 13:49	05/10/24 00:46	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 13:49	05/10/24 00:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*83*		*62 - 134*	*05/09/24 13:49*	*05/10/24 00:46*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:59	05/10/24 09:16	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-12 2'

Date Collected: 05/07/24 15:20
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-24

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.6		mg/Kg		05/09/24 11:37	05/09/24 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*35 - 166*	*05/09/24 11:37*	*05/09/24 18:50*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.018		mg/Kg		05/09/24 11:37	05/09/24 18:50	1
Ethylbenzene	ND		0.036		mg/Kg		05/09/24 11:37	05/09/24 18:50	1
Toluene	ND		0.036		mg/Kg		05/09/24 11:37	05/09/24 18:50	1
Xylenes, Total	ND		0.072		mg/Kg		05/09/24 11:37	05/09/24 18:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*90*		*39 - 146*	*05/09/24 11:37*	*05/09/24 18:50*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.7		mg/Kg		05/09/24 13:49	05/10/24 00:59	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		05/09/24 13:49	05/10/24 00:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*82*		*62 - 134*	*05/09/24 13:49*	*05/10/24 00:59*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:59	05/10/24 09:31	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-12 4'

Date Collected: 05/07/24 15:25
Date Received: 05/09/24 07:45

Lab Sample ID: 885-4193-25

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.2		mg/Kg		05/09/24 11:37	05/09/24 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*05/09/24 11:37*	*05/09/24 19:11*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.021		mg/Kg		05/09/24 11:37	05/09/24 19:11	1
Ethylbenzene	ND		0.042		mg/Kg		05/09/24 11:37	05/09/24 19:11	1
Toluene	ND		0.042		mg/Kg		05/09/24 11:37	05/09/24 19:11	1
Xylenes, Total	ND		0.084		mg/Kg		05/09/24 11:37	05/09/24 19:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*39 - 146*	*05/09/24 11:37*	*05/09/24 19:11*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		05/09/24 13:49	05/10/24 01:12	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		05/09/24 13:49	05/10/24 01:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*05/09/24 13:49*	*05/10/24 01:12*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		05/09/24 16:59	05/10/24 09:46	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-4666/1-A
Matrix: Solid
Analysis Batch: 4743

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4666

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/09/24 10:48	05/09/24 12:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*15 - 244*	*05/09/24 10:48*	*05/09/24 12:38*	*1*

Lab Sample ID: LCS 885-4666/2-A
Matrix: Solid
Analysis Batch: 4743

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4666

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	25.3		mg/Kg		101	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*209*		*15 - 244*

Lab Sample ID: 885-4193-1 MS
Matrix: Solid
Analysis Batch: 4743

Client Sample ID: BES24-70 2'
Prep Type: Total/NA
Prep Batch: 4666

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		20.4	20.4		mg/Kg		100	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*211*		*15 - 244*

Lab Sample ID: 885-4193-1 MSD
Matrix: Solid
Analysis Batch: 4743

Client Sample ID: BES24-70 2'
Prep Type: Total/NA
Prep Batch: 4666

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		20.4	20.3		mg/Kg		99	70 - 130	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*211*		*15 - 244*

Lab Sample ID: MB 885-4669/1-A
Matrix: Solid
Analysis Batch: 4736

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4669

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/09/24 11:37	05/09/24 13:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*35 - 166*	*05/09/24 11:37*	*05/09/24 13:02*	*1*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 8015D - Gasoline Range Organics (GRO) (GC) (Continued)

Lab Sample ID: LCS 885-4669/2-A
Matrix: Solid
Analysis Batch: 4736

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4669

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	24.2		mg/Kg		97	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*229*	*S1+*	*35 - 166*

Lab Sample ID: 885-4193-14 MS
Matrix: Solid
Analysis Batch: 4736

Client Sample ID: BES24-83 2'
Prep Type: Total/NA
Prep Batch: 4669

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		22.3	19.6		mg/Kg		88	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*201*	*S1+*	*35 - 166*

Lab Sample ID: 885-4193-14 MSD
Matrix: Solid
Analysis Batch: 4736

Client Sample ID: BES24-83 2'
Prep Type: Total/NA
Prep Batch: 4669

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		22.3	19.9		mg/Kg		89	70 - 130	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*211*	*S1+*	*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-4666/1-A
Matrix: Solid
Analysis Batch: 4744

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4666

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/09/24 10:48	05/09/24 12:38	1
Ethylbenzene	ND		0.050		mg/Kg		05/09/24 10:48	05/09/24 12:38	1
Toluene	ND		0.050		mg/Kg		05/09/24 10:48	05/09/24 12:38	1
Xylenes, Total	ND		0.10		mg/Kg		05/09/24 10:48	05/09/24 12:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*39 - 146*	*05/09/24 10:48*	*05/09/24 12:38*	*1*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: LCS 885-4666/3-A
Matrix: Solid
Analysis Batch: 4744

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4666

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.939		mg/Kg		94	70 - 130		
Ethylbenzene			1.00	0.901		mg/Kg		90	70 - 130		
m,p-Xylene			2.00	1.82		mg/Kg		91	70 - 130		
o-Xylene			1.00	0.897		mg/Kg		90	70 - 130		
Toluene			1.00	0.889		mg/Kg		89	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*39 - 146*

Lab Sample ID: 885-4193-2 MS
Matrix: Solid
Analysis Batch: 4744

Client Sample ID: BES24-71 2'
Prep Type: Total/NA
Prep Batch: 4666

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.783	0.733		mg/Kg		94	70 - 130		
Ethylbenzene	ND		0.783	0.709		mg/Kg		91	70 - 130		
m,p-Xylene	ND		1.57	1.44		mg/Kg		92	70 - 130		
o-Xylene	ND		0.783	0.694		mg/Kg		89	70 - 130		
Toluene	ND		0.783	0.705		mg/Kg		90	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*39 - 146*

Lab Sample ID: 885-4193-2 MSD
Matrix: Solid
Analysis Batch: 4744

Client Sample ID: BES24-71 2'
Prep Type: Total/NA
Prep Batch: 4666

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.783	0.736		mg/Kg		94	70 - 130	0	20
Ethylbenzene	ND		0.783	0.713		mg/Kg		91	70 - 130	1	20
m,p-Xylene	ND		1.57	1.46		mg/Kg		93	70 - 130	1	20
o-Xylene	ND		0.783	0.708		mg/Kg		90	70 - 130	2	20
Toluene	ND		0.783	0.698		mg/Kg		89	70 - 130	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*39 - 146*

Lab Sample ID: MB 885-4669/1-A
Matrix: Solid
Analysis Batch: 4737

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4669

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/09/24 11:37	05/09/24 13:02	1
Ethylbenzene	ND		0.050		mg/Kg		05/09/24 11:37	05/09/24 13:02	1
Toluene	ND		0.050		mg/Kg		05/09/24 11:37	05/09/24 13:02	1
Xylenes, Total	ND		0.10		mg/Kg		05/09/24 11:37	05/09/24 13:02	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-4669/1-A
Matrix: Solid
Analysis Batch: 4737

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4669

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		39 - 146	05/09/24 11:37	05/09/24 13:02	1

Lab Sample ID: LCS 885-4669/3-A
Matrix: Solid
Analysis Batch: 4737

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4669

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	1.00	0.889		mg/Kg		89	70 - 130
Ethylbenzene	1.00	0.924		mg/Kg		92	70 - 130
m,p-Xylene	2.00	1.85		mg/Kg		93	70 - 130
o-Xylene	1.00	0.931		mg/Kg		93	70 - 130
Toluene	1.00	0.904		mg/Kg		90	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	95		39 - 146

Lab Sample ID: 885-4193-15 MS
Matrix: Solid
Analysis Batch: 4737

Client Sample ID: BES24-84 2'
Prep Type: Total/NA
Prep Batch: 4669

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Benzene	ND		0.840	0.723		mg/Kg		86	70 - 130
Ethylbenzene	ND		0.840	0.738		mg/Kg		88	70 - 130
m,p-Xylene	ND		1.68	1.46		mg/Kg		87	70 - 130
o-Xylene	ND		0.840	0.730		mg/Kg		87	70 - 130
Toluene	ND		0.840	0.735		mg/Kg		88	70 - 130

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	85		39 - 146

Lab Sample ID: 885-4193-15 MSD
Matrix: Solid
Analysis Batch: 4737

Client Sample ID: BES24-84 2'
Prep Type: Total/NA
Prep Batch: 4669

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.840	0.722		mg/Kg		86	70 - 130	0	20
Ethylbenzene	ND		0.840	0.735		mg/Kg		88	70 - 130	0	20
m,p-Xylene	ND		1.68	1.47		mg/Kg		87	70 - 130	0	20
o-Xylene	ND		0.840	0.731		mg/Kg		87	70 - 130	0	20
Toluene	ND		0.840	0.730		mg/Kg		87	70 - 130	1	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		39 - 146

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-4680/1-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4680

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/09/24 13:49	05/09/24 23:56	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 13:49	05/09/24 23:56	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*80*		*62 - 134*	*05/09/24 13:49*	*05/09/24 23:56*	*1*

Lab Sample ID: LCS 885-4680/2-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4680

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	44.3		mg/Kg		89	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*

Lab Sample ID: 885-4193-25 MS
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: TP24-12 4'
Prep Type: Total/NA
Prep Batch: 4680

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		48.8	45.3		mg/Kg		93	44 - 136		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*33*	*S1-*	*62 - 134*

Lab Sample ID: 885-4193-25 MSD
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: TP24-12 4'
Prep Type: Total/NA
Prep Batch: 4680

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		49.7	43.5		mg/Kg		88	44 - 136	4	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*96*		*62 - 134*

Lab Sample ID: MB 885-4682/1-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4682

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/09/24 14:09	05/09/24 18:31	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/09/24 14:09	05/09/24 18:31	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: MB 885-4682/1-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4682

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	96		62 - 134	05/09/24 14:09	05/09/24 18:31	1

Lab Sample ID: LCS 885-4682/2-A
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4682

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	46.0		mg/Kg		92	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	120		62 - 134

Lab Sample ID: 885-4193-1 MS
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: BES24-70 2'
Prep Type: Total/NA
Prep Batch: 4682

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]	ND		46.8	45.0		mg/Kg		96	44 - 136		

Surrogate	MS %Recovery	MS Qualifier	Limits
Di-n-octyl phthalate (Surr)	117		62 - 134

Lab Sample ID: 885-4193-1 MSD
Matrix: Solid
Analysis Batch: 4691

Client Sample ID: BES24-70 2'
Prep Type: Total/NA
Prep Batch: 4682

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		49.6	47.7		mg/Kg		96	44 - 136	6	32

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Di-n-octyl phthalate (Surr)	119		62 - 134

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-4662/2-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4662

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		05/09/24 10:06	05/09/24 14:00	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-4662/3-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4662

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	30.0	28.1		mg/Kg		94	90 - 110

Lab Sample ID: MRL 885-4662/1-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4662

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	0.500	0.527		mg/L		105	50 - 150

Lab Sample ID: MB 885-4704/1-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 4704

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		05/09/24 16:29	05/09/24 23:19	1

Lab Sample ID: LCS 885-4704/2-A
Matrix: Solid
Analysis Batch: 4713

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 4704

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	30.0	27.7		mg/Kg		92	90 - 110

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

GC VOA

Prep Batch: 4666

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	5035	
885-4193-2	BES24-71 2'	Total/NA	Solid	5035	
885-4193-3	BES24-72 2'	Total/NA	Solid	5035	
885-4193-4	BES24-73 2'	Total/NA	Solid	5035	
885-4193-5	BES24-74 2'	Total/NA	Solid	5035	
885-4193-6	BES24-75 2'	Total/NA	Solid	5035	
885-4193-7	BES24-76 2'	Total/NA	Solid	5035	
885-4193-8	BES24-77 2'	Total/NA	Solid	5035	
885-4193-9	BES24-78 2'	Total/NA	Solid	5035	
885-4193-10	BES24-79 2'	Total/NA	Solid	5035	
885-4193-11	BES24-80 2'	Total/NA	Solid	5035	
885-4193-12	BES24-81 2'	Total/NA	Solid	5035	
885-4193-13	BES24-82 2'	Total/NA	Solid	5035	
MB 885-4666/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4666/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4666/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-4193-1 MS	BES24-70 2'	Total/NA	Solid	5035	
885-4193-1 MSD	BES24-70 2'	Total/NA	Solid	5035	
885-4193-2 MS	BES24-71 2'	Total/NA	Solid	5035	
885-4193-2 MSD	BES24-71 2'	Total/NA	Solid	5035	

Prep Batch: 4669

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-14	BES24-83 2'	Total/NA	Solid	5035	
885-4193-15	BES24-84 2'	Total/NA	Solid	5035	
885-4193-16	BES24-85 2'	Total/NA	Solid	5035	
885-4193-17	BES24-86 2'	Total/NA	Solid	5035	
885-4193-18	WES24-20 6.5'	Total/NA	Solid	5035	
885-4193-19	WES24-21 6.5'	Total/NA	Solid	5035	
885-4193-20	TP24-11 0'	Total/NA	Solid	5035	
885-4193-21	TP24-11 2'	Total/NA	Solid	5035	
885-4193-22	TP24-11 4'	Total/NA	Solid	5035	
885-4193-23	TP24-12 0'	Total/NA	Solid	5035	
885-4193-24	TP24-12 2'	Total/NA	Solid	5035	
885-4193-25	TP24-12 4'	Total/NA	Solid	5035	
MB 885-4669/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-4669/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-4669/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-4193-14 MS	BES24-83 2'	Total/NA	Solid	5035	
885-4193-14 MSD	BES24-83 2'	Total/NA	Solid	5035	
885-4193-15 MS	BES24-84 2'	Total/NA	Solid	5035	
885-4193-15 MSD	BES24-84 2'	Total/NA	Solid	5035	

Analysis Batch: 4736

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-14	BES24-83 2'	Total/NA	Solid	8015D	4669
885-4193-15	BES24-84 2'	Total/NA	Solid	8015D	4669
885-4193-16	BES24-85 2'	Total/NA	Solid	8015D	4669
885-4193-17	BES24-86 2'	Total/NA	Solid	8015D	4669
885-4193-18	WES24-20 6.5'	Total/NA	Solid	8015D	4669
885-4193-19	WES24-21 6.5'	Total/NA	Solid	8015D	4669

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

GC VOA (Continued)

Analysis Batch: 4736 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-20	TP24-11 0'	Total/NA	Solid	8015D	4669
885-4193-21	TP24-11 2'	Total/NA	Solid	8015D	4669
885-4193-22	TP24-11 4'	Total/NA	Solid	8015D	4669
885-4193-23	TP24-12 0'	Total/NA	Solid	8015D	4669
885-4193-24	TP24-12 2'	Total/NA	Solid	8015D	4669
885-4193-25	TP24-12 4'	Total/NA	Solid	8015D	4669
MB 885-4669/1-A	Method Blank	Total/NA	Solid	8015D	4669
LCS 885-4669/2-A	Lab Control Sample	Total/NA	Solid	8015D	4669
885-4193-14 MS	BES24-83 2'	Total/NA	Solid	8015D	4669
885-4193-14 MSD	BES24-83 2'	Total/NA	Solid	8015D	4669

Analysis Batch: 4737

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-14	BES24-83 2'	Total/NA	Solid	8021B	4669
885-4193-15	BES24-84 2'	Total/NA	Solid	8021B	4669
885-4193-16	BES24-85 2'	Total/NA	Solid	8021B	4669
885-4193-17	BES24-86 2'	Total/NA	Solid	8021B	4669
885-4193-18	WES24-20 6.5'	Total/NA	Solid	8021B	4669
885-4193-19	WES24-21 6.5'	Total/NA	Solid	8021B	4669
885-4193-20	TP24-11 0'	Total/NA	Solid	8021B	4669
885-4193-21	TP24-11 2'	Total/NA	Solid	8021B	4669
885-4193-22	TP24-11 4'	Total/NA	Solid	8021B	4669
885-4193-23	TP24-12 0'	Total/NA	Solid	8021B	4669
885-4193-24	TP24-12 2'	Total/NA	Solid	8021B	4669
885-4193-25	TP24-12 4'	Total/NA	Solid	8021B	4669
MB 885-4669/1-A	Method Blank	Total/NA	Solid	8021B	4669
LCS 885-4669/3-A	Lab Control Sample	Total/NA	Solid	8021B	4669
885-4193-15 MS	BES24-84 2'	Total/NA	Solid	8021B	4669
885-4193-15 MSD	BES24-84 2'	Total/NA	Solid	8021B	4669

Analysis Batch: 4743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	8015D	4666
885-4193-2	BES24-71 2'	Total/NA	Solid	8015D	4666
885-4193-3	BES24-72 2'	Total/NA	Solid	8015D	4666
885-4193-4	BES24-73 2'	Total/NA	Solid	8015D	4666
885-4193-5	BES24-74 2'	Total/NA	Solid	8015D	4666
885-4193-6	BES24-75 2'	Total/NA	Solid	8015D	4666
885-4193-7	BES24-76 2'	Total/NA	Solid	8015D	4666
885-4193-8	BES24-77 2'	Total/NA	Solid	8015D	4666
885-4193-9	BES24-78 2'	Total/NA	Solid	8015D	4666
885-4193-10	BES24-79 2'	Total/NA	Solid	8015D	4666
885-4193-11	BES24-80 2'	Total/NA	Solid	8015D	4666
885-4193-12	BES24-81 2'	Total/NA	Solid	8015D	4666
885-4193-13	BES24-82 2'	Total/NA	Solid	8015D	4666
MB 885-4666/1-A	Method Blank	Total/NA	Solid	8015D	4666
LCS 885-4666/2-A	Lab Control Sample	Total/NA	Solid	8015D	4666
885-4193-1 MS	BES24-70 2'	Total/NA	Solid	8015D	4666
885-4193-1 MSD	BES24-70 2'	Total/NA	Solid	8015D	4666

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

GC VOA

Analysis Batch: 4744

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	8021B	4666
885-4193-2	BES24-71 2'	Total/NA	Solid	8021B	4666
885-4193-3	BES24-72 2'	Total/NA	Solid	8021B	4666
885-4193-4	BES24-73 2'	Total/NA	Solid	8021B	4666
885-4193-5	BES24-74 2'	Total/NA	Solid	8021B	4666
885-4193-6	BES24-75 2'	Total/NA	Solid	8021B	4666
885-4193-7	BES24-76 2'	Total/NA	Solid	8021B	4666
885-4193-8	BES24-77 2'	Total/NA	Solid	8021B	4666
885-4193-9	BES24-78 2'	Total/NA	Solid	8021B	4666
885-4193-10	BES24-79 2'	Total/NA	Solid	8021B	4666
885-4193-11	BES24-80 2'	Total/NA	Solid	8021B	4666
885-4193-12	BES24-81 2'	Total/NA	Solid	8021B	4666
885-4193-13	BES24-82 2'	Total/NA	Solid	8021B	4666
MB 885-4666/1-A	Method Blank	Total/NA	Solid	8021B	4666
LCS 885-4666/3-A	Lab Control Sample	Total/NA	Solid	8021B	4666
885-4193-2 MS	BES24-71 2'	Total/NA	Solid	8021B	4666
885-4193-2 MSD	BES24-71 2'	Total/NA	Solid	8021B	4666

GC Semi VOA

Prep Batch: 4680

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-21	TP24-11 2'	Total/NA	Solid	SHAKE	
885-4193-22	TP24-11 4'	Total/NA	Solid	SHAKE	
885-4193-23	TP24-12 0'	Total/NA	Solid	SHAKE	
885-4193-24	TP24-12 2'	Total/NA	Solid	SHAKE	
885-4193-25	TP24-12 4'	Total/NA	Solid	SHAKE	
MB 885-4680/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4680/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-4193-25 MS	TP24-12 4'	Total/NA	Solid	SHAKE	
885-4193-25 MSD	TP24-12 4'	Total/NA	Solid	SHAKE	

Prep Batch: 4682

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	SHAKE	
885-4193-2	BES24-71 2'	Total/NA	Solid	SHAKE	
885-4193-3	BES24-72 2'	Total/NA	Solid	SHAKE	
885-4193-4	BES24-73 2'	Total/NA	Solid	SHAKE	
885-4193-5	BES24-74 2'	Total/NA	Solid	SHAKE	
885-4193-6	BES24-75 2'	Total/NA	Solid	SHAKE	
885-4193-7	BES24-76 2'	Total/NA	Solid	SHAKE	
885-4193-8	BES24-77 2'	Total/NA	Solid	SHAKE	
885-4193-9	BES24-78 2'	Total/NA	Solid	SHAKE	
885-4193-10	BES24-79 2'	Total/NA	Solid	SHAKE	
885-4193-11	BES24-80 2'	Total/NA	Solid	SHAKE	
885-4193-12	BES24-81 2'	Total/NA	Solid	SHAKE	
885-4193-13	BES24-82 2'	Total/NA	Solid	SHAKE	
885-4193-14	BES24-83 2'	Total/NA	Solid	SHAKE	
885-4193-15	BES24-84 2'	Total/NA	Solid	SHAKE	
885-4193-16	BES24-85 2'	Total/NA	Solid	SHAKE	
885-4193-17	BES24-86 2'	Total/NA	Solid	SHAKE	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

GC Semi VOA (Continued)

Prep Batch: 4682 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-18	WES24-20 6.5'	Total/NA	Solid	SHAKE	
885-4193-19	WES24-21 6.5'	Total/NA	Solid	SHAKE	
885-4193-20	TP24-11 0'	Total/NA	Solid	SHAKE	
MB 885-4682/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-4682/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-4193-1 MS	BES24-70 2'	Total/NA	Solid	SHAKE	
885-4193-1 MSD	BES24-70 2'	Total/NA	Solid	SHAKE	

Analysis Batch: 4691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	8015D	4682
885-4193-2	BES24-71 2'	Total/NA	Solid	8015D	4682
885-4193-3	BES24-72 2'	Total/NA	Solid	8015D	4682
885-4193-4	BES24-73 2'	Total/NA	Solid	8015D	4682
885-4193-5	BES24-74 2'	Total/NA	Solid	8015D	4682
885-4193-6	BES24-75 2'	Total/NA	Solid	8015D	4682
885-4193-7	BES24-76 2'	Total/NA	Solid	8015D	4682
885-4193-8	BES24-77 2'	Total/NA	Solid	8015D	4682
885-4193-9	BES24-78 2'	Total/NA	Solid	8015D	4682
885-4193-10	BES24-79 2'	Total/NA	Solid	8015D	4682
885-4193-11	BES24-80 2'	Total/NA	Solid	8015D	4682
885-4193-12	BES24-81 2'	Total/NA	Solid	8015D	4682
885-4193-13	BES24-82 2'	Total/NA	Solid	8015D	4682
885-4193-14	BES24-83 2'	Total/NA	Solid	8015D	4682
885-4193-15	BES24-84 2'	Total/NA	Solid	8015D	4682
885-4193-16	BES24-85 2'	Total/NA	Solid	8015D	4682
885-4193-17	BES24-86 2'	Total/NA	Solid	8015D	4682
885-4193-18	WES24-20 6.5'	Total/NA	Solid	8015D	4682
885-4193-19	WES24-21 6.5'	Total/NA	Solid	8015D	4682
885-4193-20	TP24-11 0'	Total/NA	Solid	8015D	4682
885-4193-21	TP24-11 2'	Total/NA	Solid	8015D	4680
885-4193-22	TP24-11 4'	Total/NA	Solid	8015D	4680
885-4193-23	TP24-12 0'	Total/NA	Solid	8015D	4680
885-4193-24	TP24-12 2'	Total/NA	Solid	8015D	4680
885-4193-25	TP24-12 4'	Total/NA	Solid	8015D	4680
MB 885-4680/1-A	Method Blank	Total/NA	Solid	8015D	4680
MB 885-4682/1-A	Method Blank	Total/NA	Solid	8015D	4682
LCS 885-4680/2-A	Lab Control Sample	Total/NA	Solid	8015D	4680
LCS 885-4682/2-A	Lab Control Sample	Total/NA	Solid	8015D	4682
885-4193-1 MS	BES24-70 2'	Total/NA	Solid	8015D	4682
885-4193-1 MSD	BES24-70 2'	Total/NA	Solid	8015D	4682
885-4193-25 MS	TP24-12 4'	Total/NA	Solid	8015D	4680
885-4193-25 MSD	TP24-12 4'	Total/NA	Solid	8015D	4680

HPLC/IC

Prep Batch: 4662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	300_Prep	
885-4193-2	BES24-71 2'	Total/NA	Solid	300_Prep	
885-4193-3	BES24-72 2'	Total/NA	Solid	300_Prep	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

HPLC/IC (Continued)

Prep Batch: 4662 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-4	BES24-73 2'	Total/NA	Solid	300_Prep	
885-4193-5	BES24-74 2'	Total/NA	Solid	300_Prep	
885-4193-6	BES24-75 2'	Total/NA	Solid	300_Prep	
885-4193-7	BES24-76 2'	Total/NA	Solid	300_Prep	
MB 885-4662/2-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4662/3-A	Lab Control Sample	Total/NA	Solid	300_Prep	
MRL 885-4662/1-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 4704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-8	BES24-77 2'	Total/NA	Solid	300_Prep	
885-4193-9	BES24-78 2'	Total/NA	Solid	300_Prep	
885-4193-10	BES24-79 2'	Total/NA	Solid	300_Prep	
885-4193-11	BES24-80 2'	Total/NA	Solid	300_Prep	
885-4193-12	BES24-81 2'	Total/NA	Solid	300_Prep	
885-4193-13	BES24-82 2'	Total/NA	Solid	300_Prep	
885-4193-14	BES24-83 2'	Total/NA	Solid	300_Prep	
885-4193-15	BES24-84 2'	Total/NA	Solid	300_Prep	
885-4193-16	BES24-85 2'	Total/NA	Solid	300_Prep	
885-4193-17	BES24-86 2'	Total/NA	Solid	300_Prep	
885-4193-18	WES24-20 6.5'	Total/NA	Solid	300_Prep	
885-4193-19	WES24-21 6.5'	Total/NA	Solid	300_Prep	
885-4193-20	TP24-11 0'	Total/NA	Solid	300_Prep	
885-4193-21	TP24-11 2'	Total/NA	Solid	300_Prep	
885-4193-22	TP24-11 4'	Total/NA	Solid	300_Prep	
885-4193-23	TP24-12 0'	Total/NA	Solid	300_Prep	
885-4193-24	TP24-12 2'	Total/NA	Solid	300_Prep	
885-4193-25	TP24-12 4'	Total/NA	Solid	300_Prep	
MB 885-4704/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-4704/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 4713

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-1	BES24-70 2'	Total/NA	Solid	300.0	4662
885-4193-2	BES24-71 2'	Total/NA	Solid	300.0	4662
885-4193-3	BES24-72 2'	Total/NA	Solid	300.0	4662
885-4193-4	BES24-73 2'	Total/NA	Solid	300.0	4662
885-4193-5	BES24-74 2'	Total/NA	Solid	300.0	4662
885-4193-6	BES24-75 2'	Total/NA	Solid	300.0	4662
885-4193-7	BES24-76 2'	Total/NA	Solid	300.0	4662
885-4193-8	BES24-77 2'	Total/NA	Solid	300.0	4704
885-4193-9	BES24-78 2'	Total/NA	Solid	300.0	4704
885-4193-10	BES24-79 2'	Total/NA	Solid	300.0	4704
885-4193-11	BES24-80 2'	Total/NA	Solid	300.0	4704
885-4193-12	BES24-81 2'	Total/NA	Solid	300.0	4704
885-4193-13	BES24-82 2'	Total/NA	Solid	300.0	4704
885-4193-14	BES24-83 2'	Total/NA	Solid	300.0	4704
885-4193-15	BES24-84 2'	Total/NA	Solid	300.0	4704
885-4193-16	BES24-85 2'	Total/NA	Solid	300.0	4704
885-4193-17	BES24-86 2'	Total/NA	Solid	300.0	4704
885-4193-18	WES24-20 6.5'	Total/NA	Solid	300.0	4704

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

HPLC/IC (Continued)

Analysis Batch: 4713 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-19	WES24-21 6.5'	Total/NA	Solid	300.0	4704
885-4193-20	TP24-11 0'	Total/NA	Solid	300.0	4704
885-4193-21	TP24-11 2'	Total/NA	Solid	300.0	4704
MB 885-4662/2-A	Method Blank	Total/NA	Solid	300.0	4662
MB 885-4704/1-A	Method Blank	Total/NA	Solid	300.0	4704
LCS 885-4662/3-A	Lab Control Sample	Total/NA	Solid	300.0	4662
LCS 885-4704/2-A	Lab Control Sample	Total/NA	Solid	300.0	4704
MRL 885-4662/1-A	Lab Control Sample	Total/NA	Solid	300.0	4662

Analysis Batch: 4796

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-4193-22	TP24-11 4'	Total/NA	Solid	300.0	4704
885-4193-23	TP24-12 0'	Total/NA	Solid	300.0	4704
885-4193-24	TP24-12 2'	Total/NA	Solid	300.0	4704
885-4193-25	TP24-12 4'	Total/NA	Solid	300.0	4704

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-70 2'

Lab Sample ID: 885-4193-1
Matrix: Solid
Date Collected: 05/07/24 09:00
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 13:02
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 13:02
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 18:57
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 20:48

Client Sample ID: BES24-71 2'

Lab Sample ID: 885-4193-2
Matrix: Solid
Date Collected: 05/07/24 09:10
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 13:25
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 13:25
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 19:36
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 21:03

Client Sample ID: BES24-72 2'

Lab Sample ID: 885-4193-3
Matrix: Solid
Date Collected: 05/07/24 09:20
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 13:49
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 13:49
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 19:49
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 21:18

Client Sample ID: BES24-73 2'

Lab Sample ID: 885-4193-4
Matrix: Solid
Date Collected: 05/07/24 09:30
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 14:12

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-73 2'

Lab Sample ID: 885-4193-4
Matrix: Solid
Date Collected: 05/07/24 09:30
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 14:12
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 20:03
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 21:33

Client Sample ID: BES24-74 2'

Lab Sample ID: 885-4193-5
Matrix: Solid
Date Collected: 05/07/24 09:40
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 14:36
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 14:36
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 20:15
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 21:49

Client Sample ID: BES24-75 2'

Lab Sample ID: 885-4193-6
Matrix: Solid
Date Collected: 05/07/24 09:50
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 14:59
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 14:59
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 20:28
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 22:04

Client Sample ID: BES24-76 2'

Lab Sample ID: 885-4193-7
Matrix: Solid
Date Collected: 05/07/24 10:00
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 15:23
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 15:23

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-76 2'

Lab Sample ID: 885-4193-7
Matrix: Solid
Date Collected: 05/07/24 10:00
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 20:42
Total/NA	Prep	300_Prep			4662	JT	EET ALB	05/09/24 16:24
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 22:19

Client Sample ID: BES24-77 2'

Lab Sample ID: 885-4193-8
Matrix: Solid
Date Collected: 05/07/24 10:05
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 15:46
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 15:46
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 20:55
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/09/24 23:35

Client Sample ID: BES24-78 2'

Lab Sample ID: 885-4193-9
Matrix: Solid
Date Collected: 05/07/24 10:10
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 16:09
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 16:09
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 21:08
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 00:20

Client Sample ID: BES24-79 2'

Lab Sample ID: 885-4193-10
Matrix: Solid
Date Collected: 05/07/24 10:20
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 16:33
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 16:33
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 21:21

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-79 2'

Lab Sample ID: 885-4193-10
Matrix: Solid
Date Collected: 05/07/24 10:20
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 01:06

Client Sample ID: BES24-80 2'

Lab Sample ID: 885-4193-11
Matrix: Solid
Date Collected: 05/07/24 10:30
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 17:20
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 17:20
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 21:34
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 01:21

Client Sample ID: BES24-81 2'

Lab Sample ID: 885-4193-12
Matrix: Solid
Date Collected: 05/07/24 10:40
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 17:43
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 17:43
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 21:47
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 02:07

Client Sample ID: BES24-82 2'

Lab Sample ID: 885-4193-13
Matrix: Solid
Date Collected: 05/07/24 12:00
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8015D		1	4743	JP	EET ALB	05/09/24 18:07
Total/NA	Prep	5035			4666	JP	EET ALB	05/09/24 10:48
Total/NA	Analysis	8021B		1	4744	JP	EET ALB	05/09/24 18:07
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 22:00
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 02:21

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-83 2'

Lab Sample ID: 885-4193-14

Date Collected: 05/07/24 12:10
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 13:24
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 13:24
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 22:13
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 02:37

Client Sample ID: BES24-84 2'

Lab Sample ID: 885-4193-15

Date Collected: 05/07/24 12:20
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 13:46
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 13:46
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 22:26
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 02:52

Client Sample ID: BES24-85 2'

Lab Sample ID: 885-4193-16

Date Collected: 05/07/24 12:30
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 14:08
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 14:08
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 22:39
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 03:07

Client Sample ID: BES24-86 2'

Lab Sample ID: 885-4193-17

Date Collected: 05/07/24 12:40
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 14:30

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: BES24-86 2'

Lab Sample ID: 885-4193-17

Date Collected: 05/07/24 12:40
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 14:30
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 22:52
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 03:23

Client Sample ID: WES24-20 6.5'

Lab Sample ID: 885-4193-18

Date Collected: 05/07/24 14:00
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 14:51
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 14:51
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 23:04
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:29
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 03:37

Client Sample ID: WES24-21 6.5'

Lab Sample ID: 885-4193-19

Date Collected: 05/07/24 14:30
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 15:13
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 15:13
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 23:17
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:31
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 03:53

Client Sample ID: TP24-11 0'

Lab Sample ID: 885-4193-20

Date Collected: 05/07/24 15:00
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 15:35
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 15:35

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Client Sample ID: TP24-11 0'

Lab Sample ID: 885-4193-20
Matrix: Solid
Date Collected: 05/07/24 15:00
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	SHAKE			4682	SB	EET ALB	05/09/24 14:09
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/09/24 23:30
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:31
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 04:08

Client Sample ID: TP24-11 2'

Lab Sample ID: 885-4193-21
Matrix: Solid
Date Collected: 05/07/24 15:05
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 15:56
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 15:56
Total/NA	Prep	SHAKE			4680	SB	EET ALB	05/09/24 13:49
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/10/24 00:21
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:59
Total/NA	Analysis	300.0		20	4713	RC	EET ALB	05/10/24 04:23

Client Sample ID: TP24-11 4'

Lab Sample ID: 885-4193-22
Matrix: Solid
Date Collected: 05/07/24 15:10
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 16:18
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 16:18
Total/NA	Prep	SHAKE			4680	SB	EET ALB	05/09/24 13:49
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/10/24 00:34
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:59
Total/NA	Analysis	300.0		20	4796	RC	EET ALB	05/10/24 09:01

Client Sample ID: TP24-12 0'

Lab Sample ID: 885-4193-23
Matrix: Solid
Date Collected: 05/07/24 15:15
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 16:40
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 16:40
Total/NA	Prep	SHAKE			4680	SB	EET ALB	05/09/24 13:49
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/10/24 00:46

Lab Chronicle

Client: Vertex
Job ID: 885-4193-1
Project/Site: Red Deer CTB

Client Sample ID: TP24-12 0'
Lab Sample ID: 885-4193-23
Date Collected: 05/07/24 15:15
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:59
Total/NA	Analysis	300.0		20	4796	RC	EET ALB	05/10/24 09:16

Client Sample ID: TP24-12 2'
Lab Sample ID: 885-4193-24
Date Collected: 05/07/24 15:20
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 18:50
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 18:50
Total/NA	Prep	SHAKE			4680	SB	EET ALB	05/09/24 13:49
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/10/24 00:59
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:59
Total/NA	Analysis	300.0		20	4796	RC	EET ALB	05/10/24 09:31

Client Sample ID: TP24-12 4'
Lab Sample ID: 885-4193-25
Date Collected: 05/07/24 15:25
Matrix: Solid
Date Received: 05/09/24 07:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8015D		1	4736	CM	EET ALB	05/09/24 19:11
Total/NA	Prep	5035			4669	JP	EET ALB	05/09/24 11:37
Total/NA	Analysis	8021B		1	4737	CM	EET ALB	05/09/24 19:11
Total/NA	Prep	SHAKE			4680	SB	EET ALB	05/09/24 13:49
Total/NA	Analysis	8015D		1	4691	JU	EET ALB	05/10/24 01:12
Total/NA	Prep	300_Prep			4704	MA	EET ALB	05/09/24 16:59
Total/NA	Analysis	300.0		20	4796	RC	EET ALB	05/10/24 09:46

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-4193-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Mack Energy (Direct Bill)

Mailing Address: on File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 24 hr

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carthar

Sampler: John Raven

On Ice: ☑ Yes ☐ No

# of Coolers: 2 Monty

Cooler Temp(Including CF): 1.0-0=1.0 (°C) 1.6-0=1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

505-4193 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-7-24	0900	Soil	BES24 - 70 2'	4oz Jar	ICE	1										
	0910		BES24 - 71 2'			2										
	0920		BES24 - 72 2'			3										
	0930		BES24 - 73 2'			4										
	0940		BES24 - 74 2'			5										
	0950		BES24 - 75 2'			6										
	1000		BES24 - 76 2'			7										
	1005		BES24 - 77 2'			8										
	1010		BES24 - 78 2'			9										
	1020		BES24 - 79' 2'			10										
	1030		BES24 - 80' 2'			11										
	1040		BES24 - 81 2'			12										

Date	Time	Relinquished by:	Received by:	Via	Date	Time
					5/8/24	745
5/8/24	1440					

Date	Time	Relinquished by	Received by	Via	Date	Time
				Courier	5/9/24	745

Remarks: Direct Bill to Mack
Attn: Matt Buckles
cc: jraven@vertex.ca
scarthar@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Mack Energy (CO rect B:11)

Mailing Address: On File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 24 Hr

Project Name: Red Deer CTB

Project #: 24E - 01863

Project Manager: Sally Carthar

Sampler: John Rewis

On Ice: ☑ Yes ☐ No

# of Coolers: 2 Monty

Cooler Temp(including CF): 1.0-0=1.0 (°C) 1.6-0=1.6

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
5-7-24	1200	Soil	BES24 - 82 2'	4 oz Jar	Ice	13
	1210		BES24 - 83 2'			14
	1220		BES24 - 84 2'			15
	1230		BES24 - 85 2'			16
	1240		BES24 - 86 2'			17
	1400		WES24 - 20 6.5'			18
	1430		WES24 - 21 6.5'			19
	1500		TP24 - 01 0'			20
	1505		TP24 - 01 2'			21
	1510		TP24 - 01 4'			22
	1515		TP24 - 02 0'			23
↓	1520	↓	TP24 - 02 2'	↓	↓	24

Analysis Request

BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
↓	↓					↓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
					5/8/24	945
5/8/24	1200		Courier		5/9/24	7:45

Remarks: Direct Bill to Mack
Attn: Matt Buckles
cc: jrewis@vertex.ca
scarthar@vertex.ca

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

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Chain-of-Custody Record

Client: Mark Energy

Mailing Address: on File

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 hr

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: John Rewis

On Ice: ☒ Yes ☐ No

# of Coolers: 1 Monty

Cooler Temp(including CF): 1.6-0=1.6 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1-0-0260	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-7-24	1525	Soil	TP24-02 4'	4 oz Jar	Ice	25	X	X					X			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					5/8/24	945
Date: 5/8/24	Time: 1945	Relinquished by:	Received by:	Via: Courier	Date: 5/9/24	Time: 7:45

Remarks: Direct Bill to Mark
Attn: Matt Buckles
cc: scarttar@vertex.ca
jrewis@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-4193-1

Login Number: 4193 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 6/1/2024 11:08:36 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-5007-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

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Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



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6/1/2024 11:08:36 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-5007-1

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Definitions/Glossary

Client: Vertex Job ID: 885-5007-1
Project/Site: Red Deer CTB

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

GC Semi VOA

Qualifier	Qualifier Description
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-5007-1

Job ID: 885-5007-1 Eurofins Albuquerque

Job Narrative
885-5007-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The sample was received on 5/23/2024 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.4°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
Method 8015D_DRO: The matrix spike / matrix spike duplicate / sample duplicate (MS/MSD/DUP) precision for preparation batch 885-5576 and analytical batch 885-5629 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

Client Sample ID: WES24-34 0-2'

Date Collected: 05/20/24 15:10
Date Received: 05/23/24 08:00

Lab Sample ID: 885-5007-1

Matrix: Solid

Method: SW846 8015D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		3.7		mg/Kg		05/23/24 10:45	05/23/24 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*35 - 166*	*05/23/24 10:45*	*05/23/24 13:23*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.019		mg/Kg		05/23/24 10:45	05/23/24 13:23	1
Ethylbenzene	ND		0.037		mg/Kg		05/23/24 10:45	05/23/24 13:23	1
Toluene	ND		0.037		mg/Kg		05/23/24 10:45	05/23/24 13:23	1
Xylenes, Total	ND		0.075		mg/Kg		05/23/24 10:45	05/23/24 13:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*48 - 145*	*05/23/24 10:45*	*05/23/24 13:23*	*1*

Method: SW846 8015D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		05/23/24 14:41	05/24/24 11:47	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/23/24 14:41	05/24/24 11:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*05/23/24 14:41*	*05/24/24 11:47*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		61		mg/Kg		05/24/24 14:04	05/24/24 23:35	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

Method: 8015D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-5536/1-A
Matrix: Solid
Analysis Batch: 5569

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5536

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		05/23/24 10:45	05/23/24 12:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*35 - 166*	*05/23/24 10:45*	*05/23/24 12:13*	*1*

Lab Sample ID: LCS 885-5536/2-A
Matrix: Solid
Analysis Batch: 5569

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5536

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	23.8		mg/Kg		95	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*186*	*S1+*	*35 - 166*

Lab Sample ID: 885-5007-1 MS
Matrix: Solid
Analysis Batch: 5569

Client Sample ID: WES24-34 0-2'
Prep Type: Total/NA
Prep Batch: 5536

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		18.6	19.1		mg/Kg		95	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*206*	*S1+*	*35 - 166*

Lab Sample ID: 885-5007-1 MSD
Matrix: Solid
Analysis Batch: 5569

Client Sample ID: WES24-34 0-2'
Prep Type: Total/NA
Prep Batch: 5536

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		18.6	18.6		mg/Kg		92	70 - 130	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*200*	*S1+*	*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-5536/1-A
Matrix: Solid
Analysis Batch: 5570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5536

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		05/23/24 10:45	05/23/24 12:13	1
Ethylbenzene	ND		0.050		mg/Kg		05/23/24 10:45	05/23/24 12:13	1
Toluene	ND		0.050		mg/Kg		05/23/24 10:45	05/23/24 12:13	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-5536/1-A
Matrix: Solid
Analysis Batch: 5570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5536

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		05/23/24 10:45	05/23/24 12:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*48 - 145*	*05/23/24 10:45*	*05/23/24 12:13*	*1*

Lab Sample ID: LCS 885-5536/3-A
Matrix: Solid
Analysis Batch: 5570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5536

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.943		mg/Kg		94	70 - 130		
Ethylbenzene			1.00	0.877		mg/Kg		88	70 - 130		
m,p-Xylene			2.00	1.78		mg/Kg		89	70 - 130		
o-Xylene			1.00	0.879		mg/Kg		88	70 - 130		
Toluene			1.00	0.884		mg/Kg		88	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*48 - 145*

Method: 8015D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-5576/1-A
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5576

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		05/23/24 14:41	05/24/24 11:05	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		05/23/24 14:41	05/24/24 11:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*102*		*62 - 134*	*05/23/24 14:41*	*05/24/24 11:05*	*1*

Lab Sample ID: LCS 885-5576/2-A
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5576

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	56.1		mg/Kg		112	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*109*		*62 - 134*

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

Method: 8015D - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 885-5007-1 MS
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: WES24-34 0-2'
Prep Type: Total/NA
Prep Batch: 5576

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Diesel Range Organics [C10-C28]	ND		46.0	53.4		mg/Kg		116	44 - 136

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*111*		*62 - 134*

Lab Sample ID: 885-5007-1 MSD
Matrix: Solid
Analysis Batch: 5629

Client Sample ID: WES24-34 0-2'
Prep Type: Total/NA
Prep Batch: 5576

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	ND		42.4	38.3	F2	mg/Kg		90	44 - 136	33	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*84*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-5639/1-A
Matrix: Solid
Analysis Batch: 5663

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 5639

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		05/24/24 14:04	05/24/24 20:18	1

Lab Sample ID: LCS 885-5639/2-A
Matrix: Solid
Analysis Batch: 5663

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 5639

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			15.0	14.7		mg/Kg		98	90 - 110

Lab Sample ID: MB 885-5663/4
Matrix: Solid
Analysis Batch: 5663

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50		mg/Kg			05/24/24 11:12	1

Lab Sample ID: MRL 885-5663/3
Matrix: Solid
Analysis Batch: 5663

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits
Chloride			0.500	0.534		mg/L		107	50 - 150

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

GC VOA

Prep Batch: 5536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	5035	
MB 885-5536/1-A	Method Blank	Total/NA	Solid	5035	
LCS 885-5536/2-A	Lab Control Sample	Total/NA	Solid	5035	
LCS 885-5536/3-A	Lab Control Sample	Total/NA	Solid	5035	
885-5007-1 MS	WES24-34 0-2'	Total/NA	Solid	5035	
885-5007-1 MSD	WES24-34 0-2'	Total/NA	Solid	5035	

Analysis Batch: 5569

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	8015D	5536
MB 885-5536/1-A	Method Blank	Total/NA	Solid	8015D	5536
LCS 885-5536/2-A	Lab Control Sample	Total/NA	Solid	8015D	5536
885-5007-1 MS	WES24-34 0-2'	Total/NA	Solid	8015D	5536
885-5007-1 MSD	WES24-34 0-2'	Total/NA	Solid	8015D	5536

Analysis Batch: 5570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	8021B	5536
MB 885-5536/1-A	Method Blank	Total/NA	Solid	8021B	5536
LCS 885-5536/3-A	Lab Control Sample	Total/NA	Solid	8021B	5536

GC Semi VOA

Prep Batch: 5576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	SHAKE	
MB 885-5576/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-5576/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
885-5007-1 MS	WES24-34 0-2'	Total/NA	Solid	SHAKE	
885-5007-1 MSD	WES24-34 0-2'	Total/NA	Solid	SHAKE	

Analysis Batch: 5629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	8015D	5576
MB 885-5576/1-A	Method Blank	Total/NA	Solid	8015D	5576
LCS 885-5576/2-A	Lab Control Sample	Total/NA	Solid	8015D	5576
885-5007-1 MS	WES24-34 0-2'	Total/NA	Solid	8015D	5576
885-5007-1 MSD	WES24-34 0-2'	Total/NA	Solid	8015D	5576

HPLC/IC

Prep Batch: 5639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	300_Prep	
MB 885-5639/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-5639/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 5663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-5007-1	WES24-34 0-2'	Total/NA	Solid	300.0	5639
MB 885-5639/1-A	Method Blank	Total/NA	Solid	300.0	5639
MB 885-5663/4	Method Blank	Total/NA	Solid	300.0	

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

HPLC/IC (Continued)

Analysis Batch: 5663 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 885-5639/2-A	Lab Control Sample	Total/NA	Solid	300.0	5639
MRL 885-5663/3	Lab Control Sample	Total/NA	Solid	300.0	

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

Client Sample ID: WES24-34 0-2'

Date Collected: 05/20/24 15:10
Date Received: 05/23/24 08:00

Lab Sample ID: 885-5007-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			5536	AT	EET ALB	05/23/24 10:45
Total/NA	Analysis	8015D		1	5569	JP	EET ALB	05/23/24 13:23
Total/NA	Prep	5035			5536	AT	EET ALB	05/23/24 10:45
Total/NA	Analysis	8021B		1	5570	JP	EET ALB	05/23/24 13:23
Total/NA	Prep	SHAKE			5576	DH	EET ALB	05/23/24 14:41
Total/NA	Analysis	8015D		1	5629	JU	EET ALB	05/24/24 11:47
Total/NA	Prep	300_Prep			5639	RC	EET ALB	05/24/24 14:04
Total/NA	Analysis	300.0		20	5663	RC	EET ALB	05/24/24 23:35

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-5007-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015D	5035	Solid	Gasoline Range Organics [C6 - C10]
8015D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5035	Solid	Benzene
8021B	5035	Solid	Ethylbenzene
8021B	5035	Solid	Toluene
8021B	5035	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex (Mack Energy)
Mailing Address: On File
Phone #:
email or Fax#:
QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 24 hour
Project Name: Red Deer CTB
Project #: 24E-01863
Project Manager: Sally Carttar
Sampler: AL
On Ice: ~~☐~~ Yes ☐ No
# of Coolers: 1
Cooler Temp(including CF): 3-4.0=7.4 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107
885-5097 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
5-20-24	1510	Soil	WES24-34 0-2'	4oz	ICE	1	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
5/22/24	1900				5/23/24	8:00

Remarks: Direct Bill to Mack Energy
Attn: Matt Buckley
CC: SCarttar@Vertex.ca
ALudvik@Vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-5007-1

Login Number: 5007 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 7/3/2024 10:07:54 AM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-6499-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



Generated
7/3/2024 10:07:54 AM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-6499-1

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Definitions/Glossary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-6499-1

Job ID: 885-6499-1 Eurofins Albuquerque

Job Narrative
885-6499-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 6/19/2024 7:45 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.5°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Client Sample ID: BES24-118 0.5'
Date Collected: 06/17/24 11:00
Date Received: 06/19/24 07:45

Lab Sample ID: 885-6499-1
Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/19/24 14:04	06/26/24 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*35 - 166*	*06/19/24 14:04*	*06/26/24 21:07*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/19/24 14:04	06/26/24 21:07	1
Ethylbenzene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 21:07	1
Toluene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 21:07	1
Xylenes, Total	ND		0.10		mg/Kg		06/19/24 14:04	06/26/24 21:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*48 - 145*	*06/19/24 14:04*	*06/26/24 21:07*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.0		mg/Kg		06/21/24 13:36	06/24/24 18:45	1
Motor Oil Range Organics [C28-C40]	ND		45		mg/Kg		06/21/24 13:36	06/24/24 18:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*92*		*62 - 134*	*06/21/24 13:36*	*06/24/24 18:45*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**200**		60		mg/Kg		06/21/24 12:54	06/21/24 22:47	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Client Sample ID: BES24-119 0.0'

Date Collected: 06/17/24 13:00
Date Received: 06/19/24 07:45

Lab Sample ID: 885-6499-2

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/19/24 14:04	06/26/24 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*35 - 166*	*06/19/24 14:04*	*06/26/24 22:12*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/19/24 14:04	06/26/24 22:12	1
Ethylbenzene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 22:12	1
Toluene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 22:12	1
Xylenes, Total	ND		0.099		mg/Kg		06/19/24 14:04	06/26/24 22:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*48 - 145*	*06/19/24 14:04*	*06/26/24 22:12*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		8.6		mg/Kg		06/21/24 13:36	06/24/24 18:57	1
Motor Oil Range Organics [C28-C40]	ND		43		mg/Kg		06/21/24 13:36	06/24/24 18:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*06/21/24 13:36*	*06/24/24 18:57*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		06/21/24 15:09	06/24/24 17:04	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Client Sample ID: BES24-120 0.0'

Date Collected: 06/17/24 13:30
Date Received: 06/19/24 07:45

Lab Sample ID: 885-6499-3

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/19/24 14:04	06/26/24 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*35 - 166*	*06/19/24 14:04*	*06/26/24 23:18*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/19/24 14:04	06/26/24 23:18	1
Ethylbenzene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 23:18	1
Toluene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 23:18	1
Xylenes, Total	ND		0.10		mg/Kg		06/19/24 14:04	06/26/24 23:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*	*06/19/24 14:04*	*06/26/24 23:18*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.3		mg/Kg		06/21/24 13:36	06/24/24 19:08	1
Motor Oil Range Organics [C28-C40]	ND		47		mg/Kg		06/21/24 13:36	06/24/24 19:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*74*		*62 - 134*	*06/21/24 13:36*	*06/24/24 19:08*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		06/21/24 15:09	06/24/24 17:42	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-7018/1-A
Matrix: Solid
Analysis Batch: 7563

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7018

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		06/19/24 14:04	06/26/24 19:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*35 - 166*	*06/19/24 14:04*	*06/26/24 19:57*	*1*

Lab Sample ID: LCS 885-7018/2-A
Matrix: Solid
Analysis Batch: 7563

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7018

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	27.1		mg/Kg		108	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*209*	*S1+*	*35 - 166*

Lab Sample ID: 885-6499-1 MS
Matrix: Solid
Analysis Batch: 7563

Client Sample ID: BES24-118 0.5'
Prep Type: Total/NA
Prep Batch: 7018

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		25.0	22.7		mg/Kg		91	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*204*	*S1+*	*35 - 166*

Lab Sample ID: 885-6499-1 MSD
Matrix: Solid
Analysis Batch: 7563

Client Sample ID: BES24-118 0.5'
Prep Type: Total/NA
Prep Batch: 7018

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		25.0	26.0		mg/Kg		104	70 - 130	14	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*214*	*S1+*	*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-7018/1-A
Matrix: Solid
Analysis Batch: 7564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7018

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		06/19/24 14:04	06/26/24 19:57	1
Ethylbenzene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 19:57	1
Toluene	ND		0.050		mg/Kg		06/19/24 14:04	06/26/24 19:57	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-7018/1-A
Matrix: Solid
Analysis Batch: 7564

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7018

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		06/19/24 14:04	06/26/24 19:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*	*06/19/24 14:04*	*06/26/24 19:57*	*1*

Lab Sample ID: LCS 885-7018/3-A
Matrix: Solid
Analysis Batch: 7564

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7018

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	1.00		mg/Kg		100	70 - 130		
Ethylbenzene			1.00	1.01		mg/Kg		101	70 - 130		
m,p-Xylene			2.00	2.02		mg/Kg		101	70 - 130		
o-Xylene			1.00	1.02		mg/Kg		102	70 - 130		
Toluene			1.00	0.990		mg/Kg		99	70 - 130		
Xylenes, Total			3.00	3.04		mg/Kg		101	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*48 - 145*

Lab Sample ID: 885-6499-2 MS
Matrix: Solid
Analysis Batch: 7564

Client Sample ID: BES24-119 0.0'
Prep Type: Total/NA
Prep Batch: 7018

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.995	0.952		mg/Kg		96	70 - 130		
Ethylbenzene	ND		0.995	0.968		mg/Kg		97	70 - 130		
m,p-Xylene	ND		1.99	1.94		mg/Kg		97	70 - 130		
o-Xylene	ND		0.995	0.977		mg/Kg		98	70 - 130		
Toluene	ND		0.995	0.953		mg/Kg		96	70 - 130		
Xylenes, Total	ND		2.99	2.91		mg/Kg		98	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*48 - 145*

Lab Sample ID: 885-6499-2 MSD
Matrix: Solid
Analysis Batch: 7564

Client Sample ID: BES24-119 0.0'
Prep Type: Total/NA
Prep Batch: 7018

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.997	0.940		mg/Kg		94	70 - 130	1	20
Ethylbenzene	ND		0.997	0.957		mg/Kg		96	70 - 130	1	20
m,p-Xylene	ND		1.99	1.92		mg/Kg		96	70 - 130	1	20
o-Xylene	ND		0.997	0.957		mg/Kg		96	70 - 130	2	20
Toluene	ND		0.997	0.942		mg/Kg		95	70 - 130	1	20
Xylenes, Total	ND		2.99	2.87		mg/Kg		96	70 - 130	1	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 885-6499-2 MSD
Matrix: Solid
Analysis Batch: 7564

Client Sample ID: BES24-119 0.0'
Prep Type: Total/NA
Prep Batch: 7018

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*93*		*48 - 145*

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-7184/1-A
Matrix: Solid
Analysis Batch: 7241

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7184

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		06/21/24 13:36	06/24/24 16:19	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		06/21/24 13:36	06/24/24 16:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*97*		*62 - 134*	*06/21/24 13:36*	*06/24/24 16:19*	*1*

Lab Sample ID: LCS 885-7184/2-A
Matrix: Solid
Analysis Batch: 7241

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7184

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	51.3		mg/Kg		103	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-7180/1-A
Matrix: Solid
Analysis Batch: 7221

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7180

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.5		mg/Kg		06/21/24 12:54	06/21/24 15:27	1

Lab Sample ID: LCS 885-7180/2-A
Matrix: Solid
Analysis Batch: 7221

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7180

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			15.0	14.0		mg/Kg		93	90 - 110		

Lab Sample ID: MB 885-7199/1-A
Matrix: Solid
Analysis Batch: 7238

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7199

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		06/21/24 15:09	06/24/24 15:08	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 885-7199/2-A
Matrix: Solid
Analysis Batch: 7238

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7199

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.1		mg/Kg		94	90 - 110		

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

GC VOA

Prep Batch: 7018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	5030C	
885-6499-2	BES24-119 0.0'	Total/NA	Solid	5030C	
885-6499-3	BES24-120 0.0'	Total/NA	Solid	5030C	
MB 885-7018/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-7018/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-7018/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-6499-1 MS	BES24-118 0.5'	Total/NA	Solid	5030C	
885-6499-1 MSD	BES24-118 0.5'	Total/NA	Solid	5030C	
885-6499-2 MS	BES24-119 0.0'	Total/NA	Solid	5030C	
885-6499-2 MSD	BES24-119 0.0'	Total/NA	Solid	5030C	

Analysis Batch: 7563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	8015M/D	7018
885-6499-2	BES24-119 0.0'	Total/NA	Solid	8015M/D	7018
885-6499-3	BES24-120 0.0'	Total/NA	Solid	8015M/D	7018
MB 885-7018/1-A	Method Blank	Total/NA	Solid	8015M/D	7018
LCS 885-7018/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	7018
885-6499-1 MS	BES24-118 0.5'	Total/NA	Solid	8015M/D	7018
885-6499-1 MSD	BES24-118 0.5'	Total/NA	Solid	8015M/D	7018

Analysis Batch: 7564

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	8021B	7018
885-6499-2	BES24-119 0.0'	Total/NA	Solid	8021B	7018
885-6499-3	BES24-120 0.0'	Total/NA	Solid	8021B	7018
MB 885-7018/1-A	Method Blank	Total/NA	Solid	8021B	7018
LCS 885-7018/3-A	Lab Control Sample	Total/NA	Solid	8021B	7018
885-6499-2 MS	BES24-119 0.0'	Total/NA	Solid	8021B	7018
885-6499-2 MSD	BES24-119 0.0'	Total/NA	Solid	8021B	7018

GC Semi VOA

Prep Batch: 7184

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	SHAKE	
885-6499-2	BES24-119 0.0'	Total/NA	Solid	SHAKE	
885-6499-3	BES24-120 0.0'	Total/NA	Solid	SHAKE	
MB 885-7184/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-7184/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 7241

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	8015M/D	7184
885-6499-2	BES24-119 0.0'	Total/NA	Solid	8015M/D	7184
885-6499-3	BES24-120 0.0'	Total/NA	Solid	8015M/D	7184
MB 885-7184/1-A	Method Blank	Total/NA	Solid	8015M/D	7184
LCS 885-7184/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	7184

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

HPLC/IC

Prep Batch: 7180

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	300_Prep	
MB 885-7180/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-7180/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Prep Batch: 7199

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-2	BES24-119 0.0'	Total/NA	Solid	300_Prep	
885-6499-3	BES24-120 0.0'	Total/NA	Solid	300_Prep	
MB 885-7199/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-7199/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 7221

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-1	BES24-118 0.5'	Total/NA	Solid	300.0	7180
MB 885-7180/1-A	Method Blank	Total/NA	Solid	300.0	7180
LCS 885-7180/2-A	Lab Control Sample	Total/NA	Solid	300.0	7180

Analysis Batch: 7238

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-6499-2	BES24-119 0.0'	Total/NA	Solid	300.0	7199
885-6499-3	BES24-120 0.0'	Total/NA	Solid	300.0	7199
MB 885-7199/1-A	Method Blank	Total/NA	Solid	300.0	7199
LCS 885-7199/2-A	Lab Control Sample	Total/NA	Solid	300.0	7199

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Client Sample ID: BES24-118 0.5'
Date Collected: 06/17/24 11:00
Date Received: 06/19/24 07:45

Lab Sample ID: 885-6499-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7018	AT	EET ALB	06/19/24 14:04
Total/NA	Analysis	8015M/D		1	7563	RA	EET ALB	06/26/24 21:07
Total/NA	Prep	5030C			7018	AT	EET ALB	06/19/24 14:04
Total/NA	Analysis	8021B		1	7564	RA	EET ALB	06/26/24 21:07
Total/NA	Prep	SHAKE			7184	SB	EET ALB	06/21/24 13:36
Total/NA	Analysis	8015M/D		1	7241	PD	EET ALB	06/24/24 18:45
Total/NA	Prep	300_Prep			7180	RC	EET ALB	06/21/24 12:54
Total/NA	Analysis	300.0		20	7221	RC	EET ALB	06/21/24 22:47

Client Sample ID: BES24-119 0.0'
Date Collected: 06/17/24 13:00
Date Received: 06/19/24 07:45

Lab Sample ID: 885-6499-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7018	AT	EET ALB	06/19/24 14:04
Total/NA	Analysis	8015M/D		1	7563	RA	EET ALB	06/26/24 22:12
Total/NA	Prep	5030C			7018	AT	EET ALB	06/19/24 14:04
Total/NA	Analysis	8021B		1	7564	RA	EET ALB	06/26/24 22:12
Total/NA	Prep	SHAKE			7184	SB	EET ALB	06/21/24 13:36
Total/NA	Analysis	8015M/D		1	7241	PD	EET ALB	06/24/24 18:57
Total/NA	Prep	300_Prep			7199	RC	EET ALB	06/21/24 15:09
Total/NA	Analysis	300.0		20	7238	RC	EET ALB	06/24/24 17:04

Client Sample ID: BES24-120 0.0'
Date Collected: 06/17/24 13:30
Date Received: 06/19/24 07:45

Lab Sample ID: 885-6499-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7018	AT	EET ALB	06/19/24 14:04
Total/NA	Analysis	8015M/D		1	7563	RA	EET ALB	06/26/24 23:18
Total/NA	Prep	5030C			7018	AT	EET ALB	06/19/24 14:04
Total/NA	Analysis	8021B		1	7564	RA	EET ALB	06/26/24 23:18
Total/NA	Prep	SHAKE			7184	SB	EET ALB	06/21/24 13:36
Total/NA	Analysis	8015M/D		1	7241	PD	EET ALB	06/24/24 19:08
Total/NA	Prep	300_Prep			7199	RC	EET ALB	06/21/24 15:09
Total/NA	Analysis	300.0		20	7238	RC	EET ALB	06/24/24 17:42

Laboratory References:
EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-6499-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: Vertex for Mack Energy

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5-DAY
☑ Standard ☑ Rush

Project Name: Red Deer CTB

Project #: 24E-01863

Project Manager: Sally Carttar

Sampler: AH

On Ice: ☑ Yes ☐ No 4pg

# of Coolers: 1

Cooler Temp(including CF): 0.5+0=0.5 (°C)

HALL ENVIRONMENTAL ANALYSIS LABOR
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 871
Tel. 505-345-3975 Fax 505-345-4107

885-6499 COC

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
6-17-24	1100	Soil	BES24-118 0.5'	4oz	ICE											
↓	1300	↓	BES24-119 0.0'	↓	↓											
↓	1330	↓	BES24-120 0.0'	↓	↓											

Date	Time	Relinquished by	Received by	Via	Date	Time
			[signature]		6/18/24	1000
Date 6/18/24	Time 1900	Relinquished by [signature]	Received by	Via courier	Date 6/18/24	Time 7:45

Remarks: *Bill to Matt Buckles

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories This serves as notice of this possibility Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-6499-1

Login Number: 6499 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Ms. Sally Carttar
Vertex
3101 Boyd Dr
Carlsbad, New Mexico 88220

Generated 7/9/2024 3:29:02 PM

JOB DESCRIPTION

Red Deer CTB

JOB NUMBER

885-7336-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Released to Imaging: 8/12/2024 2:32:55 PM

Eurofins Albuquerque

Job Notes

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing South Central, LLC Project Manager.

Authorization



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7/9/2024 3:29:02 PM

Authorized for release by
Andy Freeman, Business Unit Manager
andy.freeman@et.eurofinsus.com
(505)345-3975

Client: Vertex
Project/Site: Red Deer CTB

Laboratory Job ID: 885-7336-1

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Definitions/Glossary

Client: Vertex Job ID: 885-7336-1
Project/Site: Red Deer CTB

Qualifiers

GC VOA

Qualifier	Qualifier Description
S1+	Surrogate recovery exceeds control limits, high biased.

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Vertex
Project: Red Deer CTB

Job ID: 885-7336-1

Job ID: 885-7336-1 Eurofins Albuquerque

Job Narrative
885-7336-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 7/3/2024 8:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.9°C.

Gasoline Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Diesel Range Organics
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Client Sample ID: WES24-35 0-0.5'

Date Collected: 07/01/24 10:55
Date Received: 07/03/24 08:10

Lab Sample ID: 885-7336-1

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.9		mg/Kg		07/03/24 10:43	07/06/24 00:26	1

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*35 - 166*	*07/03/24 10:43*	*07/06/24 00:26*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		07/03/24 10:43	07/06/24 00:26	1
Ethylbenzene	ND		0.049		mg/Kg		07/03/24 10:43	07/06/24 00:26	1
Toluene	ND		0.049		mg/Kg		07/03/24 10:43	07/06/24 00:26	1
Xylenes, Total	ND		0.099		mg/Kg		07/03/24 10:43	07/06/24 00:26	1

Method: SW846 8021B - Volatile Organic Compounds (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*07/03/24 10:43*	*07/06/24 00:26*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**10**		9.1		mg/Kg		07/03/24 15:14	07/03/24 23:03	1
Motor Oil Range Organics [C28-C40]	ND		46		mg/Kg		07/03/24 15:14	07/03/24 23:03	1

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*89*		*62 - 134*	*07/03/24 15:14*	*07/03/24 23:03*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**190**		60		mg/Kg		07/05/24 15:35	07/05/24 17:40	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Client Sample ID: BES24-114 0.5'

Date Collected: 07/01/24 11:30
Date Received: 07/03/24 08:10

Lab Sample ID: 885-7336-2

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		07/03/24 10:43	07/06/24 01:36	1

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*35 - 166*	*07/03/24 10:43*	*07/06/24 01:36*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		07/03/24 10:43	07/06/24 01:36	1
Ethylbenzene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 01:36	1
Toluene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 01:36	1
Xylenes, Total	ND		0.10		mg/Kg		07/03/24 10:43	07/06/24 01:36	1

Method: SW846 8021B - Volatile Organic Compounds (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*	*07/03/24 10:43*	*07/06/24 01:36*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.8		mg/Kg		07/03/24 15:14	07/03/24 23:14	1
Motor Oil Range Organics [C28-C40]	ND		49		mg/Kg		07/03/24 15:14	07/03/24 23:14	1

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*95*		*62 - 134*	*07/03/24 15:14*	*07/03/24 23:14*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**260**		60		mg/Kg		07/05/24 15:35	07/05/24 17:53	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Client Sample ID: BES24-115 0.5'

Lab Sample ID: 885-7336-3
Matrix: Solid
Date Collected: 07/01/24 12:10
Date Received: 07/03/24 08:10

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		07/03/24 10:43	07/06/24 02:47	1

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*35 - 166*	*07/03/24 10:43*	*07/06/24 02:47*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		07/03/24 10:43	07/06/24 02:47	1
Ethylbenzene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 02:47	1
Toluene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 02:47	1
Xylenes, Total	ND		0.099		mg/Kg		07/03/24 10:43	07/06/24 02:47	1

Method: SW846 8021B - Volatile Organic Compounds (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 145*	*07/03/24 10:43*	*07/06/24 02:47*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**12**		9.9		mg/Kg		07/03/24 15:14	07/03/24 23:25	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		07/03/24 15:14	07/03/24 23:25	1

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*107*		*62 - 134*	*07/03/24 15:14*	*07/03/24 23:25*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**330**		60		mg/Kg		07/05/24 15:35	07/05/24 18:05	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Client Sample ID: BES24-116 0.5'

Date Collected: 07/01/24 12:40
Date Received: 07/03/24 08:10

Lab Sample ID: 885-7336-4

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		07/03/24 10:43	07/06/24 03:10	1

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*35 - 166*	*07/03/24 10:43*	*07/06/24 03:10*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		07/03/24 10:43	07/06/24 03:10	1
Ethylbenzene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 03:10	1
Toluene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 03:10	1
Xylenes, Total	ND		0.10		mg/Kg		07/03/24 10:43	07/06/24 03:10	1

Method: SW846 8021B - Volatile Organic Compounds (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*	*07/03/24 10:43*	*07/06/24 03:10*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.9		mg/Kg		07/03/24 15:14	07/03/24 23:36	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		07/03/24 15:14	07/03/24 23:36	1

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*105*		*62 - 134*	*07/03/24 15:14*	*07/03/24 23:36*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**270**		60		mg/Kg		07/05/24 15:35	07/05/24 19:07	20

Client Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Client Sample ID: BES24-117 0.5'

Date Collected: 07/01/24 13:10
Date Received: 07/03/24 08:10

Lab Sample ID: 885-7336-5

Matrix: Solid

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		07/03/24 10:43	07/06/24 03:34	1

Method: SW846 8015M/D - Gasoline Range Organics (GRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*07/03/24 10:43*	*07/06/24 03:34*	*1*

Method: SW846 8021B - Volatile Organic Compounds (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		07/03/24 10:43	07/06/24 03:34	1
Ethylbenzene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 03:34	1
Toluene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 03:34	1
Xylenes, Total	ND		0.099		mg/Kg		07/03/24 10:43	07/06/24 03:34	1

Method: SW846 8021B - Volatile Organic Compounds (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*07/03/24 10:43*	*07/06/24 03:34*	*1*

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		07/03/24 15:14	07/03/24 23:48	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		07/03/24 15:14	07/03/24 23:48	1

Method: SW846 8015M/D - Diesel Range Organics (DRO) (GC)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*117*		*62 - 134*	*07/03/24 15:14*	*07/03/24 23:48*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**200**		60		mg/Kg		07/05/24 15:35	07/05/24 19:19	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Method: 8015M/D - Gasoline Range Organics (GRO) (GC)

Lab Sample ID: MB 885-7870/1-A
Matrix: Solid
Analysis Batch: 7988

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7870

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		07/03/24 10:43	07/06/24 00:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*35 - 166*	*07/03/24 10:43*	*07/06/24 00:02*	*1*

Lab Sample ID: LCS 885-7870/2-A
Matrix: Solid
Analysis Batch: 7988

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7870

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	22.8		mg/Kg		91	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*201*	*S1+*	*35 - 166*

Lab Sample ID: 885-7336-1 MS
Matrix: Solid
Analysis Batch: 7988

Client Sample ID: WES24-35 0-0.5'
Prep Type: Total/NA
Prep Batch: 7870

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]	ND		24.8	23.4		mg/Kg		94	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*200*	*S1+*	*35 - 166*

Lab Sample ID: 885-7336-1 MSD
Matrix: Solid
Analysis Batch: 7988

Client Sample ID: WES24-35 0-0.5'
Prep Type: Total/NA
Prep Batch: 7870

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Gasoline Range Organics [C6 - C10]	ND		24.8	23.3		mg/Kg		94	70 - 130	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*200*	*S1+*	*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-7870/1-A
Matrix: Solid
Analysis Batch: 7946

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7870

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		07/03/24 10:43	07/06/24 00:02	1
Ethylbenzene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 00:02	1
Toluene	ND		0.050		mg/Kg		07/03/24 10:43	07/06/24 00:02	1

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: MB 885-7870/1-A
Matrix: Solid
Analysis Batch: 7946

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7870

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		0.10		mg/Kg		07/03/24 10:43	07/06/24 00:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 145*	*07/03/24 10:43*	*07/06/24 00:02*	*1*

Lab Sample ID: LCS 885-7870/3-A
Matrix: Solid
Analysis Batch: 7946

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7870

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.873		mg/Kg		87	70 - 130		
Ethylbenzene			1.00	0.803		mg/Kg		80	70 - 130		
m,p-Xylene			2.00	1.64		mg/Kg		82	70 - 130		
o-Xylene			1.00	0.792		mg/Kg		79	70 - 130		
Toluene			1.00	0.806		mg/Kg		81	70 - 130		
Xylenes, Total			3.00	2.43		mg/Kg		81	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*

Lab Sample ID: 885-7336-2 MS
Matrix: Solid
Analysis Batch: 7946

Client Sample ID: BES24-114 0.5'
Prep Type: Total/NA
Prep Batch: 7870

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene	ND		0.998	0.917		mg/Kg		92	70 - 130		
Ethylbenzene	ND		0.998	0.856		mg/Kg		86	70 - 130		
m,p-Xylene	ND		2.00	1.73		mg/Kg		86	70 - 130		
o-Xylene	ND		0.998	0.845		mg/Kg		85	70 - 130		
Toluene	ND		0.998	0.855		mg/Kg		84	70 - 130		
Xylenes, Total	ND		2.99	2.58		mg/Kg		85	70 - 130		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*91*		*48 - 145*

Lab Sample ID: 885-7336-2 MSD
Matrix: Solid
Analysis Batch: 7946

Client Sample ID: BES24-114 0.5'
Prep Type: Total/NA
Prep Batch: 7870

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene	ND		0.997	0.903		mg/Kg		91	70 - 130	2	20
Ethylbenzene	ND		0.997	0.844		mg/Kg		85	70 - 130	1	20
m,p-Xylene	ND		1.99	1.70		mg/Kg		84	70 - 130	2	20
o-Xylene	ND		0.997	0.834		mg/Kg		84	70 - 130	1	20
Toluene	ND		0.997	0.843		mg/Kg		83	70 - 130	1	20
Xylenes, Total	ND		2.99	2.53		mg/Kg		84	70 - 130	2	20

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Method: 8021B - Volatile Organic Compounds (GC) (Continued)

Lab Sample ID: 885-7336-2 MSD
Matrix: Solid
Analysis Batch: 7946

Client Sample ID: BES24-114 0.5'
Prep Type: Total/NA
Prep Batch: 7870

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*87*		*48 - 145*

Method: 8015M/D - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 885-7885/1-A
Matrix: Solid
Analysis Batch: 7876

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7885

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		07/03/24 15:14	07/03/24 22:30	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		07/03/24 15:14	07/03/24 22:30	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Di-n-octyl phthalate (Surr)	*86*		*62 - 134*	*07/03/24 15:14*	*07/03/24 22:30*	*1*

Lab Sample ID: LCS 885-7885/2-A
Matrix: Solid
Analysis Batch: 7876

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7885

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	47.6		mg/Kg		95	60 - 135		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Di-n-octyl phthalate (Surr)	*91*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-7952/1-A
Matrix: Solid
Analysis Batch: 8024

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 7952

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		07/05/24 15:35	07/05/24 17:03	1

Lab Sample ID: LCS 885-7952/2-A
Matrix: Solid
Analysis Batch: 8024

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 7952

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.2		mg/Kg		94	90 - 110		

Lab Sample ID: 885-7336-3 MS
Matrix: Solid
Analysis Batch: 8024

Client Sample ID: BES24-115 0.5'
Prep Type: Total/NA
Prep Batch: 7952

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride	330		30.0	341	4	mg/Kg		53	50 - 150		

QC Sample Results

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 885-7336-3 MSD
Matrix: Solid
Analysis Batch: 8024

Client Sample ID: BES24-115 0.5'
Prep Type: Total/NA
Prep Batch: 7952

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	330		30.2	375	4	mg/Kg		166	50 - 150	10	20

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

GC VOA

Prep Batch: 7870

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	5030C	
885-7336-2	BES24-114 0.5'	Total/NA	Solid	5030C	
885-7336-3	BES24-115 0.5'	Total/NA	Solid	5030C	
885-7336-4	BES24-116 0.5'	Total/NA	Solid	5030C	
885-7336-5	BES24-117 0.5'	Total/NA	Solid	5030C	
MB 885-7870/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-7870/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-7870/3-A	Lab Control Sample	Total/NA	Solid	5030C	
885-7336-1 MS	WES24-35 0-0.5'	Total/NA	Solid	5030C	
885-7336-1 MSD	WES24-35 0-0.5'	Total/NA	Solid	5030C	
885-7336-2 MS	BES24-114 0.5'	Total/NA	Solid	5030C	
885-7336-2 MSD	BES24-114 0.5'	Total/NA	Solid	5030C	

Analysis Batch: 7946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	8021B	7870
885-7336-2	BES24-114 0.5'	Total/NA	Solid	8021B	7870
885-7336-3	BES24-115 0.5'	Total/NA	Solid	8021B	7870
885-7336-4	BES24-116 0.5'	Total/NA	Solid	8021B	7870
885-7336-5	BES24-117 0.5'	Total/NA	Solid	8021B	7870
MB 885-7870/1-A	Method Blank	Total/NA	Solid	8021B	7870
LCS 885-7870/3-A	Lab Control Sample	Total/NA	Solid	8021B	7870
885-7336-2 MS	BES24-114 0.5'	Total/NA	Solid	8021B	7870
885-7336-2 MSD	BES24-114 0.5'	Total/NA	Solid	8021B	7870

Analysis Batch: 7988

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	8015M/D	7870
885-7336-2	BES24-114 0.5'	Total/NA	Solid	8015M/D	7870
885-7336-3	BES24-115 0.5'	Total/NA	Solid	8015M/D	7870
885-7336-4	BES24-116 0.5'	Total/NA	Solid	8015M/D	7870
885-7336-5	BES24-117 0.5'	Total/NA	Solid	8015M/D	7870
MB 885-7870/1-A	Method Blank	Total/NA	Solid	8015M/D	7870
LCS 885-7870/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	7870
885-7336-1 MS	WES24-35 0-0.5'	Total/NA	Solid	8015M/D	7870
885-7336-1 MSD	WES24-35 0-0.5'	Total/NA	Solid	8015M/D	7870

GC Semi VOA

Analysis Batch: 7876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	8015M/D	7885
885-7336-2	BES24-114 0.5'	Total/NA	Solid	8015M/D	7885
885-7336-3	BES24-115 0.5'	Total/NA	Solid	8015M/D	7885
885-7336-4	BES24-116 0.5'	Total/NA	Solid	8015M/D	7885
885-7336-5	BES24-117 0.5'	Total/NA	Solid	8015M/D	7885
MB 885-7885/1-A	Method Blank	Total/NA	Solid	8015M/D	7885
LCS 885-7885/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	7885

QC Association Summary

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

GC Semi VOA

Prep Batch: 7885

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	SHAKE	
885-7336-2	BES24-114 0.5'	Total/NA	Solid	SHAKE	
885-7336-3	BES24-115 0.5'	Total/NA	Solid	SHAKE	
885-7336-4	BES24-116 0.5'	Total/NA	Solid	SHAKE	
885-7336-5	BES24-117 0.5'	Total/NA	Solid	SHAKE	
MB 885-7885/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-7885/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

HPLC/IC

Prep Batch: 7952

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	300_Prep	
885-7336-2	BES24-114 0.5'	Total/NA	Solid	300_Prep	
885-7336-3	BES24-115 0.5'	Total/NA	Solid	300_Prep	
885-7336-4	BES24-116 0.5'	Total/NA	Solid	300_Prep	
885-7336-5	BES24-117 0.5'	Total/NA	Solid	300_Prep	
MB 885-7952/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-7952/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	
885-7336-3 MS	BES24-115 0.5'	Total/NA	Solid	300_Prep	
885-7336-3 MSD	BES24-115 0.5'	Total/NA	Solid	300_Prep	

Analysis Batch: 8024

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-7336-1	WES24-35 0-0.5'	Total/NA	Solid	300.0	7952
885-7336-2	BES24-114 0.5'	Total/NA	Solid	300.0	7952
885-7336-3	BES24-115 0.5'	Total/NA	Solid	300.0	7952
885-7336-4	BES24-116 0.5'	Total/NA	Solid	300.0	7952
885-7336-5	BES24-117 0.5'	Total/NA	Solid	300.0	7952
MB 885-7952/1-A	Method Blank	Total/NA	Solid	300.0	7952
LCS 885-7952/2-A	Lab Control Sample	Total/NA	Solid	300.0	7952
885-7336-3 MS	BES24-115 0.5'	Total/NA	Solid	300.0	7952
885-7336-3 MSD	BES24-115 0.5'	Total/NA	Solid	300.0	7952

Lab Chronicle

Client: Vertex
Project/Site: Red Deer CTB

Job ID: 885-7336-1

Client Sample ID: WES24-35 0-0.5'

Lab Sample ID: 885-7336-1
Matrix: Solid
Date Collected: 07/01/24 10:55
Date Received: 07/03/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8015M/D		1	7988	JP	EET ALB	07/06/24 00:26
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8021B		1	7946	JP	EET ALB	07/06/24 00:26
Total/NA	Prep	SHAKE			7885	KR	EET ALB	07/03/24 15:14
Total/NA	Analysis	8015M/D		1	7876	PD	EET ALB	07/03/24 23:03
Total/NA	Prep	300_Prep			7952	JT	EET ALB	07/05/24 15:35
Total/NA	Analysis	300.0		20	8024	JT	EET ALB	07/05/24 17:40

Client Sample ID: BES24-114 0.5'

Lab Sample ID: 885-7336-2
Matrix: Solid
Date Collected: 07/01/24 11:30
Date Received: 07/03/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8015M/D		1	7988	JP	EET ALB	07/06/24 01:36
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8021B		1	7946	JP	EET ALB	07/06/24 01:36
Total/NA	Prep	SHAKE			7885	KR	EET ALB	07/03/24 15:14
Total/NA	Analysis	8015M/D		1	7876	PD	EET ALB	07/03/24 23:14
Total/NA	Prep	300_Prep			7952	JT	EET ALB	07/05/24 15:35
Total/NA	Analysis	300.0		20	8024	JT	EET ALB	07/05/24 17:53

Client Sample ID: BES24-115 0.5'

Lab Sample ID: 885-7336-3
Matrix: Solid
Date Collected: 07/01/24 12:10
Date Received: 07/03/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8015M/D		1	7988	JP	EET ALB	07/06/24 02:47
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8021B		1	7946	JP	EET ALB	07/06/24 02:47
Total/NA	Prep	SHAKE			7885	KR	EET ALB	07/03/24 15:14
Total/NA	Analysis	8015M/D		1	7876	PD	EET ALB	07/03/24 23:25
Total/NA	Prep	300_Prep			7952	JT	EET ALB	07/05/24 15:35
Total/NA	Analysis	300.0		20	8024	JT	EET ALB	07/05/24 18:05

Client Sample ID: BES24-116 0.5'

Lab Sample ID: 885-7336-4
Matrix: Solid
Date Collected: 07/01/24 12:40
Date Received: 07/03/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8015M/D		1	7988	JP	EET ALB	07/06/24 03:10

Lab Chronicle

Client: Vertex
Job ID: 885-7336-1
Project/Site: Red Deer CTB

Client Sample ID: BES24-116 0.5'
Lab Sample ID: 885-7336-4
Date Collected: 07/01/24 12:40
Matrix: Solid
Date Received: 07/03/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8021B		1	7946	JP	EET ALB	07/06/24 03:10
Total/NA	Prep	SHAKE			7885	KR	EET ALB	07/03/24 15:14
Total/NA	Analysis	8015M/D		1	7876	PD	EET ALB	07/03/24 23:36
Total/NA	Prep	300_Prep			7952	JT	EET ALB	07/05/24 15:35
Total/NA	Analysis	300.0		20	8024	JT	EET ALB	07/05/24 19:07

Client Sample ID: BES24-117 0.5'
Lab Sample ID: 885-7336-5
Date Collected: 07/01/24 13:10
Matrix: Solid
Date Received: 07/03/24 08:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8015M/D		1	7988	JP	EET ALB	07/06/24 03:34
Total/NA	Prep	5030C			7870	AT	EET ALB	07/03/24 10:43
Total/NA	Analysis	8021B		1	7946	JP	EET ALB	07/06/24 03:34
Total/NA	Prep	SHAKE			7885	KR	EET ALB	07/03/24 15:14
Total/NA	Analysis	8015M/D		1	7876	PD	EET ALB	07/03/24 23:48
Total/NA	Prep	300_Prep			7952	JT	EET ALB	07/05/24 15:35
Total/NA	Analysis	300.0		20	8024	JT	EET ALB	07/05/24 19:19

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Vertex
Job ID: 885-7336-1
Project/Site: Red Deer CTB

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-26-25

Released to Imaging: 8/12/2024 2:32:55 PM
Received by OCD: 7/24/2024 3:21:43 PM

Chain-of-Custody Record

Client: **Vertex (bill to Mack Energy, Matt Buckles)**

Mailing Address: (On File)

Phone #:

email or Fax#:

QA/QC Package: ☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☐ Standard X Rush_48-hour

Project Name: **Red Deer CTB**

Project #: **24E-01863**

Project Manager: **Sally Carttar**

SCarttar@vertex ca

Sampler: L Pullman

On Ice: ☒ Yes ☐ No

# of Coolers: 1 VOG1

Cooler Temp(including CF): 0.9+0=0.9°C

HALL ENVIRONMENTAL ANALYSIS LABO
www hallenvironmental com
4901 Hawkins NE - Albuquerque, NM 8
Tel 505-345-3975 Fax 505-345-41
885-7336 COC

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH 8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504 1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
7 1 24	10 55	Soil	WES24-35 0-0 5'	1, 4oz jar		1	X	X					X			
7 1 24	11 30	Soil	BES24-114 0 5'	1, 4oz jar		2	X	X					X			
7 1 24	12 10	Soil	BES24-115 0 5'	1, 4oz jar		3	X	X					X			
7 1 24	12 40	Soil	BES24-116 0 5'	1, 4oz jar		4	X	X					X			
7 1 24	13 10	Soil	BES24-117 0 5'	1, 4oz jar		5	X	X					X			

Date	Time	Relinquished by	Received by	Via	Date	Time
7-8-24	07:50	John Pullman	CCummings		7/8/24	0700
7/8/24	1900	CCummings	SCM	Courier	7/3/24	0810

Remarks
Direct Bill to Mack Energy ATTN Matt Buckles

CC.Sally Carttar (SCarttar@vertexresource com) for Final Report

If necessary samples submitted to Hall Environmental may be subcontracted to other accredited laboratories This serves as notice of this possibility Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Vertex Job Number: 885-7336-1

Login Number: 7336 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: McQuiston, Steven

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
TCEQ Mtd 1005 soil sample was frozen/delivered for prep within 48H of sampling.	N/A	

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QUESTIONS

Action 366582

QUESTIONS

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAPP2411337548**
Incident Name	**NAPP2411337548 RED DEER CTB @ 0**
Incident Type	**Fire**
Incident Status	**Remediation Closure Report Received**
Incident Facility	**[fAPP2211037291] Red Deer Federal Com Battery**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	Red Deer CTB
Date Release Discovered	04/21/2024
Surface Owner	State

Incident Details	
Please answer all the questions in this group.	
Incident Type	Fire
Did this release result in a fire or is the result of a fire	Yes
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Cause: Fire | Separator | Crude Oil | Released: 40 BBL | Recovered: 0 BBL | Lost: 40 BBL.
Produced Water Released (bbls) Details	Cause: Fire | Flow Line - Production | Produced Water | Released: 99 BBL | Recovered: 0 BBL | Lost: 99 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more;** **(2) an unauthorized release of a volume that:** **(a) results in a fire or is the result of a fire.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	*Not answered.*
Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 04/25/2024

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Less than or equal 25 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 500 and 1000 (ft.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Greater than 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 100 and 200 (ft.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Zero feet, overlying, or within area
Categorize the risk of this well / site being in a karst geology	High
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	Yes

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	8600
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	11130
GRO+DRO (EPA SW-846 Method 8015M)	7330
BTEX (EPA SW-846 Method 8021B or 8260B)	36.6
Benzene (EPA SW-846 Method 8021B or 8260B)	0.4
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	04/25/2024
On what date will (or did) the final sampling or liner inspection occur	07/01/2024
On what date will (or was) the remediation complete(d)	05/10/2024
What is the estimated surface area (in square feet) that will be reclaimed	15369
What is the estimated volume (in cubic yards) that will be reclaimed	1230
What is the estimated surface area (in square feet) that will be remediated	15369
What is the estimated volume (in cubic yards) that will be remediated	1230
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	HALFWAY DISPOSAL AND LANDFILL [fEEM0112334510]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 07/24/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	OGRID: 13837
	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

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	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**357313**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**07/01/2024**
What was the (estimated) number of samples that were to be gathered	**9**
What was the sampling surface area in square feet	**1600**

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Was this release entirely contained within a lined containment area	**No**
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	15369
What was the total volume (cubic yards) remediated	1230
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	0
What was the total volume (in cubic yards) reclaimed	1230
Summarize any additional remediation activities not included by answers (above)	None

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Sally Carttar Title: Consultant Email: scarttar@vertex.ca Date: 07/24/2024

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QUESTIONS (continued)

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	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Reclamation Report	
Only answer the questions in this group if all reclamation steps have been completed.	
Requesting a reclamation approval with this submission	No

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CONDITIONS

Action 366582

CONDITIONS

Operator:	OGRID:
MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	13837
	Action Number: 366582
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	We have received your Remediation Closure Report for Incident #NAPP2411337548 RED DEER CTB, thank you. This Remediation Closure Report is approved.	8/12/2024