



September 24, 2024

**New Mexico Energy Minerals and Natural Resources Department**

1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: Closure Request  
Remuda 100 Battery  
Incident Number nAPP2418050972  
Eddy County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum) on behalf of XTO Energy, Inc. (XTO), has prepared this *Closure Request* to document site assessment, excavation, and soil sampling activities at the Remuda 100 Battery (Site). The purpose of the site assessment and soil sampling activities was to assess the presence or absence of impacts to soil following a release of produced water. Based on field observations, field screening activities, and soil sample laboratory analytical results, XTO is submitting this *Closure Request*, describing delineation and excavation activities that have occurred and requesting no further action for Incident Number nAPP2418050972.

### **SITE DESCRIPTION AND RELEASE SUMMARY**

The release was initially reported at the incorrect location but following a review of initial release records, internal documents, and personnel communications, it was confirmed the release is located on the Remuda 100 Battery facility pad. The Site is located in Unit E, Section 25, Township 23 South, Range 29 East, in Eddy County, New Mexico (32.276985°, -103.942892°) and is associated with oil and gas exploration and production operations on state land managed by the New Mexico State Land Office (SLO).

On June 26, 2024, a corrosion of a pipeline resulted in the release of approximately 7 barrels (bbls) of produced water onto the surface of the pad. A vacuum truck was immediately dispatched to the Site to recover free-standing fluids; 2 bbls of released fluids were recovered. XTO reported the release to the New Mexico Oil Conservation Division (NMOCD) on an Initial C-141 Application (C-141) and notification of release (NOR) on June 28, 2024. The release was assigned Incident Number nAPP2418050972.

### **SITE CHARACTERIZATION AND CLOSURE CRITERIA**

The Site was characterized according to Table I, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29 (19.15.29) of the New Mexico Administrative Code (NMAC). Results from the characterization desktop review are presented below. Potential Site receptors are identified on Figure 1.

Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on a soil boring drilled for determination of regional groundwater depth. In January 2021, a soil boring permitted by New Mexico Office of the State Engineer (C-04994) was completed approximately 0.32 miles southeast of the Site utilizing hollow stem auger method. Soil boring C-04994 was drilled to

a depth of 105 feet bgs. A field geologist logged and described soils continuously. No moisture or groundwater was encountered during drilling activities. The temporary well was left open for over 72 hours to allow for potential slow infill of groundwater. After the 72-hour waiting period without observing groundwater, it was confirmed that groundwater beneath the Site is greater than 105 feet bgs. The borehole was properly abandoned with drill cuttings and hydrated bentonite chips. The Well Record & Log is included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is an intermittent dry wash, located approximately 215 feet northeast of the Site based on the NMOCD Oil and Gas Map. Because the significant watercourse appeared in online databases to flow through the well pad and adjacent well pad (Figure 2), Ensolum personnel conducted a field investigation to confirm the presence or absence of a potentially significant watercourse for a previously approved *Deferral Request* at the same Site. The approved *Deferral Request* for Incident Number nAPP2226346738 documents the watercourse survey that was completed on November 22, 2022 to confirm the feature complies with the definition of a significant watercourse per Subsection P of 19.15.17.7 NMAC. Ensolum was able to confirm an intermittent dry wash with an established bed and bank located approximately 440 feet to the North of the Site, but not within 300 feet of the Site. More detailed results and photographic evidence are provided in Figure 2. Further details on the approval can be found on the OCD portal for Incident Number nAPP2226346738.

The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not underlain by unstable geology (medium potential karst designation area).

Based on the results of the Site Characterization, the following NMOCD Table 1 Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH)-gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg
- TPH: 2,500 mg/kg
- Chloride: 20,000 mg/kg

## DELINEATION AND EXCAVATION ACTIVITIES

On July 9, 2024, Ensolum personnel visited the Site to evaluate the release extent based on information provided on the C-141 and visual observations. The release extent was mapped utilizing a handheld Global Positioning System (GPS) unit and is depicted on Figure 3. On July 18 and 19, 2024, Ensolum personnel returned to the Site to oversee delineation and excavation activities. Five delineation soil samples (SS01 through SS05) were collected at a depth of 0.5 feet bgs outside the release extent to assess the lateral extent of the release. Three boreholes (BH01 through BH03) were advanced via hand auger within the release extent to assess the vertical extent of the release. Delineation soil samples were collected at depths ranging from 0.5 feet bgs to 3 feet bgs. The soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride utilizing Hach® chloride QuanTab® test strips. The delineation soil sample locations are depicted on

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Figure 3. Photographic documentation was collected, and a Photographic Log is included in Appendix B.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported under strict chain-of-custody procedures to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico, for analysis of the following constituents of concern (COC): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following Standards Method SM4500.

Impacted soil was then excavated from the release area as indicated by visible staining and field screening activities. Excavation activities were performed using hand shovels. To direct excavation activities, Ensolum personnel field screened soil for VOCs and chlorides. The excavation occurred on the well pad near production equipment and XTO safety policy restricts soil disturbing activities within a 2-foot radius of any active production equipment. The surface surrounding the production equipment that was unsafe to excavate was scraped with hand shovels. Following removal of impacted soil to the maximum extent possible, Ensolum personnel collected 5-point composite soil samples representing no more than 200 square feet from the sidewalls and floor of the excavation. The 5-point composite soil samples were collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. Excavation soil samples FS01 through FS07 were collected from the floor of the excavation at depth of 0.5 feet bgs. Excavation sidewall soil samples SW01 through SW07 were collected from the sidewalls of the excavation at depths ranging from ground surface to 0.5 feet bgs. The soil samples were collected, handled, and analyzed following the same procedures described above at Cardinal in Hobbs, New Mexico. The excavation extent and excavation soil sample locations are depicted on Figure 4.

The final excavation extent measured approximately 92 square feet. A total of approximately 2 cubic yards of impacted soil was removed during the excavation activities. The impacted soil was transported and properly disposed of at the R360 Landfill Facility in Hobbs, New Mexico.

## LABORATORY ANALYTICAL RESULTS

Laboratory analytical results for assessment soil samples SS01 through SS05 collected at 0.5 feet bgs indicated the COC concentrations were compliant with Site Closure Criteria and the strictest Table I Closure Criteria, successfully defining the lateral extent of the release. Delineation soil samples BH01 through BH03 collected at 0.5 feet bgs indicated the COC concentrations were compliant with Site Closure Criteria but exceeded the strictest Table I Closure Criteria for chloride concentrations. Delineation soil sample BH02 at terminal depth of 1-foot bgs indicated all COCs were compliant with Site Closure Criteria but exceeded the strictest Table I Closure Criteria for chloride. Delineation soil sample BH03 at terminal depth of 3 feet bgs indicated all COCs were compliant with the Site Closure Criteria and the strictest Table 1 Closure Criteria, successfully defining the vertical extent of the release.

Laboratory analytical results for all excavation floor soil samples, FS01 through FS07, indicated all COC concentrations were compliant with Site Closure Criteria. Excavation sidewall soil samples SW01 and SW07 were in compliance with Closure Criteria. Laboratory analytical results are summarized in Table 1 and laboratory analytical reports are included in Appendix D.

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**CLOSURE REQUEST**

Delineation and excavation activities were conducted at the Site to address the June 26, 2024, release of produced water. Laboratory analytical results for the confirmation soil samples, collected from the final excavation extent, indicated that all COCs were compliant with the Site Closure Criteria. Based on the soil sample analytical results, no further remediation was required. XTO will backfill the excavation with material purchased locally and recontour the Site to match pre-existing site conditions.

Laboratory analytical results indicate approximately 120 cubic yards of waste-containing soil, assuming a maximum depth of 3 feet bgs as indicated by BH03C remain immediately adjacent to and underneath active production equipment. Final reclamation of the remaining waste-containing soil exceeding the strictest Table I Closure Criteria in the top 4 feet will occur during the final abandonment of the well pad or major construction, whichever comes first.

Excavation of impacted soil has mitigated impacts at this Site. Depth to groundwater has been estimated to be greater than 100 feet bgs and no other sensitive receptors were identified near the release extent. XTO believes these remedial actions are protective of human health, the environment, and groundwater. As such, XTO respectfully requests closure for Incident Number nAPP2418050972.

If you have any questions or comments, please contact Ms. Tacoma Morrissey at (337) 257-8307 or tmorrissey@ensolum.com.

Sincerely,  
**Ensolum, LLC**

Tracy Hillard  
Staff Engineer

Ashley L. Ager, M.S., P.G  
Principal

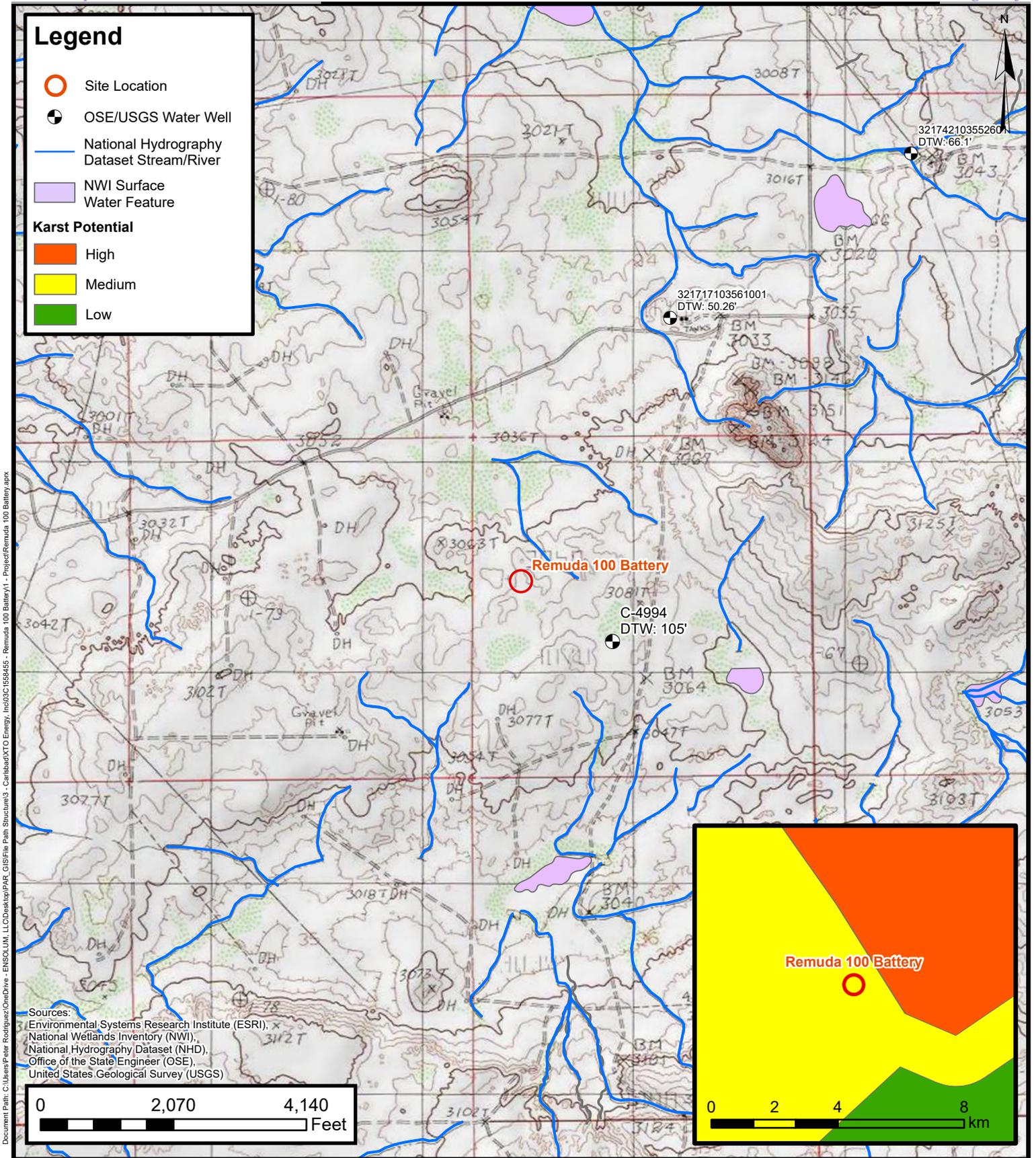
cc: Amy Ruth, XTO  
Amanda Garcia, XTO  
SLO

Appendices:

- Figure 1 Site Receptor Map
- Figure 2 Watercourse Survey
- Figure 3 Delineation Soil Sample Locations
- Figure 4 Excavation Soil Sample Locations
- Table 1 Soil Sample Analytical Results
- Appendix A Referenced Well Records
- Appendix B Photographic Log
- Appendix C Lithologic / Soil Sampling Logs
- Appendix D Laboratory Analytical Reports & Chain-of-Custody Documentation



FIGURES



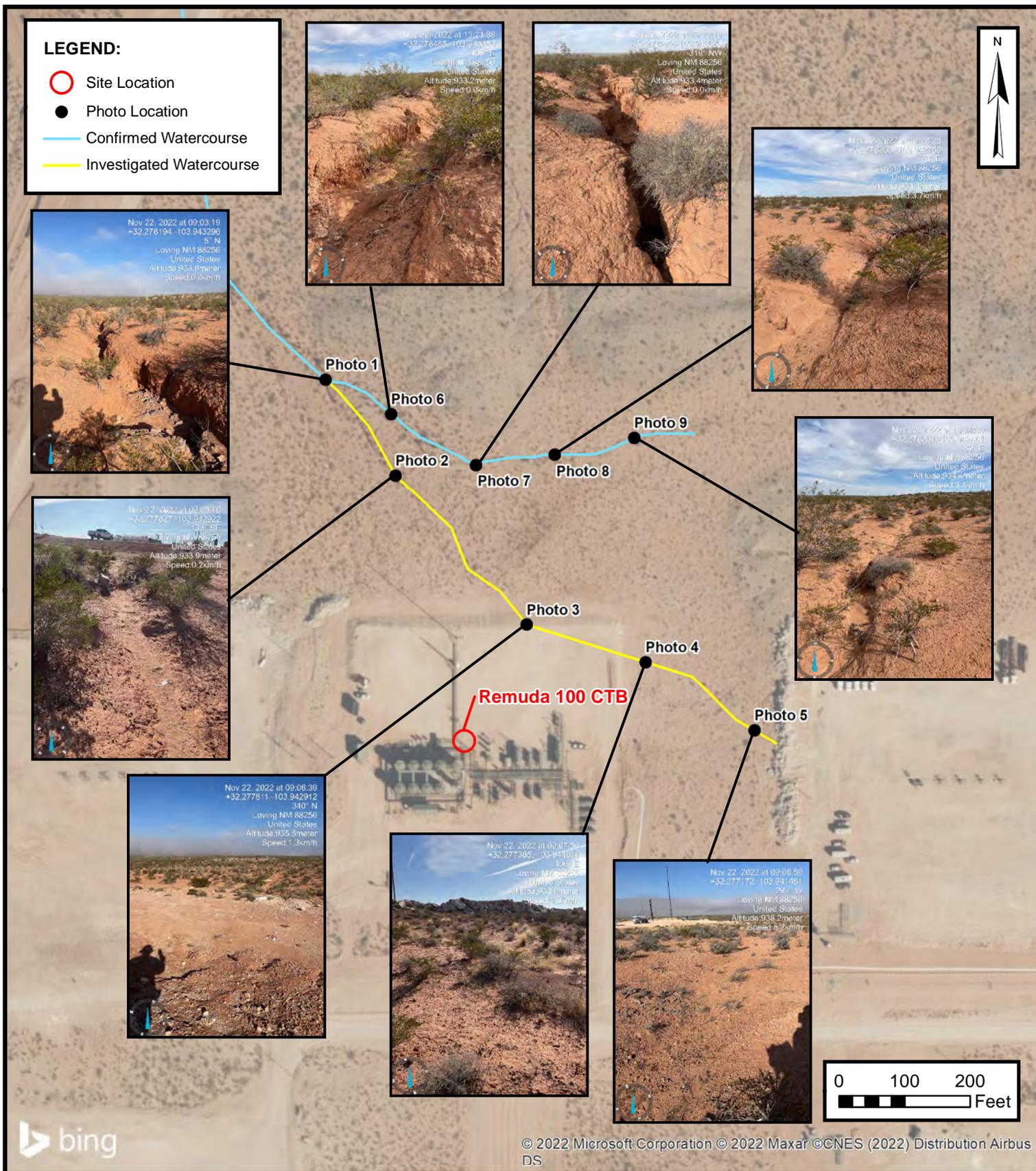
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**Site Receptor Map**

XTO Energy, Inc  
 Remuda 100 Battery  
 Incident Number: NAPP2418050972  
 Unit E , Sec 25, T23S, R29E  
 Eddy County, New Mexico

**FIGURE**  
**1**



**ENSOLUM**  
Environmental, Engineering and Hydrogeologic Consultants

**WATERCOURSE SURVEY**

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Eddy County, New Mexico

**FIGURE**  
**2**



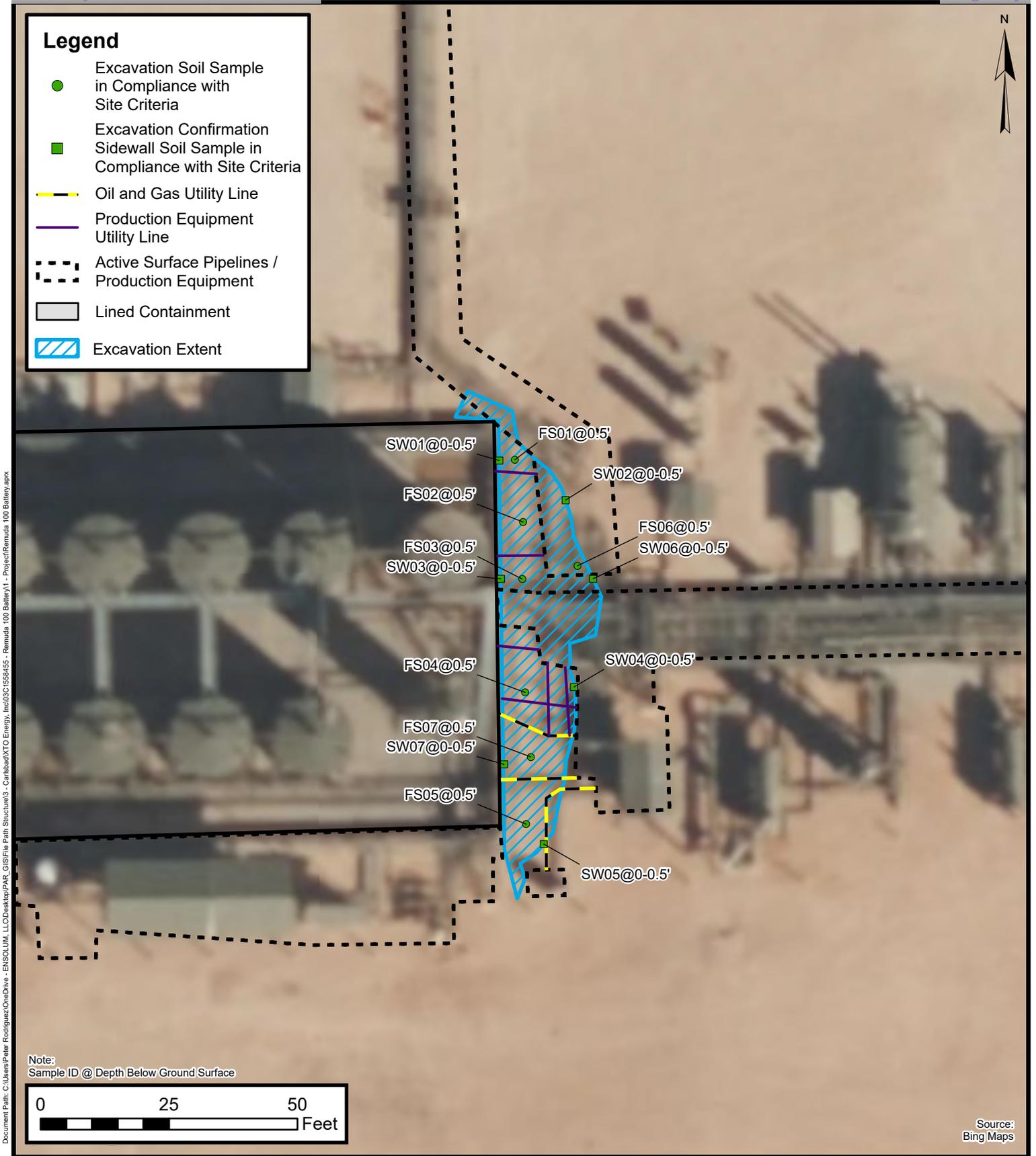
Document Path: C:\Users\Peter.Rodriguez\OneDrive - ENSOLUM, LLC\Desktop\PAR\_GIS\File Path Structure3 - Carlsbad\XTO Energy - Inc\03C\558465 - Remuda 100 Battery\1 - Project\Remuda 100 Battery.aprx



**Delineation Soil Sample Locations**

XTO Energy, Inc  
Remuda 100 Battery  
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Eddy County, New Mexico

**FIGURE**  
**3**



### Excavation Soil Sample Locations

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 Unit E , Sec 25, T23S, R29E  
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**FIGURE**  
**4**





TABLES



**TABLE 1  
SOIL SAMPLE ANALYTICAL RESULTS  
Remuda 100 Battery  
XTO Energy, Inc  
Eddy County, New Mexico**

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
<b>NMOCD Table I Closure Criteria (NMAC 19.15.29)</b>			<b>10</b>	<b>50</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>1,000</b>	<b>2,500</b>	<b>20,000</b>
<b>Delineation Soil Samples</b>										
SS01	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS02	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
SS03	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	576
SS04	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
SS05	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
BH01	07/18/2024	0.5	<0.050	<0.300	<10.0	24.4	<10.0	24.4	24.4	11,800
BH02	07/18/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	13,600
BH02A	07/18/2024	1	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	9,600
BH03	07/18/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	8,600
BH03C	07/18/2024	3	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
<b>Confirmation Soil Samples</b>										
FS01	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	12,600
FS02	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	10,200
FS03	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	10,200
FS04	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	6,930
FS05	07/19/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	576
FS06	07/19/2024	0.5	<0.050	<0.300	<10.0	19.8	<10.0	19.8	19.8	704
FS07	08/09/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	5,120
SW01	08/09/2024	0-0.5	<0.050	<0.300	<10.0	10.7	<10.0	10.7	10.7	15,800
SW02	08/09/2024	0-0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	18,000
SW03	08/09/2024	0-0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	12,200



**TABLE 1  
SOIL SAMPLE ANALYTICAL RESULTS  
Remuda 100 Battery  
XTO Energy, Inc  
Eddy County, New Mexico**

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
<b>NMOCD Table I Closure Criteria (NMAC 19.15.29)</b>			<b>10</b>	<b>50</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>1,000</b>	<b>2,500</b>	<b>20,000</b>
SW04	08/09/2024	0-0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	9,200
SW05	08/09/2024	0-0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,410
SW06	08/09/2024	0-0.5	<0.050	<0.300	<10.0	354	106	354	460	544
SW07	08/09/2024	0-0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	18,800

Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

Concentrations in **bold** exceed the NMOCD Table I Closure Criteria or reclamation requirement where applicable.

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon

NMAC: New Mexico Administrative Code

Grey text indicates soil sample removed during excavation activities



## APPENDIX A

### Referenced Well Records

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<p><b>WSP USA</b> 508 West Stevens Street Carlsbad, New Mexico 88220</p>				BH or PH Name:		Date:		
				BH01 (C-04494)		11/18/2020, 12/02/20, 01/05/2021		
				Site Name:		Remuda North 25 Observation Well		
				RP or Incident Numbe				
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>				LTE Job Number:		TE012919039		
Lat/Long:				Field Screening:		Hole Diameter:		
						6.25", 4.25"		
						Total Depth:		
						105'		
Comments: Lithology remarks only. No field screenings: Dry hole								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D			N			1	SP-SC	0-1' : SAND, dry, brown, poorly graded, fine grain, Clay (10% clay), some roots, no stain, no odor  1-4' : SAND, dry, reddish-light brown, poorly graded, very fine - fine grain, some rounded caliche pebbles, no stain, no odor  4-9' : CALICHE, dry, light brown-tan, poorly consolidated, sub-rounded caliche pebbles and gravel, very silty, gradational  9-14' : Abundent sub-round caliche gravel  14-19' : Some sub-angular caliche gravel and pebbles  19-24' : Abundant sub-angular caliche gravel and pebbles, moderately consolidated
D			N			2		
						3		
						4	CCHE	
						5		
						6		
						7		
						8		
						9		
						10		
						11		
						12		
						13		
						14		
						15		
						16		
						17		
						18		
						19		
						20		
						21		
						22		
						23		
						24		
D			N			25	CL	

 <p style="text-align: center;"><b>WSP USA</b> 508 West Stevens Street Carlsbad, New Mexico 88220</p>				BH or PH Name:		Date:			
				BH01 (C-04494)		11/18/2020, 12/02/20, 01/05/2021			
				Site Name: <b>Remuda North 25 Observation Well</b>					
				RP or Incident Number					
LITHOLOGIC / SOIL SAMPLING LOG				LTE Job Number: <b>TE012919039</b>					
Lat/Long:		Field Screening:		Logged By BB, LAD, FS		Method: Hollow Stem Auger, sonic			
				Hole Diameter: 6.25", 4.25"		Total Depth: 105'			
Comments: Lithology remarks only. No field screenings: Dry hole									
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks	
D			N			26	CL	24-39' : MUDSTONE, dry, reddish-brown, low plasticity, well consolidated, cohesive, trace caliche sub-angular pebbles, no tain, no odor, sharp transition  34-39' : Sub-angular calcium carbonate gravel with dissolution features (1-3mm), tan-light brown  At 39' : Begin air rotary (4.25")  39-42' : DOLOMETIC LIMESTONE, tan-light brown, dry, well consolidated, with dissolution features (1-3mm), sharp, no stain, no odor, light to moderate reaction with HCl  42-45' : Some light gray dolomite with trace dissolution features (>1mm)  At 48' : Stop due to air rotary refusal (11/18/20)  48-56' : Advance borehole with new air rotary bit (12/02/20), DOLOMITE, white, well consolidated, dark gray-black banding, no stain , no odor	
						27			
						28			
						29			
						30			
						31			
						32			
						33			
						34			
						35			
						36			
						37			
						38			
						39			
D			N			40	DOL		
						41			
						42			
						43			
						44			
						45			
						46			
						47			
						48			
						49			
						50			
							Refusal on 11/18/20		
							Restart borehole on 12/02/20		

<p><b>WSP USA</b> 508 West Stevens Street Carlsbad, New Mexico 88220</p>				BH or PH Name:		Date:		
				BH01 (C-04494)		11/18/2020, 12/02/2020, 1/5/2021		
				Site Name:		Remuda North 25 Observation Well		
				RP or Incident Number:				
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>				LTE Job Number: TE012919039				
Lat/Long:		Field Screening:		Logged By BB, LAD, FS		Method: Hollow Stem Auger, sonic		
				Hole Diameter: 6.25", 4.25"		Total Depth: 105'		
Comments: Lithologic log only, no field screenings								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D			N			51	DOL	48-56' : Advanced borehole with new air rotary bit (12/02/20), DOLOMITE, white, well consolidated, dark gray- banding, no stain no odor  At 56' : Restarted borehole on 1/5/2021 with sonic rig  56-65' : DOLOMITE, dry, light gray-gray, well consolidated, some calcium crystalline veins (<1mm), some dissolution features (2mm) with fine calcite crystalline, trace orange oxidation staining within dissolution features, no stain, no odor  62' : Brown-pale yellow coarse crystalline dolomitic limestone stringer (2cm) 63-65' : Abundant calcite crystalline veins (<1mm), pale green-gray, poorly consolidated  65-69' : MUDSTONE, moist, reddish brown, poorly consolidated, high plasticity, cohesive, abundant coarse crystalline gypsum, few pale green-gray mottling, no stain, no odor  69-81' : GYPSUM with Anhydrite, dry, greenish gray, some pale yellow, well consolidated, fine crystalline, 20% anhydrite, no stain, no odor
						52		
						53		
						54		
						55		
						56		
						57		
						58		
						59		
						60		
						61		
						62		
						63		
						64		
						65		
D			N			66	CH-S	
						67		
						68		
						69		
						70		
						71		
						72		
						73		
						74		
						75		
						70	GYP	

 <p style="text-align: center;"><b>WSP USA</b> 508 West Stevens Street Carlsbad, New Mexico 88220</p>		BH or PH Name: BH01 (C-04494)	Date: 11/18/2020, 12/02/2020, 1/5/2021					
		Site Name: Remuda North 25 Observation Well						
		RP or Incident Number:						
		LTE Job Number: TE012919039						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Lat/Long:		Field Screening:	Logged By BB, LAD, FS	Method: Hollow Stem Auger, sonic				
			Hole Diameter: 6.25", 4.25"	Total Depth: 105'				
Comments: Lithologic log only, no field screenings								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks
D			N			76	GYP	69-81' : GYPSUM with Anhydrite, dry, greenish gray, some pale yellow, well consolidated, fine crystalline, 20% anhydrite, no stain, no odor
						77		
						78		
						79		
						80		
						81		
						82		
						83		
						84		
						85		
D			N			86	CH-S	90-98' : Some fine grain brown sand  At 97' : dark gray-gray gypsum stringer (4cm)
						87		
						88		
						89		
						90		
						91		
						92		
						93		
						94		
						95		
D			N			96	GYP	98-99.5' : GYPSUM, dark gray-gray, some brown, dry, well consolidated, fine-coarse crystalline, no stain, no odor
						97		
						98		
						99		
						100		
D			N			100	ML-S	99.5-105' : Sandy SILTSTONE, moist, brown, some gray-dark gray, poorly consolidated, 20% very fine grain sand, no stain, no odor

 <p><b>WSP USA</b> 508 West Stevens Street Carlsbad, New Mexico 88220</p>				BH or PH Name: BH01 (C-04494)		Date: 11/18/2020, 12/02/2020, 1/5/2021					
				Site Name: Remuda North 25 Observation Well				RP or Incident Number:			
				LTE Job Number: TE012919039				Logged By BB, LAD, FS		Method: Hollow Stem Auger, sonic	
				Lat/Long:		Field Screening:		Hole Diameter: 6.25", 4.25"		Total Depth: 105'	
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>											
Comments: Lithologic log only, no field screenings											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample #	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithology/Remarks			
D			N			101	ML-S	99.5-105' : Sandy SILTSTONE, moist, brown, some gray-dark gray, poorly consolidated, 20% very fine grain sand, no stain, no odor  At 102' : Thin (<1mm) laminated black/gray well consolidated shale stringer (4cm thick)			
						102					
						103					
						104					
						105					
						106		TD @ 105' bgs (1/5/2021)			
						107					
						108					
						109					
						110					
						111					
						112					
						113					
						114					
						115					
						116					
						117					
						118					
						119					
						120					
						121					
						122					
						123					
						124					
						125					



## APPENDIX B

### Photographic Log

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**Photographic Log**  
XTO Energy, Inc  
Remuda 100 Battery  
NAPP2418050972



Photograph: 1 Date: 7/09/2024  
Description: Initial soil staining  
View: North

Photograph: 2 Date: 7/9/2024  
Description: Initial soil staining  
View: Northwest



Photograph: 3 Date: 7/18/2024  
Description: Final excavation extent  
View: North

Photograph: 4 Date: 8/9/2024  
Description: Final excavation extent  
View: Northwest



## APPENDIX C

### Lithologic Soil Sampling Logs

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		Sample Name: BH02		Date: 7/18/2024				
		Site Name: Remuda 100 Battery						
		Incident Number: nAPP2418050972						
		Job Number: 03C1558455						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>				Logged By: US		Method: Hand Auger		
Coordinates: 32.276968, -103.942894				Hole Diameter: 4"		Total Depth: 1'		
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. A 40% correction factor is included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
M	12,762	0.0		BH02	0.5	0	CCHE	(0-0.5') CALICHE, white
M	9,240	0.0		BH02A	1	1	SP	(0.5-1') SAND, brown, well sorted, with silt, trace clay, no odor
Total Depth @ 1 feet bgs - Hand Auger Refusal								

		Sample Name: BH03		Date: 7/18/2024				
		Site Name: Remuda 100 Battery						
		Incident Number: nAPP2418050972						
		Job Number: 03C1558455						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.276841, -103.942895			Logged By: US		Method: Hand Auger			
			Hole Diameter: 4"		Total Depth: 3'			
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. A 40% correction factor is included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
					0	0	CCHE	(0-0.5') CALICHE, white
M	7,884	0.0	N	BH03	0.5	0.5	SP	(0.5-3') SAND, brown, well sorted, with silt, trace clay, no odor  (@2') some clay
M	694	0.0	N		1	1		
D	1,002	0.0	N		2	2		
D	235	0.0	N	BH03C	3	3		
						Total Depth @ 3 feet bgs		



## APPENDIX D

### Laboratory Analytical Reports & Chain of Custody Documentation

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PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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July 26, 2024

TRACY HILLARD

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: REMUDA 100 BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 07/23/24 12:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number TX-C24-00112. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: FS01 0.5' (H244372-01)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12600	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	212	106	200	2.44	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	180	90.2	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 115 % 48.2-134

Surrogate: 1-Chlorooctadecane 142 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received: 07/23/2024  
 Reported: 07/26/2024  
 Project Name: REMUDA 100 BATTERY  
 Project Number: 03C1558455  
 Project Location: XTO 32.276952-103.942877

Sampling Date: 07/19/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: FS02 0.5' (H244372-02)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	10200	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	212	106	200	2.44	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	180	90.2	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 105 % 48.2-134

Surrogate: 1-Chlorooctadecane 129 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: FS03 0.5' (H244372-03)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>10200</b>	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	212	106	200	2.44	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	180	90.2	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 96.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 119 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: FS04 0.5' (H244372-04)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6930	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	212	106	200	2.44	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	180	90.2	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 105 % 48.2-134

Surrogate: 1-Chlorooctadecane 128 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: FS05 0.5' (H244372-05)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.0 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	576	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	212	106	200	2.44	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	180	90.2	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 115 % 48.2-134

Surrogate: 1-Chlorooctadecane 140 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: FS06 0.5' (H244372-06)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.5 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>704</b>	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
<b>DRO &gt;C10-C28*</b>	<b>19.8</b>	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 124 % 48.2-134

Surrogate: 1-Chlorooctadecane 130 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received: 07/23/2024  
 Reported: 07/26/2024  
 Project Name: REMUDA 100 BATTERY  
 Project Number: 03C1558455  
 Project Location: XTO 32.276952-103.942877

Sampling Date: 07/18/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: BH01 0.5' (H244372-07)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>11800</b>	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
<b>DRO &gt;C10-C28*</b>	<b>24.4</b>	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 109 % 48.2-134

Surrogate: 1-Chlorooctadecane 114 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/18/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: BH02 0.5' (H244372-08)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.99	99.5	2.00	4.09	
Toluene*	<0.050	0.050	07/24/2024	ND	1.96	97.9	2.00	4.00	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	1.98	99.2	2.00	4.19	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.87	97.9	6.00	3.87	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.0 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	13600	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 124 % 48.2-134

Surrogate: 1-Chlorooctadecane 128 % 49.1-148

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\*=Accredited Analyte

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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/18/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: BH02A 1' (H244372-09)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.8 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9600	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 98.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 104 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received: 07/23/2024  
 Reported: 07/26/2024  
 Project Name: REMUDA 100 BATTERY  
 Project Number: 03C1558455  
 Project Location: XTO 32.276952-103.942877

Sampling Date: 07/18/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: BH03 0.5' (H244372-10)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.0 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8600	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 122 % 48.2-134

Surrogate: 1-Chlorooctadecane 127 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received: 07/23/2024  
 Reported: 07/26/2024  
 Project Name: REMUDA 100 BATTERY  
 Project Number: 03C1558455  
 Project Location: XTO 32.276952-103.942877

Sampling Date: 07/19/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: BH03C 3' (H244372-11)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.7 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 108 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SS01 0.5' (H244372-12)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.0 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 104 % 48.2-134

Surrogate: 1-Chlorooctadecane 106 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received: 07/23/2024  
 Reported: 07/26/2024  
 Project Name: REMUDA 100 BATTERY  
 Project Number: 03C1558455  
 Project Location: XTO 32.276952-103.942877

Sampling Date: 07/19/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: SS02 0.5' (H244372-13)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.2 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 105 % 48.2-134

Surrogate: 1-Chlorooctadecane 108 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SS03 0.5' (H244372-14)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	576	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 126 % 48.2-134

Surrogate: 1-Chlorooctadecane 133 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SS04 0.5' (H244372-15)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.8 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 109 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	07/23/2024	Sampling Date:	07/19/2024
Reported:	07/26/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Shalyn Rodriguez
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SS05 0.5' (H244372-16)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/24/2024	ND	1.98	99.1	2.00	3.35	
Toluene*	<0.050	0.050	07/24/2024	ND	1.94	96.8	2.00	2.97	
Ethylbenzene*	<0.050	0.050	07/24/2024	ND	2.03	101	2.00	2.89	
Total Xylenes*	<0.150	0.150	07/24/2024	ND	5.95	99.2	6.00	2.96	
Total BTEX	<0.300	0.300	07/24/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.1 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: CT					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	07/24/2024	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/24/2024	ND	187	93.5	200	1.36	
DRO >C10-C28*	<10.0	10.0	07/24/2024	ND	186	93.1	200	2.65	
EXT DRO >C28-C36	<10.0	10.0	07/24/2024	ND					

Surrogate: 1-Chlorooctane 107 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 49.1-148

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Notes and Definitions

- S-05 The surrogate recovery is outside of lab established statistical control limits but still within method limits. Data is not adversely affected.
ND Analyte NOT DETECTED at or above the reporting limit
RPD Relative Percent Difference
\*\* Samples not received at proper temperature of 6°C or below.
\*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager



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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

1 of 3

Send PDF  
to email  
provided

BILL TO

ANALYSIS REQUEST

Company Name: Ensolum, LLC  
 Project Manager: Tracy Hillard  
 Address: 3122 National Parks Hwy  
 City: Carlsbad State: NM Zip: 88220  
 Phone #: 575-937-3906 Fax #: Project Owner:  
 Project #: 03C1558455  
 Project Name: Remuda 100 battery  
 Project Location: 32.276952, -103.942877  
 Sampler Name: Uriel Santillana

P.O. #: Company: XTO Energy  
 Attn: Amy Ruth  
 Address: 3104 E Green st  
 City: Carlsbad State: NM Zip: 88220  
 Phone #: Fax #:

Lab I.D.	Sample I.D.	Depth (feet)	PRESERV.		DATE	TIME	ANALYSIS REQUEST		
			ICE / COOL	OTHER			Chloride	TPH	BTEX
1	FS01	0.5'	X		7/19/24	1515	X	X	X
2	FS02								
3	FS03								
4	FS04								
5	FS05								
6	FS06								

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Relinquished By: *[Signature]* Date: 7/23/24 Time: 1:50  
 Received By: *[Signature]*  
 Relinquished By: *[Signature]* Date: Received By: *[Signature]*

Delivered By: (Circle One) Observed Temp.: -0.2°C  
 Corrected Temp.:  
 Sampler - UPS - Bus - Other: Sample Condition: Cool Intact: Yes [X] No [ ]  
 Checked By: *[Signature]*  
 Turnaround Time: Standard [X] Rush [ ]  
 Thermometer ID: #113 Correction Factor: -0.5°C  
 Bacteria (only) Sample Condition: Cool Intact: Yes [ ] No [ ]  
 Corrected Temp.: °C

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com



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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2 of 3

Company Name: Ensolum, LLC

Project Manager: Tracy Hillard

Address: 3122 National Parks Hwy

City: Carlsbad State: NM Zip: 88220

Phone #: 575-937-3906 Fax #: Project Owner:

Project #: 03C1558455 Project Name: Remuda 100 battery

Project Location: 32.276952, -103.942877

Sampler Name: Uriel Santillana

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.	DATE	TIME	ANALYSIS REQUEST
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :				
H44312	BH01	0.5'	G	2			X				X	7/18/24	954	X Chloride
	BH02	0.5'	G	2			X				X	1008	X BTEX	
	BH02A	1'	G	2			X				X	1013	X TPH	
	BH03	0.5'	G	2			X				X	7/19/24	910	
	BH03C	3'	G	2			X				X			

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Relinquished By: [Signature] Date: 7/30/24 Time: 12:50 Received By: [Signature]

Relinquished By: [Signature] Date: Received By: [Signature]

Delivered By: (Circle One) Observed Temp.: -0.2°C Corrected Temp.: Sample Condition Cool Intact  Bacteria (only)  Sample Condition Cool Intact

Sampler - UPS - Bus - Other: Corrected Temp.: CHECKED BY: (Initials) [Signature]

TURN-ROUND TIME: Standard  Rush  Bacteria (only)  Sample Condition Cool Intact

Thermometer ID: #140 Correction Factor: #140

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

3 of 3

Company Name: Ensolum, LLC **BILL TO** ANALYSIS REQUEST

Project Manager: Tracy Hillard P.O. #: Company: XTO Energy

Address: 3122 National Parks Hwy Attn: Amy Ruth

City: Carlsbad State: NM Zip: 88220 Address: 3104 E Green st

Phone #: 575-937-3906 Fax #: Project Owner: City: Carlsbad

Project #: 03C1558455 Project Name: Remuda 100 battery State: NM Zip: 88220

Project Location: 32.276952, -103.942877 Phone #:

Sampler Name: Uriel Santillana Fax #:

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	Analysis
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			
1844372	SS01	0.5'	G	1			X				7/19/24	1316	X chloride
13	SS02		G	1			X				1429	1324	X BTEX
14	SS03		G	1			X				1413	1331	X TPH
15	SS04		G	1			X						
10	SS05		G	1			X						

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Relinquished By: [Signature] Date: 8/23/24 Time: 1:50 Received By: [Signature] Verbal Result:  Yes  No Add'l Phone #:

Relinquished By: [Signature] Date: Received By: [Signature] REMARKS: Cost Center: 1067601001 Incident #: NAPP2418050972

Delivered By: (Circle One) Observed Temp.: -0.2°C Corrected Temp.: Sample Condition: Cool Intact  Yes  No Bacteria (only) Sample Condition: Cool Intact  Yes  No

Sampler - UPS - Bus - Other: Observed Temp.: Corrected Temp.: Sample Condition: Cool Intact  Yes  No Bacteria (only) Sample Condition: Cool Intact  Yes  No

FORM 006 R 3-2 10/07/21 Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com



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August 21, 2024

TRACY HILLARD

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: REMUDA 100 BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 08/15/24 13:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number TX-C24-00112. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: FS 07 0.5' (H244952-01)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/16/2024	ND	2.33	116	2.00	1.45	
Toluene*	<0.050	0.050	08/16/2024	ND	2.14	107	2.00	5.47	
Ethylbenzene*	<0.050	0.050	08/16/2024	ND	2.11	106	2.00	8.58	
Total Xylenes*	<0.150	0.150	08/16/2024	ND	6.42	107	6.00	9.24	
Total BTEX	<0.300	0.300	08/16/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5120	16.0	08/19/2024	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
DRO >C10-C28*	<10.0	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 119 % 48.2-134

Surrogate: 1-Chlorooctadecane 116 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 07 0-0.5' (H244952-02)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/16/2024	ND	2.33	116	2.00	1.45	
Toluene*	<0.050	0.050	08/16/2024	ND	2.14	107	2.00	5.47	
Ethylbenzene*	<0.050	0.050	08/16/2024	ND	2.11	106	2.00	8.58	
Total Xylenes*	<0.150	0.150	08/16/2024	ND	6.42	107	6.00	9.24	
Total BTEX	<0.300	0.300	08/16/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18800	16.0	08/19/2024	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
DRO >C10-C28*	<10.0	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 99.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 96.9 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 05 0-0.5' (H244952-03)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/16/2024	ND	2.33	116	2.00	1.45	
Toluene*	<0.050	0.050	08/16/2024	ND	2.14	107	2.00	5.47	
Ethylbenzene*	<0.050	0.050	08/16/2024	ND	2.11	106	2.00	8.58	
Total Xylenes*	<0.150	0.150	08/16/2024	ND	6.42	107	6.00	9.24	
Total BTEX	<0.300	0.300	08/16/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.4 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1410	16.0	08/19/2024	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
DRO >C10-C28*	<10.0	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 89.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.1 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 04 0-0.5' (H244952-04)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/17/2024	ND	2.07	104	2.00	2.84	
Toluene*	<0.050	0.050	08/17/2024	ND	1.98	99.1	2.00	2.26	
Ethylbenzene*	<0.050	0.050	08/17/2024	ND	1.97	98.5	2.00	1.54	
Total Xylenes*	<0.150	0.150	08/17/2024	ND	5.84	97.3	6.00	1.46	
Total BTEX	<0.300	0.300	08/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.6 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	9200	16.0	08/19/2024	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
DRO >C10-C28*	<10.0	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 93.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 90.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 01 0-0.5' (H244952-05)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/17/2024	ND	2.07	104	2.00	2.84	
Toluene*	<0.050	0.050	08/17/2024	ND	1.98	99.1	2.00	2.26	
Ethylbenzene*	<0.050	0.050	08/17/2024	ND	1.97	98.5	2.00	1.54	
Total Xylenes*	<0.150	0.150	08/17/2024	ND	5.84	97.3	6.00	1.46	
Total BTEX	<0.300	0.300	08/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.8 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>15800</b>	16.0	08/19/2024	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
<b>DRO &gt;C10-C28*</b>	<b>10.7</b>	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 114 % 48.2-134

Surrogate: 1-Chlorooctadecane 111 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 02 0-0.5' (H244952-06)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/17/2024	ND	2.07	104	2.00	2.84	
Toluene*	<0.050	0.050	08/17/2024	ND	1.98	99.1	2.00	2.26	
Ethylbenzene*	<0.050	0.050	08/17/2024	ND	1.97	98.5	2.00	1.54	
Total Xylenes*	<0.150	0.150	08/17/2024	ND	5.84	97.3	6.00	1.46	
Total BTEX	<0.300	0.300	08/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.5 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18000	16.0	08/19/2024	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
DRO >C10-C28*	<10.0	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 112 % 48.2-134

Surrogate: 1-Chlorooctadecane 109 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 03 0-0.5' (H244952-07)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/17/2024	ND	2.07	104	2.00	2.84	
Toluene*	<0.050	0.050	08/17/2024	ND	1.98	99.1	2.00	2.26	
Ethylbenzene*	<0.050	0.050	08/17/2024	ND	1.97	98.5	2.00	1.54	
Total Xylenes*	<0.150	0.150	08/17/2024	ND	5.84	97.3	6.00	1.46	
Total BTEX	<0.300	0.300	08/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.0 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12200	16.0	08/19/2024	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
DRO >C10-C28*	<10.0	10.0	08/16/2024	ND	192	95.8	200	5.07	
EXT DRO >C28-C36	<10.0	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 118 % 48.2-134

Surrogate: 1-Chlorooctadecane 114 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
 TRACY HILLARD  
 3122 NATIONAL PARKS HWY  
 CARLSBAD NM, 88220  
 Fax To:

Received:	08/15/2024	Sampling Date:	08/09/2024
Reported:	08/21/2024	Sampling Type:	Soil
Project Name:	REMUDA 100 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	03C1558455	Sample Received By:	Alyssa Parras
Project Location:	XTO 32.276952-103.942877		

**Sample ID: SW 06 0-0.5' (H244952-08)**

BTEX 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/17/2024	ND	2.07	104	2.00	2.84	
Toluene*	<0.050	0.050	08/17/2024	ND	1.98	99.1	2.00	2.26	
Ethylbenzene*	<0.050	0.050	08/17/2024	ND	1.97	98.5	2.00	1.54	
Total Xylenes*	<0.150	0.150	08/17/2024	ND	5.84	97.3	6.00	1.46	
Total BTEX	<0.300	0.300	08/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.6 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>544</b>	16.0	08/19/2024	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/16/2024	ND	194	96.9	200	2.66	
<b>DRO &gt;C10-C28*</b>	<b>354</b>	10.0	08/16/2024	ND	192	95.8	200	5.07	
<b>EXT DRO &gt;C28-C36</b>	<b>106</b>	10.0	08/16/2024	ND					

Surrogate: 1-Chlorooctane 103 % 48.2-134

Surrogate: 1-Chlorooctadecane 106 % 49.1-148

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Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND Analyte NOT DETECTED at or above the reporting limit
RPD Relative Percent Difference
\*\* Samples not received at proper temperature of 6°C or below.
\*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report

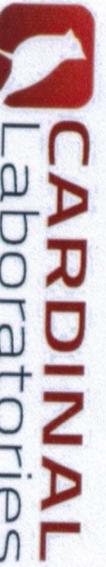
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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

**BILL TO**

**ANALYSIS REQUEST**

Company Name: Ensolium, LLC		P.O. #:		Company: XTO Energy Inc.	
Project Manager: Tracy Hillord		Company: XTO Energy Inc.		Address: 3104 E Green St	
Address: 3122 National Parks Hwy		Attn: Amy Ruth		City: Carlsbad	
City: Carlsbad		State: NM		Zip: 88220	
Phone #: 575-937-3906		Fax #:		Project Owner: XTO	
Project #: 03C1558455		Project Name: Rinvika 100 Battery		State: NM	
Project Location:		Project Name: Rinvika 100 Battery		Zip: 88220	
Sampler Name: Connor Whelan		Phone #:		Fax #:	

Lab I.D.	Sample I.D.	Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX							DATE	TIME	ANALYSIS		
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:				ICE / COOL	OTHER :
H44458	FS07	0.5	C	1							5			8-9-24	915	BTEX
	SW07	0-0.5												920	925	TPH
	SW05													930	935	Chloride
	SW04													1000	1005	
	SW01													1010	1015	
	SW02															
	SW03															
	SW06															

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Relinquished By: *CHX* Date: 8/15/24 Received By: *ADD* Date: 8/30/24

Delivered By: (Circle One) Observed Temp. °C: 8.9°C Sample Condition: Cool Intact  Yes  No CHECKED BY: (Initials) *AD*

Sampler - UPS - Bus - Other: Corrected Temp. °C: 8.3°C Bacteria (only)  Yes  No Sample Condition: Cool Intact  Yes  No Observed Temp. °C: *8.3°C* Corrected Temp. °C: *8.3°C*

† Cardinal cannot accept verbal changes. Please email changes to [caley.keene@cardinallabsnm.com](mailto:caley.keene@cardinallabsnm.com)

**From:** [Tacoma Morrissey](#)  
**To:** [Wells, Shelly, EMNRD](#)  
**Subject:** [EXTERNAL] RE: NAPP2418050972 REMUDA 100 BATTERY  
**Date:** Tuesday, October 8, 2024 7:51:40 AM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[Photolog- Remuda 100 Battery- Incident Number NAPP2418050972.pdf](#)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Hi Shelly,

Apologies for my delay I am at the NMOGA conference, will you be at the joint committee meeting today? It would be so nice to meet you in person!

I reviewed the report and photolog, and yes, photograph 3 should have had the description of “excavation activities” not final excavation extent. The photo was taken around 10am on July 18, 2024, so this was not the final extent. I’ve attached an updated photolog. Is there any additional information I can provide?

Thank you for reaching out to clarify!



**Tacoma Morrissey**  
Associate Principal  
337-257-8307  
**Ensolum, LLC**  
in f X

---

**From:** Wells, Shelly, EMNRD <Shelly.Wells@emnrd.nm.gov>  
**Sent:** Monday, October 7, 2024 8:11 AM  
**To:** Tacoma Morrissey <tmorrissey@ensolum.com>  
**Subject:** NAPP2418050972 REMUDA 100 BATTERY

[ \*\*EXTERNAL EMAIL\*\* ]

Hi Tacoma,

I am reviewing the submitted remediation closure report for the following release NAPP2418050972 REMUDA 100 BATTERY and have a question regarding the photos submitted. Photograph 3 in the report says final excavation extent but shows a patch of stained soil. Did the stained soil get removed?

Kind regards,

Shelly

Shelly Wells \* Environmental Specialist-Advanced  
Environmental Bureau  
EMNRD-Oil Conservation Division  
1220 S. St. Francis Drive|Santa Fe, NM 87505  
(505)469-7520|[Shelly.Wells@emnrd.nm.gov](mailto:Shelly.Wells@emnrd.nm.gov)  
<http://www.emnrd.state.nm.us/OCD/>

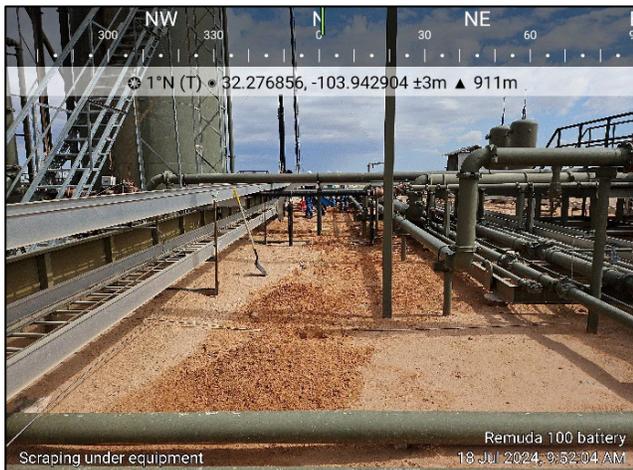


**Photographic Log**  
XTO Energy, Inc  
Remuda 100 Battery  
NAPP2418050972



Photograph: 1                      Date: 7/09/2024  
Description: Initial soil staining  
View: North

Photograph: 2                      Date: 7/9/2024  
Description: Initial soil staining  
View: Northwest



Photograph: 3                      Date: 7/18/2024  
Description: Excavation Activities  
View: North

Photograph: 4                      Date: 8/9/2024  
Description: Final excavation extent  
View: Northwest

**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 385951

**QUESTIONS**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

**QUESTIONS**

<b>Prerequisites</b>	
Incident ID (n#)	nAPP2418050972
Incident Name	NAPP2418050972 REMUDA 100 BATTERY @ 0
Incident Type	Produced Water Release
Incident Status	Remediation Closure Report Received

**Location of Release Source**

Please answer all the questions in this group.

Site Name	REMUDA 100 BATTERY
Date Release Discovered	06/26/2024
Surface Owner	State

**Incident Details**

Please answer all the questions in this group.

Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	No
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	Not answered.
Produced Water Released (bbls) Details	Cause: Corrosion   Pipeline (Any)   Produced Water   Released: 7 BBL   Recovered: 2 BBL   Lost: 5 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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**District III**  
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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, Page 2

Action 385951

**QUESTIONS (continued)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

**QUESTIONS**

<b>Nature and Volume of Release (continued)</b>	
Is this a gas only submission (i.e. only significant Mcf values reported)	<b>No, according to supplied volumes this does not appear to be a "gas only" report.</b>
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	<b>No</b>
Reasons why this would be considered a submission for a notification of a major release	<i>Unavailable.</i>
<i>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.</i>	

**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	<b>True</b>
The impacted area has been secured to protect human health and the environment	<b>True</b>
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	<b>True</b>
All free liquids and recoverable materials have been removed and managed appropriately	<b>True</b>
If all the actions described above have not been undertaken, explain why	<i>Not answered.</i>

*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: Colton Brown Title: Environmental Advisor Email: colton.s.brown@exxonmobil.com Date: 09/23/2024
--	--

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1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720

**District II**  
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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 (continued)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	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)	Between 100 and 500 (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
<b>What is the minimum distance, between the closest lateral extents of the release and the following surface areas:</b>	
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 ½ and 1 (mi.)
Any other fresh water well or spring	Greater than 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between ½ and 1 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Between ½ and 1 (mi.)
Categorize the risk of this well / site being in a karst geology	Medium
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

**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
<i>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.</i>	
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)	18800
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	460
GRO+DRO (EPA SW-846 Method 8015M)	354
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0

*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	07/18/2024
On what date will (or did) the final sampling or liner inspection occur	08/09/2024
On what date will (or was) the remediation complete(d)	08/09/2024
What is the estimated surface area (in square feet) that will be reclaimed	92
What is the estimated volume (in cubic yards) that will be reclaimed	2
What is the estimated surface area (in square feet) that will be remediated	92
What is the estimated volume (in cubic yards) that will be remediated	2

*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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Action 385951

**QUESTIONS (continued)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	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 <b>off-site</b> disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for <b>off-site</b> disposal	HALFWAY DISPOSAL AND LANDFILL [FEEM0112334510]
<b>OR</b> which OCD approved well (API) will be used for <b>off-site</b> disposal	Not answered.
<b>OR</b> is the <b>off-site</b> disposal site, to be used, out-of-state	Not answered.
<b>OR</b> is the <b>off-site</b> disposal site, to be used, an NMED facility	Not answered.
(Ex Situ) Excavation and <b>on-site</b> 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: Colton Brown Title: Environmental Advisor Email: colton.s.brown@exxonmobil.com Date: 09/23/2024
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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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Action 385951

**QUESTIONS (continued)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	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)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

**QUESTIONS**

<b>Sampling Event Information</b>	
Last sampling notification (C-141N) recorded	370735
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	08/09/2024
What was the (estimated) number of samples that were to be gathered	10
What was the sampling surface area in square feet	2000

<b>Remediation Closure Request</b>	
<i>Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.</i>	
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	92
What was the total volume (cubic yards) remediated	2
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	92
What was the total volume (in cubic yards) reclaimed	2
Summarize any additional remediation activities not included by answers (above)	Delineation and excavation activities were conducted at the Site to address the June 26, 2024, release of produced water. Laboratory analytical results for the confirmation soil samples, collected from the final excavation extent, indicated that all COCs were compliant with the Site Closure Criteria. Based on the soil sample analytical results, no further remediation was required. XTO will backfill the excavation with material purchased locally and recontoured the Site to match pre-existing site conditions. Final reclamation of the remaining impacted soil that met Site Closure Criteria but exceeds the strictest Table 1 Closure Criteria will occur during the final reclamation of the well pad or major construction, whichever comes first.
<i>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>	
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: Colton Brown Title: Environmental Advisor Email: colton.s.brown@exxonmobil.com Date: 09/23/2024

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Action 385951

**QUESTIONS (continued)**

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	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

**QUESTIONS**

<b>Reclamation Report</b>	
<i>Only answer the questions in this group if all reclamation steps have been completed.</i>	
Requesting a reclamation approval with this submission	No

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CONDITIONS

Action 385951

**CONDITIONS**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 385951
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

**CONDITIONS**

Created By	Condition	Condition Date
scwells	Remediation closure approved. OCD concurs that a defined bed and bank of a watercourse is not located within 300 feet of any part of this release.	10/8/2024