



February 4, 2025

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

**Re: Remediation Work Plan  
Big Eddy Unit 248H and 249H  
Incident Numbers: nAPP2418043567, nAPP2432147637, nAPP2432531235, &  
nAPP2502042071  
API: 30-015-40714 & 30-015-40715  
Eddy County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of XTO Energy, Inc. (XTO), has prepared the following *Remediation Work Plan (Work Plan)* to document the assessment and delineation activities completed to date and propose a plan to address impacted soil identified at the Big Eddy Unit 248H and Big Eddy Unit 249H (Site), where a total of four releases occurred on the same pad. The purpose of the assessment and delineation activities was to assess the lateral and vertical extent of impacted soil resulting from multiple releases of produced water and crude oil at the Site. The following *Work Plan* proposes to excavate impacted soil within the release extent areas.

## **SITE DESCRIPTION AND RELEASE BACKGROUND**

All releases occurred in Eddy County, New Mexico (32.62087°, -103.83145°), at the Big Eddy Unit 248H and Big Eddy Unit 249H wellhead locations. Release extent areas located west of the wellheads are located in Unit A, Section 35, Township 19 South, Range 31 East, and are associated with oil and gas exploration and production operations on Federal Land managed by the Bureau of Land Management (BLM). Release extent areas located east of the wellheads are located in Unit D, Section 36, Township 19 South, and Range 31 on State Land managed by New Mexico State Land Office (SLO) under Lease ID V0-6323-0003.

### **Incident Number: nAPP2418043567**

On June 21, 2024, the packing on the wellhead stuffing box failed, resulting in the release of approximately 5 barrels (bbls) of crude oil and 9 bbls of produced water onto the surface of the pad and lightly over-spraying the northwest area of the pad and surrounding pasture following the dominant wind direction that day. A vacuum truck was immediately dispatched to the Site to recover free-standing fluids; approximately 5 bbls of fluids were recovered. XTO reported the release to the New Mexico Oil Conservation Division (NMOCD) and submitted a Notification of Release (NOR) and Initial C-141 Application (C-141) on June 28, 2024. The release was assigned Incident Number nAPP2418043567.

On September 20, 2024, XTO submitted a Remediation Work Plan (*September 2024 Work Plan*) to the NMOCD describing Site assessment and delineation activities completed. The *September 2024 Work Plan* proposed the following remediation activities:

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H and 249H

- Excavation of an estimated 1,500 cubic yards of total petroleum hydrocarbon (TPH)- and chloride-impacted soil to be removed;
- The excavation will be backfilled and recontoured to match pre-existing conditions. Reclamation and reseeding of the on-pad area will occur during pad abandonment; and
- The area of investigation will continue to be monitored, and photo documentation of the vegetation will be included in the final *Closure Report*.

On November 6, 2024, NMOCD approved the *September 2024 Work Plan* with the following conditions:

*All samples must be analyzed for all constituents listed in Table I of 19.15.29.12 NMAC. Floor confirmation samples should be delineated/excavated to meet closure criteria standards from Table 1 of the OCD Spill Rule for site assessment/characterization/proven depth to water determination. Sidewall/Edge samples should be delineated/excavated to 600 mg/kg for chlorides and 100 mg/kg for TPH to define the edge of the release. The release area will need confirmation floor/sidewall samples representing no more than 200 ft<sup>2</sup>. All sidewall samples should be taken from the sidewall of the excavation. Please make sure that the edge of the release extent is accurately defined. Confirmation samples will need to be conducted at surface and at 0.5 feet in the "Area of Investigation" to ensure that contaminants didn't get carried/deposited in this area. All off-pad areas must meet reclamation/revegetation standards set forth in the OCD Spill Rule.*

On January 16, 2025, and after Site discussions with the NMOCD, XTO requested a sampling variance for the "area of investigation" confirmation floor soil sample size to be 1,000 square feet. The NMOCD approved the sampling variance the same day.

#### **Incident Numbers: nAPP2432147637, nAPP2432531235, and nAPP2502042071**

On November 16, 2024, the packing on the stuffing box of the Big Eddy Unit 249H well failed, resulting in the release of approximately 10 bbls of crude oil onto the surface of the well pad. No fluids were recovered. XTO reported the release to the NMOCD and submitted a NOR and C-141 on November 16, 2024. The release was assigned Incident Number nAPP2432147637.

On November 19, 2024, an equipment failure at the Big Eddy Unit 248H wellhead resulted in the release of approximately 22 bbls of crude oil and 1 bbls of produced water onto the surface of the well pad. Four bbls of fluids were recovered. XTO reported the release to the NMOCD and submitted a NOR and C-141 on November 20, 2024. The release was assigned Incident Number nAPP2432531235.

On January 17, 2025, an equipment failure at the Big Eddy Unit 249H wellhead resulted in the release of approximately 33 bbls of crude oil and 29 bbls of produced water onto the surface of the pad. A vacuum truck was immediately dispatched to the Site to recover free-standing fluids; approximately 35 bbls of fluids were recovered. Furthermore, approximately 73 thousand cubic feet (Mcf) of natural gas were vented during the release. XTO reported the release to the NMOCD and submitted a NOR and C-141 on November 20, 2024. The release was assigned Incident Number nAPP2502042071.

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

The Site was characterized to assess the applicability of 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.

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H and 249H

Based on the results of the Site Characterization, presented in the approved *September 2024 Work Plan*, the following NMOCD Table I 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): 100 mg/kg
- Chloride: 600 mg/kg

## NMSLO CULTURAL RESOURCES AND BIOLOGICAL REVIEW

### Cultural Properties Protection

Since the release occurred on the well pad in the area governed by SLO, the Site is exempt from the Cultural Properties Protection Rule (CPP). As such, no additional cultural resource surveys were completed in connection with these releases.

### Biological Review

Ensolum personnel conducted a desktop review to establish if the Site is within an area of possible threatened, endangered, and sensitive wildlife and plant species, environmentally sensitive areas, surface waters, and sensitive soils.

- A review of the U.S. Fish and Wildlife Services Information for Planning and Consultation (IPaC) resources indicated there are no critical wildlife habitats at the Site. A review of the Bureau of Land Management (BLM) New Mexico Plant Wildlife Habitat maps indicated potential habitats for Dunes Sage Brush Lizard and Lesser Prairie Chicken near the Site. Threatened and endangered species are potentially present in the area surrounding the Site; however, no native vegetation outside of the well pad extent will be disturbed during remediation activities.
  - From March 1<sup>st</sup> through June 15<sup>th</sup>, no remediation activities will occur between the hours of 3:00 am to 9:00 am to protect any Lesser Prairie Chickens within the area.
- No sensitive receptors were identified near the Site as determined by the Site Characterization. The strictest Table I Closure Criteria is being applied to the Site due to a lack of recent depth to groundwater within 0.5 miles.
- The Natural Resources Conservation Service (NRCS) Web Soil Survey classifies the soil type at the Site as Wink loamy fine sand. The Wink loamy fine sand is not considered a sensitive soil per the SLO guidelines. The release occurred on the caliche surface of the well pad limiting contact with potentially sensitive native soil.

## SITE ASSESSMENT ACTIVITIES

On November 20, 2024 and January 17, 2025, Ensolum personnel conducted Site assessment activities to evaluate the three additional releases based on information provided on the C-141 and visual observations. Ensolum personnel mapped the four releases utilizing a handheld Global Positioning System (GPS) unit. It was confirmed that the November 2024 and January 2025 releases overlapped the proposed area of excavation presented in the *September 2024 Work Plan*, but did not overlap the area of investigation. All release extent areas are depicted on Figure 1. Both November 2024 release extents covered the same area and are presented on Figure 1 as a single release extent.

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H and 249H

## ADDITIONAL DELINEATION SOIL SAMPLING ACTIVITIES

On January 31, 2025, Ensolum conducted delineation activities. Five potholes (PH01 through PH05) were advanced within the release extent via backhoe to a maximum depth of 9 feet below ground surface (bgs). Discrete soil samples were collected from each delineation pothole at depths ranging from 0.5 feet to 9 feet bgs. Due to open excavations from ongoing remediation activities conducted for Incident Number nAPP2418043567, delineation pothole PH01 was advanced in the open excavation where discrete soil sampling started at 5 feet bgs and delineation pothole PH04 began at 1-foot bgs. The delineation soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride utilizing Hach® chloride QuanTab® test strips. Field screening results and observations were logged on lithologic/soil sampling logs, which are included in Appendix A. Delineation pothole locations are depicted on Figure 1. Photographic documentation was completed during all Site visits and is presented on a Photographic Log included in Appendix B.

The delineation 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 (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following Standards Method SM4500.

## LABORATORY ANALYTICAL RESULTS

Laboratory analytical results for all delineation soil samples collected in PH01, collected on January 31, 2025, indicated all COCs were in compliance with Closure Criteria. Laboratory analytical results for soil sample PH02, collected at 1-foot bgs on January 31, 2025, contained elevated TPH concentrations that were within range of the concentrations detected from a sample collected from the same location in 2024. Laboratory analytical results for pothole PH03 indicated chloride concentrations exceeded Closure Criteria at 1-foot bgs but were in compliance with Closure Criteria at 4 feet bgs, successfully defining the vertical extent of that release area. Delineation soil sample PH04, collected at 4 feet bgs, indicated TPH and chloride concentrations exceeded Closure Criteria. The soil sample collected from PH05 at 1-foot bgs contained elevated BTEX, TPH, and chloride concentrations. The sample collected one foot deeper (PH05 at 2 feet bgs) did not exceed Closure Criteria for VOCs, but remained elevated for chloride. All other delineation soil samples collected on January 31, 2025, indicated COC concentrations were in compliance with Closure Criteria. All laboratory analytical results are summarized on Table 1. This includes all soil samples collected before January 31, 2025, which are presented in the *September 2024 Work Plan* included in Appendix C. All laboratory analytical reports are included in Appendix D.

## PROPOSED REMEDIATION WORK PLAN

The delineation soil sampling results indicated soil containing elevated BTEX, TPH, and chloride concentrations exists across an approximate 34,375 square foot area in the release extents on pad and extends to depths ranging from 0.5 feet to 4 feet bgs. As such, XTO proposes to complete the following remediation activities:

- Excavation of impacted soil will proceed vertically and laterally until confirmation floor and sidewall soil samples confirm all COC concentrations are compliant with the Closure Criteria. The proposed excavation extent is depicted in Figure 2;



XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H and 249H

- An estimated 3,800 cubic yards of impacted soil will be excavated. The excavated soil will be transferred a New Mexico approved landfill facility for disposal;
- As stated in the approved sampling variance for Incident Number nAPP2418043567, the “area of investigation” will be composite sampled in a 1,000 square-foot sampling frequency. The initial proposed excavation for Incident Number nAPP2418043567 will be sampled in a 200 square-foot sampling frequency. The approved sampling variance email is provided in Appendix E;
- Due to the size of the release extent for the November 2024 and January 2025 releases, XTO requests a variance for the frequency of confirmation soil samples. XTO proposes 5-point composite soil samples to be collected at a sampling frequency of 400 square feet along the excavation floor, outside of the June 21, 2024 release extent area, and a sampling frequency of 200 square feet along all excavation sidewalls. The proposed sampling frequency would reduce the total number of samples from approximately 395 confirmation soil samples (200 square feet) to approximately 339 confirmation soil samples. The soil samples will be handled and submitted for the same COCs described above. The NMOCD approved sampling grid is presented on Figure 2 and the newly proposed sampling grid is presented on Figure 3; and,
- The excavation will be backfilled and recontoured to match pre-existing conditions. Reclamation and reseeding of the on-pad area will occur during pad abandonment.

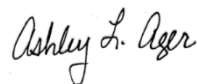
XTO will complete the excavation and soil sampling activities within 90 days of the date of approval of this *Work Plan* by the NMOCD.

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

Sincerely,  
**Ensolum, LLC**



Tracy Hillard  
Project Engineer



Ashley Ager, PG, MS  
Principal

cc: Ashley McAfee, XTO  
Kaylan Dirkx, XTO  
New Mexico State Land Office  
Bureau of Land Management

Appendices:

Figure 1	Delineation Soil Sample Locations
Figure 2	Proposed Excavation Extent - 200 Square Foot Frequency
Figure 3	Proposed Excavation Extent - 400 Square Foot Frequency
Table 1	Soil Sample Analytical Results
Appendix A	Lithologic / Soil Sampling Logs
Appendix B	Photographic Log
Appendix C	<i>Remediation Work Plan</i> ; dated September 20, 2024

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H and 249H

Appendix D Laboratory Analytical Reports & Chain-of-Custody Documentation  
Appendix E NMOCD Correspondence

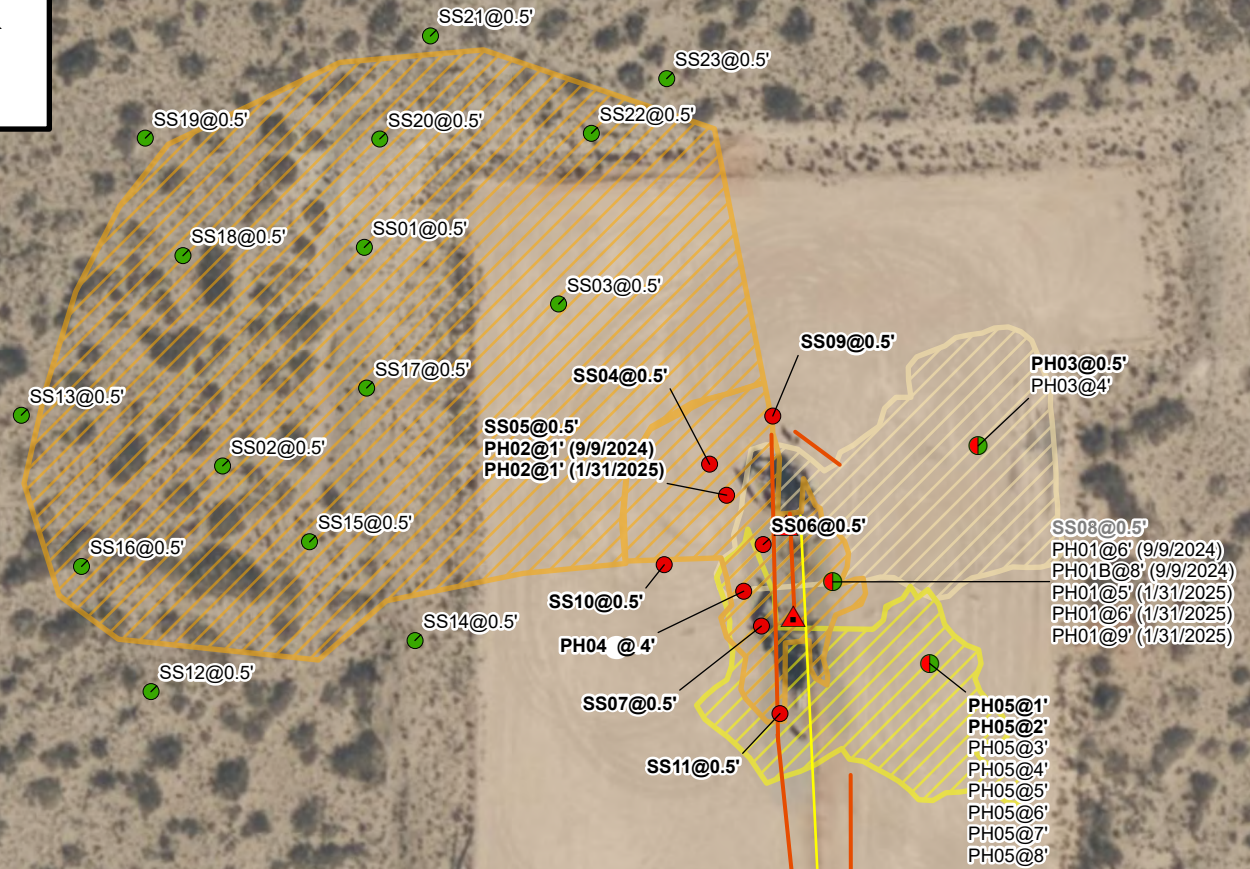


FIGURES



**Legend**

- Delineation Soil Sample in Compliance with Closure Criteria
- Delineation Soil Sample with Concentrations Exceeding Closure Criteria
- ● Delineation Soil Sample with Concentrations Previously Exceeding Closure Criteria
- ▲ Point of Release (POR)
- Electric Utility Line
- Oil and Gas Utility Line
- Release Extent - nAPP2418043567
- Release Extent - nAPP24321476375 & nAPP2432531235
- Release Extent - nAPP2502042071



Notes:  
 Sample ID @ Depth Below Ground Surface.  
 Samples in bold indicate sample exceeded applicable closure criteria.  
 Grey text indicate soil sample was removed during excavation activities.

0 25 50 100 150 200  
 Feet

Sources: Environmental Systems Research Institute (ESRI)

## Delineation Soil Sample Locations

XTO Energy, Inc  
 Big Eddy Unit 248H and 249H  
 Incident Numbers: nAPP2418043567,  
 nAPP2432147637, nAPP2432531235, and nAPP2502042071  
 Unit A, Section 35, T 19S, R 31E  
 Eddy County, New Mexico

FIGURE

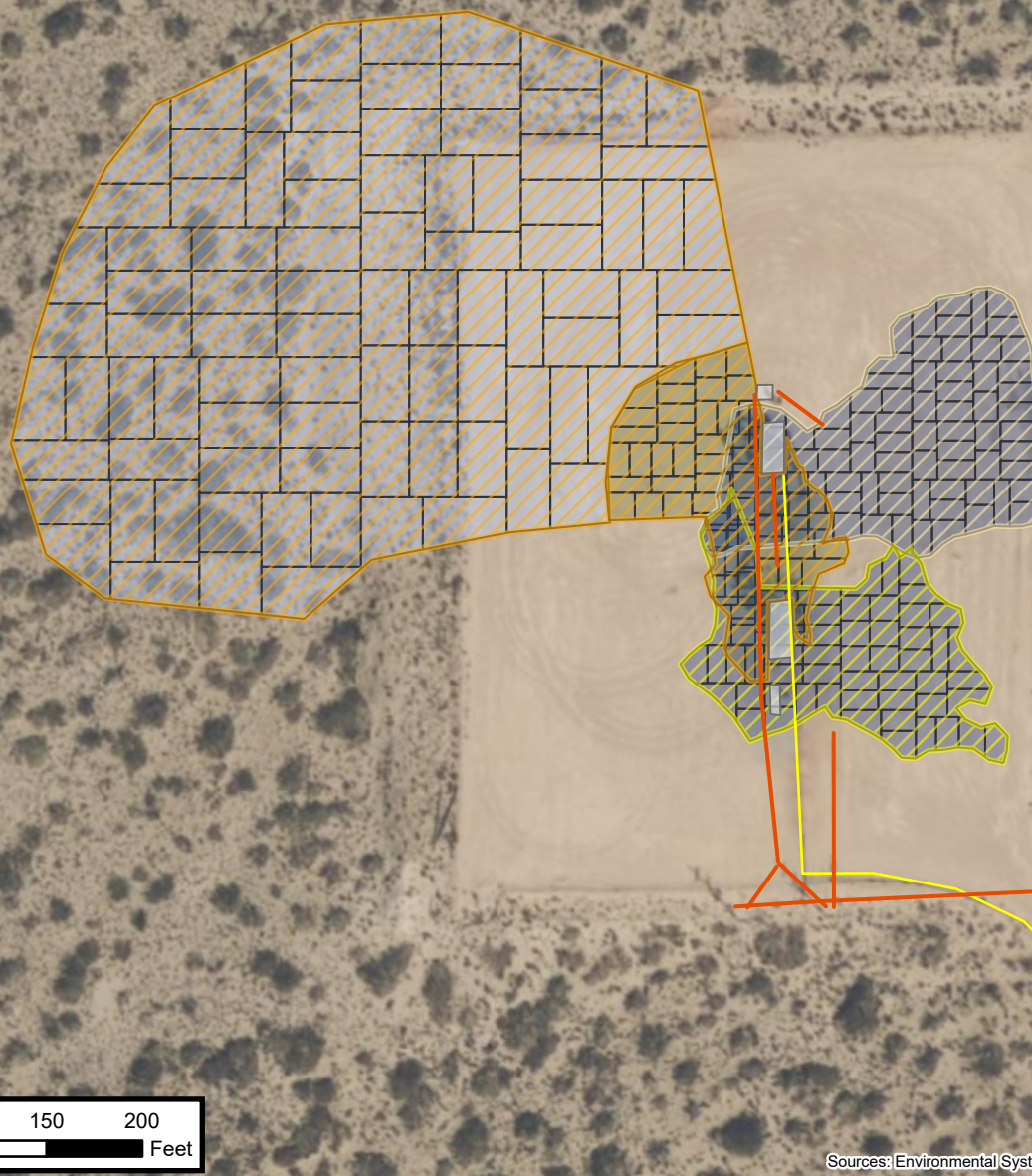
1





**Legend**

- Electric Utility Line
- Oil and Gas Utility Line
- Release Extent - nAPP2418043567
- Release Extent - nAPP24321476375 & nAPP2432531235
- Release Extent - nAPP2502042071
- Production Equipment
- Sample Grid 1000 Sqft
- Sample Grid 200 Sqft
- Sample Grid 200 Sqft



Sources: Environmental Systems Research Institute (ESRI)

**Proposed Excavation Extent - 200 square foot frequency**

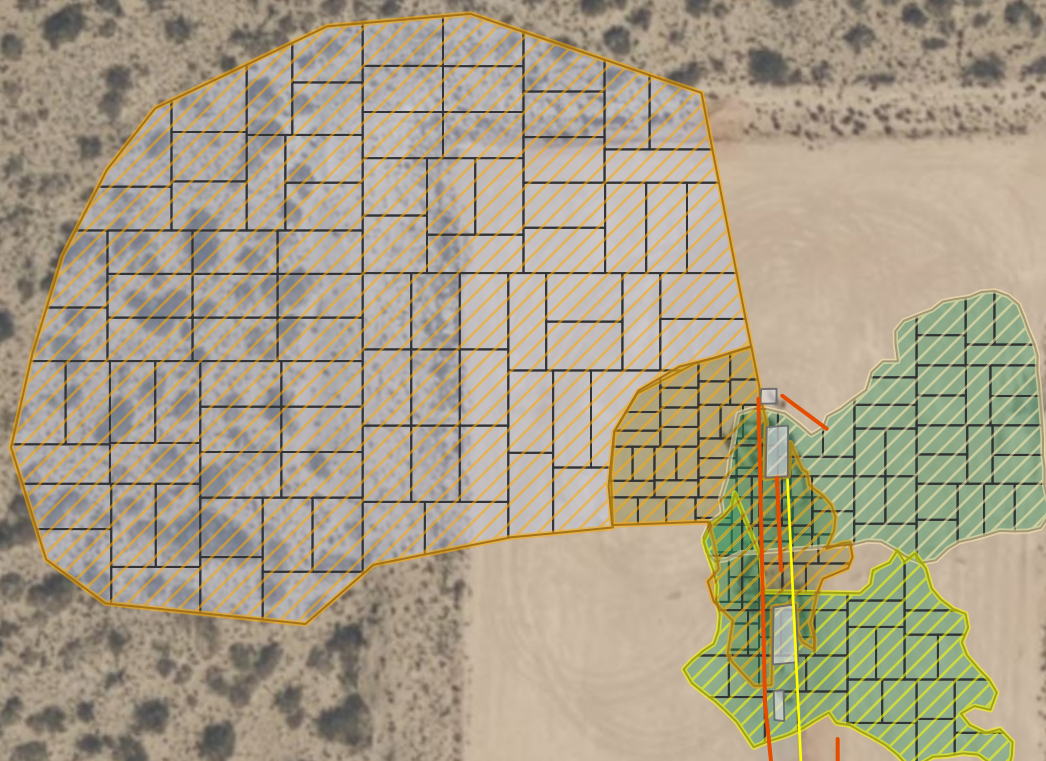
XTO Energy, Inc  
 Big Eddy Unit 248H and 249H  
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 nAPP2432147637, nAPP2432531235, and nAPP2502042071  
 Unit A, Section 35, T 19S, R 31E  
 Eddy County, New Mexico

**FIGURE****2**



**Legend**

- Electric Utility Line
- Oil and Gas Utility Line
- Production Equipment
- Release Extent - nAPP2418043567
- Release Extent - nAPP24321476375 & nAPP2432531235
- Release Extent - nAPP2502042071
- Sample Grid 1000 Sqft
- Sample Grid 200 Sqft
- Sample Grid 400 Sqft



0 25 50 100 150 200  
Feet

Sources: Environmental Systems Research Institute (ESRI)

### Proposed Excavation Extent - 400 square foot frequency

XTO Energy, Inc  
Big Eddy Unit 248H and 249H  
Incident Numbers: nAPP2418043567,  
nAPP2432147637, nAPP2432531235, and nAPP2502042071  
Unit A, Section 35, T 19S, R 31E  
Eddy County, New Mexico

## FIGURE

# 3





TABLES



**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Big Eddy Unit 248H and 249H  
 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)
NMOCD Table I Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	NE	100	600
Delineation Soil Samples										
SS01	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS02	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS03	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	240
SS04	07/29/2024	0.5	<0.050	<0.300	<10.0	182	55.3	182	<b>237</b>	560
SS05	07/29/2024	0.5	<0.050	<0.300	<10.0	1,870	465	1,870	<b>2,335</b>	<b>1,650</b>
PH02	09/09/2024	1	<0.050	<0.300	<10.0	87.4	13.3	87.4	<b>101</b>	192
PH02	01/31/2025	1	<0.050	<0.300	<10.0	135	54.7	135	<b>190</b>	176
SS06	07/29/2024	0.5	<0.050	5.16	75.7	2,710	613	2,786	<b>3,399</b>	<b>1,250</b>
SS07	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>640</b>
SS08	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<del>13,600</del>
PH01	09/09/2024	6	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>752</b>
PH01B	09/09/2024	8	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
PH01	01/31/2025	5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	224
PH01	01/31/2025	6	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	256
PH01	01/31/2025	9	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	144
SS09	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>1,060</b>
SS10	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>1,570</b>
SS11	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>1,060</b>
SS12	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS13	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS14	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS15	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS16	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS17	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS18	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS19	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0



**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
**Big Eddy Unit 248H and 249H**  
**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)
NMOCD Table I Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	NE	100	600
SS20	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS21	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS22	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS23	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
PH03	01/31/2025	1	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>4,040</b>
PH03	01/31/2025	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
PH04	01/31/2025	4	<0.050	<0.300	<10.0	179	41.8	179	<b>221</b>	<b>1,010</b>
PH05	01/31/2025	1	1.15	<b>53.1</b>	419	1,550	277	1,969	<b>2,246</b>	<b>2,480</b>
PH05	01/31/2025	2	<0.050	0.474	<10.0	20.7	<10.0	20.7	20.7	<b>640</b>
PH05	01/31/2025	3	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	144
PH05	01/31/2025	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH05	01/31/2025	5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH05	01/31/2025	6	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH05	01/31/2025	7	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
PH05	01/31/2025	8	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0

## 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


### Lithologic Soil Sampling Logs


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 <b>ENSOLUM</b>		Sample Name: PH01		Date: 9/9/2024				
		Site Name: Big Eddy Unit 248H						
		Incident Number: NAPP2418043567						
		Job Number: 03C1558453						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.620931, -103.831294			Logged By: JD		Method: Backhoe			
			Hole Diameter: 24"		Total Depth: 8'			
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
D	12,611	0.0	N	SS08	0.5	0	CCHE	(0-8') CALICHE, tan, fine grained, some sand, well sorted, no odor
						1		
						2		
						3		
						4		Soil excavated to 4' bgs between 9/4/24 and 9/9/2024
						5		
D	929.6	0.0		PH01	6	6		
D	1,495	0.0				7		
D	<162	0.0		PH01A	8	8		
						Total Depth @ 8 feet bgs		


 <b>ENSOLUM</b>		Sample Name: PH01		Date: 1/31/2025				
		Site Name: Big Eddy Unit 248H & 249H						
		Incident Numbers: nAPP2418043567, nAPP2432147637, nAPP2432531235, & nAPP2502042071						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.620930, -103.831295			Logged By: ER		Method: BackHoe			
			Hole Diameter: 3'		Total Depth: 9'			
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. 40% correction factors included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
						0		(0-5') Open excavation
						1		
						2		
						3		
						4		
D	274	0.4	Y	PH01	5	5	CCHE	(0-9') CALICHE, tan-gray, coarse - fine grained, non-cohesive
D	162	0.4	Y	PH01	6	6		
D	<162	0.7	Y			7		
D	<162	0.6	Y			8		
D	<162	0.5	Y	PH01	9	9	SP-SC	(@9') SAND, brown, fine to medium grained sand w/silt
Total Depth @ 9 feet bgs								


 <b>ENSOLUM</b>		Sample Name: PH02		Date: 9/9/2024				
		Site Name: Big Eddy Unit 248H						
		Incident Number: NAPP2418043567						
		Job Number: 03C1558453						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.621056, -103.831474			Logged By: JD		Method: Backhoe			
			Hole Diameter: 24"		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
D	1,609	24.8	Y	SS05	0.5	0	CCHE	(0-1') CALICHE, tan, fine grained, some sand, well sorted, odor
D	201.6	0.0	N	PH02	1	1		(@1') no odor
						Total Depth @ 1-foot bgs		

 <b>ENSOLUM</b>		Sample Name: PH02		Date: 1/31/2025				
		Site Name: Big Eddy Unit 248H & 249H						
		Incident Numbers: nAPP2418043567, nAPP2432147637, nAPP2432531235, & nAPP2502042071						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>				Logged By: ER		Method: BackHoe		
Coordinates: 32.621056, -103.831472				Hole Diameter: 3'		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. 40% correction factors included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
D	<162	0.2	Y	PH02	1	0	CCHE	(0-1') CALICHE, tan, fine to coarse grained, w/ silt
						Total Depth @ 1-foot bgs		

 <b>ENSOLUM</b>		Sample Name: PH03		Date: 1/31/2025				
		Site Name: Big Eddy Unit 248H & 249H						
		Incident Numbers: nAPP2418043567, nAPP2432147637, nAPP2432531235, & nAPP2502042071						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>				Logged By: ER		Method: BackHoe		
Coordinates: 32.621123, -103.831045				Hole Diameter: 3'		Total Depth: 4'		
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. 40% correction factors included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
D	4356	0.2	Y	PH03	1	0	CCHE	(0-4') CALICHE, grey-brown, fine to coarse grained, non-cohesive, w/silt
D	1540	0.1	Y			1		
D	1713	0.0	Y			2		
D	<162	0.5	Y	PH03	4	3		
Total depth @ 4 feet bgs								



 <b>ENSOLUM</b>		Sample Name: PH04		Date: 1/31/2025				
		Site Name: Big Eddy Unit 248H & 249H						
		Incident Numbers: nAPP2418043567, nAPP2432147637, nAPP2432531235, & nAPP2502042071						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.620918, -103.831444			Logged By: ER		Method: BackHoe			
			Hole Diameter: 3'		Total Depth: 4'			
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. 40% correction factors included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
						0		(0-1') Open excavation
						1		
						2		
						3		
D	464	0.4	Y	PH04	4	4	CCHE	(@4') CALICHE, tan-grey, fine to medium grained, w/ silt, non-cohesive
						Total Depth @ 4 feet bgs		

 <b>ENSOLUM</b>		Sample Name: PH05		Date: 1/31/2025				
		Site Name: Big Eddy Unit 248H & 249H						
		Incident Numbers: nAPP2418043567, nAPP2432147637, nAPP2432531235, & nAPP2502042071						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>				Logged By: ER		Method: BackHoe		
Coordinates: 32.620811, -103.831131				Hole Diameter: 3'		Total Depth: 8'		
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. 40% correction factors included.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
						0	CCHE	(0-8') CALICHE, tan-grey, fine to medium grained, w/ silt, non-cohesive
D		554.6	Y	PH05	1	1		
D		70.2	Y	PH05	2	2		
D		32.3	Y	PH05	3	3		
D		35.9	Y	PH05	4	4		
D		27.7	Y	PH05	5	5		
D	<162	5.8	Y	PH05	6	6		
D		10.7	Y	PH05	7	7		
D	<162	4.6	Y	PH05	8	8		
Total Depth @ 8 feet bgs								



## APPENDIX B

### Photographic Log

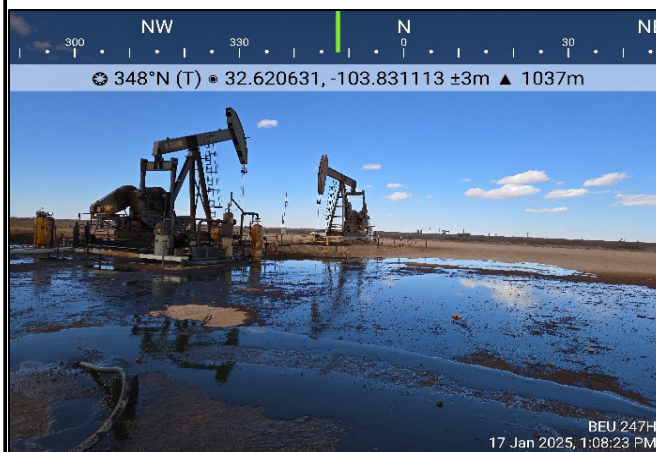
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# Photographic Log

XTO Energy, Inc

Big Eddy Unit 248H and 249H  
nAPP2418043567, nAPP2432147637,  
nAPP2432531235, & nAPP2502042071



Photograph: 1 Date: 11/20/2024  
Description: Soil staining - nAPP2432147637, nAPP2432531235  
View: North

Photograph: 2 Date: 1/17/2025  
Description: Soil staining - nAPP2502042071  
View: North



Photograph: 3 Date: 1/31/2025  
Description: Delineation activities  
View: West

Photograph: 4 Date: 1/31/2025  
Description: Delineation activities  
View: Northwest



APPENDIX C  
*Remediation Work Plan;*  
dated September 20, 2024

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September 19, 2024

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

**Re: Remediation Work Plan  
Big Eddy Unit 248H  
Incident Number NAPP2418043567  
Eddy County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of XTO Energy, Inc. (XTO), has prepared the following *Remediation Work Plan (Work Plan)* to document the site assessment activities completed to date and propose a plan to address impacted soil identified at the Big Eddy Unit 248H (Site). The purpose of the site assessment activities was to assess the lateral and vertical extent of impacted soil resulting from a release of produced water and crude oil at the Site. The following *Work Plan* proposes to excavate impacted soil within the release extent.

## **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 Big Eddy Unit 248H well pad. The majority of the release is located in Unit A, Section 35, Township 19 South, Range 31 East, in Eddy County, New Mexico (32.62087°, -103.83145°) and is associated with oil and gas exploration and production operations on Federal Land managed by the Bureau of Land Management (BLM). However, a portion of the release occurred on State Land managed by New Mexico State Land Office (SLO) in Unit D, Section 36, Township 19 South, and Range 31 East.

On June 21, 2024, the packing on the stuffing box of the well failed, resulting in the release of approximately 5 barrels (bbls) of crude oil and 9 bbls of produced water onto the surface of the pad and lightly over-spraying the northwest area of the pad and surrounding pasture due the dominant wind direction that day. A vacuum truck was immediately dispatched to the Site to recover free-standing fluids; approximately 5 bbls of fluids were recovered. XTO reported the release to the New Mexico Oil Conservation Division (NMOCD) and submitted a Notification of Release (NOR) and Initial C-141 Application (C-141) on June 28, 2024. The release was assigned Incident Number NAPP2418043567.

## **SITE CHARACTERIZATION AND CLOSURE CRITERIA**

The Site was characterized to assess the applicability of 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 the nearest groundwater well data. The closest permitted groundwater well with depth to

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H

groundwater data is New Mexico Office of the State Engineer (NMOSE) well CP-641, located approximately 0.4 miles southeast of the Site. The depth to groundwater in the well, 130 feet bgs, was most recently measured on February 23, 1982. All wells used for depth to water determination are depicted on Figure 1 and the referenced well records are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is a lakebed approximately 12,400 feet southeast of the Site. 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 (low potential karst designation area).

Based on the nearest groundwater data exceeding 25 years in age, and no other data available within 0.5 miles as preferred by the NMOCD, the following Table I 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): 100 mg/kg
- Chloride: 600 mg/kg

## CULTURAL PROPERTIES

Since the release remained on pad in the area governed by SLO, the Site is exempt from the Cultural Properties Protection (CPP) Rule. As such no additional cultural resource surveys were completed in connection with this release.

## SITE ASSESSMENT ACTIVITIES

On July 29, 2024, Ensolum personnel conducted a Site assessment to evaluate the release based on information provided on the C-141 and visual observations. Ensolum personnel identified the release extent, approximately 10,700 square feet, based on visual observations of stained soil. Ensolum personnel also identified an approximately 88,300 square-foot area in the northwest corner of the pad and pasture where high winds had carried a *de minimus* volume of fluid spray from the release. This area is considered an area of investigation. Ensolum personnel collected thirteen delineation soil samples (SS01 through SS13) within and around the release extent and area of investigation. The delineation soil samples were collected at a depth of 0.5 feet bgs to determine the presence or absence of impacted soil. The delineation soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. The release extent, area of investigation, and delineation soil sample locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 2.

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 (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-gasoline range organics (GRO), TPH-diesel range organics (DRO), and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following Standards Method SM4500. Based on field screenings and laboratory analytical results, additional delineation of the release extent and further assessment of the area of investigation in the northwest corner of the pad and pasture was warranted.

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H

## DELINEATION SOIL SAMPLING ACTIVITIES

On September 9, 2024, Ensolum returned to the Site to remove gross impacts and conduct additional delineation. Saturated soil was removed around the wellhead, but field screening results for VOCs and chloride in excavation soil samples indicated additional excavation was warranted. As such, two potholes (PH01 and PH02) were advanced within the release extent via a backhoe. Pothole PH01 was advanced within the excavation area near SS08 to a depth of 8 feet bgs. Pothole PH02 was advanced to 1-foot bgs and was located in the vicinity of SS05. Discrete delineation soil samples were collected from PH01 at 6 feet and 8 feet bgs and from PH02 at 1-foot bgs. Soil from the potholes was field screened, handled, and analyzed for the same COCs as described above. Field screening results and observations were logged on lithologic/soil sampling logs, which are included in Appendix B. Both delineation pothole locations are depicted on Figure 2. Photographic documentation was completed during all Site visits and is presented on a Photographic Log included in Appendix C.

On September 17, 2024, in order to further assess the area of investigation, Ensolum personnel collected ten additional delineation soil samples (SS14 through SS23) at a depth of 0.5 feet bgs within and around the area of investigation. The delineation soil samples were handled and analyzed following the same procedures described above.

Laboratory analytical results for delineation soil samples collected at 0.5 feet bgs within the release extent indicated TPH and chloride concentrations exceeded the Closure Criteria. Laboratory analytical results for the terminal depths of PH01 and PH02 indicated that all COCs were compliant with Closure Criteria and successfully defined the vertical extent of impacted soil. Laboratory analytical results for delineation soil samples collected at 0.5 feet bgs within and around the area of investigation in the northwest corner of the pad and surrounding pasture indicated all COCs were compliant with the Closure Criteria and confirmed the absence of impacted soil in that area. All laboratory analytical results are summarized on Table 1 and laboratory analytical reports are included in Appendix D.

## VEGETATION SURVEY ACTIVITIES

On September 13, 2024, Ensolum personnel conducted a vegetation survey utilizing the line-point intercept (LPI) method to assess for the presence or absence of any biological indications of stress to the vegetation in the area of investigation. A staff biologist completed 1 LPI transect within the area of investigation and 1 LPI transect to the north in an undisturbed area. Each transect was 100 feet in length and mapped utilizing a handheld GPS unit as depicted on Figure 3. The staff biologist noted each time vegetation intersected the transect and recorded the length of the vegetation along the transect. The transects were completed along the same slope and direction. The staff biologist also recorded the observed health of the plant. Some stressed vegetation, that was indicative of heat stress and natural conditions, was noted throughout the area of investigation and surrounding pasture area. No indications of stress from the potential overspray were observed.

The LPI transect completed in an undisturbed area to the north, LPI-1, indicated a vegetation coverage of 27 percent (%). The LPI transect LPI-2 was completed in the area of investigation and indicated vegetation coverage of 26%. These observations suggest there have been no significant impacts to the vegetation in the area of investigation. The vegetation survey was conducted over 2 months after the release date, during which time any impacts would have become clearly visible. In addition, all laboratory analytical results for delineation soil samples collected in the area of investigation confirmed the absence of impacted soil in the area. Photographic documentation of the vegetation survey is presented in a Photographic Log provided in Appendix C.

XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H

## PROPOSED REMEDIATION WORK PLAN

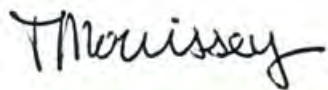
The delineation soil sampling results indicate soil containing elevated TPH and chloride concentrations exists across an approximate 10,700 square foot area in the release extent on pad and extends to depths ranging from 0.5 feet to 8 feet bgs. As such, XTO proposes to complete the following remediation activities:

- Excavation of TPH and chloride impacted soil has begun and will proceed vertically and laterally until sidewall samples confirm all COC concentrations are compliant with the Closure Criteria. The proposed excavation extent is depicted in Figure 4.
- An estimated 1,500 cubic yards of impacted soil will be excavated. The excavated soil will be transferred a New Mexico approved landfill facility for disposal.
- The excavation will be backfilled and recontoured to match pre-existing conditions. Reclamation and reseedling of the on-pad area will occur during pad abandonment.
- The area of investigation will continue to be monitored, and photo documentation of the vegetation will be included in the final *Closure Report*.

XTO will complete the excavation and soil sampling activities within 90 days of the date of approval of this *Work Plan* by the NMOCD.

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

Sincerely,  
**Ensolum, LLC**



Tacoma Morrissey, MS  
Associate Principal



Ashley Ager, PG, MS  
Principal

cc: Colton Brown, XTO  
Kaylan Dirkx, XTO  
New Mexico State Land Office  
Bureau of Land Management

### Appendices:

Figure 1	Site Location Map
Figure 2	Delineation Soil Sample Locations
Figure 3	Vegetation Survey Transects
Figure 4	Proposed Excavation Extent
Table 1	Soil Sample Analytical Results
Appendix A	Referenced Well Records
Appendix B	Lithologic / Soil Sampling Logs
Appendix C	Photographic Log

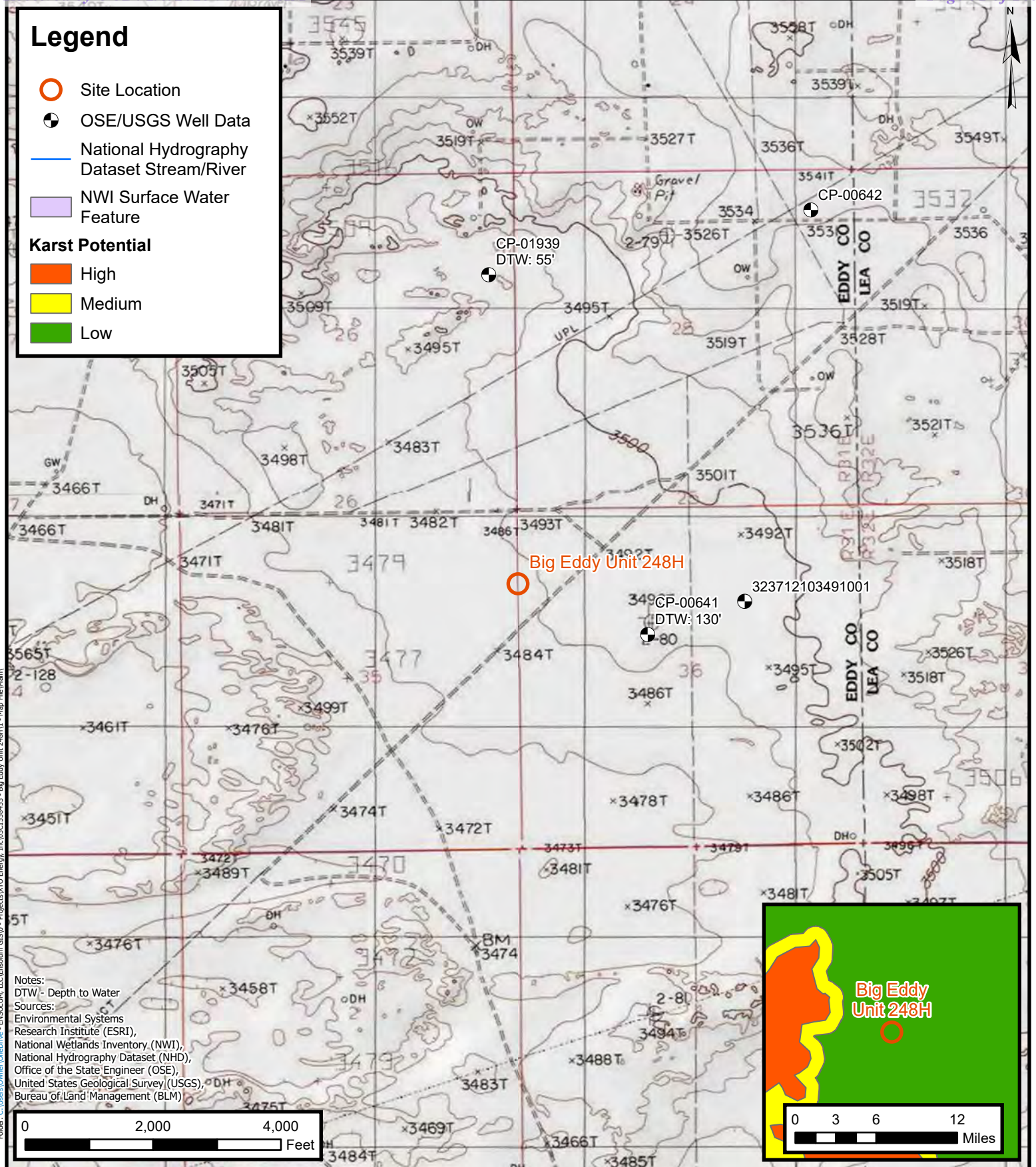
XTO Energy, Inc.  
Remediation Work Plan  
Big Eddy Unit 248H

## Appendix D Laboratory Analytical Reports & Chain-of-Custody Documentation



FIGURES

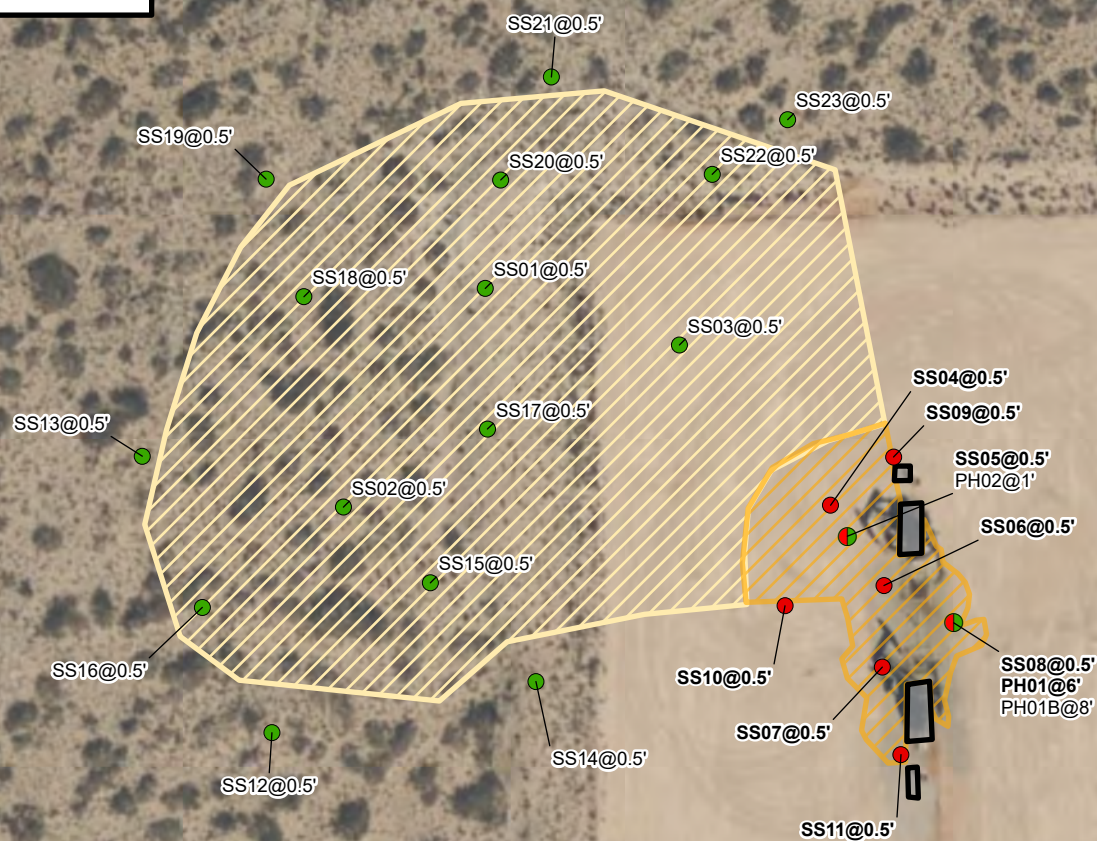






**Legend**

- Delineation Soil Sample in Compliance with Closure Criteria
- Delineation Soil Sample with Concentrations Previously Exceeding Closure Criteria
- Delineation Soil Sample with Concentrations Exceeding Closure Criteria
- Production Equipment
- Release Extent
- Area of Investigation



Notes:  
Sample ID @ Depth Below Ground Surface.

0 25 50 100 150 200  
Feet

Sources: Environmental Systems Research Institute (ESRI)



## Delineation Soil Sample Locations

XTO Energy, Inc  
Big Eddy Unit 248H  
Incident Number: NAPP2418043567  
Unit A, Sec 35, T19S, R31E  
Eddy County, New Mexico

**FIGURE**

**2**







**ENSOLUM**  
Environmental, Engineering and  
Hydrogeologic Consultants

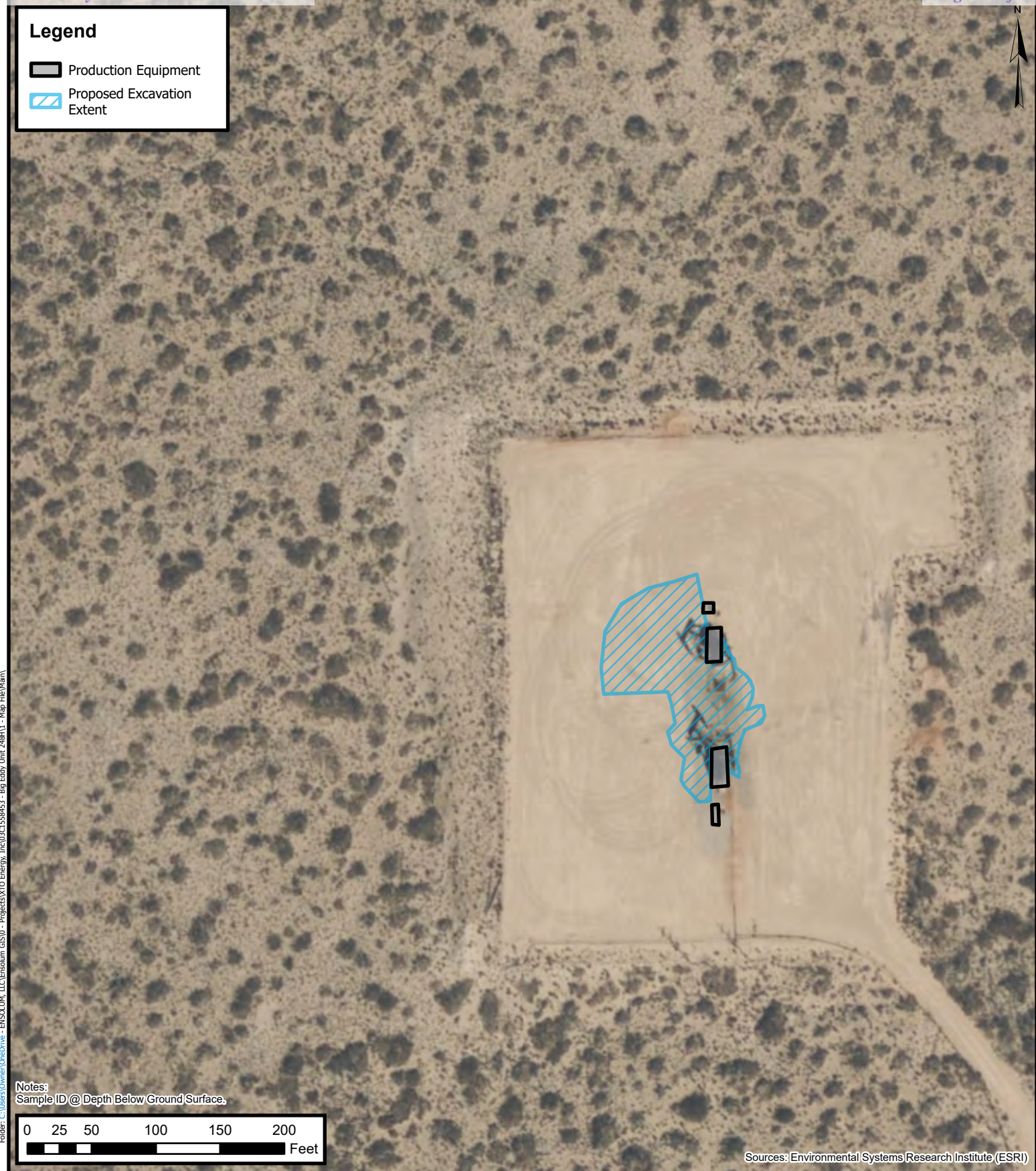
### **Vegetation Survey Transects**

XTO Energy, Inc  
Big Eddy Unit 248H  
Incident Number: NAPP2418043567  
Unit A, Sec 35, T19S, R31E  
Eddy County, New Mexico

### **FIGURE**

**3**





## Proposed Excavation Extent

XTO Energy, Inc  
Big Eddy Unit 248H  
Incident Number: NAPP2418043567  
Unit A, Sec 35, T19S, R31E  
Eddy County, New Mexico

**FIGURE**  
**4**



TABLES



**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Big Eddy Unit 248H  
 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)
NMOCD Table I Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	NE	100	600
Delineation Soil Samples										
SS01	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS02	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS03	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	240
SS04	07/29/2024	0.5	<0.050	<0.300	<10.0	182	55.3	182	<b>237</b>	560
SS05	07/29/2024	0.5	<0.050	<0.300	<10.0	1,870	465	1,870	<b>2,335</b>	<b>1,650</b>
PH02	09/09/2024	1	<0.050	<0.300	<10.0	87.4	13.3	87.4	101	192
SS06	07/29/2024	0.5	<0.050	5.16	75.7	2,710	613	2,786	<b>3,399</b>	<b>1,250</b>
SS07	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>640</b>
SS08	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>13,600</b>
PH01	09/09/2024	6	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>752</b>
PH01B	09/09/2024	8	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
SS09	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>1,060</b>
SS10	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>1,570</b>
SS11	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<b>1,060</b>
SS12	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS13	07/29/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS14	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
SS15	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS16	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS17	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS18	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS19	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0



**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Big Eddy Unit 248H  
 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)
NMOCD Table I Closure Criteria (NMAC 19.15.29)			10	50	NE	NE	NE	NE	100	600
SS20	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS21	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS22	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
SS23	09/17/2024	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0

## 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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Revised June 1972

STATE ENGINEER OFFICE  
WELL RECORD

SANTA FE

Section 1. GENERAL INFORMATION

(A) Owner of well Phillips Petroleum Owner's Well No. CP-641-Expl.  
Street or Post Office Address P.O. Box 2130  
City and State Hobbs, NM 88240

Well was drilled under Permit No. TEST HOLE FOR EPA and is located in the: #4 1600' FNL 1600' FWL  
a. 1/4 1/4 SE 1/4 NW 1/4 of Section 36 Township 19S Range 31E N.M.P.M.  
b. Tract No. \_\_\_\_\_ of Map No. \_\_\_\_\_ of the \_\_\_\_\_  
c. Lot No. \_\_\_\_\_ of Block No. \_\_\_\_\_ of the \_\_\_\_\_  
Subdivision, recorded in Eddy County.  
d. X= \_\_\_\_\_ feet, Y= \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in the \_\_\_\_\_ Grant.

(B) Drilling Contractor Larry's Drilling License No. WD882  
Address 2601 W. Bender Hobbs, NM 88240  
Drilling Began 2-11-82 Completed 2-12-82 Type tools trl-cone 0-220'-7 7/8  
220 Size hole 4 3/4  
Elevation of land surface or \_\_\_\_\_ at well is \_\_\_\_\_ ft. Total depth of well 300 ft.  
Completed well is ☐ shallow ☐ artesian test hole Depth to water upon completion of well 130 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
<u>5 1/2</u>	<u>160PVC</u>		<u>0</u>	<u>220</u>				

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				

Section 5. PLUGGING RECORD

Plugging Contractor \_\_\_\_\_  
Address \_\_\_\_\_  
Plugging Method \_\_\_\_\_  
Date Well Plugged \_\_\_\_\_  
Plugging approved by: \_\_\_\_\_  
State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received February 23, 1982 Quad \_\_\_\_\_ FWL \_\_\_\_\_ FSL \_\_\_\_\_  
File No. CP-641-Exploratory Use EXP. Location No. 19.31.36.14114



Section 7. REMARKS AND ADDITIONAL INFORMATION

1. 	2. 	3. 	4. 
5. 	6. 	7. 	8. 
9. 	10. 	11. 	12. 


Released to Imaging: 2/6/2025 2:46:45 PM




## APPENDIX B

### Lithologic Soil Sampling Logs

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								Sample Name: PH01		Date: 9/9/2024	
								Site Name: Big Eddy Unit 248H			
								Incident Number: NAPP2418043567			
								Job Number: 03C1558453			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: JD		Method: Backhoe	
Coordinates: 32.620931, -103.831294								Hole Diameter: 24"		Total Depth: 8'	
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			
D	12,611	0.0	N	SS08	0.5	0	CCHE	(0-8') CALICHE, tan, fine grained, some sand, well sorted, no odor			
						1					
						2					
						3					
						4		Soil excavated to 4' bgs between 9/4/24 and 9/9/2024			
						5					
D	929.6	0.0		PH01	6	6					
D	1,495	0.0				7					
D	<162	0.0		PH01A	8	8					
Total Depth @ 8 feet bgs											

 <b>ENSOLUM</b>		Sample Name: PH02		Date: 9/9/2024				
		Site Name: Big Eddy Unit 248H						
		Incident Number: NAPP2418043567						
		Job Number: 03C1558453						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.621056, -103.831474			Logged By: JD		Method: Backhoe			
			Hole Diameter: 24"		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
						0	CCHE	(0-1') CALICHE, tan, fine grained, some sand, well sorted, odor
D	1,609	24.8	Y	SS05	0.5			
D	201.6	0.0	N	PH02	1	1		(@1') no odor
						Total Depth @ 1-foot bgs		



## APPENDIX C

### Photographic Log

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**Photographic Log**

XTO Energy, Inc  
Big Eddy Unit 248H  
NAPP2418043567



Photograph: 1                      Date: 6/21/2024  
Description: Recovery of free standing fluids  
View: Northwest



Photograph: 2                      Date: 7/12/2024  
Description: Soil staining in release footprint  
View: Northwest



Photograph: 3                      Date: 7/12/2024  
Description: Area of investigation  
View: Southeast



Photograph: 4                      Date: 9/9/2024  
Description: Delineation and excavation activities  
View: South



**Photographic Log**

XTO Energy, Inc  
Big Eddy Unit 248H  
NAPP2418043567



Photograph: 5 Date: 9/13/2024  
Description: LPI -1 in undisturbed area  
View: North



Photograph: 6 Date: 9/13/2024  
Description: LPI -2 in area of investigation  
View: Northeast



Photograph: 7 Date: 9/13/2024  
Description: LPI -2 in area of investigation  
View: Southwest



Photograph: 8 Date: 9/17/2024  
Description: View of area of investigation from pad edge  
View: North





## APPENDIX D

### Laboratory Analytical Reports & Chain of Custody Documentation

---



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

August 02, 2024

DAVID MCINNIS

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: BIG EDDY UNIT 248H

Enclosed are the results of analyses for samples received by the laboratory on 07/30/24 14:25.

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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 01 .5' (H244536-01)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95	
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60	
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41	
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45	
Total BTEX	<0.300	0.300	07/31/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 113 % 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	32.0	16.0	07/31/2024	ND	464	116	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	08/01/2024	ND	209	104	200	2.32	
DRO >C10-C28*	<10.0	10.0	08/01/2024	ND	179	89.4	200	0.570	
EXT DRO >C28-C36	<10.0	10.0	08/01/2024	ND					

Surrogate: 1-Chlorooctane 106 % 48.2-134

Surrogate: 1-Chlorooctadecane 103 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 02 .5' (H244536-02)**

BTX 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	07/31/2024	ND	1.96	98.2	2.00	5.95	
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60	
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41	
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45	
Total BTX	<0.300	0.300	07/31/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	16.0	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 123 % 48.2-134

Surrogate: 1-Chlorooctadecane 126 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 03 .5' (H244536-03)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 112 % 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	240	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 106 % 48.2-134

Surrogate: 1-Chlorooctadecane 105 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 04 .5' (H244536-04)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 113 % 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	560	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	182	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	55.3	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 114 % 48.2-134

Surrogate: 1-Chlorooctadecane 129 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 05 .5' (H244536-05)**

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	08/01/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	08/01/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	08/01/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	08/01/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	08/01/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	1650	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	1870	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	465	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 127 % 48.2-134

Surrogate: 1-Chlorooctadecane 147 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 06 .5' (H244536-06)**

BTX 8021B		mg/kg	Analyzed By: JH					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2024	ND	1.96	98.2	2.00	5.95	
Toluene*	0.384	0.050	08/01/2024	ND	2.08	104	2.00	5.60	
Ethylbenzene*	1.52	0.050	08/01/2024	ND	2.15	107	2.00	5.41	
Total Xylenes*	3.26	0.150	08/01/2024	ND	6.59	110	6.00	5.45	
Total BTX	5.16	0.300	08/01/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 153 % 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	1250	16.0	07/31/2024	ND	464	116	400	0.00	

TPH 8015M		mg/kg	Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	75.7	10.0	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	2710	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	613	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 131 % 48.2-134

Surrogate: 1-Chlorooctadecane 153 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 07 .5' (H244536-07)**

BTX 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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 115 % 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	640	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 100 % 48.2-134

Surrogate: 1-Chlorooctadecane 109 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 08 .5' (H244536-08)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.2 % 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	13600	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 93.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 09 .5' (H244536-09)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.0 % 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	1060	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 75.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 78.2 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 10 .5' (H244536-10)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.0 % 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	1570	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 83.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 85.8 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 11 .5' (H244536-11)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 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	1060	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 86.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.6 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 12 .5' (H244536-12)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.4 % 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	16.0	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 120 % 48.2-134

Surrogate: 1-Chlorooctadecane 126 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 13 .5' (H244536-13)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.4 % 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	32.0	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 114 % 48.2-134

Surrogate: 1-Chlorooctadecane 122 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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### Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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

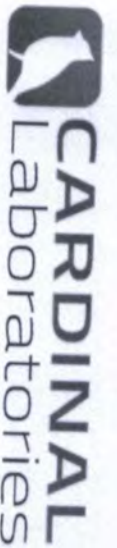
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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

<b>Company Name:</b> Ensolum, LLC		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>	
<b>Project Manager:</b> David McInnis		<b>P.O. #:</b>			
<b>Address:</b> 3122 National Parks Hwy		<b>Company:</b> XTO Energy Inc.			
<b>City:</b> Carlsbad		<b>Attn:</b> Amy Ruth			
<b>Phone #:</b> 409-454-3009		<b>Address:</b> 3104 E. Greene St.			
<b>Fax #:</b>		<b>City:</b> Carlsbad			
<b>Project #:</b> 03C1558453		<b>State:</b> NM		<b>Zip:</b> 88220	
<b>Project Name:</b> Big Eddy Unit 248H		<b>Phone #:</b>			
<b>Project Location:</b> 32.62087 -103.831415		<b>Fax #:</b>			
<b>Sampler Name:</b> Jesse Dorman					

Lab I.D.	Sample I.D.	Sample Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	BTX	TPH	CHLORIDE
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
1	5501	5'													
2	5502														
3	5503														
4	5504														
5	5505														
6	5506														
7	5507														
8	5508														
9	5509														
10	5510														

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<b>Relinquished By:</b>	<b>Date:</b> 1-30-24	<b>Received By:</b>	<b>Date:</b> 1-25
<b>Relinquished By:</b>	<b>Date:</b>	<b>Received By:</b>	<b>Date:</b>

Delivered By: (Circle One) ☒ UPS ☐ Bus ☐ Other: ☐ **Observed Temp. °C** 14.4 **Sample Condition** ☒ Cool ☐ Intact ☐ Yes ☐ No ☐ Yes ☐ No **CHECKED BY:** (Initials) **Turnaround Time:** Standard ☒ Rush ☐ **Thermometer ID #113-#140** **Bacteria (only)** ☐ Sample Condition ☐ Cool ☐ Intact ☐ Yes ☐ No ☐ Yes ☐ No **Corrected Temp. °C**

REMARKS: Cost Center: 1140201001 Incident ID: nAPP2418043567

Verbal Result: ☐ Yes ☒ No **Add'l Phone #:**

All Results are emailed. Please provide Email address: bheill@ensolum.com, TMorrissey@ensolum.com, dmclinnis@ensolum.com

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





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

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September 17, 2024

DAVID MCINNIS

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: BIG EDDY UNIT 248H

Enclosed are the results of analyses for samples received by the laboratory on 09/10/24 13:00.

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/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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,

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PH 01 6'	H245458-01	Soil	09-Sep-24 11:30	10-Sep-24 13:00
PH 01A 8'	H245458-02	Soil	09-Sep-24 12:05	10-Sep-24 13:00
FS 10 2'	H245458-03	Soil	09-Sep-24 13:50	10-Sep-24 13:00
FS 11 2'	H245458-04	Soil	09-Sep-24 13:55	10-Sep-24 13:00
FS 15 2'	H245458-05	Soil	09-Sep-24 14:10	10-Sep-24 13:00
PH 02 1'	H245458-06	Soil	09-Sep-24 15:10	10-Sep-24 13:00

09/17/24 - Client changed the sample IDs for -01, -02 and -06 (see COC). This is the revised report and will replace the one sent on 09/11/24.

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**PH 01 6'**  
**H245458-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>752</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)	105 %	71.5-134	4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0	10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0	10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane	97.1 %	48.2-134	4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane	115 %	49.1-148	4091016	MS	10-Sep-24	8015B	
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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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**PH 01A 8'**  
**H245458-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>48.0</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			106 %	71.5-134		4091019	JH	10-Sep-24	8021B	

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
Surrogate: 1-Chlorooctane			97.7 %	48.2-134		4091016	MS	10-Sep-24	8015B	
Surrogate: 1-Chlorooctadecane			115 %	49.1-148		4091016	MS	10-Sep-24	8015B	

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**FS 10 2'**  
**H245458-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>80.0</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			103 %	71.5-134		4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane			100 %	48.2-134		4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane			120 %	49.1-148		4091016	MS	10-Sep-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**FS 11 2'**  
**H245458-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>144</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)		105 %		71.5-134		4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane		96.4 %		48.2-134		4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane		111 %		49.1-148		4091016	MS	10-Sep-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**FS 15 2'**  
**H245458-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>144</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Surrogate: 4-Bromofluorobenzene (PID)			107 %	71.5-134		4091019	JH	10-Sep-24	8021B	

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
Surrogate: 1-Chlorooctane			97.8 %	48.2-134		4091016	MS	10-Sep-24	8015B	
Surrogate: 1-Chlorooctadecane			113 %	49.1-148		4091016	MS	10-Sep-24	8015B	

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**PH 02 1'**  
**H245458-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>192</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			107 %		71.5-134	4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
<b>DRO &gt;C10-C28*</b>	<b>87.4</b>		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>13.3</b>		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane			94.3 %		48.2-134	4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane			111 %		49.1-148	4091016	MS	10-Sep-24	8015B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**Inorganic Compounds - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 4091126 - 1:4 DI Water</b>									
<b>Blank (4091126-BLK1)</b>					Prepared & Analyzed: 11-Sep-24				
Chloride	ND	16.0	mg/kg						
<b>LCS (4091126-BS1)</b>					Prepared & Analyzed: 11-Sep-24				
Chloride	400	16.0	mg/kg	400		100	80-120		
<b>LCS Dup (4091126-BSD1)</b>					Prepared & Analyzed: 11-Sep-24				
Chloride	416	16.0	mg/kg	400		104	80-120	3.92	20

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4091019 - Volatiles****Blank (4091019-BLK1)**

Prepared &amp; Analyzed: 10-Sep-24

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0517		mg/kg	0.0500		103	71.5-134			

**LCS (4091019-BS1)**

Prepared &amp; Analyzed: 10-Sep-24

Benzene	2.05	0.050	mg/kg	2.00		102	82.8-130			
Toluene	2.08	0.050	mg/kg	2.00		104	86-128			
Ethylbenzene	2.07	0.050	mg/kg	2.00		103	85.9-128			
m,p-Xylene	4.42	0.100	mg/kg	4.00		110	89-129			
o-Xylene	2.11	0.050	mg/kg	2.00		105	86.1-125			
Total Xylenes	6.52	0.150	mg/kg	6.00		109	88.2-128			
Surrogate: 4-Bromofluorobenzene (PID)	0.0501		mg/kg	0.0500		100	71.5-134			

**LCS Dup (4091019-BSD1)**

Prepared &amp; Analyzed: 10-Sep-24

Benzene	1.81	0.050	mg/kg	2.00		90.3	82.8-130	12.5	15.8	
Toluene	1.84	0.050	mg/kg	2.00		92.0	86-128	12.4	15.9	
Ethylbenzene	1.82	0.050	mg/kg	2.00		90.9	85.9-128	12.9	16	
m,p-Xylene	3.91	0.100	mg/kg	4.00		97.7	89-129	12.2	16.2	
o-Xylene	1.85	0.050	mg/kg	2.00		92.5	86.1-125	12.9	16.7	
Total Xylenes	5.76	0.150	mg/kg	6.00		96.0	88.2-128	12.4	16.3	
Surrogate: 4-Bromofluorobenzene (PID)	0.0504		mg/kg	0.0500		101	71.5-134			

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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4091016 - General Prep - Organics****Blank (4091016-BLK1)**

Prepared &amp; Analyzed: 10-Sep-24

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	46.2		mg/kg	50.0		92.5	48.2-134			
Surrogate: 1-Chlorooctadecane	53.1		mg/kg	50.0		106	49.1-148			

**LCS (4091016-BS1)**

Prepared &amp; Analyzed: 10-Sep-24

GRO C6-C10	204	10.0	mg/kg	200		102	66.4-123			
DRO >C10-C28	199	10.0	mg/kg	200		99.4	66.5-118			
Total TPH C6-C28	403	10.0	mg/kg	400		101	77.6-123			
Surrogate: 1-Chlorooctane	51.1		mg/kg	50.0		102	48.2-134			
Surrogate: 1-Chlorooctadecane	55.0		mg/kg	50.0		110	49.1-148			

**LCS Dup (4091016-BSD1)**

Prepared &amp; Analyzed: 10-Sep-24

GRO C6-C10	210	10.0	mg/kg	200		105	66.4-123	3.00	17.7	
DRO >C10-C28	209	10.0	mg/kg	200		104	66.5-118	4.92	21	
Total TPH C6-C28	419	10.0	mg/kg	400		105	77.6-123	3.95	18.5	
Surrogate: 1-Chlorooctane	54.7		mg/kg	50.0		109	48.2-134			
Surrogate: 1-Chlorooctadecane	58.9		mg/kg	50.0		118	49.1-148			

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Celey D. Keene, Lab Director/Quality Manager



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**Notes and Definitions**

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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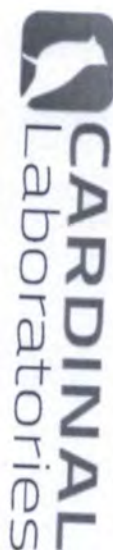
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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Ensolum, LLC		P.O. #:	
Project Manager: David Mcinnis		<b>BILL TO</b>	
Address: 3122 National Parks Hwy		ANALYSIS REQUEST	
City: Carlsbad	State: NM Zip: 88220	Company: XTO Energy Inc.	
Phone #: 409-454-3009	Fax #:	Attn: Amy Ruth	
Project #: 03C1558453	Project Owner: XTO	Address: 3104 E. Green St.	
Project Name: Big Eddy Unit 248H		City: Carlsbad	
Project Location: 32.62087, -103.83145		State: NM Zip: 88220	
Sampler Name: Jesse Dorman		Phone #:	
FOR LAB USE ONLY		Fax #:	

FOR LAB USE ONLY

[illegible]

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**Relinquished By:** \_\_\_\_\_ **Received By:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Date: 4-10-24		Received By: <i>Spodisquely</i>	
Time: 1:30			
Date:		Received By:	
Time:			
Relinquished By: <i>[Signature]</i>			
Delivered By: (Circle One)		Observed Temp. °C 9.3	
Sampler - UPS - Bus - Other:		Corrected Temp. °C 0.12	
		Sample Condition	
		Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		CHECKED BY: <i>SR</i>	
		Turnaround Time: <i>Standard</i>	
		Thermometer ID #140-0113	
		Correction Factor: <i>0.11</i>	
		Bacteria (only) <input checked="" type="checkbox"/> Cool Intact <input type="checkbox"/> Yes <input type="checkbox"/> No	
		Sample Condition <input type="checkbox"/> Observed Temp. °C	
		Corrected Temp. °C	
		REMARKS: <i>*Customer Requested IT Check</i>	
		Dmcinis@ensolum.com TMorrissey@ensolum.com	
		Cost Center: 1140201001	
		Incident ID: NAPP2418043567	
		Verbal Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
		Add'l Phone #:	
		All Results are emailed. Please provide Email address:	
		† Cardinal cannot accept verbal changes. Please email changes to celey.keene@carradoh.com	

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



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

September 18, 2024

DAVID MCINNIS

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: BIG EDDY UNIT 248H

Enclosed are the results of analyses for samples received by the laboratory on 09/17/24 14:11.

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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 14 .5' (H245642-01)**

BTX 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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	09/18/2024	ND	400	100	400	3.92	

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 117 % 48.2-134

Surrogate: 1-Chlorooctadecane 126 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 15 .5' (H245642-02)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 110 % 48.2-134

Surrogate: 1-Chlorooctadecane 116 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 16 .5' (H245642-03)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 102 % 48.2-134

Surrogate: 1-Chlorooctadecane 108 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 17 .5' (H245642-04)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 109 % 48.2-134

Surrogate: 1-Chlorooctadecane 116 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 18 .5' (H245642-05)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 108 % 48.2-134

Surrogate: 1-Chlorooctadecane 115 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 19 .5' (H245642-06)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 105 % 48.2-134

Surrogate: 1-Chlorooctadecane 110 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 20 .5' (H245642-07)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 99.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 105 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 21 .5' (H245642-08)**

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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTEx	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 111 % 48.2-134

Surrogate: 1-Chlorooctadecane 120 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 22 .5' (H245642-09)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/18/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/18/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/18/2024	ND					

Surrogate: 1-Chlorooctane 109 % 48.2-134

Surrogate: 1-Chlorooctadecane 118 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 23 .5' (H245642-10)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/18/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/18/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/18/2024	ND					

Surrogate: 1-Chlorooctane 116 % 48.2-134

Surrogate: 1-Chlorooctadecane 124 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

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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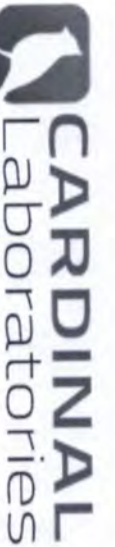
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager





CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: Ensolum, LLC	P.O. #:
Project Manager: David Mcinnis	Company: XTO Energy Inc.
Address: 3122 National Parks Hwy	Attn: Amy Ruth
City: Carlsbad	Address: 3104 E. Green St.
Phone #: 409-454-3009	City: Carlsbad
Fax #: 409-454-3009	State: NM Zip: 88220
Project #: 03C1558453	Project Owner: XTO
Project Name: Big Eddy Unit 248H	State: NM Zip: 88220
Project Location: 32.62087, -103.83145	Phone #:
Sampler Name: Jesse Dorman	Fax #:

Lab I.D.	Sample I.D.	Sample Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	ANALYSIS REQUEST			
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			BTEX	TPH	CHLORIDE	
HAUSCUB	5514	1.5	G	1							9/17/21	1230				
	5515	1.5	G	1								1133				
	5516	1.5	G	1								1136				
	5517	1.5	G	1								1141				
	5518	1.5	G	1								1144				
	5519	1.5	G	1								1148				
	5520	1.5	G	1								1152				
	5521	1.5	G	1								1155				
	5522	1.5	G	1								1158				
	5523	1.5	G	1								1159				

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Relinquished By: <i>mm</i>	Date: 1/11/21	Received By: <i>Stoddard</i>	Date: 1/11/21
----------------------------	---------------	------------------------------	---------------

Relinquished By: <i>mm</i>	Date: 1/11/21	Received By: <i>Stoddard</i>	Date: 1/11/21
----------------------------	---------------	------------------------------	---------------

Delivered By: (Circle One)	Observed Temp.: °C	Sample Condition	CHECKED BY: <i>sd</i>	Turnaround Time: <i>Standard</i>	Bacteria (only)	Sample Condition
Sampler - UPS - Bus - Other:	Corrected Temp.: °C	Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<i>40-0.0</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

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





## 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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August 02, 2024

DAVID MCINNIS

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: BIG EDDY UNIT 248H

Enclosed are the results of analyses for samples received by the laboratory on 07/30/24 14:25.

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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 01 .5' (H244536-01)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95	
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60	
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41	
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45	
Total BTEX	<0.300	0.300	07/31/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 113 % 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	32.0	16.0	07/31/2024	ND	464	116	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	08/01/2024	ND	209	104	200	2.32	
DRO >C10-C28*	<10.0	10.0	08/01/2024	ND	179	89.4	200	0.570	
EXT DRO >C28-C36	<10.0	10.0	08/01/2024	ND					

Surrogate: 1-Chlorooctane 106 % 48.2-134

Surrogate: 1-Chlorooctadecane 103 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 02 .5' (H244536-02)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	16.0	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 123 % 48.2-134

Surrogate: 1-Chlorooctadecane 126 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 03 .5' (H244536-03)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 112 % 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	240	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 106 % 48.2-134

Surrogate: 1-Chlorooctadecane 105 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 04 .5' (H244536-04)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 113 % 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	560	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	182	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	55.3	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 114 % 48.2-134

Surrogate: 1-Chlorooctadecane 129 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 05 .5' (H244536-05)**

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	08/01/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	08/01/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	08/01/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	08/01/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	08/01/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	1650	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	1870	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	465	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 127 % 48.2-134

Surrogate: 1-Chlorooctadecane 147 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 06 .5' (H244536-06)**

BTEx 8021B		mg/kg	Analyzed By: JH					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/01/2024	ND	1.96	98.2	2.00	5.95	
Toluene*	<b>0.384</b>	0.050	08/01/2024	ND	2.08	104	2.00	5.60	
Ethylbenzene*	<b>1.52</b>	0.050	08/01/2024	ND	2.15	107	2.00	5.41	
Total Xylenes*	<b>3.26</b>	0.150	08/01/2024	ND	6.59	110	6.00	5.45	
Total BTEX	<b>5.16</b>	0.300	08/01/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 153 % 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	<b>1250</b>	16.0	07/31/2024	ND	464	116	400	0.00	

TPH 8015M		mg/kg	Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<b>75.7</b>	10.0	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<b>2710</b>	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<b>613</b>	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 131 % 48.2-134

Surrogate: 1-Chlorooctadecane 153 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 07 .5' (H244536-07)**

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	07/31/2024	ND	1.96	98.2	2.00	5.95		
Toluene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	5.60		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.15	107	2.00	5.41		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.59	110	6.00	5.45		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 115 % 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	640	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 100 % 48.2-134

Surrogate: 1-Chlorooctadecane 109 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 08 .5' (H244536-08)**

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	07/31/2024	ND	2.00	100	2.00	8.77	
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42	
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88	
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73	
Total BTEX	<0.300	0.300	07/31/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.2 % 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	13600	16.0	07/31/2024	ND	464	116	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 93.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 09 .5' (H244536-09)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.0 % 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	1060	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 75.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 78.2 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 10 .5' (H244536-10)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.0 % 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	1570	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 83.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 85.8 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 11 .5' (H244536-11)**

BTX 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	07/31/2024	ND	2.00	100	2.00	8.77	
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42	
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88	
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73	
Total BTX	<0.300	0.300	07/31/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 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	1060	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 86.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.6 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 12 .5' (H244536-12)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEx	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.4 % 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	16.0	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 120 % 48.2-134

Surrogate: 1-Chlorooctadecane 126 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/30/2024  
Reported: 08/02/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 07/29/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Alyssa Parras

**Sample ID: SS 13 .5' (H244536-13)**

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	07/31/2024	ND	2.00	100	2.00	8.77		
Toluene*	<0.050	0.050	07/31/2024	ND	1.97	98.4	2.00	9.42		
Ethylbenzene*	<0.050	0.050	07/31/2024	ND	2.08	104	2.00	9.88		
Total Xylenes*	<0.150	0.150	07/31/2024	ND	6.11	102	6.00	9.73		
Total BTEX	<0.300	0.300	07/31/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.4 % 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	32.0	16.0	08/01/2024	ND	448	112	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	07/31/2024	ND	187	93.7	200	4.47	
DRO >C10-C28*	<10.0	10.0	07/31/2024	ND	184	91.9	200	4.69	
EXT DRO >C28-C36	<10.0	10.0	07/31/2024	ND					

Surrogate: 1-Chlorooctane 114 % 48.2-134

Surrogate: 1-Chlorooctadecane 122 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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### Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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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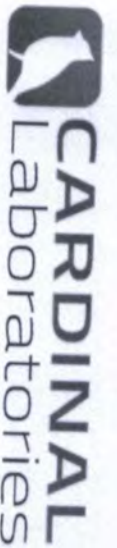
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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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

<b>Company Name:</b> Ensolum, LLC		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>	
<b>Project Manager:</b> David McInnis		<b>P.O. #:</b>			
<b>Address:</b> 3122 National Parks Hwy		<b>Company:</b> XTO Energy Inc.			
<b>City:</b> Carlsbad		<b>Attn:</b> Amy Ruth			
<b>Phone #:</b> 409-454-3009		<b>Address:</b> 3104 E. Greene St.			
<b>Fax #:</b>		<b>City:</b> Carlsbad			
<b>Project #:</b> 03C1558453		<b>State:</b> NM <b>Zip:</b> 88220			
<b>Project Name:</b> Big Eddy Unit 248H		<b>Phone #:</b>			
<b>Project Location:</b> 32.62087 -103.831415		<b>Fax #:</b>			
<b>Sampler Name:</b> Jesse Dorman					

Lab I.D.	Sample I.D.	Sample Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	BTX	TPH	CHLORIDE
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :					
1	5501	5'													
2	5502														
3	5503														
4	5504														
5	5505														
6	5506														
7	5507														
8	5508														
9	5509														
10	5510														

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<b>Relinquished By:</b>	<b>Date:</b> 1-30-24	<b>Received By:</b>	<b>Date:</b> 1-25
<b>Relinquished By:</b>	<b>Date:</b>	<b>Received By:</b>	<b>Date:</b>

Delivered By: (Circle One) ☒ UPS ☐ Bus ☐ Other: ☐ **Observed Temp. °C** 14.4 **Sample Condition** ☒ Cool ☐ Intact ☐ Yes ☐ No ☐ **CHECKED BY:** (Initials) **Turnaround Time:** Standard ☒ Rush ☐ **Thermometer ID** #113-#140 **Bacteria (only)** ☐ Yes ☒ No ☐ **Corrected Temp. °C**

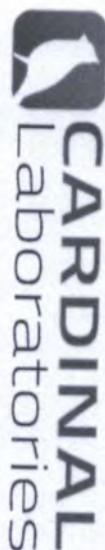
REMARKS: Cost Center: 1140201001 Incident ID: nAPP2418043567

Verbal Result: ☐ Yes ☒ No **Add'l Phone #:**

All Results are emailed. Please provide Email address: bbeill@ensolum.com, TMorrissey@ensolum.com, dmclnns@ensolum.com

Cardinal cannot accept verbal changes. Please email changes to caley.keene@cardinalabsnm.com





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

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

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

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September 17, 2024

DAVID MCINNIS

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: BIG EDDY UNIT 248H

Enclosed are the results of analyses for samples received by the laboratory on 09/10/24 13:00.

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/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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,

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PH 01 6'	H245458-01	Soil	09-Sep-24 11:30	10-Sep-24 13:00
PH 01A 8'	H245458-02	Soil	09-Sep-24 12:05	10-Sep-24 13:00
FS 10 2'	H245458-03	Soil	09-Sep-24 13:50	10-Sep-24 13:00
FS 11 2'	H245458-04	Soil	09-Sep-24 13:55	10-Sep-24 13:00
FS 15 2'	H245458-05	Soil	09-Sep-24 14:10	10-Sep-24 13:00
PH 02 1'	H245458-06	Soil	09-Sep-24 15:10	10-Sep-24 13:00

09/17/24 - Client changed the sample IDs for -01, -02 and -06 (see COC). This is the revised report and will replace the one sent on 09/11/24.

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**PH 01 6'**  
**H245458-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>752</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)	105 %	71.5-134	4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0	10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0	10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane	97.1 %	48.2-134	4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane	115 %	49.1-148	4091016	MS	10-Sep-24	8015B	
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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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**PH 01A 8'**  
**H245458-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 106 % 71.5-134 4091019 JH 10-Sep-24 8021B

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane 97.7 % 48.2-134 4091016 MS 10-Sep-24 8015B

Surrogate: 1-Chlorooctadecane 115 % 49.1-148 4091016 MS 10-Sep-24 8015B

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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**FS 10 2'**  
**H245458-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>80.0</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			103 %	71.5-134		4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane			100 %	48.2-134		4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane			120 %	49.1-148		4091016	MS	10-Sep-24	8015B	
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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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**FS 11 2'**  
**H245458-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>144</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			105 %	71.5-134		4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane			96.4 %	48.2-134		4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane			111 %	49.1-148		4091016	MS	10-Sep-24	8015B	
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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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**FS 15 2'**  
**H245458-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>144</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			107 %		71.5-134	4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane			97.8 %		48.2-134	4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane			113 %		49.1-148	4091016	MS	10-Sep-24	8015B	
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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  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**PH 02 1'**  
**H245458-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>192</b>		16.0	mg/kg	4	4091126	CT	11-Sep-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4091019	JH	10-Sep-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4091019	JH	10-Sep-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			107 %		71.5-134	4091019	JH	10-Sep-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
<b>DRO &gt;C10-C28*</b>	<b>87.4</b>		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	
<b>EXT DRO &gt;C28-C36</b>	<b>13.3</b>		10.0	mg/kg	1	4091016	MS	10-Sep-24	8015B	

Surrogate: 1-Chlorooctane			94.3 %		48.2-134	4091016	MS	10-Sep-24	8015B	
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Surrogate: 1-Chlorooctadecane			111 %		49.1-148	4091016	MS	10-Sep-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**Inorganic Compounds - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 4091126 - 1:4 DI Water</b>									
<b>Blank (4091126-BLK1)</b>					Prepared & Analyzed: 11-Sep-24				
Chloride	ND	16.0	mg/kg						
<b>LCS (4091126-BS1)</b>					Prepared & Analyzed: 11-Sep-24				
Chloride	400	16.0	mg/kg	400		100	80-120		
<b>LCS Dup (4091126-BSD1)</b>					Prepared & Analyzed: 11-Sep-24				
Chloride	416	16.0	mg/kg	400		104	80-120	3.92	20

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4091019 - Volatiles****Blank (4091019-BLK1)**

Prepared &amp; Analyzed: 10-Sep-24

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0517		mg/kg	0.0500		103	71.5-134			

**LCS (4091019-BS1)**

Prepared &amp; Analyzed: 10-Sep-24

Benzene	2.05	0.050	mg/kg	2.00		102	82.8-130			
Toluene	2.08	0.050	mg/kg	2.00		104	86-128			
Ethylbenzene	2.07	0.050	mg/kg	2.00		103	85.9-128			
m,p-Xylene	4.42	0.100	mg/kg	4.00		110	89-129			
o-Xylene	2.11	0.050	mg/kg	2.00		105	86.1-125			
Total Xylenes	6.52	0.150	mg/kg	6.00		109	88.2-128			
Surrogate: 4-Bromofluorobenzene (PID)	0.0501		mg/kg	0.0500		100	71.5-134			

**LCS Dup (4091019-BSD1)**

Prepared &amp; Analyzed: 10-Sep-24

Benzene	1.81	0.050	mg/kg	2.00		90.3	82.8-130	12.5	15.8	
Toluene	1.84	0.050	mg/kg	2.00		92.0	86-128	12.4	15.9	
Ethylbenzene	1.82	0.050	mg/kg	2.00		90.9	85.9-128	12.9	16	
m,p-Xylene	3.91	0.100	mg/kg	4.00		97.7	89-129	12.2	16.2	
o-Xylene	1.85	0.050	mg/kg	2.00		92.5	86.1-125	12.9	16.7	
Total Xylenes	5.76	0.150	mg/kg	6.00		96.0	88.2-128	12.4	16.3	
Surrogate: 4-Bromofluorobenzene (PID)	0.0504		mg/kg	0.0500		101	71.5-134			

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220

Project: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Manager: DAVID MCINNIS  
Fax To:

Reported:  
17-Sep-24 15:23

**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4091016 - General Prep - Organics****Blank (4091016-BLK1)**

Prepared &amp; Analyzed: 10-Sep-24

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	46.2		mg/kg	50.0		92.5	48.2-134			
Surrogate: 1-Chlorooctadecane	53.1		mg/kg	50.0		106	49.1-148			

**LCS (4091016-BS1)**

Prepared &amp; Analyzed: 10-Sep-24

GRO C6-C10	204	10.0	mg/kg	200		102	66.4-123			
DRO >C10-C28	199	10.0	mg/kg	200		99.4	66.5-118			
Total TPH C6-C28	403	10.0	mg/kg	400		101	77.6-123			
Surrogate: 1-Chlorooctane	51.1		mg/kg	50.0		102	48.2-134			
Surrogate: 1-Chlorooctadecane	55.0		mg/kg	50.0		110	49.1-148			

**LCS Dup (4091016-BS1)**

Prepared &amp; Analyzed: 10-Sep-24

GRO C6-C10	210	10.0	mg/kg	200		105	66.4-123	3.00	17.7	
DRO >C10-C28	209	10.0	mg/kg	200		104	66.5-118	4.92	21	
Total TPH C6-C28	419	10.0	mg/kg	400		105	77.6-123	3.95	18.5	
Surrogate: 1-Chlorooctane	54.7		mg/kg	50.0		109	48.2-134			
Surrogate: 1-Chlorooctadecane	58.9		mg/kg	50.0		118	49.1-148			

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

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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A handwritten signature in black ink, appearing to read "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager





CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

<b>Company Name:</b> Ensolum, LLC		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>	
<b>Project Manager:</b> David McInnis		<b>P.O. #:</b>			
<b>Address:</b> 3122 National Parks Hwy		<b>Company:</b> XTO Energy Inc.			
<b>City:</b> Carlsbad		<b>Attn:</b> Amy Ruth			
<b>Phone #:</b> 409-454-3009		<b>Address:</b> 3104 E. Green St.			
<b>State:</b> NM <b>Zip:</b> 88220		<b>City:</b> Carlsbad			
<b>Project #:</b> 03C1558453		<b>State:</b> NM <b>Zip:</b> 88220			
<b>Project Owner:</b> XTO		<b>Phone #:</b>			
<b>Project Name:</b> Big Eddy Unit 248H		<b>Fax #:</b>			
<b>Project Location:</b> 32.62087, -103.83145					
<b>Sampler Name:</b> Jesse Dorman					

Lab I.D.	Sample I.D.	Sample Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	BTX	TPH	CHLORIDE	
					GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :						
#245458	Ph 631	6'	G	1							9/9/24	11:30	/	/	/	
	Ph 631	8'	G	1							12:05	/	/	/		
	Ph 631	10'	G	1							13:30	/	/	/		
	Ph 631	12'	G	1							13:55	/	/	/		
	Ph 631	14'	G	1							14:10	/	/	/		
	SD															

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<b>Relinquished By:</b>	<b>Date:</b> 9/10/24	<b>Received By:</b>	<b>Verbal Result:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Add'l Phone #:
	<b>Time:</b> 1:30	<b>Signature:</b>	<b>All Results are emailed. Please provide Email address:</b>
	<b>Date:</b>		DMcInnis@ensolum.com TMorrissey@ensolum.com,
	<b>Time:</b>		<b>REMARKS:</b> *Customer Requested ID changes.
			Cost Center: 1140201001
			Incident ID: NADPP2418043567

<b>Delivered By:</b> (Circle One)	<b>Observed Temp. °C:</b> 13.3	<b>Sample Condition:</b>	<b>CHECKED BY:</b>
<b>Sampler - UPS - Bus - Other:</b>	<b>Corrected Temp. °C:</b> 0.12	<b>Cool Intact:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Signature:</b>
		<b>Turnaround Time:</b> Standard	<b>Thermometer ID:</b> #40-010
		<b>Bacteria (only) Sample Condition:</b>	<b>Correction Factor:</b> 0.00
		<b>Cool Intact:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Standard:</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
		<b>Observed Temp. °C:</b>	<b>Corrected Temp. °C:</b>

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



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

September 18, 2024

DAVID MCINNIS

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: BIG EDDY UNIT 248H

Enclosed are the results of analyses for samples received by the laboratory on 09/17/24 14:11.

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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 14 .5' (H245642-01)**

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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTEX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	09/18/2024	ND	400	100	400	3.92	

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 117 % 48.2-134

Surrogate: 1-Chlorooctadecane 126 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 15 .5' (H245642-02)**

BTX 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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41	

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 110 % 48.2-134

Surrogate: 1-Chlorooctadecane 116 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 16 .5' (H245642-03)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 102 % 48.2-134

Surrogate: 1-Chlorooctadecane 108 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 17 .5' (H245642-04)**

BTX 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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41	

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 109 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 18 .5' (H245642-05)**

BTX 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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41	

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 108 % 48.2-134

Surrogate: 1-Chlorooctadecane 115 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 19 .5' (H245642-06)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 105 % 48.2-134

Surrogate: 1-Chlorooctadecane 110 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 20 .5' (H245642-07)**

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	09/17/2024	ND	2.11	105	2.00	6.21		
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10		
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29		
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13		
Total BTEx	<0.300	0.300	09/17/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 99.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 105 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 21 .5' (H245642-08)**

BTX 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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41	

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	09/17/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/17/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/17/2024	ND					

Surrogate: 1-Chlorooctane 111 % 48.2-134

Surrogate: 1-Chlorooctadecane 120 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 22 .5' (H245642-09)**

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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTEx	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41		

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	09/18/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/18/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/18/2024	ND					

Surrogate: 1-Chlorooctane 109 % 48.2-134

Surrogate: 1-Chlorooctadecane 118 % 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  
DAVID MCINNIS  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/17/2024  
Reported: 09/18/2024  
Project Name: BIG EDDY UNIT 248H  
Project Number: 03C1558453  
Project Location: XTO 32.62087 -103.83145

Sampling Date: 09/17/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: SS 23 .5' (H245642-10)**

BTX 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	09/17/2024	ND	2.11	105	2.00	6.21	
Toluene*	<0.050	0.050	09/17/2024	ND	2.13	107	2.00	6.10	
Ethylbenzene*	<0.050	0.050	09/17/2024	ND	2.12	106	2.00	6.29	
Total Xylenes*	<0.150	0.150	09/17/2024	ND	6.53	109	6.00	6.13	
Total BTX	<0.300	0.300	09/17/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	<16.0	16.0	09/18/2024	ND	416	104	400	7.41	

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	09/18/2024	ND	201	101	200	2.40	
DRO >C10-C28*	<10.0	10.0	09/18/2024	ND	203	102	200	1.95	
EXT DRO >C28-C36	<10.0	10.0	09/18/2024	ND					

Surrogate: 1-Chlorooctane 116 % 48.2-134

Surrogate: 1-Chlorooctadecane 124 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- 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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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

[illegible]



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

February 03, 2025

TRACY HILLARD

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: BEU 2481249H

Enclosed are the results of analyses for samples received by the laboratory on 01/31/25 17:00.

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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 03 1 (H250597-01)**

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	01/31/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	01/31/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 121 % 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	4040	16.0	02/03/2025	ND	416	104	400	7.41		

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 102 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 03 4 (H250597-02)**

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	01/31/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	01/31/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 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	80.0	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 95.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 91.3 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 01 5 (H250597-03)**

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	01/31/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	01/31/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 107 % 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	224	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 103 % 48.2-134

Surrogate: 1-Chlorooctadecane 99.5 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 01 6 (H250597-04)**

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	01/31/2025	ND	2.33	117	2.00	0.910		
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56		
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63		
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157		
Total BTEX	<0.300	0.300	01/31/2025	ND						

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	256	16.0	02/03/2025	ND	416	104	400	7.41		

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 104 % 48.2-134

Surrogate: 1-Chlorooctadecane 100 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 01 9 (H250597-05)**

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	01/31/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	01/31/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 108 % 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	144	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 101 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.2 % 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, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 04 4 (H250597-06)**

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	01/31/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	01/31/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 114 % 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	1010	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	179	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	41.8	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 101 % 48.2-134

Surrogate: 1-Chlorooctadecane 99.7 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 02 1 (H250597-07)**

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	01/31/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	01/31/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	01/31/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	01/31/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	01/31/2025	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	176	16.0	02/03/2025	ND	416	104	400	7.41		

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	135	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	54.7	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 99.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.2 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

BS-3	Blank spike recovery outside of lab established statistical 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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A handwritten signature in black ink, appearing to read "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

<b>BILL TO</b>					<b>ANALYSIS REQUEST</b>				
<b>Company Name:</b> Ensolum, LLC <b>Project Manager:</b> Tracy Gillen <b>Address:</b> 601 N Marientfield Street, Suite 400 City: Midland State: TX Zip: 79701	<b>P.O.#:</b> <b>Company:</b> XTO Energy, Inc <b>Attn:</b> Colton Brown <b>Address:</b> 3104 E Greene St City: Carlsbad State: NM Zip: 88220								
<b>Phone #:</b> 575-937-3906 <b>Fax #:</b> 575-937-3906 <b>Project #:</b> 03615567 <b>Project Owner:</b> XTO Energy <b>City:</b> Carlsbad <b>State:</b> NM <b>Zip:</b> 88220 <b>Phone #:</b> <b>Fax #:</b>									
<b>Project Location:</b> 32.62085, -103.83132									
<b>Sampler Name:</b> Even Rec									
<b>FOR LAB USE ONLY</b>									
Lab I.D.	Sample I.D.	Depth (feet)	(G)RAB OR (C)OMP. # CONTAINERS	MATRIX	PRESERV	SAMPLING	TPH 8015	BTEX 8021	Chloride 4500
#350547	PHO3	1	G	GROUNDWATER		DATE TIME			
	PHO3	4	G	SOIL		1/30/25 10:35	✓	✓	✓
	PHO1	5	G	OIL		1/30/25 12:08	✓	✓	✓
	PHO1	6	G	SLUDGE		1/30/25 12:30	✓	✓	✓
	PHO1	9	G	OTHER :		1/31/25 12:35	✓	✓	✓
	PHO4	4	G	ACID/BASE:		1/31/25 14:08	✓	✓	✓
	PHO2	1	G	ICE / COOL		1/31/25 14:24	✓	✓	✓
				OTHER :					
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<b>Relinquished By:</b>	<b>Date:</b> 1/30/25	<b>Received By:</b>							
<b>Time:</b> 1:00									
<b>Date:</b>									
<b>Time:</b>									
<b>Delivered By:</b> (Circle One) Cool Intact Yes No	<b>Observed Temp.: °C</b> Corrected Temp.: °C	<b>Sample Condition</b> Cool Intact Yes No	<b>CHECKED BY:</b> (Initials)						
<b>Sampler - UPS - Bus - Other:</b>									
REMARKS: NAPP2418043567 NAPP2432531235 NAPP2432147037 NAPP2502042071 Turnaround Time: Standard Rush Thermometer ID #1137 #1100 Bacteria (only) Sample Condition Cool Intact Observed Temp.: °C Correction Factor +0.5°C -0.3°C Yes No Corrected Temp.: °C									

\* Cardinal cannot accept verbal changes. Please email all changes to cely.keene@cardinallabsnm.com



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February 03, 2025

TRACY HILLARD

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: BEU 2481249H

Enclosed are the results of analyses for samples received by the laboratory on 01/31/25 17:00.

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, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 1' (H250598-01)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>1.15</b>	0.500	02/03/2025	ND	2.37	118	2.00	6.88	
<b>Toluene*</b>	<b>16.3</b>	0.500	02/03/2025	ND	2.51	125	2.00	11.1	
<b>Ethylbenzene*</b>	<b>11.9</b>	0.500	02/03/2025	ND	2.54	127	2.00	12.7	
<b>Total Xylenes*</b>	<b>23.7</b>	1.50	02/03/2025	ND	7.52	125	6.00	12.8	
<b>Total BTEX</b>	<b>53.1</b>	3.00	02/03/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 117 % 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>2480</b>	16.0	02/03/2025	ND	416	104	400	7.41	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>419</b>	10.0	01/31/2025	ND	202	101	200	0.762	
<b>DRO &gt;C10-C28*</b>	<b>1550</b>	10.0	01/31/2025	ND	181	90.4	200	2.52	
<b>EXT DRO &gt;C28-C36</b>	<b>277</b>	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 114 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.3 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 2' (H250598-02)**

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	02/03/2025	ND	2.37	118	2.00	6.88	
Toluene*	0.215	0.050	02/03/2025	ND	2.51	125	2.00	11.1	
Ethylbenzene*	0.080	0.050	02/03/2025	ND	2.54	127	2.00	12.7	
Total Xylenes*	<0.150	0.150	02/03/2025	ND	7.52	125	6.00	12.8	
Total BTEX	0.474	0.300	02/03/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 120 % 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	640	16.0	02/03/2025	ND	416	104	400	7.41	

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	02/03/2025	ND	202	101	200	0.762	
<b>DRO &gt;C10-C28*</b>	<b>20.7</b>	10.0	02/03/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	02/03/2025	ND					

Surrogate: 1-Chlorooctane 102 % 48.2-134

Surrogate: 1-Chlorooctadecane 104 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 3' (H250598-03)**

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	02/01/2025	ND	2.33	117	2.00	0.910		
Toluene*	<0.050	0.050	02/01/2025	ND	2.37	119	2.00	2.56		
Ethylbenzene*	<0.050	0.050	02/01/2025	ND	2.53	127	2.00	1.63		
Total Xylenes*	<0.150	0.150	02/01/2025	ND	7.63	127	6.00	0.157		
Total BTEX	<0.300	0.300	02/01/2025	ND						

Surrogate: 4-Bromofluorobenzene (PID) 115 % 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	144	16.0	02/03/2025	ND	416	104	400	7.41		

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	02/03/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	02/03/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	02/03/2025	ND					

Surrogate: 1-Chlorooctane 83.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 83.0 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 4' (H250598-04)**

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	02/01/2025	ND	2.33	117	2.00	0.910		
Toluene*	<0.050	0.050	02/01/2025	ND	2.37	119	2.00	2.56		
Ethylbenzene*	<0.050	0.050	02/01/2025	ND	2.53	127	2.00	1.63		
Total Xylenes*	<0.150	0.150	02/01/2025	ND	7.63	127	6.00	0.157		
Total BTEX	<0.300	0.300	02/01/2025	ND						

Surrogate: 4-Bromofluorobenzene (PID) 113 % 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	32.0	16.0	02/03/2025	ND	416	104	400	7.41		

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 96.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.6 % 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, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 5' (H250598-05)**

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	02/01/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	02/01/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	02/01/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	02/01/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	02/01/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	32.0	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 103 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.9 % 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, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 6' (H250598-06)**

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	02/01/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	02/01/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	02/01/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	02/01/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	02/01/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	32.0	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 105 % 48.2-134

Surrogate: 1-Chlorooctadecane 101 % 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, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 7' (H250598-07)**

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	02/01/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	02/01/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	02/01/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	02/01/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	02/01/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	48.0	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 98.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 93.8 % 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, LLC  
 TRACY HILLARD  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 01/31/2025  
 Reported: 02/03/2025  
 Project Name: BEU 2481249H  
 Project Number: 03C155877 03C1558453  
 Project Location: XTO 32.62085, -103.83132

Sampling Date: 01/31/2025  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: PH 05 8' (H250598-08)**

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	02/01/2025	ND	2.33	117	2.00	0.910	
Toluene*	<0.050	0.050	02/01/2025	ND	2.37	119	2.00	2.56	
Ethylbenzene*	<0.050	0.050	02/01/2025	ND	2.53	127	2.00	1.63	
Total Xylenes*	<0.150	0.150	02/01/2025	ND	7.63	127	6.00	0.157	
Total BTEX	<0.300	0.300	02/01/2025	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	16.0	16.0	02/03/2025	ND	416	104	400	7.41	

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	01/31/2025	ND	202	101	200	0.762	
DRO >C10-C28*	<10.0	10.0	01/31/2025	ND	181	90.4	200	2.52	
EXT DRO >C28-C36	<10.0	10.0	01/31/2025	ND					

Surrogate: 1-Chlorooctane 103 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.8 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

BS-3	Blank spike recovery outside of lab established statistical 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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A handwritten signature in black ink, appearing to read "Celey D. Keene", is written over a horizontal line.

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

Company Name: Ensolum, LLC

BILL TO

ANALYSIS REQUEST

Project Manager: Trey Hillard

Address: 601 N Marientfeld Street, Suite 400

City: Midland

State: TX Zip: 79701

Phone #: 575-437-3506 Fax #: 575-437-3543

Project # 030155477 Project Owner: XTO Energy

Project Name: OBEN 24812492L

Project Location: 32,62085,-103.83132

Sample Name: Even Rev

P.O. #:

Company: XTO Energy, Inc

Attn: Colton Brown

Address: 3104 E Greene St

City: Carlsbad

State: NM Zip: 88220

Phone #:

Fax #:

FOR LAB USE ONLY

Lab I.D. Sample I.D.

Depth (feet)

(G)RAB OR (C)OMP.

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

TPH 8015

BTEX 8021

Chloride 4500

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Relinquished By:

Date: 1-3-25

Received By:

Date: 1-3-25

Time: 1700

Received By:

Date: 1-3-25

Time: 1700

Received By:

Date: 1-3-25

Time: 1700

Received By:

Relinquished By:

Date: 1-3-25

Received By:

Date: 1-3-25

Time: 1700

Received By:

Date: 1-3-25

Time: 1700

Received By:

Date: 1-3-25

Time: 1700

Received By:

Delivered By: (Circle One)

Observed Temp. °C

Corrected Temp. °C

Sample Condition

Checked By: (Initials)

Turnaround Time:

Thermometer ID #

Correction Factor

Bacteria (only)

Sample Condition

Observed Temp. °C

Corrected Temp. °C

Sampler - JPS - Bus - Other:

Observed Temp. °C

Corrected Temp. °C

Sample Condition

Checked By: (Initials)

Turnaround Time:

Thermometer ID #

Correction Factor

Bacteria (only)

Sample Condition

Observed Temp. °C

Corrected Temp. °C

FORM 100-R-3-2 10/07/21

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



Appendix E

NMOCD Correspondence

---

**Ben Belill**

---

**From:** Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>  
**Sent:** Thursday, January 16, 2025 9:51 AM  
**To:** Brown, Colton S  
**Cc:** Dirkx, Kaylan; Garcia, Amanda; McAfee, Ashley A; Tacoma Morrissey; Ben Belill; Bratcher, Michael, EMNRD; Wells, Shelly, EMNRD  
**Subject:** (Variance Approval) -XTO - Big Eddy Unit 248H- Incident Number NAPP2418043567

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

Colton,

The Variance Request for confirmation floor sample size of 1,000 ft<sup>2</sup> in the “Area of Investigation” is approved. The “Release Area” will still need confirmation samples representing no more than 200 ft<sup>2</sup>. Please include this e-mail correspondence in the Remediation Closure Report. I have changed the location and coordinates to match where the majority of the release occurred, which is Unit A, Section 35, Township 19 South, Range 31 East, in Eddy County, New Mexico (32.62087°, -103.83145°).

Regards,

**Robert Hamlet** • Environmental Specialist - Advanced  
Environmental Bureau  
EMNRD - Oil Conservation Division  
506 W. Texas Ave. | Artesia, NM 88210  
575.909.0302 | [robert.hamlet@emnrd.nm.gov](mailto:robert.hamlet@emnrd.nm.gov)  
<http://www.emnrd.state.nm.us/OCD/>



---

**From:** Brown, Colton S <colton.s.brown@exxonmobil.com>  
**Sent:** Thursday, January 16, 2025 7:19 AM  
**To:** Hamlet, Robert, EMNRD <Robert.Hamlet@emnrd.nm.gov>  
**Cc:** Dirkx, Kaylan <kaylan.dirkx@exxonmobil.com>; Garcia, Amanda <amanda.garcia@exxonmobil.com>; McAfee, Ashley A <ashley.a.mcafee@exxonmobil.com>; Tacoma Morrissey <tmorrissey@ensolum.com>; Ben Belill <bbelill@ensolum.com>  
**Subject:** [EXTERNAL] XTO- Variance Request- Big Eddy Unit 248H- Incident Number

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

Good Morning,

Please see the sampling variance below and supporting documentation attached. Please let me know of any questions or concerns.

Mr. Hamlet,

Based on our discussion today, XTO is submitting a variance request for the confirmation soil sampling requested in the conditions of approval for a Remediation Work Plan. The Work Plan was submitted September 20, 2024 and approved on November 6, 2024 with the following conditions of approval:

- "...Confirmation samples will need to be conducted at surface and at 0.5 feet in the "Area of Investigation" to ensure that contaminants didn't get carried/deposited in this area. All off-pad areas must meet reclamation/revegetation standards set forth in the OCD Spill Rule."

As discussed on our call, January 15, 2024, the "area of investigation" was investigated to assess the area due to high winds at the time of the release in a northwesterly direction. Vegetation was assessed by a staff biologist, and delineation soil samples were collected within an around the area of investigation. The vegetation was determined to be healthy and similar to the surrounding area and no impacts to soil were identified. As such, XTO proposed continued monitoring of the area of investigation. XTO's goal was to be especially protective of the sparse vegetation in the area and to mitigate any additional disturbance of the area as it is in a mapped area for potential Dune Sagebrush Lizard habitat. Following our conversation, XTO understands the need for confirmation soil sampling of the area, however, to ensure minimal disturbance of the area, XTO proposes a variance of the 200 square foot confirmation soil sample frequency and recommends confirmation soil sample be collected on a 1,000 square foot sampling frequency. We believe this will provide additional confirmation that no impacted soil exists in the area and be protective of the vegetative health and potential habitat of the Dune Sagebrush Lizard.

One note, the coordinates on the OCD portal are incorrect, as stated in the Work Plan: 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 Big Eddy Unit 248H well pad. The majority of the release is located in Unit A, Section 35, Township 19 South, Range 31 East, in Eddy County, New Mexico (32.62087°, -103.83145°) and is associated with oil and gas exploration and production operations on Federal Land managed by the Bureau of Land Management (BLM). However, a portion of the release occurred on State Land managed by New Mexico State Land Office (SLO) in Unit D, Section 36, Township 19 South, and Range 31 East.

The following attachments are included as supporting documentation.

Figure 1      Site Location Map (showing the correct location)  
Figure 2      Delineation Soil Sample Locations  
Figure 3      Vegetation Survey Transects  
Table 1      Soil Sample Analytical Results  
Photographic Log

If we can provide any additional information, please let us know.

Thank you

**Colton Brown**  
Spill Coordinator

**ExxonMobil Upstream Company**  
3104 E. Greene St.  
Carlsbad, NM 88220  
Cell Phone: 575-988-2390  
[colton.s.brown@exxonmobil.com](mailto:colton.s.brown@exxonmobil.com)



Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

QUESTIONS

Action 428461

**QUESTIONS**

Operator:  XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:  5380
	Action Number:  428461
	Action Type:  [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS**

<b>Prerequisites</b>	
Incident ID (n#)	nAPP2502042071
Incident Name	NAPP2502042071 BIG EDDY UNIT 249H @ 30-015-40715
Incident Type	Release Other
Incident Status	Remediation Plan Received
Incident Well	[30-015-40715] BIG EDDY UNIT #249H

<b>Location of Release Source</b>	
<i>Please answer all the questions in this group.</i>	
Site Name	BIG EDDY UNIT 249H
Date Release Discovered	01/17/2025
Surface Owner	Federal

<b>Incident Details</b>	
<i>Please answer all the questions in this group.</i>	
Incident Type	Release Other
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

<b>Nature and Volume of Release</b>	
<i>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.</i>	
Crude Oil Released (bbls) Details	Cause: Equipment Failure   Well   Crude Oil   Released: 33 BBL   Recovered: 19 BBL   Lost: 14 BBL.
Produced Water Released (bbls) Details	Cause: Equipment Failure   Well   Produced Water   Released: 29 BBL   Recovered: 16 BBL   Lost: 13 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	Cause: Equipment Failure   Well   Natural Gas Vented   Released: 73 MCF   Recovered: 0 MCF   Lost: 73 MCF.
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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Phone: (505) 629-6116

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

QUESTIONS, Page 2

Action 428461

**QUESTIONS (continued)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 428461
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS**

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

**Initial Response**

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.

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

Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.

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

I hereby agree and sign off to the above statement	Name: Ashley McAfee Email: <a href="mailto:ashley.a.mcafee@exxonmobil.com">ashley.a.mcafee@exxonmobil.com</a> Date: 01/20/2025
--	--

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Phone: (505) 476-3441

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Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

QUESTIONS, Page 3

Action 428461

**QUESTIONS (continued)**

Operator:  XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:  5380
	Action Number:  428461
	Action Type:  [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS**

<b>Site Characterization</b>	
<i>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.</i>	
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 1 and 5 (mi.)
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	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Between 1 and 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	Yes

<b>Remediation Plan</b>	
<i>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.</i>	
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
<b>Soil Contamination Sampling:</b> (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	4040
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	3399
GRO+DRO (EPA SW-846 Method 8015M)	2786
BTEX (EPA SW-846 Method 8021B or 8260B)	53
Benzene (EPA SW-846 Method 8021B or 8260B)	1
<i>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>	
On what estimated date will the remediation commence	01/17/2025
On what date will (or did) the final sampling or liner inspection occur	04/04/2025
On what date will (or was) the remediation complete(d)	04/04/2025
What is the estimated surface area (in square feet) that will be reclaimed	34375
What is the estimated volume (in cubic yards) that will be reclaimed	3800
What is the estimated surface area (in square feet) that will be remediated	34375
What is the estimated volume (in cubic yards) that will be remediated	3800
<i>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.</i>	
<i>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.</i>	

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

QUESTIONS, Page 4

Action 428461

**QUESTIONS (continued)**

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**QUESTIONS**

<b>Remediation Plan (continued)</b>	
<i>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.</i>	
<b>This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:</b>	
<i>(Select all answers below that apply.)</i>	
(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.
<i>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>	
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: Kailee Smith Title: Regulatory Analyst Email: <a href="mailto:kailee.smith@exxonmobil.com">kailee.smith@exxonmobil.com</a> Date: 02/05/2025
<i>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.</i>	

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QUESTIONS, Page 5

Action 428461

QUESTIONS (continued)

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	Action Number:  428461
	Action Type:  [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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, Page 6

Action 428461

**QUESTIONS (continued)**

Operator: XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID: 5380
	Action Number: 428461
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS**

Sampling Event Information	
Last sampling notification (C-141N) recorded	425108
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	01/31/2025
What was the (estimated) number of samples that were to be gathered	8
What was the sampling surface area in square feet	1600

**Remediation Closure Request**

Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.

Requesting a remediation closure approval with this submission	No
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CONDITIONS

Action 428461

CONDITIONS

Operator:  XTO ENERGY, INC 6401 Holiday Hill Road Midland, TX 79707	OGRID:  5380
	Action Number:  428461
	Action Type:  [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
scwells	The remediation plan is conditionally approved:	2/6/2025
scwells	Due to the occurrence of multiple releases on top of one another at this site, OCD does not believe it provides equal or better protection of fresh water, public health and the environment to grant a sampling variance request. Five-point composite confirmation samples from the base and sidewalls of all excavations must be collected at a sampling frequency of every 200 square feet per 19.15.29.12(D)1(c) NMAC.	2/6/2025
scwells	Per the conditions of approval for the remediation plan that was approved on 11/6/24, the "Area of Investigation" must have five-point composite confirmation samples collected at both surface and .5 feet at a sampling frequency of every 1000 square feet.	2/6/2025
scwells	Submit a remediation closure report to the OCD by 5/7/25.	2/6/2025