



January 24, 2025

District Supervisor  
Oil Conservation Division, District 1  
1625 N. French Drive  
Hobbs, New Mexico 88240

**Re: REVISED Release Characterization and Remediation Work Plan  
ADDENDUM  
BTA Oil Producers, LLC  
Vacuum SWD H #035  
Unit Letter H, Section 35, Township 17 South, Range 35 East  
Lea County, New Mexico  
API #30-025-20207  
Incident ID NAPP2313058428**

Sir or Madam:

Tetra Tech, Inc. (Tetra Tech) was contacted by BTA Oil Producers, LLC (BTA) to assess and evaluate current conditions associated with a historical release associated with the Vacuum SWD H #035 (API # 30-025-20207). The approximate release site coordinates are 32.793423°, -103.422657°, located in the Public Land Survey System (PLSS) Unit Letter H, Section 35, Township 17 South, Range 35 East Lea County, New Mexico (Site). The Site location is shown in Figures 1 and 2. The site is located on State land.

## BACKGROUND

According to the State of New Mexico Oil Conservation Division (NMOCD) C-141 Initial Report (Appendix A), the release was discovered on 5/10/2023. These historical impacts were discovered during activities involving the installation of a pipeline associated with the Vacuum SWD H #035 (Site) saltwater disposal (SWD) tank battery. No data is available regarding the initial release or impacts. Based on the observed impact footprint, the release quantity more than likely breached the reportable volume threshold. The NMOCD received the initial C-141 on 5/26/2023 and subsequently assigned the release the Incident ID nAPP2313058428.

## LAND OWNERSHIP

As mentioned, the Site is located on State Trust Lands. The historical release was identified in the pasture therefore, the release location was assessed to determine compliance with the Cultural Properties Protection Rule (CPP) prior to disturbing the surface with mechanical equipment. The NMSLO was notified of the potential disturbance of the pasture on a *Right of Entry Request for Remediation* form. The request included a copy of the Form C-141, a topographic location map, and a satellite image of the location. An Archaeological Records Management System (ARMS) review was performed for the right-of-way prior to pipeline construction. No cultural resources were identified within and/or around the release extent requiring remediation efforts. A Right of Way Easement (Number R-40581) was secured by BTA on March 24, 2023, which included the release area. The Right of Way Easement Permit, is included in Appendix A.

Tetra Tech

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## ENSOLUM ASSESSMENT AND RECLAMATION WORK PLAN

On behalf of BTA, Ensolum, LLC (Ensolum), was initially contracted to assess the impacts at the Site. The approximate release extent was identified based on information provided by BTA representatives, a review of photographs, and visual observations made in the field.

Ensolum was on site to conduct assessment activities on May 18, 2023. Ensolum advanced one soil boring (BH01) via hand auger to a depth of 3 feet bgs (Figure 3). Two samples were taken from BH01 at depths of 1 foot, and 3 feet bgs. Soil samples were submitted to Cardinal Laboratories in Hobbs, New Mexico for chloride analysis via Standard Method SM4500Cl-B, TPH via EPA Method 8015M, and BTEX via EPA Method 8021B. Laboratory analytical results associated with BH01 were above the NMOCD reclamation requirements for chloride (600 mg/kg) and/or TPH (100 mg/kg). As a result, additional delineation activities appeared to be warranted. Soil analytical results are summarized in Table 1. The laboratory analytical report is included in Appendix A.

Ensolum remobilized to the site on June 28 and July 5, 2023, to complete delineation efforts. Five potholes (PH01 through PH05) were advanced via backhoe and trackhoe. Pothole PH01 was advanced in the vicinity of soil boring BH01 to the maximum depth of 18 feet bgs. Potholes PH02 through PH05 were advanced in all four cardinal directions of pothole PH01 to depths ranging from 2 feet to 4 feet bgs. The locations of the potholes are depicted in Figure 3. Soil samples were submitted to Cardinal Laboratories in Hobbs, New Mexico for chloride analysis via Standard Method SM4500Cl-B, TPH via EPA Method 8015M, and BTEX via EPA Method 8021B. Laboratory analytical results associated with PH01, PH03, and PH05 were above the NMOCD reclamation requirements for chloride (600 mg/kg) and/or TPH (100 mg/kg).

Vertical and horizontal delineation was not achieved therefore, Ensolum contracted Cascade Environmental (Cascade) to advance deeper into the subsurface. Ensolum and Cascade advanced potholes PH01, PH02, and PH04 and installed four additional lateral borings (PH06 through PH09) utilizing a Terrasonic® 150cc drill rig. Original potholes PH01, PH02, and PH04 were deepened to approximately 50 feet bgs. Groundwater was encountered in pothole PH02 at 56.2 feet bgs. Potholes PH06 through PH09 were advanced to depths ranging from 18 feet to 59 feet bgs. Soil samples collected throughout the drilling process were screened and select soil samples were submitted for laboratory analysis of BTEX, TPH, and chloride. The location of the potholes/soil borings are depicted in Figure 3.

A copy of the Ensolum Remediation Work Plan is included in Appendix A. Results from the 2023 soil assessment are summarized in Table 1.

Based on the site assessment results, Ensolum prepared and submitted a Remediation Work Plan to the NMSLO in March 2024. In the report, Ensolum proposes the following:

- *Excavate hydrocarbon-impacted soil in the release area to approximately 6 feet bgs, which is the depth to which elevated BTEX concentrations exist.*
- *Following excavation activities, 5-point composite soil samples will be collected every 200 square feet from the floor and sidewalls of the excavation. The 5-point composite samples will be collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. The composite soil samples will be handled and analyzed as described above.*
- *While TPH is present in soil in the vicinity of pothole/soil boring PH01 at concentrations exceeding the Closure Criteria to a total depth of 18 feet bgs, the soil is a poorly to moderately cemented caliche unit that is not conducive to remediate by excavation. There is approximately 38 feet of non-impacted soil between the terminus of TPH impacts and groundwater table. As such, BTA is requesting a variance to leave TPH-impacted soil in-place and install a 20-mil poly liner at the base of the excavation. The liner will minimize vertical migration of residual TPH concentrations from surface infiltration of precipitation. While the caliche is poorly to moderately cemented, there is sufficient pore space for natural vadose zone air flow and microbial activity to support natural*

*attenuation through volatilization and biodegradation. In requesting a variance request, BTA has to show the remedial action provides equal or better protection to the environment. BTA believes the application of excavation and disposal of impacted soil would be less protective of the environment than leaving in place due to the extraordinary effort to excavate 9 feet of poorly to moderately cemented caliche. This would require a lengthy time period to excavate with a trackhoe, which would utilize more fuel and increase its emissions. In addition, the volume of impacted soil would require additional trucking to transport the soil to an approved landfill and backfilling with new caliche, affecting roadway traffic, roadway conditions, and additional emissions to the atmosphere. Leaving the residual impacts in place will allow for natural attenuation and protect the environment equally, if not better. The liner will present a barrier to human and/or wildlife contact and retard vertical migration of TPH to groundwater, which is equally protective. Groundwater is over 38 feet beneath the terminus of impacts, which is sufficient to be protective of groundwater, especially with the installation of a liner.*

- *Following excavation activities and the installation of a liner, BTA will backfill the excavation with locally sourced material and follow the reclamation plan described below.*

## REMEDIATION WORK PLAN REJECTION

Ensolum submitted the Remediation Work Plan on the OCD portal on 03/19/2024, and was subsequently denied the same day by the NMOCD with the following comments:

- *Synthetic liners that are placed on top of contamination as a remediation variance in an effort solely to ensure contamination doesn't migrate further is not equal or better protection, as the contamination will remain in place.*
- *Variances with a liner request solely to reduce cleanup will be denied.*
- *OCD may also require landowner concurrence for any variance request to permanently leave contamination in place.*
- *Soil standards below 4 feet must be delineated/remediated to Table I Closure Criteria for the approved site-specific depth to groundwater.*
- *A surface visual footprint alone is not sufficient when assessing the horizontal extent of the release.*
- *Laboratory data must be provided as evidence of delineation efforts.*

## SITE CHARACTERIZATION

A site characterization was performed and no watercourses, sinkholes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, playa lakes, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the distances specified in 19.15.29 New Mexico Administrative Code (NMAC). The Site is within a New Mexico oil and gas production area. The Site is in an area of low potential. The site characterization data is presented in Appendix A.

## DTW DETERMINATION

There are no water wells listed in the New Mexico Office of the State Engineer (NMOSE) database located with approximately ½ mile (800 meters) of the site. Groundwater was encountered beneath the Site at a depth of 56.2 feet bgs in pothole/soil boring PH02, located north of the release. In addition, the closest groundwater well with depth to groundwater data is United States Geological Survey (USGS) well number 324745103251501, located approximately 1,858 feet northwest of the Site. The well has a measured depth to groundwater of 58.5 feet bgs and a total depth of 121 feet bgs. Based on this data, groundwater beneath the Site has been reasonably determined to be between 51 feet and 100 feet bgs. The boring log is presented in Appendix A.

**REGULATORY FRAMEWORK**

Based upon the on-pad release footprint, depth-to-water and in accordance with Subsection E of 19.15.29.12 NMAC, per 19.15.29.11 NMAC, the site characterization data was used to determine recommended remedial action levels (RRALs) for benzene, toluene, ethylbenzene, and xylene (collectively referred to as BTEX), total petroleum hydrocarbons (TPH), and chlorides in soil.

Based on the site characterization and in accordance with Table I of 19.15.29.12 NMAC, the RRALs for the Site are as follows:

Constituent	Site RRAL
Chloride	10,000 mg/kg
TPH (GRO+DRO+ORO)	2,500 mg/kg
TPH (GRO+DRO)	1,000 mg/kg
BTEX	50 mg/kg

Additionally, in accordance with the NMOCD guidance *Procedures for Implementation of the Spill Rule (19.15.29 NMAC)* (September 6, 2019), the following reclamation requirements for surface soils (0-4 feet bgs) are as follows:

Constituent	Reclamation Requirement
Chloride	600 mg/kg
TPH (GRO+DRO+ORO)	100 mg/kg
BTEX	50 mg/kg

**REVISED REMEDIATION WORK PLAN**

Based on previously collected data, and available aerial imagery, Tetra Tech revised the approximate release extent as shown in Figure 4. Based on the previously submitted Work Plan and data collected by Ensolum, impacted soils will be excavated using heavy equipment (backhoes, hoe rams, and track hoes) to a maximum depth of 20 feet bgs or until a representative sample from the walls and bottom of the excavation is below the applicable reclamation requirements and/or RRALs.

Tetra Tech personnel will collect confirmation samples to be evaluated for chloride, TPH, and BTEX (Figure 6). If concentrations exceed the reclamation standards (or site RRALs below 4 feet), the defined areas will be further excavated until a representative sample from the bottom of the excavation is below the reclamation standards/applicable RRALs. Any area containing pressurized lines will be excavated using non-invasive techniques (hydrovac, hand dig) to the proposed depth shown on Figure 6 or the maximum extent practicable; heavy equipment will come no more than 4 feet from any pressurized lines.

Excavated soils will be transported offsite and disposed of at an NMOCD-approved or permitted facility. Prior to confirmation sampling the NMOCD district office will be notified via the portal in accordance with Subsection D of 19.15.29.12 NMAC. Confirmation floor and sidewall samples will be collected for verification of remedial activities and analyzed for TPH, BTEX, and chloride. The estimated total volume of material to be remediated is approximately 679 cubic yards.

**CONFIRMATION SAMPLING PLAN**

In accordance with 19.15.29.12(D)(1)(b) NMAC, COPC proposes the following confirmation sampling plan to adhere with NMOCD requirements (Figure 6). Eight (8) confirmation floor samples and six (6) confirmation sidewall samples are proposed for verification of remedial activities. The proposed excavation encompasses a surface area of approximately 2,860 square feet.

These confirmation sidewall and floor samples will be representative of no more than approximately 400 square feet of excavated area. Confirmation samples will be sent to an accredited analytical laboratory for



REVISED Remediation Work Plan ADDENDUM  
January 24, 2025

BTA Oil Producers, LLC

analysis of chloride, TPH, and BTEX. Once acceptable results are received, the excavation will then be backfilled with clean material to surface grade.

### SITE RECLAMATION AND RESTORATION PLAN

Based on 19.15.29.13 NMAC, all areas disturbed by the remediation and closure will be reclaimed once confirmation sampling results below the reclamation requirements for soils above four feet bgs are received. Once acceptable confirmation sample results are received, the excavation will be backfilled with clean material to pre-release grade. The soil cover will include a top layer consisting of one foot of suitable material to establish vegetation at the site.

These disturbed areas will be seeded post-remediation (or in the first favorable growing season) to aid in revegetation. Based on the location of the Site, the NMSLO Course (CS) Sites Seed Mixture will be used for seeding and will be planted in the amount specified in the pounds pure live seed (PLS) per acre. The seed mixture will be spread by a drill equipped with a depth regulator or a hand-held broadcaster and raked. If a hand-held broadcaster is used for dispersal, the pounds of pure live seed per acre will be doubled. The proposed reclamation extent is depicted in Figure 7.

Site inspections will be performed to assess the revegetation progress and evaluate the site for the presence of primary or secondary noxious weeds. If noxious weeds are identified, the NMSLO will be contacted to determine an effective method for eradication. If the site does not show revegetation after one growing season, the area will be reseeded as appropriate. The NMSLO seed mixture details and corresponding pounds of pure live seed per acre are included in Appendix B.

Reclamation activities will be implemented in consultation with the State Land Office in accordance with 19.2.100.67 NMAC for surface reclamations on State Oil and Gas Leases. COP will notify the NMSLO when reclamation and revegetation are complete.

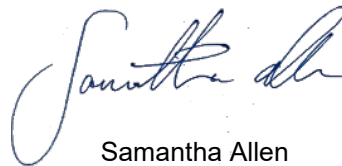
### CONCLUSION

BTA proposes to begin remediation and reclamation activities at the Site within 90 days of NMOCD plan approval, with concurrence from the SLO. Upon completion of the proposed work, a final closure report detailing the remediation and reclamation activities, and the results of the confirmation sampling will be submitted to the NMOCD and NMSLO. If you have any questions concerning the soil assessment or the proposed remedial activities for the Site, please call me at (512) 560-9064.

Sincerely,  
**Tetra Tech, Inc.**



Nicholas M. Poole  
Project Manager



Samantha Allen  
Project Lead

cc: Ray Ramos, BTA Oil Producers, LLC

## LIST OF ATTACHMENTS

### Figures:

- Figure 1 – Overview Map
- Figure 2 – Site Location/Topographic Map
- Figure 3 – Approximate Release Extent and Site Assessment (Ensolum)
- Figure 4 – Revised Release Extent (Tetra Tech)
- Figure 5 – Proposed Remediation Extent
- Figure 6 – Alternative Confirmation Sampling Plan
- Figure 7 – Area Proposed for Reclamation

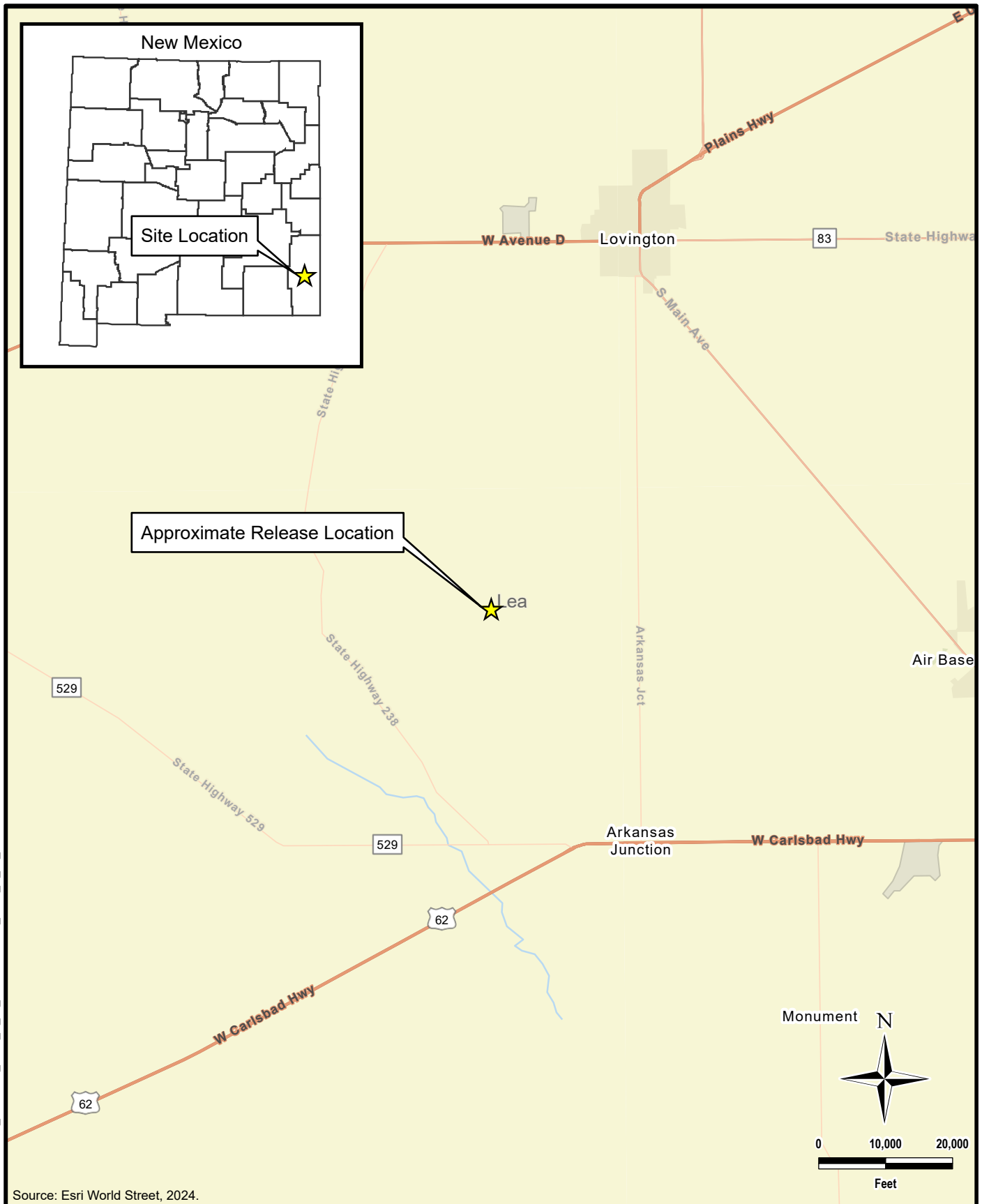
### Tables:

- Table 1 – Summary of Analytical Results – 2023 Ensolum Soil Assessment

### Appendices:

- Appendix A – Ensolum Remediation Work Plan
- Appendix B – NMSLO Seed Mixture

## **FIGURES**



Source: Esri World Street, 2024.



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**BTA OIL PRODUCERS, LLC**

NAPP2313058428  
(32.793423°, -103.422657°)  
LEA COUNTY, NEW MEXICO

**VACUUM SWD H #035 PIPELINE  
OVERVIEW MAP**

PROJECT NO.: 212C-MD-0

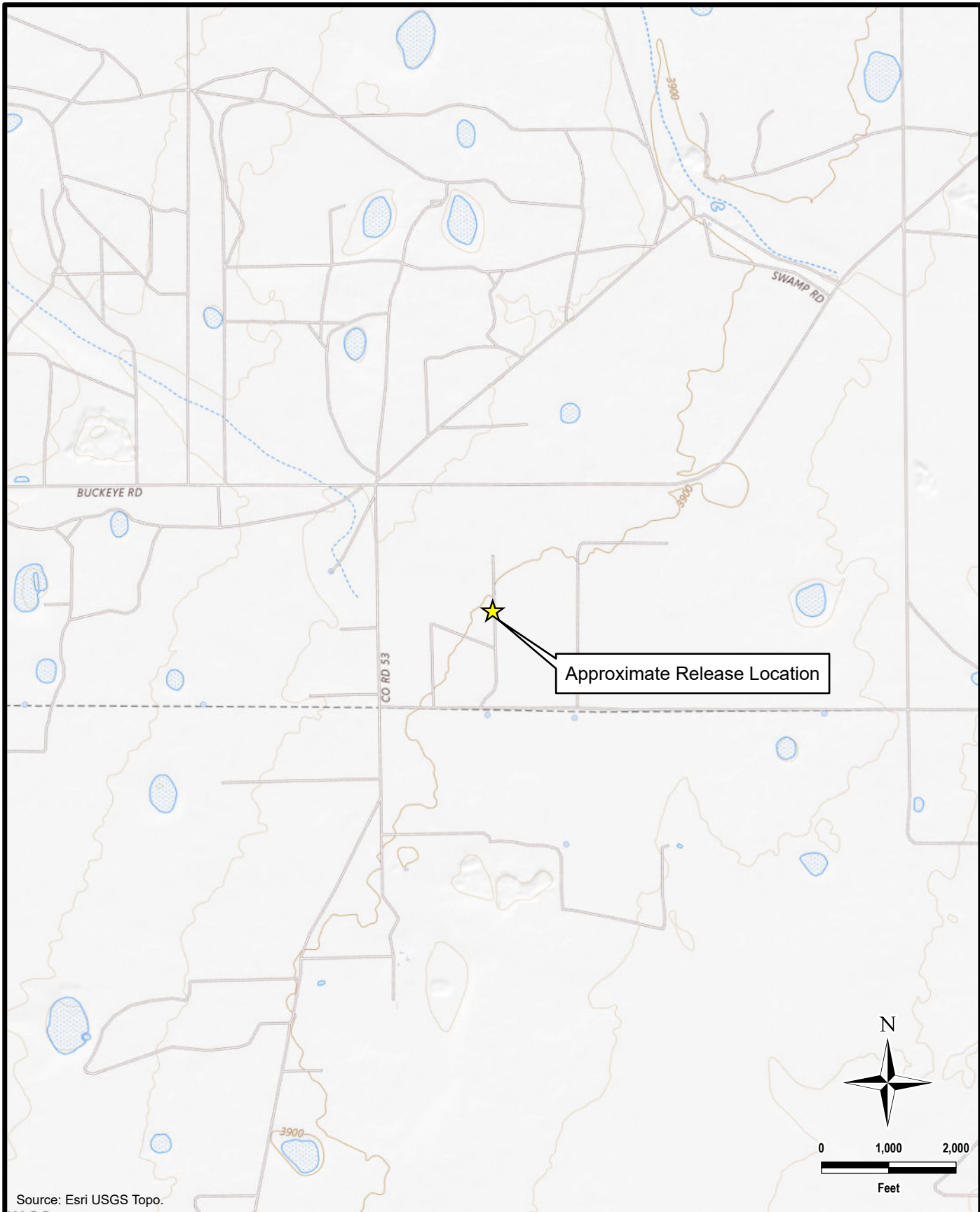
DATE: JANUARY 20, 2025

DESIGNED BY: LMV


Figure No.

**1**

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<div><b>TETRA TECH</b> <a href="http://www.tetrattech.com">www.tetrattech.com</a> 901 West Wall Street, Suite 100 Midland, Texas 79701 Phone: (432) 682-4559 Fax: (432) 682-3946</div>	<b>BTA OIL PRODUCERS, LLC</b>		PROJECT NO.: 212C-MD-03738
	NAPP2313058428 (32.793423°, -103.422657°) LEA COUNTY, NEW MEXICO		DATE: JANUARY 20, 2025
	<b>VACUUM SWD H #035 PIPELINE TOPOGRAPHIC MAP</b>		DESIGNED BY: LMV
			Figure No. <b>2</b>





**Legend**

-  Boring Location (Ensolum)
-  Release Extent (Ensolum)
-  Buried Pipeline

Source: Google Earth, 2023.



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**BTA OIL PRODUCERS, LLC**

NAPP2313058428  
(32.793423°, -103.422657°)  
LEA COUNTY, NEW MEXICO

**VACUUM SWD H #035 PIPELINE  
APPROXIMATE RELEASE EXTENT AND SITE ASSESSMENT (ENSOLUM)**

PROJECT NO.: 212C-MD-03738

DATE: JANUARY 20, 2025

DESIGNED BY: LMV

Figure No.

**3**

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**BTA OIL PRODUCERS, LLC**

NAPP2313058428  
(32.793423°, -103.422657°)  
LEA COUNTY, NEW MEXICO

**VACUUM SWD H #035 PIPELINE  
REVISED RELEASE EXTENT (TETRA TECH)**

PROJECT NO.: 212C-MD-03738

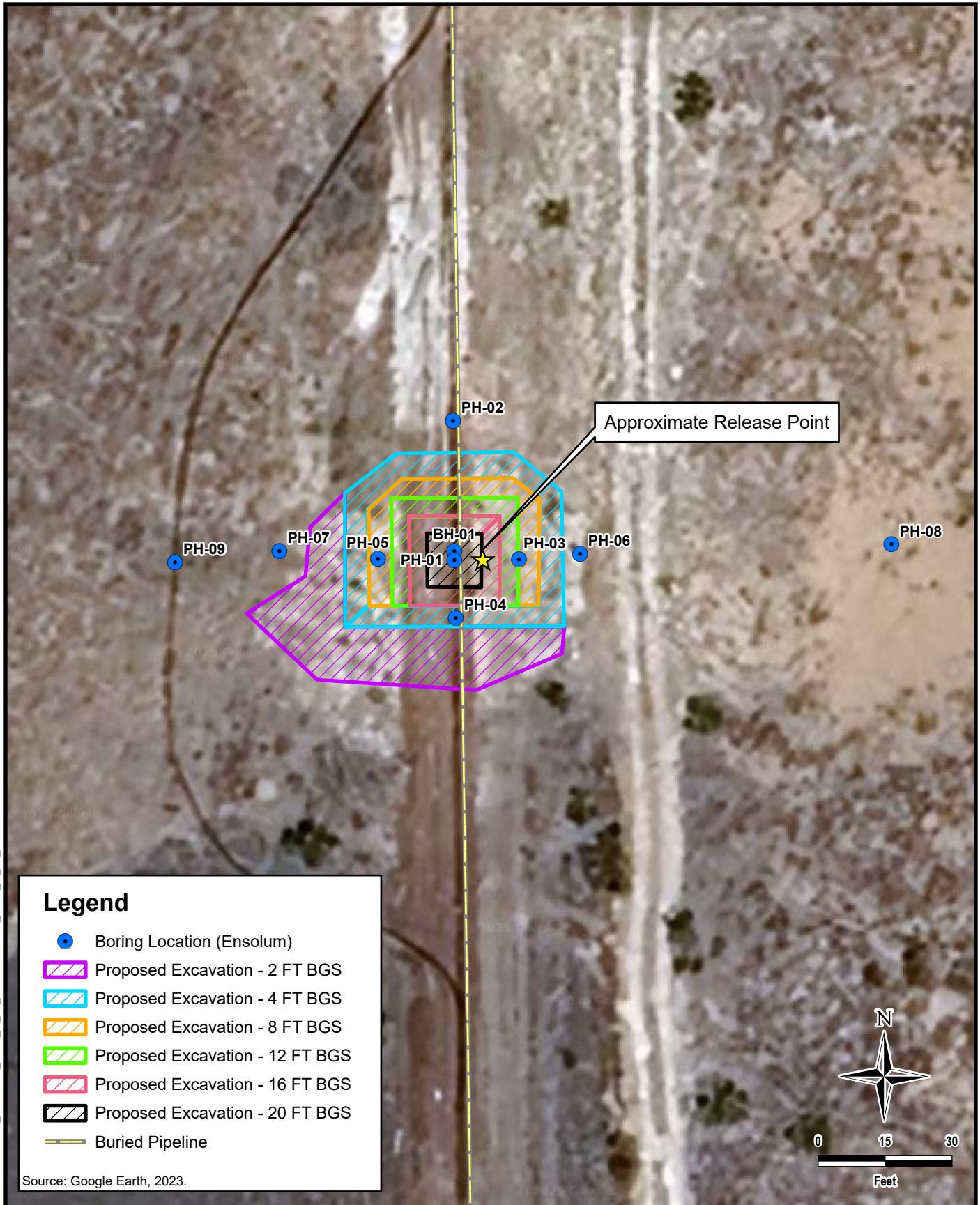
DATE: JANUARY 20, 2025

DESIGNED BY: LMV


Figure No.

**4**

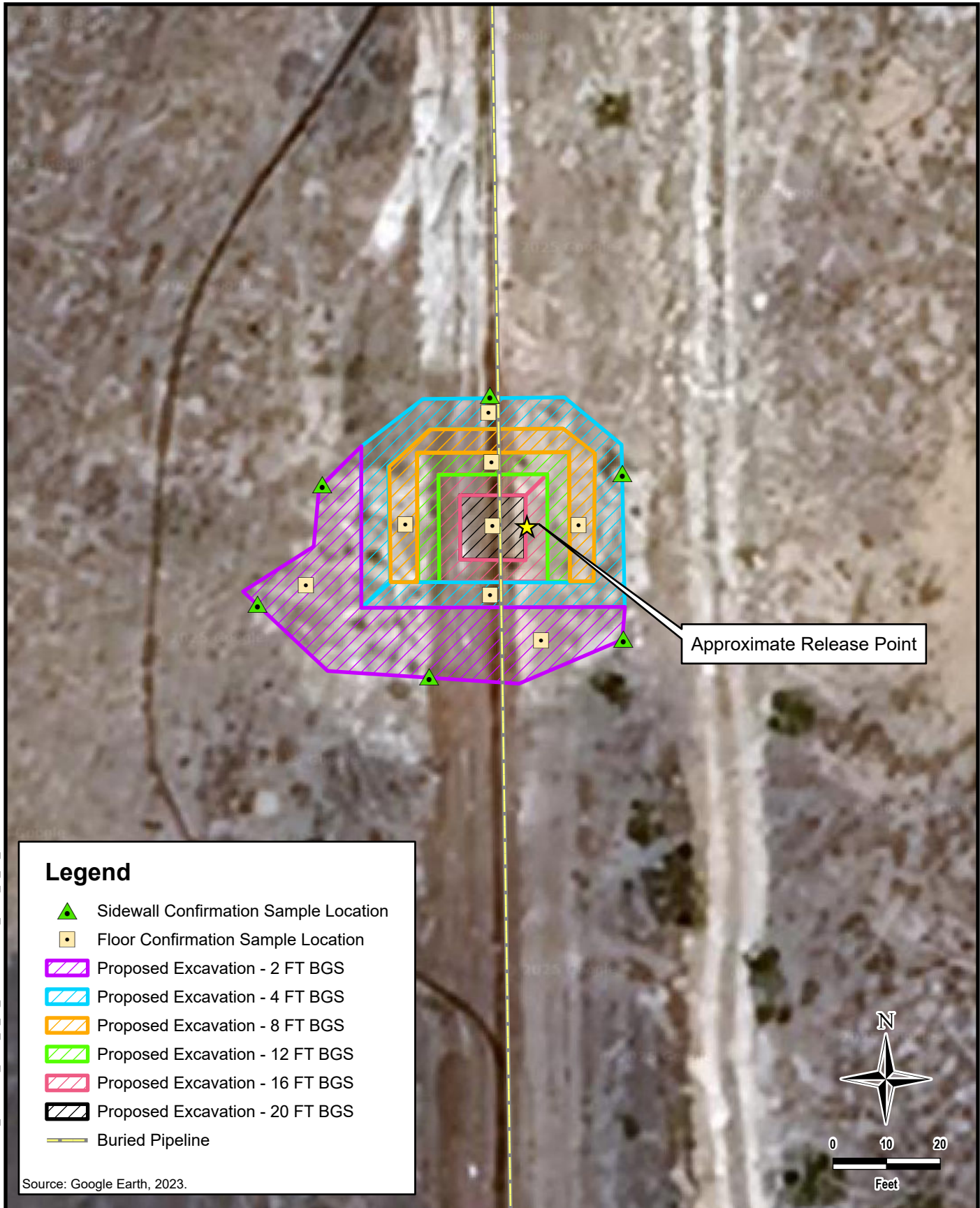




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	NAPP2313058428 (32.793423°, -103.422657°) LEA COUNTY, NEW MEXICO		DATE: JANUARY 20, 2025
	<b>VACUUM SWD H #035 PIPELINE PROPOSED REMEDIATION EXTENT</b>		DESIGNED BY: LMV
			Figure No. <b>5</b>






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	NAPP2313058428 (32.793423°, -103.422657°) LEA COUNTY, NEW MEXICO		DATE: JANUARY 20, 2025
	VACUUM SWD H #035 PIPELINE ALTERNATIVE CONFIRMATION SAMPLING PLAN		DESIGNED BY: LMV
			Figure No. <b>6</b>



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## **TABLES**

TABLE 1  
SUMMARY OF ANALYTICAL RESULTS  
SOIL ASSESSMENT- nAPP2313058428  
BTA OIL PRODUCERS, LLC  
VACUUM SWD H #035  
LEA COUNTY, NM

NMOCD Table I Closure Criteria (NMAC 19.15.29)			BTEX <sup>2</sup>				TPH <sup>3</sup>								Chlorides <sup>1</sup>	
			< 10 mg/kg		< 50 mg/kg		GRO		DRO		EXT DRO		< 100 mg/kg	<1,000 mg/kg	< 10,000 mg/kg	
Sample ID	Sample Date	Sample Depth Interval	Benzene		Total BTEX		C <sub>6</sub> - C <sub>10</sub>		> C <sub>10</sub> - C <sub>28</sub>		> C <sub>28</sub> - C <sub>36</sub>		Total TPH (GRO+DRO+EXT DRO)	GRO+DRO	Chloride	
		ft. bgs	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	mg/kg	mg/kg	Q
BH01	5/18/2023	1	<0.050		1.15		<100		11,600		5,180		16,780	11,600	1,090	
BH01A	5/18/2023	3	<0.100		27.8		378		7,860		2,060		10,298	8,238	6,530	
PH01*	6/28/2023	2.5	<0.050		0.623		<50.0		15,500		4,990		20,490	15,500	4,040	
PH01A*	6/28/2023	3	0.477		27.1		221		3,320		1,070		4,611	3,541	3,440	
PH01B	6/28/2023	4	2.61		187		2,690		19,800		5,510		28,000	22,490	2,200	
PH01C	7/5/2023	6	<0.500		70.9		2,350		15,900		3,200		21,450	18,250	3,040	
PH01D	7/5/2023	10	0.064		12.3		1,200		11,900		2,580		15,680	13,100	3,280	
PH01E	7/5/2023	14	<0.050		0.468		14		728		201		943	742	4,560	
PH01F	7/5/2023	18	<0.050		3.07		76		2,030		629		2,735	2,106	4,000	
PH01G	9/19/2023	25	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	960	
PH01H	9/19/2023	35	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	688	
PH01I	9/19/2023	40	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	768	
PH01J	9/19/2023	46	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	1,800	
PH01K	9/19/2023	49	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	2,080	
PH01L	9/19/2023	50	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	2,360	
PH01M	9/21/2023	55	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	112	
PH02	6/28/2023	4	<0.050		0.488		<10.0		<10.0		<10.0		<10.0	<10.0	32	
PH02A	9/19/2023	10	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	192	
PH02B	9/19/2023	18	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	160	
PH02C	9/19/2023	25	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	320	
PH02D	9/19/2023	35	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	208	
PH02E	9/19/2023	40	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	176	
PH02F	9/19/2023	50	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	192	
PH02G	9/20/2023	59	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32	
PH03*	6/28/2023	0.5	<0.050		<0.300		<50.0		604	QM-07, QR-03	599		1,203	604	80	
PH03A*	6/28/2023	2	1.26		102		1,160		11,100		3,070		15,330	12,260	384	
PH04	6/28/2023	4	<0.050		<0.300		<10.0		16.9		29.6		46.5	16.9	<16.0	
PH04A	9/20/2023	10	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	64.0	
PH04B	9/20/2023	18	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH04C	9/20/2023	25	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	368	
PH04D	9/20/2023	35	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	80.0	
PH04E	9/20/2023	40	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH04F	9/20/2023	50	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH05*	6/28/2023	0.5	<0.050		<0.300		<10.0		625		643		1,268	625	<16.0	
PH05A*	6/28/2023	2	<0.050		<0.300		<10.0		775		762		1,537	775	272.0	

TABLE 1  
SUMMARY OF ANALYTICAL RESULTS  
SOIL ASSESSMENT- nAPP2313058428  
BTA OIL PRODUCERS, LLC  
VACUUM SWD H #035  
LEA COUNTY, NM

NMOCD Table I Closure Criteria (NMAC 19.15.29)			BTEX <sup>2</sup>				TPH <sup>3</sup>								Chlorides <sup>1</sup>	
			< 10 mg/kg		< 50 mg/kg		GRO		DRO		EXT DRO		< 100 mg/kg	<1,000 mg/kg	< 10,000 mg/kg	
Sample ID	Sample Date	Sample Depth Interval	Benzene		Total BTEX		C <sub>6</sub> - C <sub>10</sub>		> C <sub>10</sub> - C <sub>28</sub>		> C <sub>28</sub> - C <sub>36</sub>		Total TPH (GRO+DRO+EXT DRO)	GRO+DRO	Chloride	
		ft. bgs	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	mg/kg	mg/kg	Q
PH06	9/20/2023	4	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	272	
PH06A	9/20/2023	10	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	800	
PH06B	9/20/2023	18	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	1,540	
PH06C	9/20/2023	20	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	1,260	
PH07	9/20/2023	4	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	80	
PH07A	9/21/2023	10	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	768	
PH07B	9/21/2023	18	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	1,720	
PH07C	9/21/2023	20	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	3,680	
PH08*	10/19/2023	0.5	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	<16.0	
PH08A*	10/19/2023	2	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08B	10/19/2023	4	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08C	10/19/2023	6	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08D	10/19/2023	10	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08E	10/19/2023	14	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08F	10/19/2023	18	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08G	10/19/2023	20	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08H	10/19/2023	25	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08I	10/19/2023	30	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08J	10/19/2023	35	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08K	10/19/2023	40	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08L	10/19/2023	45	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH08M	10/19/2023	50	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08N	10/19/2023	52	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH08O	10/19/2023	55	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH09*	10/20/2023	0.5	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH09A*	10/20/2023	2	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH09B	10/20/2023	4	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH09C	10/20/2023	6	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH09D	10/20/2023	10	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH09E	10/20/2023	14	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	<16.0	
PH09F	10/20/2023	18	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH09G	10/20/2023	20	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH09H	10/20/2023	25	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	80.0	
PH09I	10/20/2023	30	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	96.0	
PH09J	10/20/2023	35	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	112.0	
PH09K	10/20/2023	40	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	

TABLE 1  
SUMMARY OF ANALYTICAL RESULTS  
SOIL ASSESSMENT- nAPP2313058428  
BTA OIL PRODUCERS, LLC  
VACUUM SWD H #035  
LEA COUNTY, NM

NMOCD Table I Closure Criteria (NMAC 19.15.29)			BTEX <sup>2</sup>				TPH <sup>3</sup>								Chlorides <sup>1</sup>	
			< 10 mg/kg		< 50 mg/kg		GRO		DRO		EXT DRO		< 100 mg/kg	<1,000 mg/kg	< 10,000 mg/kg	
Sample ID	Sample Date	Sample Depth Interval	Benzene		Total BTEX		C <sub>6</sub> - C <sub>10</sub>		> C <sub>10</sub> - C <sub>28</sub>		> C <sub>28</sub> - C <sub>36</sub>		Total TPH (GRO+DRO+EXT DRO)	GRO+DRO	Chloride	
		ft. bgs	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	mg/kg	mg/kg	Q
PH09L	10/20/2023	45	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH09M	10/20/2023	50	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	16.0	
PH09N	10/20/2023	52	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	
PH09O	10/20/2023	55	<0.050		<0.300		<10.0		<10.0		<10.0		<10.0	<10.0	32.0	

NOTES:

ft. Feet

bgs Below ground surface

mg/kg Milligrams per kilogram

TPH Total Petroleum Hydrocarbons

GRO Gasoline range organics

DRO Diesel range organics

1 Method SM4500CI-B

2 Method 8021B

3 Method 8015M

***Bold and italicized values indicate exceedance of proposed RRALs and Reclamation Requirements.***

Shaded rows indicate intervals proposed for excavation.

QUALIFIERS:

QM-07, The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

## **APPENDIX A**

# **Ensolum Remediation Work Plan**





December 4, 2023

**New Mexico Oil Conservation Division**

New Mexico Energy, Minerals, and Natural Resources Department  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: Remediation Work Plan  
Vacuum SWD H #035 Pipeline  
Incident Number nAPP2313058428  
Lea County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of BTA Oil Producers, LLC (BTA), has prepared the following *Remediation Work Plan (Work Plan)* to document assessment activities and propose remedial actions for soil impacts related to a historical release of crude oil. The impacts were encountered during construction of a new pipeline associated with the Vacuum SWD H #035 (Site).

**SITE DESCRIPTION AND RELEASE SUMMARY**

The Site is located in Unit H, Section 35, Township 17 South, Range 35 East, in Lea County, New Mexico (32.793423°, -103.422657°) and is associated with oil and gas exploration and production operations on New Mexico State Trust Land managed by the New Mexico State Land Office (NMSLO).

The Site is situated adjacent to a lease road with no active oil and gas production equipment and/or flowlines. On May 10, 2023, presumed historical impacts were identified during the installation of a pipeline associated with a saltwater disposal (SWD) tank battery. Based on soil type and using visual observations to estimate the extent of impacted soil, the historical release appeared to be greater than 5 barrels (bbls) and, therefore, reportable. BTA reported the release to the New Mexico Oil Conservation Division (NMOCD) via a Release Notification Form C-141 (Form C-141) on May 16, 2023. The release was assigned Incident Number nAPP2313058428.

**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 on Form C-141, Site Assessment/Characterization. Potential Site receptors are identified on Figure 1.

Depth to groundwater at the Site is estimated to be between 51 feet and 100 feet below ground surface (bgs) based on Site-specific observations and the closest groundwater well data. Groundwater was encountered beneath the Site at a depth of 56.2 feet bgs in pothole/soil boring PH02, located upgradient of the release. In addition, the closest groundwater well with depth to groundwater data is United States Geological Survey (USGS) well number 324745103251501, located approximately 1,858 feet northwest

BTA Oil Producers, LLC  
Remediation Work Plan  
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of the Site. The well has a measured depth to groundwater of 58.5 feet bgs and a total depth of 121 feet bgs. Based on these data, groundwater beneath the Site has been reasonably determined to be between 51 feet and 100 feet bgs. The lithologic/soil sampling log for pothole/soil boring PH02 is included in Appendix A. All wells used for depth to water determination are depicted on Figure 1 and the referenced well record is included in Appendix B.

The closest continuously flowing or significant watercourse to the Site is greater than 300 feet from 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). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOCD Table I Closure Criteria (Closure Criteria) apply for the following chemicals of concern (COCs):

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total Petroleum Hydrocarbons (TPH) – gasoline range organics (GRO) and TPH – diesel range organics (DRO): 1,000 mg/kg
- Total TPH: 2,500 mg/kg
- Chloride: 10,00 mg/kg

A reclamation requirement of 600 mg/kg chloride and 100 mg/kg TPH is applied to the top 4 feet of the pasture area per 19.15.29.13.D (1) NMAC for the top 4 feet of areas that will be immediately reclaimed following remediation.

## CULTURAL RESOURCES SURVEY

Since the historical release was identified in the pasture, the release location was assessed for determination of whether the release encroached into undisturbed areas to comply with the Cultural Properties Protection Rule (CPP) prior to disturbing the surface with mechanical equipment. The NMSLO was notified of potential disturbance of the pasture on a *Right of Entry Request for Remediation* form. The request included a copy of the Form C-141, a topographic location map, and a satellite image of the location. An Archaeological Records Management System (ARMS) review was performed for the right-of-way prior to pipeline construction. No cultural resources were identified within and/or around the release extent requiring remediation efforts. A Right Of Way Easement (Number R-40581) was secured by BTA on March 24, 2023, which included the release area. The Right of Way Easement Permit, is included in Appendix C.

## DELINEATION ACTIVITIES

Ensolum visited the Site on May 18, 2023, to assess the impacted soil exposed by BTA. Ensolum advanced one soil boring (BH01) via hand auger to a depth of 3 feet bgs (Figure 2). Soil samples from soil boring BH01 were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride using Hach® chloride QuanTab® test strips. Field screening results and observations were logged on a lithologic/soil sampling log, which is included in Appendix A. The soil sample location was mapped utilizing a handheld Global Positioning System (GPS) unit. Photographic documentation was completed during the site visit and a photographic log is included in Appendix D.

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Soil samples for laboratory analysis 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 COCs: BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method SM4500.

Laboratory analytical results indicated concentrations of TPH-GRO and TPH-DRO as well as total TPH exceeded the Closure Criteria in the soil samples submitted from soil boring BH01. In addition, the chloride concentration in soil from the two samples exceeded the reclamation requirement. As a result, additional delineation activities appeared warranted. Soil analytical results are summarized in Table 1. The laboratory analytical report is included in Appendix E.

Ensolum returned to the Site on June 28 and July 5, 2023, to delineate impacted soil detected in soil boring BH01. Five potholes (PH01 through PH05) were advanced via backhoe and trackhoe. Pothole PH01 was advanced in the vicinity of soil boring BH01 to a depth of 18 feet bgs, the maximum depth of the trackhoe. Potholes PH02 through PH05 were advanced in all four cardinal directions of pothole PH01 to depths ranging from 2 feet to 4 feet bgs. The locations of the potholes are depicted on Figure 2. Observations and field screenings were documented for each pothole on lithologic/soil sampling logs, which are included in Appendix A. Soil samples from the four potholes were submitted for laboratory analysis of BTEX, TPH, and chloride.

Based on soil analytical results, it appeared vertical and lateral delineation was not achieved. As such, Ensolum contracted Cascade Environmental (Cascade) to advance deeper into the subsurface. Ensolum and Cascade advanced potholes PH01, PH02, and PH04 and installed four additional lateral borings (PH06 through PH09) utilizing a Terrasonic® 150cc drill rig. Original potholes PH01, PH02, and PH04 were deepened to at least 50 feet bgs. Groundwater was encountered in pothole PH02 at 56.2 feet bgs. New borings PH06 through PH09 were advanced to depths ranging from 18 feet to 59 feet bgs. Soil samples collected throughout the drilling process were screened for VOCs and chloride and select soil samples were submitted for laboratory analysis of BTEX, TPH, and chloride. The location of the potholes/soil borings are depicted on Figure 2.

## RESULTS

Laboratory analytical results for pothole PH01 indicated concentrations of all COCs exceeded Closure Criteria in the upper 20 feet of the subsurface. Samples collected below that depth were in compliance with the Closure Criteria. Chloride was vertically delineated to 600 mg/kg in pothole PH01 in the sample collected from 55 feet bgs. No groundwater was observed in PH01 and the sample depth is above the depth of groundwater observed in pothole PH02. Laboratory analytical results for all other samples collected with the sonic drill rig indicated all COCs were in compliance with Closure Criteria and provided lateral definition of the historical release.

Based on all soil samples collected, impacted soil is characterized by concentrations of BTEX and TPH exceeding the Closure Criteria from just under the ground surface to approximately 18 feet bgs in the estimated release extent. Additionally, chloride exceeds the reclamation requirement in the top 4 feet. The impacts extend outward approximately 20 feet east and west, less than 30 feet to the north and less than 20 feet to the south. Soil analytical results are summarized in Table 1 and the laboratory analytical reports are included in Appendix E.

Although groundwater was observed in PH02, it does not appear to be in contact with the impacted soil. Soil observed at the Site generally consisted of poorly graded, very fine to fine-grained sand from the ground surface to depths ranging from 1-foot to 8 feet bgs. A poorly to moderately cemented caliche

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Remediation Work Plan  
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was observed beneath the sand to a depth of approximately 52 feet bgs, which was followed by a poorly graded sand. Groundwater appeared to be a lower portion of the deepest sand-bearing unit.

## PROPOSED REMEDIAL ACTIONS

While BTA is not aware of the source or origin of this historical release, BTA has communicated with NMOCD and NMSLO to identify a practical remedial approach to address this Site. As such, BTA is proposing the following remedial actions:

- Excavate hydrocarbon-impacted soil in the release area to approximately 6 feet bgs, which is the depth to which elevated BTEX concentrations exist;
- Following excavation activities, 5-point composite soil samples will be collected every 200 square feet from the floor and sidewalls of the excavation. The 5-point composite samples will be collected by placing five equivalent aliquots of soil into a 1-gallon, resealable plastic bag and homogenizing the samples by thoroughly mixing. The composite soil samples will be handled and analyzed as described above;
- While TPH is present in soil in the vicinity of pothole/soil boring PH01 at concentrations exceeding the Closure Criteria to a total depth of 18 feet bgs, the soil is a poorly to moderately cemented caliche unit that is not conducive to remediate by excavation. There is approximately 38 feet of non-impacted soil between the terminus of TPH impacts and groundwater table. As such, BTA is requesting a variance to leave TPH-impacted soil in-place and install a 20-mil poly liner at the base of the excavation. The liner will minimize vertical migration of residual TPH concentrations from surface infiltration of precipitation. While the caliche is poorly to moderately cemented, there is sufficient pore space for natural vadose zone air flow and microbial activity to support natural attenuation through volatilization and biodegradation. In requesting a variance request, BTA has to show the remedial action provides equal or better protection to the environment. BTA believes the application of excavation and disposal of impacted soil would be less protective of the environment than leaving in place due to the extraordinary effort to excavate 9 feet of poorly to moderately cemented caliche. This would require a lengthy time period to excavate with a trackhoe, which would utilize more fuel and increase its emissions. In addition, the volume of impacted soil would require additional trucking to transport the soil to an approved landfill and backfilling with new caliche, affecting roadway traffic, roadway conditions, and additional emissions to the atmosphere. Leaving the residual impacts in place will allow for natural attenuation and protect the environment equally, if not better. The liner will present a barrier to human and/or wildlife contact and retard vertical migration of TPH to groundwater, which is equally protective. Groundwater is over 38 feet beneath the terminus of impacts, which is sufficient to be protective of groundwater, especially with the installation of a liner;
- Following excavation activities and the installation of a liner, BTA will backfill the excavation with locally sourced material and follow the reclamation plan described below.

## RECLAMATION PLAN

The historical release occurred off pad in the pasture and as such, a reclamation requirement of 600 mg/kg chloride and 100 mg/kg TPH will be applied to the top 4 feet of the off pad area that was impacted by the release per 19.15.29.13.D (1) NMAC for the top 4 feet of areas that will be reclaimed following remediation. The following Reclamation Plan addresses reclamation of the off-pad area:

- The excavation will be backfilled with locally sourced caliche and topsoil to match surrounding grade. Topsoil will be placed on top of the caliche to support vegetative growth within the disturbed area;

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- Soil in the vicinity of the release include: poorly to well-graded sand from the ground surface to depths ranging from 1-foot to 8 feet bgs;
- The backfilled areas will be seeded utilizing a weed-free seed mix designed by the NMSLO to meet reclamation standards for this region, which will be: Sandy (S) Sites Seed Mixture;
- The seed mixture will be distributed with either a push broadcaster seed spreader, tractor operated broadcast seed spreader, drill seeding, and/or other means;
- Application of the seed mixture will be at a coverage of 10 pounds of seeds per acre of reclaimed pasture with distribution by a drilling method or 20 pounds of seeds per acre of reclaimed pasture with distribution by a broadcast method;
- Erosion control management is not anticipated, but if required, will potentially include:
  - The placement of wattles in areas with a propensity for high run off rates;
  - Straw cover if high winds are anticipated to support moisture retention and limit wind from blowing seeds away before they have had time to germinate; and/or
  - Other erosional control best management practices (BMP) as necessary to support timely and healthy regrowth of vegetation in disturbed areas;
- Backfilling of the excavation will occur following the excavation of impacted and waste-containing soil;
- Seeding is anticipated to be completed in the Spring or Fall (depending on when this *Work Plan* is approved and work is completed (when temperatures and precipitation is most conducive for vegetation growth. In general, seeding should occur approximately one month after the last frost in the Spring up until approximately one month prior to the first fall frost. NMSLO has recognized the optimal time to seed is between July and early September, which will be adhered to for this Site;
- Annual inspections (at a minimum) will take place on the location until revegetation is consistent with local natural vegetation density. The Site will be inspected the following Spring/Fall to assess the success of regrowth. If necessary, an additional application of the NMSLO-approved pure live seed mixture will be applied as well as any needed BMPs will be installed to support growth and limit erosion; and
- Upon completion of revegetation, a copy of the C-103 submitted to NMOCD will also be submitted to NMSLO for final inspection and release.

## Schedule and Reporting

BTA will complete the remedial activities described above within 90 days of the date of approval of this *Work Plan* by the NMOCD and NMSLO. A *Closure Request* will be prepared and submitted to the NMOCD and NMSLO describing the implementation of this *Work Plan*, which will include photographic documentation, soil confirmation sample results, figures, supporting documentation, and a narration of field activities.

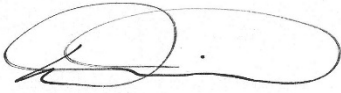
BTA believes the scope of work described above will meet requirements set forth in 19.15.29.12 and 13 NMAC as well as stipulation set forth in 19.2.100.67 NMAC for reclamation of Sites on State Trust Land. These measures are believed to be protective of human health, the environment, and groundwater. As such, BTA respectfully requests approval of this *Work Plan* by NMOCD and NMSLO.



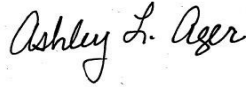
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Vacuum SWD H #035 Pipeline

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**



Daniel R. Moir, PG  
Senior Managing Geologist



Ashley L. Ager, MS, PG  
Principal

cc: Kelton Beaird, BTA  
Nathan Sirgo, BTA  
NMSLO ECO

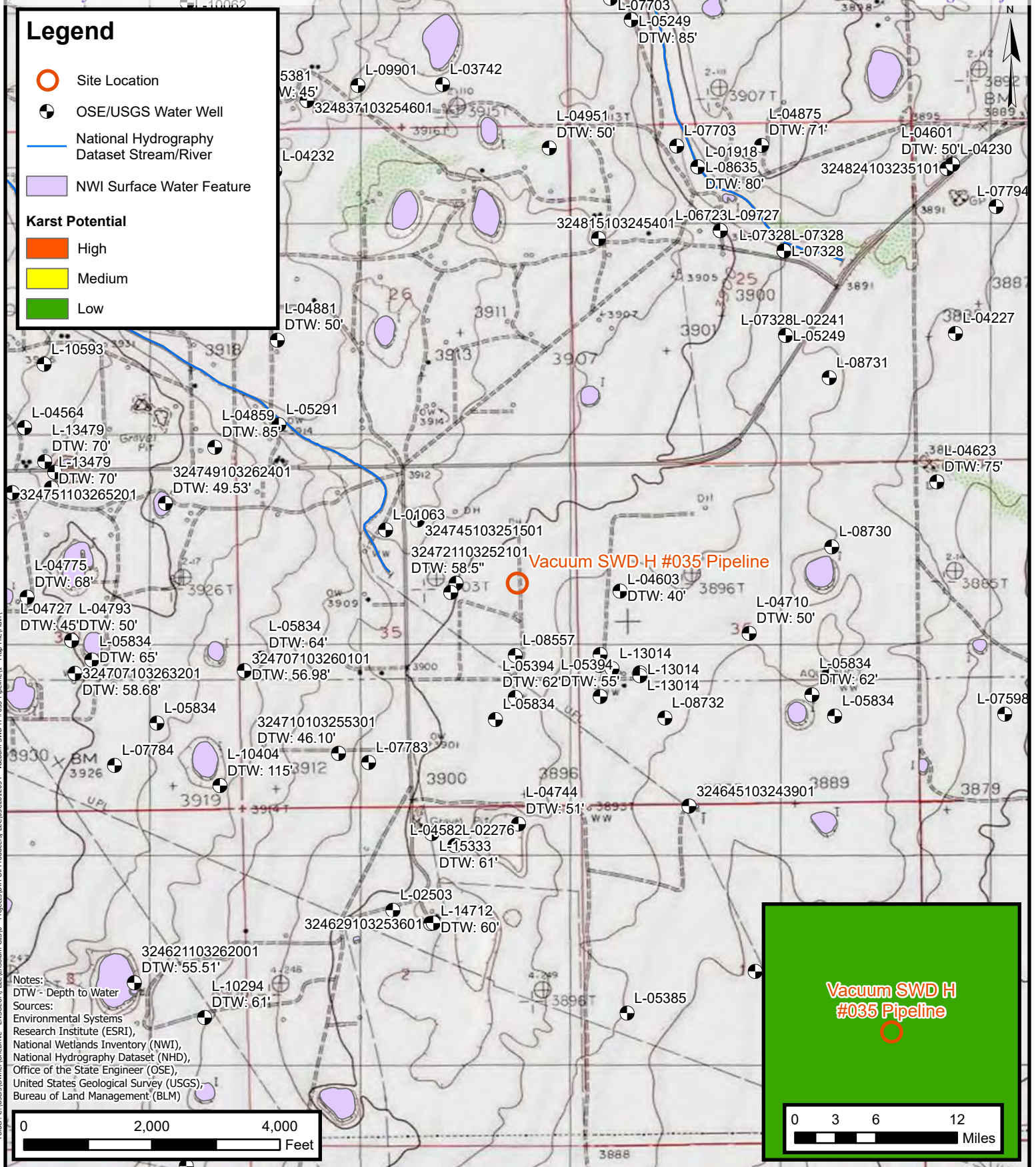
Appendices:

Figure 1	Sensitive Receptor Map
Figure 2	Delineation Soil Sample Locations
Table 1	Soil Analytical Results
Appendix A	Lithologic/Soil Sampling Logs
Appendix B	Referenced Well Records
Appendix C	NMSLO Right of Way Easement
Appendix D	Photographic Log
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Appendix F	Form C-141
Appendix G	NMOCD Notifications



Figures

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## Site Receptor Map

BTA Oil Producers, LLC  
Vacuum SWD H #035 Pipeline  
Incident Number: nAPP2313058428  
Unit H, Section 35, Township 17 South, Range 35 East  
Lea County, New Mexico

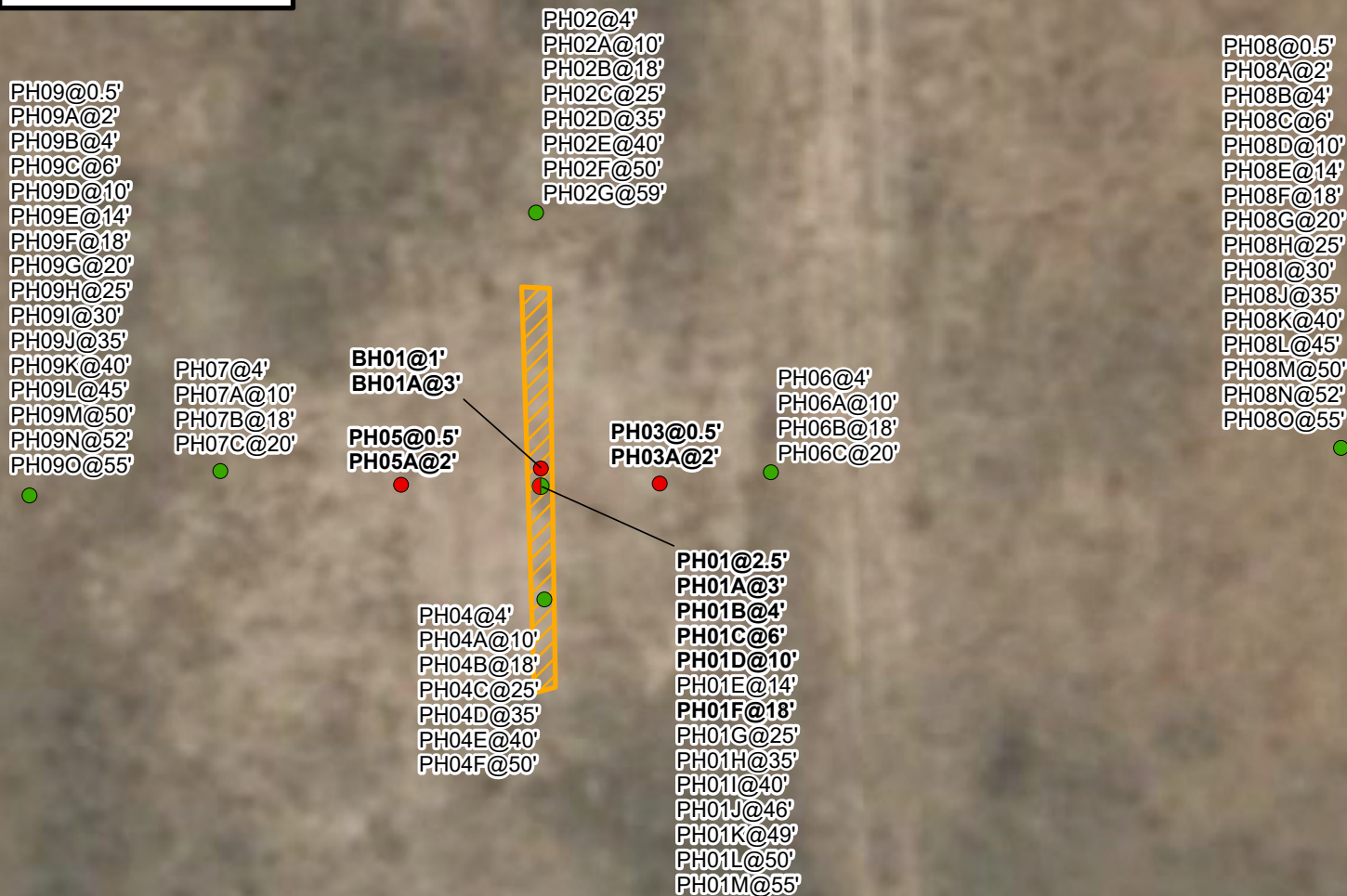
**FIGURE**

**1**

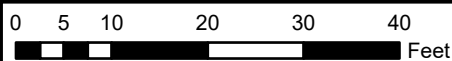


## Legend

- Delineation Soil Sample in Compliance with Closure Criteria
- Delineation Soil Sample with Concentrations Previously Exceeding Closure Criteria
- Delineation Soil Sample with Concentration Exceeding Closure Criteria
- Release Extent



Notes:  
 Sample ID @ Depth Below Ground Surface.  
 Samples in bold indicate sample exceeded applicable closure criteria.



Sources: Environmental Systems Research Institute (ESRI)



## Delineation Soil Sample Locations

BTA Oil Producers, LLC  
 Vacuum SWD H #035 Pipeline  
 Incident Number: nAPP2313058428  
 Unit H, Section 35, Township 17 South, Range 35 East  
 Lea County, New Mexico

FIGURE

2



Table

**TABLE I**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Vacuum SWD H #035  
 BTA Oil Producers, LLC  
 Lea 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	1,000	2,500	10,000
Delineation Soil Samples										
BH01	05/18/2023	1	<0.050	1.150	<100	11,600	5,180	<b>11,600</b>	<b>16,780</b>	1,090
BH01A	05/18/2023	3	<0.100	27.8	378	7,860	2,060	<b>8,238</b>	<b>10,298</b>	6,530
PH01*	06/28/2023	2.5	<0.050	0.623	<50.0	15,500	4,990	<b>15,500</b>	<b>20,490</b>	4,040
PH01A*	06/28/2023	3	0.477	27.1	221	3,320	1,070	<b>3,541</b>	<b>4,611</b>	3,440
PH01B	06/28/2023	4	2.61	<b>187</b>	2,690	19,800	5,510	<b>22,490</b>	<b>28,000</b>	2,200
PH01C	07/05/2023	6	<0.500	<b>70.9</b>	2,350	15,900	3,200	<b>18,250</b>	<b>21,450</b>	3,040
PH01D	07/05/2023	10	0.064	12.3	1,200	11,900	2,580	<b>13,100</b>	<b>15,680</b>	3,280
PH01E	07/05/2023	14	<0.050	0.468	14.1	728	201	742	943	4,560
PH01F	07/05/2023	18	<0.050	3.07	75.7	2,030	629	<b>2,106</b>	<b>2,735</b>	4,000
PH01G	09/19/2023	25	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	960
PH01H	09/19/2023	35	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	688
PH01I	09/19/2023	40	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	768
PH01J	09/19/2023	46	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,800
PH01K	09/19/2023	49	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,080
PH01L	09/19/2023	50	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	2,360
PH01M	09/21/2023	55	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	112
PH02	06/28/2023	4	<0.050	0.488	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH02A	09/19/2023	10	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
PH02B	09/19/2023	18	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	160
PH02C	09/19/2023	25	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	320
PH02D	09/19/2023	35	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	208
PH02E	09/19/2023	40	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	176
PH02F	09/19/2023	50	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	192
PH02G	09/20/2023	59	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH03*	06/28/2023	0.5	<0.050	<0.300	<50.0	604	599	<b>604</b>	<b>1,203</b>	80.0
PH03A*	06/28/2023	2	1.26	<b>102</b>	1,160	11,100	3,070	<b>12,260</b>	<b>15,330</b>	384
PH04	06/28/2023	4	<0.050	<0.300	<10.0	16.9	29.6	16.9	46.5	<16.0
PH04A	09/20/2023	10	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
PH04B	09/20/2023	18	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0

**TABLE I**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Vacuum SWD H #035  
 BTA Oil Producers, LLC  
 Lea County, New Mexico

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
<b>NMOCD Table I Closure Criteria (NMAC 19.15.29)</b>			<b>10</b>	<b>50</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>1,000</b>	<b>2,500</b>	<b>10,000</b>
PH04C	09/20/2023	25	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	368
PH04D	09/20/2023	35	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
PH04E	09/20/2023	40	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH04F	09/20/2023	50	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH05*	06/28/2023	0.5	<0.050	<0.300	<10.0	625	643	<b>625</b>	<b>1,268</b>	<16.0
PH05A*	06/28/2023	2	<0.050	<0.300	<10.0	775	762	<b>775</b>	<b>1,537</b>	272
PH06	09/20/2023	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	272
PH06A	09/20/2023	10	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	800
PH06B	09/20/2023	18	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,540
PH06C	09/20/2023	20	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,260
PH07	09/20/2023	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
PH07A	09/21/2023	10	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	768
PH07B	09/21/2023	18	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	1,720
PH07C	09/21/2023	20	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	3,680
PH08*	10/19/2023	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
PH08A*	10/19/2023	2	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08B	10/19/2023	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08C	10/19/2023	6	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08D	10/19/2023	10	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08E	10/19/2023	14	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08F	10/19/2023	18	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08G	10/19/2023	20	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08H	10/19/2023	25	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08I	10/19/2023	30	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08J	10/19/2023	35	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08K	10/19/2023	40	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08L	10/19/2023	45	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH08M	10/19/2023	50	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08N	10/19/2023	52	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH08O	10/19/2023	55	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0



**TABLE I**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Vacuum SWD H #035  
 BTA Oil Producers, LLC  
 Lea County, New Mexico

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
<b>NMOCD Table I Closure Criteria (NMAC 19.15.29)</b>			<b>10</b>	<b>50</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>1,000</b>	<b>2,500</b>	<b>10,000</b>
PH09*	10/20/2023	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH09A*	10/20/2023	2	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09B	10/20/2023	4	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09C	10/20/2023	6	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09D	10/20/2023	10	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09E	10/20/2023	14	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	<16.0
PH09F	10/20/2023	18	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH09G	10/20/2023	20	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09H	10/20/2023	25	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
PH09I	10/20/2023	30	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	96.0
PH09J	10/20/2023	35	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	112
PH09K	10/20/2023	40	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09L	10/20/2023	45	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH09M	10/20/2023	50	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	16.0
PH09N	10/20/2023	52	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
PH09O	10/20/2023	55	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0

## Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

NMAC: New Mexico Administrative Code

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

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

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon


\*indicates sample was collected in area to be reclaimed after remediation is complete: remediation standard in the top 4 feet is 600 mg/kg for chloride and 100 mg/kg for TPH.





## APPENDIX A


### Lithologic/Soil Sampling Logs


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							Sample Name: PH01		Date: 6/28 & 7/5 & 9/19 & 9/21	
							Site Name: Vacuum SWD H 35 Pipeline			
							Incident Number: nAPP2313058428			
							Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>							Logged By: Mariaha O'Dell		Method: Excavator/Terrasonic	
Coordinates: 32.793413, -103.422662							Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.										
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions		
D	2,839	15	Y	PH01	2.5	2	SP	Sand. Brown, very fine to fine grained, well graded		
W	4,189	372	Y	PH01A	3					
W	1,501	488	Y	PH01B	4	4	CCHE	CCHE.		
W	2,643	839	S	PH01C	5					
W	3,248	884	S		6	6				
W	3,248	703	S		7					
W	3,075	516	S		8	8				
W	2,839	210	S		9					
W	3,058	396	S	PH01D	10	10				
W	3,058	255	S		11					
W	1,473	678	S		12	12				
W	2,548	250	N		13					
W	5,242	18.2	N	PH01E	14	14				
W	4,833	52	N		15					
W	4,094	72	N		16	16				
W	3,758	68.8	N		17					
W	3,450	65	N	PH01F	18	18				
D	2,436	0	N		20	20				
D	2,436				21					
D	2,436	0	N		22	22				
D	2,436				23					
D	1,982	0	N		24	24				
D	1,982	0	N	PH01G	25					


								Sample Name: PH01		Date: 6/28 & 7/5 & 9/19 & 9/21	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Excavator	
Coordinates: 32.793413, -103.422662								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
D	1,288	0	N	PH01H	26	26	CCHE	CCHE.			
D	1,019	0	N		27						
D	1,103	0	N		28	28					
D	1,192	0	N		29						
D	1,388	0	N		30	30					
D	1,019	0	N		31						
D	1,192	0	N		32	32					
D	1,192	0	N		33						
D	1,192	0	N		34	34					
D	941	0	N		35						
D	1,192	0	N	36	36						
D	1,192	0	N	37							
D	1,501	0	N	38	38						
D	1,389	0	N	39							
D	1,613	0	N	PH01I	40	40					
D	1,103	0	N	41							
D	1,389	0	N	42	42						
D	2,145	0	N	43							
D	2,296	0	N	44	44						
D	1,859	0	N	45							
D	2,296	0	N	PH01J	46	46					
D	2,643	0	N	47							
D	2,296	0	N	48	48						
D	3,058	0	N	PH01K	49						
D	2,688	0	N	PH01M	50	50					


 <b>ENSOLUM</b>								Sample Name: PH01		Date: 6/28 & 7/5 & 9/19 & 9/21	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Excavator	
Coordinates: 32.793413, -103.422662								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
M	2,912	0	N		52	52	SP	Sand. Tannish brown, very fine to fine grained, poorly graded, moist.			
						54					
M	<162	0	N	PH01M	55						
Total Depth @ 55' bgs.											


								Sample Name: PH02		Date: 6/28 & 9/19 & 9/20	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Excavator/Terrasonic	
Coordinates: 32.793498, -103.422663								Hole Diameter: N/A		Total Depth: 59'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
D	179	0	N	PH02	2.5	2	SP CCHE	Sand. Brown, very fine to fine grained, well graded CCHE,			
D	<179	0	N		3						
D	<179	0	N		4	4					
						6					
						8					
D	364	0	N	PH02A	10	10		Damp due to injecting water down hole.			
						12					
D	<174	0	N		14	14		Damp due to injecting water down hole.			
						16					
D	364	0	N	PH02B	18	18		Damp due to injecting water down hole.			
D	207	0	N			20		Damp due to injecting water down hole.			
						22					
						24					
D	515	0	N	PH02C		25					


								Sample Name: PH02		Date: 6/28 & 9/19 & 9/20	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Excavator	
Coordinates: 32.793498, -103.422663								Hole Diameter: N/A		Total Depth: 59'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
						26	CCHE	CCHE			
						28					
D	280	0	N		30	30					
						32					
						34					
D	241	0	N	PH02D	35	36					
						38					
D	207	0	N	PH02E	40	40					
						42					
						44					
D	280	0	N		45	46					
						48					
D	207	0	N		49						
D	280	0	N	PH02F		50					





								Sample Name: PH02		Date: 6/28 & 9/19 & 9/20	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Excavator	
Coordinates: 32.793498, -103.422663								Hole Diameter: N/A		Total Depth: 59'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
M	<162	0	N		52	52	SP	Sand. Tannish brown, very fine to fine grained, poorly graded, trace cche, moist.			
M	<162	0	N		55	54					
M	<162	0	N		57	56					
M	<162	0	N		59	58					
M	<162	0	N	PH02G	59	60		SAA, moist			
Total Depth @ 59' bgs.											


								Sample Name: PH03		Date: 6/28	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Excavator	
Coordinates: 32.793414, -103.422619								Hole Diameter: N/A		Total Depth: 3'	
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
D	<179	0.5	Y	PH03	0.5	0.5	SP	Sand. Brown, very fine to fine grained, well graded, some caliche CCHE. Stained black.			
D	<179	5.2	Y		1	1	CCHE				
W	280	391.4	Y	PH03A	2	2					
W	<179	15.7	Y		3	3					
Total Depth at 3' bgs.											

		Sample Name: PH04		Date: 6/28 & 9/20				
		Site Name: Vacuum SWD H 35 Pipeline						
		Incident Number: nAPP2313058428						
		Job Number: 03C2012054						
LITHOLOGIC / SOIL SAMPLING LOG								
Coordinates: 32.793379, -103.422662			Logged By: Mariaha O'Dell		Method: Excavator & Terrasonic			
			Hole Diameter: N/A		Total Depth: 50'			
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. All Chloride measurements done with a +40% correction factor.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
D	<179	0.5	N	PH04	2.5	2	SP	Sand. Brown, very fine to fine grained, poorly graded, dry.
D	<179	1.3	N		3			
D	<179	0.3	N		4	4		
						6		
	<162				8	8	CCHE	CCHE
D	<162	0	N	PH04A	10	10		
						12		
D	<162	0	N		14	14		
						16		
D	<162	0	N	PH04B	18	18		
D	<162	0	N		20	20		
						22		
						24		
D	442	0	N	PH04C	25	25		


		Sample Name: PH04		Date: 6/28 & 9/20				
		Site Name: Vacuum SWD H 35 Pipeline						
		Incident Number: nAPP2313058428						
		Job Number: 03C2012054						
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								
Coordinates: 32.793498, -103.422663			Logged By: Mariaha O'Dell		Method: Excavator & Terrasonic			
			Hole Diameter: N/A		Total Depth: 50'			
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. All Chloride measurements done with a +40% correction factor.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
						26	CCHE	CCHE
						28		
D	263	0	N		30	30		
						32		
						34		
D	<162	0	N	PH04D	35	36		
						38		
D	<162	0	N	PH04E	40	40		
						42		
						44		
D	<162	0	N		45	46		
						48		
						50		
D	<162	0	N	PH04F				


									Sample Name: PH05		Date: 6/28	
									Site Name: Vacuum SWD H 35 Pipeline			
									Incident Number: nAPP2313058428			
									Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>									Logged By: Mariaha O'Dell		Method: Excavator	
Coordinates: 32.793415, -103.422713									Hole Diameter: N/A		Total Depth: 3'	
Comments: Field screening conducted with HACH Chloride Test Strips and PID for chloride and vapor, respectively. Chloride test performed with 1:4 dilution factor of soil to distilled water. All Chloride measurements done with a +40% correction factor.												
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions				
D	<179	0	N	PH05	0.5	0.5	SP	Sand. Brown, very fine to fine grained, well graded				
D	<179	0	S		1	1	SP					
D	280	0	S	PH05A	2	2	SP					
D	213	0	S		3	3	SP					
Total Depth at 3' bgs.												


		Sample Name: PH06		Date: 9/20/2023				
		Site Name: Vacuum SWD H 35 Pipeline						
		Incident Number: nAPP2313058428						
		Job Number: 03C2012054						
LITHOLOGIC / SOIL SAMPLING LOG								
Coordinates: 32.793417, -103.422578			Logged By: Mariaha O'Dell		Method: Terrasonic Rig			
			Hole Diameter: N/A		Total Depth: 20'			
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. All Chloride measurements done with a +40% correction factor.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
D	<162.4	0	N		2	2	SP	Sand. Brown, very fine to fine grained, well graded, dry.
D	302	0	N	PH06	4	4	CCHE	CCHE
						6		
						8		
D	1,260	0	N	PH06A	10	10		
						12		
D	1,574	0	N		14	14		
						16		
D	2,218	0	N	PH06B	18	18		
D	1,165	0	N	PH06C	20	20		
Total Depth @ 20' bgs.								


		Sample Name: PH07		Date: 9/21/2023				
		Site Name: Vacuum SWD H 35 Pipeline						
		Incident Number: nAPP2313058428						
		Job Number: 03C2012054						
LITHOLOGIC / SOIL SAMPLING LOG								
Coordinates: 32.793420, -103.422779			Logged By: Mariaha O'Dell		Method: Terrasonic Rig			
			Hole Diameter: N/A		Total Depth: 20'			
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. All Chloride measurements done with a +40% correction factor.								
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions
D	<162.4	0	N		2	2	SP	Sand. Brown, very fine to fine grained, well graded, dry.
D	<162.4	0	N	PH07	4	4	CCHE	CCHE
						6		
D	263	0	N		8	8		
D	829	0	N	PH07A	10	10		
						12		
D	1,574	0	N		14	14		
						16		
D	2,218	0	N	PH07B	18	18		
D	1,165	0	N	PH07C	20	20		
Total Depth @ 20' bgs.								




								Sample Name: PH08		Date: 10/19/2023	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Terrasonic Rig	
Coordinates: 32.793427, -103.422353								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
D	<168	0	N	PH08	0.5	0.5	SP	Sand. Brown, very fine to fine grained, well graded			
D	<168	0	N	PH08A	1	2	CCHE				
D	<168	0	N		2						
D	<168	0	N		3						
D	<168	0	N	PH08B	4	4					
D	<168	0	N		5						
D	<168	0	N	PH08C	6	6					
D	<168	0	N		7						
D	<168	0	N		8	8					
D	<168	0	N		9						
D	<168	0	N	PH08D	10	10					
						12					
D	<168	0	N	PH08E	14	14					
						16					
D	<168	0	N	PH08F	18	18					
D	<168	0	N	PH08G	20	20					
						22					
						24					
D	<168	0	N	PH08H	25		SP	Sand. Tannish brown, very fine to fine grained, well graded, dry			


								Sample Name: PH08		Date: 10/19	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Terrasonic Rig	
Coordinates: 32.793427, -103.422353								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
						26	SP	Sand. Tannish brown, very fine to fine grained, well graded, dry.			
						28					
D	<168	0	N	PH08I	30	30					
						32					
						34					
D	<168	0	N	PH08J	35	36					
						38					
D	<168	0	N	PH08K	40	40					
						42					
						44					
D	<168	0	N	PH08L	45	46					
						48					
D	<168	0	N	PH08M	49						
D	<168	0	N	PH01M	50	50					

								Sample Name: PH08		Date: 10/19	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Terrasonic Rig	
Coordinates: 32.793427, -103.422353								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
D	<168	0	N	PH08N	52	52	SP	Sand. Tannish brown, very fine to fine grained, well graded, moist.			
						54					
D	<168	0	N	PH08N	55						
Total Depth @ 55' bgs.											

								Sample Name: PH09		Date: 10/20/2023	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Terrasonic Rig	
Coordinates: 32.793413, -103.422849								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
D	<168	0	N	PH09	0.5	0.5	SP	Sand. Brown, very fine to fine grained, well graded			
D	<168	0	N	PH09A	1	2	CCHE				
D	<168	0	N		2						
D	<168	0	N		3						
D	<168	0	N	PH09B	4	4					
D	<168	0	N		5						
D	<168	0	N	PH09C	6	6					
D	<168	0	N		7						
D	<168	0	N		8	8					
D	<168	0	N		9						
D	<168	0	N	PH09D	10	10					
						12					
D	<168	0	N	PH09E	14	14					
						16					
D	<168	0	N	PH09F	18	18					
D	<168	0	N	PH09G	20	20					
						22					
						24					
D	<168	0	N	PH09H	25		SW	Sand. Tannish brown, very fine to fine grained, well graded, dry			



								Sample Name: PH09		Date: 10/19	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Terrasonic Rig	
Coordinates: 32.793413, -103.422849								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
						26	SP	Sand. Tannish brown, very fine to fine grained, well graded, dry.			
						28					
D	<168	0	N	PH09I	30	30					
						32					
						34					
D	<168	0	N	PH09J	35	36					
						38					
D	<168	0	N	PH09K	40	40					
						42					
						44					
D	<168	0	N	PH09L	45	46					
						48					
D	<168	0	N	PH09M	49						
D	<168	0	N	PH09M	50	50					

								Sample Name: PH09		Date: 10/19	
								Site Name: Vacuum SWD H 35 Pipeline			
								Incident Number: nAPP2313058428			
								Job Number: 03C2012054			
<b>LITHOLOGIC / SOIL SAMPLING LOG</b>								Logged By: Mariaha O'Dell		Method: Terrasonic Rig	
Coordinates: 32.793413, -103.422849								Hole Diameter: N/A		Total Depth: 55'	
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. All Chloride measurements done with a +40% correction factor.											
Moisture Content	Chloride (ppm)	Vapor (ppm)	Staining	Sample ID	Sample Depth (ft bgs)	Depth (ft bgs)	USCS/Rock Symbol	Lithologic Descriptions			
M	<168	0	N	PH08N	52	52	SP	Sand. Tannish brown, very fine to fine grained, well graded, moist.			
M	<168	0	N	PH08N	55	54					
Total Depth @ 55' bgs.											



## APPENDIX B

### Referenced Well Records

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Groundwater ▼

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United States ▼

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## Search Results -- 1 sites found

**Agency code** = usgs

**site\_no list** =

- 324745103251501

**Minimum number of levels** = 1

**Date range** = 05/31/2000 . 05/31/2023

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## USGS 324745103251501 17S.35E.35.213132

Available data for this site

Groundwater: Field measurements ▼

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Lea County, New Mexico

Hydrologic Unit Code 12080003

Latitude 32°47'46.3", Longitude 103°25'39.7" NAD83

Land-surface elevation 3,908 feet above NAVD88

The depth of the well is 121 feet below land surface.

This well is completed in the High Plains aquifer (N100HGHPLN) national aquifer.

This well is completed in the Ogallala Formation (121OGLL) local aquifer.

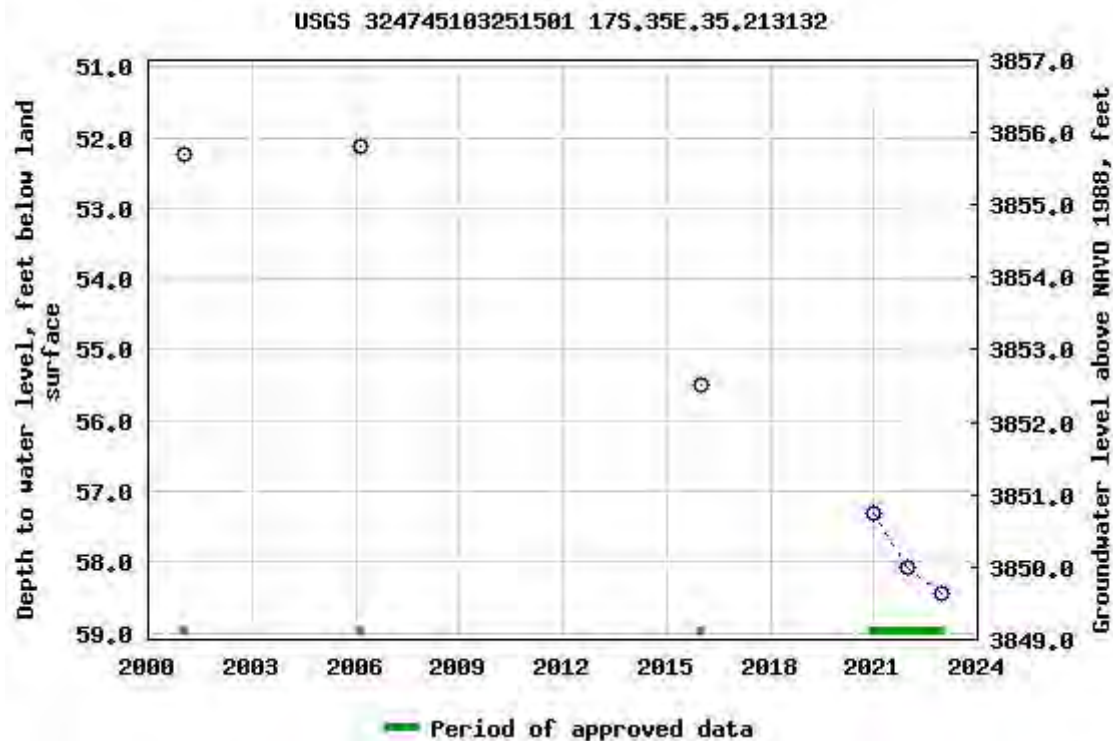
### Output formats

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Breaks in the plot represent a gap of at least one year between field measurements.

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**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2023-05-31 14:02:17 EDT

0.7 0.55 nadww02



Date

Time

?  
Water-level  
date-time  
accuracy

?  
Parameter  
code

Water  
level,  
feet  
below  
land  
surface


Water  
level,  
feet  
above  
specific  
vertical  
datum

Groundwater

New Mexico

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Search Results -- 1 sites found

Agency code = usgs  
site\_no list =

- 324745103251501

Minimum number of levels = 1  
[Save file of selected sites](#) to local disk for future upload

USGS 324745103251501 17S.35E.35.213132

Lea County, New Mexico  
Latitude 32°47'46.3", Longitude 103°25'39.7" NAD83  
Land-surface elevation 3,908 feet above NAVD88  
The depth of the well is 121 feet below land surface.  
This well is completed in the High Plains aquifer (N100HGHPLN) national aquifer.  
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

Date	Time	? Water-level date-time accuracy	? Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Status	? Method of measurement	? Measuring agency	? Source measur
1940-09-26			D 62610		3865.16	NGVD29	1		Z	
1940-09-26			D 62611		3866.61	NAVD88	1		Z	
1940-09-26			D 72019	41.39			1		Z	
1941-01-26			D 62610		3865.10	NGVD29	1		Z	
1941-01-26			D 62611		3866.55	NAVD88	1		Z	
1941-01-26			D 72019	41.45			1		Z	
1941-03-30			D 62610		3865.12	NGVD29	1		Z	
1941-03-30			D 62611		3866.57	NAVD88	1		Z	
1941-03-30			D 72019	41.43			1		Z	
1941-05-22			D 62610		3865.12	NGVD29	1		Z	
1941-05-22			D 62611		3866.57	NAVD88	1		Z	
1941-05-22			D 72019	41.43			1		Z	
1941-11-28			D 62610		3867.02	NGVD29	1		Z	
1941-11-28			D 62611		3868.47	NAVD88	1		Z	

Date	Time	?	Water-level date-time accuracy	?	Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum
1941-11-28	D	72019	39.53			1	Z
1942-02-05	D	62610		3867.28	NGVD29	1	Z
1942-02-05	D	62611		3868.73	NAVD88	1	Z
1942-02-05	D	72019	39.27			1	Z
1942-03-30	D	62610		3867.36	NGVD29	1	Z
1942-03-30	D	62611		3868.81	NAVD88	1	Z
1942-03-30	D	72019	39.19			1	Z
1942-07-28	D	62610		3867.42	NGVD29	1	Z
1942-07-28	D	62611		3868.87	NAVD88	1	Z
1942-07-28	D	72019	39.13			1	Z
1942-09-27	D	62610		3867.51	NGVD29	1	Z
1942-09-27	D	62611		3868.96	NAVD88	1	Z
1942-09-27	D	72019	39.04			1	Z
1942-10-23	D	62610		3867.56	NGVD29	1	Z
1942-10-23	D	62611		3869.01	NAVD88	1	Z
1942-10-23	D	72019	38.99			1	Z
1942-11-26	D	62610		3867.57	NGVD29	1	Z
1942-11-26	D	62611		3869.02	NAVD88	1	Z
1942-11-26	D	72019	38.98			1	Z
1943-01-22	D	62610		3867.62	NGVD29	1	Z
1943-01-22	D	62611		3869.07	NAVD88	1	Z
1943-01-22	D	72019	38.93			1	Z
1943-03-30	D	62610		3867.63	NGVD29	1	Z
1943-03-30	D	62611		3869.08	NAVD88	1	Z
1943-03-30	D	72019	38.92			1	Z
1943-05-26	D	62610		3867.63	NGVD29	1	Z
1943-05-26	D	62611		3869.08	NAVD88	1	Z
1943-05-26	D	72019	38.92			1	Z
1943-07-28	D	62610		3867.63	NGVD29	1	Z
1943-07-28	D	62611		3869.08	NAVD88	1	Z
1943-07-28	D	72019	38.92			1	Z
1943-09-29	D	62610		3867.68	NGVD29	1	Z
1943-09-29	D	62611		3869.13	NAVD88	1	Z
1943-09-29	D	72019	38.87			1	Z
1943-11-30	D	62610		3867.71	NGVD29	1	Z
1943-11-30	D	62611		3869.16	NAVD88	1	Z
1943-11-30	D	72019	38.84			1	Z
1944-01-16	D	62610		3867.70	NGVD29	1	Z
1944-01-16	D	62611		3869.15	NAVD88	1	Z
1944-01-16	D	72019	38.85			1	Z
1944-03-24	D	62610		3867.72	NGVD29	1	Z
1944-03-24	D	62611		3869.17	NAVD88	1	Z
1944-03-24	D	72019	38.83			1	Z
1944-05-15	D	62610		3867.70	NGVD29	1	Z
1944-05-15	D	62611		3869.15	NAVD88	1	Z
1944-05-15	D	72019	38.85			1	Z
1944-07-26	D	62610		3867.68	NGVD29	1	Z
1944-07-26	D	62611		3869.13	NAVD88	1	Z
1944-07-26	D	72019	38.87			1	Z
1944-09-21	D	62610		3867.63	NGVD29	1	Z

Date	Time	?	?	Water level, feet below land surface	Water level, feet above specific vertical datum
		Water-level date-time accuracy	Parameter code		
1944-09-21	D	62611	3869.08	NAVD88	1 Z
1944-09-21	D	72019	38.92		1 Z
1944-11-28	D	62610	3867.60	NGVD29	1 Z
1944-11-28	D	62611	3869.05	NAVD88	1 Z
1944-11-28	D	72019	38.95		1 Z
1945-01-12	D	62610	3867.63	NGVD29	1 Z
1945-01-12	D	62611	3869.08	NAVD88	1 Z
1945-01-12	D	72019	38.92		1 Z
1945-03-31	D	62610	3867.59	NGVD29	1 Z
1945-03-31	D	62611	3869.04	NAVD88	1 Z
1945-03-31	D	72019	38.96		1 Z
1945-05-26	D	62610	3867.57	NGVD29	1 Z
1945-05-26	D	62611	3869.02	NAVD88	1 Z
1945-05-26	D	72019	38.98		1 Z
1945-07-27	D	62610	3867.52	NGVD29	1 Z
1945-07-27	D	62611	3868.97	NAVD88	1 Z
1945-07-27	D	72019	39.03		1 Z
1945-09-22	D	62610	3867.50	NGVD29	1 Z
1945-09-22	D	62611	3868.95	NAVD88	1 Z
1945-09-22	D	72019	39.05		1 Z
1945-11-21	D	62610	3867.45	NGVD29	1 Z
1945-11-21	D	62611	3868.90	NAVD88	1 Z
1945-11-21	D	72019	39.10		1 Z
1946-01-31	D	62610	3867.43	NGVD29	1 Z
1946-01-31	D	62611	3868.88	NAVD88	1 Z
1946-01-31	D	72019	39.12		1 Z
1946-03-23	D	62610	3867.38	NGVD29	1 Z
1946-03-23	D	62611	3868.83	NAVD88	1 Z
1946-03-23	D	72019	39.17		1 Z
1946-05-25	D	62610	3867.38	NGVD29	1 Z
1946-05-25	D	62611	3868.83	NAVD88	1 Z
1946-05-25	D	72019	39.17		1 Z
1946-07-22	D	62610	3867.37	NGVD29	1 Z
1946-07-22	D	62611	3868.82	NAVD88	1 Z
1946-07-22	D	72019	39.18		1 Z
1946-09-26	D	62610	3867.35	NGVD29	1 Z
1946-09-26	D	62611	3868.80	NAVD88	1 Z
1946-09-26	D	72019	39.20		1 Z
1946-11-25	D	62610	3867.91	NGVD29	1 Z
1946-11-25	D	62611	3869.36	NAVD88	1 Z
1946-11-25	D	72019	38.64		1 Z
1947-01-17	D	62610	3867.91	NGVD29	1 Z
1947-01-17	D	62611	3869.36	NAVD88	1 Z
1947-01-17	D	72019	38.64		1 Z
1947-03-26	D	62610	3867.90	NGVD29	1 Z
1947-03-26	D	62611	3869.35	NAVD88	1 Z
1947-03-26	D	72019	38.65		1 Z
1947-05-23	D	62610	3867.85	NGVD29	1 Z
1947-05-23	D	62611	3869.30	NAVD88	1 Z
1947-05-23	D	72019	38.70		1 Z

Date	Time	?	?	Water level, feet below land surface	Water level, feet above specific vertical datum
		Water-level date-time accuracy	Parameter code		
1947-07-27	D	62610	3867.85	NGVD29	1 Z
1947-07-27	D	62611	3869.30	NAVD88	1 Z
1947-07-27	D	72019 38.70			1 Z
1947-09-12	D	62610	3867.85	NGVD29	1 Z
1947-09-12	D	62611	3869.30	NAVD88	1 Z
1947-09-12	D	72019 38.70			1 Z
1947-11-17	D	62610	3867.83	NGVD29	1 Z
1947-11-17	D	62611	3869.28	NAVD88	1 Z
1947-11-17	D	72019 38.72			1 Z
1948-01-16	D	62610	3867.95	NGVD29	1 Z
1948-01-16	D	62611	3869.40	NAVD88	1 Z
1948-01-16	D	72019 38.60			1 Z
1948-03-26	D	62610	3867.77	NGVD29	1 Z
1948-03-26	D	62611	3869.22	NAVD88	1 Z
1948-03-26	D	72019 38.78			1 Z
1948-05-24	D	62610	3867.74	NGVD29	1 Z
1948-05-24	D	62611	3869.19	NAVD88	1 Z
1948-05-24	D	72019 38.81			1 Z
1948-07-24	D	62610	3867.70	NGVD29	1 Z
1948-07-24	D	62611	3869.15	NAVD88	1 Z
1948-07-24	D	72019 38.85			1 Z
1948-09-25	D	62610	3867.65	NGVD29	1 Z
1948-09-25	D	62611	3869.10	NAVD88	1 Z
1948-09-25	D	72019 38.90			1 Z
1948-11-17	D	62610	3867.64	NGVD29	1 Z
1948-11-17	D	62611	3869.09	NAVD88	1 Z
1948-11-17	D	72019 38.91			1 Z
1949-01-22	D	62610	3867.62	NGVD29	1 Z
1949-01-22	D	62611	3869.07	NAVD88	1 Z
1949-01-22	D	72019 38.93			1 Z
1949-03-22	D	62610	3867.63	NGVD29	1 Z
1949-03-22	D	62611	3869.08	NAVD88	1 Z
1949-03-22	D	72019 38.92			1 Z
1949-05-23	D	62610	3867.54	NGVD29	1 Z
1949-05-23	D	62611	3868.99	NAVD88	1 Z
1949-05-23	D	72019 39.01			1 Z
1949-07-27	D	62610	3867.52	NGVD29	1 Z
1949-07-27	D	62611	3868.97	NAVD88	1 Z
1949-07-27	D	72019 39.03			1 Z
1949-09-23	D	62610	3867.45	NGVD29	1 Z
1949-09-23	D	62611	3868.90	NAVD88	1 Z
1949-09-23	D	72019 39.10			1 Z
1949-11-17	D	62610	3867.44	NGVD29	1 Z
1949-11-17	D	62611	3868.89	NAVD88	1 Z
1949-11-17	D	72019 39.11			1 Z
1950-01-18	D	62610	3867.45	NGVD29	1 Z
1950-01-18	D	62611	3868.90	NAVD88	1 Z
1950-01-18	D	72019 39.10			1 Z
1950-03-24	D	62610	3867.45	NGVD29	1 Z
1950-03-24	D	62611	3868.90	NAVD88	1 Z

Date	Time	?	Water-level date-time accuracy	?	Parameter code	Water level, feet below land surface	Water level, feet above specific vertical datum
1950-03-24	D	72019	39.10			1	Z
1950-05-17	D	62610		3867.41	NGVD29	1	Z
1950-05-17	D	62611		3868.86	NAVD88	1	Z
1950-05-17	D	72019	39.14			1	Z
1950-07-21	D	62610		3867.35	NGVD29	1	Z
1950-07-21	D	62611		3868.80	NAVD88	1	Z
1950-07-21	D	72019	39.20			1	Z
1950-09-21	D	62610		3867.33	NGVD29	1	Z
1950-09-21	D	62611		3868.78	NAVD88	1	Z
1950-09-21	D	72019	39.22			1	Z
1950-11-18	D	62610		3867.41	NGVD29	1	Z
1950-11-18	D	62611		3868.86	NAVD88	1	Z
1950-11-18	D	72019	39.14			1	Z
1951-01-21	D	62610		3867.42	NGVD29	1	Z
1951-01-21	D	62611		3868.87	NAVD88	1	Z
1951-01-21	D	72019	39.13			1	Z
1951-03-24	D	62610		3867.40	NGVD29	1	Z
1951-03-24	D	62611		3868.85	NAVD88	1	Z
1951-03-24	D	72019	39.15			1	Z
1951-05-22	D	62610		3867.37	NGVD29	1	Z
1951-05-22	D	62611		3868.82	NAVD88	1	Z
1951-05-22	D	72019	39.18			1	Z
1951-07-25	D	62610		3867.35	NGVD29	1	Z
1951-07-25	D	62611		3868.80	NAVD88	1	Z
1951-07-25	D	72019	39.20			1	Z
1951-09-21	D	62610		3867.32	NGVD29	1	Z
1951-09-21	D	62611		3868.77	NAVD88	1	Z
1951-09-21	D	72019	39.23			1	Z
1951-11-21	D	62610		3867.28	NGVD29	1	Z
1951-11-21	D	62611		3868.73	NAVD88	1	Z
1951-11-21	D	72019	39.27			1	Z
1952-01-04	D	62610		3867.29	NGVD29	1	Z
1952-01-04	D	62611		3868.74	NAVD88	1	Z
1952-01-04	D	72019	39.26			1	Z
1952-03-22	D	62610		3867.25	NGVD29	1	Z
1952-03-22	D	62611		3868.70	NAVD88	1	Z
1952-03-22	D	72019	39.30			1	Z
1952-05-24	D	62610		3867.18	NGVD29	1	Z
1952-05-24	D	62611		3868.63	NAVD88	1	Z
1952-05-24	D	72019	39.37			1	Z
1952-07-22	D	62610		3867.17	NGVD29	1	Z
1952-07-22	D	62611		3868.62	NAVD88	1	Z
1952-07-22	D	72019	39.38			1	Z
1952-09-18	D	62610		3867.12	NGVD29	1	Z
1952-09-18	D	62611		3868.57	NAVD88	1	Z
1952-09-18	D	72019	39.43			1	Z
1952-11-19	D	62610		3867.08	NGVD29	1	Z
1952-11-19	D	62611		3868.53	NAVD88	1	Z
1952-11-19	D	72019	39.47			1	Z
1953-01-07	D	62610		3867.07	NGVD29	1	Z

Date	Time	?	?	Water level, feet below land surface	Water level, feet above specific vertical datum
		Water-level date-time accuracy	Parameter code		
1953-01-07	D	62611	3868.52	NAVD88	1 Z
1953-01-07	D	72019 39.48			1 Z
1953-03-24	D	62610	3867.02	NGVD29	1 Z
1953-03-24	D	62611	3868.47	NAVD88	1 Z
1953-03-24	D	72019 39.53			1 Z
1953-05-23	D	62610	3866.99	NGVD29	1 Z
1953-05-23	D	62611	3868.44	NAVD88	1 Z
1953-05-23	D	72019 39.56			1 Z
1953-07-22	D	62610	3866.97	NGVD29	1 Z
1953-07-22	D	62611	3868.42	NAVD88	1 Z
1953-07-22	D	72019 39.58			1 Z
1953-09-03	D	62610	3866.93	NGVD29	1 Z
1953-09-03	D	62611	3868.38	NAVD88	1 Z
1953-09-03	D	72019 39.62			1 Z
1953-11-20	D	62610	3866.94	NGVD29	1 Z
1953-11-20	D	62611	3868.39	NAVD88	1 Z
1953-11-20	D	72019 39.61			1 Z
1954-01-11	D	62610	3866.92	NGVD29	1 Z
1954-01-11	D	62611	3868.37	NAVD88	1 Z
1954-01-11	D	72019 39.63			1 Z
1954-03-02	D	62610	3866.90	NGVD29	1 Z
1954-03-02	D	62611	3868.35	NAVD88	1 Z
1954-03-02	D	72019 39.65			1 Z
1954-05-11	D	62610	3866.89	NGVD29	1 Z
1954-05-11	D	62611	3868.34	NAVD88	1 Z
1954-05-11	D	72019 39.66			1 Z
1954-07-13	D	62610	3866.87	NGVD29	1 Z
1954-07-13	D	62611	3868.32	NAVD88	1 Z
1954-07-13	D	72019 39.68			1 Z
1954-09-15	D	62610	3866.82	NGVD29	1 Z
1954-09-15	D	62611	3868.27	NAVD88	1 Z
1954-09-15	D	72019 39.73			1 Z
1954-11-09	D	62610	3866.78	NGVD29	1 Z
1954-11-09	D	62611	3868.23	NAVD88	1 Z
1954-11-09	D	72019 39.77			1 Z
1955-01-06	D	62610	3866.76	NGVD29	1 Z
1955-01-06	D	62611	3868.21	NAVD88	1 Z
1955-01-06	D	72019 39.79			1 Z
1955-03-19	D	62610	3866.72	NGVD29	1 Z
1955-03-19	D	62611	3868.17	NAVD88	1 Z
1955-03-19	D	72019 39.83			1 Z
1955-05-27	D	62610	3866.65	NGVD29	1 Z
1955-05-27	D	62611	3868.10	NAVD88	1 Z
1955-05-27	D	72019 39.90			1 Z
1955-07-15	D	62610	3866.63	NGVD29	1 Z
1955-07-15	D	62611	3868.08	NAVD88	1 Z
1955-07-15	D	72019 39.92			1 Z
1955-09-23	D	62610	3866.59	NGVD29	1 Z
1955-09-23	D	62611	3868.04	NAVD88	1 Z
1955-09-23	D	72019 39.96			1 Z



Date	Time	?		?	Water level, feet below land surface	Water level, feet above specific vertical datum	
		Water-level date-time accuracy		Parameter code			
1955-11-28	D	62610		3866.66	NGVD29	1	Z
1955-11-28	D	62611		3868.11	NAVD88	1	Z
1955-11-28	D	72019	39.89			1	Z
1956-01-05	D	62610		3866.72	NGVD29	1	Z
1956-01-05	D	62611		3868.17	NAVD88	1	Z
1956-01-05	D	72019	39.83			1	Z
1956-03-14	D	62610		3866.73	NGVD29	1	Z
1956-03-14	D	62611		3868.18	NAVD88	1	Z
1956-03-14	D	72019	39.82			1	Z
1956-05-09	D	62610		3866.71	NGVD29	1	Z
1956-05-09	D	62611		3868.16	NAVD88	1	Z
1956-05-09	D	72019	39.84			1	Z
1956-07-26	D	62610		3866.62	NGVD29	1	Z
1956-07-26	D	62611		3868.07	NAVD88	1	Z
1956-07-26	D	72019	39.93			1	Z
1956-09-06	D	62610		3866.61	NGVD29	1	Z
1956-09-06	D	62611		3868.06	NAVD88	1	Z
1956-09-06	D	72019	39.94			1	Z
1956-11-30	D	62610		3866.62	NGVD29	1	Z
1956-11-30	D	62611		3868.07	NAVD88	1	Z
1956-11-30	D	72019	39.93			1	Z
1957-01-23	D	62610		3866.65	NGVD29	1	Z
1957-01-23	D	62611		3868.10	NAVD88	1	Z
1957-01-23	D	72019	39.90			1	Z
1957-03-06	D	62610		3866.63	NGVD29	1	Z
1957-03-06	D	62611		3868.08	NAVD88	1	Z
1957-03-06	D	72019	39.92			1	Z
1957-06-06	D	62610		3866.59	NGVD29	1	Z
1957-06-06	D	62611		3868.04	NAVD88	1	Z
1957-06-06	D	72019	39.96			1	Z
1957-09-11	D	62610		3866.68	NGVD29	1	Z
1957-09-11	D	62611		3868.13	NAVD88	1	Z
1957-09-11	D	72019	39.87			1	Z
1958-01-15	D	62610		3866.67	NGVD29	1	Z
1958-01-15	D	62611		3868.12	NAVD88	1	Z
1958-01-15	D	72019	39.88			1	Z
1958-03-18	D	62610		3866.65	NGVD29	1	Z
1958-03-18	D	62611		3868.10	NAVD88	1	Z
1958-03-18	D	72019	39.90			1	Z
1958-06-25	D	62610		3866.57	NGVD29	1	Z
1958-06-25	D	62611		3868.02	NAVD88	1	Z
1958-06-25	D	72019	39.98			1	Z
1958-09-10	D	62610		3866.51	NGVD29	1	Z
1958-09-10	D	62611		3867.96	NAVD88	1	Z
1958-09-10	D	72019	40.04			1	Z
1959-01-18	D	62610		3868.61	NGVD29	1	Z
1959-01-18	D	62611		3870.06	NAVD88	1	Z
1959-01-18	D	72019	37.94			1	Z
1959-03-10	D	62610		3867.58	NGVD29	1	Z
1959-03-10	D	62611		3869.03	NAVD88	1	Z

Date	Time	?	?	Water level, feet below land surface	Water level, feet above specific vertical datum
1959-03-10	D	72019	38.97	1	Z
1959-06-02	D	62610	3867.66	1	Z
1959-06-02	D	62611	3869.11	1	Z
1959-06-02	D	72019	38.89	1	Z
1959-09-15	D	62610	3867.36	1	Z
1959-09-15	D	62611	3868.81	1	Z
1959-09-15	D	72019	39.19	1	Z
1960-01-15	D	62610	3867.23	1	Z
1960-01-15	D	62611	3868.68	1	Z
1960-01-15	D	72019	39.32	1	Z
1960-03-23	D	62610	3867.17	1	Z
1960-03-23	D	62611	3868.62	1	Z
1960-03-23	D	72019	39.38	1	Z
1960-06-02	D	62610	3867.07	1	Z
1960-06-02	D	62611	3868.52	1	Z
1960-06-02	D	72019	39.48	1	Z
1960-09-01	D	62610	3868.05	1	Z
1960-09-01	D	62611	3869.50	1	Z
1960-09-01	D	72019	38.50	1	Z
1961-01-17	D	62610	3868.30	1	Z
1961-01-17	D	62611	3869.75	1	Z
1961-01-17	D	72019	38.25	1	Z
1961-03-27	D	62610	3868.26	1	Z
1961-03-27	D	62611	3869.71	1	Z
1961-03-27	D	72019	38.29	1	Z
1961-06-01	D	62610	3868.09	1	Z
1961-06-01	D	62611	3869.54	1	Z
1961-06-01	D	72019	38.46	1	Z
1961-09-06	D	62610	3868.16	1	Z
1961-09-06	D	62611	3869.61	1	Z
1961-09-06	D	72019	38.39	1	Z
1962-01-16	D	62610	3867.84	1	Z
1962-01-16	D	62611	3869.29	1	Z
1962-01-16	D	72019	38.71	1	Z
1962-03-27	D	62610	3867.67	1	Z
1962-03-27	D	62611	3869.12	1	Z
1962-03-27	D	72019	38.88	1	Z
1962-06-19	D	62610	3867.36	1	Z
1962-06-19	D	62611	3868.81	1	Z
1962-06-19	D	72019	39.19	1	Z
1962-09-24	D	62610	3867.31	1	Z
1962-09-24	D	62611	3868.76	1	Z
1962-09-24	D	72019	39.24	1	Z
1963-02-18	D	62610	3867.55	1	Z
1963-02-18	D	62611	3869.00	1	Z
1963-02-18	D	72019	39.00	1	Z
1963-09-23	D	62610	3867.67	1	Z
1963-09-23	D	62611	3869.12	1	Z
1963-09-23	D	72019	38.88	1	Z
1964-02-10	D	62610	3867.67	1	Z

Date	Time		?	?	Water level, feet below land surface	Water level, feet above specific vertical datum	
			Water-level date-time accuracy	Parameter code			
1964-02-10	D	62611		3869.12	NAVD88	Z	
1964-02-10	D	72019	38.88			Z	
1964-09-15	D	62610		3867.47	NGVD29	Z	
1964-09-15	D	62611		3868.92	NAVD88	Z	
1964-09-15	D	72019	39.08			Z	
1965-02-10	D	62610		3867.28	NGVD29	Z	
1965-02-10	D	62611		3868.73	NAVD88	Z	
1965-02-10	D	72019	39.27			Z	
1965-09-13	D	62610		3866.80	NGVD29	Z	
1965-09-13	D	62611		3868.25	NAVD88	Z	
1965-09-13	D	72019	39.75			Z	
1966-02-07	D	62610		3866.63	NGVD29	Z	
1966-02-07	D	62611		3868.08	NAVD88	Z	
1966-02-07	D	72019	39.92			Z	
1966-09-27	D	62610		3867.41	NGVD29	Z	
1966-09-27	D	62611		3868.86	NAVD88	Z	
1966-09-27	D	72019	39.14			Z	
1967-01-03	D	62610		3867.34	NGVD29	Z	
1967-01-03	D	62611		3868.79	NAVD88	Z	
1967-01-03	D	72019	39.21			Z	
1968-01-02	D	62610		3866.15	NGVD29	Z	
1968-01-02	D	62611		3867.60	NAVD88	Z	
1968-01-02	D	72019	40.40			Z	
1969-01-14	D	62610		3865.69	NGVD29	Z	
1969-01-14	D	62611		3867.14	NAVD88	Z	
1969-01-14	D	72019	40.86			Z	
1970-01-05	D	62610		3865.29	NGVD29	Z	
1970-01-05	D	62611		3866.74	NAVD88	Z	
1970-01-05	D	72019	41.26			Z	
1971-02-12	D	62610		3864.81	NGVD29	Z	
1971-02-12	D	62611		3866.26	NAVD88	Z	
1971-02-12	D	72019	41.74			Z	
1976-03-04	D	62610		3864.00	NGVD29	Z	
1976-03-04	D	62611		3865.45	NAVD88	Z	
1976-03-04	D	72019	42.55			Z	
1981-01-21	D	62610		3861.37	NGVD29	Z	
1981-01-21	D	62611		3862.82	NAVD88	Z	
1981-01-21	D	72019	45.18			Z	
1986-04-09	D	62610		3859.16	NGVD29	Z	
1986-04-09	D	62611		3860.61	NAVD88	Z	
1986-04-09	D	72019	47.39			Z	
1996-02-08	D	62610		3856.14	NGVD29	S	
1996-02-08	D	62611		3857.59	NAVD88	S	
1996-02-08	D	72019	50.41			S	
2001-01-16	D	62610		3854.32	NGVD29	S	
2001-01-16	D	62611		3855.77	NAVD88	S	
2001-01-16	D	72019	52.23			S	
2006-02-22 17:44 UTC	m	62610		3854.42	NGVD29	S	USGS
2006-02-22 17:44 UTC	m	62611		3855.87	NAVD88	S	USGS
2006-02-22 17:44 UTC	m	72019	52.13			S	USGS

Date	Time	?		?	Water level, feet below land surface	Water level, feet above specific vertical datum		
		Water-level date-time accuracy		Parameter code				
2016-01-06 22:48 UTC	m	62610		3851.06	NGVD29	1	S	USGS
2016-01-06 22:48 UTC	m	62611		3852.51	NAVD88	1	S	USGS
2016-01-06 22:48 UTC	m	72019	55.49			1	S	USGS
2020-12-31 20:46 UTC	m	62610		3849.23	NGVD29	1	S	USGS
2020-12-31 20:46 UTC	m	62611		3850.68	NAVD88	1	S	USGS
2020-12-31 20:46 UTC	m	72019	57.32			1	S	USGS
2021-12-22 19:02 UTC	m	62610		3848.49	NGVD29	1	V	USGS
2021-12-22 19:02 UTC	m	62611		3849.94	NAVD88	1	V	USGS
2021-12-22 19:02 UTC	m	72019	58.06			1	V	USGS
2022-12-22 18:52 UTC	m	62610		3848.12	NGVD29	1	S	USGS
2022-12-22 18:52 UTC	m	62611		3849.57	NAVD88	1	S	USGS
2022-12-22 18:52 UTC	m	72019	58.43			1	S	USGS

Explanation		
Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Parameter code	62610	Groundwater level above NGVD 1929, feet
Parameter code	62611	Groundwater level above NAVD 1988, feet
Parameter code	72019	Depth to water level, feet below land surface
Referenced vertical datum	NAVD88	North American Vertical Datum of 1988
Referenced vertical datum	NGVD29	National Geodetic Vertical Datum of 1929
Status	1	Static
Method of measurement	S	Steel-tape measurement.
Method of measurement	V	Calibrated electric-tape measurement.
Method of measurement	Z	Other.
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement		Not determined
Source of measurement	S	Measured by personnel of reporting agency.
Water-level approval status	A	Approved for publication -- Processing and review completed.

[Questions or Comments](#)  
[Automated retrievals](#)  
[Help](#)  
[Data Tips](#)  
[Explanation of terms](#)  
[Subscribe for system changes](#)  
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Accessibility    FOIA    Privacy    Policies and Notices  
[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)  
**Title: Groundwater for New Mexico: Water Levels**  
**URL: <https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?>**



Page Contact Information: [New Mexico Water Data Maintainer](#)  
Page Last Modified: 2023-07-07 12:17:53 EDT  
0.31 0.25 nadww01



## APPENDIX C

### NMSLO Right of Way Easement

---



Stephanie Garcia Richard  
COMMISSIONER

**State of New Mexico**  
**Commissioner of Public Lands**

310 OLD SANTA FE TRAIL  
P.O. BOX 1148  
SANTA FE, NEW MEXICO 87504-1148

COMMISSIONER'S OFFICE

Phone (505) 827-5760  
Fax (505) 827-5766  
[www.nmstatelands.org](http://www.nmstatelands.org)

March 24, 2023

BTA Oil Producers, LLC  
103 South Pecos  
Midland, Texas 79701

Attn: Ryan Weaver

Re: NM State Land Office Right of Way Easement No. R-40581


Dear Applicant:

Enclosed is your approved signed copy of the captioned grant of right-of-way easement. Also enclosed are an Affidavit of Completion form to be filled out and returned to this office upon completion of the project.

**The New Mexico State Land Office requires you to notify any surface lessees that will be impacted by your project prior to construction.**

If you have any questions, please feel free to contact Philip Garcia of the Rights of Way Department at 505-827-5751 or via email at [pgarcia@slo.state.nm.us](mailto:pgarcia@slo.state.nm.us).

Sincerely,

  
James S. Bordegaray  
Director, Commercial Resource Division

JSG/pg

Enclosures (3)



**STATE OF NEW MEXICO  
COMMISSIONER OF PUBLIC LANDS  
PIPELINE RIGHT-OF-WAY**

Right-of-Way Easement No. R-40581  
22115 Village Produced Water Pipeline to H35

This indenture made this 24<sup>th</sup> day of March, 2023 by and between the State of New Mexico, acting by and through its Commissioner of Public Lands, "Grantor", and BTA Oil Producers, LLC whose address is 103 South Pecos, Midland, Texas 79701 Grantee;

**WITNESSETH:**

That Grantor, for and in consideration of the sum of \$35,038.00-----Thirty Five Thousand Thirty Eight Dollars and 00/100-----cash in hand, receipt of which is hereby acknowledged, and other good and valuable consideration, hereby conveys to Grantee a right-of-way for the sole and exclusive purpose of one (1) buried poly produced water pipeline not to exceed 12 3/4" O.D. including the right to enter upon the real estate hereinafter described at any time that it may see fit to construct, maintain and repair the structures upon the right-of-way, together with the right to remove trees, brush, undergrowth, and other obstructions interfering with the location, construction, and maintenance of said right-of-way.

The right-of-way hereby granted covers a strip of land 30 feet in width in Lea County (ies), as more particularly described by the attached centerline description and survey plats, which are incorporated herein as Exhibit A.

This grant is made upon the following express terms and conditions:

1. This right-of-way is granted for a term of 35 years. The grant may be renewed for additional periods upon application to Grantor. Any such renewals are subject to such terms and conditions as the Grantor may require, and payment of compensation.
2. Grantor reserves the right to authorize or grant rights-of-way or other easements to third parties, which may be over, parallel to, or across this right-of-way. In such cases, the subsequent grantee may, at the discretion of the Grantor, be required to post a bond guaranteeing payment for damages to the installations and improvements of Grantee herein. In crossing any right-of-way for a highway, road, telephone, telegraph, transmission line, etc. Grantee herein will exercise due care so as not to interfere with said rights-of-way and will comply with all applicable laws, rules, and regulations in connection with the making of such crossings.
3. The right to grant additional rights-of-way or easements within this right-of-way belongs exclusively to Grantor. Grantor hereby agrees, however, that in the event Grantor elects to exercise such right and if Grantee herein is the New Mexico State Highway and Transportation Department, Grantor will secure in writing the agreement of subsequent right-of-way grantee that no facilities will be constructed or installed within the right-of-way subsequently granted without first obtaining from the Department a permit prescribing the conditions under which facilities may be placed within such right-of-way in accordance with the Department's applicable rules and regulations.
4. GRANTEE EXPRESSLY AGREES THAT PRIOR TO THE CONSTRUCTION OR INSTALLATION OF ANY FACILITIES WITHIN THE RIGHT-OF-WAY GRANTED HEREIN, GRANTEE WILL DETERMINE WHETHER THE RIGHT-OF-WAY IS WITHIN A PREVIOUSLY ESTABLISHED NEW MEXICO STATE HIGHWAY AND TRANSPORTATION DEPARTMENT RIGHT-OF-WAY, AND IF IT IS, GRANTEE WILL OBTAIN FROM THE DEPARTMENT A PERMIT THAT PRESCRIBES THE CONDITIONS UNDER WHICH

(2)

Right-of-Way Easement No. R-40581

FACILITIES MAY BE PLACED WITHIN THE RIGHT-OF-WAY IN ACCORDANCE WITH THE DEPARTMENT'S APPLICABLE RULES AND REGULATIONS. GRANTEE FURTHER UNDERSTANDS AND AGREES THAT THE FAILURE TO OBTAIN SUCH PERMIT SHALL RESULT IN THE FORCIBLE REMOVAL BY THE DEPARTMENT OF ANY FACILITIES THAT MAY BE CONSTRUCTED OR INSTALLED WITHIN THE RIGHT-OF-WAY.

5. In clearing the right-of-way, Grantee agrees to dispose of brush and other debris so as not to interfere with the movement of livestock of state agriculture lessees.
6. All pipelines placed on said lands by virtue of this grant shall be buried not less than twenty inches (20") deep. An exception to this requirement may be granted on other than agricultural lands when hard rock is encountered which would require blasting, or when a temporary pipeline is necessary and will not unduly hamper other surface uses. Deviation of the twenty-inch depth must be shown on the plat accompanying the application for right-of-way or by the filing of an amended plat upon completion of construction.
7. Grantee hereby agrees to carefully avoid destruction or injury to any improvements or livestock lawfully upon the premises described herein, to close all gates immediately upon passing through same, and to pay promptly the reasonable and just damages for any injury or destruction arising from construction or maintenance of this right-of-way.
8. Grantee shall not assign this right-of-way without the prior written approval of Grantor, which shall not be unreasonably withheld. Such approval may be conditioned upon the agreement by Grantee's assignee to additional conditions and covenants and may require payment of additional compensation to Grantor. This right-of-way is for the sole purpose stated and no other. Grantee agrees not to sell or otherwise grant to any person or entity any interest therein or the right to use any portion thereof.
9. The rights granted herein are subject to valid existing rights.
10. Grantor reserves the right to execute leases for oil and gas, coal, and minerals of whatsoever kind and for geothermal resources development and operation, the right to sell or dispose of same and the right to grant rights-of-way and easements related to such leasing.
11. In all matters affecting the premises described herein or operations thereon, Grantee, its employees, agents and contractors shall, at their own expense, fully comply with all laws, regulations, rules, ordinances, and requirements of any governmental authority or agency, which may be enacted or promulgated, including, but not limited to, requirements or enactments pertaining to conservation, sanitation, aesthetics, pollution, cultural properties, fire, or ecology, including those provisions of the New Mexico Cultural Properties Act, §§18-6-1 through 17, NMSA 1978, that attach criminal penalties to the appropriation, excavation, injury or destruction of any site or object of historical, archaeological, architectural, or scientific value located on state lands. In addition, Grantee, its employees, agents and contractors must comply with the provisions of the Pipeline Safety Act, §§ 70-3-11 through 20, NMSA 1978, and rules enacted pursuant to the Act, and agree to provide the Public Regulation Commission access to records of compliance.

Non-use of the right-of-way granted herein for any period in excess of one (1) year without the prior written consent of Grantor shall be conclusive proof of abandonment of the right-of-way, and shall cause the right-of-way to lapse *ipso facto* and revert to Grantor without further action or notice required of Grantor; and non-use for shorter periods shall place upon grantee the burden of providing that there was no intent to abandon. Grantee's abandonment cannot be waived by any action or inaction of Grantor or by Grantor's failure to discover such abandonment. The resumption of use by Grantee after abandonment shall be deemed a trespass. Grantee, if other than a governmental entity that is provided



(3)

Right-of-Way Easement No. R-40581

immunity from suit by the New Mexico Tort Claims Act, agrees to save and hold harmless, defend and indemnify the State of New Mexico, the Commissioner of Public Lands, and his agents or employees, in their official and individual capacities, of and from any and all liability, claims, losses, or damages arising out of or alleged to arise out of or indirectly connected with the operations of Grantee, its employees, agents, or contractors hereunder; provided however that such claims, losses, or damages are not caused by the negligence or willful misconduct of Grantor.

12. Notwithstanding anything contained herein, Grantor may cancel this grant for violation of any of the covenants of this agreement; provided, however, that before any such cancellation shall become effective, Grantor shall mail to grantee or any approved assignee, by certified mail addressed to the post office address of Grantee or such assignee shown by Land Office records, a - sixty (60) day notice of intention to cancel, specifying the default for which the grant is subject to cancellation. No proof of receipt of notice shall be necessary and sixty (60) days after such mailing, Grantor may enter cancellation unless Grantee shall have sooner remedied the default to the satisfaction of Grantor.
13. Grantee agrees to preserve and protect the natural environmental conditions of the land encompassed in this grant, and to take those reclamation or corrective actions that are accepted soil and water conservation practices and that are deemed necessary by Grantor to protect the land from pollution, erosion, or other environmental degradation as more particularly described by the attached New Mexico State Land Office Required Best Management Practices for Surface Users, which are incorporated herein as Exhibit B.
14. Grantee agrees to reclaim by grading, leveling, or terracing all areas disturbed by the construction or maintenance of the right-of-way or operations thereon and to landscape such areas at its own cost and expense. Landscaping shall include the planting of native grasses, shrubs, or other vegetation so as to return disturbed areas to their natural state and prevent water and wind erosion.
15. This grant shall become effective upon its execution by Grantor.

#### Stipulations:

- Temporary Construction Space is granted up to 20' additional width during the initial construction phase and during any subsequent maintenance, this excludes any remediation phase. Temporary Construction Space not to exceed 180 days.

2023 MAR 24 AM 9:40

(4)

Right-of-Way Easement No. R-40581

GRANTEE: BTA Oil Producers, LLC

RW

By: [Signature]

Alex Beal, Member

ACKNOWLEDGMENT

STATE OF Texas )

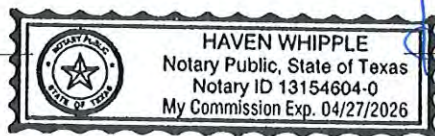
) ss.

COUNTY OF Midland )

The foregoing instrument was acknowledged before me this 23rd day of March, 2023,  
by Alex Beal, Member, of BTA Oil Producers, LLC, a  
Texas limited liability company ~~corporation, on behalf of said corporation.~~  
or behalf of said limited liability company.

My Commission Expires:

4/27/2026



[Signature]  
NOTARY PUBLIC

STATE OF NEW MEXICO

BY: [Signature]

Stephanie Garcia Richard  
Commissioner of Public Lands

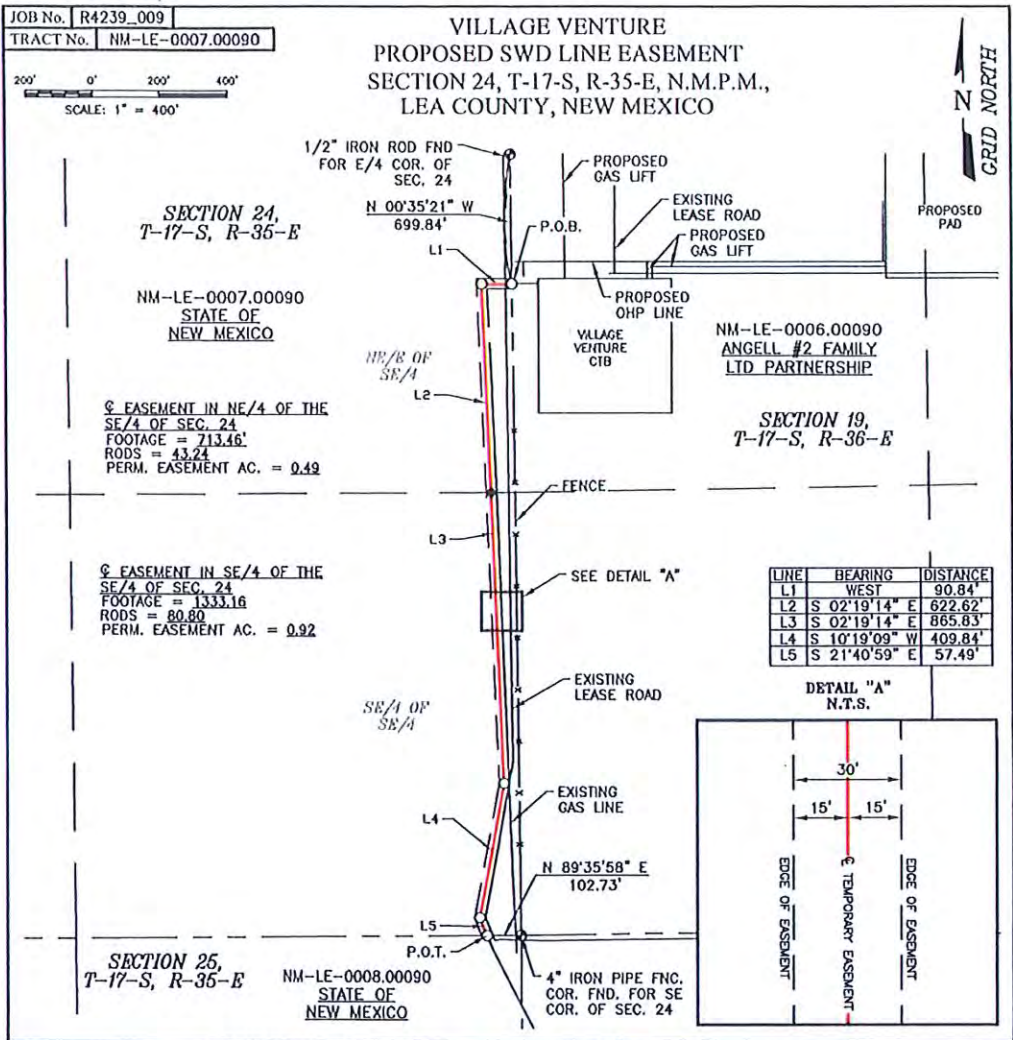
DATE: 03/24/2023



S  
E  
A  
L

S-25 (Revised 07/19/2019)





EASEMENT DESCRIPTION

THE LENGTH OF THE HEREIN DESCRIBED 30 FOOT WIDE PROPOSED SWD LINE EASEMENT CROSSING SAID SECTION 24 BEING 2,046.62 FEET (124.04 RODS) AND CONTAINS 1.41 ACRE OF LAND; IN SECTION 24, TOWNSHIP 17 SOUTH, RANGE 35 EAST, NEW MEXICO PRINCIPAL MERIDIAN, LEA COUNTY, NEW MEXICO.

CENTERLINE EASEMENT TOTALS AS SHOWN IN PLAN ABOVE

TEMPORARY EASEMENT ACREAGE	1.41
CENTERLINE FOOTAGE	2,040.02'
CENTERLINE RODS	124.04

STAMP

JANUARY 6, 2023

DAVID W. MYERS [11403]

DAVID W. MYERS  
NEW MEXICO  
11403  
PROFESSIONAL SURVEYOR

CERTIFICATION

I, DAVID W. MYERS NEW MEXICO PROFESSIONAL SURVEYOR NO. 11403, DO HEREBY CERTIFY THAT THIS EASEMENT SURVEY PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER CERTIFY THAT THIS SURVEY IS NOT A LAND DIVISION OR SUBDIVISION AS DEFINED IN THE NEW MEXICO SUBDIVISION ACT AND THAT THIS INSTRUMENT IS AN EASEMENT SURVEY PLAT CROSSING AN EXISTING TRACT OR TRACTS.

BASIS OF BEARING

ALL BEARINGS AND COORDINATES REFER TO NAD 83, NEW MEXICO STATE PLANE COORDINATE SYSTEM, EAST ZONE, U.S. SURVEY FEET. (ALL BEARINGS, DISTANCES, COORDINATES AND AREAS ARE GRID MEASUREMENTS UTILIZING A COMBINED SCALE FACTOR OF 0.999981955 AND A CONVERGENCE ANGLE OF 0.50466944").

**BTA** BTA OIL PRODUCERS, LLC

PERMANENT EASEMENT  
PROPERTY LINE  
CENTERLINE OF LEASE ROAD  
EDGE OF ROAD  
FENCE  
PAD LINE  
LOT/QUARTER LINE  
PROPOSED CENTERLINE  
PIPELINES  
OVERHEAD POWERLINE  
SURVEY/SECTION LINE  
TOWNSHIP/RANGE LINE  
FOUND MONUMENT  
CALCULATED MONUMENT  
QUARTER SPLIT

PLAT FOR A PROPOSED SWD LINE  
CROSSING THE PROPERTY OF

STATE OF  
NEW MEXICO

LEA COUNTY, NEW MEXICO

DATE SURVEYED: 10/20/2022

REV.	DATE	DESCRIPTION	BY	CHKD
SHEET 2 OF 2				
DRAWN BY: ICA				
DATE DRAWN: 12/7/2022				
CHECKED BY: HWS				

510 TRENTON STREET  
WEST MONROE, LA 71291  
(318) 323-6900  
FAX (318) 362-0064

R-40581  
EXHIBIT A  
1 OF 13

EXHIBIT "A"

NM-LE-0007.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 1 OF 2

FIELD NOTES DESCRIBING

*The centerline of a proposed 30 foot wide permanent swd line easement, being 1.41 acres of land. Said easement being located in Section 24, Township 17 South, Range 35 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 1/2 inch iron rod found for the East quarter corner of said Section 24 bears N 00°35'21" W a distance of 699.84 feet.

(NE/4 OF THE SE/4)

*THENCE* crossing the Northeast quarter of the Southeast quarter of said Section 24 the following courses and distances:

WEST a distance of 90.84 feet, S 02°19'14" E a distance of 622.62 feet to the South line of said Northeast quarter of the Southeast quarter of Section 24.

The length of the herein described permanent swd line easement crossing the said Northeast quarter of the Southeast quarter of Section 24 being 713.46 feet (43.24 rods), containing 0.49 acre of land.

(SE/4 OF THE SE/4)

*THENCE* crossing the Southeast quarter of Southeast quarter of said Section 24 the following courses and distances:

S 02°19'14" E a distance of 865.83 feet, S 10°19'09" W a distance of 409.84 feet, S 21°40'59" E a distance of 57.49 feet to the *POINT OF TERMINATION*, from which a 4 inch iron pipe fence corner found for the Southeast corner of said section 24 bears N 89°35'58" E a distance of 102.73 feet.

The length of the herein described permanent swd line easement crossing the said Southeast quarter of the Southeast quarter of Section 24 being 1,333.16 feet (80.80 rods), containing 0.92 acre of land.

The total length of the above described permanent easement of said Section 24 being 2,046.62 feet (124.04 rods), containing 1.41 acre of land.

The edges of the easement are parallel with the centerline of the easement until reaching the boundaries of the subject tract of land, unless otherwise shown.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are grid measurements utilizing a combined scale factor of 0.99981955 and a convergence angle of 0.50466944°.)

Title information furnished by BTA Oil Producers, LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.


STATE OF NEW MEXICO  
COUNTY OF LEA

*I, David W. Myers, New Mexico Professional Surveyor No. 11403 do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.*

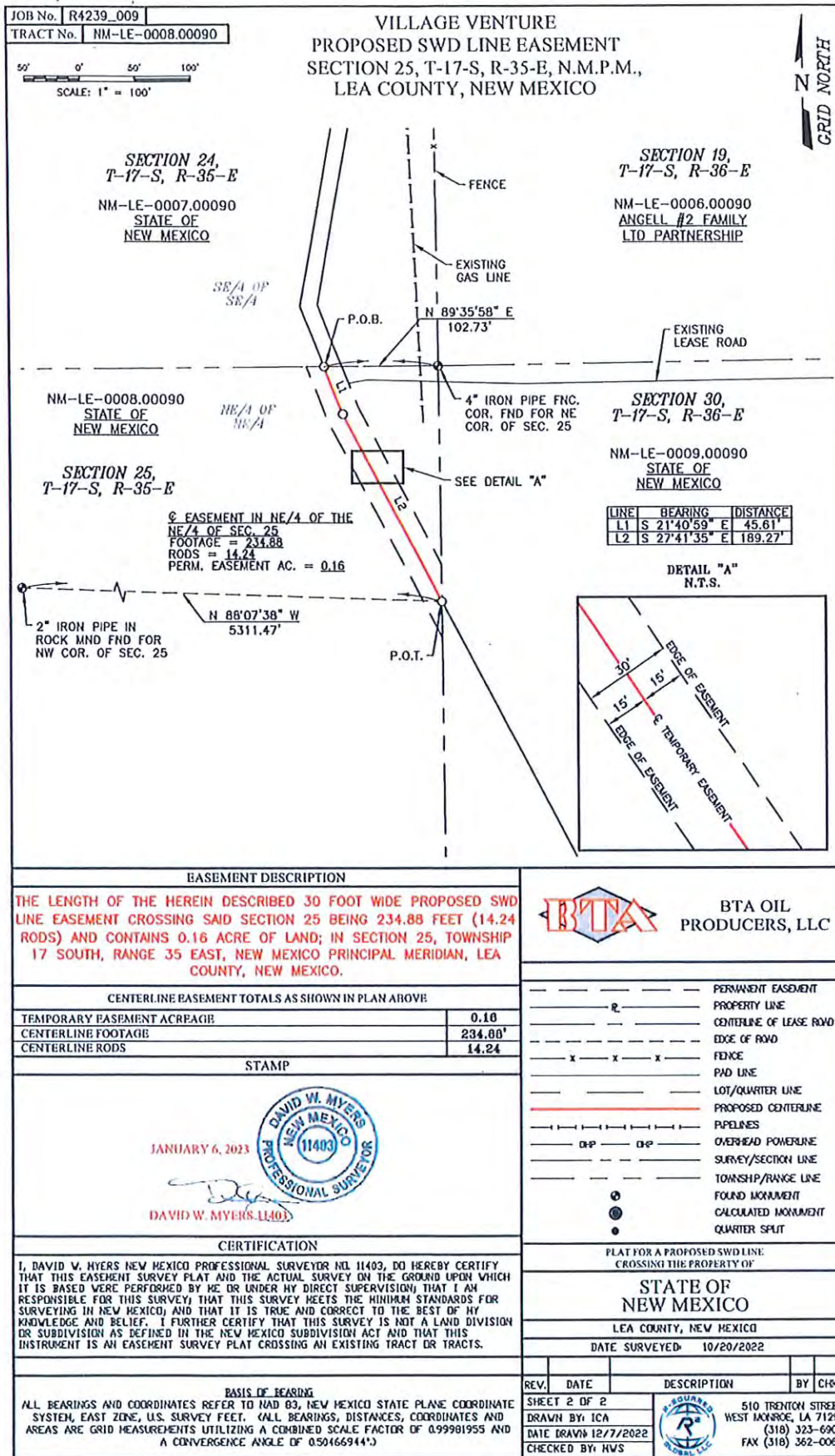
JANUARY 6, 2023

DAVID W. MYERS  
NEW MEXICO  
PROFESSIONAL SURVEYOR  
11403

R-40581  
EXHIBIT A  
2 OF 13

 510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900 FAX (318) 362-0064	This field note description is to accompany a plat evenly dated. Modification in any way of the foregoing description terminates liability of Surveyor.	JOB #: R4239-009	
		REV.	DATE BY





R-40581  
EXHIBIT A  
3 OF 13

EXHIBIT "A"

NM-LE-0008.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 1 OF 2

FIELD NOTES DESCRIBING

*The centerline of a proposed 30 foot wide permanent swd line easement, being 0.16 acre of land. Said easement being located in Section 25, Township 17 South, Range 35 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 4 inch iron pipe fence corner for the Northeast corner of said Section 25 bears N 89°35'58" E a distance of 102.73 feet.

(NE/4 OF THE NE/4)

*THENCE* crossing the Northeast quarter of the Northeast quarter of said Section 25 the following courses and distances:

S 21°40'59" E a distance of 45.61 feet, S 27°41'35" E a distance of 189.27 feet to the *POINT OF TERMINATION* from which a 2 inch iron pipe in rock mound found for the Northwest corner of said Section 25 bears N 88°07'38" W a distance of 5,311.47 feet.

The length of the herein described permanent swd line easement crossing the said Northeast quarter of the Northeast quarter of Section 25 being 234.88 feet (14.24 rods), containing 0.16 acre of land.

The total length of the above described permanent easement of said Section 25 being 234.88 feet (14.24 rods), containing 0.16 acre of land.

The edges of the easement are parallel with the centerline of the easement until reaching the boundaries of the subject tract of land, unless otherwise shown.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are grid measurements utilizing a combined scale factor of 0.99981955 and a convergence angle of 0.50466944°.)

Title information furnished by BTA Oil Producers, LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.


STATE OF NEW MEXICO  
COUNTY OF LEA

*I, David W. Myers, New Mexico Professional Surveyor No. 11403 do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.*

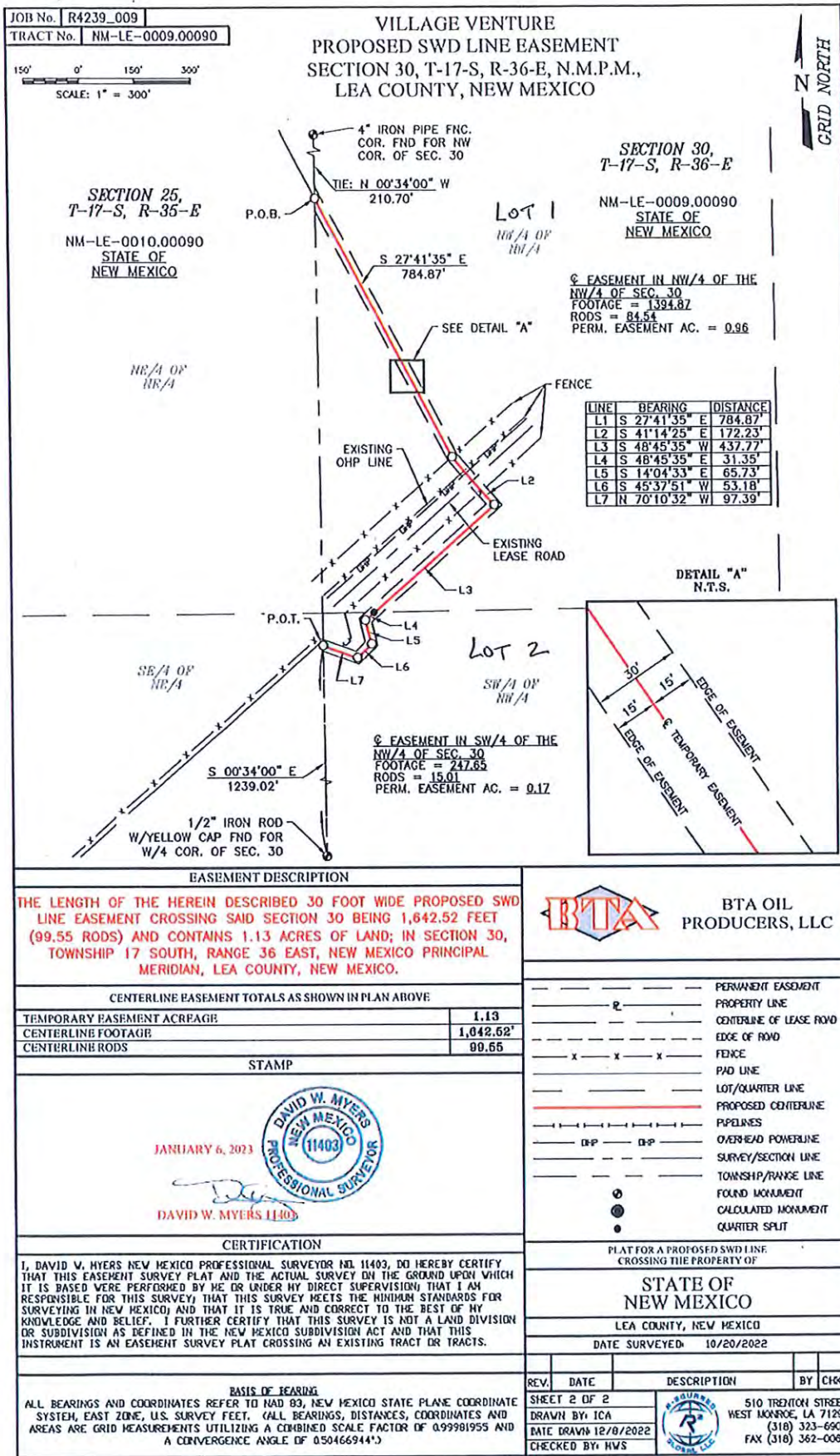
JANUARY 6, 2023



R - 40581  
EXHIBIT A  
4 OF 13

 510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900 FAX (318) 362-0064	This field note description is to accompany a plat evenly dated. Modification in any way of the foregoing description terminates liability of Surveyor.	JOB #: R1239	
		REV.	DATE BY





R-40581  
**EXHIBIT A**  
 5 OF 13

## EXHIBIT "A"

NM-LE-0009.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 1 OF 2

## FIELD NOTES DESCRIBING

*The centerline of a proposed 30 foot wide permanent swd line easement, being 1.13 acre of land. Said easement being located in Section 30, Township 17 South, Range 36 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 4 inch iron pipe fence corner found for the Northwest corner of said Section 30 bears N 00°34'00" W a distance of 210.70 feet.

(NW/4 OF THE NW/4)

*THENCE* crossing the Northwest quarter of the Northwest quarter of said Section 30 the following courses and distances:

S 27°41'35" E a distance of 784.87 feet, S 41°14'25" E a distance of 172.23 feet, S 48°45'35" W a distance of 437.77 feet to the South line of the Northwest quarter of the Northwest quarter of said Section 30.

The length of the herein described permanent swd line easement crossing the said Northwest quarter of the Northwest quarter of Section 30 being 1,394.87 feet (84.54 rods), containing 0.96 acre of land.

(SW/4 OF THE NW/4)

S 48°45'35" W a distance of 31.35 feet, S 14°04'33" E a distance of 65.73 feet, S 45°37'51" W a distance of 53.18 feet, N 70°10'32" W a distance of 97.39 feet to the *POINT OF TERMINATION*, from which a 1/2 inch iron rod with yellow cap found for the West quarter corner of said Section 30 bears S 00°34'00" E a distance of 1,239.02 feet.

The length of the herein described permanent swd line easement crossing the said Southwest quarter of the Northwest quarter of said Section 30 being 247.65 feet (15.01 rods), containing 0.17 acre of land.

The total length of the above described permanent easement of said Section 30 being 1,642.52 feet (99.55 rods), containing 1.13 acres of land.

The edges of the easement are parallel with the centerline of the easement until reaching the boundaries of the subject tract of land, unless otherwise shown.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are grid measurements utilizing a combined scale factor of 0.99981955 and a convergence angle of 0.50466944°.)

Title information furnished by BTA Oil Producers, LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.

STATE OF NEW MEXICO  
COUNTY OF LEA

*I, David W. Myers, New Mexico Professional Surveyor No. 11403 do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.*

JANUARY 6, 2023

DAVID W MYERS 11403



R - 40581  
EXHIBIT A  
6 OF 13

	510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900 FAX (318) 362-0064	This field note description is to accompany a plat evenly dated. Modification in any way of the foregoing description terminates liability of Surveyor.	JOB #: R4239-009
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R - 40581

EXHIBIT A

7 OF 13



EXHIBIT "A"

NM-LE-0010.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 1 OF 3

FIELD NOTES DESCRIBING

*The centerline of a proposed 30 foot wide permanent swd line easement, being 3.54 acres of land. Said easement being located in Section 25, Township 17 South, Range 35 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 1/2 inch iron rod with a yellow cap found for the East quarter corner of said Section 25 bears S 00°34'00" E a distance of 1,239.02 feet.

(SE/4 OF THE NE/4)

*THENCE* crossing the Southeast quarter of the Northeast quarter of said Section 25 the following courses and distances:

N 70°10'32" W a distance of 12.03 feet, S 48°17'18" W a distance of 1,084.99 feet, S 41°17'54" W a distance of 222.34 feet, S 32°26'26" W a distance of 427.36 feet to the South line of said Southeast quarter of the Northeast quarter of Section 25.

The length of the herein described permanent swd line easement crossing the said Southeast quarter of the Northeast quarter of Section 25 being 1,746.72 feet (105.86 rods), containing 1.20 acres of land.

(NE/4 OF THE SE/4)

*THENCE* crossing the Northeast quarter of Southeast quarter of said Section 25 the following courses and distances:

S 32°26'26" W a distance of 219.63 feet to the West line of said Northeast quarter of the Southeast quarter of Section 25.

The length of the herein described permanent swd line easement crossing the said Northeast quarter of the Southeast quarter of Section 25 being 219.63 feet (13.31 rods), containing 0.15 acre of land.

(NW/4 OF THE SE/4)

*THENCE* crossing the Northwest quarter of Southeast quarter of said Section 25 the following courses and distances:

S 32°26'26" W a distance of 1,353.69 feet to the South line of said Northwest quarter of the Southeast quarter of Section 25.

The length of the herein described permanent swd line easement crossing the said Northwest quarter of the Southeast quarter of Section 25 being 1,353.69 feet (82.04 rods), containing 0.93 acre of land.

(SW/4 OF THE SE/4)

*THENCE* crossing the Southwest quarter of Southeast quarter of said Section 25 the following courses and distances:

S 32°26'26" W a distance of 247.27 feet, S 32°25'17" W a distance of 387.99 feet, S 32°27'06" W a distance of 453.30 feet to the West line of said Southwest quarter of the Southeast quarter of Section 25.

The length of the herein described permanent swd line easement crossing the said Southeast quarter of the Southeast quarter of Section 25 being 1,088.56 feet (65.97 rods), containing 0.75 acre of land.

(SE/4 OF THE SW/4)

*THENCE* crossing the Southeast quarter of Southwest quarter of said Section 25 the following courses and distances:

S 32°27'06" W a distance of 265.98 feet, S 66°32'10" W a distance of 464.00 feet to the *POINT OF TERMINATION* from which a 1/2 inch iron rod found for the Southeast corner of said section 25 bears N 89°45'52" E a distance of 3,212.01 feet.

The length of the herein described permanent swd line easement crossing the said Southeast quarter of the Southwest quarter of Section 25 being 729.98 feet (44.24 rods), containing 0.50 acre of land.

The total length of the above described permanent easement of said Section 25 being 5,138.58 feet (311.43 rods), containing 3.54 acre of land.

The edges of the easement are parallel with the centerline of the easement until reaching the boundaries of the subject tract of land, unless otherwise shown.

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EXHIBIT A  
8 OF 13

JANUARY 6, 2023

DAVID W. MYERS 11403




	510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900 FAX (318) 362-0064	This field note description is to accompany a plot evenly dated. Modification in any way of the foregoing description terminates liability of Surveyor.	JOB #: 4239-009		
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EXHIBIT "A"

NM-LE-0010.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 2 OF 3

FIELD NOTES DESCRIBING

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are grid measurements utilizing a combined scale factor of 0.99981955 and a convergence angle of 0.50466944°.)

Title information furnished by BTA Oil Producers, LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.

STATE OF NEW MEXICO  
COUNTY OF LEA

I, David W. Myers, New Mexico Professional Surveyor No. 11403 do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.

JANUARY 6, 2023




DAVID W. MYERS 11403

R-40581

EXHIBIT A

9 OF 13

	510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900 FAX (318) 362-0064	This field note description is to accompany a plat evenly dated. Modification in any way of the foregoing description terminates liability of Surveyor.	JOB #: 4239_009		
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EXHIBIT A  
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EXHIBIT "A"

NM-LE-0011.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 1 OF 2

FIELD NOTES DESCRIBING

*The centerline of a proposed 30 foot wide permanent swd line easement, being 1.61 acres of land. Said easement being located in Section 36, Township 17 South, Range 35 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 1/2 inch iron rod found for the Northeast corner of said Section 36 bears N 89°45'52" E a distance of 3,212.01 feet.

(NE/4 OF THE NW/4)

*THENCE* crossing the Northeast quarter of the Northwest quarter of said Section 36 the following courses and distances:

S 66°32'10" W a distance of 40.36 feet, S 89°41'58" W a distance of 608.62 feet, S 23°08'07" W a distance of 94.99 feet, S 87°54'41" W a distance of 47.54 feet, N 22°14'35" W a distance of 44.83 feet to the West line of said Northeast quarter of the Northwest quarter of said Section 36.

The length of the herein described permanent swd line easement crossing the said Northeast quarter of the Southeast quarter of Section 24 being 836.34 feet (50.69 rods), containing 0.58 acre of land.

(NW/4 OF THE NW/4)

*THENCE* crossing the Northwest quarter of Northwest quarter of said Section 36 the following courses and distances:

N 22°14'35" W a distance of 51.07 feet, S 89°48'14" W a distance of 1,301.32 feet to the *POINT OF TERMINATION*, from which a 1/2 inch iron rod in rock mound found for the Northwest corner of said section 36 bears N 00°38'07" W a distance of 15.63 feet.

The length of the herein described permanent swd line easement crossing the said Northwest quarter of the Northwest quarter of Section 36 being 1,352.39 feet (81.96 rods), containing 0.93 acre of land.

The total length of the above described permanent easement of said Section 36 being 2,188.73 feet (132.65 rods), containing 1.51 acre of land.

The edges of the easement are parallel with the centerline of the easement until reaching the boundaries of the subject tract of land, unless otherwise shown.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are grid measurements utilizing a combined scale factor of 0.99981955 and a convergence angle of 0.50466944°.)

Title information furnished by BTA Oil Producers, LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.


STATE OF NEW MEXICO  
COUNTY OF LEA

*I, David W. Myers, New Mexico Professional Surveyor No. 11403 do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.*

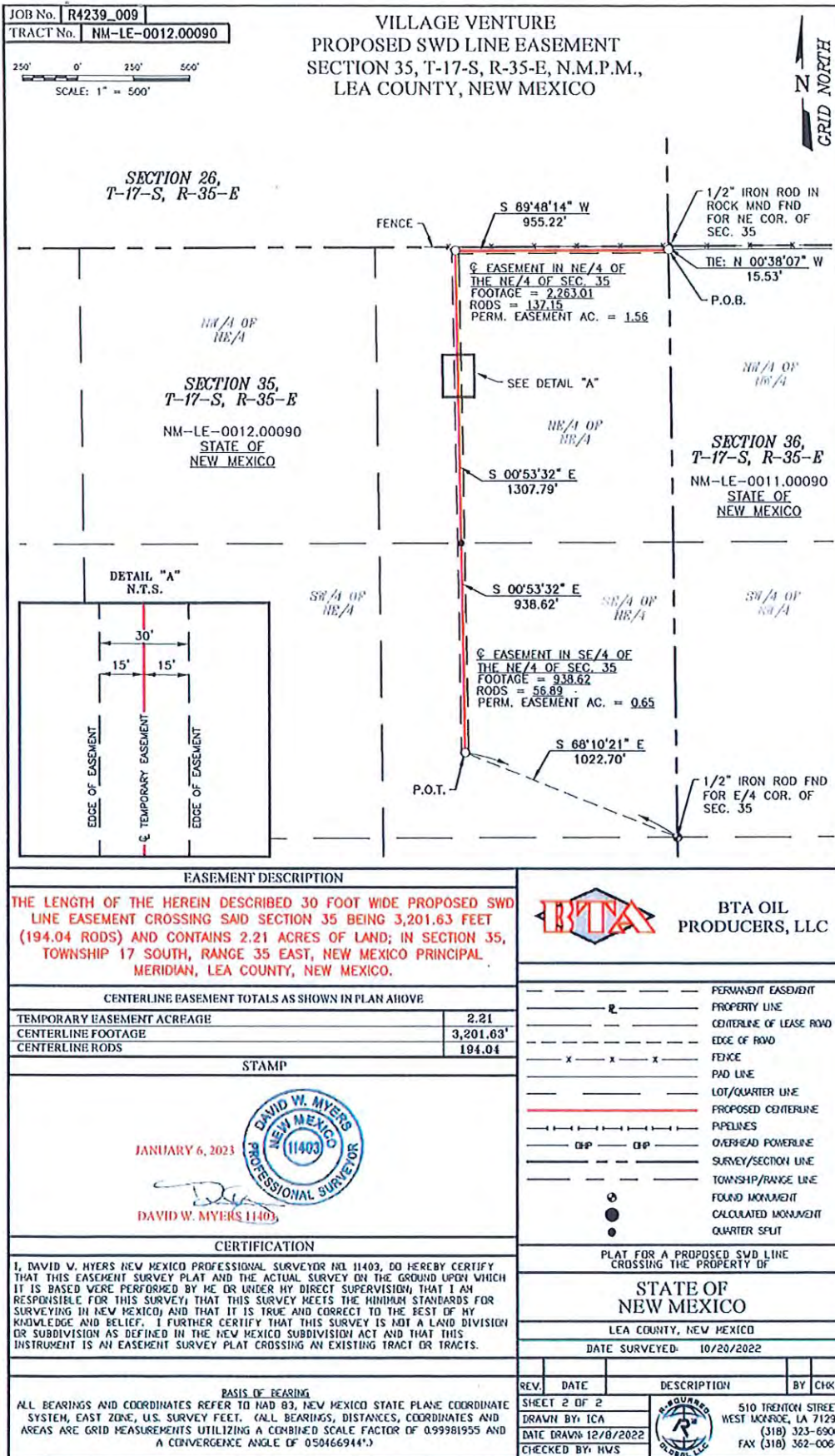
JANUARY 6, 2023

DAVID W. MYERS 11403



	510 TRENTON ST. WEST MONROE, LA 71291 (318) 323-6900 FAX (318) 362-0084	This field note description is to accompany a plat evenly dated. Modification in any way of the foregoing description terminates liability of Surveyor.	JOB #: R4233-009		
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EXHIBIT A  
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EXHIBIT A

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EXHIBIT "A"

NM-LE-0012.00090  
LEA COUNTY, NEW MEXICO  
BTA OIL PRODUCERS, LLC  
VILLAGE VENTURE  
PROPOSED SWD LINE EASEMENT

SHEET 1 OF 2

FIELD NOTES DESCRIBING

*The centerline of a proposed 30 foot wide permanent swd line easement, being 2.21 acres of land. Said easement being located in Section 35, Township 17 South, Range 35 East, New Mexico Principal Meridian, Lea County, New Mexico.*

Being more particularly described as lying 15 feet on each side of the following described centerline (see Detail "A" on sheet 2 of 2):

*BEGINNING* at a point from which a 1/2 inch iron rod in a rock mound found for the Northeast corner of said Section 35 bears N 00°38'07" W a distance of 15.63 feet.

(NE/4 OF THE NE/4)

*THENCE* crossing the Northeast quarter of the Northeast quarter of said Section 35 the following courses and distances:

S 89°48'14" W a distance of 955.22 feet, S 00°53'32" E a distance of 1,307.79 feet to the South line of said Northeast quarter of the Northeast quarter of Section 35.

The length of the herein described permanent swd line easement crossing the said Northeast quarter of the Northeast quarter of Section 35 being 2,263.01 feet (137.15 rods), containing 1.56 acre of land.

(SE/4 OF THE NE/4)

*THENCE* crossing the Southeast quarter of the Northeast quarter of said Section 35 the following course and distance:

S 00°53'32" E a distance of 938.62 feet to the *POINT OF TERMINATION*, from which a 1/2 inch iron rod found for the East quarter corner of said Section 35 bears S 68°10'21" E a distance of 1,022.70 feet.

The length of the herein described permanent swd line easement crossing the said Southeast quarter of the Northeast quarter of Section 35 being 938.62 feet (56.89 rods), containing 0.65 acre of land.

The total length of the above described permanent easement of said Section 35 being 3,201.63 feet (194.04 rods), containing 2.21 acre of land.

The edges of the easement are parallel with the centerline of the easement until reaching the boundaries of the subject tract of land, unless otherwise shown.

All bearings and coordinates refer to NAD 83, New Mexico State Plane Coordinate System, East Zone, U.S. Survey Feet. (All bearings, distances, coordinates and areas are grid measurements utilizing a combined scale factor of 0.99981955 and a convergence angle of 0.50466944°.)

Title information furnished by BTA Oil Producers, LLC.

Reference accompanying Certificate of Survey prepared in conjunction with this legal description for easement.


STATE OF NEW MEXICO  
COUNTY OF LEA

*I, David W. Myers, New Mexico Professional Surveyor No. 11403 do hereby certify that this easement survey plat and the actual survey on the ground upon which it is based were performed by me or under my direct supervision; that I am responsible for this survey; that this survey meets the minimum standards for surveying in New Mexico; and that it is true and correct to the best of my knowledge and belief. I further certify that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this instrument is an easement survey plat crossing an existing tract or tracts.*

JANUARY 6, 2023

*David W. Myers*  
DAVID W. MYERS 11403



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R-40581  
EXHIBIT A  
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## Exhibit B

### New Mexico State Land Office Best Management Practices for Surface Users

**1. Design.** To ensure public safety and the protection of trust resources, projects should be designed to minimize new surface disturbance and should be in compliance with New Mexico State Land Office (NMSLO) best management practices for surface users. The Commissioner of Public Lands may review design plans, and may determine whether professional engineering design or construction oversight is necessary. The Commissioner may waive or include any additional specific best management practices as necessary in the best interest of the trust.

**a. Design.**

i. No new surface disturbance will be permitted in riparian areas, wetlands, playas or floodplains. There will be a 150-foot setback from the outer wet edges (normal high water mark) of wetlands and playas, and a 50-foot setback from the 100-year flood stage of the floodplain associated with riparian areas. Boring under water features may be allowed if designs are approved.

ii. All efforts shall be made to minimize new surface disturbance: new construction shall be located in pre-existing disturbed areas, including existing roadbeds, rights-of-way, or in pre-existing or dedicated development areas and corridors.

iii. No new surface disturbance will be permitted within 50-feet of the normal high water mark of ephemeral drainages, floodways, arroyos or other short duration flow channels, except when crossing these channels and drainages. Drainage crossings will be perpendicular to flow, and will be built to accommodate flood events and to control erosion.

**iv. Design plans shall:**

1. Include a cadastral survey;
2. Minimize new surface disturbance by locating in pre-existing disturbance areas, or designated development areas or corridors, and designing for minimum necessary area of impact according to expected purpose and use;
3. Avoid wetlands, known critical habitat and protected areas;
4. Avoid steep slopes (>12%); grades from 4-10% are preferred for managing drainage; roads and rights-of-way are best placed at the toe of slopes where cross slope is between 5% and 40%;
5. Preserve as much natural vegetation and living root structure as possible. Use blading only where not to do so would create an unsafe work environment. Mow, or cut and shred vegetation, rather than blading whenever possible. Grubbing is less destructive than blading, and may be used as an alternative where mowing is not possible; in mowing or grubbing, if mesquite or other colonizing non-desirable vegetation is involved, include an herbicide treatment to inhibit spread that may be caused by mowing or

- grubbing;
6. Avoid alteration of natural drainage patterns;
  7. Provide adequate surface drainage; as grade steepens drainage features, such as water bars, must be closer together; drainage features on fine grained soils should be closer together;
  8. Reduce impervious surfaces by limiting area of impact;
  9. Account for specific site topography, soil type, drainage and hydrology, i.e. fit construction to the natural terrain by conforming to the ground, rolling the grade, minimizing cuts and fills, and managing for erosion; medium to coarse textured soils (sand-sized particles and larger) are best suited to low-standard rural roads;
  10. Account for cultural resources at least in accordance with minimum standards set forth in NMSLO policy;
  11. Account for biological resources at least in accordance with minimum standards set forth in NMSLO Policy;
  12. Include a spill containment and prevention plan where hazardous materials are involved, including requirements for berms and lining where necessary;
  13. Include a storm water pollution and prevention plan where hazardous materials are involved and the site falls within a 100-year flood plain of any major drainage;
  14. Include an erosion control plan for drainage crossings, head-cuts, gullies and rills, including soil stabilization structures, ditches, water-bars, and the size and location of culverts and bridges;
  15. Include a reclamation plan detailing the removal of improvements, soil stabilization and the re-vegetation process;
  16. Include an access control plan;
  17. Use only native weed-free certified seed for reclamation;
  18. Use only certified freshwater (<140 ppm chloride, certified safe drinking water) for reclamation;
  19. Use local materials where possible;
  20. Include a noxious weed prevention plan;
  21. Include a dust abatement plan;
  22. Address clearing, grading, and cut and fill processes;
  23. Address crown, inslope, outslope and shoulder design (roads);
  24. Address trenching and boring design, including depth, casing, core sampling, valve location and access management (pipelines);
  25. Include professional engineer plans and specifications for bores, bridges, or other major construction elements that present a potential hazard to the public or environment;
  26. Address span and pole design (powerlines);
  27. Define use, location and size of temporary work space, temporary storage and turnouts;
  28. Address logistics of construction;
  29. Address all pertinent state and federal regulations.



2. **Construction.** Construction involves all aspects of implementation of the design.

a. **Construction Practices:** During construction the lessee shall:

- i. Control access to the construction site;
- ii. Control unauthorized use of space adjacent to permitted rights-of-way, easements and lease use areas;
- iii. Maintain temporary erosion control structures, such as silt fencing to prevent sediment flow during construction;
- iv. Implement dust abatement plan and use only certified freshwater (<140 ppm chloride, certified safe drinking water) on areas that will be revegetated;
- v. When requested by the Commissioner, engage a compliance inspection officer to monitor quality control and compliance with NMSLO best management practices;
- vi. Sample, test and monitor to ensure construction materials meet design specifications;
- vii. Dispose of unsuitable or excess construction or excavation material in approved locations to minimize adverse impacts to water quality or other resources; construction waste and debris will not be buried on state trust land without express permission from the Commissioner

3. **Maintenance.** Roads should be maintained routinely during active use and after major storm events to ensure that road surfaces are intact and serviceable and drainage structures are functioning properly. Pipeline, transmission line and other exclusive rights-of-way should be monitored routinely and maintained when necessary to ensure that public access is closed, drainage is functioning properly, and that reclamation efforts are successful. Operational equipment, work spaces, facilities, and structures shall be maintained routinely during use to function properly and to minimize adverse impacts to the public or the environment. Reclaimed areas, including temporary work spaces, yards, pads, pits, roads, pipelines, transmission lines or other lease areas, should be monitored for at least two years and retreated where necessary to manage erosion, noxious weeds and seeding success. Lessees sharing a right-of-way will be held jointly and severally responsible for maintenance of the right-of-way. The NMSLO encourages holders of shared rights-of-way to develop maintenance agreements.

a. **Maintenance Practices:** At all times, lessees must stay within the length and width of the permitted right-of-way. If maintenance requires work outside the boundaries of the right-of-way, the lessee must seek an amendment to the right-of-way or a right-of-entry for reclamation or maintenance:

- i. Grade and shape roadway surfaces to maintain distinct inslope, outslope or crown shape to move water effectively off the road surface;
- ii. Compact graded roadway surfaces to preserve hard driving surface;

- replace surface material when needed; implement dust abatement plans;
- iii. Fill ruts and potholes with gravel or compacted fill or remove ruts through rolling dips and water bars; reshape structures to maintain proper function;
- iv. Clean ditches and reshape when necessary to allow adequate flow capacity;
- v. Remove debris from the entrance of culverts to prevent plugging and overtopping; check for signs of damage;
- vi. Replace or repair rock armor, erosion control structures, or vegetation used for slope protection, scour protection or energy dissipation;
- vii. Inspect and repair fencing, gates, cattle-guards and other access control structures;
- viii. Inspect facilities, structures, equipment and operations for leaks, hazardous material releases, hazardous conditions, and proper functioning condition;
- ix. Inspect reclamation, revegetation and noxious weed treatments and re-treat as necessary to maintain proper functioning of erosion control and establishment of native vegetation.

4. **Reclamation.** See Attachment A for Sample NMSLO Surface Reclamation Plan.

- a. **Reclamation Objectives:** To reduce and prevent erosion, remove contaminants and contaminated materials, restore clean soils, restore native plant diversity and abundance, restore and maintain hydrological regime, and restore and maintain productive habitat for livestock and wildlife;
- b. **Applicability:** These Reclamation Requirements are applicable to all reclamation activities on state trust lands including: hazardous materials spills/releases, site closure for oil and gas, mineral and business leases, plug and abandon site reclamation, mine site reclamation, pit, pad, or pond reclamation, illegal dump reclamation, road and pipeline reclamation, dairy farm or other agricultural impact reclamation, and any other clean up or reclamation activity on state trust land;
- c. **Access:** If the spill/release or reclamation project extends beyond the lease boundary or permitted right of way, the responsible party shall contact the NMSLO Rights Of Way Division and **obtain a remediation right-of-entry**;
- d. **Compliance:** Before commencing any new ground disturbing activity, the responsible party shall:
  - i. Conduct an archaeological survey of the impacted area, or verify that the area has already been surveyed and that no cultural properties will be impacted by ground disturbing activities;

- ii. **Immediately stop all ground disturbing activities and contact NMSLO for further direction, if cultural properties have been impacted by a spill/release or reclamation project;**
- iii. Verify compliance with NMSLO biological and cultural resource policies for the area to be reclaimed; conduct surveys where necessary;
- iv. Verify compliance with all state and federal regulations, including but not limited to storm water pollution and prevention, air quality control, and hazardous materials disposal;

**e. Hazardous Material Spill/Releases:**

- i. **Oil and Gas Activity:**
  - Upon discovery of any oil and gas related hazardous material spill or release, either current or historic, the responsible party shall:
    - o immediately notify OCD and NMSLO;
    - o File C-141 form with OCD;
- ii. **Other Spill/Releases:**
  - Upon discovery of any non-oil and gas related hazardous material release, including mine waste, either current or historic, the responsible party shall:
    - o immediately notify NMED and NMSLO;

f. **Delineation:** Upon discovery of contaminated soils, the responsible party shall delineate the horizontal and vertical extent of the contamination; submit a delineation plan for approval by the NMSLO; for oil and gas related contamination, the NMOCD must also approve the delineation plan; the NMSLO may review NMOCD approved plans for adequacy of sampling related to restoration of surface conditions; for non-oil and gas related contamination, the NMED may require delineation and monitoring related to surface and ground water impacts; the NMSLO may require any necessary sampling or reclamation related to the restoration of surface conditions;

g. **Reclamation Plan:** A reclamation plan shall be submitted with all lease applications involving surface disturbance. In the event of a spill or hazardous materials release, the responsible party shall submit a reclamation plan for approval by the NMSLO within 30 days of completion of delineation. In all other situations, the responsible party must submit a reclamation plan to the NMSLO within 30 days of receiving a notice to reclaim. The reclamation plan shall address each of the matters cited below; these best management practices shall constitute minimum requirements for reclamation plans submitted under the following rules: leasing for general mining 19.2.2.24, leases and permits for caliche, gypsum, clay, sand, gravel, stone, shale, perlite, volcanic deposits and borrow dirt 19.2.5.9(B); unless otherwise permitted by the NMSLO, the reclamation plan and all earthworks required for reclamation must be approved and completed within 6

months of completion of construction for any right of way lease, or improvement under an agricultural lease, or within 6 months of closure or final use of any business lease, mineral lease, or oil and gas lease;

- h. **Removal/Containment:** The responsible party will remove and replace any contaminated soils, including contaminated caliche or base course. Contaminated soils and caliche shall be disposed of only in state permitted disposal locations such as land farms or hazardous disposal sites, and in accordance with state and federal regulations. Contaminated soils shall be removed at least to the rooting zone. Removal shall be based on site delineation, but in areas of deep saturation and deep soils this depth is typically four feet; removal depth may be less in shallow soils. If any contaminated soil remains at the site the reclamation plan must address containment, including the potential for the contaminant to wick upward into the rooting zone or downward toward groundwater. If complete removal is impossible, the responsible party may apply to the NMSLO for a variance to stabilize and contain the hazardous material that cannot be removed. If the NMSLO agrees, a stabilization and containment plan may replace or supplement the removal and replacement plan. In addition to the removal of contaminated soils, the responsible party will remove all uncontaminated caliche or base course.
- i. **Soil Replacement:** The responsible party will replace contaminated soils, caliche or base course, and uncontaminated caliche or base course, with certified clean top soil; replacement soils should have comparable structure and chemistry to healthy, native undisturbed soils in the vicinity.
- j. **Trash and Debris:** Unless equipment is to be re-used onsite, the responsible party shall remove any trash, debris, garbage, rubbish, junk, scrap, or broken or contaminated equipment, such as pipelines, plastic lining, surface flowlines, tanks, scrap materials of any kind, or other equipment and shall dispose of all such trash and debris in accordance with state and federal regulations within 30 days of final use or completion of construction; no hazardous substances, trash or litter will be buried or placed in pits on state trust land without express written permission of the Commissioner.
- k. **Surface Preparation:** The responsible party will contour the ground surface to blend in with the surrounding topography to allow the natural hydrology of the basin to function without impediment or impact; no major depressions or pits will be left that will trap water or cause ponding except where the project involves a mining pit where there is no possible outlet, slopes will not exceed 3:1 (run to rise).
- l. **Erosion Control:** Where active transportation of sediment through gullying, headcutting, slumping or deep or excessive rills (greater than 3 inches deep)

occurs within the lease area or within the adjacent area of impact, the responsible party will install erosion control structures to repair and control gullies, head-cuts, rills, and other forms of sediment movement;

- i. Erosion control structures shall be designed to restore natural hydrological function and flood regime, and to the extent possible should use local rock or bio-degradable materials and low-energy, minimum-necessary designs;
  - ii. Erosion control structures may include, but are not limited to, one rock dams, rock mulch rundowns, zuni bowls, media lunas, swales, berms, terraces, wattles, rock or log mats, hay mulch, gabions, bales or other stabilizing enhancements to control erosion;
- m. **Drainage Control:** Where ephemeral, intermittent or permanent water flow-ways or drainages cross, intersect or bisect a lease, the responsible party shall install drainage control structures to manage water flow, especially across roads, pipeline rights of way, or other structures that may interfere with natural drainage;
  - i. Drainage control structures shall be designed to mimic natural hydrological function and flood regime as much as possible so as not to increase the erosional impact of hydrologic flows to the structure or to the upstream or downstream landscape; drainage control designs shall be engineered or built in consultation with the NRCS and approved by the NMSLO;
  - ii. Drainage control structures may include but are not limited to road bars, culverts, water bars, parallel and lateral ditches, drains, and low water crossings;
- n. **Seedbed Preparation:** All disturbed soils within the lease area will be revegetated. The responsible party will prepare the seedbed in consultation with the NMSLO to maximize potential for success. This may include, but is not limited to, a combination of watering with certified fresh water (<140 ppm chloride), mechanical packing to consolidate loose soils, disking or ripping to loosen compacted soils (up to 18 inch depth with furrow spacing of 2 feet), crimping hay mulch into the soil (2 tons/acre), furrowing or imprint rolling to create microhabitats, scarifying (minimum 4 inch depth), adding soil amendments, contouring and/or importing top soil. Note: Caliche is not top soil and should not be mixed or flipped into the top soil.
- o. **Revegetation:** The responsible party will seed the prepared seedbed with a drill seeder or hydraulic seeder with different sized seed boxes; unless otherwise authorized by the NMSLO, hydro-seeding will be used on 3:1 slopes or greater; all disturbed areas will be seeded with the seed mixture(s) provided or approved by the NMSLO; the seed mixture will be planted in the amounts specified in pounds of pure live seed per acre; the seed will contain no primary or secondary noxious weeds; commercial seed will be either certified or registered seed; the seed drill will be equipped with a depth regulator, and seed will be planted at the depth prescribed by the NMSLO; the seed mixture will be evenly and uniformly planted over the disturbed area; seed mixes should be provided in bags separating

seed types into size categories, to ensure that the appropriate seed drill box is used for each species; broadcast seeding will only be allowed when no other option is available; where broadcast seeding, the area should be disked with a tandem, double-disk harrow, one day prior to broadcast seeding and the lbs/acre are to be doubled; seeding will be conducted no more than two weeks following completion of final seedbed preparation; seeding should take place at the beginning of the growing season prior to the monsoon season unless otherwise directed; seeding will be repeated until a satisfactory stand is established as determined by the NMSLO; evaluation of growth will not be made before completion of at least one full growing season after seeding; seeding will be repeated until a satisfactory stand is established.

- p. **Noxious Weeds.** The responsible party will prepare a noxious weed plan in consultation with the NMSLO and noxious weeds will be monitored and treated on an annual basis until controlled.
- q. **Access Control.** Unless otherwise authorized by the NMSLO, the responsible party will close all reclamation areas to public access; private access points will be gated, fenced and signed; unauthorized or trespass access points will be permanently closed and signed;
  - i. **Gate and Fencing Specifications:** Unless otherwise directed by the NMSLO, a locked metal gate with 4-inch H-braces and a permanent fence extending at least 100 feet from either side of the gate, or to the next adjacent gate, will be installed to block public access to all closed reclamation sites; fence will be constructed with steel T-posts on 16-foot spacing, with stays every 8 feet and 4 strands of barbed wire; the top wire should be set at 42 inches above the ground surface; inline braces will be used at intervals not to exceed 660 feet; corners will be braced and set in concrete; fence wire will be attached on the outside of the T-posts with wire ties;
  - ii. **Permanent Closure Specifications:** Dirt berms, permanent hard barriers or rock barricades will be installed to block unauthorized access points to reclamation sites; berms and barriers will be at least 3 feet high and will extend the width of the access point; berms will be hard packed; barriers and barricades may be constructed of metal pipe rail, concrete, or rock and may be used in combination with berm work to ensure closure of an access point;
  - iii. **Signage:** Signs should be noticeably visible and should clearly state that public access is not authorized.
- r. **Monitoring.** The responsible party will monitor the reclamation site annually until relinquished by the NMSLO; prior to relinquishment, the NMSLO may require supplemental clean up, maintenance of erosion control structures, additional reseeding efforts, or noxious weed treatments to ensure success of reclamation; the NMSLO may request detailed annual monitoring reports



depending on the severity of the situation.

- s. **Reporting.** The NMSLO may require weekly updates during the course of the initial reclamation work; weekly updates will include a brief narrative statement of work completed with photo documentation; upon completion of the initial reclamation work, the responsible party will notify the NMSLO that the site is ready for inspection; annual monitoring reports may be required depending on the severity of the situation.
- t. **Relinquishment:** The NMSLO will inspect the initial reclamation work upon completion and will provide the responsible party with a statement indicating that the initial work has been completed as required and detailing any follow up work that may be necessary prior to relinquishment; notice of relinquishment will be provided upon complete satisfaction of all NMSLO reclamation requirements.

## 5. Resources.

*Reducing Erosion from Unpaved Rural Roads in New Mexico, A Guide to Road Construction and Maintenance Practices*; State of New Mexico Natural Resources Department Soil and Water Conservation Division, November 1983.

*The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development*; Bureau of Land Management, Fourth Edition—Revised 2007.

*New Mexico Forest Practices Guidelines*; Energy, Minerals and Natural Resources Department, Forestry Division.

*Low-Volume Roads Engineering BMPs*; [https://www.fs.fed.us/t-d/programs/forest\\_mgmt/projects/lowvolroads/ch4.pdf](https://www.fs.fed.us/t-d/programs/forest_mgmt/projects/lowvolroads/ch4.pdf)

*Water Harvesting from Low-Standard Rural Roads*; Bill Zeedyk, A Joint Publication of The Quivira Coalition, Zeedyk Ecological Consulting, LLC, The Rio Puerco Management Committee—Watershed Initiative, and the New Mexico Environment Department—Surface Water Quality bureau, April 2006.  
[http://altarvalleyconservation.org/wp-content/uploads/pdf/1597-A Good Road Lies Easy on the Land.pdf](http://altarvalleyconservation.org/wp-content/uploads/pdf/1597-A%20Good%20Road%20Lies%20Easy%20on%20the%20Land.pdf)

*Revegetation Guidelines Handbook for Southeastern New Mexico*, New Mexico State Land Office, July 2018.

## 6. Authorities.

*ROW Rule: (19.2.10 NMAC)*



A ROW lessee shall file an affidavit of completion within 60 days of completion. 19.2.10.21 NMAC

ROWs may be used only for authorized uses as granted (e.g. a pipeline or powerline ROW may not be used as a public road). 19.2.10.22 NMAC

The CPL may terminate any ROW for failure to comply with any term or condition of the grant. 19.2.10.26 NMAC

Anyone constructing a ROW, in consultation with the CPL, must take all steps necessary to preserve and protect the natural environmental conditions of the land including reclamation and re-vegetation. 19.2.10.28 NMAC.

*Road Rule: (19.2.20 NMAC)*

All roads constructed on state trust lands shall be constructed in accordance with the minimum requirements described in 19.2.20.10 NMAC and maintained in accordance with the standards described in 19.2.20.11 NMAC. 19.2.20.9(A) NMAC.

Construction and maintenance of these roads will be done in a manner that insures that authorized traffic remains within the right-of-way and erosion damage is mitigated. 19.2.20.9(C) NMAC.

*Road Construction Standards: (19.2.20.10 NMAC)*

Width. 14' single lane, 20' double lane, maximum grade 10% without engineered design. 19.2.20.10(A) NMAC.

Drainage. Drainage control shall be ensured through the use of dips, turnouts, and culverts etc. Drainages will be constructed in such frequency necessary to prevent headcuts or other forms of accelerated erosion or damage on adjacent areas. 19.2.20.10(A) NMAC.

Culverts. Culverts shall be used on grades in excess of 10% and all major drainages and on roads when dips are not feasible.

Road Surfacing: Roadbeds should be surfaced where all weather access is needed. Roadbeds should be reasonably smooth, free of ruts, chuckholes, rocks, slides, washboards, dust pockets, soft spots or other driving hazards.

Fencing: 4-strand barbed wire, 12-inch spacing.

*Road Maintenance Standards: (19.2.20.11 NMAC)*

Lessees shall be responsible for preventative and/or corrective road maintenance, including roadbeds, shoulders, ditches, culverts and drainages, fences, gates and cattle guards, ford and low water crossings. 19.2.20.11 NMAC.

*Reclamation: (19.2.20.12 NMAC)*

The seedbed will be prepared and the roadbed reseeded. 19.2.20.12 NMAC.

*Oil and Gas Rule: (19.2.100 NMAC)*

Site Development: All access roads shall be built, maintained and reclaimed in accordance with 19.2.20 NMAC.

Review and Inspection: State land office personnel or oil conservation division personnel may, from time to time, recommend actions necessary to comply with reasonable use of the surface and prudent operator standards. (19.2.100.66(D) (1) NMAC).

## ATTACHMENT A to EXHIBIT B

SURFACE

BTA Oil Producers, LLC

1. **Purpose.** The purpose of this Reclamation Plan is to provide for the restoration of trust land to its original condition existing prior to the placement of any improvements.
2. **Timing.** Unless otherwise permitted by the NMSLO, this reclamation plan and all earthworks required for reclamation must be implemented and completed within six months following closure of all activity or final use under this business lease. Monitoring, maintenance, revegetation and noxious weed treatments may be required to continue until final relinquishment.
3. **Interim Reclamation.** After initial construction has been completed, all portions of the location not essential to necessary operations or maintenance will be reclaimed within six months of completion of construction and in accordance with the provisions below.
4. **Structures, Equipment, Trash and Debris.** Unless structures or equipment are to be re-used on site, any structure, equipment, trash, debris, garbage, rubbish, junk, scrap, or broken or contaminated equipment, such as pipelines, plastic lining, surface flowlines, tanks, vehicles, scrap materials of any kind, or other equipment must be removed and disposed of in accordance with state and federal regulations within 30 days of final use or completion of construction; no hazardous substances, trash or litter will be buried or placed in pits.
5. **Delineation.** If hazardous materials have been used on site and if such materials may have leaked or spilled or been released on site, or if such materials have caused contamination to the soils, the Lessee will delineate the horizontal and vertical extent of the contamination; a hazardous materials delineation plan must be approved by the NMSLO; for oil and gas related contamination, the NMOCD must also approve the delineation plan; the NMSLO may review NMOCD approved plans for adequacy of sampling related to restoration of surface conditions; for non-oil and gas related contamination, the NMED may require delineation and monitoring related to surface and ground water impacts; the NMSLO may require any necessary sampling or reclamation related to the restoration of surface conditions.
6. **Hazardous Materials Reclamation Plan.** In the event of a spill or hazardous materials release, a specific hazardous materials reclamation plan must be submitted to, and approved by, the NMSLO within 30 days of completion of delineation. The hazardous materials reclamation plan should address each of the matters described below.

7. **Removal/Containment.** The Lessee will remove and replace any contaminated soils, including contaminated caliche or base course. Contaminated soils and caliche should be disposed of only in state permitted disposal locations such as land farms or hazardous disposal sites, and in accordance with state and federal regulations. Contaminated soils should be removed at least to the rooting zone. Removal should be based on site delineation, but in areas of deep saturation and deep soils this depth is typically four feet; removal depth may be less in shallow soils. If any contaminated soil remains at the site the reclamation plan must address containment, including the potential for the contaminant to wick upward into the rooting zone or downward toward groundwater. If complete removal is impossible, the Lessee may apply to the NMSLO for a variance to stabilize and contain the hazardous material that cannot be removed. If the NMSLO agrees, a stabilization and containment plan may replace or supplement the removal and replacement plan. In addition to the removal of contaminated soils, the Lessee will remove all uncontaminated caliche or base course.
8. **Soil Replacement.** The Lessee will replace contaminated soils, caliche or base course, and uncontaminated caliche or base course, with certified clean top soil; replacement soils should have comparable structure and chemistry to healthy, native undisturbed soils in the vicinity.
9. **Trash and Debris:** Unless equipment is to be re-used onsite, the Lessee shall remove any trash, debris, garbage, rubbish, junk, scrap, or broken or contaminated equipment, such as pipelines, plastic lining, surface flowlines, tanks, scrap materials of any kind, or other equipment and dispose of such trash and debris in accordance with state and federal regulations within 30 days of final use or completion of construction; no hazardous substances, trash or litter will be buried or placed in pits on state trust land without the express written permission of the Commissioner.
10. **Surface Preparation.** The Lessee will contour the ground surface to blend in with the surrounding topography and to allow the natural hydrology of the basin to function without impediment or impact; no major depressions or pits will be left that will trap water or cause ponding except where the project involves a mining pit where there is no possible outlet; slopes will not exceed 3:1 (run to rise).
11. **Erosion Control:** Where active transportation of sediment through gulying, head-cutting, slumping or deep or excessive rills (greater than 3 inches deep) occurs within the lease area or within the adjacent area of impact, the Lessee will install erosion control structures to repair and control gullies, head-cuts, rills, and other forms of sediment movement;
  - a. Erosion control structures will be designed to restore natural hydrological function and flood regime, and to the extent possible will use local rock or bio-degradable materials and low-energy, minimum-necessary designs;
  - b. Erosion control structures may include, but are not limited to, one rock darns, rock mulch rundowns, zuni bowls, media hums, swales, berms, terraces, wattles, rock

or log mats, hay mulch, gabions, bales or other stabilizing enhancements to control erosion.

- 12. Drainage Control:** Where ephemeral, intermittent or permanent water flow-ways or drainages cross, intersect or bisect the lease area, the Lessee will install drainage control structures to manage water flow, especially across roads, pipeline rights of way, or other built obstacles that may interfere with natural drainage;
- Drainage control structures will be designed to enhance natural hydrologic function and flood regime as much as possible so as not to increase the erosional impact of water flows to any built structures or to the upstream or downstream landscape; drainage control designs will be engineered or built in conformance with industry standards (e.g. the NRCS, BLM or USFS) and approved by the NMSLO;
  - Drainage control structures may include but are not limited to road bars, culverts, water bars, parallel and lateral ditches, drains, and low water crossings.
- 13. Seedbed Preparation.** All disturbed soils within the lease area will be revegetated. The Lessee will prepare the seedbed in consultation with the NMSLO to maximize potential for success. This may include, but is not limited to, a combination of watering with certified fresh water (<140 ppm chloride), mechanical packing to consolidate loose soils, disking or ripping to loosen compacted soils (up to 18 inch depth with furrow spacing of 2 feet), crimping hay mulch into the soil (2 tons/acre), furrowing or imprint rolling to create microhabitats, scarifying (minimum 4 inch depth), adding soil amendments, contouring and/or importing top soil. Note: Caliche is not top soil and should not be mixed or flipped into the top soil.
- 14. Revegetation:** The Lessee will seed the prepared seedbed with a drill seeder or hydraulic seeder with different sized seed boxes; unless otherwise authorized by the NMSLO, hydro-seeding will be used on 3:1 slopes or greater; all disturbed areas will be seeded with the seed mixture(s) provided or approved by the NMSLO; the seed mixture will be planted in the amounts specified in pounds of pure live seed per acre; the seed will contain no primary or secondary noxious weeds; commercial seed will be either certified or registered seed; the seed drill will be equipped with a depth regulator, and seed will be planted at the depth prescribed by the NMSLO; the seed mixture will be evenly and uniformly planted over the disturbed area; seed mixes should be provided in bags separating seed types into size categories, to ensure that the appropriate seed drill box is used for each species; broadcast seeding will only be allowed when no other option is available; where broadcast seeding, the area should be disked with a tandem, double-disk, one day prior to broadcast seeding and the lbs/acre are to be doubled; seeding will be conducted no more than two weeks following completion of final seedbed preparation; seeding should take place at the beginning of the growing season prior to the monsoon season unless otherwise directed; seeding will be repeated until a satisfactory stand is established as determined by the NMSLO; evaluation of growth will not be made before completion of at least one full growing season after seeding; seeding will be repeated until a satisfactory stand is established.

- 15. Noxious Weeds.** The Lessee will prepare a noxious weed plan in consultation with the NMSLO and noxious weeds will be monitored and treated on an annual basis until controlled.
- 16. Access Control.** Unless otherwise authorized by the NMSLO, all reclamation areas will be closed to public access; private access points will be gated, fenced and signed; unauthorized or trespass access points will be permanently closed and signed;
- a. **Gate and Fencing Specifications:** Unless otherwise directed by the NMSLO, a locked metal gate with 4-inch H-braces and a permanent fence extending at least 100 feet from either side of the gate, or to the next adjacent gate, will be installed to block public access to all closed reclamation sites; fence will be constructed with steel T-posts on 16-foot spacing, with stays every 8 feet and 4 strands of barbed wire; the top wire should be set at 42 inches above the ground surface; in-line braces will be used at intervals not to exceed 660 feet; corners will be braced and set in concrete; fence wire will be attached on the outside of the T-posts with wire ties;
  - b. **Permanent Closure Specifications:** Dirt berms, permanent hard barriers or rock barricades will be installed to block unauthorized access points to reclamation sites; berms and barriers will be at least 3 feet high and will extend the width of the access point; berms will be hard packed; barriers and barricades may be constructed of metal pipe rail, concrete, or rock and may be used in combination with berm work to ensure closure of an access point;
  - c. **Signage:** Signs should be noticeably visible and should clearly state that public access is not authorized.
- 17. Monitoring.** The Lessee will monitor the reclamation site annually until relinquished by the NMSLO; prior to relinquishment, the NMSLO may require supplemental clean up, maintenance of erosion control structures, additional reseeding efforts, or noxious weed treatments to ensure success of reclamation; the NMSLO may request detailed annual monitoring reports depending on the severity of the situation.
- 18. Reporting.** The NMSLO may require weekly updates during the course of the initial reclamation work; weekly updates will include a brief narrative statement of work completed with photo documentation; upon completion of the initial reclamation work, the Lessee will notify the NMSLO that the site is ready for inspection; annual monitoring reports may be required depending on the severity of the situation.
- 19. Relinquishment:** The NMSLO will inspect the initial reclamation work upon completion and will provide the Lessee with a statement indicating that the initial work has been completed as required and detailing any follow up work that may be necessary prior to relinquishment; notice of relinquishment will be provided upon complete satisfaction of all NMSLO reclamation requirements; business Lessee obligations to remove improvements and to restore trust land shall survive the termination of the lease (NMAC 19.2.9.17(B)).





## APPENDIX D

### Photographic Log



**Photographic Log**  
**BTA Oil Producers, LLC**  
**Vacuum SWD H #035 Pipeline**  
**Incident Number nAPP2313058428**

Date & Time: Thu, May 18, 2023 at 05:25:31 MDI  
 Position: +032.793393° / -103.422662° (-17.2m)  
 Altitude: 3854ft (-62.8ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 251° S46W 41.0km True (-17°)  
 Elevation Angle: +05.2°  
 Horizon Angle: +00°  
 Zoom: 0.5X



Photograph: 1  
 Description: Pipeline trench  
 View: south-southwest

Date: 5/18/2023

Date & Time: Thu, May 18, 2023 at 06:55:57 MDI  
 Position: +032.793393° / -103.422662° (-15.9m)  
 Altitude: 3854ft (-62.8ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 225° S46W 41.0km True (-17°)  
 Elevation Angle: +05.2°  
 Horizon Angle: +00°  
 Zoom: 0.5X



Photograph: 2  
 Description: Staining observed in trench  
 View: west

Date: 5/18/2023

Date & Time: Wed, Jul 05, 2023 at 14:26:06 MDI  
 Position: +032.793393° / -103.422662° (-232.8ft)  
 Altitude: 3854ft (-62.8ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 221° S46W 39.8km True (-17°)  
 Elevation Angle: +02.4°  
 Horizon Angle: +02.4°  
 Zoom: 0.5X  
 PH01 in the trench  
 March 01 0316



Photograph: 3  
 Description: Pothole PH01  
 View: southwest

Date: 7/5/2023



Photograph: 4  
 Description: Sonic drilling  
 View: southwest

Date: 9/19/2023

Sep 19, 2023 5:41:01 PM  
 32.79359974N 103.42260262W  
 208° SW  
 Unnamed Road  
 Lovington  
 Lea County  
 New Mexico  
 Altitude: 3793.8ft  
 Speed: 0.0mi/h



## APPENDIX E

### 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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May 31, 2023

HADLIE GREEN

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 05/18/23 10:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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, LLC  
705 W WADLEY AVE.  
MIDLAND TX, 79705Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:Reported:  
31-May-23 11:56

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01 @ 1'	H232511-01	Soil	18-May-23 09:00	18-May-23 10:50
BH01A @ 3'	H232511-02	Soil	18-May-23 09:05	18-May-23 10:50

05/31/23 - Login mistake was made on the sample IDs. This is the revised report with the corrected sample IDs and will replace the report sent on 05/23/23.

Cardinal Laboratories

\*=Accredited Analyte

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A handwritten signature in cursive script, appearing to read "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  
705 W WADLEY AVE.  
MIDLAND TX, 79705

Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:

Reported:  
31-May-23 11:56

**BH01 @ 1'**  
**H232511-01 (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>1090</b>		16.0	mg/kg	4	3051932	GM	19-May-23	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	3051926	JH/	21-May-23	8021B	
Toluene*	<b>0.096</b>		0.050	mg/kg	50	3051926	JH/	21-May-23	8021B	
Ethylbenzene*	<b>0.318</b>		0.050	mg/kg	50	3051926	JH/	21-May-23	8021B	
Total Xylenes*	<b>0.734</b>		0.150	mg/kg	50	3051926	JH/	21-May-23	8021B	
Total BTEX	<b>1.15</b>		0.300	mg/kg	50	3051926	JH/	21-May-23	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 125 % 71.5-134 3051926 JH/ 21-May-23 8021B

**Petroleum Hydrocarbons by GC FID****S-06**

GRO C6-C10*	<100		100	mg/kg	10	3051906	MS	19-May-23	8015B	
DRO >C10-C28*	<b>11600</b>		100	mg/kg	10	3051906	MS	19-May-23	8015B	
EXT DRO >C28-C36	<b>5180</b>		100	mg/kg	10	3051906	MS	19-May-23	8015B	

Surrogate: 1-Chlorooctane 123 % 48.2-134 3051906 MS 19-May-23 8015B

Surrogate: 1-Chlorooctadecane 304 % 49.1-148 3051906 MS 19-May-23 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, LLC  
705 W WADLEY AVE.  
MIDLAND TX, 79705

Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:

Reported:  
31-May-23 11:56

**BH01A @ 3'**  
**H232511-02 (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>6530</b>		16.0	mg/kg	4	3051932	GM	19-May-23	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021****S-04**

Benzene*	<0.100		0.100	mg/kg	100	3051923	JH	22-May-23	8021B	
Toluene*	<b>3.19</b>		0.100	mg/kg	100	3051923	JH	22-May-23	8021B	
Ethylbenzene*	<b>9.21</b>		0.100	mg/kg	100	3051923	JH	22-May-23	8021B	
Total Xylenes*	<b>15.4</b>		0.300	mg/kg	100	3051923	JH	22-May-23	8021B	
Total BTEX	<b>27.8</b>		0.600	mg/kg	100	3051923	JH	22-May-23	8021B	

Surrogate: 4-Bromofluorobenzene (PID)		144 %		71.5-134		3051923	JH	22-May-23	8021B	
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**Petroleum Hydrocarbons by GC FID****S-04**

GRO C6-C10*	<b>378</b>		10.0	mg/kg	1	3051906	MS	19-May-23	8015B	
DRO >C10-C28*	<b>7860</b>		10.0	mg/kg	1	3051906	MS	19-May-23	8015B	
EXT DRO >C28-C36	<b>2060</b>		10.0	mg/kg	1	3051906	MS	19-May-23	8015B	

Surrogate: 1-Chlorooctane		141 %		48.2-134		3051906	MS	19-May-23	8015B	
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Surrogate: 1-Chlorooctadecane		184 %		49.1-148		3051906	MS	19-May-23	8015B	
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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  
705 W WADLEY AVE.  
MIDLAND TX, 79705

Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:

Reported:  
31-May-23 11:56

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 3051932 - 1:4 DI Water</b>										
<b>Blank (3051932-BLK1)</b>										
					Prepared & Analyzed: 19-May-23					
Chloride	ND	16.0	mg/kg							
<b>LCS (3051932-BS1)</b>										
					Prepared & Analyzed: 19-May-23					
Chloride	400	16.0	mg/kg	400		100	80-120			
<b>LCS Dup (3051932-BSD1)</b>										
					Prepared & Analyzed: 19-May-23					
Chloride	416	16.0	mg/kg	400		104	80-120	3.92	20	

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  
705 W WADLEY AVE.  
MIDLAND TX, 79705

Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:

Reported:  
31-May-23 11:56

**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 3051923 - Volatiles****Blank (3051923-BLK1)**

Prepared: 19-May-23 Analyzed: 21-May-23

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)	0.0534		mg/kg	0.0500		107	71.5-134			

**LCS (3051923-BS1)**

Prepared: 19-May-23 Analyzed: 21-May-23

Benzene	2.11	0.050	mg/kg	2.00		105	81.4-118			
Toluene	2.08	0.050	mg/kg	2.00		104	88.7-121			
Ethylbenzene	2.17	0.050	mg/kg	2.00		108	86.1-120			
m,p-Xylene	4.31	0.100	mg/kg	4.00		108	88.2-124			
o-Xylene	2.14	0.050	mg/kg	2.00		107	84.9-118			
Total Xylenes	6.44	0.150	mg/kg	6.00		107	87.3-122			
Surrogate: 4-Bromofluorobenzene (PID)	0.0495		mg/kg	0.0500		99.1	71.5-134			

**LCS Dup (3051923-BS1)**

Prepared: 19-May-23 Analyzed: 21-May-23

Benzene	2.10	0.050	mg/kg	2.00		105	81.4-118	0.243	15.8	
Toluene	2.13	0.050	mg/kg	2.00		106	88.7-121	2.32	15.9	
Ethylbenzene	2.17	0.050	mg/kg	2.00		108	86.1-120	0.101	16	
m,p-Xylene	4.29	0.100	mg/kg	4.00		107	88.2-124	0.478	16.2	
o-Xylene	2.11	0.050	mg/kg	2.00		105	84.9-118	1.38	16.7	
Total Xylenes	6.39	0.150	mg/kg	6.00		107	87.3-122	0.777	16.3	
Surrogate: 4-Bromofluorobenzene (PID)	0.0486		mg/kg	0.0500		97.2	71.5-134			

**Batch 3051926 - Volatiles****Blank (3051926-BLK1)**

Prepared: 19-May-23 Analyzed: 21-May-23

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							

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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  
705 W WADLEY AVE.  
MIDLAND TX, 79705

Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:

Reported:  
31-May-23 11:56

**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 3051926 - Volatiles****Blank (3051926-BLK1)**

Prepared: 19-May-23 Analyzed: 21-May-23

Total BTEX	ND	0.300	mg/kg							
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Surrogate: 4-Bromofluorobenzene (PID)	0.0521		mg/kg	0.0500		104	71.5-134			
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**LCS (3051926-BS1)**

Prepared: 19-May-23 Analyzed: 21-May-23

Benzene	2.06	0.050	mg/kg	2.00		103	81.4-118			
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Toluene	2.10	0.050	mg/kg	2.00		105	88.7-121			
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Ethylbenzene	2.03	0.050	mg/kg	2.00		101	86.1-120			
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m,p-Xylene	4.27	0.100	mg/kg	4.00		107	88.2-124			
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o-Xylene	2.03	0.050	mg/kg	2.00		101	84.9-118			
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Total Xylenes	6.30	0.150	mg/kg	6.00		105	87.3-122			
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Surrogate: 4-Bromofluorobenzene (PID)	0.0505		mg/kg	0.0500		101	71.5-134			
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**LCS Dup (3051926-BSD1)**

Prepared: 19-May-23 Analyzed: 21-May-23

Benzene	2.18	0.050	mg/kg	2.00		109	81.4-118	5.34	15.8	
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Toluene	2.24	0.050	mg/kg	2.00		112	88.7-121	6.29	15.9	
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Ethylbenzene	2.16	0.050	mg/kg	2.00		108	86.1-120	6.49	16	
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m,p-Xylene	4.55	0.100	mg/kg	4.00		114	88.2-124	6.30	16.2	
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o-Xylene	2.15	0.050	mg/kg	2.00		107	84.9-118	5.72	16.7	
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Total Xylenes	6.70	0.150	mg/kg	6.00		112	87.3-122	6.11	16.3	
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Surrogate: 4-Bromofluorobenzene (PID)	0.0503		mg/kg	0.0500		101	71.5-134			
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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  
705 W WADLEY AVE.  
MIDLAND TX, 79705

Project: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Manager: HADLIE GREEN  
Fax To:

Reported:  
31-May-23 11:56

**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 3051906 - General Prep - Organics****Blank (3051906-BLK1)**

Prepared &amp; Analyzed: 19-May-23

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	40.7		mg/kg	49.6		82.2	48.2-134			
Surrogate: 1-Chlorooctadecane	44.9		mg/kg	50.0		89.8	49.1-148			

**LCS (3051906-BS1)**

Prepared &amp; Analyzed: 19-May-23

GRO C6-C10	171	10.0	mg/kg	200		85.5	78.5-124			
DRO >C10-C28	189	10.0	mg/kg	200		94.7	72.5-126			
Total TPH C6-C28	360	10.0	mg/kg	400		90.1	77.6-123			
Surrogate: 1-Chlorooctane	44.7		mg/kg	49.6		90.1	48.2-134			
Surrogate: 1-Chlorooctadecane	45.2		mg/kg	50.0		90.3	49.1-148			

**LCS Dup (3051906-BSD1)**

Prepared &amp; Analyzed: 19-May-23

GRO C6-C10	169	10.0	mg/kg	200		84.6	78.5-124	1.05	17.7	
DRO >C10-C28	194	10.0	mg/kg	200		97.2	72.5-126	2.59	21	
Total TPH C6-C28	364	10.0	mg/kg	400		90.9	77.6-123	0.879	18.5	
Surrogate: 1-Chlorooctane	45.9		mg/kg	49.6		92.6	48.2-134			
Surrogate: 1-Chlorooctadecane	47.6		mg/kg	50.0		95.2	49.1-148			

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Celey D. Keene, Lab Director/Quality Manager

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### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
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



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:	Hadlie Green	Company:	BTA
Address:	601 N. Marlenfeld St. STE 400	Attn:	Kelton Beaird
City:	Midland	Address:	104 S Pecos St
State:	TX	City:	Midland
Zip:	79701	State:	TX
Phone #:	432-557-8895	Zip:	79701
Fax #:		Phone #:	432-682-3753
Project #:	03C2012054	Project Owner:	
Project Name:	Vacuum SWD H 35 Pipeline	State:	TX
Project Location:	32.793423, -103.422657	Zip:	79701
Sample Name:	Kase Parker	Phone #:	
Fax #:			

FOR LAB USE ONLY	Lab I.D.	Sample I.D.	Sample Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX	PRESERV.	SAMPLING	DATE	TIME	BTEx	TPH	Chloride 4500
	H333511	BH01	1		1	GROUNDWATER			5/18/23	0900	X	X	X
		BH01A	3		1	WASTEWATER			5/18/23	0905	X	X	X
						SOIL							
						OIL							
						SLUDGE							
						OTHER:							
						ACID/BASE:							
						ICE / COOL							
						OTHER:							

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Relinquished By:	Date: 5/18/23	Received By:	Shodiq
Relinquished By:	Time: 1050	Received By:	Shodiq
Delivered By: (Circle One)	Observed Temp.: 8.1°C	Sample Condition	CHECKED BY: (Initials)
Sampler - UPS - Bus - Other:	Corrected Temp.: 7.5°C	Cool Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
		Turnaround Time:	Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>
		Thermometer ID #113	Bacteria (only) <input type="checkbox"/>
		Corrosion Factor -0.5°C	Cool Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No
			Observed Temp.: °C
			Corrected Temp.: °C

FORM 0006 R 3.2 1/10/77

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



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

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July 03, 2023

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 06/29/23 11:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 01 2.5' (H233362-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2023	ND	2.22	111	2.00	2.80	
<b>Toluene*</b>	<b>0.073</b>	0.050	06/30/2023	ND	2.20	110	2.00	2.35	
<b>Ethylbenzene*</b>	<b>0.155</b>	0.050	06/30/2023	ND	2.14	107	2.00	2.37	
<b>Total Xylenes*</b>	<b>0.396</b>	0.150	06/30/2023	ND	6.59	110	6.00	3.28	
<b>Total BTX</b>	<b>0.623</b>	0.300	06/30/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 124 % 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>4040</b>	16.0	06/30/2023	ND	432	108	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<50.0	50.0	06/29/2023	ND	171	85.3	200	1.93		
<b>DRO &gt;C10-C28*</b>	<b>15500</b>	50.0	06/29/2023	ND	176	88.0	200	4.21		
<b>EXT DRO &gt;C28-C36</b>	<b>4990</b>	50.0	06/29/2023	ND						

Surrogate: 1-Chlorooctane 121 % 48.2-134

Surrogate: 1-Chlorooctadecane 546 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 01 A 3' (H233362-02)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.477	0.100	06/30/2023	ND	2.22	111	2.00	2.80	
Toluene*	7.16	0.100	06/30/2023	ND	2.20	110	2.00	2.35	
Ethylbenzene*	7.60	0.100	06/30/2023	ND	2.14	107	2.00	2.37	
Total Xylenes*	11.9	0.300	06/30/2023	ND	6.59	110	6.00	3.28	
Total BTX	27.1	0.600	06/30/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 128 % 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	3440	16.0	06/30/2023	ND	432	108	400	3.77	

TPH 8015M	mg/kg		Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	221	100	06/29/2023	ND	171	85.3	200	1.93	
DRO >C10-C28*	3320	100	06/29/2023	ND	176	88.0	200	4.21	
EXT DRO >C28-C36	1070	100	06/29/2023	ND					

Surrogate: 1-Chlorooctane 138 % 48.2-134

Surrogate: 1-Chlorooctadecane 195 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 01 B 4' (H233362-03)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	2.61	1.00	06/30/2023	ND	2.22	111	2.00	2.80	
Toluene*	34.0	1.00	06/30/2023	ND	2.20	110	2.00	2.35	
Ethylbenzene*	55.7	1.00	06/30/2023	ND	2.14	107	2.00	2.37	
Total Xylenes*	94.8	3.00	06/30/2023	ND	6.59	110	6.00	3.28	
Total BTEX	187	6.00	06/30/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 123 % 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	2200	16.0	06/30/2023	ND	432	108	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	2690	100	06/29/2023	ND	171	85.3	200	1.93	
DRO >C10-C28*	19800	100	06/29/2023	ND	176	88.0	200	4.21	
EXT DRO >C28-C36	5510	100	06/29/2023	ND					

Surrogate: 1-Chlorooctane 241 % 48.2-134

Surrogate: 1-Chlorooctadecane 603 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 02 4' (H233362-04)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2023	ND	2.22	111	2.00	2.80	
Toluene*	0.105	0.050	06/30/2023	ND	2.20	110	2.00	2.35	
Ethylbenzene*	0.145	0.050	06/30/2023	ND	2.14	107	2.00	2.37	
Total Xylenes*	0.237	0.150	06/30/2023	ND	6.59	110	6.00	3.28	
Total BTEX	0.488	0.300	06/30/2023	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	32.0	16.0	06/30/2023	ND	432	108	400	3.77		

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	06/29/2023	ND	171	85.3	200	1.93	
DRO >C10-C28*	<10.0	10.0	06/29/2023	ND	176	88.0	200	4.21	
EXT DRO >C28-C36	<10.0	10.0	06/29/2023	ND					

Surrogate: 1-Chlorooctane 112 % 48.2-134

Surrogate: 1-Chlorooctadecane 114 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 03 0.5' (H233362-05)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	06/30/2023	ND	2.22	111	2.00	2.80		
Toluene*	0.076	0.050	06/30/2023	ND	2.20	110	2.00	2.35		
Ethylbenzene*	0.072	0.050	06/30/2023	ND	2.14	107	2.00	2.37		
Total Xylenes*	<0.150	0.150	06/30/2023	ND	6.59	110	6.00	3.28		
Total BTX	<0.300	0.300	06/30/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 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	80.0	16.0	06/30/2023	ND	432	108	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<50.0	50.0	06/29/2023	ND	169	84.4	200	1.92	
DRO >C10-C28*	604	50.0	06/29/2023	ND	156	78.1	200	0.512	QM-07, QR-03
EXT DRO >C28-C36	599	50.0	06/29/2023	ND					

Surrogate: 1-Chlorooctane 80.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 117 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 03 A 2' (H233362-06)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	1.26	0.500	06/30/2023	ND	2.22	111	2.00	2.80	
Toluene*	12.9	0.500	06/30/2023	ND	2.20	110	2.00	2.35	
Ethylbenzene*	38.6	0.500	06/30/2023	ND	2.14	107	2.00	2.37	
Total Xylenes*	49.7	1.50	06/30/2023	ND	6.59	110	6.00	3.28	
Total BTEX	102	3.00	06/30/2023	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	384	16.0	06/30/2023	ND	432	108	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	1160	100	06/29/2023	ND	169	84.4	200	1.92	
DRO >C10-C28*	11100	100	06/29/2023	ND	156	78.1	200	0.512	
EXT DRO >C28-C36	3070	100	06/29/2023	ND					

Surrogate: 1-Chlorooctane 192 % 48.2-134

Surrogate: 1-Chlorooctadecane 390 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 04 4' (H233362-07)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	06/30/2023	ND	2.22	111	2.00	2.80		
Toluene*	<0.050	0.050	06/30/2023	ND	2.20	110	2.00	2.35		
Ethylbenzene*	<0.050	0.050	06/30/2023	ND	2.14	107	2.00	2.37		
Total Xylenes*	<0.150	0.150	06/30/2023	ND	6.59	110	6.00	3.28		
Total BTEx	<0.300	0.300	06/30/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	06/30/2023	ND	432	108	400	3.77		

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	06/29/2023	ND	169	84.4	200	1.92	
DRO >C10-C28*	16.9	10.0	06/29/2023	ND	156	78.1	200	0.512	
EXT DRO >C28-C36	29.6	10.0	06/29/2023	ND					

Surrogate: 1-Chlorooctane 94.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 102 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 05 0.5' (H233362-08)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2023	ND	2.22	111	2.00	2.80	
Toluene*	<0.050	0.050	06/30/2023	ND	2.20	110	2.00	2.35	
Ethylbenzene*	<0.050	0.050	06/30/2023	ND	2.14	107	2.00	2.37	
Total Xylenes*	<0.150	0.150	06/30/2023	ND	6.59	110	6.00	3.28	
Total BTEx	<0.300	0.300	06/30/2023	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	<16.0	16.0	06/30/2023	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	06/29/2023	ND	169	84.4	200	1.92	
DRO >C10-C28*	625	10.0	06/29/2023	ND	156	78.1	200	0.512	
EXT DRO >C28-C36	643	10.0	06/29/2023	ND					

Surrogate: 1-Chlorooctane 83.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 148 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 06/29/2023  
Reported: 07/03/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 06/28/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH 05 A 2' (H233362-09)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/30/2023	ND	2.22	111	2.00	2.80	
Toluene*	0.061	0.050	06/30/2023	ND	2.20	110	2.00	2.35	
Ethylbenzene*	0.050	0.050	06/30/2023	ND	2.14	107	2.00	2.37	
Total Xylenes*	<0.150	0.150	06/30/2023	ND	6.59	110	6.00	3.28	
Total BTX	<0.300	0.300	06/30/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	272	16.0	06/30/2023	ND	448	112	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*	<10.0	10.0	06/29/2023	ND	169	84.4	200	1.92	
DRO >C10-C28*	775	10.0	06/29/2023	ND	156	78.1	200	0.512	
EXT DRO >C28-C36	762	10.0	06/29/2023	ND					

Surrogate: 1-Chlorooctane 113 % 48.2-134

Surrogate: 1-Chlorooctadecane 193 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

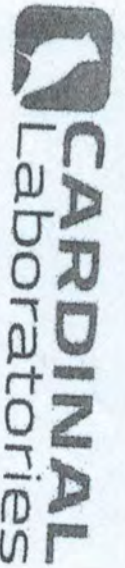
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A handwritten signature in black ink, appearing to read "Celey D. Keene", is written over a horizontal line.

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

<b>Project Manager:</b> Hadlie Green <b>Address:</b> 3122 National Parks Hwy <b>City:</b> Calhoun <b>Phone #:</b> 432 557-8895 <b>Fax #:</b> NM Zip: 88220 <b>Project #:</b> 03C2012054 <b>Project Owner:</b> BTA Oil <b>Project Name:</b> Vacuum SMD H 35 Pipeline <b>Project Location:</b> 32.193423, -103.422057 <b>Sampler Name:</b> Mariana O'Dell		<b>P.O. #:</b> <b>Company:</b> BTA Oil <b>Attn:</b> Kelton Beaird <b>Address:</b> 104 S Pecos St <b>City:</b> Midland <b>State:</b> TX Zip: 79701 <b>Phone #:</b> <b>Fax #:</b>	
<b>Company Name:</b> Ensolum, LLC		<b>BILL TO</b>	
<b>FOR LAB USE ONLY</b>		<b>ANALYSIS REQUEST</b>	
<b>Lab I.D.</b> H233342	<b>Sample I.D.</b> PH01 PH01A PH01B PH02 PH03 PH03A PH04 PH05 PH05A	<b>Depth (feet)</b> 2.5' 3' 4' 4' 0.5' 2' 4' 0.5' 2'	(G) RAB OR (C) OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER: ACID/BASE: ICE / COOL OTHER:
<b>DATE</b> 10/28/23		<b>TIME</b> 9:10 9:15 9:30 10:10 10:40 10:50 12:20 12:45 12:55	
<b>Relinquished By:</b> M. O'Dell		<b>Received By:</b> Mariana O'Dell	
<b>Relinquished By:</b> M. O'Dell		<b>Received By:</b> Mariana O'Dell	
<b>Delivered By: (Circle One)</b> UPS - Bus - Other:		<b>Observed Temp. °C</b> 2.7 <b>Corrected Temp. °C</b> 2.1	
<b>Turnaround Time:</b> 5 days <b>Thermometer ID #113</b> <b>Correction Factor:</b> -0.5°C		<b>Standard</b> Rush <input checked="" type="checkbox"/>	
<b>Remarks:</b> All Results are emailed. Please provide Email address: hgreene@ensolum.com		<b>Bacteria (only)</b> Cool Intact <input type="checkbox"/> Yes <input type="checkbox"/> No Observed Temp. °C Corrected Temp. °C	

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





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

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July 10, 2023

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 07/05/23 16:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/05/2023  
Reported: 07/10/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 07/05/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: PH 01 C 6' (H233429-01)**

BTX 8021B		mg/kg	Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.500	0.500	07/07/2023	ND	1.87	93.3	2.00	1.95	
<b>Toluene*</b>	<b>3.90</b>	0.500	07/07/2023	ND	1.98	99.1	2.00	3.34	
<b>Ethylbenzene*</b>	<b>20.9</b>	0.500	07/07/2023	ND	2.03	101	2.00	2.99	
<b>Total Xylenes*</b>	<b>46.1</b>	1.50	07/07/2023	ND	5.92	98.7	6.00	2.95	
<b>Total BTX</b>	<b>70.9</b>	3.00	07/07/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 144 % 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>3040</b>	16.0	07/06/2023	ND	432	108	400	0.00	

TPH 8015M		mg/kg	Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>2350</b>	50.0	07/06/2023	ND	235	118	200	10.7	
<b>DRO &gt;C10-C28*</b>	<b>15900</b>	50.0	07/06/2023	ND	214	107	200	13.5	
<b>EXT DRO &gt;C28-C36</b>	<b>3200</b>	50.0	07/06/2023	ND					

Surrogate: 1-Chlorooctane 311 % 48.2-134

Surrogate: 1-Chlorooctadecane 297 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/05/2023  
Reported: 07/10/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 07/05/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: PH 01 D 10' (H233429-02)**

BTEx 8021B		mg/kg	Analyzed By: MS					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Benzene*</b>	<b>0.064</b>	0.050	07/07/2023	ND	1.87	93.3	2.00	1.95	
<b>Toluene*</b>	<b>1.10</b>	0.050	07/07/2023	ND	1.98	99.1	2.00	3.34	
<b>Ethylbenzene*</b>	<b>2.61</b>	0.050	07/07/2023	ND	2.03	101	2.00	2.99	
<b>Total Xylenes*</b>	<b>8.55</b>	0.150	07/07/2023	ND	5.92	98.7	6.00	2.95	
<b>Total BTEX</b>	<b>12.3</b>	0.300	07/07/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 302 % 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>3280</b>	16.0	07/06/2023	ND	432	108	400	0.00	

TPH 8015M		mg/kg	Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>1200</b>	50.0	07/06/2023	ND	235	118	200	10.7	
<b>DRO &gt;C10-C28*</b>	<b>11900</b>	50.0	07/06/2023	ND	214	107	200	13.5	
<b>EXT DRO &gt;C28-C36</b>	<b>2580</b>	50.0	07/06/2023	ND					

Surrogate: 1-Chlorooctane 218 % 48.2-134

Surrogate: 1-Chlorooctadecane 251 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/05/2023  
Reported: 07/10/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 07/05/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: PH 01 E 14' (H233429-03)**

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	07/06/2023	ND	2.00	100	2.00	2.61	
Toluene*	<0.050	0.050	07/06/2023	ND	1.92	95.9	2.00	1.00	
Ethylbenzene*	0.144	0.050	07/06/2023	ND	2.08	104	2.00	1.06	
Total Xylenes*	0.324	0.150	07/06/2023	ND	6.30	105	6.00	1.58	
Total BTEX	0.468	0.300	07/06/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 124 % 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	4560	16.0	07/06/2023	ND	432	108	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*	14.1	10.0	07/06/2023	ND	235	118	200	10.7	
DRO >C10-C28*	728	10.0	07/06/2023	ND	214	107	200	13.5	
EXT DRO >C28-C36	201	10.0	07/06/2023	ND					

Surrogate: 1-Chlorooctane 131 % 48.2-134

Surrogate: 1-Chlorooctadecane 163 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 07/05/2023  
Reported: 07/10/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 07/05/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Shalyn Rodriguez

**Sample ID: PH 01 G 18' (H233429-05)**

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	07/06/2023	ND	2.00	100	2.00	2.61	
Toluene*	<b>0.171</b>	0.050	07/06/2023	ND	1.92	95.9	2.00	1.00	
Ethylbenzene*	<b>1.01</b>	0.050	07/06/2023	ND	2.08	104	2.00	1.06	
Total Xylenes*	<b>1.89</b>	0.150	07/06/2023	ND	6.30	105	6.00	1.58	
Total BTEX	<b>3.07</b>	0.300	07/06/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 143 % 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>4000</b>	16.0	07/06/2023	ND	432	108	400	0.00	

TPH 8015M		mg/kg	Analyzed By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<b>75.7</b>	50.0	07/07/2023	ND	235	118	200	10.7	
DRO >C10-C28*	<b>2030</b>	50.0	07/07/2023	ND	214	107	200	13.5	
EXT DRO >C28-C36	<b>629</b>	50.0	07/07/2023	ND					

Surrogate: 1-Chlorooctane 142 % 48.2-134

Surrogate: 1-Chlorooctadecane 163 % 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

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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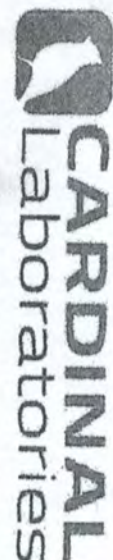
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A handwritten signature in black ink, appearing to read "Celey D. Keene", is written over a horizontal line.

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

[illegible]



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

---

September 21, 2023

HADLIE GREEN

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 09/20/23 12:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/21/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 G @ 25' (H235098-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/20/2023	ND	2.17	108	2.00	6.21	
Toluene*	<0.050	0.050	09/20/2023	ND	2.24	112	2.00	7.19	
Ethylbenzene*	<0.050	0.050	09/20/2023	ND	2.39	120	2.00	7.07	
Total Xylenes*	<0.150	0.150	09/20/2023	ND	6.29	105	6.00	6.22	
Total BTX	<0.300	0.300	09/20/2023	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	960	16.0	09/21/2023	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	09/20/2023	ND	208	104	200	3.95	
DRO >C10-C28*	<10.0	10.0	09/20/2023	ND	208	104	200	5.84	
EXT DRO >C28-C36	<10.0	10.0	09/20/2023	ND					

Surrogate: 1-Chlorooctane 92.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 93.6 % 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, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/21/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 H @ 35' (H235098-02)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/20/2023	ND	2.17	108	2.00	6.21		
Toluene*	<0.050	0.050	09/20/2023	ND	2.24	112	2.00	7.19		
Ethylbenzene*	<0.050	0.050	09/20/2023	ND	2.39	120	2.00	7.07		
Total Xylenes*	<0.150	0.150	09/20/2023	ND	6.29	105	6.00	6.22		
Total BTEx	<0.300	0.300	09/20/2023	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	688	16.0	09/21/2023	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	09/20/2023	ND	208	104	200	3.95	
DRO >C10-C28*	<10.0	10.0	09/20/2023	ND	208	104	200	5.84	
EXT DRO >C28-C36	<10.0	10.0	09/20/2023	ND					

Surrogate: 1-Chlorooctane 81.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 79.9 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/21/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 I @ 40' (H235098-03)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/20/2023	ND	2.17	108	2.00	6.21	
Toluene*	<0.050	0.050	09/20/2023	ND	2.24	112	2.00	7.19	
Ethylbenzene*	<0.050	0.050	09/20/2023	ND	2.39	120	2.00	7.07	
Total Xylenes*	<0.150	0.150	09/20/2023	ND	6.29	105	6.00	6.22	
Total BTX	<0.300	0.300	09/20/2023	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	768	16.0	09/21/2023	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	09/20/2023	ND	208	104	200	3.95	
DRO >C10-C28*	<10.0	10.0	09/20/2023	ND	208	104	200	5.84	
EXT DRO >C28-C36	<10.0	10.0	09/20/2023	ND					

Surrogate: 1-Chlorooctane 87.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.1 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/21/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 J @ 46' (H235098-04)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/20/2023	ND	2.17	108	2.00	6.21		
Toluene*	<0.050	0.050	09/20/2023	ND	2.24	112	2.00	7.19		
Ethylbenzene*	<0.050	0.050	09/20/2023	ND	2.39	120	2.00	7.07		
Total Xylenes*	<0.150	0.150	09/20/2023	ND	6.29	105	6.00	6.22		
Total BTEX	<0.300	0.300	09/20/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 116 % 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	1800	16.0	09/21/2023	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	09/21/2023	ND	208	104	200	3.95	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	5.84	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 86.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.0 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/21/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 K @ 49' (H235098-05)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/20/2023	ND	2.17	108	2.00	6.21		
Toluene*	<0.050	0.050	09/20/2023	ND	2.24	112	2.00	7.19		
Ethylbenzene*	<0.050	0.050	09/20/2023	ND	2.39	120	2.00	7.07		
Total Xylenes*	<0.150	0.150	09/20/2023	ND	6.29	105	6.00	6.22		
Total BTX	<0.300	0.300	09/20/2023	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	2080	16.0	09/21/2023	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	09/21/2023	ND	208	104	200	3.95	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	5.84	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 84.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 86.2 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/21/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 L @ 50' (H235098-06)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/20/2023	ND	2.17	108	2.00	6.21	
Toluene*	<0.050	0.050	09/20/2023	ND	2.24	112	2.00	7.19	
Ethylbenzene*	<0.050	0.050	09/20/2023	ND	2.39	120	2.00	7.07	
Total Xylenes*	<0.150	0.150	09/20/2023	ND	6.29	105	6.00	6.22	
Total BTEX	<0.300	0.300	09/20/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 116 % 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	2360	16.0	09/21/2023	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	09/21/2023	ND	208	104	200	3.95	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	5.84	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 84.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.4 % 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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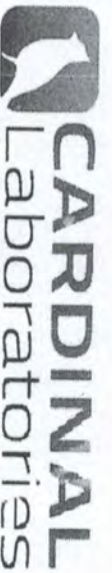
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

---

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>Project Manager:</b> Hadlie Green <b>Address:</b> 1001 N Marland St Suite 400 <b>City:</b> Midland <b>State:</b> TX <b>Zip:</b> 79701 <b>Phone #:</b> (432) 557-8895 <b>Fax #:</b> <b>Project #:</b> 03C2012054 <b>Project Owner:</b> <b>Project Name:</b> Vacuum SWD H 35 Pipeline <b>Project Location:</b> 32.793423, -103.422657 <b>Sample Name:</b> Mariahna O'Dell		<b>P.O. #:</b> <b>Company:</b> BTA Oil <b>Attn:</b> Kelton Bealrd <b>Address:</b> 104 S Pecos St <b>City:</b> Midland <b>State:</b> TX <b>Zip:</b> 79701 <b>Phone #:</b> <b>Fax #:</b>	
<b>FOR LAB USE ONLY</b> <b>Lab I.D.</b> H135098 <b>Sample I.D.</b>		<b>BILL TO</b>	
<b>Relinquished By:</b> [Signature] <b>Date:</b> 9/24/2023 <b>Time:</b> 12:00 <b>Received By:</b> [Signature] <b>Date:</b> 9/24/2023 <b>Time:</b> 12:00		<b>ANALYSIS REQUEST</b>	
<b>Relinquished By:</b> [Signature] <b>Date:</b> 9/24/2023 <b>Time:</b> 12:00 <b>Received By:</b> [Signature] <b>Date:</b> 9/24/2023 <b>Time:</b> 12:00		<b>Verbal Result:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Add'l Phone #:</b> <b>All Results are emailed. Please provide Email address:</b> mgreen@ensolum.com, model@ensolum.com	
<b>Relinquished By:</b> [Signature] <b>Date:</b> 9/24/2023 <b>Time:</b> 12:00 <b>Received By:</b> [Signature] <b>Date:</b> 9/24/2023 <b>Time:</b> 12:00		<b>REMARKS:</b>	
<b>Delivered By:</b> (Circle One) Driver & Shipmate <b>Observed Temp. °C:</b> 41 <b>Corrected Temp. °C:</b>		<b>Turnaround Time:</b> Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/> <b>Thermometer ID #140</b> <b>Correction Factor 0°C</b>	
<b>Sampler - UPS - Bus - Other:</b> UPS		<b>Sample Condition</b> Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <b>CHECKED BY:</b> [Signature] <b>(Initials)</b>	
<b>FOR LAB USE ONLY</b> <b>Lab I.D.</b> H135098 <b>Sample I.D.</b>		<b>Matrix</b> GROUNDWATER <input type="checkbox"/> WASTEWATER <input type="checkbox"/> SOIL <input type="checkbox"/> OIL <input type="checkbox"/> SLUDGE <input type="checkbox"/> OTHER: <input type="checkbox"/> ACID/BASE: <input type="checkbox"/> ICE / COOL <input checked="" type="checkbox"/> OTHER: <input type="checkbox"/>	
<b>FOR LAB USE ONLY</b> <b>Lab I.D.</b> H135098 <b>Sample I.D.</b>		<b>PRESERV.</b> DATE TIME	
<b>FOR LAB USE ONLY</b> <b>Lab I.D.</b> H135098 <b>Sample I.D.</b>		<b>SAMPLING</b> Chlorides BTEX TPH	
<b>FOR LAB USE ONLY</b> <b>Lab I.D.</b> H135098 <b>Sample I.D.</b>		<b>ANALYSIS REQUEST</b>	



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---

September 26, 2023

HADLIE GREEN

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 09/20/23 12:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 02 A @ 10' (H235101-01)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/21/2023	ND	2.04	102	2.00	3.23	
Toluene*	<0.050	0.050	09/21/2023	ND	2.16	108	2.00	3.04	
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.37	119	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.09	102	6.00	2.44	
Total BTEX	<0.300	0.300	09/21/2023	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	192	16.0	09/21/2023	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	233	116	200	5.18	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	231	115	200	5.90	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 89.0 % 48.2-134

Surrogate: 1-Chlorooctadecane 99.1 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 02 B @ 18' (H235101-02)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/21/2023	ND	2.04	102	2.00	3.23		
Toluene*	<0.050	0.050	09/21/2023	ND	2.16	108	2.00	3.04		
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.37	119	2.00	2.93		
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.09	102	6.00	2.44		
Total BTEX	<0.300	0.300	09/21/2023	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	160	16.0	09/21/2023	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	233	116	200	5.18	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	231	115	200	5.90	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 87.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 96.7 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 02 C @ 25' (H235101-03)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/21/2023	ND	2.04	102	2.00	3.23	
Toluene*	<0.050	0.050	09/21/2023	ND	2.16	108	2.00	3.04	
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.37	119	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.09	102	6.00	2.44	
Total BTEX	<0.300	0.300	09/21/2023	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	320	16.0	09/21/2023	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	233	116	200	5.18	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	231	115	200	5.90	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 80.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.1 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 02 D @ 35' (H235101-04)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/21/2023	ND	2.04	102	2.00	3.23	
Toluene*	<0.050	0.050	09/21/2023	ND	2.16	108	2.00	3.04	
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.37	119	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.09	102	6.00	2.44	
Total BTX	<0.300	0.300	09/21/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 116 % 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	208	16.0	09/21/2023	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	233	116	200	5.18	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	231	115	200	5.90	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 89.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 102 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 02 E @ 40' (H235101-05)**

BTEx 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/21/2023	ND	2.04	102	2.00	3.23	
Toluene*	<0.050	0.050	09/21/2023	ND	2.16	108	2.00	3.04	
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.37	119	2.00	2.93	
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.09	102	6.00	2.44	
Total BTEX	<0.300	0.300	09/21/2023	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	176	16.0	09/21/2023	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	221	111	200	4.15	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	226	113	200	0.870	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 99.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 123 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/20/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 02 F @ 50' (H235101-06)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/21/2023	ND	2.04	102	2.00	3.23		
Toluene*	<0.050	0.050	09/21/2023	ND	2.16	108	2.00	3.04		
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.37	119	2.00	2.93		
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.09	102	6.00	2.44		
Total BTEX	<0.300	0.300	09/21/2023	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	192	16.0	09/21/2023	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	221	111	200	4.15	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	226	113	200	0.870	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 96.6 % 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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### 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".

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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>Project Manager:</b> Hadlie Green <b>Address:</b> 401 N. Marienfeld St. Suite 400 <b>City:</b> Midland <b>State:</b> TX <b>Zip:</b> 79701 <b>Phone #:</b> (432) 557-8895 <b>Fax #:</b> <b>Project #:</b> 03C2012054 <b>Project Owner:</b> <b>Project Name:</b> Vacuum SWD H 35 Pipeline <b>Project Location:</b> 32.793423, -103.422057 <b>Sampler Name:</b> Maria na O'Dell		<b>BILL TO</b> <b>P.O. #:</b> <b>Company:</b> BTA Oil <b>Attn:</b> Kelton Beaird <b>Address:</b> 104 S Pecos St <b>City:</b> Midland <b>State:</b> TX <b>Zip:</b> 79701 <b>Phone #:</b> <b>Fax #:</b>		<b>ANALYSIS REQUEST</b>	
<b>Lab I.D.</b> H235701		<b>Sample I.D.</b> PH02A @ 10' PH02B @ 18' PH02C @ 25' PH02D @ 35' PH02E @ 40' PH02F @ 50'		(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER : ACID/BASE: ICE / COOL OTHER :	
DATE: 9/20/2023 TIME: 12:00 RECEIVED BY: [Signature]		DATE: 9/19/23 TIME:		CHLORIDES BTEX TPH	
Relinquished By: [Signature] Relinquished Date: 9/20/2023 Relinquished Time: 12:00 Received By: [Signature] Received Date: 9-20-23 Received Time: 4:11		Turnaround Time: 5 days Standard Rush Bacteria (only) Sample Condition Cool Intact Observed Temp. °C Corrected Temp. °C		Verbal Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #: All Results are emailed. Please provide Email address: hgreen@ensolum.com, modelle@ensolum.com	
Delivered By: (Circle One) UPS <input checked="" type="checkbox"/> Bus <input type="checkbox"/> Other:		Observed Temp. °C Corrected Temp. °C		REMARKS:	

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





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September 26, 2023

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 09/21/23 9:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received:	09/21/2023	Sampling Date:	09/20/2023
Reported:	09/26/2023	Sampling Type:	Soil
Project Name:	VACUUM SWD H 35 PIPELINE	Sampling Condition:	Cool & Intact
Project Number:	03C2012054	Sample Received By:	Tamara Oldaker
Project Location:	BTA (32.793423 - 103.422657)		

**Sample ID: PH06 @ 4' (H235126-01)**

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	09/22/2023	ND	2.03	101	2.00	2.23	
Toluene*	<0.050	0.050	09/22/2023	ND	2.09	104	2.00	3.03	
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.26	113	2.00	3.18	
Total Xylenes*	<0.150	0.150	09/22/2023	ND	6.77	113	6.00	2.91	
Total BTX	<0.300	0.300	09/22/2023	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	272	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 92.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.1 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH06 A @ 10' (H235126-02)**

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	09/22/2023	ND	2.03	101	2.00	2.23		
Toluene*	<0.050	0.050	09/22/2023	ND	2.09	104	2.00	3.03		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.26	113	2.00	3.18		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	6.77	113	6.00	2.91		
Total BTEx	<0.300	0.300	09/22/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 108 % 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	800	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 94.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH06 B @ 18' (H235126-03)**

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	09/22/2023	ND	2.03	101	2.00	2.23		
Toluene*	<0.050	0.050	09/22/2023	ND	2.09	104	2.00	3.03		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.26	113	2.00	3.18		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	6.77	113	6.00	2.91		
Total BTEx	<0.300	0.300	09/22/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 104 % 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	1540	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 96.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.5 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH06 C @ 20' (H235126-04)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25		
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387		
Total BTEx	<0.300	0.300	09/22/2023	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	1260	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 93.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 95.8 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH04 A @ 10' (H235126-05)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25		
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387		
Total BTEx	<0.300	0.300	09/22/2023	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	64.0	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 93.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.1 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH04 B @ 18' (H235126-06)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25		
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387		
Total BTX	<0.300	0.300	09/22/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 116 % 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	32.0	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 96.9 % 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  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH04 C @ 25' (H235126-07)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25		
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387		
Total BTX	<0.300	0.300	09/22/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 116 % 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	368	16.0	09/21/2023	ND	432	108	400	3.77	

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 94.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 99.6 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH04 D @ 35' (H235126-08)**

BTX 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25		
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387		
Total BTX	<0.300	0.300	09/22/2023	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	80.0	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 87.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.6 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH04 E @ 40' (H235126-09)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.98	99.1	2.00	0.306		
Toluene*	<0.050	0.050	09/22/2023	ND	2.04	102	2.00	1.23		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.03	102	2.00	0.317		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	6.15	102	6.00	0.652		
Total BTEx	<0.300	0.300	09/22/2023	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	32.0	16.0	09/21/2023	ND	432	108	400	3.77	

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 79.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 79.3 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH04 F @ 50' (H235126-10)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/22/2023	ND	1.98	99.1	2.00	0.306	
Toluene*	<0.050	0.050	09/22/2023	ND	2.04	102	2.00	1.23	
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.03	102	2.00	0.317	
Total Xylenes*	<0.150	0.150	09/22/2023	ND	6.15	102	6.00	0.652	
Total BTX	<0.300	0.300	09/22/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 108 % 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	09/21/2023	ND	432	108	400	3.77	

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	09/21/2023	ND	202	101	200	5.36	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	200	99.8	200	4.06	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 82.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.0 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH07 4' (H235126-11)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2023	ND	2.13	106	2.00	2.37	
Toluene*	<0.050	0.050	09/23/2023	ND	2.23	112	2.00	3.02	
Ethylbenzene*	<0.050	0.050	09/23/2023	ND	2.46	123	2.00	3.00	
Total Xylenes*	<0.150	0.150	09/23/2023	ND	6.17	103	6.00	2.41	
Total BTX	<0.300	0.300	09/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 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	80.0	16.0	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	172	86.0	200	1.31	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	192	96.2	200	7.30	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 83.0 % 48.2-134

Surrogate: 1-Chlorooctadecane 82.9 % 49.1-148

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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 09/21/2023  
Reported: 09/26/2023  
Project Name: VACUUM SWD H 35 PIPELINE  
Project Number: 03C2012054  
Project Location: BTA (32.793423 - 103.422657)

Sampling Date: 09/20/2023  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: PH02 G 59' (H235126-12)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/23/2023	ND	2.13	106	2.00	2.37	
Toluene*	<0.050	0.050	09/23/2023	ND	2.23	112	2.00	3.02	
Ethylbenzene*	<0.050	0.050	09/23/2023	ND	2.46	123	2.00	3.00	
Total Xylenes*	<0.150	0.150	09/23/2023	ND	6.17	103	6.00	2.41	
Total BTX	<0.300	0.300	09/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 112 % 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	09/21/2023	ND	432	108	400	3.77		

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	09/21/2023	ND	172	86.0	200	1.31	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	192	96.2	200	7.30	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 88.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 88.8 % 49.1-148

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### Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

---

Cardinal Laboratories

\*=Accredited Analyte

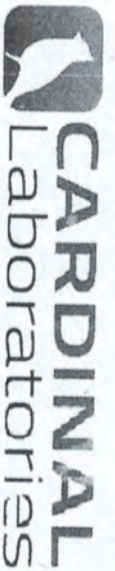
PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

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

---

Celey D. Keene, Lab Director/Quality Manager



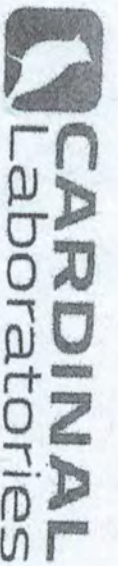


101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> ENSOLUM, LLC <b>Project Manager:</b> Hadlie Green <b>Address:</b> 1001 N Marland St Suite 400 <b>City:</b> Midland TX <b>State:</b> TX Zip: 79701 <b>Phone #:</b> 432-551-8895 Fax #: <b>Project #:</b> 03C2012054 Project Owner: <b>Project Name:</b> Vacuum SWD H 35 Pipeline <b>Project Location:</b> 32.793423 -103.422457 <b>Sampler Name:</b> Maritana O'Dell		<b>P.O. #:</b> <b>Company:</b> BTA Oil <b>Attn:</b> Kelton Beavil <b>Address:</b> 104 S Pecos St <b>City:</b> Midland <b>State:</b> TX Zip: 79701 <b>Phone #:</b> <b>Fax #:</b>	
<b>FOR LAB USE ONLY</b> <b>Lab I.D.</b> H235125 <b>Sample I.D.</b>		<b>BILL TO</b>	
<b>PLEASE NOTE:</b> Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder. Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.		<b>ANALYSIS REQUEST</b>	
<b>Relinquished By:</b> [Signature] <b>Date:</b> 1/21/23 <b>Time:</b> 8:30 <b>Received By:</b> [Signature] <b>Date:</b> 1/22/23 <b>Time:</b> 8:30 <b>Relinquished By:</b> [Signature] <b>Date:</b> 1/21/23 <b>Time:</b> 8:05 <b>Received By:</b> [Signature] <b>Date:</b> 1/22/23 <b>Time:</b> 8:05		<b>REMARKS:</b> All Results are emailed. Please provide Email address: haren@ensolum.com, model@ensolum.com Turnaround Time: 5 days Standard Rush Bacteria (only) Sample Condition Cool Intact Observed Temp. °C Yes Yes No No Corrected Temp. °C	
<b>Delivered By:</b> (Circle One) UPS - Bus - Other:		<b>Observed Temp. °C</b> 3.8 <b>Corrected Temp. °C</b> <b>Sample Condition</b> Cool Intact Yes Yes No No <b>CHECKED BY:</b> (Initials) [Signature] <b>Thermometer ID #140</b> <b>Correction Factor 0°C</b>	
<b>FORM 000-R-3-9 07/11/23</b>		<b>Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com</b>	





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(575) 393-2326 FAX (575) 393-2476

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Ensolum, LLC

Project Manager: Hadlie Green

Address: 1001 N Marientfeld St Suite 400

City: Midland

State: TX Zip: 79701

Phone #: 432-557-8895 Fax #:

Project #: 032012054

Project Owner:

Project Name: Vacuum SWD H 35 Pipeline

Project Location: 32.793423 - 103.422457

Sampler Name: Manganha O'Dell

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

Chlorides

TPH

BTEX

BILL TO

ANALYSIS REQUEST

P.O. #:

Company: BTAD Oil

Attn: Kelton Baird

Address: 104 S Pecoss St

City: Midland

State: TX Zip: 79701

Phone #:

Fax #:

PRESERV

SAMPLING

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Relinquished By:

Relinquished By: M. Green

Date: 1/21/23

Received By:

Relinquished By:

Relinquished By: M. Green

Date: 1/21/23

Received By:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Observed Temp. °C

Corrected Temp. °C

Sample Condition

CHECKED BY: (Initials)

Turnaround Time: 5 days

Standard Rush

Bacteria (only)

Cool Intact

Observed Temp. °C

Corrected Temp. °C

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



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

September 22, 2023

HADLIE GREEN

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 09/21/23 14:33.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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 "Mike Snyder". The signature is fluid and cursive, with the first name "Mike" and last name "Snyder" clearly distinguishable.

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/21/2023  
 Reported: 09/22/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/21/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 01 M 55' (H235136-01)**

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	09/21/2023	ND	1.94	96.8	2.00	0.667		
Toluene*	<0.050	0.050	09/21/2023	ND	2.10	105	2.00	6.41		
Ethylbenzene*	<0.050	0.050	09/21/2023	ND	2.12	106	2.00	0.154		
Total Xylenes*	<0.150	0.150	09/21/2023	ND	6.37	106	6.00	0.783		
Total BTEx	<0.300	0.300	09/21/2023	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	112	16.0	09/22/2023	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	187	93.5	200	10.2	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	18.3	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 92.6 % 48.2-134

Surrogate: 1-Chlorooctadecane 94.5 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

### Notes and Definitions

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

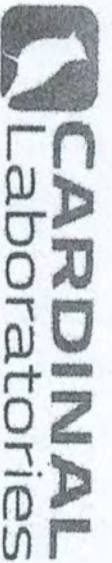
Cardinal Laboratories

\*=Accredited Analyte

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A handwritten signature in black ink, appearing to read "Mike Snyder".

Mike Snyder For 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: Hadlie Green

P.O. #:

Address: 1001 N. Marland St

Company: BTA Oil

City: Midland

State: TX Zip: 79701

Attn: Kellon Beal

Phone #: 432-551-8895 Fax #:

Address: 104 S PECOS St

Project #: 03C2012054 Project Owner:

City: Midland

Project Name: Vacuum SWD H 35 Pipeline

State: TX Zip: 79701

Project Location: 32.793423, -103.422057

Phone #:

Sampler Name: Mariha O'Dell

Fax #:

FOR LAB USE ONLY

Lab I.D. Sample I.D.

Depth (feet)

H335136 PH01M

55

(G)RAB OR (C)OMP.

# CONTAINERS

GROUNDWATER

WASTEWATER

SOIL

OIL

SLUDGE

OTHER :

ACID/BASE:

ICE / COOL

OTHER :

DATE

TIME

Chlorides

TPH

BTEX

PLEASE NOTE: Liability and Damages, Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of time, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:

Date: 1/21/23

Received By:

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

All Results are emailed. Please provide Email address:

hgreene@ensolum.com, hgreene.mmodell@ensolum.com

Relinquished By:

Date: 1/21/23

Received By:

REMARKS:

Delivered By: (Circle One)

Observed Temp.: °C 5.0

Sample Condition

CHECKED BY: (Initials)

Turnaround Time: 24 hrs

Standard

☒ Rush

Bacteria (only) Sample Condition

Observed Temp.: °C

Sampler - UPS - Bus - Other:

Corrected Temp.: °C

Cool ☒ Intact ☒

Yes ☒ No ☒

Thermometer ID #444 #1/40

Correction Factor -0.3°C 9/21/23

Cool ☐ Intact ☐

Yes ☐ No ☐

Corrected Temp.: °C

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





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

---

September 26, 2023

HADLIE GREEN  
ENSOLUM, LLC  
705 W WADLEY AVE.  
MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 09/21/23 14:33.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene  
Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/21/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/21/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 07A @ 10' (H235137-01)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25	
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84	
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35	
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387	
Total BTX	<0.300	0.300	09/22/2023	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	768	16.0	09/22/2023	ND	432	108	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	187	93.5	200	10.2	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	18.3	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 85.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 88.0 % 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, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/21/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/21/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 07B @ 18' (H235137-02)**

BTEx 8021B		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25		
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84		
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35		
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387		
Total BTEx	<0.300	0.300	09/22/2023	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	1720	16.0	09/22/2023	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	187	93.5	200	10.2	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	18.3	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 90.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.6 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 09/21/2023  
 Reported: 09/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 09/21/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 07C @ 20' (H235137-03)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	09/22/2023	ND	1.91	95.6	2.00	2.25	
Toluene*	<0.050	0.050	09/22/2023	ND	2.02	101	2.00	1.84	
Ethylbenzene*	<0.050	0.050	09/22/2023	ND	2.16	108	2.00	2.35	
Total Xylenes*	<0.150	0.150	09/22/2023	ND	5.84	97.3	6.00	0.387	
Total BTX	<0.300	0.300	09/22/2023	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	3680	16.0	09/22/2023	ND	432	108	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	09/21/2023	ND	187	93.5	200	10.2	
DRO >C10-C28*	<10.0	10.0	09/21/2023	ND	208	104	200	18.3	
EXT DRO >C28-C36	<10.0	10.0	09/21/2023	ND					

Surrogate: 1-Chlorooctane 96.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.0 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager

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

---

### Notes and Definitions

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

---

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\*=Accredited Analyte

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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

Page 6 of 6



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

October 25, 2023

HADLIE GREEN

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 10/20/23 8:08.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08 0.5' (H235752-01)**

BTX 8021B			mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04		
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800		
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703		
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126		
Total BTX	<0.300	0.300	10/23/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/23/2023	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 84.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 74.8 % 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, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08A 2' (H235752-02)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEX	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/23/2023	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 88.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 77.2 % 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, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08B 4' (H235752-03)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEX	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/23/2023	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 86.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 77.1 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08C 6' (H235752-04)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEx	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	32.0	16.0	10/23/2023	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 86.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 76.7 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08D 10' (H235752-05)**

BTX 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTX	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/23/2023	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 81.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 72.6 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08E 14' (H235752-06)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEX	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 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	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 87.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 78.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08F 18' (H235752-07)**

BTEx 8021B		mg/kg		Analyzed By: AW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04		
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800		
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703		
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126		
Total BTEX	<0.300	0.300	10/23/2023	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	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 81.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 72.8 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08G 20' (H235752-08)**

BTEX 8021B			mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04		
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800		
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703		
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126		
Total BTEX	<0.300	0.300	10/23/2023	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	32.0	16.0	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 88.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 78.5 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08H 25' (H235752-09)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEX	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 81.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 72.3 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08I 30' (H235752-10)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEX	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 86.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 77.2 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08J 35' (H235752-11)**

BTEx 8021B		mg/kg		Analyzed By: AW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/23/2023	ND	2.01	100	2.00	1.04	
Toluene*	<0.050	0.050	10/23/2023	ND	2.06	103	2.00	0.800	
Ethylbenzene*	<0.050	0.050	10/23/2023	ND	2.05	103	2.00	0.703	
Total Xylenes*	<0.150	0.150	10/23/2023	ND	6.21	104	6.00	0.126	
Total BTEx	<0.300	0.300	10/23/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 84.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 74.0 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08K 40' (H235752-12)**

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	10/24/2023	ND	2.21	111	2.00	0.416		
Toluene*	<0.050	0.050	10/24/2023	ND	2.19	110	2.00	7.54		
Ethylbenzene*	<0.050	0.050	10/24/2023	ND	2.30	115	2.00	10.1		
Total Xylenes*	<0.150	0.150	10/24/2023	ND	6.94	116	6.00	10.6		
Total BTEX	<0.300	0.300	10/24/2023	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	16.0	16.0	10/23/2023	ND	416	104	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	10/23/2023	ND	227	113	200	0.915	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	199	99.6	200	3.33	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 76.1 % 48.2-134

Surrogate: 1-Chlorooctadecane 68.4 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08L 45' (H235752-13)**

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	10/24/2023	ND	2.21	111	2.00	0.416	
Toluene*	<0.050	0.050	10/24/2023	ND	2.19	110	2.00	7.54	
Ethylbenzene*	<0.050	0.050	10/24/2023	ND	2.30	115	2.00	10.1	
Total Xylenes*	<0.150	0.150	10/24/2023	ND	6.94	116	6.00	10.6	
Total BTEX	<0.300	0.300	10/24/2023	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	16.0	16.0	10/23/2023	ND	416	104	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	10/23/2023	ND	202	101	200	3.27	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	206	103	200	8.67	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 99.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08M 50' (H235752-14)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/24/2023	ND	2.21	111	2.00	0.416	
Toluene*	<0.050	0.050	10/24/2023	ND	2.19	110	2.00	7.54	
Ethylbenzene*	<0.050	0.050	10/24/2023	ND	2.30	115	2.00	10.1	
Total Xylenes*	<0.150	0.150	10/24/2023	ND	6.94	116	6.00	10.6	
Total BTEX	<0.300	0.300	10/24/2023	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	32.0	16.0	10/23/2023	ND	416	104	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	10/23/2023	ND	202	101	200	3.27	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	206	103	200	8.67	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 107 % 48.2-134

Surrogate: 1-Chlorooctadecane 116 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 08N 52' (H235752-15)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/24/2023	ND	2.21	111	2.00	0.416	
Toluene*	<0.050	0.050	10/24/2023	ND	2.19	110	2.00	7.54	
Ethylbenzene*	<0.050	0.050	10/24/2023	ND	2.30	115	2.00	10.1	
Total Xylenes*	<0.150	0.150	10/24/2023	ND	6.94	116	6.00	10.6	
Total BTEX	<0.300	0.300	10/24/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 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	10/23/2023	ND	416	104	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	10/23/2023	ND	202	101	200	3.27	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	206	103	200	8.67	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 107 % 48.2-134

Surrogate: 1-Chlorooctadecane 117 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/25/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/19/2023  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Shalyn Rodriguez

**Sample ID: PH 080 55' (H235752-16)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/24/2023	ND	2.21	111	2.00	0.416	
Toluene*	<0.050	0.050	10/24/2023	ND	2.19	110	2.00	7.54	
Ethylbenzene*	<0.050	0.050	10/24/2023	ND	2.30	115	2.00	10.1	
Total Xylenes*	<0.150	0.150	10/24/2023	ND	6.94	116	6.00	10.6	
Total BTEX	<0.300	0.300	10/24/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 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	10/23/2023	ND	416	104	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	10/23/2023	ND	202	101	200	3.27	
DRO >C10-C28*	<10.0	10.0	10/23/2023	ND	206	103	200	8.67	
EXT DRO >C28-C36	<10.0	10.0	10/23/2023	ND					

Surrogate: 1-Chlorooctane 107 % 48.2-134

Surrogate: 1-Chlorooctadecane 118 % 49.1-148

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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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\*=Accredited Analyte

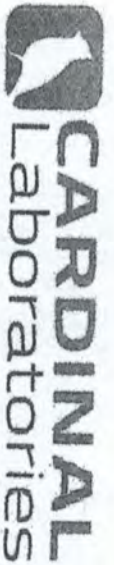
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

---

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

Company Name: Ensolum, LLC		Project Manager: Hadlie Green		P.O. #:		BILL TO		ANALYSIS REQUEST		
Address: 101 N. Marienfeld St # 400		City: Midland		State: TX Zip: 79701		Company: BTA Oil				
Phone #: 432-557-8845		Fax #: 432-557-8845		Attn: Kelton Beaird		Address: 104 S. Pecross St				
Project #: 03C2012054		Project Owner:		City: Midland		State: TX Zip: 79701				
Project Name: Vacuum SWD H 35 Pipeline		Project Location: 32.793423, -103.422457		Phone #:		Fax #:				
Sampler Name: Mariona O'Dell		FOR LAB USE ONLY		PRESERV		SAMPLING				
Lab I.D.	Sample I.D.	Depth (feet)	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX	DATE	TIME	Chlorides	TPH	BTEX
1	PH08	0.5'		1		10/19/23	14:45	X	X	X
2	PH08A	2'		1						
3	PH08B	4'		1						
4	PH08C	6'		1						
5	PH08D	10'		1						
6	PH08E	14'		1						
7	PH08F	18'		1						
8	PH08G	20'		1						
9	PH08H	25'		1						
10	PH08I	30'		1						

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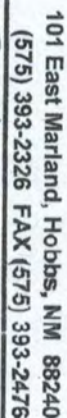
Relinquished By: M. O'Dell Date: 10/20/23 Time: 8:08

Received By: Spokane Date: 10/20/23 Time: 8:08

Delivered By: (Circle One) UPS 0.1°C Sample Condition Checked BY: SK Turnaround Time: 5 days Standard Corrected Temp. °C 140

Remarks: All Results are emailed. Please provide Email address: ngreen@ensolum.com, modelle@ensolum.com





## ANALYSIS REQUEST

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



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

---

October 26, 2023

HADLIE GREEN

ENSOLUM, LLC

705 W WADLEY AVE.

MIDLAND, TX 79705

RE: VACUUM SWD H 35 PIPELINE

Enclosed are the results of analyses for samples received by the laboratory on 10/20/23 16:41.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09 0.5' (H235775-01)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTX	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.7 % 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	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 81.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.1 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09A 2' (H235775-02)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEx	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 71.5-134

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 79.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 87.9 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09B 4' (H235775-03)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEX	<0.300	0.300	10/25/2023	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	32.0	16.0	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 81.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 90.6 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09C 6' (H235775-04)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEX	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	32.0	16.0	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 72.6 % 48.2-134

Surrogate: 1-Chlorooctadecane 79.6 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09D 10' (H235775-05)**

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	10/25/2023	ND	2.01	100	2.00	2.33		
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54		
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17		
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04		
Total BTEX	<0.300	0.300	10/25/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 75.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 83.9 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09E 14' (H235775-06)**

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	10/25/2023	ND	2.01	100	2.00	2.33		
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54		
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17		
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04		
Total BTEX	<0.300	0.300	10/25/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 82.6 % 48.2-134

Surrogate: 1-Chlorooctadecane 91.7 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09F 18' (H235775-07)**

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	10/25/2023	ND	2.01	100	2.00	2.33		
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54		
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17		
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04		
Total BTEX	<0.300	0.300	10/25/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 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	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 75.0 % 48.2-134

Surrogate: 1-Chlorooctadecane 78.9 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09G 20' (H235775-08)**

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	10/25/2023	ND	2.01	100	2.00	2.33		
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54		
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17		
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04		
Total BTEX	<0.300	0.300	10/25/2023	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	32.0	16.0	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 89.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 100 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09H 25' (H235775-09)**

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	10/25/2023	ND	2.01	100	2.00	2.33		
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54		
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17		
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04		
Total BTEX	<0.300	0.300	10/25/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	10/24/2023	ND	400	100	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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 87.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.6 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09I 30' (H235775-10)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEX	<0.300	0.300	10/25/2023	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	96.0	16.0	10/24/2023	ND	416	104	400	3.77		

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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 86.2 % 48.2-134

Surrogate: 1-Chlorooctadecane 96.3 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09J 35' (H235775-11)**

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	10/25/2023	ND	2.01	100	2.00	2.33		
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54		
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17		
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04		
Total BTEx	<0.300	0.300	10/25/2023	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	112	16.0	10/24/2023	ND	416	104	400	3.77		

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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 89.0 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.5 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09K 40' (H235775-12)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEX	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 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	10/24/2023	ND	416	104	400	3.77		

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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 90.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 102 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09L 45' (H235775-13)**

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	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEx	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	10/24/2023	ND	416	104	400	3.77		

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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 86.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.7 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09M 50' (H235775-14)**

BTEx 8021B		mg/kg		Analyzed By: JH/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/25/2023	ND	2.01	100	2.00	2.33	
Toluene*	<0.050	0.050	10/25/2023	ND	2.18	109	2.00	3.54	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	2.15	108	2.00	4.17	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	6.49	108	6.00	4.04	
Total BTEX	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	10/24/2023	ND	416	104	400	3.77		

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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 82.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.9 % 49.1-148

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**Analytical Results For:**

ENSOLUM, LLC  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 09N 52' (H235775-15)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/25/2023	ND	2.02	101	2.00	0.00437	
Toluene*	<0.050	0.050	10/25/2023	ND	1.91	95.5	2.00	0.954	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	1.97	98.3	2.00	1.93	QR-03
Total Xylenes*	<0.150	0.150	10/25/2023	ND	5.91	98.5	6.00	2.52	QR-03
Total BTEX	<0.300	0.300	10/25/2023	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	32.0	16.0	10/24/2023	ND	416	104	400	3.77	

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	10/24/2023	ND	225	112	200	0.883	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	210	105	200	1.44	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 83.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 95.5 % 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  
 HADLIE GREEN  
 705 W WADLEY AVE.  
 MIDLAND TX, 79705  
 Fax To:

Received: 10/20/2023  
 Reported: 10/26/2023  
 Project Name: VACUUM SWD H 35 PIPELINE  
 Project Number: 03C2012054  
 Project Location: BTA 32.793423,-103.422657

Sampling Date: 10/20/2023  
 Sampling Type: Soil  
 Sampling Condition: \*\* (See Notes)  
 Sample Received By: Tamara Oldaker

**Sample ID: PH 090 55' (H235775-16)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	10/25/2023	ND	2.02	101	2.00	0.00437	
Toluene*	<0.050	0.050	10/25/2023	ND	1.91	95.5	2.00	0.954	
Ethylbenzene*	<0.050	0.050	10/25/2023	ND	1.97	98.3	2.00	1.93	
Total Xylenes*	<0.150	0.150	10/25/2023	ND	5.91	98.5	6.00	2.52	
Total BTEX	<0.300	0.300	10/25/2023	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.2 % 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	32.0	16.0	10/24/2023	ND	416	104	400	3.77	

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	10/24/2023	ND	225	113	200	4.26	
DRO >C10-C28*	<10.0	10.0	10/24/2023	ND	228	114	200	7.03	
EXT DRO >C28-C36	<10.0	10.0	10/24/2023	ND					

Surrogate: 1-Chlorooctane 89.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 101 % 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

---

### Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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

---

Cardinal Laboratories

\*=Accredited Analyte

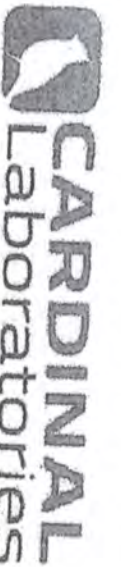
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A handwritten signature in black ink, appearing to read "Celey D. Keene".

---

Celey D. Keene, Lab Director/Quality Manager





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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Ensolum, LLC

Project Manager: Hadlie Green

Address: 1001 N. Marenfeld St # 400

City: Midland State: TX Zip: 79701

Phone #: 432-557-8895 Fax #: 79701

Project #: 0362012054 Project Owner:

Project Name: Vacuum SWD H 35 Pipeline

Project Location: 32.793423, -103.422057

Sampler Name: Manahua O'Dell

FOR LAB USE ONLY

BILL TO

P.O. #:

Company: BTA Oil

Attn: Keith Beaud

Address: 104 S. Pecos St

City: Midland

State: TX Zip: 79701

Phone #:

Fax #:

ANALYSIS REQUEST

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

Chlorides

TPH

BTEX

PLEASE NOTE: Liability and Damages, Carbons, Indol, and other chemicals remain the property of the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 28 days after completion of the applicable analysis. In no event shall Cardinal be liable for indirect or consequential damages, including without limitation, business interruption, loss of profits, loss of data, or loss of other property, incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services rendered by Cardinal, regardless of whether such claim is based upon any of the above stated theories or otherwise.

Relinquished By:

Date:

Received By:

Verbal Result:

All Results are emailed. Please provide Email address:

Relinquished By:

Date:

Received By:

REMARKS:

Green@ensolum.com, model@ensolum.com

Delivered By: (Circle One)

Observed Temp. °C

Sample Condition

CHECKED BY:

Turnaround Time:

Standard

Rush

Backlog (only)

Cool Intact

Yes

No

Corrected Temp. °C

Sample Condition

Observed Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

Corrected Temp. °C

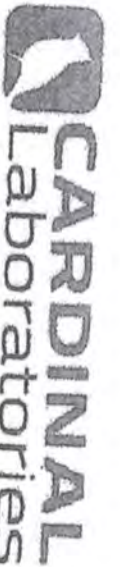
Corrected Temp. °C

Corrected Temp. °C

FORM-000 R 3.2 10/19/21

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





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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Ensolum, LLC

Project Manager: Hadlie Green

Address: 1001 N. Marrenfeld St # 400

City: Midland

State: TX Zip: 79701

Phone #: 432-557-8895 Fax #:

Project #: 03C2012054 Project Owner:

Project Name: Vacuum SMD H 35 Pipeline

Project Location: 32.793423-103.422657

Sampler Name: Mariah O'Dell

FOR LAB USE ONLY

BILL TO

ANALYSIS REQUEST

P.O. #:

Company: BTA Oil

Attn: Kellon Baird

Address: 104 S. Pecos St

City: Midland

State: TX Zip: 79701

Phone #:

Fax #:

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

Chlorides

TPH

BTEX

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Relinquished By:

Received By:

Date: 10/24/2023

Time: 10:41

Received By:

Date:

Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

Observed Temp. °C 12.3

Sample Condition: Cool Intact

CHECKED BY: (Initials)

Turnaround Time: Standard

Thermometer ID #1140

Bacteria (only) Sample Condition

Observed Temp. °C

Corrected Temp. °C

REMARKS: Cooler Temp Blank 21°C

† Cardinal cannot accept verbal changes. Please email changes to celej.leene@cardinallabsnm.com



APPENDIX F

Final C-141

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	nAPP2313058428
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party: BTA Oil Producers, LLC	OGRID: 260297
Contact Name: Nathan Sirgo	Contact Telephone: (432) 682-3753
Contact email: nsirgo@btaoil.com	Incident # (assigned by OCD)
Contact mailing address: 104 South Pecos St. Midland, TX 79701	

### Location of Release Source

Latitude 32.793423 Longitude -103.422657  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Vacuum SWD H #035	Site Type: Pipeline
Date Release Discovered: 5/10/2023	API# (if applicable) 30-025-20207

Unit Letter	Section	Township	Range	County
H	35	17S	35E	Lea

Surface Owner: ☒ State ☐ Federal ☐ Tribal ☐ Private (Name: \_\_\_\_\_)

### Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) Unkown	Volume Recovered (bbls) 0
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)


Historical impacts were discovered during the pipeline installation process of the battery. The environmental consultant contracted to investigate the area determined on 5/10/2023 based on the impacted area footprint that the release more than likely breached the reportable volume threshold.

Incident ID	nAPP2313058428
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?          
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?          	

### Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:          	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
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.	
Printed Name: <u>Nathan J. Sirgo</u>	Title: <u>Operations Manager</u>
Signature: <u></u>	Date: <u>5/16/2023</u>
email: <u>nsirgo@btaoil.com</u>	Telephone: <u>432-682-3753</u>
<b><u>OCD Only</u></b>  Received by: _____ Date: _____	



Incident ID	nAPP2313058428
District RP	
Facility ID	
Application ID	

## Site Assessment/Characterization

*This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

What is the shallowest depth to groundwater beneath the area affected by the release?	56.2 (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

### **Characterization Report Checklist:** *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.



State of New Mexico  
Oil Conservation Division

Page 4

Incident ID	nAPP2313058428
District RP	
Facility ID	
Application ID	

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.

Printed Name: Kelton Beaird Title: Environmental Manager

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

email: kbeaird@btaoil.com Telephone: 432-312-2203

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Incident ID	nAPP2313058428
District RP	
Facility ID	
Application ID	

## Remediation Plan

**Remediation Plan Checklist:** *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only:** *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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.

Printed Name:     Kelton Beaird     Title:     Operations Manager    

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

email:     kbeaird@btaoil.com     Telephone:     432-312-2203    **OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## APPENDIX G

### NMOCD Notifications

---

**Dan Moir**

---

**From:** Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>  
**Sent:** Wednesday, July 26, 2023 5:30 PM  
**To:** Hadlie Green  
**Cc:** KBeaird@btaoil.com  
**Subject:** BTA - Extension Request - Vacuum SWD H #035 (Incident Number nAPP2313058428)

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

Good morning Hadlie,

Your 90-day time extension request is approved. Remediation Due date has been updated to November 6, 2023.

Regards,

**Nelson Velez** • Environmental Specialist - Adv  
Environmental Bureau | EMNRD - Oil Conservation Division  
1000 Rio Brazos Road | Aztec, NM 87410  
(505) 469-6146 | [nelson.velez@emnrd.nm.gov](mailto:nelson.velez@emnrd.nm.gov)  
<http://www.emnrd.state.nm.us/OCD/>



previous email submittal;

---

**From:** Hadlie Green <hgreen@ensolum.com>  
**Sent:** Wednesday, July 26, 2023 7:02 AM  
**To:** Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>  
**Cc:** Kelton Beaird <KBeaird@btaoil.com>  
**Subject:** [EXTERNAL] BTA - Extension Request - Vacuum SWD H #035 (Incident Number nAPP2313058428)


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

All,

BTA is requesting an extension for the current deadline of August 8, 2023, for submitting a remediation work plan or closure report required in 19.15.29.12.B.(1) NMAC for Vacuum SWD H #035 (Incident Number nAPP2313058428). The release was discovered on May 10, 2023. Initial site assessment activities have been completed and delineation activities are ongoing. In order to complete additional remediation activities and submit a remediation work plan or closure report, BTA requests a 90-day extension of this deadline until November 6, 2023.

Thank you,



**Hadlie Green**  
Project Geologist  
432-557-8895  
[hgreen@ensolum.com](mailto:hgreen@ensolum.com)  
Ensolum, LLC  
in f 



**Dan Moir**

---

**From:** Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>  
**Sent:** Wednesday, June 21, 2023 10:36 PM  
**To:** Hadlie Green  
**Subject:** RE: [EXTERNAL] BTA - Sampling Notification - Week of 06/26/2023

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

Hadlie,

Thank you for the notification. Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

JH

**Jocelyn Harimon** • Environmental Specialist  
Environmental Bureau  
EMNRD - Oil Conservation Division  
1220 South St. Francis Drive | Santa Fe, NM 87505  
(505)469-2821 | [Jocelyn.Harimon@emnrd.nm.gov](mailto:Jocelyn.Harimon@emnrd.nm.gov)  
[http:// www.emnrd.nm.gov](http://www.emnrd.nm.gov)



---

**From:** Hadlie Green <hgreen@ensolum.com>  
**Sent:** Wednesday, June 21, 2023 7:34 AM  
**To:** Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>  
**Cc:** Kelton Beaird <KBeaird@btaoil.com>; Tacoma Morrissey <tmorrissey@ensolum.com>  
**Subject:** [EXTERNAL] BTA - Sampling Notification - Week of 06/26/2023

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

All,

BTA anticipates collecting confirmation samples at the following locations the week of June 26, 2023.

- Mesa 30 31 Tank Battery / nAPP2106930621
  - Sampling Date: 6/28/2023 @ 9:00 AM MST
- Vacuum SWD H 35 Pipeline / nAPP2313058428
  - Sampling Date: 6/28-29/2023 @ 9:00 AM MST

Thank you,



**Hadlie Green**

Project Geologist

432-557-8895

[hgreen@ensolum.com](mailto:hgreen@ensolum.com)

Ensolum, LLC

in f 

**Dan Moir**

---

**From:** Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>  
**Sent:** Thursday, June 29, 2023 10:48 PM  
**To:** Hadlie Green  
**Cc:** Bratcher, Michael, EMNRD; Velez, Nelson, EMNRD  
**Subject:** RE: [EXTERNAL] BTA - Sampling Notification - Week of 07/3/2023

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

Hadlie,

The OCD has received your notification. Include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

JH

**Jocelyn Harimon** • Environmental Specialist  
Environmental Bureau  
EMNRD - Oil Conservation Division  
1220 South St. Francis Drive | Santa Fe, NM 87505  
(505)469-2821 | [Jocelyn.Harimon@emnrd.nm.gov](mailto:Jocelyn.Harimon@emnrd.nm.gov)  
[http:// www.emnrd.nm.gov](http://www.emnrd.nm.gov)



---

**From:** Hadlie Green <hgreen@ensolum.com>  
**Sent:** Thursday, June 29, 2023 8:18 AM  
**To:** Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>  
**Cc:** Tacoma Morrissey <tmorrissey@ensolum.com>; Kelton Beaird <KBeaird@btaoil.com>; Peter Van Patten <pvanpatten@ensolum.com>  
**Subject:** [EXTERNAL] BTA - Sampling Notification - Week of 07/3/2023

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

All,

BTA anticipates collecting confirmation samples at the following locations the week of July 3, 2023.

- Vacuum SWD H 35 Pipeline / nAPP2313058428
  - Sampling Date: 7/5/2023 @ 9:00 AM MST
- Chiso 14 State Jet Pump Excavation / nAPP2205837214
  - Sampling Date: 7/6/2023 @ 9:00 AM MST
- Mesa B #25 / nAPP2112744758
  - Sampling Date: 7/6-7/2023 @ 9:00 AM MST

- Mesa #16H Flowline / nAPP2123156473
  - Sampling Date: 7/7/2023 @ 9:00 AM MST

Thank you,



**Hadlie Green**

Project Geologist

432-557-8895

[hgreen@ensolum.com](mailto:hgreen@ensolum.com)

**Ensolum, LLC**

**in f** 

Re: [EXTERNAL] BTA - Extension Request - Vacuum SWD H #035 (Incident Number nAPP2313058428)



Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>

To Hadlie Green

Cc Kelton Beaird; Tacoma Morrissey; Aimee Cole; Bratcher, Michael, EMNRD

You replied to this message on 11/7/2023 3:41 PM.

If there are problems with how this message is displayed, click here to view it in a web browser.

[\*EXTERNAL EMAIL\*]

Good morning Hadlie,

Your 30-day time extension request is approved. Remediation Due date has been updated to December 6, 2023 within the incident page.

Please keep a copy of this communication for inclusion within the appropriate report submittal.

Regards,

**Nelson Velez** • Environmental Specialist - Adv  
Environmental Bureau | EMNRD - Oil Conservation Division  
1000 Rio Brazos Road | Aztec, NM 87410  
(505) 469-6146 | [nelson.velez@emnrd.nm.gov](mailto:nelson.velez@emnrd.nm.gov)  
<http://www.emnrd.state.nm.us/OCD/>



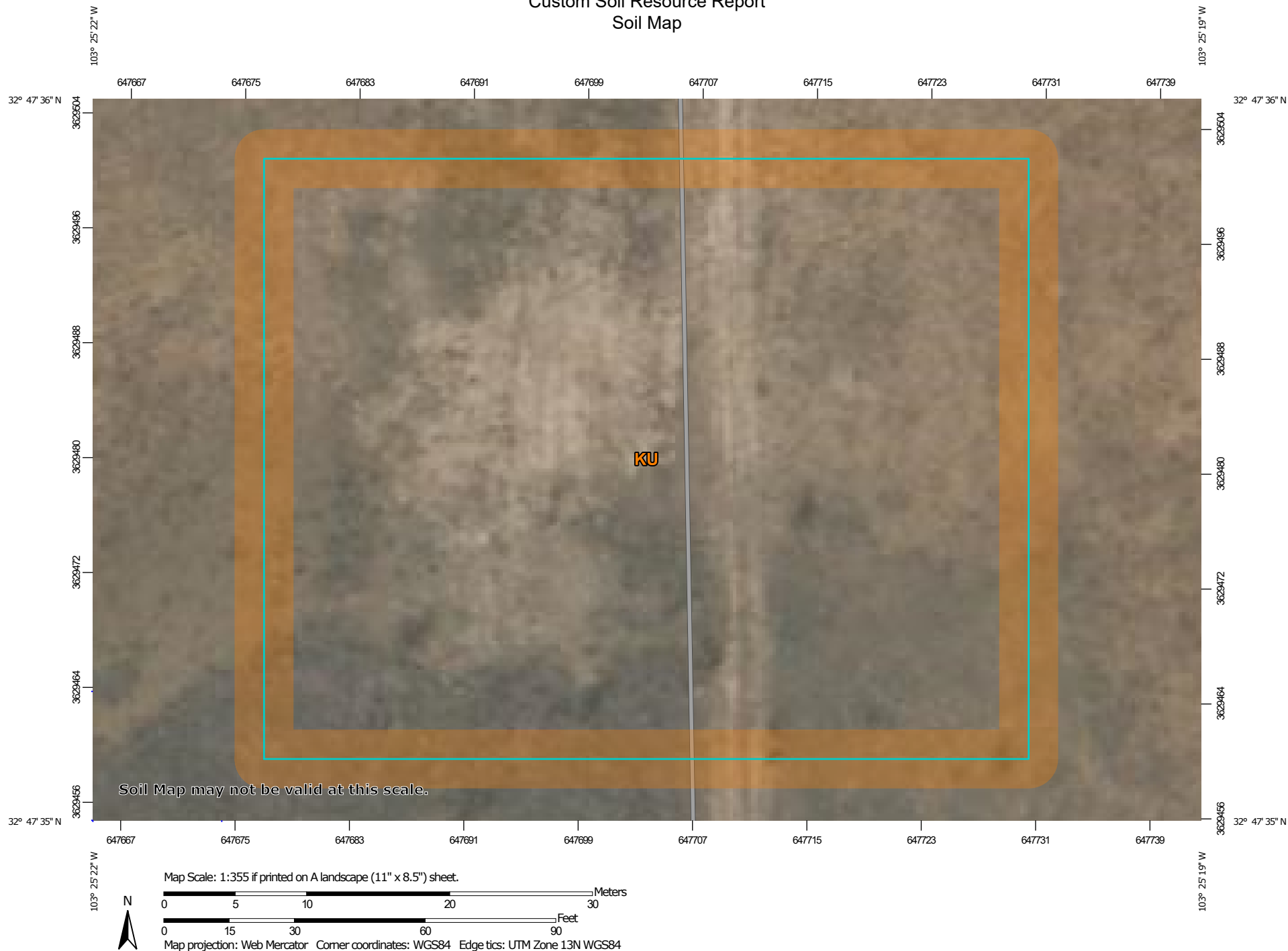
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## **APPENDIX B**

### **NMSLO Seed Mixture**


# Custom Soil Resource Report Soil Map



## Custom Soil Resource Report

## MAP LEGEND

## Area of Interest (AOI)

 Area of Interest (AOI)

## Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

## Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole

 Slide or Slip


 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

## Water Features

 Streams and Canals

## Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

## Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: Lea County, New Mexico  
Survey Area Data: Version 21, Sep 3, 2024

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

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

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

## Custom Soil Resource Report

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	0.6	100.0%
<b>Totals for Area of Interest</b>		<b>0.6</b>	<b>100.0%</b>

## Map Unit Descriptions

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

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

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

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

## Custom Soil Resource Report

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

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

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

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

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

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

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

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



## Custom Soil Resource Report

**Lea County, New Mexico****KU—Kimbrough-Lea complex, dry, 0 to 3 percent slopes****Map Unit Setting**

*National map unit symbol:* 2tw46  
*Elevation:* 2,500 to 4,800 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 57 to 63 degrees F  
*Frost-free period:* 180 to 220 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Kimbrough and similar soils:* 45 percent  
*Lea and similar soils:* 25 percent  
*Minor components:* 30 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Kimbrough****Setting**

*Landform:* Playa rims, plains  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Concave, linear  
*Parent material:* Loamy eolian deposits derived from sedimentary rock

**Typical profile**

*A - 0 to 3 inches:* gravelly loam  
*Bw - 3 to 10 inches:* loam  
*Bkkm1 - 10 to 16 inches:* cemented material  
*Bkkm2 - 16 to 80 inches:* cemented material

**Properties and qualities**

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* 4 to 18 inches to petrocalcic  
*Drainage class:* Well drained  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.01 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 95 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 1.0  
*Available water supply, 0 to 60 inches:* Very low (about 1.4 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* D  
*Ecological site:* R077DY049TX - Very Shallow 12-17" PZ  
*Hydric soil rating:* No

## Custom Soil Resource Report

**Description of Lea****Setting**

*Landform:* Plains

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Calcareous, loamy eolian deposits from the blackwater draw formation of pleistocene age over indurated caliche of pliocene age

**Typical profile**

*A - 0 to 10 inches:* loam

*Bk - 10 to 18 inches:* loam

*Bkk - 18 to 26 inches:* gravelly fine sandy loam

*Bkkm - 26 to 80 inches:* cemented material

**Properties and qualities**

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* 22 to 30 inches to petrocalcic

*Drainage class:* Well drained

*Runoff class:* High

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 90 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 3.0

*Available water supply, 0 to 60 inches:* Very low (about 2.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

*Ecological site:* R077DY047TX - Sandy Loam 12-17" PZ

*Hydric soil rating:* No

**Minor Components****Douro**

*Percent of map unit:* 12 percent

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R077DY047TX - Sandy Loam 12-17" PZ

*Other vegetative classification:* Unnamed (G077DH000TX)

*Hydric soil rating:* No

**Kenhill**

*Percent of map unit:* 12 percent

*Landform:* Plains

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Ecological site:* R077DY038TX - Clay Loam 12-17" PZ

*Hydric soil rating:* No

Custom Soil Resource Report

**Spraberry**

*Percent of map unit:* 6 percent

*Landform:* Playa rims, plains

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear

*Ecological site:* R077DY049TX - Very Shallow 12-17" PZ

*Other vegetative classification:* Unnamed (G077DH000TX)

*Hydric soil rating:* No

**NMSLO Seed Mix****Coarse (CS)****COARSE (CS) SITES SEED MIXTURE:**

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
<b>Grasses:</b>			
Sand bluestem	VNS, Southern	2.0	F
Sideoats grama	Vaughn, El Reno	2.0	F
Blue grama	Hachita, Lovington	1.5	D
Little bluestem	Cimmaron, Pastura	1.5	F
Sand dropseed	VNS, Southern	1.0	S
Plains bristlegrass	VNS, Southern	0.75	D
<b>Forbs:</b>			
Parry penstemon	VNS, Southern	1.0	D
Desert globemallow	VNS, Southern	1.0	D
White prairieclover	Kaneb, VNS	0.5	D
Sulfur buckwheat	VNS, Southern	0.5	D
<b>Shrubs:</b>			
Fourwing saltbush	VNS, Southern	1.0	D
Skunkbush sumac	VNS, Southern	1.0	D
Common winterfat	VNS, Southern	1.0	F
Fringed sagewort	VNS, Southern	0.5	F
<b>Total PLS/acre</b>		<b>18.25</b>	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box

- VNS, Southern – No Variety Stated, seed should be from a southern latitude collection of this species.
- Double above seed rates for broadcast or hydroseeding.
- If Parry is not available, substitute firecracker penstemon.
- If desert globemallow is not available, substitute scarlet globemallow.
- If one species is not available, provide a suggested substitute to the New Mexico Land Office for approval. Increasing all other species proportionately may be acceptable.



## References

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- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
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## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

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Sante Fe Main Office  
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General Information  
Phone: (505) 629-6116

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<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 424407

**QUESTIONS**

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 424407
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS**

<b>Prerequisites</b>	
Incident ID (n#)	nAPP2313058428
Incident Name	NAPP2313058428 VACUUM SWD H #035 @ 30-025-20207
Incident Type	Other
Incident Status	Remediation Plan Received
Incident Well	[30-025-20207] VACUUM SWD H #035

**Location of Release Source***Please answer all the questions in this group.*

Site Name	VACUUM SWD H #035
Date Release Discovered	05/10/2023
Surface Owner	State

**Incident Details***Please answer all the questions in this group.*

Incident Type	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

**Nature and Volume of Release***Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.*

Crude Oil Released (bbls) Details	Cause: Other   Unknown   Crude Oil   Released: 0 BBL (Unknown Released Amount)   Recovered: 0 BBL   Lost: 0 BBL.
Produced Water Released (bbls) Details	Not answered.
Is the concentration of chloride in the produced water >10,000 mg/l	Not answered.
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Not answered.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	Not answered.

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QUESTIONS, Page 2

Action 424407

**QUESTIONS (continued)**

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 424407
	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: Nicholas Poole Title: with Tetrattech Email: <a href="mailto:nicholas.poole@tetrattech.com">nicholas.poole@tetrattech.com</a> Date: 01/24/2025
--	---

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QUESTIONS, Page 3

Action 424407

**QUESTIONS (continued)**

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 424407
	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 51 and 75 (ft.)
What method was used to determine the depth to ground water	Direct Measurement
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	Greater than 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between ½ and 1 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Greater than 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Greater than 5 (mi.)
Any other fresh water well or spring	Greater than 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Greater than 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Greater than 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

<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)	6530
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	28000
GRO+DRO (EPA SW-846 Method 8015M)	22490
BTEX (EPA SW-846 Method 8021B or 8260B)	187
Benzene (EPA SW-846 Method 8021B or 8260B)	2.6
<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	04/24/2025
On what date will (or did) the final sampling or liner inspection occur	04/28/2025
On what date will (or was) the remediation complete(d)	04/30/2025
What is the estimated surface area (in square feet) that will be reclaimed	2860
What is the estimated volume (in cubic yards) that will be reclaimed	679
What is the estimated surface area (in square feet) that will be remediated	2860
What is the estimated volume (in cubic yards) that will be remediated	679
<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>	

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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 4

Action 424407

**QUESTIONS (continued)**

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 424407
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**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: Nicholas Poole Title: with Tetrattech Email: <a href="mailto:nicholas.poole@tetrattech.com">nicholas.poole@tetrattech.com</a> Date: 01/24/2025
<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>	



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

General Information  
Phone: (505) 629-6116

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QUESTIONS, Page 5  
  
Action 424407

QUESTIONS (continued)

Operator:  BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID:  260297
	Action Number:  424407
	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 424407

**QUESTIONS (continued)**

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 424407
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS**

Sampling Event Information	
Last sampling notification (C-141N) recorded	304675
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	07/05/2023
What was the (estimated) number of samples that were to be gathered	40
What was the sampling surface area in square feet	3600

**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 424407

CONDITIONS

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 424407
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
scott.rodgers	The Remediation Plan is Conditionally Approved. 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 for site assessment/characterization/proven depth to water determination. Sidewall samples should be delineated/excavated to 600 mg/kg for chlorides and 100 mg/kg for TPH to define the edge of the release. Confirmation samples should be collected every 200 ft2. All off pad areas must meet reclamation standards set forth in the OCD Spill Rule. Please note that at least one (1) representative 5-point composite sample will need to be collected from the backfill material that will be used for the reclamation of the top four feet of the excavation. The work will need to occur in 90 days after the work plan has been reviewed.	2/4/2025