ENSOLUM

January 16, 2025

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 Completion Report and Closure Request**
Lambe 2C
San Juan County, New Mexico
Hilcorp Energy Company
NMOCD Incident Number: NVF1836050592

To Whom it May Concern:

Ensolum, LLC (Ensolum), on behalf of Hilcorp Energy Company (Hilcorp), presents this *Remediation Completion Report and Closure Request* associated with a release at the Lambe 2C natural gas production well pad (Site). The Site is located on federal land in Unit H, Section 20, Township 31 North, Range 10 West in San Juan County, New Mexico (Figure 1).

1.0 SITE BACKGROUND AND INITIAL RELEASE RESPONSE

On December 17, 2018, Hilcorp personnel discovered a pinhole leak due to corrosion in the bottom of a condensate tank. The leak resulted in approximately 97 barrels (bbls) of condensate draining onto the ground and infiltrating the subsurface. The release was contained within the earthen berm, but no liquids were recovered. The defective tank was immediately shut-in, drained of remaining liquids, and taken out of service. The release was reported to the New Mexico Oil Conservation Division (NMOCD) by Hilcorp on a form C-141 Release Notification and Corrective Action Form dated December 21, 2018. The NMOCD received the release report on December 24, 2018, and assigned incident number NVF1836050592.

Hilcorp responded to the release by conducting several delineation investigations to determine the extent of subsurface hydrocarbon impact. In January of 2019, soil samples were collected from soil borings via hand auger and a CME-55 hollow-stem auger drill rig. Borings were advanced until refusal in cobbles at depths ranging from 9 feet to 12 feet below ground surface (bgs). Upon encountering refusal with the hollow-stem drill rig due to cobbles at a relatively shallow depth, Hilcorp initiated remediation activities via excavation between January and May 2019. An estimated 5,000 cubic yards of impacted soil was excavated and hauled for disposal. The excavation depth ranged from 23 feet to 29 feet bgs, which required significant sloping of the sidewalls. A photograph of the excavation extent is attached in Appendix A.

Based on the size of the excavation, a second attempt at subsurface delineation was conducted with a sonic drill rig on June 22, 2019. From June 22 through June 24, 2019, Hilcorp's former environmental consultant, LT Environmental, Inc. (LTE), used a sonic drill rig to advance eight borings to collect soil samples for laboratory analysis and determine the lateral and vertical impacts outside of the existing

excavation extent. Wells were installed following soil boring activities for potential future use during remediation activities. Based on results of the drilling and soil sampling event, it was determined the release was delineated to the Site-specific standards (presented below) and impacted soils were limited in areal extent within proximity to MW01. Groundwater was not encountered during drilling activities and as a result, subsurface soil appeared to be the only medium impacted by the December 2018 release.

Based on field screening during drilling activities, borings MW01 through MW08 were completed as wells within the subsurface vadose zone. Screened casing in boring MW01 was installed across the subsurface intervals with the highest petroleum hydrocarbon impacted soil based on field screening results in order to target these depth intervals. In addition, wells installed in borings MW02 through MW08 were completed and eventually used as observation wells during a soil vapor extraction (SVE) pilot test. Wells were constructed with 2-inch diameter Schedule 40 polyvinyl chloride (PVC) casing and 2-inch Schedule 40 PVC 0.010-inch slotted screen. Wells were completed with 10-20 silica sand pack to 2 feet above the screened interval, then hydrated bentonite seal to the ground surface.

Detailed information about the release, release response, subsequent Site investigations, initial remediation, and proposed additional remediation were included in the *Soil Delineation and Proposed Remediation Work Plan* submitted by LTE to the NMOCD on August 30, 2019, (submitted directly to Mr. Cory Smith via email) and approved with conditions on September 9, 2019. As presented in the LTE work plan, a Site characterization assessment was conducted and the following NMOCD Closure Criteria apply at the Site: 100 milligrams per kilogram (mg/kg) total petroleum hydrocarbons (TPH); 10 mg/kg benzene; 50 mg/kg total for the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX); and 600 mg/kg chloride due to the proximity of the Site to a significant watercourse. Depth to groundwater beneath the Site was determined to be greater than 50 feet bgs.

Following approval, Hilcorp conducted four limited SVE events between September 24, 2019 and October 14, 2019 using an air compressor and Venturi T to test SVE feasibility. An initial air sample was collected on September 25, 2019, and a final air sample was collected on October 14, 2019. All activities performed at the Site were documented in the *Venturi SVE Remediation Update and Proposed Workplan,* dated March 5, 2020, and submitted to the NMOCD. Based on the information collected, this document proposed a subsequent remediation work plan to construct and install an SVE system to remediate petroleum hydrocarbon impacted soil at the Site. The NMOCD did not respond to the March 5, 2020 work plan with approval or denial.

2.0 2021 UPDATED REMEDIATION WORK PLAN AND SVE SYSTEM OPERATION

After submittal of the *Venturi SVE Remediation Update and Proposed Workplan* (dated March 5, 2020), the NMOCD did not comment on the report and did not approve or deny newly proposed activities. Hilcorp was subsequently issued a notice of violation (NOV) on September 1, 2021, for failing to meet the operational and reporting requirements conditioned by the NMOCD for the original approved work plan dated August 30, 2019. The NOV required the submittal of any delinquent reports, an update on Site remediation, a plan for bringing the Site into compliance, and an updated remediation work plan. WSP USA, Inc. (WSP) subsequently submitted the *Update Report and Updated Remediation Workplan* to the NMOCD on September 30, 2021, complying with the requests of the NOV and summarizing the results of an SVE pilot test performed at the Site on September 17, 2021.

2.1 SVE SYSTEM OPERATION

In September 2021, an SVE system consisting of a 1-horsepower Atlantic Blower model AB-202/1 regenerative blower capable of producing 50 standard cubic feet of per minute (scfm) flow and 30 inches of water column (IWC) vacuum was installed at the Site and operated on well MW01. Operation of the SVE system began on September 24, 2021 and remains in operation as of the date of this report. Since startup of the permanent system, runtime of greater than 90% has been achieved by the system.

Quarterly air sample data and measured stack flow rates are used to estimate total mass recovered and total emissions generated by the SVE system. Based on these estimates, approximately 537 pounds of total volatile petroleum hydrocarbons (TVPH) have been removed as of November 26, 2024. As indicated by the air emissions data collected quarterly from the SVE system, BTEX and TVPH concentrations have become asymptotic at the Site. Quarterly air sampling data collected at the Site is summarized in Table 1.

3.0 2024 MONITORING WELL GAUGING

As requested by the NMOCD in their email dated March 15, 2024 (attached in Appendix B), Hilcorp and Ensolum gauged all on-Site monitoring wells to assess groundwater conditions and determine if sufficient water was present at the Site to collect groundwater samples. Specifically, the NMOCD stated that groundwater samples should be collected if static water column within any of the Site wells exceeded 2 feet in thickness. Hilcorp and Ensolum personnel conducted Site visits on April 26, 2024, May 22, 2024, May 29, 2024, and June 7, 2024, to gauge Site wells and determine depth to groundwater and water column thickness. Based on the observations from these visits, as well as the original observations presented in the LTE *Soil Delineation and Proposed Remediation Workplan* dated August 30, 2019, significant volumes of groundwater are not present in any of the wells at the Site and wells that are not dry have a water column thickness of less than 2 feet. Depth to water measurements collected in 2024 are summarized on Table 2.

4.0 DRILLING AND CONFIRMATION SOIL SAMPLING ACTIVITIES

As proposed in the September 2021 work plan prepared by WSP, drilling and soil confirmation sampling activities were performed once SVE system data indicated asymptotic conditions. Drilling activities occurred on September 22 and 23, 2023, utilizing a sonic drill rig operated by Cascade Environmental. A total of four borings, SB01 through SB04, were advanced to depths of up to 40 feet bgs at the locations proposed in WSP's September 2021 work plan (shown on Figure 2). Ensolum submitted notice of sampling to the NMOCD and Bureau of Land Management (BLM) at least 48 hours in advance of sampling activities (Appendix B).

During drilling, an Ensolum geologist logged lithology, inspected the soil for petroleum hydrocarbon staining and odors, and field screened for volatile organic compounds (VOCs) using a photoionization detector (PID), with results noted on field logs (attached as Appendix C). In general, sand, gravel, and cobbles were encountered to depths ranging from 25 feet to 35 feet bgs. Silty sand/sandy silt was encountered below the coarser grained lithology in all borings to the terminal depths. Boring SB01, advanced in close proximity to SVE well MW01 and in the original source of the release, contained elevated PID readings and slight petroleum odors at depths between approximately 25 feet to 27.5 feet bgs (PID reading of 2,923 parts per million [ppm]) and 27.5 feet to 30 feet bgs (PID reading of 2,875 ppm). The boring log for well MW01 (included in Appendix C) also indicated odors and staining in a limited 1.5-inch lens of fine-grain soil at a depth between 25 feet and 30 feet bgs.

Confirmation soil samples were collected at depth intervals indicating the greatest impacts based on field screening results and from the terminal depth of the boring. Soil samples were collected directly into laboratory-provided jars and immediately placed on ice. Samples were submitted to Hall for analysis of TPH and BTEX. Based on field screening and analytical data gathered during the Site sampling, slightly elevated concentrations of TPH above the NMOCD Closure Criteria were identified near the source of the release in boring SB01 at the sampled depth range of 25 feet to 27.5 feet bgs. All other soil samples collected during sampling were either below the NMOCD Closure Criteria or were below the laboratory reporting limits. Soil analytical results are summarized in Table 2, with complete laboratory analytical reports attached as Appendix D.

Based on the September 2023 confirmation sampling results and limited TPH concentrations remaining in boring SB01, Ensolum and Hilcorp submitted a *Closure Request with Variance* report (dated June 13,

2024) requesting closure of the Site with the NMOCD. The NMOCD rejected the closure request and requested that Hilcorp operate the SVE system for an additional 6 months and resample soil from the depth interval with previous Closure Criteria exceedances.

4.1 2024 ADDITIONAL DRILLING AND CONFIRMATION SOIL SAMPLING

As requested by the NMOCD, an additional boring was advanced at the Site on December 9, 2024 in close proximity to MW01 and SB01. Drilling was accomplished utilizing a sonic drill rig operated by Cascade Environmental. Boring SS01 was advanced to a depth of 40 feet bgs at the location shown on Figure 2. Ensolum submitted notice of sampling to the NMOCD and BLM prior to drilling and sampling activities (attached in Appendix B).

During drilling, an Ensolum geologist logged lithology, inspected the soil for petroleum hydrocarbon staining and odors, and field screened for VOCs, with results noted on field logs (included in Appendix C with historical field logs). In general, sand, gravel, and cobbles were encountered to depths ranging from ground surface to approximately 30 feet bgs. Clayey sand and sandy silt was encountered below the coarser grained lithology to the terminal depth of 40 feet bgs. Groundwater was not encountered during drilling activities. SS01, advanced in close proximity to SVE well MW01/ boring SB01 and in the original source of the release, contained elevated PID readings up to 232.6 ppm at depths between approximately 27 feet to 30 feet bgs. The boring logs for previously drilled well MW01 and boring SB01 (included in Appendix C) also indicated odors, staining, and elevated PID readings from this same depth interval between approximately 25 feet and 30 feet bgs.

One confirmation soil sample was collected at the depth interval of 27.5 feet to 30 feet bgs where field screening indicated the greatest potential impacts. The soil sample was collected directly into laboratory-provided jars and immediately placed on ice. The sample was submitted to Eurofins Environment Testing for laboratory analysis of TPH, BTEX, and chloride. Based on the analytical data, all analyzed constituents were below the NMOCD Table I Closure Criteria. Soil analytical results are summarized in Table 3 and Figure 2, with complete laboratory analytical reports (including 2023 soil sample results) attached as Appendix D.

5.0 CONCLUSIONS AND CLOSURE REQUEST

A release of approximately 97 barrels (bbls) of condensate occurred due to a pinhole leak in the Site storage tank. The condensate quickly migrated vertically through coarse grained soils until they reached finer grained material around 30 feet bgs. The initial remedial excavation performed in 2019 removed an estimated 5,000 cubic yards of soil to depths up to 29 feet bgs, removing the majority of impacted soil present at the Site. Due to the depth and difficulty removing the cobbly soil at that depth, Hilcorp ceased excavation and conducted additional delineation efforts to assess the vertical and lateral extent of impacts. Based on the field screening and analytical results from the June 2019 drilling event, remaining soil impacts were limited vertically and laterally to the vicinity of MW01 at a depth range of 25 to 30 feet bgs.

Due to the depth of impacts and favorable subsurface lithology at the Site (as indicated by the SVE pilot test performed in 2021), Hilcorp conducted additional remediation efforts using SVE technology at well MW01. SVE emission analytical results collected from the SVE system between 2021 and 2024 indicate approximately 537 pounds of TVPH were removed from the subsurface, thus reducing residual concentrations of TPH at the Site. Once the system approached asymptotic conditions, confirmation soil sampling was performed in September 2023, with results indicating that low levels of TPH were still present in a limited area in the subsurface at depths between approximately 25 and 30 feet bgs. The SVE system operated for an additional 15 months, and additional confirmation sampling was conducted in December 2024. Results from the December 2024 confirmation sampling event, as well as historical excavation and drilling confirmation sampling events, indicate that a combination of excavation and

remediation through SVE has successfully remediated TPH-impacted soil and concentrations are below the applicable NMOCD Table I Closure Criteria.

6.0 CLOSURE REQUEST

Excavation and SVE system operation activities were conducted at the Site to address the release discovered on December 17, 2018. Laboratory analytical results for the excavation and soil boring confirmation soil samples indicate that all contaminant concentrations are compliant with the Site Closure Criteria and no further remediation is required. Remediation of impacted soil at the Site have been protective of human health, the environment, and groundwater. As such, Hilcorp respectfully requests closure for Incident Number NVF1836050592.

We appreciate the opportunity to provide this report to the NMOCD. If you should have any questions or comments regarding this document, please contact the undersigned.

Sincerely,
Ensolum, LLC

Stuart Hyde
Senior Managing Geologist
(970) 903-1607
shyde@ensolum.com

Daniel R. Moir
Senior Managing Geologist
(303) 887-2946
dmoir@ensolum.com

Attachments:

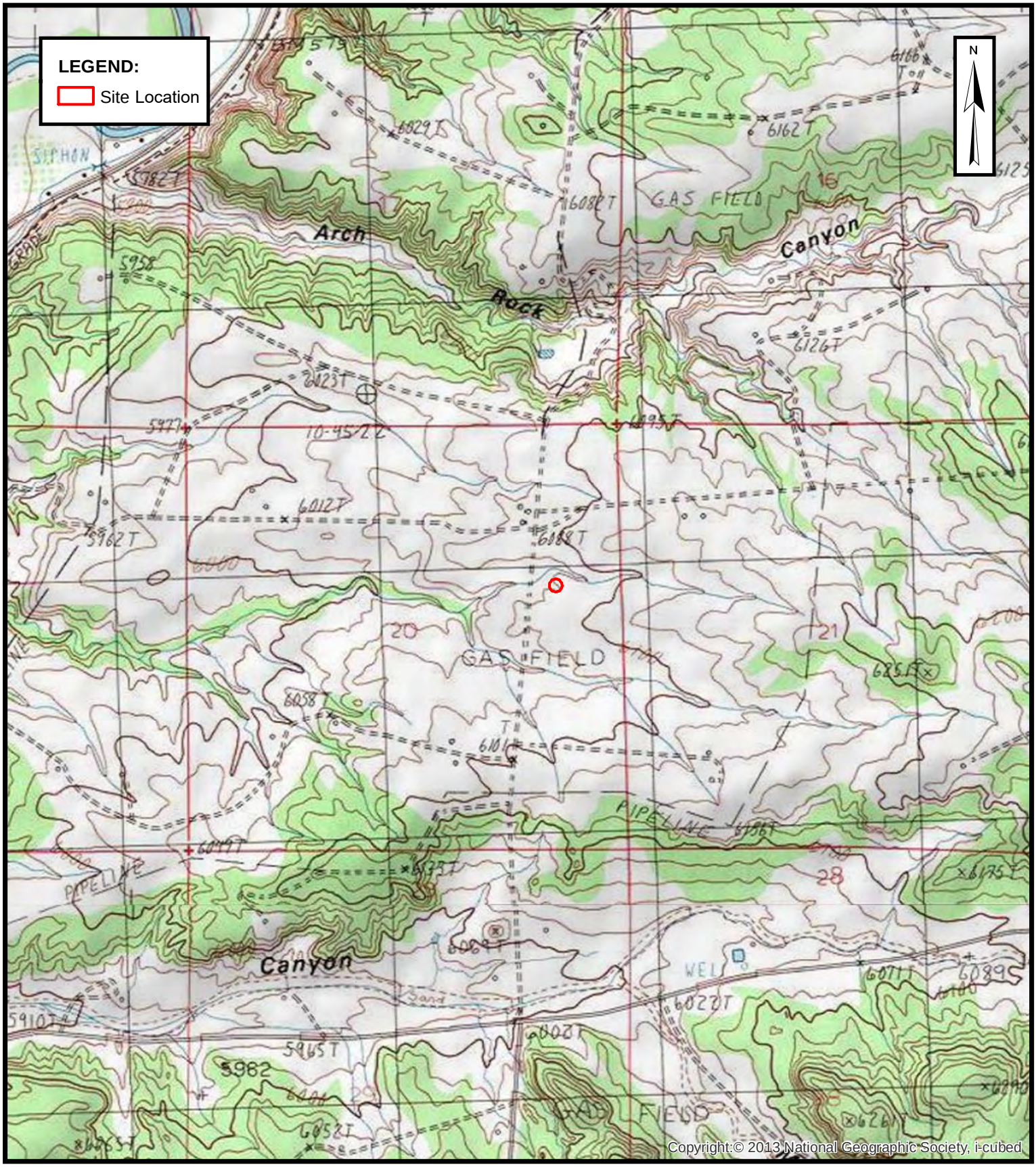
Figure 1: Site Location Map
Figure 2: 2023/2024 Confirmation Soil Sample Results

Table 1: Soil Vapor Extraction System Emissions Analytical Results
Table 2: Groundwater Elevation Summary
Table 3: Confirmation Soil Sample Analytical Results

Appendix A: Project Photographs
Appendix B: Agency Correspondence
Appendix C: Boring Logs
Appendix D: Laboratory Analytical Reports

ENSOLUM

FIGURES



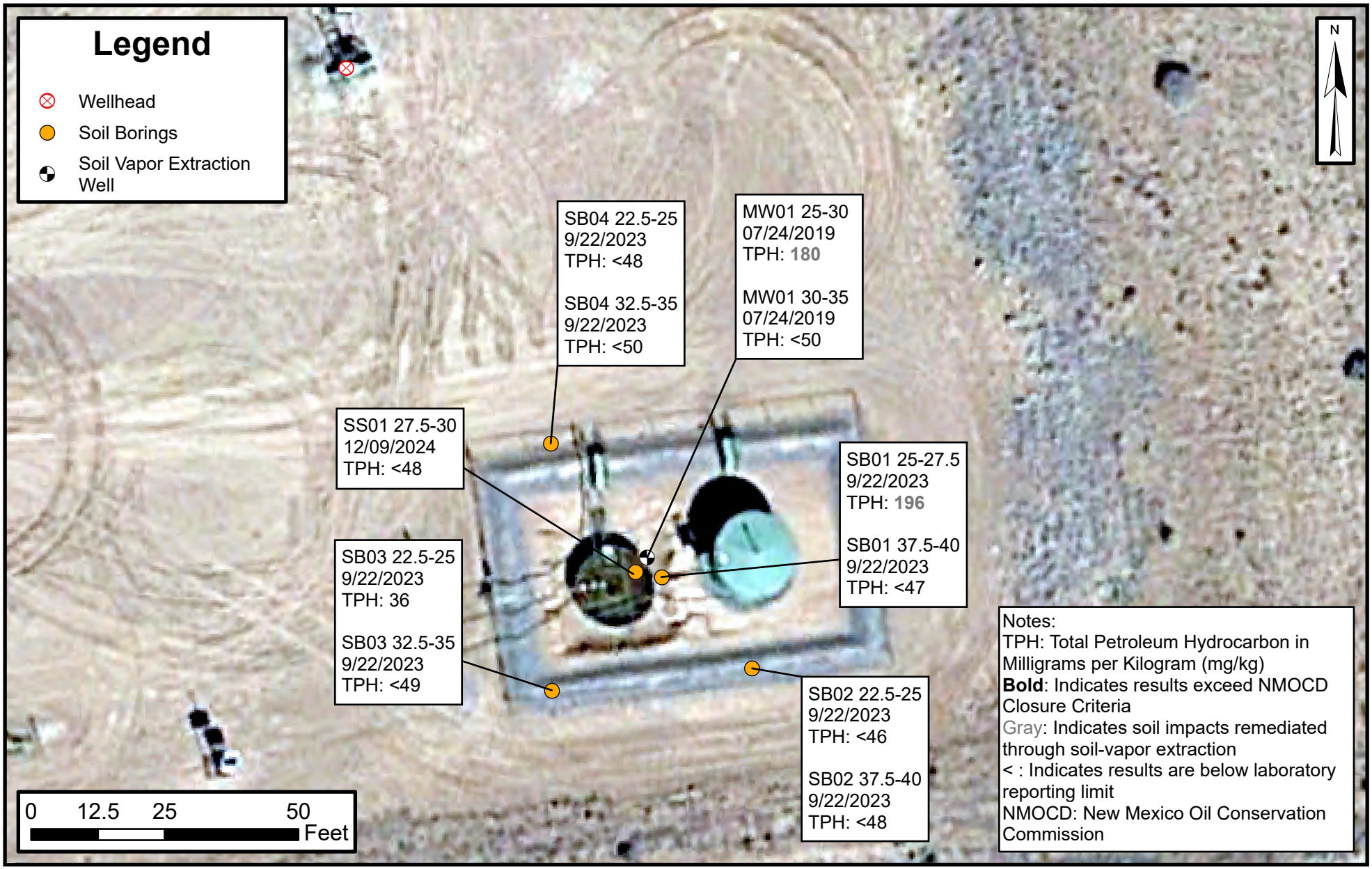
ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

Site Location Map

Lambe 2C
Hilcorp Energy Company

36.885855, -107.899525
San Juan County, New Mexico

FIGURE
1



ENSOLUM
Environmental, Engineering and Hydrogeologic Consultants

2023/2024 Confirmation Soil Sample Results

Lambe #2C
Hilcorp Energy Company

36.885855, -107.899525
San Juan County, New Mexico

FIGURE
2

Sources: Google Earth (2015)

ENSOLUM

TABLES

ENSOLUM

TABLE 1
SOIL VAPOR EXTRACTION SYSTEM EMISSIONS ANALYTICAL RESULTS
Lambe 2C
Hilcorp Energy Company
San Juan County, New Mexico

Date	PID (ppm)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	TVPH/GRO (µg/L)	Oxygen (%)	Carbon Dioxide (%)
9/25/2019 (1)	782	6.1	42	<5.0	56	--	--	--
10/14/2019 (1)	431	7.3	26	2.6	36	3,600	--	--
9/17/2021 (2)	78	<0.10	<0.10	<0.10	1.1	660	--	--
9/24/2021	97	<0.20	0.9	<0.20	4.3	880	--	--
12/2/2021	92	<0.20	2.3	0.6	6.5	300	22.10	0.288
3/15/2022	42	<0.1	<0.10	<0.10	0.5	41	22.10	0.249
6/16/2022	25	<0.10	0.51	0.14	1.4	110	21.57	0.28
9/28/2022 (3)	122	<0.10	<0.10	<0.10	<0.15	43	21.47	0.41
12/12/2022 (3)	16.9	0.72	8.2	0.51	6.5	170	21.68	0.30
3/9/2023	20.8	0.21	4.1	0.47	<0.10	140	21.64	0.26
6/22/2023	48.3	0.37	4.1	0.29	5.4	120	21.10	0.30
8/23/2023	38.6	0.21	3.1	0.30	4.7	75	21.30	0.53
11/27/2023	23.8	<0.10	1.6	0.16	2.5	51	21.50	0.34
3/5/2024	40.6	0.69	9.9	0.91	11	130	22.31	0.24
6/13/2024	30.1	0.35	4.2	0.34	4.4	57	21.67	0.25
9/18/2024	18.6	2.4	1.1	18	25	61	21.82	0.35
11/26/2024	2.1	<0.10	0.12	<0.10	0.18	7.4	21.45	0.05

Notes:

(1): sample collected during a Venturi event

(2): sample collected during pilot testing of the SVE system

(3): PID measurement collected during operation and maintenance visits on 9/21/2022 and 12/10/2022

GRO: gasoline range organics

µg/L: microgram per liter

PID: photoionization detector

ppm: parts per million

TVPH: total volatile petroleum hydrocarbons

%: percent

--: not sampled

<: gray indicates result less than the stated laboratory reporting limit (RL)

ENSOLUM

TABLE 2
GROUNDWATER ELEVATION SUMMARY
Lambe 2C
Hilcorp Energy Company
San Juan County, New Mexico

Well Identification	Total Depth (feet bgs)	Date	Depth to Groundwater (feet BTOC)	Depth to Product (feet BTOC)	Product Thickness (feet)	Water Column Thickness (feet)
MW01	39.57	4/26/2024	39.13	--	--	0.44
		5/22/2024	39.35	--	--	0.22
		5/29/2024	39.48	--	--	0.09
		6/7/2024	39.48	--	--	0.09
MW02	38.78	4/26/2024	Dry			
		5/22/2024	Dry			
		5/29/2024	Dry			
		6/7/2024	38.64	--	--	0.14
MW03	38.82	4/26/2024	38.71	--	--	0.11
		5/22/2024	38.75	--	--	0.07
		5/29/2024	38.72	--	--	0.10
		6/7/2024	38.72	--	--	0.10
MW04	38.57	4/26/2024	Dry			
		5/22/2024	Dry			
		5/29/2024	Dry			
		6/7/2024	Dry			
MW05	38.45	4/26/2024	Dry			
		5/22/2024	Dry			
		5/29/2024	Dry			
		6/7/2024	Dry			
MW06	39.20	4/26/2024	37.93	--	--	1.27
		5/22/2024	38.36	--	--	0.84
		5/29/2024	38.31	--	--	0.89
		6/7/2024	38.25	--	--	0.95
MW07	38.81	4/26/2024	38.37	--	--	0.44
		5/22/2024	38.63	--	--	0.18
		5/29/2024	38.65	--	--	0.16
		6/7/2024	38.62	--	--	0.19
MW08	38.40	4/26/2024	Dry			
		5/22/2024	Dry			
		5/29/2024	Dry			
		6/7/2024	Dry			

Notes:

bgs: below ground surface

BTOC: below top of casing

--: indicates no GWEL or PSH measured

ENSOLUM

TABLE 3
CONFIRMATION SOIL SAMPLE ANALYTICAL RESULTS
Lambe 2C
Hilcorp Energy Company
San Juan County, New Mexico

Sample ID	Date	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH MRO (mg/kg)	Total TPH (mg/kg)
NMOCD Closure Criteria for Soils Impacted by a Release			**10**	NE	NE	NE	**50**	NE	NE	NE	**100**
~~SB01 25-27.5~~	~~9/22/2023~~	~~25-27.5~~	~~<0.12~~	~~<0.23~~	~~0.44~~	~~4.3~~	~~4.7~~	~~110~~	~~86~~	~~<49~~	~~**196**~~
SB01 37.5-40	9/22/2023	37.5-40	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	<9.4	<47	<47
SB02 22.5-25	9/22/2023	22.5-25	<0.023	<0.046	<0.046	<0.091	<0.091	<4.6	<9.2	<46	<46
SB02 37.5-40	9/22/2023	37.5-40	<0.024	<0.048	<0.048	<0.095	<0.095	<4.8	<9.7	<48	<48
SB03 22.5-25	9/22/2023	22.5-25	<0.023	<0.046	<0.046	<0.092	<0.092	7.4	29	<48	36
SB03 32.5-35	9/22/2023	32.5-35	<0.025	<0.050	<0.050	<0.10	<0.10	<5.0	<9.8	<49	<49
SB04 22.5-25	9/23/2023	22.5-25	<0.025	<0.049	<0.049	<0.099	<0.099	<4.9	<9.6	<48	<48
SB04 32.5-35	9/23/2023	32.5-35	<0.024	<0.048	<0.048	<0.096	<0.096	<4.8	<10	<50	<50
SS01 27.5-30	12/9/2024	27.5-30	<0.023	<0.047	<0.047	<0.094	<0.094	<4.7	<9.6	<48	<48

Notes:

bgs: below ground surface
BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes
mg/kg: milligrams per kilogram
NE: Not Established
NMOCD: New Mexico Oil Conservation Division
GRO: Gasoline Range Organics
DRO: Diesel Range Organics
MRO: Motor Oil/Lube Oil Range Organics
TPH: Total Petroleum Hydrocarbon
<: indicates result less than the stated laboratory reporting limit (RL)
~~Grey~~ text indicates soil sample remediated during operation of the soil-vapor extraction system

ENSOLUM

APPENDIX A

Project Photographs

PROJECT PHOTOGRAPHS
Lambe 2C
San Juan County, New Mexico
Hilcorp Energy Company

Photograph 1 Final excavation extent from initial remediation efforts, view looking southeast. Date: May 6, 2019	
Photograph 2 Sonic drill rig at boring SB01, view looking south. Date: September 22, 2023	

ENSOLUM

APPENDIX B

Agency Correspondence

From: Velez, Nelson, EMNRD
To: Stuart Hyde
Cc: Adeloye, Abiodun A; Mitch Killough
Subject: Re: [EXTERNAL] Hilcorp Lambe 2C Sampling Notification Variance
Date: Friday, December 6, 2024 9:58:03 AM
Attachments: image001.png
image002.png
image003.png
Outlook-10cx23c5.png

[**EXTERNAL EMAIL**]
Good morning Stuart,

Thank you for the notice. Your variance request specifically addressing 19.15.29.12D (1a) NMAC is approved.

If an OCD representative is not on-site on the date &/or time given, please sample per 19.15.29 NMAC or from an OCD pre-approved sampling plan. For whatever reason, if the sampling timeframe is altered, please notify the OCD as soon as possible so we may adjust our schedule(s). Failure to notify the OCD of this change may result in the closure sample(s) not being accepted.

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
http://www.emnrd.nm.gov/ocd

From: Stuart Hyde <shyde@ensolum.com>
Sent: Thursday, December 5, 2024 2:56 PM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>; Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>; Adeloye, Abiodun A <aadeloye@blm.gov>
Cc: Mitch Killough <mkillough@hilcorp.com>

Subject: [EXTERNAL] Hilcorp Lambe 2C Sampling Notification Variance

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

Nelson and Emmanuel,

We submitted a sampling notification for the Lambe 2C to start on 12/13/2024. However, due to the drillers schedule, we are swapping dates with another site and will be starting at the Lambe 2C on Monday December 9, 2024. As such, we are requesting a variance from the 2-business day sampling notification requirement outlined in 19.15.29.12(D)(1)(a) NMAC to allow soil sampling to begin on Monday 12/9/2024.

Please reach out with any questions. Thanks.

Stuart Hyde, PG
(Licensed in WA/TX)
Senior Managing Geologist
970-903-1607
Ensolum, LLC

"If you want to go fast, go alone. If you want to go far, go together." – African Proverb

---

From: OCDOnline@state.nm.us <OCDOnline@state.nm.us>
Sent: Thursday, December 5, 2024 2:45 PM
To: Stuart Hyde <shyde@ensolum.com>
Subject: The Oil Conservation Division (OCD) has accepted the application, Application ID: 409179

[**EXTERNAL EMAIL**]
To whom it may concern (c/o Stuart Hyde for HILCORP ENERGY COMPANY),
The OCD has received the submitted *Notification for (Final) Sampling of a Release* (C-141N), for incident ID (n#) nVF1836050592.

The sampling event is expected to take place:

When: 12/09/2024 @ 08:00
Where: H-20-31N-10W 0 FNL 0 FEL (36.88592353,-107.8994293)

Additional Information: Contact Stuart Hyde, 970-903-1607

Additional Instructions: 36.885844, -107.899342, Lambe 2C

Based on driller schedule changes, sampling at the Lambe 2C has moved from the original date of 12/13/2024 to Monday 12/9/2024. As such, we are requesting a variance from the 2-business day sampling notification requirement outlined in 9.15.29.12(D)(1)(a) to allow soil sampling to begin on Monday 12/9/2024.

An OCD representative may be available onsite at the date and time reported. In the absence or presence of an OCD representative, sampling pursuant to 19.15.29.12.D NMAC is required. Sampling must be performed following an approved sampling plan or pursuant to 19.15.29.12.D.(1).(c) NMAC. Should there be a change in the scheduled date and time of the sampling event, then another notification should be resubmitted through OCD permitting as soon as possible.

- **Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.**

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

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

From: OCDOnline@state.nm.us
To: Stuart Hyde
Subject: The Oil Conservation Division (OCD) has rejected the application, Application ID: 354030
Date: Wednesday, July 31, 2024 3:14:14 PM

[**EXTERNAL EMAIL**]

To whom it may concern (c/o Stuart Hyde for HILCORP ENERGY COMPANY),

The OCD has rejected the submitted *Corrective Action Alternative Remediation Report* (C-141AR), for incident ID (n#) nVF1836050592,
for the following reasons:

- **1. OCD does not concur with Hilcorp's assessment and the variance to leave impacts exceeding Table 1 closure standards for Total Petroleum Hydrocarbons (TPH) is denied at this time. 2. Continue to operate the SVE system. OCD suggest re-sampling in the same vicinity as SVE01/MW01 between 25-27.5 feet below grade in 6 months for TPH from the date of this reporting (June 13, 2024).**

The rejected C-141AR can be found in the OCD Online: Permitting - Action Status, under the Application ID: 354030.
Please review and make the required correction(s) prior to resubmitting.
If you have any questions why this application was rejected or believe it was rejected in error, please contact me prior to submitting an additional C-141AR.

Thank you,
Nelson Velez
Environmental Specialist - Advanced
505-469-6146
Nelson.Velez@emnrd.nm.gov

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

From: OCDOnline@state.nm.us <OCDOnline@state.nm.us>
Sent: Friday, March 15, 2024 10:16 AM
To: Mitch Killough <mkillough@hilcorp.com>
Subject: [EXTERNAL] The Oil Conservation Division (OCD) has rejected the application, Application ID: 289794

CAUTION: External sender. DO NOT open links or attachments from UNKNOWN senders.

To whom it may concern (c/o Mitch Killough for HILCORP ENERGY COMPANY),

The OCD has rejected the submitted *Application for administrative approval of a release notification and corrective action* (C-141), for incident ID (n#) nVF1836050592, for the following reasons:

- **1. No subsequent action toward water related issue mentioned in the March 5, 2020 (nvf1836050592_09_27_2022_09_46_05.pdf) report under the subject header "Recommendation" which stated, "Hilcorp will continue to gauge for groundwater in all monitoring wells on a quarterly basis. If sufficient water is observed, samples will be collected and submitted for analysis of full VOC by EPA Method 8260, TDS by SM 2540C, pH by SM 4500, and common anions by EPA Metho 300.0, and dissolved metals by EPA Method 6010B". OCD understands that this report co-existed with the initial Covid pandemic shutdown. Therefore, Hilcorp must confirm, via gauging, that water does not exist or the static water column in the well is >2 feet. If the latter exist, laboratory samples must be collected for the constituent of concerns, which are benzene and chloride (EPA Methods 8260 & 300.0 respectively).**
- **2. Hilcorp has 90-days (June 13, 2024) to submit to OCD its appropriate or final remediation closure report addressing the water issue.**

The rejected C-141 can be found in the OCD Online: Permitting - Action Status, under the

Application ID: 289794.
Please review and make the required correction(s) prior to resubmitting.
If you have any questions why this application was rejected or believe it was rejected in error, please contact me prior to submitting an additional C-141.

Thank you,
Nelson Velez
Environmental Specialist - Advanced
505-469-6146
Nelson.Velez@emnrd.nm.gov

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

The information contained in this email message is confidential and may be legally privileged and is intended only for the use of the individual or entity named above. If you are not an intended recipient or if you have received this message in error, you are hereby notified that any dissemination, distribution, or copy of this email is strictly prohibited. If you have received this email in error, please immediately notify us by return email or telephone if the sender's phone number is listed above, then promptly and permanently delete this message.

While all reasonable care has been taken to avoid the transmission of viruses, it is the responsibility of the recipient to ensure that the onward transmission, opening, or use of this message and any attachments will not adversely affect its systems or data. No responsibility is accepted by the company in this regard and the recipient should carry out such virus and other checks as it considers appropriate.

From: Stuart Hyde
To: Velez, Nelson, EMNRD; Adeloye, Abiodun A
Cc: Mitch Killough; Devin Hencmann; Eric Carroll
Subject: NVF1836050592 - Lambe 2C Notification to Perform Confirmation Soil Sampling
Date: Friday, September 15, 2023 3:55:00 PM
Attachments: image001.png
image002.png
image003.png
image004.png

Nelson and Emmanuel,

On behalf of Hilcorp Energy Company, we are providing this notification for confirmation soil sampling to be performed at the Lambe 2C SVE remediation site on Thursday September 21, 2023 starting at 8 AM. The site is located in San Juan County, NM at coordinates 36.885923, -107.899429. Sampling will be performed in accordance with the "Update Report and Updated Remediation Workplan" submitted to the NMOCD by WSP USA, Inc. and dated September 30, 2021.

Please reach out with any questions. Thanks.

Stuart Hyde, LG
Senior Geologist
970-903-1607
Ensolum, LLC

ENSOLUM

APPENDIX C

Boring Logs

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW01	Project: Lambe 2C
Date: 7/24/19	Project Number: 017818055
Logged By: E. Carroll	Drilled By: Cascade
Elevation:	Detector: PID
Drilling Method: Sonic	Sampling Method: Continuous
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite
Grout: Bentonite	
Casing Type: Schedule 40 PVC	Diameter: 2" Length: 25'
Hole Diameter: 6"	Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010" Diameter: 2" Length: 15'
Total Depth: 35'	Depth to Water: 29'

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	NO		0			SP-SM	med. dose, red brown silty sand Excavation backfill to ~20'	
					1					
					2					
					3					
					4					
	moist	1.6	NO		5					
					6					
					7					
					8					
					9					
	moist	4.2	NO		10					
					11					
					12					
					13					
					14					
	moist	6.3	NO		15					

Advancing Opportunity

Boring/Well #	MW01
Project:	Lambe 2c
Project #	01781805S
Date	7/24/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16				Excavation backfill	
					17					
					18					
	moist	10.6	NP		19			SP-SM		
					20					
					21			GP	Loose, lt brown, coarse sand and gravel Cobbles >8" diameter	
					22	5				
					23					
					24					
	Dry	14.3	NO		25					
					26			SC	Dense, dark brown/black Silty Sand, some clay <25% Small band of Staining, Strong odor	
					27					
					28	6				
					29					
	moist	>5,000	yes Small band ~1.5"		30					
					31					
					32					
					33	7				
					34			SM	Dense, lt brown, Silty Sand trace clay <10% no Stain	
	moist	~~186~~ 18.6	NO		35					
					36					
					37					

LTE Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW02	Project: Lambe 2C
Date: 7/23/19	Project Number: 017818055
Logged By: E. Carroll	Drilled By: Cascade
Elevation:	Detector: PID
Drilling Method: Sonic	Sampling Method: Continous
Gravel Pack: 10-20 Silica Sand	Seal: Bertonite
Grout: Bentonite	
Casing Type: Schedule 40 PVC	Diameter: 2" Length: 25
Hole Diameter: 6"	Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010" Diameter: 2" Length: 15
Total Depth: 35'	Depth to Water: 29'

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	No		0			SP-SM	Dense, reddish brown Coarse Sand some gravel no stain/odor	
					1					
					2					
					3	1				
	Dry	1.1	No		4					
					5			SP-SM	SAA no Stain/odor	
					6					
					7					
					8	2				
					9					
	Dry	1.3	No		10			SP-SM	SAA no Stain/odor	
					11					
					12					
					13	3				
					14				Loose, lt brown coarse sand	
	Dry	0.8	No		15			GP	and gravel cobbles 78" diameter	

Advancing Opportunity

Boring/Well #	MW02
Project:	Lambe DC
Project #	017818055
Date	7/23/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	2.1	No		15–20	4		GP	Loose, lt brown coarse Sand and gravel cobbles 7-8" diameter no stain/odor	
					20–25	5		GP	SAA no stain/odor	
	Dry	3.5	NO	MW02 20'-25' 1400						
	Wet	0.6	NO		25–30	6		SM	Dense, lt brown, med. Sand Some Silt <15% no Stain odor	GW
								GW		
	moist	0.4	No		30–35	7		SM	Compact, yellow brown Sandy Silt no Stain/odor	
								SC	Compact, dark brown/black, Sandy Silt, some clay <20% no Stain/odor	
	moist	1.1	NO	MW02 30'-35' 1500	35–37			SM	Compact, yellow brown, Sandy Silt no Stain/odor	

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW03		Project: Lambe 2C	
Date: 7/23/19		Project Number: 017818055	
Logged By: E. Carroll		Drilled By: Cascade	
Elevation:	Detector: PID	Drilling Method: Sonic	Sampling Method: Continous
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite
Casing Type: Schedule 40 PVC		Diameter: 2" Length: 25'	Hole Diameter: 6" Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2" Length: 15'	Total Depth: 35' Depth to Water: 27'

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	NO		0			SP-SM	Dry med. dense, reddish brown Silty sand (backfill) no stain/odor	
					1					
					2	1				
					3					
					4					
	Dry	1.1	NO		5			SP-SM	SAA	
					6					
					7					
					8	2				
					9					
	Dry	1.4	NO		10			SP-SM	SAA	
					11					
					12					
					13	3				
					14					
	Dry 0.6	0.6	NO		15			SP-SM	SAA	

Advancing Opportunity

Boring/Well #	MW03
Project:	Lambe 2C
Project #	01781805S
Date	7/23/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16			SP-SM	SAA no stain/odor	
					17	4				
					18				Loose, lt brown, Sand and gravel	
	Dry	4.4	NO		19			GP	Cobbles > 6"	
					20				no stain/odor	
					21					
					22					
					23	5				
	Dry	7.5	NO		24			GP	SAA no Stain/odor	
					25					
					26			GP. GW	Loose, dark red brown, coarse Sand and gravel, wet no Stain/odor	GW
	wet	3.0	NO		27					
					28	6		SM	dense, med silty Sand, trace clay < 10%	
	moist	3.3	NO		29				no Stain/odor	
					30					
					31				Compact, dark brown/black, silty Sand	
	moist	5.0	NO		32			SC	some clay < 25% no stain/odor	
					33	7				
					34			SM	Dense, lt brown silty Sand, trace clay < 10% no stain/odor	
	moist	5.3	NO		35					
					36				TD = 35'	
					37					

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW04	Project: Lambe 2C
Date: 7/24/19	Project Number: 01781805 5
Logged By: E. Carroll	Drilled By: Cascade
Elevation:	Detector: PID
Drilling Method: Sonic	Sampling Method: Continous
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite
Grout: Bentonite	
Casing Type: Schedule 40 PVC	Diameter: 2" Length: 25'
Hole Diameter: 6"	Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010" Diameter: 2" Length: 15'
Total Depth: 35'	Depth to Water: 27'

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	No		0			SP-SM	Dry, lt. reddish brown, silty sand	
					1					
					2					
					3	1				
					4					
	Dry	1.3	No		5			SP-SM	SAA no stain/odor	
					6					
					7					
					8	2				
					9					
	Dry	1.1	No		10			SP-SM	SAA no stain/odor	
					11					
					12					
					13	3				
					14			GP	Loose, lt. brown coarse sand and gravel cobbles > 8" diameter no stain/odor	
	Dry	2.0	No		15					

LTE Advancing Opportunity

Boring/Well #	MW04
Project:	Lambe 2c
Project #	C17818055
Date	7/24/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17	4				
					18					
					19			GP	Loose, lt brown, Sand and gravel, cobbles >8" diameter	
	Dry	5.8	NO		20				no stain/odor	
					21					
					22					
					23	5				
					24			GP	SAA, no stain/odor	
	Dry	6.6	NO		25					
					26					
					27			GW	Loose, saturated, coarse Sand	
	wet	6.5	NO		28	6		GP	and gravel, no stain/odor	
					29			SM	Dense, lt. brown silty sand, trace clay < 10% no stain/odor	
	moist	5.2	NO		30					
					31					
					32	7				
					33					
					34			SM	SAA no stain/odor	
	moist	2.2	no		35					
					36				TD = 35'	
					37					

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW05		Project: Lambe 2C	
Date: 7/24/19		Project Number: 01781855	
Logged By: E. Carroll		Drilled By: Cascade	
Elevation:	Detector: PID	Drilling Method: Sonic	Sampling Method: Continous
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite
Casing Type: Schedule 40 PVC		Diameter: 2" Length: 25'	Hole Diameter: 6" Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2" Length: 15'	Total Depth: 35' Depth to Water: 26'

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	wet	0.8	NO		0			SP-SM	wet, dark reddish brown, silty sand no stain/odor	
					1					
					2					
					3	1				
					4					
	Dry	1.1	NO		5			SP-SM	SAA no stain/odor	
					6					
					7					
					8	2				
					9					
	Dry	1.3	NO		10			SP-SM	SAA no stain/odor	
					11					
					12					
					13	3				
					14				Loose, lt. brown, sand and gravel cobbles > 8" diameter no stain/odor	
	Dry	1.2	NO		15			GP		

Advancing Opportunity

Boring/Well #	MW05
Project:	Lambe 7C
Project #	
Date	7/24/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17	4				
					18					
	Dry	19.9	NO	MW05 15'-20' 940	19			GP	SAA no Stain/odor	
					20					
					21					
					22					
					23	5		GP	SAA no Stain/odor	
					24					
	Dry	13.4	NO		25					
					26			GW		GW
	Wet	0.3	NO		27			SM	Dense, lt. brown, Silty Sand trace Clay < 10% no Stain/odor	
					28	6				
	moist	7.8	NO		29					
					30			SC	Dense, dark brown black Silty Sand Some Clay < 25% no Stain/odor	
					31					
					32					
					33					
					34			SM	Dense, lb brown, Silty Sand, trace Clay < 10% no Stain/Odor	
	moist	7.2	NO	MW05 30'-35' 1100	35					
					36					
					37					

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW06		Project: Lambe 2C	
Date: 7/22/19		Project Number: 017816055	
Logged By: E. Carroll		Drilled By: Cascade	
Elevation:	Detector: PID	Drilling Method: Sonic	Sampling Method: continous
Gravel Pack: 10-20 Silica Sand		Seal: Bentonite	Grout: Bentonite
Casing Type: Schedule 40 PVC		Diameter: 2" Length: 25'	Hole Diameter: 6" Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010"	Diameter: 2" Length: 15'	Total Depth: 35' Depth to Water: 28'

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	NO		0	1		SP-SM	compact, lt. reddish brown, medium grain poorly sorted, trace silt clots	
					1					
					2					
					3	1				
					4					
					5			SP-SM	SAA no stain/odor	
					6					
					7					
					8	2				
	Dry	1.1	NO		9			GP	Loose, lt. brown, Poorly Sorted coarse sand and gravel, cobbles up to 8" diameter no stain/odor	
					10					
					11					
					12					
					13	3				
					14					
		9.8			15			GP	SAA, cobbles < 8" diameter no stain/odor	

LTE Advancing Opportunity

Boring/Well #	MW06
Project:	Lambe 2C
Project #	01781805S
Date	7/22/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	5.1	NO		15–20	4		GP	SAA no stain/odor	
	moist	19.9	NO	MW06 20-25' 8:15	21–25	5		GP	SAA no stain/odor	
	wet				26–27	GW		GP	SAA no stain/odor	GW
	moist	1.6	NO		28–30	6		SM	compact, dark brown black, fine sand and silt, some clay <15% no stain/odor	
	moist	0.0	NO	MW06 30-35' 9:00	31–35	7		SM	Compact, lt brown, fine sandy silt some clay <15% no stain/odor	
					36–37					

Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW07	Project: Lambe 2C
Date: 7/23/19	Project Number: 017818055
Logged By: E. Carroll	Drilled By: Cascade
Elevation:	Detector: PID
Drilling Method: Sonic	Sampling Method: continous
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite
Grout: Bentonite	
Casing Type: Schedule 40 PVC	Diameter: 2" Length: 25
Hole Diameter: 6"	Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010"
Diameter: 2" Length: 15	Total Depth: 35
Depth to Water: 28'	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	No		0			SP-SM	medium dense, lt reddish brown coarse sand, some gravel <20% (backfill) no stain/odor	
					1					
					2					
					3	1				
					4					
					5					
					6					
					7					
					8	2				
	Moist	2.3	No		9			SP-SM	SAA no stain/odor	
					10					
					11					
					12					
					13	3				
					14			SP-SM	SAA no stain/odor	
	Moist	3.4	No		15					

Advancing Opportunity

Boring/Well #	MW07
Project:	Lambe 2C
Project #	
Date	7/23/19

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
					15					
					16					
					17	4				
					18					
	moist	10.6	NO		19			GP	loose, lt brown, coarse sand and gravel cobbles > 8" no stain/odor	
					20					
					21					
					22					
					23	5				
					24			GP	SAA no stain/odor	
	moist	17.8	No		25					
					26					
					27					
					28	6		GW	Compact, fine sandy silt, trace clay <10%, no stain strong odor	GW
	moist	75,000	NO	MW07 25'-30' 10:30	29			SM		
					30					
					31					
					32					
					33	7				
					34			SC	Compact, fine sandy silt some clay <20% no stain/odor	
	moist	42.3	no	MW07 30'-35' 11:00	35					
					36				TD: 35'	
					37					

LTE Advancing Opportunity

848 E. 2nd Ave
Durango, Colorado 81301

BORING LOG/MONITORING WELL COMPLETION DIAGRAM

Boring/Well Number: MW08	Project: Lambe 2C
Date: 7/22/2019	Project Number: 017618055
Logged By: E. Carroll	Drilled By: Cascade
Elevation:	Detector: PID
Drilling Method: Sonic	Sampling Method: Continous
Gravel Pack: 10-20 Silica Sand	Seal: Bentonite
Grout: Bentonite	
Casing Type: Schedule 40 PVC	Diameter: 2" Length: 25'
Hole Diameter: 6"	Depth to Liquid: NA
Screen Type: Schedule 40 PVC	Slot: 0.010"
Diameter: 2" Length: 15'	Total Depth: 35'
Depth to Water: 26'	

Penetration Resistance	Moisture Content	Vapor (ppm)	HC Staining?	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	0.0	No		0			SP-SM	Compact, lt. reddish brown, medium Poorly Sorted Sand, trace silt <10%	Stickup
					1					
					2	1				
					3					
					4					
	Dry	11.8	No		5			SP-SM	SAA	
					6					
					7				Loose, lt brown, poorly sorted coarse sand and gravel, cobbles up to 8" diameter	
					8	2				
					9			GP		
	Dry	4.7	No		10				no stain/odor	
					11					
					12					
					13	3				
					14			GP	SAA, cobbles greater than 8"	
	Dry	0.9	No		15				no Stain/odor	

LTE Advancing Opportunity

Boring/Well #	MW08
Project:	Lambe 2C
Project #	01781855
Date	7/22/2019

Penetration Resistance	Moisture Content	Vapor (ppm)	Staining	Sample #	Depth (ft. bgs.)	Sample Run	Recovery	Soil/Rock Type	Lithology/Remarks	Well Completion
	Dry	1.1	No		15–20	4		GP	SAA no stain/odor	
	Dry	3.6	No		21–25	5		GP	SAA no stain/odor	
					25			GW	Wet, fine to dark red coarse sand and gravel	GW
					26–30	6		SM / SC	Very dense, yellow brown, platy clay and silt no stain/odor	
	moist	2.7	no							
	moist	3.0	NP		31–37	7		SC	SAA no stain/odor	
									TD = 35'	

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB01
Project No.:

Date Sampled: 9-22
Drilled By: Cascade
Driller: Miguel Alvarado
Logged By: E. Carroll

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter: 8.5'
Casing Diameter: NA
Well Materials: NA
Surface Completion: NA
Boring Method: Sonic

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0	0-2.5	100	0.0		SP	Red brown sand & gravel DRY	
5	2.5-5.0	100	0.0		SP	dark red brown sand & gravel moist. cohesive	
5	5-7.5	100	0.0		SP	SAA	
10	7.5-10	100	0.0		SP	SAA	
10	10-12.5	100	0.0		SP	SAA	
15	12.5-15	100	0.0		GP	yellow brown dry loose sand & gravel	
15	15-17.5	100	0.0		GP	Red brown loose sand with cobbles	
20	17.5-20	60	0.0		GP	SAA	
20	20-25	60	1.2		GP	White/gray sand & gravel with cobbles Slight odor	

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB01
Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25							
26	25-27.5	100	29.3		SP	Yellow brown moist sand some silt, non cohesive	
27							
28							
29	27.5-30	100	28.5		SP	SAA	
30							
31					SP		
32	30-32.5	100	32.8		~~SP~~	gray brown moist sand some ~~silt~~ / ~~clay~~ silt	
33							
34	32.5-36	100	31.6		SP	SAA	
35							
36	35-37.5	100	9.8		ML	Gray moist sandy ~~clay~~ silt	
37							
38	37.5-40	100	9.3		ML	SAA	
39							
40							
41							
42						TD = 40'	
43							
44							
45							
46							
47							
48							
49							
50							

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB02
Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0–2	0-2.5	100	0.0		SP	DRy red brown Sand & gravel	
2–5	2.5-5	100	0.0		SP	moist red brown Sand & gravel	
5–7.5	5-7.5	100	0.0		SP	SAA	
7.5–10	7.5-10	100	0.0		SP	SAA	
10–12.5	10-12.5	100	0.0		SP	SAA	
12.5–15	12.5-15	100	0.0		GP	dark brown moist Sand gravel w cobbles	
15–17.5	15-17.5	100	0.0		GP	SAA	
17.5–20	17.5-20	100	1.4		GP	SAA	
20–22.5	20-22.5	100	316		SP	yellow brown Sand Some silt	
22.5–25	22.5-25	100	334		SP	SAA	

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB02
Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIO-METRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25	25-27.5	100	34.6		SM	Dark brown sand some ~~clay~~ silt	
26							
27							
28							
29	27.5-30	100	27.2		SM	SAA	
30							
31	30-32.5	100	26.9		SM	SAA	
32							
33							
34	32.5-35	100	9.8		ML	Gray silty sand cohesive	
35							
36	35-37.5	100	7.6		ML	SAA	
37							
38							
39	37.5-40	100	4.7		ML	SAA	
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB03
Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0							
1	0-2.5	100	0.0		SP	Dry red brown sand & gravel	
2							
3							
4	2.5-5	100	0.0		SP	moist red brown sand & gravel	
5							
6							
7	5-7.5	100	0.0		SP	SAA	
8							
9	7.5-10	100	0.0		SP	SAA	
10							
11							
12	10-12.5	100	0.0		SP	SAA	
13							
14	12.5-15	100	0.0		SP GP	red brown sand & gravel w/ cobbles moist dose	
15							
16	15-17.5	50	0.0		GP	SAA	
17							
18							
19	17.5-20	50	80		GP	SAA	
20							
21	20-22.5	50	610		GP	SAA	
22							
23							
24	22.5-25	50	100		GP	SAA	
25							

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB03
Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25	25-25.7	100	0.0		ML	Gray moist silty sand	
26							
27							
28	25.7-30	100	0.0		ML	SAA	
29							
30							
31	30-32.5	100	0.0		ML	SAA	
32							
33	32.5-35	100	0.0		ML	SAA	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER: SB04
Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0							
1	0 - 2.5	100	0.0		SP	Red brown Sand & gravel DRY	
2							
3							
4	2.5 - 5	100	0.0		SP	Red brown Sand & gravel moist	
5							
6	5 - 7.5	100	0.0		SP	SAA	
7							
8							
9	7.5 - 10	100	0.0		SP	SAA	
10							
11	10 - 12.5	100	0.0		GP	Dark red brown Sand & gravel w/ cobbles	
12							
13							
14	12.5 15	100	~~0.0~~ 1.6		GP	lt. gray gravel & cobbles & boulders	
15							
16	15 - 17.5	100	1.8		GP	SAA	
17							
18							
19	17.5 - 20	100	86.2		GP	Red brown Sand, gravel & cobbles	
20							
21	20 - 22.5	100	158		GP	SAA	
22							
23							
24	22.5 25	100	230		GP	Red brown Sand gravel & cobbles	
25							

ENSOLUM

Client: Hilcorp Energy Company
Project Name: Lambe 2C
Project Location: New Mexico
Project Manager: Stuart Hyde

BORING LOG NUMBER

Project No.:

Date Sampled:
Drilled By:
Driller:
Logged By:

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate:
West Coordinate:

Borehole Diameter:
Casing Diameter:
Well Materials:
Surface Completion:
Boring Method:

DEPTH (FEET)	SAMPLE INTERVAL	RECOVERY (%)	FID/PID READING (PPM)	POTENTIOMETRIC SURFACE	GEOLOGIC LOG SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25	25-27.5	100			GP	lt gray cobbles & boulders some sand & gravel	
26							
27							
28	27.5-30	87.3			GP	SAA black sand 27.5-28.5 organic	
29							
30							
31	30-32.5	26.3			ML	lt gray silty sand moist cohesive	
32							
33	32.5-35	1.2			ML	SAA	
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							

ENSOLUM

Client: HEC
Project Name: Lambe 2C
Project Location: Aztec, Nm
Project Manager: Stuart Hyde

BORING LOG NUMBER: SS01
Project No.:

Date Sampled: 12-9-24
Drilled By: Cascade
Driller: Monty
Logged By: E. Carroll

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate: 36.68879
West Coordinate: -107.899383

Borehole Diameter: 6"
Casing Diameter:
Well Materials: X
Surface Completion:
Boring Method: Sonic

DEPTH (FEET)	SAMPLE INTERVAL	BLOW COUNT	RECOVERY (%)	FID/PID READING (PPM)	USCS SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
0							No well
1	1	NA	100	0.9	SP	Dry to. red brown sand & gravel No S/O	
2							
3							
4	2	NA	100	0.9	SP	SAA	
5							
6	3		100	1.0	SP	Dry dark brown sand & gravel No S/O	
7							
8							
9	4		100	1.1	SP	SAA	
10							
11	5		100	0.4	SP	moist red brown sand & gravel w/ cobbles / boulders	
12							
13							
14	6		100	0.3	SP	SAA	
15							
16	7		100	0.3	SP	SAA	
17							
18							
19	8		100	0.6	GP	SAA	
20							
21	9		10	x	GP	No recovery large cobbles / boulders	
22							
23							
24	10		100	1.2	SP	moist red brown sand & gravel w/ cobbles	

ENSOLUM

Client: HEC
Project Name: Lambe 2C
Project Location: Aztec, NM
Project Manager: Stuart Hyde

BORING LOG NUMBER: SS01
Project No.:

Date Sampled: 12-9-24
Drilled By: Cascade
Driller: Manny
Logged By: E. Carroll

Ground Surface Elevation:
Top of Casing Elevation:
North Coordinate: 36.885718
West Coordinate: -107.899883

Borehole Diameter: 8"
Casing Diameter: NA
Well Materials: NA
Surface Completion: NA
Boring Method: Sonic

DEPTH (FEET)	SAMPLE INTERVAL	BLOW COUNT	RECOVERY (%)	FID/PID READING (PPM)	USCS SYMBOL	GEOLOGIC DESCRIPTION	BORING/WELL COMPLETION
25–27	11	NA	100	8.3	SP	Dry lb. greenish gray sand few clay/silt & cobbles	
28–29	12		100	232.6	SP	SAA	
30–32	13		100	119.7	SC	Dark gray moist clayey sand	
33–34	14		100	108.1	SC	SAA	
35–36	15		100	24.3	ML	Dark gray moist sandy silt	
37–38	16		100	8.1	ML	SAA	
39–41	17					TD = 40'	
42–50							

ENSOLUM

APPENDIX D

Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

October 06, 2023

Mitch Killough
HILCORP ENERGY
PO Box 4700
Farmington, NM 87499
TEL: (505) 564-0733
FAX:

RE: Lambe 2C OrderNo.: 2309D92

Dear Mitch Killough:

Hall Environmental Analysis Laboratory received 8 sample(s) on 9/26/2023 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB01 25-27.5
Project: Lambe 2C
Collection Date: 9/22/2023 2:00:00 PM
Lab ID: 2309D92-001 **Matrix:** SOIL
Received Date: 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	86	9.9		mg/Kg	1	9/28/2023 1:30:28 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/28/2023 1:30:28 PM
Surr: DNOP	102	69-147		%Rec	1	9/28/2023 1:30:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	110	23	D	mg/Kg	5	10/3/2023 3:13:00 PM
Surr: BFB	252	15-244	SD	%Rec	5	10/3/2023 3:13:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.12	D	mg/Kg	5	10/3/2023 3:13:00 PM
Toluene	ND	0.23	D	mg/Kg	5	10/3/2023 3:13:00 PM
Ethylbenzene	0.44	0.23	D	mg/Kg	5	10/3/2023 3:13:00 PM
Xylenes, Total	4.3	0.47	D	mg/Kg	5	10/3/2023 3:13:00 PM
Surr: 4-Bromofluorobenzene	120	39.1-146	D	%Rec	5	10/3/2023 3:13:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB01 37.5-40
Project: Lambe 2C
Collection Date: 9/22/2023 2:30:00 PM
Lab ID: 2309D92-002 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	9/28/2023 1:41:24 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/28/2023 1:41:24 PM
Surr: DNOP	101	69-147		%Rec	1	9/28/2023 1:41:24 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	9/28/2023 2:32:00 PM
Surr: BFB	104	15-244		%Rec	1	9/28/2023 2:32:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	9/28/2023 2:32:00 PM
Toluene	ND	0.047		mg/Kg	1	9/28/2023 2:32:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	9/28/2023 2:32:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	9/28/2023 2:32:00 PM
Surr: 4-Bromofluorobenzene	88.4	39.1-146		%Rec	1	9/28/2023 2:32:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB02 22.5-25
Project: Lambe 2C
Collection Date: 9/22/2023 4:30:00 PM
Lab ID: 2309D92-003 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	9/28/2023 1:52:19 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/28/2023 1:52:19 PM
Surr: DNOP	98.9	69-147		%Rec	1	9/28/2023 1:52:19 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/28/2023 2:54:00 PM
Surr: BFB	99.7	15-244		%Rec	1	9/28/2023 2:54:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	9/28/2023 2:54:00 PM
Toluene	ND	0.046		mg/Kg	1	9/28/2023 2:54:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	9/28/2023 2:54:00 PM
Xylenes, Total	ND	0.091		mg/Kg	1	9/28/2023 2:54:00 PM
Surr: 4-Bromofluorobenzene	86.7	39.1-146		%Rec	1	9/28/2023 2:54:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB02 37.5-40
Project: Lambe 2C
Collection Date: 9/22/2023 5:10:00 PM
Lab ID: 2309D92-004 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/28/2023 2:03:11 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/28/2023 2:03:11 PM
Surr: DNOP	115	69-147		%Rec	1	9/28/2023 2:03:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2023 3:16:00 PM
Surr: BFB	99.8	15-244		%Rec	1	9/28/2023 3:16:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	9/28/2023 3:16:00 PM
Toluene	ND	0.048		mg/Kg	1	9/28/2023 3:16:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2023 3:16:00 PM
Xylenes, Total	ND	0.095		mg/Kg	1	9/28/2023 3:16:00 PM
Surr: 4-Bromofluorobenzene	89.4	39.1-146		%Rec	1	9/28/2023 3:16:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB03 22.5-25
Project: Lambe 2C
Collection Date: 9/22/2023 6:20:00 PM
Lab ID: 2309D92-005 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	29	9.7		mg/Kg	1	9/28/2023 2:14:03 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/28/2023 2:14:03 PM
Surr: DNOP	103	69-147		%Rec	1	9/28/2023 2:14:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	7.4	4.6		mg/Kg	1	9/28/2023 3:38:00 PM
Surr: BFB	146	15-244		%Rec	1	9/28/2023 3:38:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.023		mg/Kg	1	9/28/2023 3:38:00 PM
Toluene	ND	0.046		mg/Kg	1	9/28/2023 3:38:00 PM
Ethylbenzene	ND	0.046		mg/Kg	1	9/28/2023 3:38:00 PM
Xylenes, Total	ND	0.092		mg/Kg	1	9/28/2023 3:38:00 PM
Surr: 4-Bromofluorobenzene	99.1	39.1-146		%Rec	1	9/28/2023 3:38:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB03 32.5-35
Project: Lambe 2C
Collection Date: 9/22/2023 6:40:00 PM
Lab ID: 2309D92-006 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/28/2023 2:24:54 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/28/2023 2:24:54 PM
Surr: DNOP	108	69-147		%Rec	1	9/28/2023 2:24:54 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/28/2023 4:21:00 PM
Surr: BFB	101	15-244		%Rec	1	9/28/2023 4:21:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	9/28/2023 4:21:00 PM
Toluene	ND	0.050		mg/Kg	1	9/28/2023 4:21:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/28/2023 4:21:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/28/2023 4:21:00 PM
Surr: 4-Bromofluorobenzene	89.3	39.1-146		%Rec	1	9/28/2023 4:21:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB04 22.5-25
Project: Lambe 2C
Collection Date: 9/23/2023 9:00:00 AM
Lab ID: 2309D92-007 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/28/2023 2:35:45 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/28/2023 2:35:45 PM
Surr: DNOP	106	69-147		%Rec	1	9/28/2023 2:35:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/28/2023 4:43:00 PM
Surr: BFB	98.7	15-244		%Rec	1	9/28/2023 4:43:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	9/28/2023 4:43:00 PM
Toluene	ND	0.049		mg/Kg	1	9/28/2023 4:43:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/28/2023 4:43:00 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/28/2023 4:43:00 PM
Surr: 4-Bromofluorobenzene	89.2	39.1-146		%Rec	1	9/28/2023 4:43:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2309D92**
Date Reported: **10/6/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: HILCORP ENERGY
Client Sample ID: SB04 32.5-35
Project: Lambe 2C
Collection Date: 9/23/2023 9:40:00 AM
Lab ID: 2309D92-008 **Matrix:** SOIL **Received Date:** 9/26/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/28/2023 2:46:34 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/28/2023 2:46:34 PM
Surr: DNOP	104	69-147		%Rec	1	9/28/2023 2:46:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/28/2023 5:05:00 PM
Surr: BFB	101	15-244		%Rec	1	9/28/2023 5:05:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	9/28/2023 5:05:00 PM
Toluene	ND	0.048		mg/Kg	1	9/28/2023 5:05:00 PM
Ethylbenzene	ND	0.048		mg/Kg	1	9/28/2023 5:05:00 PM
Xylenes, Total	ND	0.096		mg/Kg	1	9/28/2023 5:05:00 PM
Surr: 4-Bromofluorobenzene	89.3	39.1-146		%Rec	1	9/28/2023 5:05:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309D92**

06-Oct-23

Client: HILCORP ENERGY

Project: Lambe 2C

Sample ID: **LCS-77798**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **77798**	RunNo: **100081**
Prep Date: **9/27/2023**	Analysis Date: **9/28/2023**	SeqNo: **3662172** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	104	61.9	130			
Surr: DNOP	4.9		5.000		98.8	69	147			

Sample ID: **MB-77798**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **77798**	RunNo: **100081**
Prep Date: **9/27/2023**	Analysis Date: **9/28/2023**	SeqNo: **3662173** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		114	69	147			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309D92**

06-Oct-23

Client: HILCORP ENERGY

Project: Lambe 2C

Sample ID: **lcs-77788**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **77788**	RunNo: **100076**
Prep Date: **9/27/2023**	Analysis Date: **9/28/2023**	SeqNo: **3661991** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	87.1	70	130			
Surr: BFB	2200		1000		224	15	244			

Sample ID: **mb-77788**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **77788**	RunNo: **100076**
Prep Date: **9/27/2023**	Analysis Date: **9/28/2023**	SeqNo: **3661992** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		104	15	244			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2309D92**

06-Oct-23

Client: HILCORP ENERGY

Project: Lambe 2C

Sample ID: **lcs-77788**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **77788**	RunNo: **100076**
Prep Date: **9/27/2023**	Analysis Date: **9/28/2023**	SeqNo: **3661953** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.77	0.025	1.000	0	76.8	70	130			
Toluene	0.79	0.050	1.000	0	78.5	70	130			
Ethylbenzene	0.81	0.050	1.000	0	80.7	70	130			
Xylenes, Total	2.4	0.10	3.000	0	80.8	70	130			
Surr: 4-Bromofluorobenzene	0.90		1.000		90.3	39.1	146			

Sample ID: **mb-77788**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **77788**	RunNo: **100076**
Prep Date: **9/27/2023**	Analysis Date: **9/28/2023**	SeqNo: **3661954** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.90		1.000		90.1	39.1	146			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: HILCORP ENERGY Work Order Number: 2309D92 RcptNo: 1

Received By: Juan Rojas 9/26/2023 7:30:00 AM

Completed By: Cheyenne Cason 9/26/2023 10:37:18 AM

Reviewed By: 9-26-23

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2. How was the sample delivered?	Courier		

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
5. Sample(s) in proper container(s)?	Yes ☑	No ☐	
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA?	Yes ☐	No ☐	NA ☑
10. Were any sample containers received broken?	Yes ☐	No ☑	
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: mg 9/26/23

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.1	Good	Not Present	Yogi		

Chain-of-Custody Record

Client: HilCorp

Mitch Killough

Mailing Address:

Phone #:

email or Fax#: mkillough@hilcorp.com

QA/QC Package:

☑ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:

☑ Standard 5day ☐ Rush

Project Name: Lambe 2C

Project #:

Project Manager: Stuart Hyde - Ensolum

Sampler: E. Carroll

On Ice: ☑ Yes ☐ No

# of Coolers: 1 YOG

Cooler Temp(Including CF): 3.1 -0 =3.1 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2309092	BTEX / ~~MTBE~~ / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
9-22	14:00	Soil	SB01 25-27.5	1 4oz	Cool	001	X	X								
9-22	14:36	Soil	SB01 ~~27~~ 37.5-40			002										
9-22	~~16:30~~ 16:36	Soil	SB02 ~~37.5-46~~ 22.5-25			003										
9-22	17:10	Soil	SB02 37.5-40			004										
9-22	18:20	Soil	SB03 22.5-25			005										
9-22	18:40	Soil	SB03 32.5-35			006										
9-23	04:00	Soil	SB04 22.5-25			007										
9-23	09:40	Soil	SB04 32.5-35			008										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
9/25/23	1641		Christ Walls		9/25/23	1641
9/25/23	1840		SCM	9/26/23 COURIER	9/26/23	0730

Remarks:

cc: Shyde@ensolum.com ~~hilcorp.com~~

ecarroll@ensolum.com ~~EHS~~

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

eurofins | Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Mitch Killough
Hilcorp Energy
PO BOX 4700
Farmington, New Mexico 87499

Generated 12/30/2024 11:16:55 AM

JOB DESCRIPTION

Lambe 2C

JOB NUMBER

885-16825-1

Eurofins Albuquerque
4901 Hawkins NE
Albuquerque NM 87109

See page two for job notes and contact information.

Eurofins Albuquerque

Job Notes

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

Authorization

Generated
12/30/2024 11:16:55 AM

Authorized for release by
Michelle Garcia, Project Manager
michelle.garcia@et.eurofinsus.com
(505)345-3975

Client: Hilcorp Energy
Project/Site: Lambe 2C

Laboratory Job ID: 885-16825-1

Table of Contents

Definitions/Glossary

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

Glossary

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

Case Narrative

Client: Hilcorp Energy
Project: Lambe 2C

Job ID: 885-16825-1

Job ID: 885-16825-1 Eurofins Albuquerque

Job Narrative
885-16825-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

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

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

Receipt
The samples were received on 12/12/2024 6:35 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.0°C.

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

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

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

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

Client Sample Results

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

Client Sample ID: SS01 27.5-30
Date Collected: 12/09/24 13:30
Date Received: 12/12/24 06:35

Lab Sample ID: 885-16825-1
Matrix: Solid

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		4.7		mg/Kg		12/12/24 12:40	12/14/24 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*35 - 166*	*12/12/24 12:40*	*12/14/24 10:38*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.023		mg/Kg		12/12/24 12:40	12/14/24 10:38	1
Ethylbenzene	ND		0.047		mg/Kg		12/12/24 12:40	12/14/24 10:38	1
Toluene	ND		0.047		mg/Kg		12/12/24 12:40	12/14/24 10:38	1
Xylenes, Total	ND		0.094		mg/Kg		12/12/24 12:40	12/14/24 10:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*12/12/24 12:40*	*12/14/24 10:38*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		9.6		mg/Kg		12/13/24 13:33	12/18/24 15:04	1
Motor Oil Range Organics [C28-C40]	ND		48		mg/Kg		12/13/24 13:33	12/18/24 15:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*108*		*62 - 134*	*12/13/24 13:33*	*12/18/24 15:04*	*1*

Method: EPA 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		60		mg/Kg		12/16/24 08:20	12/16/24 12:27	20

QC Sample Results

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

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

Lab Sample ID: MB 885-17635/1-A
Matrix: Solid
Analysis Batch: 17778

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17635

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics [C6 - C10]	ND		5.0		mg/Kg		12/12/24 12:40	12/14/24 05:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*35 - 166*	*12/12/24 12:40*	*12/14/24 05:39*	*1*

Lab Sample ID: LCS 885-17635/2-A
Matrix: Solid
Analysis Batch: 17778

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17635

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Gasoline Range Organics [C6 - C10]			25.0	23.3		mg/Kg		93	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*188*		*35 - 166*

Method: 8021B - Volatile Organic Compounds (GC)

Lab Sample ID: MB 885-17635/1-A
Matrix: Solid
Analysis Batch: 17779

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17635

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.025		mg/Kg		12/12/24 12:40	12/14/24 05:39	1
Ethylbenzene	ND		0.050		mg/Kg		12/12/24 12:40	12/14/24 05:39	1
Toluene	ND		0.050		mg/Kg		12/12/24 12:40	12/14/24 05:39	1
Xylenes, Total	ND		0.10		mg/Kg		12/12/24 12:40	12/14/24 05:39	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 145*	*12/12/24 12:40*	*12/14/24 05:39*	*1*

Lab Sample ID: LCS 885-17635/3-A
Matrix: Solid
Analysis Batch: 17779

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17635

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			1.00	0.984		mg/Kg		98	70 - 130		
Ethylbenzene			1.00	1.02		mg/Kg		102	70 - 130		
m&p-Xylene			2.00	1.99		mg/Kg		100	70 - 130		
o-Xylene			1.00	0.984		mg/Kg		98	70 - 130		
Toluene			1.00	1.03		mg/Kg		103	70 - 130		
Xylenes, Total			3.00	2.98		mg/Kg		99	70 - 130		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*48 - 145*

QC Sample Results

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

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

Lab Sample ID: MB 885-17753/1-A
Matrix: Solid
Analysis Batch: 18021

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17753

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		10		mg/Kg		12/13/24 13:33	12/18/24 13:29	1
Motor Oil Range Organics [C28-C40]	ND		50		mg/Kg		12/13/24 13:33	12/18/24 13:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Di-n-octyl phthalate (Surr)	*106*		*62 - 134*	*12/13/24 13:33*	*12/18/24 13:29*	*1*

Lab Sample ID: LCS 885-17753/2-A
Matrix: Solid
Analysis Batch: 18021

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17753

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Diesel Range Organics [C10-C28]			50.0	56.3		mg/Kg		113	60 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Di-n-octyl phthalate (Surr)	*103*		*62 - 134*

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 885-17797/1-A
Matrix: Solid
Analysis Batch: 17811

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17797

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		3.0		mg/Kg		12/16/24 08:20	12/16/24 09:36	1

Lab Sample ID: LCS 885-17797/2-A
Matrix: Solid
Analysis Batch: 17811

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17797

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			30.0	28.4		mg/Kg		95	90 - 110		

QC Association Summary

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

GC VOA

Prep Batch: 17635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	5030C	
MB 885-17635/1-A	Method Blank	Total/NA	Solid	5030C	
LCS 885-17635/2-A	Lab Control Sample	Total/NA	Solid	5030C	
LCS 885-17635/3-A	Lab Control Sample	Total/NA	Solid	5030C	

Analysis Batch: 17778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	8015M/D	17635
MB 885-17635/1-A	Method Blank	Total/NA	Solid	8015M/D	17635
LCS 885-17635/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	17635

Analysis Batch: 17779

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	8021B	17635
MB 885-17635/1-A	Method Blank	Total/NA	Solid	8021B	17635
LCS 885-17635/3-A	Lab Control Sample	Total/NA	Solid	8021B	17635

GC Semi VOA

Prep Batch: 17753

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	SHAKE	
MB 885-17753/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 885-17753/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

Analysis Batch: 18021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	8015M/D	17753
MB 885-17753/1-A	Method Blank	Total/NA	Solid	8015M/D	17753
LCS 885-17753/2-A	Lab Control Sample	Total/NA	Solid	8015M/D	17753

HPLC/IC

Prep Batch: 17797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	300_Prep	
MB 885-17797/1-A	Method Blank	Total/NA	Solid	300_Prep	
LCS 885-17797/2-A	Lab Control Sample	Total/NA	Solid	300_Prep	

Analysis Batch: 17811

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
885-16825-1	SS01 27.5-30	Total/NA	Solid	300.0	17797
MB 885-17797/1-A	Method Blank	Total/NA	Solid	300.0	17797
LCS 885-17797/2-A	Lab Control Sample	Total/NA	Solid	300.0	17797

Lab Chronicle

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

Client Sample ID: SS01 27.5-30

Date Collected: 12/09/24 13:30
Date Received: 12/12/24 06:35

Lab Sample ID: 885-16825-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5030C			17635	JP	EET ALB	12/12/24 12:40
Total/NA	Analysis	8015M/D		1	17778	AT	EET ALB	12/14/24 10:38
Total/NA	Prep	5030C			17635	JP	EET ALB	12/12/24 12:40
Total/NA	Analysis	8021B		1	17779	AT	EET ALB	12/14/24 10:38
Total/NA	Prep	SHAKE			17753	MI	EET ALB	12/13/24 13:33
Total/NA	Analysis	8015M/D		1	18021	MI	EET ALB	12/18/24 15:04
Total/NA	Prep	300_Prep			17797	JT	EET ALB	12/16/24 08:20
Total/NA	Analysis	300.0		20	17811	JT	EET ALB	12/16/24 12:27

Laboratory References:

EET ALB = Eurofins Albuquerque, 4901 Hawkins NE, Albuquerque, NM 87109, TEL (505)345-3975

Accreditation/Certification Summary

Client: Hilcorp Energy
Project/Site: Lambe 2C

Job ID: 885-16825-1

Laboratory: Eurofins Albuquerque

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New Mexico	State	NM9425, NM0901	02-26-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
300.0	300_Prep	Solid	Chloride
8015M/D	5030C	Solid	Gasoline Range Organics [C6 - C10]
8015M/D	SHAKE	Solid	Diesel Range Organics [C10-C28]
8015M/D	SHAKE	Solid	Motor Oil Range Organics [C28-C40]
8021B	5030C	Solid	Benzene
8021B	5030C	Solid	Ethylbenzene
8021B	5030C	Solid	Toluene
8021B	5030C	Solid	Xylenes, Total

Oregon	NELAP	NM100001	02-25-25

Chain-of-Custody Record

Client: Hilcorp Energy Company
Mitch Killough
Mailing Address:
Phone #:
email or Fax#: MKillough@hilcorp.com
QA/QC Package:
☑ Standard ☐ Level 4 (Full Validation)
Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☑ EDD (Type)

Turn-Around Time:
5-day
☒ Standard ☐ Rush
Project Name: Lambe 2C
Project #:
Project Manager: S. Hyde - Ensolum
Sampler: E. Carroll
On Ice: ☑ Yes ☐ No
# of Coolers: 1 (Yes)
Cooler Temp(including CF): 0.3-0.3=0 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORA
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107
885-16825 COC

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
12-9	1330	Soil	SS01 27.5-30	1-4oz	Cool		X	X					X			
12-9	1400	Soil	SS01 37.5-40	1-4oz	Cool		X	X					X		HOLD	

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
12/11	13:45	Eric Carroll			12/11/24	1345
12/11/24	1745			Courier	12/12/24	6:35

Remarks: Hold SS01 37.5-40
CC: ecarroll@ensolum.com

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Login Sample Receipt Checklist

Client: Hilcorp Energy Job Number: 885-16825-1

Login Number: 16825 **List Source: Eurofins Albuquerque**
List Number: 1
Creator: Casarrubias, Tracy

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nVF1836050592**
Incident Name	**NVF1836050592 LAMBE 2 C SVE @ 30-045-30747**
Incident Type	**Release Other**
Incident Status	**Remediation Closure Report Received**
Incident Well	**[30-045-30747] LAMBE #002C**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	LAMBE 2 C SVE
Date Release Discovered	12/17/2018
Surface Owner	Federal

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

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	*Not answered.*
Is the concentration of chloride in the produced water >10,000 mg/l	*Not answered.*
Condensate Released (bbls) Details	Cause: Corrosion | Tank (Any) | Condensate | Released: 97 BBL | Recovered: 0 BBL | Lost: 97 BBL.
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.*

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**

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	NA

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: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 01/16/2025

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 75 and 100 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 200 and 300 (ft.)
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	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between ½ and 1 (mi.)
Any other fresh water well or spring	Between ½ and 1 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Between 1 and 5 (mi.)
A wetland	Between 200 and 300 (ft.)
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	None
A 100-year floodplain	Between 1 and 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan		
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.		
Requesting a remediation plan approval with this submission		Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.		
Have the lateral and vertical extents of contamination been fully delineated		Yes
Was this release entirely contained within a lined containment area		No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)		
Chloride	(EPA 300.0 or SM4500 Cl B)	0
TPH (GRO+DRO+MRO)	(EPA SW-846 Method 8015M)	11100
GRO+DRO	(EPA SW-846 Method 8015M)	11100
BTEX	(EPA SW-846 Method 8021B or 8260B)	1061
Benzene	(EPA SW-846 Method 8021B or 8260B)	20
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.		
On what estimated date will the remediation commence		01/01/2019
On what date will (or did) the final sampling or liner inspection occur		12/09/2024
On what date will (or was) the remediation complete(d)		12/09/2024
What is the estimated surface area (in square feet) that will be reclaimed		0
What is the estimated volume (in cubic yards) that will be reclaimed		0
What is the estimated surface area (in square feet) that will be remediated		14400
What is the estimated volume (in cubic yards) that will be remediated		5600
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.		
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.		

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	ENVIROTECH LANDFARM #2 [fEEM0112336756]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	Yes
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 01/16/2025
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.	

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	**408593**
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	**12/13/2024**
What was the (estimated) number of samples that were to be gathered	**2**
What was the sampling surface area in square feet	**4**

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	Yes
Have the lateral and vertical extents of contamination been fully delineated	**Yes**
Was this release entirely contained within a lined containment area	**No**
All areas reasonably needed for production or subsequent drilling operations have been stabilized, returned to the sites existing grade, and have a soil cover that prevents ponding of water, minimizing dust and erosion	Yes
What was the total surface area (in square feet) remediated	14400
What was the total volume (cubic yards) remediated	5600
All areas not reasonably needed for production or subsequent drilling operations have been reclaimed to contain a minimum of four feet of non-waste contain earthen material with concentrations less than 600 mg/kg chlorides, 100 mg/kg TPH, 50 mg/kg BTEX, and 10 mg/kg Benzene	Yes
What was the total surface area (in square feet) reclaimed	0
What was the total volume (in cubic yards) reclaimed	0
Summarize any additional remediation activities not included by answers (above)	NA

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (in .pdf format) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

I hereby agree and sign off to the above statement	Name: Stuart Hyde Title: Senior Geologist Email: shyde@ensolum.com Date: 01/16/2025

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

QUESTIONS

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

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

General Information
Phone: (505) 629-6116

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

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

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 421491
	Action Type: [C-141] Remediation Closure Request C-141 (C-141-v-Closure)

CONDITIONS

Created By	Condition	Condition Date
nvelez	None	4/11/2025