



**CLOSURE REQUEST**

**MARATHON OIL COMPANY**

Created for submission to New Mexico Oil Conservation Division on 05/05/2022

**ASHLEY GIOVENGO**

*Environmental Manager - Permian*

**ENERGIZING AMERICA**

May 05, 2022

**Chad Hensley, Bradford Billings, Robert Hamlet, Jennifer Nobui, and/or Nelson Velez**

State of New Mexico

Energy, Minerals, and Natural Resources

New Mexico Oil Conservation Division

811 South First Street

Artesia, New Mexico 88210

## RE: CLOSURE REQUEST

<b>COMPANY</b>	Marathon Oil Company
<b>LOCATION</b>	Cave Lion 5 WC Federal #002H
<b>API</b>	30-025-45421
<b>PLSS</b>	Unit N Sec 05 T26S R35E
<b>GPS</b>	32.06587633, 103.392175
<b>INCIDENT ID</b>	nAPP2204529130

## BACKGROUND

Wescom, Inc., hereafter referred to as Wescom, has prepared this Closure Request on behalf of Marathon Oil Company, hereafter referred to as Marathon, regarding the release at the Cave Lion 5 WC Federal #002H (Site) located in Unit N, Section 05, Township 26 South and Range 35 East in Lea County, New Mexico. The GPS coordinates are as follows: North 32.06587633 and West -103.392175. Surface owner of the Site is Federal Land. The Site falls within New Mexico Oil Conservation Division (NMOCD), District 1 Hobbs.

On February 13, 2022, an oil dump valve on the heater treater had actuated to the open position, however fluid failed to dump from the valve. This failure caused oil to mist from the flare and catch fire on the ground. Approximately 0.02 barrels (bbls) of crude oil impacted the surface of the caliche pad on the North side of the flare lines. Marathon personnel immediately isolated the source of the leak and extinguished the fire on the ground.

Marathon contracted Atkins Engineering Associates Inc. to drill a water well, C-4601-POD1 on March 31, 2022, to establish ground water depth within a half mile radius of the Site. A well record and log was submitted to the New Mexico Office of the State Engineer (NMOSE) on April 07, 2022. Wescom personnel arrived onsite on April 20, 2022, to collect confirmation samples from the burned area.



## SURFACE & GROUND WATER

The New Mexico Office of the State Engineer (OSE) records indicates the nearest depth to groundwater measurement is greater than 100 feet below ground surface (bgs) and is 311 feet Northwest of the affected area. No playas or lakes are located within a one-mile radius of this Site (Attachment C).

## KARST POTENTIAL

According to data from the Bureau of Land Management, this Site is located within low karst potential as shown in Attachment D. There are no indicators of karst around the Site surface.

## TARGET REMEDIAL LEVELS

The target cleanup levels are determined using the NMOCD Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC, inserted below) including karst guidelines from the Bureau of Land Management. The applicable Recommended Remediation Action Levels (RRALs) are 10 parts per million (ppm) Benzene, 50 ppm combined benzene, toluene, ethyl benzene, and xylene (BTEX) and 2500 ppm Total Petroleum Hydrocarbons (TPH). Characterization of the vertical and horizontal extent of chloride concentration in the soil to a level of 20000 mg/kg (ppm) is also required.

Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC)						
Cave Lion 5 WC Fed #002H — 32.065876, -103.392175						
Depth to Groundwater		Closure Criteria (unites in mg/kg)				
		Chloride * numerical limit or background, whichever is greater	TPH	GRO+DRO	BTEX	Benzene
Based on high karst potential		600	100		50	10
No water data within 0.5 mile radius		600	100		50	10
less than 50 ft bgs		600	100		50	10
51 ft to 100 ft bgs		10000	2500	1000	50	10
greater than 100 ft bgs	>100	20000	2500	1000	50	10
Surface Water	Yes or No	If yes, then				
< 300 feet from continuously flowing watercourse or other significant watercourse?	No					
< 200 feet from lakebed, sinkhole or playa lake	No					
Water Well or Water Source						
< 500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	No					
< 1000 feet from fresh water well or spring?	No					
Human and Other Areas						
< 300 feet from an occupied permanent residence, school, hospital, institution or church?	No					
Within incorporated municipal boundaries or within a defined municipal fresh water well field?	No					
< 100 feet from wetland?	No					
Within area overlying a subsurface mine?	No					
Within an unstable area?	No					
Within a 100-year floodplan?	No					

Table: Closure Criteria Statistics



## CONFIRMATION SAMPLING

On April 20, 2022, Wescom personnel arrived on-site to perform confirmation sampling. A total of eight composite confirmation samples were collected from the burned area on the North side of the flare lines. All the confirmation samples were below the applicable RRALs for the Site, as shown in Table 1. A background sample, BG01, was collected 60 ft East of the caliche pad as shown in Figure 1.

All soil samples were properly packaged, preserved, and transported to Hall Environmental Analysis Laboratory. by chain of custody, and analyzed for Total Petroleum Hydrocarbons, or TPH, —Method 8015D, BTEX—Method 8021B, and Chlorides—Method 300.0. The results are presented in Table 1, Laboratory Analytical Reports are included in Attachment E and confirmation sample locations are shown on Figure 1.

The required 48-hour confirmation sampling notification was sent on April 18, 2022, to Chad Hensley, Bradford Billings, Mike Bratcher, Robert Hamlet, Jennifer Nobui, and Nelson Velez, with the NMOCD in Santa Fe, New Mexico (see Attachment F).

## REQUEST FOR CLOSURE

Based on the attached confirmation sample laboratory data and the fact that the depth to ground water is greater than 100 feet bgs; Marathon hereby requests closure for nAPP2204529130. Marathon also requests that no further action be taken at this time.

If you have any questions or comments, please do not hesitate to call Mrs. Ashley Giovengo at (505) 382-1211.

Sincerely,

Wescom, Inc.

**Ashley Giovengo**

Environmental Manager-Permian

cc: Aaron Daniels, Kaiser-Francis Oil Company

Bradford Billings, NMOCD

Robert Hamlet, NMOCD

Chad Hensley, NMOCD



Jennifer Nobui, NMOCD

Nelson Velez, NMOCD

# REFERENCE MATERIALS

## FIGURES

**FIGURE 1.** Confirmation Sampling

## TABLES

**TABLE 1.** Confirmation Laboratory Analysis Results

## ATTACHMENTS

**ATTACHMENT A.** C-141

**ATTACHMENT B.** Site Photos

**ATTACHMENT C.** Closure Criteria Supporting Documents

**ATTACHMENT D.** Karst Map

**ATTACHMENT E.** Hall Laboratory Analysis Reports

**ATTACHMENT F.** 48-hour Confirmation Sampling Notification Emails



# FIGURE 1

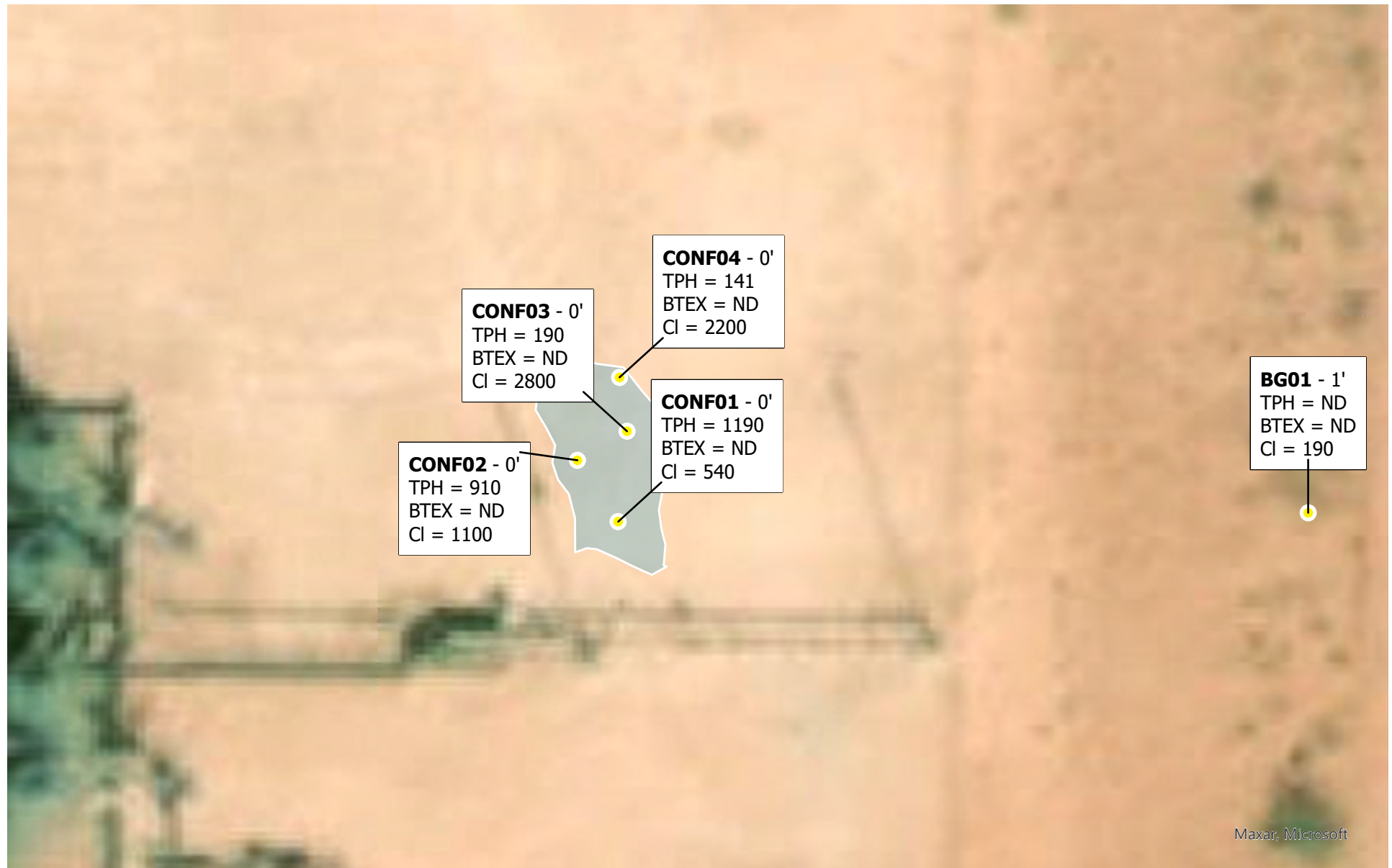
## Confirmation Samples



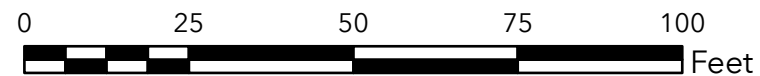
**Energizing America**

**wescominc.com** | info@wescominc.com | 218-724-1322

**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130



## FIGURE 1. CONFIRMATION SAMPLING



### LEGEND

- Sample Locations
- Spill Area



Cave Lion 5 WC Federal #002H

Incident ID: nAPP2204529130

API: 30-025-45421

GPS Coordinates: 32.06587633, -103.392175

Lea County, New Mexico

Marathon Oil Permian LLC

# TABLE 1

## Confirmation Laboratory Analysis Results



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**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130



Cave Lion 5 WC Federal #002H   nAPP2204529130							
Marathon Oil Company   05.05.2022							
Table 1. Confirmation Laboratory Analysis Results							
Sample Description			Petroleum Hydrocarbons				Inorganic
Sample ID	Depth (ft.)	Date	Volatile		Extractable		Chloride (mk/kg)
			Benzene (mk/kg)	BTEX (total) (mk/kg)	TPH (mk/kg)	GRO+DRO (mk/kg)	
Closure Criteria			10	50	2500	1000	20000
BG01	1	4/20/2022	ND	ND	ND	ND	190
CONF01	0	4/20/2022	ND	ND	1190	750	540
CONF01	0.5	4/20/2022	ND	ND	670	430	270
CONF02	0	4/20/2022	ND	ND	910	570	1100
CONF02	0.5	4/20/2022	ND	ND	560	340	560
CONF03	0	4/20/2022	ND	ND	190	80	2800
CONF03	0.5	4/20/2022	ND	ND	31	31	1200
CONF04	0	4/20/2022	ND	ND	141	58	2200
CONF04	0.5	4/20/2022	ND	ND	109	57	1100
ABBREVIATIONS							
BTEX — Benzene, Toluene, Ethylene, Xylene				GRO — Gasoline Range Organics			
DRO — Diesel Range Organics				ND — Non-detect			
ft. — Feet				mg/kg — Milligrams per Kilogram			
TPH — Total Petroleum Hydrocarbons							
Notes							
Bold Red - Results are above closure criteria							
Gray Highlight - Background Samples							



# ATTACHMENT A

Signed C-141



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**wescominc.com** | info@wescominc.com | 218-724-1322

**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural  
Resources Department

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	nAPP2204529130
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 372098
Contact Name Melodie Sanjari	Contact Telephone 575-988-8753
Contact email <a href="mailto:msanjari@marathonoil.com">msanjari@marathonoil.com</a>	Incident # (assigned by OCD)
Contact mailing address 4111 S. Tidwell Rd., Carlsbad, NM 8220	

### Location of Release Source

Latitude 32.06587633

Longitude -103.392175

(NAD 83 in decimal degrees to 5 decimal places)

Site Name CAVE LION 5 WC FEDERAL #002H	Site Type Oil & Gas Facility
Date Release Discovered: 2/13/2022	API# (if applicable) 30-025-45421

Unit Letter	Section	Township	Range	County
N	05	26S	35E	Lea

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (Name: \_\_\_\_\_)

### Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 0.02	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

#### Cause of Release

While completing a task an operator discovered that the Heater Treater Oil dump valve actuated wide open but fluid was not dumping. Upon troubleshooting lines and vessels he noticed a mist of fluid coming from the flare. The Operator shut the gate valve to the flare line downstream of the knockout and extinguished the fire on the ground with a portable fire extinguisher. Elapsed time of occurrence and mist at flare was approximately 3 seconds from time flame hit ground to being extinguished. The burned area is approximately 8 ft. by 14 ft (~1 gallon of fluid).

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Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Fire
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes. NOR submitted 2/14/2022	

## Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped.	
<input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: <u>Melodie Sanjari</u>	Title: <u>Environmental Professional</u>
Signature: <u>Melodie Sanjari</u>	Date: 2/14/2022
email: <u>msanjari@marathonoil.com</u>	Telephone: <u>575-988-8753</u>
<b><u>OCD Only</u></b>	
Received by: _____	Date: _____

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## Site Assessment/Characterization

*This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>&gt;300</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

### **Characterization Report Checklist:** *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico  
Oil Conservation Division

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

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: M. Sanjari Date: 5/9/2022

email: msanjari@marathonoil.com Telephone: 575-988-8753

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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Application ID	

## Closure

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 (electronic submittals in .pdf format are preferred) 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.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

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.

Printed Name: Melodie Sanjari Title: Environmental Professional

Signature: M. Sanjari Date: 5/9/2022

email: msanjari@marathonoil.com Telephone: 575-988-8753

### OCD Only

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Jennifer Nobui Date: 05/26/2022

Printed Name: Jennifer Nobui Title: Environmental Specialist A



## Spill Calculation Tool

### Standing Liquid Inputs:

	Length (ft.)	Width (ft.)	Avg. Liquid Depth (in.)	% Oil	Total Volume (bbls)	Water Volume (bbls)	Oil Volume (bbls)
Rectangle Area #1	8	14	0.0125		0.02	0.02	0.00
Rectangle Area #2					0.00	0.00	0.00
Rectangle Area #3					0.00	0.00	0.00
Rectangle Area #4					0.00	0.00	0.00
Rectangle Area #5					0.00	0.00	0.00
Rectangle Area #6					0.00	0.00	0.00
Tank Displacement					0.00	0.00	0.00
Tank Displacement					0.00	0.00	0.00
Liquid Volume:					0.02	0.02	0.00

### Saturated Soil Inputs:

Soil Type: Gravel Loam

	Length (ft.)	Width (ft.)	Avg. Saturated Depth (in.)	% Oil	Total Volume (bbls)	Water Volume (bbls)	Oil Volume (bbls)
Rectangle Area #1				0%	0.00	0.00	0.00
Rectangle Area #2				0%	0.00	0.00	0.00
Rectangle Area #3				0%	0.00	0.00	0.00
Rectangle Area #4				0%	0.00	0.00	0.00
Rectangle Area #5				0%	0.00	0.00	0.00
Rectangle Area #6				0%	0.00	0.00	0.00
Tank Displacement					0.00	0.00	0.00
Tank Displacement					0.00	0.00	0.00
Saturated Volume					0.00	0.00	0.00

### Volume Recovered and not included in Standing Liquid Inputs:

% Oil	Total Volume (bbls)	Water Volume (bbls)	Oil Volume (bbls)

	Total Volume (bbls)	Water Volume (bbls)	Oil Volume (bbls)
Total Spill Volume (bbls):	0.02	0.02	0.00



# ATTACHMENT B

## Site Photos



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**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130



Burned Area



Burned Area



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Cave Lion 5 WC Federal 2H Incident ID: nAPP2204529130

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Confirmation Sampling (CONF01)



Confirmation Sampling (CONF02)



Confirmation Sampling (CONF03)



Confirmation Sampling (CONF04)

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Cave Lion 5 WC Federal 2H Incident ID: nAPP2204529130

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# ATTACHMENT C

## Closure Criteria Supporting Documents



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**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130



# Cave Lion 5 WC Fed #002H

Distance to Nearest Depth to Water = 362 ft.

## Legend

-  Distance = 362 ft.
-  DTW > 100 ft - C-4601 - POD1
-  Point of Release







2904 W 2nd St.  
Roswell, NM 88201  
voice: 575.624.2420  
fax: 575.624.2421  
www.atkinseng.com

08/016/2021

DII-NMOSE  
1900 W 2<sup>nd</sup> Street  
Roswell, NM 88201

*Hand Delivered to the DII Office of the State Engineer*

Re: Well Record C-4601 Pod1

To whom it may concern:

Attached please find a well log & record and a plugging record, in duplicate, for a one (1) soil borings, C-4601 Pod1.

If you have any questions, please contact me at 575.499.9244 or [lucas@atkinseng.com](mailto:lucas@atkinseng.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Lucas Middleton".

Lucas Middleton

Enclosures: as noted above

USE DII APR 8 2022 PM 1:43



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER


[www.ose.state.nm.us](http://www.ose.state.nm.us)

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD1 (TW-1)		WELL TAG ID NO.		OSE FILE NO(S). C-4601			
	WELL OWNER NAME(S) Marathon Oil				PHONE (OPTIONAL)			
	WELL OWNER MAILING ADDRESS 4111 S Tidwell Rd.				CITY Carlsbad	STATE NM	ZIP 88220	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 3	SECONDS 58	N	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE 103	23	33	W	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE SE SE Sw Sec. 05 T26S R35E								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1249		NAME OF LICENSED DRILLER Jackie D. Atkins			NAME OF WELL DRILLING COMPANY Atkins Engineering Associates, Inc.		
	DRILLING STARTED 3/31/2022	DRILLING ENDED 3/31/2022	DEPTH OF COMPLETED WELL (FT) temporary well		BORE HOLE DEPTH (FT) ±100.8	DEPTH WATER FIRST ENCOUNTERED (FT) n/a		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) n/a	DATE STATIC MEASURED 4/6/2022		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow Stem Auger					CHECK HERE IF PITLESS ADAPTER IS INSTALLED <input type="checkbox"/>		
	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
	0	100.8	±6.5	Boring	--	--	--	--
3. ANNULAR MATERIAL	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	4	4	Sand, medium/ fine grained poorly graded, Red	Y ✓ N	
	4	19	15	Sand, medium/ fine grained poorly graded, Tan	Y ✓ N	
	19	101	82	Sand, medium/ fine grained poorly graded, Reddish Brown	Y ✓ N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
					Y N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:					TOTAL ESTIMATED WELL YIELD (gpm): 0.00	
<input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER – SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Shane Eldridge, Carmelo Trevino, Cameron Pruitt					
6. SIGNATURE	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:  <div style="display: flex; justify-content: space-between;"> <div>               SIGNATURE OF DRILLER / PRINT SIGNEE NAME           </div> <div>             Jackie D. Atkins              DATE           </div> </div>					

FOR OSE INTERNAL USE

WR-20 WELL RECORD &amp; LOG (Version 01/28/2022)

FILE NO.	POD NO.	TRN NO.
LOCATION	WELL TAG ID NO.	PAGE 2 OF 2





# PLUGGING RECORD



**NOTE: A Well Plugging Plan of Operations shall be approved by the State Engineer prior to plugging - 19.27.4 NMAC**

## I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: C-1406-POD1

Well owner: Marathon Oil

Phone No.: \_\_\_\_\_

Mailing address: 4111 S Tidwell Rd.

City: Carlsbad State: New Mexico Zip code: 88220

## II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Jackie D. Atkins ( Atkins Engineering Associates Inc.)
- 2) New Mexico Well Driller License No.: 1249 Expiration Date: 04/30/23
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Cameron Pruitt, Carmelo Trevino
- 4) Date well plugging began: 4/5/2022 Date well plugging concluded: 4/5/2022
- 5) GPS Well Location: Latitude: 32 deg, 8 min, 58 sec  
Longitude: 103 deg, 23 min, 33 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 100.15 ft below ground level (bgl),  
by the following manner: weighted tape
- 7) Static water level measured at initiation of plugging: n/a ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 03/10/22
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

CSL DT APR 8 2022 10:40

- For each interval plugged, describe within the following columns:**

09E DIT APR 8 2022 PM 1:40

**III. SIGNATURE:**

Jack Atkins

4/6/2022

Version: September 8, 2009  
Page 2 of 2






# WR-20 Well Record and Log-forsign

Final Audit Report

2022-04-07

Created:	2022-04-07
By:	Lucas Middleton (lucas@atkinseng.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAXI1rP8dnwKBGHyAMX7zQVWb_TWXRb2DK

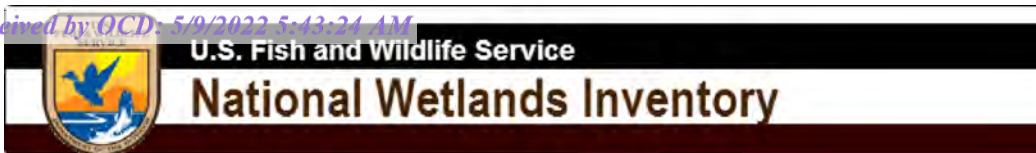
## "WR-20 Well Record and Log-forsign" History

-  Document created by Lucas Middleton (lucas@atkinseng.com)  
2022-04-07 - 4:19:29 PM GMT- IP address: 69.21.254.158
-  Document emailed to Jack Atkins (jack@atkinseng.com) for signature  
2022-04-07 - 4:20:19 PM GMT
-  Email viewed by Jack Atkins (jack@atkinseng.com)  
2022-04-07 - 4:53:44 PM GMT- IP address: 64.90.153.232
-  Document e-signed by Jack Atkins (jack@atkinseng.com)  
Signature Date: 2022-04-07 - 4:55:13 PM GMT - Time Source: server- IP address: 64.90.153.232
-  Agreement completed.  
2022-04-07 - 4:55:13 PM GMT

QSE DIT APR 8 2022 PM1:43



Adobe Acrobat Sign



# Cave Lion 5 WC Fed #002H - Riverine 2,669 ft.



April 12, 2022

## Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

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





# Cave Lion 5 WC Fed #002H - Freshwater Pond 8,777 ft.



April 12, 2022

## Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

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





# Cave Lion 5 WC Fed #002H - Wetland 14,507 ft.



April 12, 2022

## Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine




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




# Cave Lion 5 WC Fed #002H


Distance to Nearest Residence = 6.37 Miles

## Legend

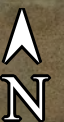
-  Cave Lion 5 WC Fed #002H
-  Distance = 6.37 Miles
-  Nearest Residence

2

 Nearest Residence

 Cave Lion 5 WC Fed #002H

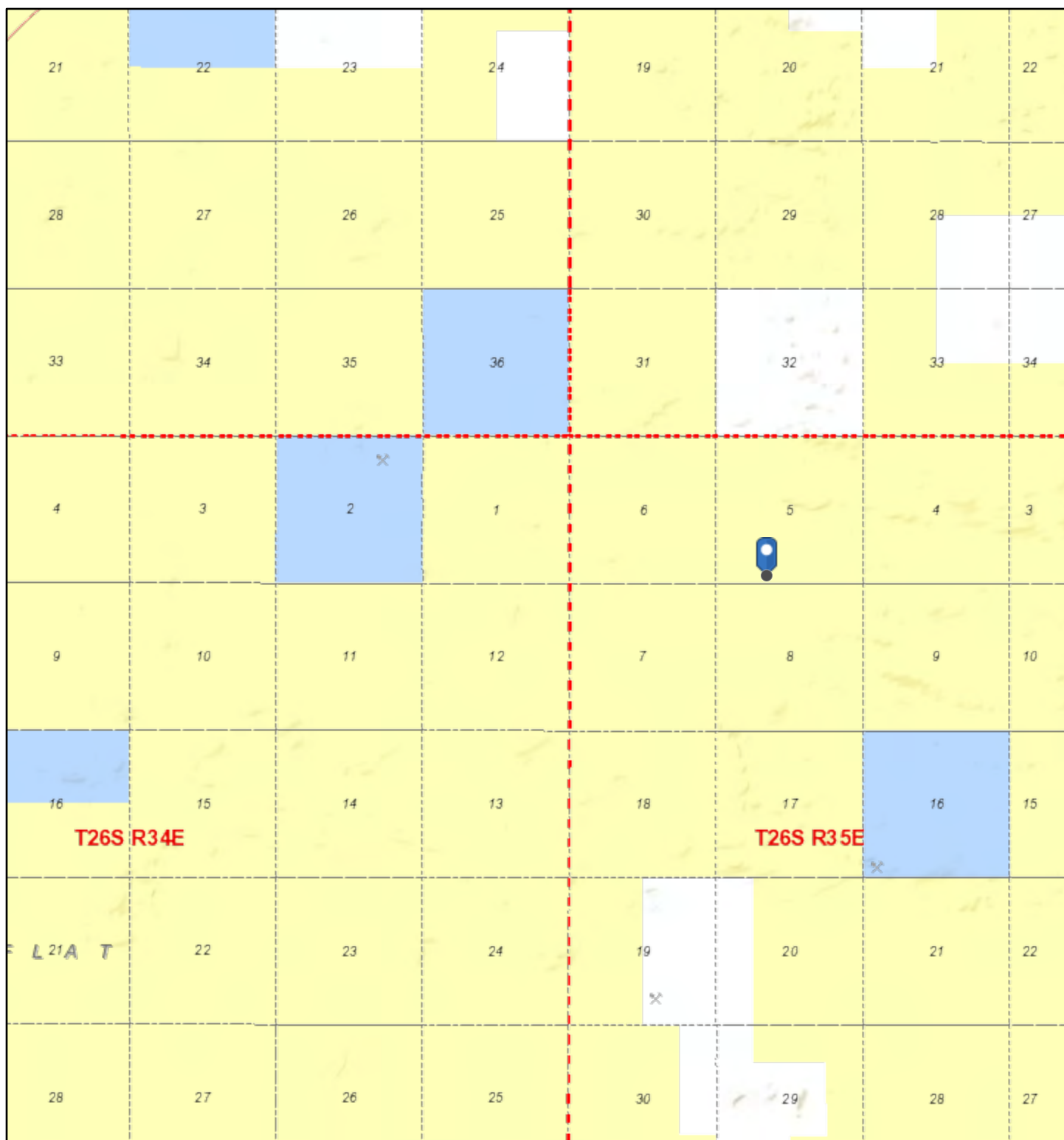
Google Earth



3 mi



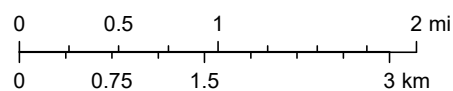
# Active Mines Near Cave Lion 5 WC Fed #002H



4/12/2022, 1:54:49 PM

1:72,224

- |                           |                       |             |
|---------------------------|-----------------------|-------------|
| Township / Range          | Department of Defense | State Parks |
| Sections                  | Department of Energy  | Tribal      |
| <b>Land Ownership</b>     |                       |             |
| Bureau of Land Management | National Park Service |             |
| Bureau of Reclamation     | State Game and Fish   |             |
| Department of Agriculture | State Land            |             |
|                           | Private Land          |             |



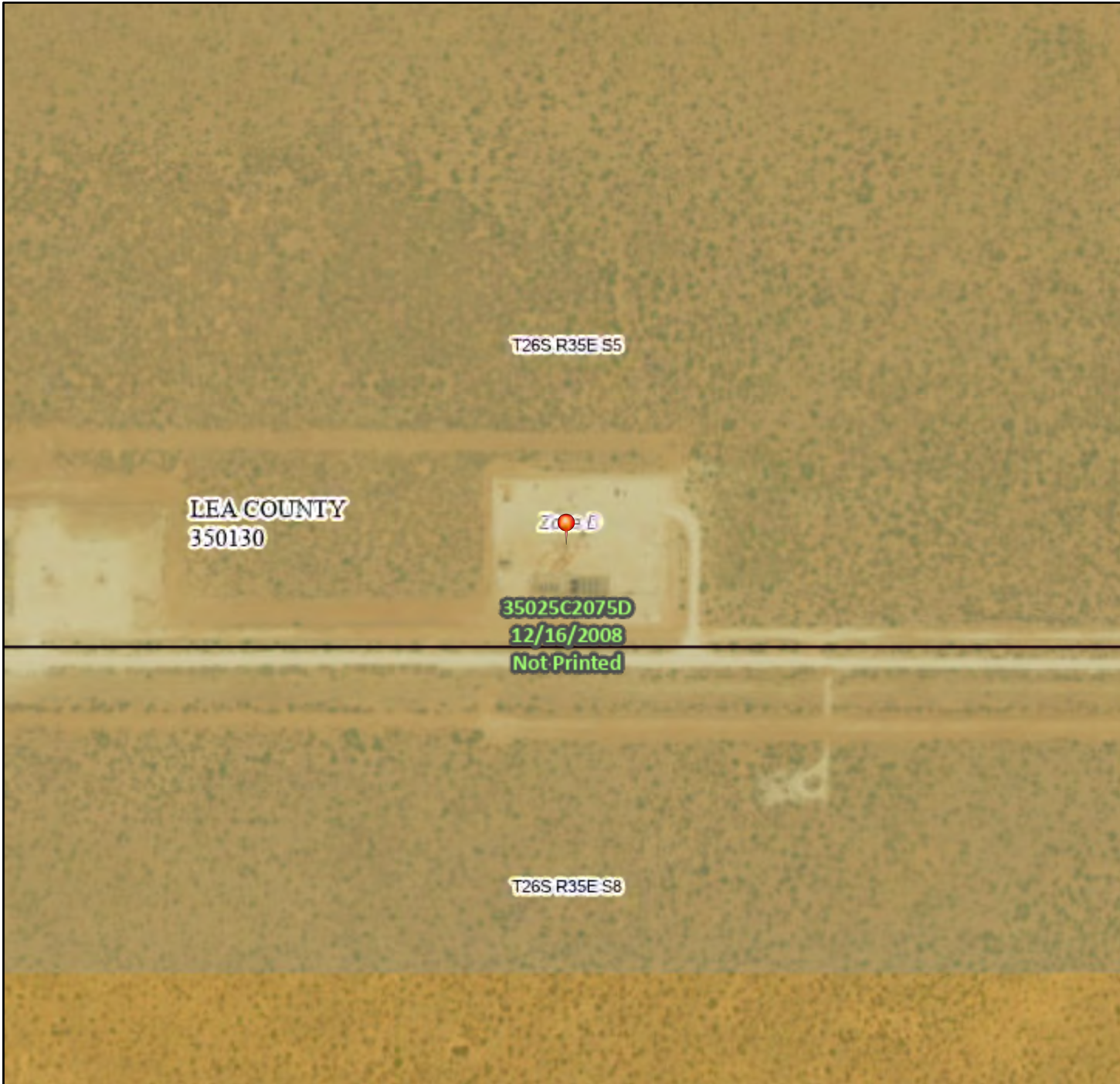
U.S. Bureau of Land Management - New Mexico State Office, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS



# National Flood Hazard Layer FIRMette



103°23'51"W 32°4'12"N



## Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		Coastal Transect
		Base Flood Elevation Line (BFE)
OTHER FEATURES		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Hydrographic Feature
		Digital Data Available
MAP PANELS		No Digital Data Available
		Unmapped



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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/12/2022 at 4:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

# ATTACHMENT D

## Karst Map



**Energizing America**

**wescominc.com** | info@wescominc.com | 218-724-1322

**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130



# Cave Lion 5 WC Fed #002H

Karst Potential = Low

## Legend

- 01 Low
- 02 Medium
- 03 High
- Cave Lion 5 WC Fed #002H

Cave Lion 5 WC Fed #002H



Anthony Rd



# ATTACHMENT E

## Hall Laboratory Analysis Reports



**Energizing America**

**wescominc.com** | info@wescominc.com | 218-724-1322

**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130



## Analytical Report

Lab Order 2204991

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF01-0.5'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 1:28:00 PM

Lab ID: 2204991-001

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	430	9.6		mg/Kg	1	4/27/2022 5:57:21 PM
Motor Oil Range Organics (MRO)	240	48		mg/Kg	1	4/27/2022 5:57:21 PM
Surr: DNOP	79.2	51.1-141		%Rec	1	4/27/2022 5:57:21 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: BRM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/26/2022 1:18:00 AM
Surr: BFB	104	37.7-212		%Rec	1	4/26/2022 1:18:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BRM
Benzene	ND	0.025		mg/Kg	1	4/26/2022 1:18:00 AM
Toluene	ND	0.049		mg/Kg	1	4/26/2022 1:18:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/26/2022 1:18:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/26/2022 1:18:00 AM
Surr: 4-Bromofluorobenzene	85.4	70-130		%Rec	1	4/26/2022 1:18:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: JMT
Chloride	270	60		mg/Kg	20	4/28/2022 2:51:07 AM

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 1 of 0

## Analytical Report

Lab Order 2204991

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF02-0.5'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 1:40:00 PM

Lab ID: 2204991-002

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	340	9.6		mg/Kg	1	4/27/2022 6:18:55 PM
Motor Oil Range Organics (MRO)	220	48		mg/Kg	1	4/27/2022 6:18:55 PM
Surr: DNOP	85.7	51.1-141		%Rec	1	4/27/2022 6:18:55 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: BRM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/26/2022 1:38:00 AM
Surr: BFB	107	37.7-212		%Rec	1	4/26/2022 1:38:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BRM
Benzene	ND	0.025		mg/Kg	1	4/26/2022 1:38:00 AM
Toluene	ND	0.050		mg/Kg	1	4/26/2022 1:38:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/26/2022 1:38:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/26/2022 1:38:00 AM
Surr: 4-Bromofluorobenzene	87.2	70-130		%Rec	1	4/26/2022 1:38:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	560	60		mg/Kg	20	4/27/2022 7:26:13 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 2 of 0

## Analytical Report

Lab Order 2204991

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF03-0.5'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 1:53:00 PM

Lab ID: 2204991-003

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	31	9.6		mg/Kg	1	4/27/2022 6:40:31 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	4/27/2022 6:40:31 PM
Surr: DNOP	116	51.1-141		%Rec	1	4/27/2022 6:40:31 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: BRM
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/26/2022 1:58:00 AM
Surr: BFB	107	37.7-212		%Rec	1	4/26/2022 1:58:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BRM
Benzene	ND	0.025		mg/Kg	1	4/26/2022 1:58:00 AM
Toluene	ND	0.050		mg/Kg	1	4/26/2022 1:58:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/26/2022 1:58:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	4/26/2022 1:58:00 AM
Surr: 4-Bromofluorobenzene	88.8	70-130		%Rec	1	4/26/2022 1:58:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	1200	60		mg/Kg	20	4/27/2022 7:38:38 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

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## Analytical Report

Lab Order 2204991

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF04-0.5'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 1:57:00 PM

Lab ID: 2204991-004

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	57	9.5		mg/Kg	1	4/27/2022 7:02:02 PM
Motor Oil Range Organics (MRO)	52	47		mg/Kg	1	4/27/2022 7:02:02 PM
Surr: DNOP	119	51.1-141		%Rec	1	4/27/2022 7:02:02 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: BRM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/26/2022 2:17:00 AM
Surr: BFB	105	37.7-212		%Rec	1	4/26/2022 2:17:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BRM
Benzene	ND	0.024		mg/Kg	1	4/26/2022 2:17:00 AM
Toluene	ND	0.049		mg/Kg	1	4/26/2022 2:17:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/26/2022 2:17:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/26/2022 2:17:00 AM
Surr: 4-Bromofluorobenzene	87.0	70-130		%Rec	1	4/26/2022 2:17:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	1100	60		mg/Kg	20	4/27/2022 7:51:03 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 4 of 0



## Analytical Report

Lab Order 2204993

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF01-0'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 12:39:00 PM

Lab ID: 2204993-001

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	750	9.5		mg/Kg	1	4/27/2022 7:23:37 PM
Motor Oil Range Organics (MRO)	440	47		mg/Kg	1	4/27/2022 7:23:37 PM
Surr: DNOP	95.0	51.1-141		%Rec	1	4/27/2022 7:23:37 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: BRM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/26/2022 2:37:00 AM
Surr: BFB	105	37.7-212		%Rec	1	4/26/2022 2:37:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BRM
Benzene	ND	0.025		mg/Kg	1	4/26/2022 2:37:00 AM
Toluene	ND	0.049		mg/Kg	1	4/26/2022 2:37:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/26/2022 2:37:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/26/2022 2:37:00 AM
Surr: 4-Bromofluorobenzene	83.8	70-130		%Rec	1	4/26/2022 2:37:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	540	60		mg/Kg	20	4/27/2022 8:03:28 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

Page 1 of 0

## Analytical Report

Lab Order 2204993

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF02-0'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 12:46:00 PM

Lab ID: 2204993-002

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	570	9.9		mg/Kg	1	4/27/2022 7:34:23 PM
Motor Oil Range Organics (MRO)	340	50		mg/Kg	1	4/27/2022 7:34:23 PM
Surr: DNOP	86.5	51.1-141		%Rec	1	4/27/2022 7:34:23 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: BRM
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/26/2022 2:57:00 AM
Surr: BFB	104	37.7-212		%Rec	1	4/26/2022 2:57:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: BRM
Benzene	ND	0.024		mg/Kg	1	4/26/2022 2:57:00 AM
Toluene	ND	0.049		mg/Kg	1	4/26/2022 2:57:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/26/2022 2:57:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/26/2022 2:57:00 AM
Surr: 4-Bromofluorobenzene	85.4	70-130		%Rec	1	4/26/2022 2:57:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	1100	60		mg/Kg	20	4/27/2022 8:15:53 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

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## Analytical Report

Lab Order 2204993

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF03-0'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 12:53:00 PM

Lab ID: 2204993-003

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	80	9.7		mg/Kg	1	4/27/2022 7:45:09 PM
Motor Oil Range Organics (MRO)	110	49		mg/Kg	1	4/27/2022 7:45:09 PM
Surr: DNOP	74.6	51.1-141		%Rec	1	4/27/2022 7:45:09 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/26/2022 2:18:18 AM
Surr: BFB	94.6	37.7-212		%Rec	1	4/26/2022 2:18:18 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	4/26/2022 2:18:18 AM
Toluene	ND	0.049		mg/Kg	1	4/26/2022 2:18:18 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/26/2022 2:18:18 AM
Xylenes, Total	ND	0.097		mg/Kg	1	4/26/2022 2:18:18 AM
Surr: 4-Bromofluorobenzene	97.3	70-130		%Rec	1	4/26/2022 2:18:18 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: NAI
Chloride	2800	150		mg/Kg	50	4/28/2022 11:17:53 AM

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

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

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## Analytical Report

Lab Order 2204993

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: CONF04-0'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 1:02:00 PM

Lab ID: 2204993-004

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	58	9.7		mg/Kg	1	4/27/2022 7:55:54 PM
Motor Oil Range Organics (MRO)	83	48		mg/Kg	1	4/27/2022 7:55:54 PM
Surr: DNOP	90.0	51.1-141		%Rec	1	4/27/2022 7:55:54 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	4/26/2022 2:41:52 AM
Surr: BFB	94.2	37.7-212		%Rec	1	4/26/2022 2:41:52 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	4/26/2022 2:41:52 AM
Toluene	ND	0.050		mg/Kg	1	4/26/2022 2:41:52 AM
Ethylbenzene	ND	0.050		mg/Kg	1	4/26/2022 2:41:52 AM
Xylenes, Total	ND	0.10		mg/Kg	1	4/26/2022 2:41:52 AM
Surr: 4-Bromofluorobenzene	96.2	70-130		%Rec	1	4/26/2022 2:41:52 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	2200	60		mg/Kg	20	4/27/2022 9:05:32 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

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## Analytical Report

Lab Order 2204993

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Marathon Oil Company

Client Sample ID: BG01-1'

Project: Cave Lion 5 WC Federal 002H

Collection Date: 4/20/2022 2:12:00 PM

Lab ID: 2204993-005

Matrix: SOIL

Received Date: 4/22/2022 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: ED
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	4/27/2022 8:06:39 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	4/27/2022 8:06:39 PM
Surr: DNOP	96.3	51.1-141		%Rec	1	4/27/2022 8:06:39 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	4/26/2022 3:05:23 AM
Surr: BFB	95.3	37.7-212		%Rec	1	4/26/2022 3:05:23 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: NSB
Benzene	ND	0.025		mg/Kg	1	4/26/2022 3:05:23 AM
Toluene	ND	0.049		mg/Kg	1	4/26/2022 3:05:23 AM
Ethylbenzene	ND	0.049		mg/Kg	1	4/26/2022 3:05:23 AM
Xylenes, Total	ND	0.098		mg/Kg	1	4/26/2022 3:05:23 AM
Surr: 4-Bromofluorobenzene	98.7	70-130		%Rec	1	4/26/2022 3:05:23 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	190	60		mg/Kg	20	4/27/2022 9:17:57 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	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix interference		

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# ATTACHMENT F

## 48-Hour Confirmation Sample Notification Email



**Energizing America**

**wescominc.com** | info@wescominc.com | 218-724-1322

**Cave Lion 5 WC Federal #002H** | Incident ID: nAPP2204529130

**From:** [cole.burton@wescominc.com](mailto:cole.burton@wescominc.com)  
**To:** ["Bratcher, Mike, EMNRD"](#); ["Hensley, Chad, EMNRD"](#); ["Hamlet, Robert, EMNRD"](#); [Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us); [Jennifer.Nobui@state.nm.us](mailto:Jennifer.Nobui@state.nm.us); [Nelson.Velez@state.nm.us](mailto:Nelson.Velez@state.nm.us)  
**Cc:** ["Ashley Giovengo"](#); ["Shar Harvester"](#); ["Sanjari, Melodie \(MRO\)"](#)  
**Subject:** RE: 48-Hour Confirmation Sample Notice - Cave Lion 5 WC Federal #002H - nAPP2204529130  
**Date:** Monday, April 18, 2022 8:01:22 AM

---

My apologies the confirmation sample date should be 4/20/22

---

**From:** cole.burton@wescominc.com <cole.burton@wescominc.com>  
**Sent:** Monday, April 18, 2022 7:57 AM  
**To:** Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>; Hensley, Chad, EMNRD <Chad.Hensley@state.nm.us>; Hamlet, Robert, EMNRD <Robert.hamlet@state.nm.us>; Bradford.Billings@state.nm.us; Jennifer.Nobui@state.nm.us; Nelson.Velez@state.nm.us  
**Cc:** Ashley Giovengo <ashley.giovengo@wescominc.com>; Shar Harvester <shar.harvester@wescominc.com>; Sanjari, Melodie (MRO) <msanjari@marathonoil.com>  
**Subject:** 48-Hour Confirmation Sample Notice - Cave Lion 5 WC Federal #002H - nAPP2204529130

Hello All,

We intend to take confirmation samples at the Cave Lion 5 WC Federal #002H – nAPP2204529130 starting on (4/18/22).

Please let us know if you plan to be onsite to oversee this sampling event.

Thanks,

**Cole Burton**, Environmental Field Technician  
O (218) 724-1322 | C (505) 205-0455  
[WescomInc.com](http://WescomInc.com) | [cole.burton@WescomInc.com](mailto:cole.burton@WescomInc.com)  
*"I am in charge of my own safety."*

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

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

CONDITIONS  
  
Action 105098

CONDITIONS

Operator: MARATHON OIL PERMIAN LLC 990 Town & Country Blvd. Houston, TX 77024	OGRID: 372098
	Action Number: 105098
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Closure Report Approved. Please implement 19.15.29.13 NMAC when completing P&A.	5/26/2022