



P.O. Box 10640 Bozeman, Montana 59719

(406) 460-0903

TO: Jim Griswold, NMOCD

FROM: Curtis Shuck, Chairman

DATE: July 23, 2023

RE: O'Brien Fee 19 #007 (30-005-60905) Orphan Well Post-Plugging Methane Monitoring

TECHNICAL MEMORANDUM

Well Done New Mexico LLC and the Well Done Foundation, Inc. (WDF) performing contract professional services methane monitoring for the State of New Mexico Energy, Minerals and Natural Resources Department – Oil Conservation Division (OCD) under Purchase Order #52100-00000073985 for Orphan Oil & Gas Wells in Chaves County, NM.

The site conditions found at the O'Brien Fee 19 #007 by the WDF Measure 1 Field Team on April 20, 2023, revealed a cement filled casing, cutoff to -2'-0" below the surface with a welded monument. The WDF Measure 1 Team took site photographs, performed field gas measurements and collected a gas sample for immediate laboratory analysis.

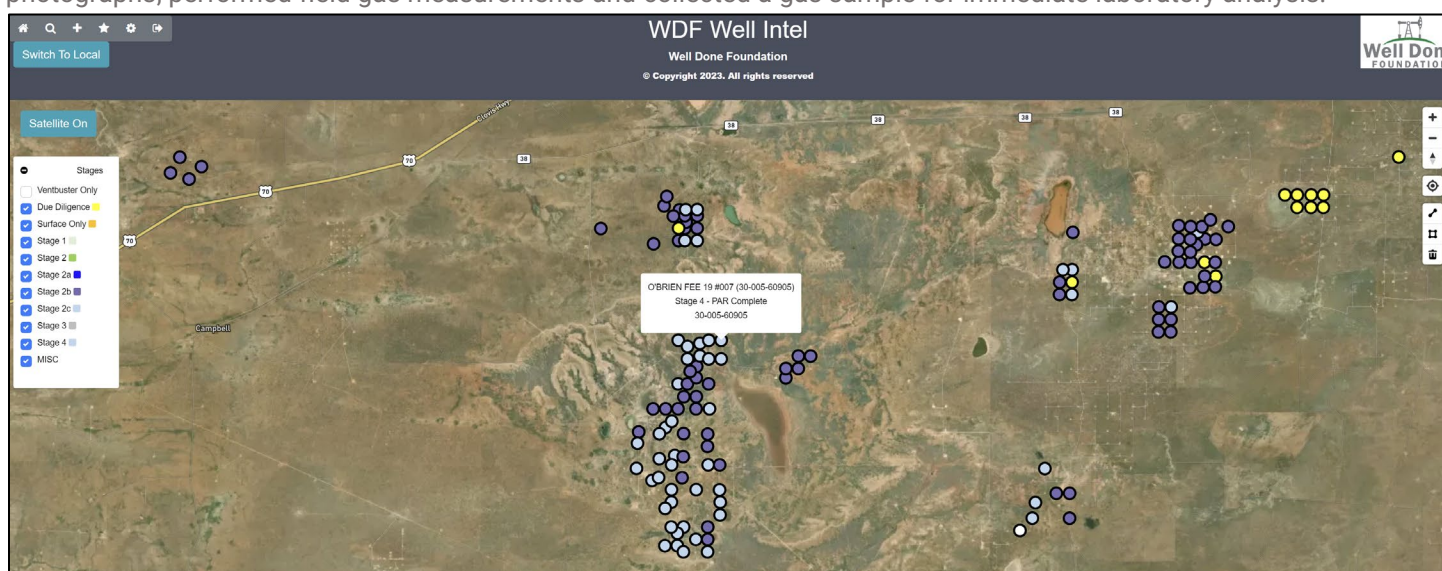


Image 1.1 – O'Brien Fee 19 #007 (30-005-60905) Orphan Well in Chaves County, NM

The Pre-Plugging Methane Flow Calculations were based on the O'Brien Field Averaging Analysis conducted by the Well Done Foundation and Well Done New Mexico LLC and monitored using Ventbuster™ Instruments VB100-54 Series Ultra-Low Flow Meter with GPS on February 21, 2023. The Methane Concentration was measured at 8,610 ppm and Methane Flow was measured at 1.45 cfd. Therefore, the adjusted average methane gas emission measured at this wellhead is calculated at **0.01 grams per hour (g/hour)**.¹

The State of New Mexico used the methane flow data collected by WDF to prioritize the O'Brien Fee 19 #007 orphan well plugging under the IJA Program and began mobilizing a contractor to location. J A Drake Well Service, Inc. of Farmington, NM was awarded the plugging contract.

¹ Methane Calculation: 717 grams CH₄ per cubic meter (717 x 0.04 m³/day = 28.68 g/day total /24 = 1.20 g/hour x 0.008610 (methane concentration) = **0.01 g/hour CH₄**). **Methane, gas** weighs 0.000717 gram per cubic centimeter or 0.717 kilogram per cubic meter, i.e. density of methane, gas is equal to 0.717 kg/m³; at 0°C (32°F or 273.15K) at standard atmospheric pressure. In Imperial or US customary measurement system, the density is equal to 0.044 pound per cubic foot [lb/ft³].



Test Report

Start Date: Tue Feb 21 2023 21:41:41 GMT+0000 (Coordinated Universal Time)
 End Date: Wed Feb 22 2023 18:52:53 GMT+0000 (Coordinated Universal Time)
 Device: VB100-0054
 Well Licensee: 30-005-60905
 Well Name: O'Brien Fee 19 007
 UWI: 30-005-60905
 Well License Number: 30-005-60905
 Surface Location: State of NM
 Bottom Hole Location: Unknown

Test Operator: Sean O. Jacobson
 Authorized By: State of NM
 Test Reason: IIA Pre Plugging
 Scope Of Work: 12 Hour
 AFE Number: 52100-0000072995
 GPS: 33.60462,-104.01902
 Notes: Dorothy V in use, GTG
 Prepared By: Curtis Shuck

Flow / Pressure Test

Flow Duration

21 hrs 10 minutes

Duration

Average Flowrate

1.4540

cfd

Average Pressure

0.6479

psig

Average Flow Temperature

57.5530

°F

Average CH4 Mass

0.01 g/hr

Methane Calculation: 717 grams CH4 per cubic meter ($717 \text{ g/m}^3 \times 0.0412 \text{ m}^3/\text{day} = 29.54 \text{ g/day total} / 24 = 1.23 \text{ g/hour} \times 0.00861 \text{ (methane concentration)} = 0.01 \text{ g/hour CH4}$). **Methane, gas** weighs 0.000717 gram per cubic centimeter or 0.717 kilogram per cubic meter, i.e. density of methane, gas is equal to 0.717 kg/m³; at 0°C (32°F or 273.15K) at standard atmospheric pressure. In imperial or US customary measurement system, the density is equal to 0.0448 pound per cubic foot [lb/ft³], or 0.0004144 ounce per cubic inch [oz/inch³].

Flow / Pressure / Temperature Timeseries

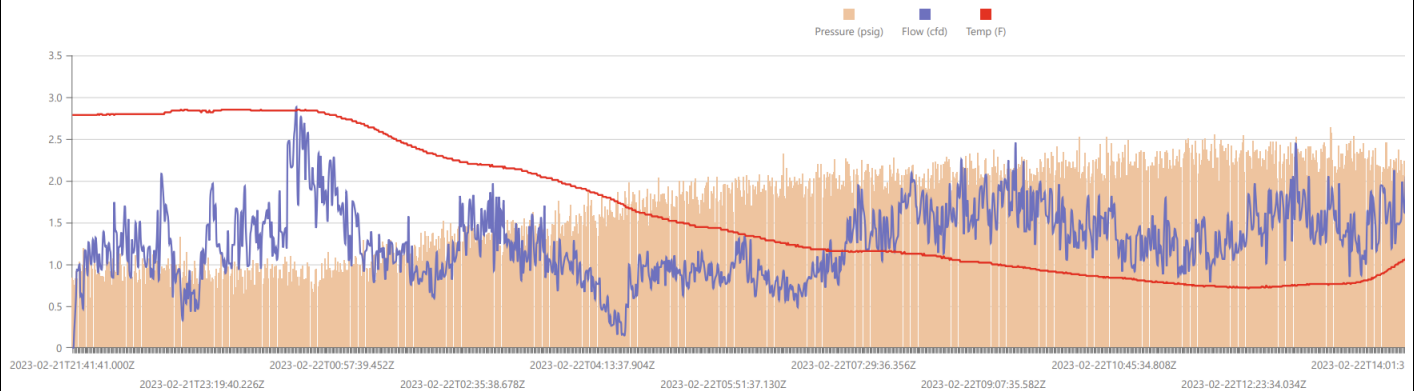


Image 2.1 – O'Brien Fee 19 #007 Pre Plugging Test Report

WDF arrived at the O'Brien Fee 18 #007 location on April 20, 2023, to perform post-plugging orphan well methane testing and sampling on behalf of the State of New Mexico. **WDF post plugging field gas tests revealed 0.00% of methane or H2s gasses. The post plugging collected gas samples, analyzed by Laboratory Services, Inc. confirmed 0.00 ppm or methane gas and 0.00 ppm of H2s gas. THEREFORE, the total Methane Gas Emissions Reduction is: 0.01 g/hour.**

This orphan well did not exceed the >1 g/hour federal program reporting requirements for methane emissions reductions as described in Section 40601 (Orphaned well site plugging, remediation, and restoration) of Title V (Methane Reduction Infrastructure) of the 2021 Bipartisan Infrastructure Law (BIL; Public Law 117-58)².

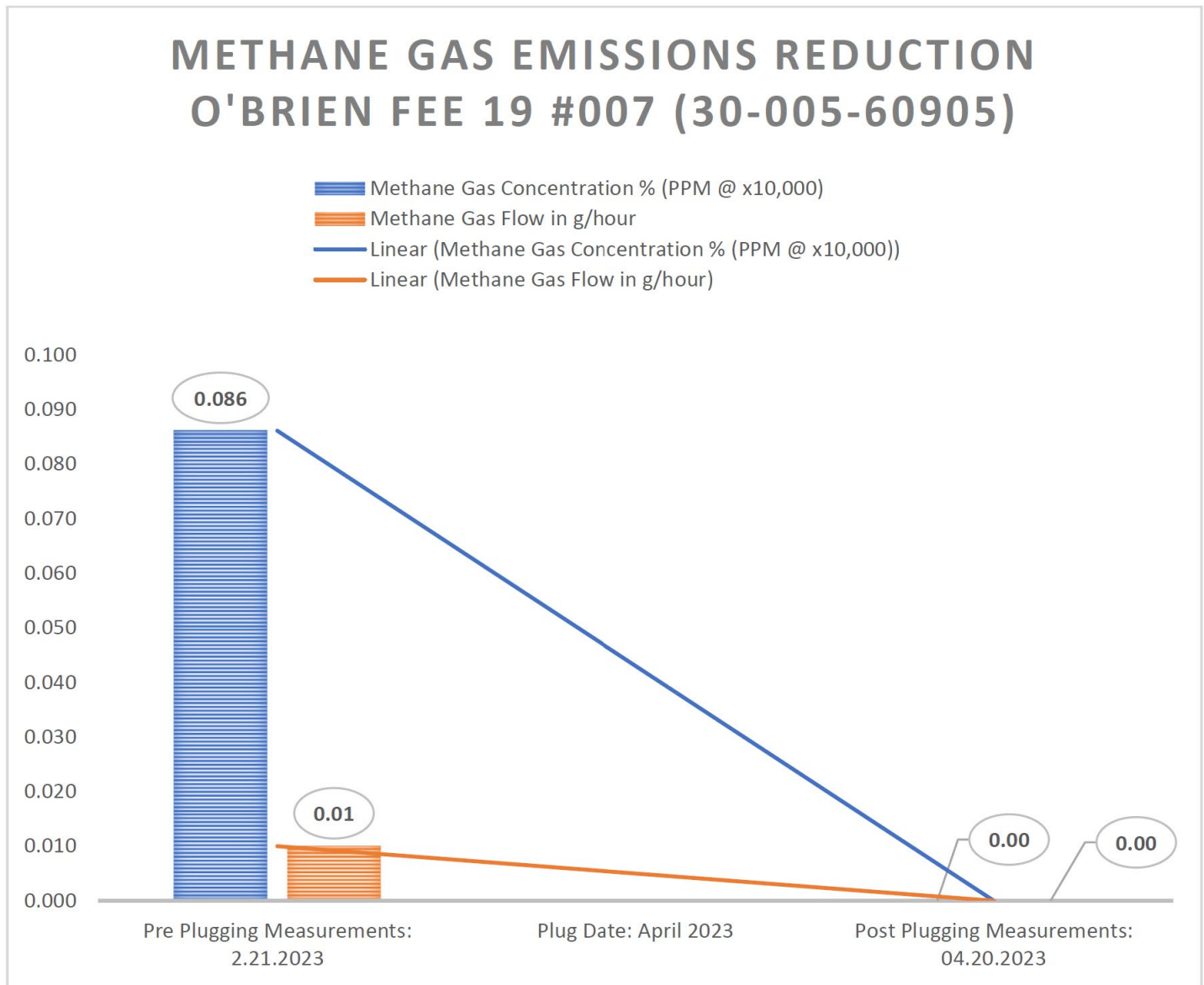


Image 3.1 – O'Brien Fee 18 #005 (30-005-61020) Methane Gas Emissions Reduction Pre Plugging to Post Plugging

TECHNICAL FINDINGS

O'Brien Fee 19 #007 (30-005-60905):

- Total C1 through C6 Gas Concentration: 11,520 ppm
- Total Measured Wellhead Gas Emissions: 0.04 m³/day
- Methane Gas Concentration: 8,610 ppm
- Calculated Average Wellhead Methane Gas Emissions: 0.01 g/hour
- Post Plugging Methane Gas Concentration: 0.00 ppm
- Post Plugging Methane Flow: 0.00 g/hour

² These April 11, 2022 Guidelines were developed to meet the federal program reporting requirements for methane emissions reductions as described in Section 40601 (Orphaned well site plugging, remediation, and restoration) of Title V (Methane Reduction Infrastructure) of the 2021 Bipartisan Infrastructure Law (BIL; Public Law 117-58).

CONCLUSIONS

- The O’Brien Fee 19 #007 (30-005-60905) was emitting Methane gas pre-plugging at the average rate of 0.01 g/hour, which was below the Federal minimum threshold for reporting described in Section 40601 (Orphaned well site plugging, remediation, and restoration) of Title V (Methane Reduction Infrastructure) of the 2021 Bipartisan Infrastructure Law (BIL; Public Law 117-58) which is >1g/hour.
- Post Plugging, the O’Brien Fee 19 #007 (30-005-60905) presented 0.00 ppm of Methane gas emissions from field gas tests and laboratory analysis of WDF collected gas samples.

FIELD NOTES

#	Date	Note
1	2023-04-20	ces: On location with WDF Measure 1 to collect post plugging gas samples and photo document the well site. Non detect for CH4 using Honeywell Quatro 4-Gas Meter. Collect Gas Sample for Lab analysis and place green ribbon at the well monument.
2	2023-02-22	Arrived 11:59am 2/22/2023. Rigged down flow test and Dorothy IV.
3	2023-02-21	Arrived 2:27pm 2/21/2023. Rigged up Ventbuster #54 for flow testing with Dorothy IV.

Image 4.1 – O’Brien Fee 19 #007 (30-005-6905) Field Notes from WDF Well Intel™ Orphan Well Project Management IoT



1) O'Brien Fee 19 #007 – Gas Sample



2) O'Brien Fee 19 #007 – Green Ribbon



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575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

16090G	OBrien Fee 19 #007	OBrien Fee 19 #007	
Sample Point Code	Sample Point Name	Sample Point Location	
Laboratory Services	2023067549	Tedlar Bag	CES - Spot
Source Laboratory	Lab File No	Container Identity	Sampler
USA	USA	USA	New Mexico
District	Area Name	Field Name	Facility Name
Apr 20, 2023 15:00	Apr 20, 2023 15:00	Apr 24, 2023 08:14	Apr 25, 2023
Date Sampled	Date Effective	Date Received	Date Reported
System Administrator			
Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions
Well Done Foundation		NG	
Operator		Lab Source Description	

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	0.0000	0	
Nitrogen (N2)	99.6380	99.637	
CO2 (CO2)	0.0410	0.041	
Methane (C1)	0.0000	0	
Ethane (C2)	0.0000	0	0.0000
Propane (C3)	0.0000	0	0.0000
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.3210	0.321	0.1390
TOTAL	100.0000	99.9990	0.1390

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

Analyzer Information			
Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	Apr 17, 2023

Source	Date	Notes
	Apr 26, 2023 12:05 pm	Methane = 0 PPM

Gross Heating Values (Real, BTU/ft³)			
14.696 PSI @ 60.00 Å°F	14.73 PSI @ 60.00 Å°F		
Dry	Saturated	Dry	Saturated
16.6	17.2	16.6	17.2

Calculated Total Sample Properties	
GPA2145-16 *Calculated at Contract Conditions	
Relative Density Real	Relative Density Ideal
0.9745	0.9746
Molecular Weight	
28.2292	

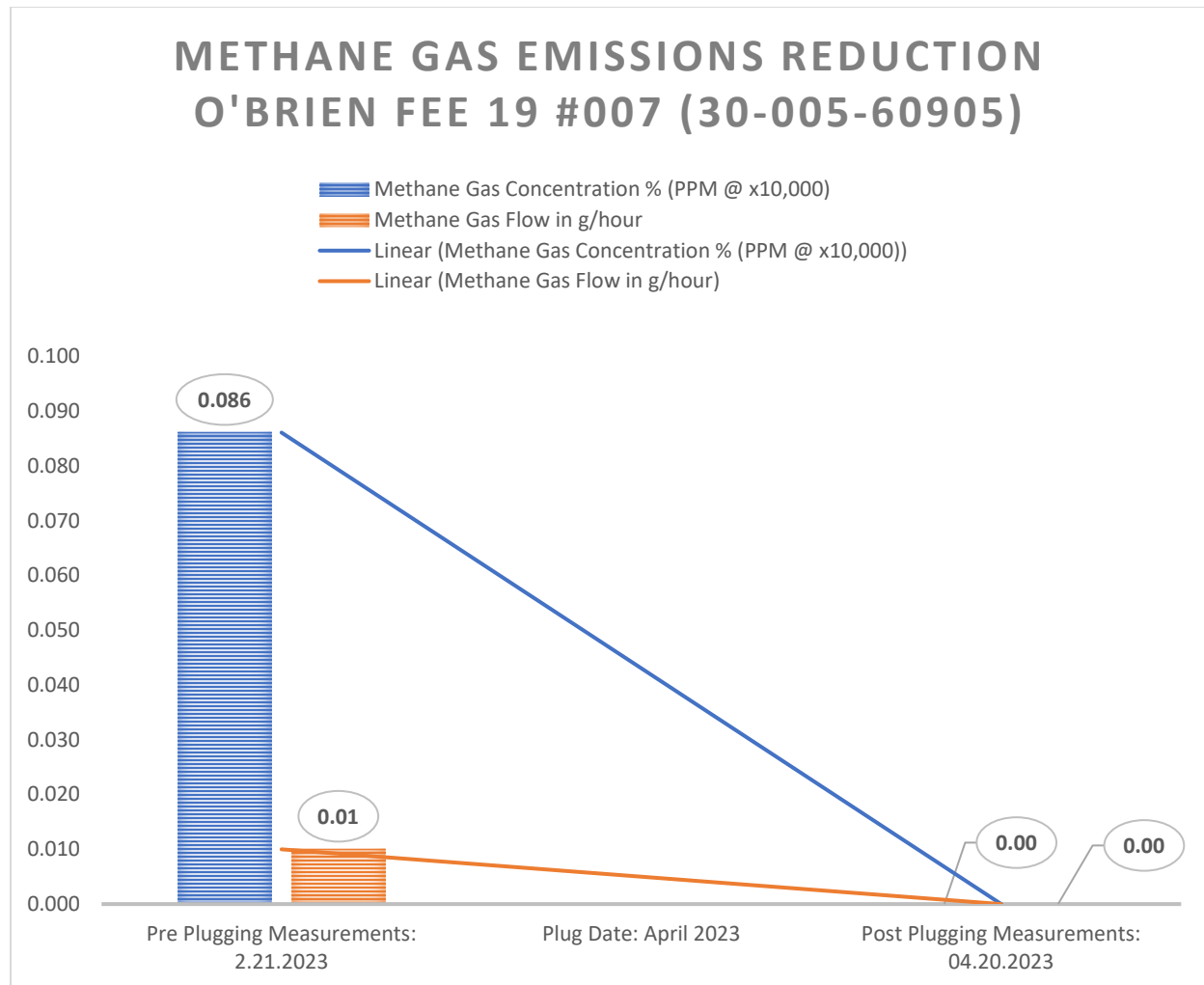
C6+ Group Properties		
Assumed Composition		
C6 - 60.000%	C7 - 30.000%	C8 - 10.000%

PROTREND STATUS: Passed By Validator on Apr 26, 2023
DATA SOURCE: Imported

PASSED BY VALIDATOR REASON: Close enough to be considered reasonable.

VALIDATOR: Rush

VALIDATOR COMMENTS: OK



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

DEFINITIONS

Action 243496

DEFINITIONS

Operator: CANYON E & P COMPANY 251 O'Connor Ridge Blvd. Irving, TX 75038	OGRID: 269864
	Action Number: 243496
	Action Type: [UF-OMA] Post-Plug Methane Monitoring (UF-OMA-MMB)

DEFINITIONS

The Orphan Well Mitigation Activity (OMA) forms are a subset of the OCD's forms exclusively designed for activities related to State of New Mexico's contracted plugging and reclamation activities. Specifically, these forms are used for orphan wells or associated facilities which are in a "Reclamation Fund Approved" status. This status represents wells or facilities where the OCD has acquired a hearing order allowing the OCD to perform plugging or reclamation on wells and associated facilities that no longer have a viable operator to perform the necessary work. These forms are not to be utilized for any other purpose.

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Energy, Minerals and Natural Resources
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1220 S. St Francis Dr.
Santa Fe, NM 87505

QUESTIONS

Action 243496

QUESTIONS

Operator: CANYON E & P COMPANY 251 O'Connor Ridge Blvd. Irving, TX 75038	OGRID: 269864
	Action Number: 243496
	Action Type: [UF-OMA] Post-Plug Methane Monitoring (UF-OMA-MMB)

QUESTIONS

Prerequisites	
[OGRID] Well Operator	[269864] CANYON E & P COMPANY
[API] Well Name and Number	[30-005-60905] O'BRIEN FEE 19 #007
Well Status	Plugged (not released)

Monitoring Event Information*Please answer all the questions in this group.*

Reason For Filing	Post-Plug Methane Monitoring
Date of monitoring	04/20/2023
Latitude	33.6046638
Longitude	-104.0188751

Monitoring Event Details*Please answer all the questions in this group.*

Flow rate in cubic meters per day (m³/day)	0.00
Test duration in hours (hr)	1.0
Average flow temperature in degrees Celsius (°C)	20.0
Average gauge flow pressure in kilopascals (kPag)	0.0
Methane concentration in part per million (ppm)	0
Methane emission rate in grams per hour (g/hr)	0.00
Testing Method	Other

Monitoring Contractor*Please answer all the questions in this group.*

Name of monitoring contractor	Well Done New Mexico LLC
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