

Form 3160-3  
(June 2015)

FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NMNM0062924</b>
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator <b>EARTHSTONE OPERATING LLC [331165]</b>		8. Lease Name and Well No. <b>MINIS 1 FED HKY COM [333515] 21H</b>
3a. Address <b>1400 WOODLOCH FOREST DRIVE SUITE 300, THE WC</b>	3b. Phone No. (include area code) <b>(281) 298-4240</b>	9. API Well No. <b>30-025-51543</b>
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface <b>LOT 1 / 200 FNL / 660 FEL / LAT 32.521797 / LONG -103.6219964</b> At proposed prod. zone <b>SWSE / 50 FSL / 1540 FEL / LAT 32.5008258 / LONG -103.6248212</b>		10. Field and Pool, or Exploratory <b>[97895]</b> <b>WC-025 G-08 S213304D/BONE SPRING</b>
11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 1/T21S/R32E/NMP</b>		
14. Distance in miles and direction from nearest town or post office* <b>7 miles</b>	12. County or Parish <b>LEA</b>	13. State <b>NM</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>100 feet</b>	16. No of acres in lease	17. Spacing Unit dedicated to this well <b>239.0</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>30 feet</b>	19. Proposed Depth <b>11050 feet / 18678 feet</b>	20. BLM/BIA Bond No. in file <b>FED:</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>3723 feet</b>	22. Approximate date work will start* <b>02/28/2023</b>	23. Estimated duration <b>30 days</b>
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- |  |   |
|--|---|
| 1. Well plat certified by a registered surveyor.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification.  |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

25. Signature (Electronic Submission)	Name (Printed/Typed) <b>JENNIFER ELROD / Ph: (281) 298-4240</b>	Date <b>10/18/2022</b>
Title <b>Senior Regulatory Technician</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>CODY LAYTON / Ph: (575) 234-5959</b>	Date <b>05/05/2023</b>
Title <b>Assistant Field Manager Lands &amp; Minerals</b> Office <b>Carlsbad Field Office</b>		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

**NGMP Rec 05/23/2023**

**SL**

(Continued on page 2)



**KZ**  
**05/30/2023**

\*(Instructions on page 2)



Intent  As Drilled

API #		
Operator Name: EARTHSTONE OPERATING, LLC	Property Name: MINIS 1 FED HKY COM	Well Number 21H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	1	21S	32E	1	200	NORTH	660	EAST	LEA
Latitude 32.5217970					Longitude 103.6219964				NAD 83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
	1	21S	32E	2	100	NORTH	1540	EAST	LEA
Latitude 32.5220745					Longitude 103.6248508				NAD 83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
O	1	21S	23E		100	SOUTH	1540	EAST	LEA
Latitude 32.5009632					Longitude 103.6248215				NAD 83

Is this well the defining well for the Horizontal Spacing Unit?  NO

Is this well an infill well?  YES

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API # 30-025-44856		
Operator Name: EARTHSTONE OPERATING, LLC	Property Name: MINIS 1 FED COM 3BS	Well Number 7H

KZ 06/29/2018

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

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

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** EARTHSTONE OPERATING, LLC \_\_ OGRID: 331165 \_\_\_\_\_ Date: \_10/17/2022

**II. Type:**  Original  Amendment due to  19.15.27.9.D(6)(a) NMAC  19.15.27.9.D(6)(b) NMAC  Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

	API		Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
MINIS 1 FED HKY COM 21H		LOT 1-1-21S-32E	200 FNL,660 FEL	700	600	1600
MINIS 1 FED HKY COM 23H		LOT 1-1-21S-32E	200 FNL,600 FEL	700	600	1600

**IV. Central Delivery Point Name:** \_MINIS 1 FED COM EAST/EAST PAD\_\_\_\_\_ [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production
MINIS 1 FEDHKYCOM 21H		04/01/2023	04/28/2023	09/01/2023	11/01/2023	11/05/2023
MINIS 1 FED HKY COM 23H		06/01/2023	06/28/2023	09/01/2023	11/01/2023	11/05/2023

**VI. Separation Equipment:**  Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:**  Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:**  Attach a complete description of Operator’s best management practices to minimize venting during active and planned maintenance.

**Section 2 – Enhanced Plan**  
**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

**X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.**  Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system  will  will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator  does  does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

Attach Operator’s plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:**  Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### **Section 3 - Certifications**

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.**  Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.**  Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### **Section 4 - Notices**

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

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I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: <i>Jennifer Elrod</i>
Printed Name: JENNIFER ELROD
Title: SR. REGULATORY ANALYST
E-mail Address: JELROD@EARTHSTONEENERGY.COM
Date: 10/17/2022
Phone: (940)452-6214
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:

## ESTE Natural Gas Management Plan Items VI-VIII

### **VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.**

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Adequate separation relates to retention time for Liquid – Liquid separation and velocity for Gas-Liquid separation.
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering are selected to be serviced without flow interruptions or the need to release gas from the well.

### **VII. Operational Practices: Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F 19.15.27.8 NMAC.**

#### Drilling Operations

- All flare stacks will be properly sized. The flare stacks will be located at a minimum 100' from the nearest surface hole location on the pad.
- All-natural gas produced during drilling operations will be flared, unless there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which point the gas will be vented.

#### Completions/Recompletions Operations

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as excess VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which point it will be flared until it meets pipeline spec.

#### Production Operations

- Weekly AVOs will be performed on all facilities.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All tanks will have sight glasses installed, but no electronic gauging equipment.
- Leaking thief hatches found during AVOs will be cleaned and properly re-sealed.
- There will be no gas re-injection for underground storage, temporary storage, or for enhanced oil recovery; however, gas injection will be used for gas lift applications in which the gas would be circulated through a closed loop system.
- If H2S is encountered, gas will be treated to pipeline spec to avoid shut-in's and/or flaring.

#### Performance Standards

- Production equipment will be designed to handle maximum anticipated rates and pressure.

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- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- Weekly AVOs will be performed on all wells and facilities that produce more than 50MCFPD.

Measurement & Estimation

- All volume that is flared or vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- No meter bypasses will be installed.
- When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

**VIII. Best Management Practices: Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.**

- During downhole well maintenance, ESTE will use best management practices to vent as minimally as possible.
- After downhole well maintenance, natural gas will be flared until it reaches pipeline specification.

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

**Choke Diagram Attachment:**

5M\_Choke\_Manifold\_Diagram\_20221017083323.pdf

**BOP Diagram Attachment:**

5M\_BOP\_Diagram\_2\_20221017084120.pdf

**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	1600	0	1600	3723	2123	1600	J-55	54.5	BUTT	2.37	3.83	DRY	19.54	DRY	18.51
2	INTERMEDIATE	12.25	10.75	NEW	API	N	0	3350	0	3350	3723	373	3350	HCL-80	45.5	BUTT	3.31	2.93	DRY	6.63	DRY	7.06
3	INTERMEDIATE	9.875	8.625	NEW	API	N	0	5500	0	5500	3728	-1777	5500	L-80	32	OTHER - EHC MO-FXL	2.26	2.17	DRY	4.19	DRY	3.46
4	PRODUCTION	7.875	5.5	NEW	API	N	0	18678	0	11050	3728	-7327	18678	P-110	20	OTHER - RY VARN RN	2.36	2.24	DRY	3.41	DRY	3.55

**Casing Attachments**

**Casing ID:** 1      **String**      SURFACE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Casing\_Calculator\_\_\_\_Minis\_1\_Federal\_HKY\_Com\_21H\_20221017084446.pdf

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

**Casing Attachments**

**Casing ID:** 2      **String**      INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Casing\_Calculator\_\_\_\_Minis\_1\_Federal\_HKY\_Com\_21H\_20221017084803.pdf

**Casing ID:** 3      **String**      INTERMEDIATE

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Casing\_Calculator\_\_\_\_Minis\_1\_Federal\_HKY\_Com\_21H\_20221017084735.pdf

**Casing ID:** 4      **String**      PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

**Casing Design Assumptions and Worksheet(s):**

Casing\_Calculator\_\_\_\_Minis\_1\_Federal\_HKY\_Com\_21H\_20221017084709.pdf

**Section 4 - Cement**

Operator Name: EARTHSTONE OPERATING LLC

Well Name: MINIS 1 FED HKY COM

Well Number: 21H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1100	630	2.01	12.8	1266	65	Class C	Sodium Metasilicate, Defoamer, KCL, Kol-Seal, Cellophane Flakes, ROF, Seal Check
SURFACE	Tail		1100	1600	420	1.33	14.8	559	50	Class C	Fluid loss, Dispercent, Retarder
INTERMEDIATE	Lead		0	2850	390	2.01	12.8	784	65	Class C	Sodium Metasilicate, Defoamer, KCL
INTERMEDIATE	Tail		2850	3350	130	1.33	14.8	173	65	Class C	Fluid Loss, Dispercent, Retarder
INTERMEDIATE	Lead	3498	0	2998	170	2.43	11.3	413	65	Class C	Sodium Metasilicate, Defoamer, KCL, Kol-Seal, Cellophane Flakes, ROF SealCheck
INTERMEDIATE	Tail		2998	3498	80	1.33	14.8	106	50	Class C	Fluid Loss, Dispercent, Retarder
INTERMEDIATE	Lead	3498	3498	5000	100	3.6	10.3	360	75	Class C	Sodium Metasilicate, Defoamer, KCL, Kol-Seal, Cellophane Flakes, ROF SealCheck
INTERMEDIATE	Tail		5000	5500	100	1.33	14.8	133	50	Class C	Fluid Loss, Dispercent, Retarder
PRODUCTION	Lead		2998	1003 9	640	2.62	11.3	1677	35	Class H	Bentonite, Compressive Strength Enhancer, Silica Fume Alternative, Fluid Loss, Defoamer, Sodium Metasilicate, Retarder
PRODUCTION	Tail		1003 9	1867 7	1120	1.82	13.2	2038	35	Class H	Fluid Loss, Suspension Agent, Retarder, Defoamer, Dispersant

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

### Section 5 - Circulating Medium

**Mud System Type:** Closed

**Will an air or gas system be Used?** NO

**Description of the equipment for the circulating system in accordance with Onshore Order #2:**

**Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**Describe what will be on location to control well or mitigate other conditions:** Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

**Describe the mud monitoring system utilized:** Pason PVT system will be in place throughout the well as well as visual checks

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
3350	5500	WATER-BASED MUD	9	9.5							28-32 VIS 15-20 PV 8-12 YP
0	1600	SPUD MUD	8.5	9.2							38-40 Vis 8-10 PV 8-10 YP
1600	3350	SALT SATURATED	10	10.2							28-32 VIS 1-3 PV 1-3 YP
5500	1867 7	OIL-BASED MUD	9.3	9.8							15-20 PV 8-12 YP

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

### Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

None

**List of open and cased hole logs run in the well:**

CEMENT BOND LOG,DIRECTIONAL SURVEY,GAMMA RAY LOG,MEASUREMENT WHILE DRILLING,

**Coring operation description for the well:**

None

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 5861

**Anticipated Surface Pressure:** 3429

**Anticipated Bottom Hole Temperature(F):** 163

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations**

ESTE\_Lea\_County\_H2S\_plan\_20221010162055.pdf

### Section 8 - Other Information

**Proposed horizontal/directional/multi-lateral plan submission:**

Minis\_1\_Fed\_HKY\_Com\_21H\_\_Plan\_1\_09\_08\_22\_20221017085413.pdf

Minis\_1\_Fed\_HKY\_Com\_21H\_\_Plan\_1\_09\_08\_22\_AC\_Report\_20221017085414.pdf

**Other proposed operations facets description:**

**Other proposed operations facets attachment:**

5.50\_20\_\_VAHC\_P110\_RY\_VARN\_AC\_\_6.300\_Cplg\_\_20221013140145.pdf

CDS\_FXL\_8\_625\_32\_BMP\_L80EHC\_Feb04\_2022\_20221013140144.pdf

ESTE\_Energy\_\_Minis\_1\_Federal\_HKY\_Com\_21H\_\_WBD\_20221017085429.pdf

**Other Variance attachment:**

Cactus\_Speed\_Head\_Pressure\_Testing\_Statement\_20210709100912.pdf

Choke\_Hose\_M55\_1\_07102017\_145204\_66\_1225\_04\_14\_2014\_\_20210709100912.pdf

Choke\_Hose\_M55\_2\_07102017\_145421\_66\_1042\_05\_03\_2013\_\_20210709100912.pdf

CACTUS\_4\_STRING\_ESTe\_CONV\_\_MBU\_3T\_CFL\_HBE\_DWG\_20221017115100.PDF

ESTE\_CACTUS\_4\_STRING\_Running\_Procedure\_20221017115106.pdf

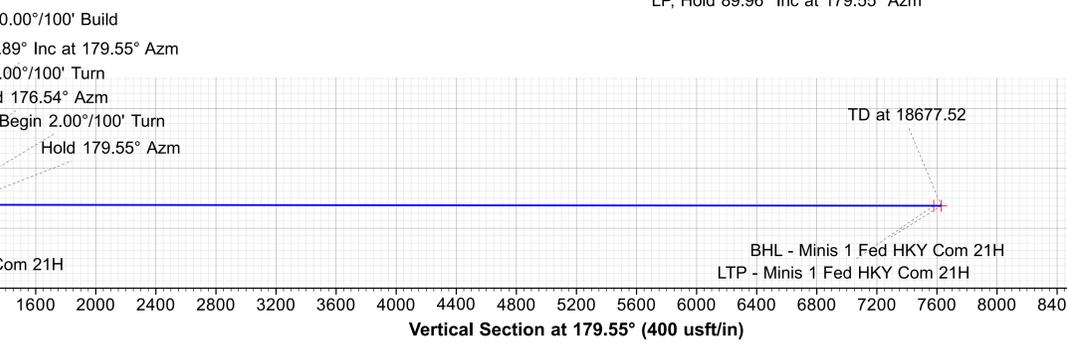
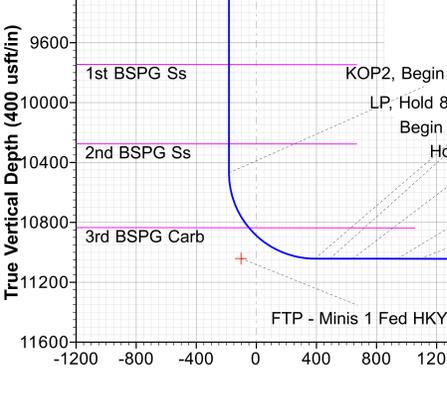
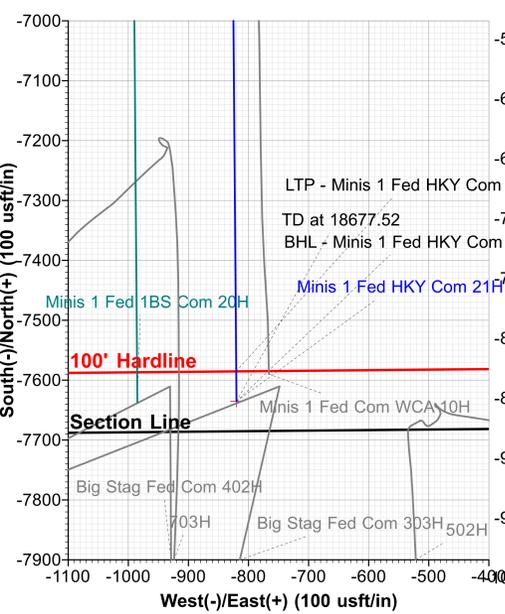
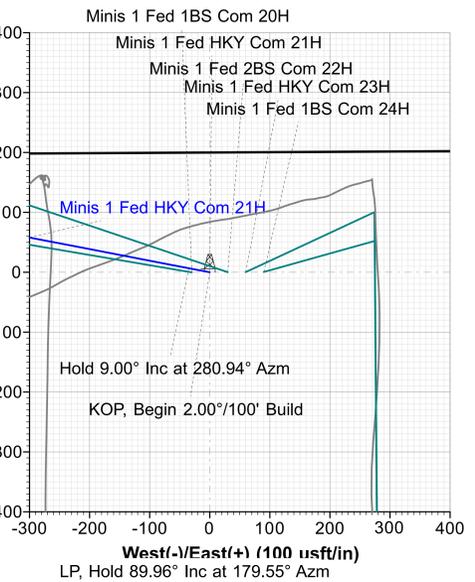
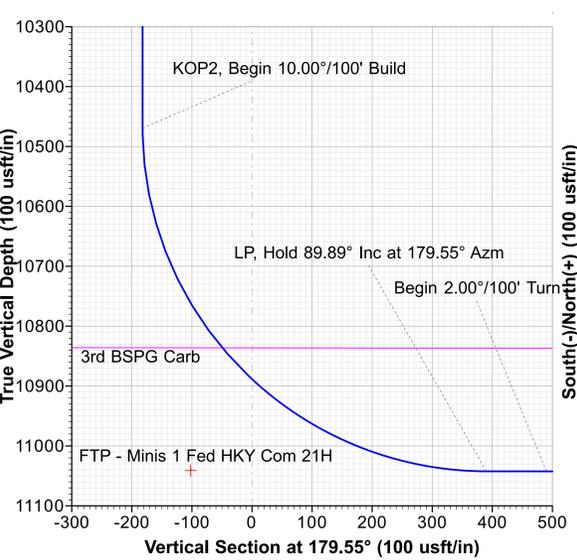
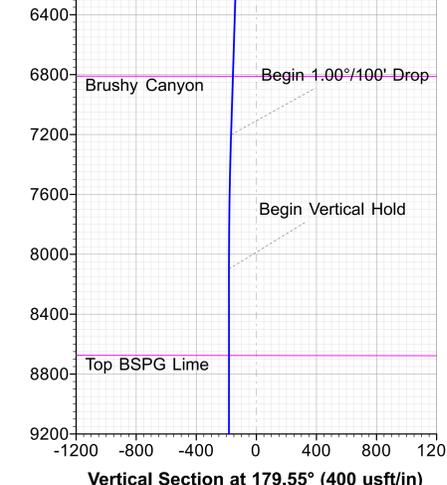
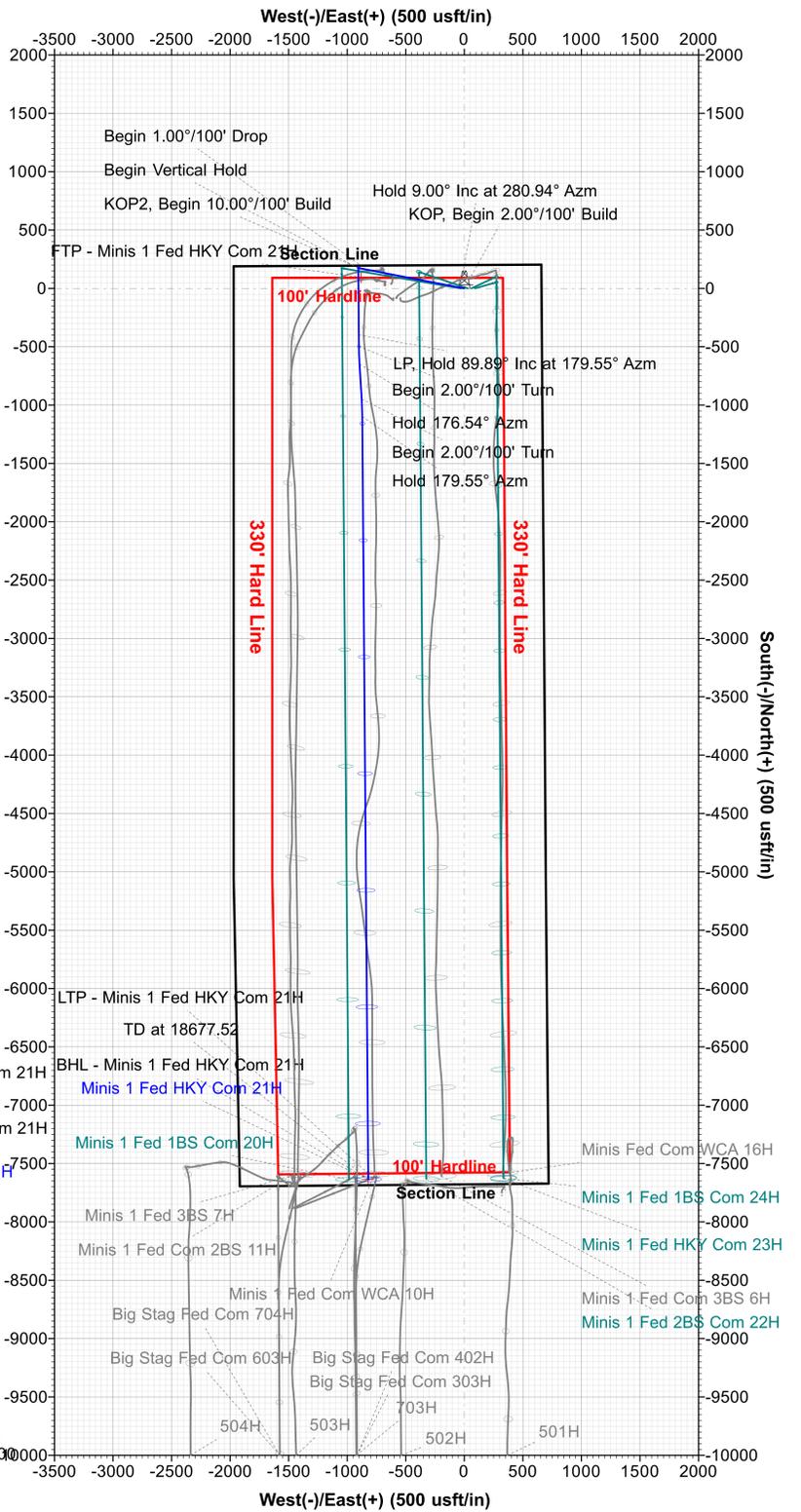
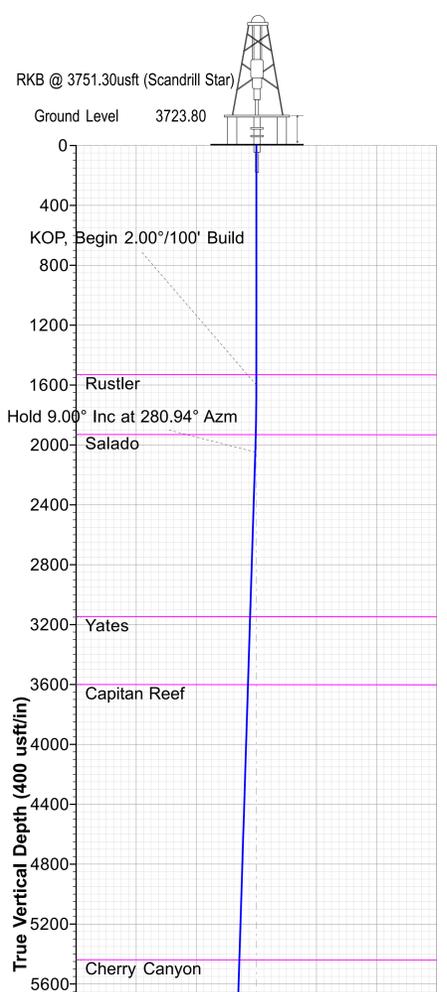
WELL DETAILS						
+N/-S	+E/-W	Northing	Ground Level	Easting	Latitude	Longitude
0.00	0.00	554292.17	3723.80	760587.95	32° 31' 18.469006 N	103° 37' 19.186848 W

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.00	0.00		KOP, Begin 2.00°/100' Build
3	2049.84	9.00	280.94	2048.00	6.69	-34.60	2.00	280.944	-6.96		Hold 9.00° Inc at 280.94° Azm
4	7268.05	9.00	280.94	7202.00	161.62	-835.79	0.00	0.000	-168.18		Begin 1.00°/100' Drop
5	8167.74	0.00	0.00	8098.00	175.00	-905.00	1.00	180.000	-182.10		Begin Vertical Hold
6	10539.20	0.00	0.00	10469.46	175.00	-905.00	0.00	0.000	-182.10		KOP2, Begin 10.00°/100' Build
7	11438.60	89.94	179.55	11042.42	-397.34	-900.50	10.00	179.550	390.26		LP, Hold 89.89° Inc at 179.55° Azm
8	11538.60	89.94	179.55	11042.52	-497.34	-899.72	0.00	0.000	490.26		Begin 2.00°/100' Turn
9	11689.15	89.94	176.54	11042.68	-647.78	-894.58	2.00	-90.002	640.74		Hold 176.54° Azm
10	11989.15	89.94	176.54	11042.99	-947.23	-876.47	0.00	0.000	940.32		Begin 2.00°/100' Turn
11	12139.70	89.94	179.55	11043.15	-1097.68	-871.34	2.00	90.002	1090.80		Hold 179.55° Azm
12	18677.52	89.94	179.55	11050.00	-7635.29	-819.98	0.00	0.000	7628.61		BHL - Minis 1 Fed HKY Com 21H TD at 18677.52

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP - Minis 1 Fed HKY Com 21H	11041.30	95.12	-880.50	554387.29	759707.45	32° 31' 19.468241 N	103° 37' 29.462895 W
LTP - Minis 1 Fed HKY Com 21H	11049.94	-7585.30	-820.43	546706.87	759767.52	32° 30' 3.467655 N	103° 37' 29.357535 W
BHL - Minis 1 Fed HKY Com 21H	11050.00	-7635.29	-819.98	546656.88	759767.97	32° 30' 2.972980 N	103° 37' 29.356159 W

Map System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone Name: New Mexico Eastern Zone  
Local Origin: Well Minis 1 Fed HKY Com 21H, Grid North  
Latitude: 32° 31' 18.469006 N  
Longitude: 103° 37' 19.186848 W  
Grid East: 760587.95  
Grid North: 554292.17  
Scale Factor: 1.000  
Geomagnetic Model: MVHD  
Sample Date: 02-Nov-22  
Magnetic Declination: 6.349°  
Dip Angle from Horizontal: 60.292°  
Magnetic Field Strength: 47807.46005253nT  
To convert a Magnetic Direction to a Grid Direction, Add 5.966°  
To convert a Magnetic Direction to a True Direction, Add 6.349° East  
To convert a True Direction to a Grid Direction, Subtract 0.382°

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1531.30	1531.30	Rustler
1931.30	1932.04	Salado
3147.26	3162.80	Yates
3601.24	3622.44	Capitan Reef
5439.18	5483.27	Cherry Canyon
6811.14	6872.31	Brushy Canyon
8676.11	8745.85	Top BSPG Lime
9746.11	9815.85	1st BSPG Ss
10276.11	10345.85	2nd BSPG Ss
10836.25	10937.24	3rd BSPG Carb





# Earthstone Operating, LLC

Lea County, NM (Nad 83 NME)

Minis 1 Fed

Minis 1 Fed HKY Com 21H

OH

Plan: Plan 1 09-08-22

## Standard Planning Report

08 September, 2022





# Phoenix Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandril Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandril Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

<b>Project</b>	Lea County, NM (Nad 83 NME)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	Minis 1 Fed				
<b>Site Position:</b>		<b>Northing:</b>	554,292.00 usft	<b>Latitude:</b>	32° 31' 18.469303 N
<b>From:</b>	Map	<b>Easting:</b>	760,557.98 usft	<b>Longitude:</b>	103° 37' 19.536883 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.382 °

<b>Well</b>	Minis 1 Fed HKY Com 21H					
<b>Well Position</b>	<b>+N/-S</b>	0.17 usft	<b>Northing:</b>	554,292.17 usft	<b>Latitude:</b>	32° 31' 18.469006 N
	<b>+E/-W</b>	29.97 usft	<b>Easting:</b>	760,587.95 usft	<b>Longitude:</b>	103° 37' 19.186848 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	3,723.80 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	MVHD	11/2/2022	6.349	60.292	47,807.46005253

<b>Design</b>	Plan 1 09-08-22			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	179.55

<b>Plan Survey Tool Program</b>	<b>Date</b>	9/8/2022		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.00	10,539.00	Plan 1 09-08-22 (OH)	Standard Keeper 104 Standard Wireline Keeper v
2	10,539.00	18,677.52	Plan 1 09-08-22 (OH)	MWD+HRGM OWSG MWD + HRGM



**Phoenix**  
Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,049.84	9.00	280.94	2,048.00	6.69	-34.60	2.00	2.00	0.00	280.944	
7,268.05	9.00	280.94	7,202.00	161.62	-835.79	0.00	0.00	0.00	0.000	
8,167.74	0.00	0.00	8,098.00	175.00	-905.00	1.00	-1.00	0.00	180.000	
10,539.20	0.00	0.00	10,469.46	175.00	-905.00	0.00	0.00	0.00	0.000	
11,438.60	89.94	179.55	11,042.42	-397.34	-900.50	10.00	10.00	0.00	179.550	
11,538.60	89.94	179.55	11,042.52	-497.34	-899.72	0.00	0.00	0.00	0.000	
11,689.15	89.94	176.54	11,042.68	-647.78	-894.58	2.00	0.00	-2.00	-90.002	
11,989.15	89.94	176.54	11,042.99	-947.23	-876.47	0.00	0.00	0.00	0.000	
12,139.70	89.94	179.55	11,043.15	-1,097.68	-871.34	2.00	0.00	2.00	90.002	
18,677.52	89.94	179.55	11,050.00	-7,635.29	-819.98	0.00	0.00	0.00	0.000	BHL - Minis 1 Fed t



# Phoenix Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,531.30	0.00	0.00	1,531.30	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Rustler</b>										
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>KOP, Begin 2.00°/100' Build</b>										
1,700.00	2.00	280.94	1,699.98	0.33	-1.71	-0.34	2.00	2.00	0.00	
1,800.00	4.00	280.94	1,799.84	1.32	-6.85	-1.38	2.00	2.00	0.00	
1,900.00	6.00	280.94	1,899.45	2.98	-15.41	-3.10	2.00	2.00	0.00	
1,932.04	6.64	280.94	1,931.30	3.65	-18.87	-3.80	2.00	2.00	0.00	
<b>Salado</b>										
2,000.00	8.00	280.94	1,998.70	5.29	-27.37	-5.51	2.00	2.00	0.00	
2,049.84	9.00	280.94	2,048.00	6.69	-34.60	-6.96	2.00	2.00	0.00	
<b>Hold 9.00° Inc at 280.94° Azm</b>										
2,100.00	9.00	280.94	2,097.54	8.18	-42.31	-8.51	0.00	0.00	0.00	
2,200.00	9.00	280.94	2,196.31	11.15	-57.66	-11.60	0.00	0.00	0.00	
2,300.00	9.00	280.94	2,295.08	14.12	-73.01	-14.69	0.00	0.00	0.00	
2,400.00	9.00	280.94	2,393.85	17.09	-88.37	-17.78	0.00	0.00	0.00	
2,500.00	9.00	280.94	2,492.62	20.06	-103.72	-20.87	0.00	0.00	0.00	
2,600.00	9.00	280.94	2,591.39	23.03	-119.07	-23.96	0.00	0.00	0.00	
2,700.00	9.00	280.94	2,690.15	25.99	-134.43	-27.05	0.00	0.00	0.00	
2,800.00	9.00	280.94	2,788.92	28.96	-149.78	-30.14	0.00	0.00	0.00	
2,900.00	9.00	280.94	2,887.69	31.93	-165.13	-33.23	0.00	0.00	0.00	
3,000.00	9.00	280.94	2,986.46	34.90	-180.49	-36.32	0.00	0.00	0.00	
3,100.00	9.00	280.94	3,085.23	37.87	-195.84	-39.41	0.00	0.00	0.00	
3,162.80	9.00	280.94	3,147.26	39.73	-205.48	-41.35	0.00	0.00	0.00	
<b>Yates</b>										
3,200.00	9.00	280.94	3,184.00	40.84	-211.20	-42.50	0.00	0.00	0.00	
3,300.00	9.00	280.94	3,282.77	43.81	-226.55	-45.59	0.00	0.00	0.00	
3,400.00	9.00	280.94	3,381.54	46.78	-241.90	-48.68	0.00	0.00	0.00	
3,500.00	9.00	280.94	3,480.31	49.75	-257.26	-51.76	0.00	0.00	0.00	
3,600.00	9.00	280.94	3,579.08	52.71	-272.61	-54.85	0.00	0.00	0.00	
3,622.44	9.00	280.94	3,601.24	53.38	-276.06	-55.55	0.00	0.00	0.00	
<b>Capitan Reef</b>										
3,700.00	9.00	280.94	3,677.85	55.68	-287.96	-57.94	0.00	0.00	0.00	
3,800.00	9.00	280.94	3,776.62	58.65	-303.32	-61.03	0.00	0.00	0.00	
3,900.00	9.00	280.94	3,875.39	61.62	-318.67	-64.12	0.00	0.00	0.00	
4,000.00	9.00	280.94	3,974.16	64.59	-334.03	-67.21	0.00	0.00	0.00	
4,100.00	9.00	280.94	4,072.93	67.56	-349.38	-70.30	0.00	0.00	0.00	
4,200.00	9.00	280.94	4,171.70	70.53	-364.73	-73.39	0.00	0.00	0.00	
4,300.00	9.00	280.94	4,270.47	73.50	-380.09	-76.48	0.00	0.00	0.00	
4,400.00	9.00	280.94	4,369.24	76.47	-395.44	-79.57	0.00	0.00	0.00	
4,500.00	9.00	280.94	4,468.01	79.44	-410.79	-82.66	0.00	0.00	0.00	
4,600.00	9.00	280.94	4,566.78	82.40	-426.15	-85.75	0.00	0.00	0.00	
4,700.00	9.00	280.94	4,665.55	85.37	-441.50	-88.84	0.00	0.00	0.00	
4,800.00	9.00	280.94	4,764.32	88.34	-456.85	-91.93	0.00	0.00	0.00	
4,900.00	9.00	280.94	4,863.09	91.31	-472.21	-95.02	0.00	0.00	0.00	
5,000.00	9.00	280.94	4,961.86	94.28	-487.56	-98.11	0.00	0.00	0.00	
5,100.00	9.00	280.94	5,060.63	97.25	-502.92	-101.20	0.00	0.00	0.00	
5,200.00	9.00	280.94	5,159.40	100.22	-518.27	-104.29	0.00	0.00	0.00	
5,300.00	9.00	280.94	5,258.17	103.19	-533.62	-107.37	0.00	0.00	0.00	
5,400.00	9.00	280.94	5,356.94	106.16	-548.98	-110.46	0.00	0.00	0.00	
5,483.27	9.00	280.94	5,439.18	108.63	-561.76	-113.04	0.00	0.00	0.00	
<b>Cherry Canyon</b>										



# Phoenix Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandril Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandril Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,500.00	9.00	280.94	5,455.71	109.12	-564.33	-113.55	0.00	0.00	0.00
5,600.00	9.00	280.94	5,554.48	112.09	-579.68	-116.64	0.00	0.00	0.00
5,700.00	9.00	280.94	5,653.25	115.06	-595.04	-119.73	0.00	0.00	0.00
5,800.00	9.00	280.94	5,752.02	118.03	-610.39	-122.82	0.00	0.00	0.00
5,900.00	9.00	280.94	5,850.78	121.00	-625.74	-125.91	0.00	0.00	0.00
6,000.00	9.00	280.94	5,949.55	123.97	-641.10	-129.00	0.00	0.00	0.00
6,100.00	9.00	280.94	6,048.32	126.94	-656.45	-132.09	0.00	0.00	0.00
6,200.00	9.00	280.94	6,147.09	129.91	-671.81	-135.18	0.00	0.00	0.00
6,300.00	9.00	280.94	6,245.86	132.88	-687.16	-138.27	0.00	0.00	0.00
6,400.00	9.00	280.94	6,344.63	135.84	-702.51	-141.36	0.00	0.00	0.00
6,500.00	9.00	280.94	6,443.40	138.81	-717.87	-144.45	0.00	0.00	0.00
6,600.00	9.00	280.94	6,542.17	141.78	-733.22	-147.54	0.00	0.00	0.00
6,700.00	9.00	280.94	6,640.94	144.75	-748.57	-150.63	0.00	0.00	0.00
6,800.00	9.00	280.94	6,739.71	147.72	-763.93	-153.72	0.00	0.00	0.00
6,872.31	9.00	280.94	6,811.14	149.87	-775.03	-155.95	0.00	0.00	0.00
<b>Brushy Canyon</b>									
6,900.00	9.00	280.94	6,838.48	150.69	-779.28	-156.81	0.00	0.00	0.00
7,000.00	9.00	280.94	6,937.25	153.66	-794.63	-159.89	0.00	0.00	0.00
7,100.00	9.00	280.94	7,036.02	156.63	-809.99	-162.98	0.00	0.00	0.00
7,200.00	9.00	280.94	7,134.79	159.60	-825.34	-166.07	0.00	0.00	0.00
7,268.05	9.00	280.94	7,202.00	161.62	-835.79	-168.18	0.00	0.00	0.00
<b>Begin 1.00°/100' Drop</b>									
7,300.00	8.68	280.94	7,233.57	162.55	-840.61	-169.15	1.00	-1.00	0.00
7,400.00	7.68	280.94	7,332.56	165.25	-854.57	-171.96	1.00	-1.00	0.00
7,500.00	6.68	280.94	7,431.77	167.62	-866.84	-174.42	1.00	-1.00	0.00
7,600.00	5.68	280.94	7,531.19	169.66	-877.41	-176.55	1.00	-1.00	0.00
7,700.00	4.68	280.94	7,630.78	171.38	-886.27	-178.33	1.00	-1.00	0.00
7,800.00	3.68	280.94	7,730.51	172.76	-893.42	-179.77	1.00	-1.00	0.00
7,900.00	2.68	280.94	7,830.36	173.81	-898.86	-180.87	1.00	-1.00	0.00
8,000.00	1.68	280.94	7,930.28	174.53	-902.59	-181.62	1.00	-1.00	0.00
8,100.00	0.68	280.94	8,030.26	174.92	-904.61	-182.02	1.00	-1.00	0.00
8,167.74	0.00	0.00	8,098.00	175.00	-905.00	-182.10	1.00	-1.00	0.00
<b>Begin Vertical Hold</b>									
8,745.85	0.00	0.00	8,676.11	175.00	-905.00	-182.10	0.00	0.00	0.00
<b>Top BSPG Lime</b>									
9,815.85	0.00	0.00	9,746.11	175.00	-905.00	-182.10	0.00	0.00	0.00
<b>1st BSPG Ss</b>									
10,345.85	0.00	0.00	10,276.11	175.00	-905.00	-182.10	0.00	0.00	0.00
<b>2nd BSPG Ss</b>									
10,539.20	0.00	0.00	10,469.46	175.00	-905.00	-182.10	0.00	0.00	0.00
<b>KOP2, Begin 10.00°/100' Build</b>									
10,600.00	6.08	179.55	10,530.15	171.78	-904.97	-178.88	10.00	10.00	0.00
10,700.00	16.08	179.55	10,628.16	152.58	-904.82	-159.69	10.00	10.00	0.00
10,800.00	26.08	179.55	10,721.35	116.66	-904.54	-123.76	10.00	10.00	0.00
10,900.00	36.08	179.55	10,806.88	65.11	-904.14	-72.21	10.00	10.00	0.00
10,937.24	39.80	179.55	10,836.25	42.21	-903.96	-49.31	10.00	10.00	0.00
<b>3rd BSPG Carb</b>									
11,000.00	46.08	179.55	10,882.17	-0.52	-903.62	-6.58	10.00	10.00	0.00
11,100.00	56.08	179.55	10,944.91	-78.22	-903.01	71.13	10.00	10.00	0.00
11,200.00	66.08	179.55	10,993.21	-165.64	-902.32	158.54	10.00	10.00	0.00
11,300.00	76.08	179.55	11,025.59	-260.11	-901.58	253.02	10.00	10.00	0.00
11,400.00	86.08	179.55	11,041.08	-358.77	-900.81	351.69	10.00	10.00	0.00
11,438.60	89.94	179.55	11,042.42	-397.34	-900.50	390.26	10.00	10.00	0.00



# Phoenix Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
<b>LP, Hold 89.89° Inc at 179.55° Azm</b>										
11,500.00	89.94	179.55	11,042.48	-458.74	-900.02	451.66	0.00	0.00	0.00	
11,538.60	89.94	179.55	11,042.52	-497.34	-899.72	490.26	0.00	0.00	0.00	
<b>Begin 2.00°/100' Turn</b>										
11,600.00	89.94	178.32	11,042.59	-558.73	-898.58	551.65	2.00	0.00	-2.00	
11,689.15	89.94	176.54	11,042.68	-647.78	-894.58	640.74	2.00	0.00	-2.00	
<b>Hold 176.54° Azm</b>										
11,700.00	89.94	176.54	11,042.69	-658.61	-893.93	651.57	0.00	0.00	0.00	
11,800.00	89.94	176.54	11,042.80	-758.43	-887.89	751.43	0.00	0.00	0.00	
11,900.00	89.94	176.54	11,042.90	-858.25	-881.85	851.30	0.00	0.00	0.00	
11,989.15	89.94	176.54	11,042.99	-947.23	-876.47	940.32	0.00	0.00	0.00	
<b>Begin 2.00°/100' Turn</b>										
12,000.00	89.94	176.76	11,043.01	-958.07	-875.84	951.16	2.00	0.00	2.00	
12,100.00	89.94	178.76	11,043.11	-1,057.98	-871.92	1,051.10	2.00	0.00	2.00	
12,139.70	89.94	179.55	11,043.15	-1,097.68	-871.34	1,090.80	2.00	0.00	2.00	
<b>Hold 179.55° Azm</b>										
12,200.00	89.94	179.55	11,043.22	-1,157.98	-870.86	1,151.10	0.00	0.00	0.00	
12,300.00	89.94	179.55	11,043.32	-1,257.98	-870.08	1,251.10	0.00	0.00	0.00	
12,400.00	89.94	179.55	11,043.42	-1,357.97	-869.29	1,351.10	0.00	0.00	0.00	
12,500.00	89.94	179.55	11,043.53	-1,457.97	-868.51	1,451.10	0.00	0.00	0.00	
12,600.00	89.94	179.55	11,043.63	-1,557.97	-867.72	1,551.10	0.00	0.00	0.00	
12,700.00	89.94	179.55	11,043.74	-1,657.96	-866.93	1,651.10	0.00	0.00	0.00	
12,800.00	89.94	179.55	11,043.84	-1,757.96	-866.15	1,751.10	0.00	0.00	0.00	
12,900.00	89.94	179.55	11,043.95	-1,857.96	-865.36	1,851.10	0.00	0.00	0.00	
13,000.00	89.94	179.55	11,044.05	-1,957.95	-864.58	1,951.10	0.00	0.00	0.00	
13,100.00	89.94	179.55	11,044.16	-2,057.95	-863.79	2,051.10	0.00	0.00	0.00	
13,200.00	89.94	179.55	11,044.26	-2,157.95	-863.01	2,151.10	0.00	0.00	0.00	
13,300.00	89.94	179.55	11,044.37	-2,257.94	-862.22	2,251.10	0.00	0.00	0.00	
13,400.00	89.94	179.55	11,044.47	-2,357.94	-861.44	2,351.10	0.00	0.00	0.00	
13,500.00	89.94	179.55	11,044.58	-2,457.94	-860.65	2,451.10	0.00	0.00	0.00	
13,600.00	89.94	179.55	11,044.68	-2,557.93	-859.86	2,551.10	0.00	0.00	0.00	
13,700.00	89.94	179.55	11,044.79	-2,657.93	-859.08	2,651.10	0.00	0.00	0.00	
13,800.00	89.94	179.55	11,044.89	-2,757.93	-858.29	2,751.10	0.00	0.00	0.00	
13,900.00	89.94	179.55	11,045.00	-2,857.92	-857.51	2,851.10	0.00	0.00	0.00	
14,000.00	89.94	179.55	11,045.10	-2,957.92	-856.72	2,951.10	0.00	0.00	0.00	
14,100.00	89.94	179.55	11,045.21	-3,057.92	-855.94	3,051.10	0.00	0.00	0.00	
14,200.00	89.94	179.55	11,045.31	-3,157.92	-855.15	3,151.10	0.00	0.00	0.00	
14,300.00	89.94	179.55	11,045.41	-3,257.91	-854.37	3,251.10	0.00	0.00	0.00	
14,400.00	89.94	179.55	11,045.52	-3,357.91	-853.58	3,351.10	0.00	0.00	0.00	
14,500.00	89.94	179.55	11,045.62	-3,457.91	-852.79	3,451.10	0.00	0.00	0.00	
14,600.00	89.94	179.55	11,045.73	-3,557.90	-852.01	3,551.10	0.00	0.00	0.00	
14,700.00	89.94	179.55	11,045.83	-3,657.90	-851.22	3,651.10	0.00	0.00	0.00	
14,800.00	89.94	179.55	11,045.94	-3,757.90	-850.44	3,751.10	0.00	0.00	0.00	
14,900.00	89.94	179.55	11,046.04	-3,857.89	-849.65	3,851.10	0.00	0.00	0.00	
15,000.00	89.94	179.55	11,046.15	-3,957.89	-848.87	3,951.10	0.00	0.00	0.00	
15,100.00	89.94	179.55	11,046.25	-4,057.89	-848.08	4,051.10	0.00	0.00	0.00	
15,200.00	89.94	179.55	11,046.36	-4,157.88	-847.30	4,151.10	0.00	0.00	0.00	
15,300.00	89.94	179.55	11,046.46	-4,257.88	-846.51	4,251.10	0.00	0.00	0.00	
15,400.00	89.94	179.55	11,046.57	-4,357.88	-845.73	4,351.10	0.00	0.00	0.00	
15,500.00	89.94	179.55	11,046.67	-4,457.87	-844.94	4,451.10	0.00	0.00	0.00	
15,600.00	89.94	179.55	11,046.78	-4,557.87	-844.15	4,551.10	0.00	0.00	0.00	
15,700.00	89.94	179.55	11,046.88	-4,657.87	-843.37	4,651.10	0.00	0.00	0.00	
15,800.00	89.94	179.55	11,046.99	-4,757.87	-842.58	4,751.10	0.00	0.00	0.00	
15,900.00	89.94	179.55	11,047.09	-4,857.86	-841.80	4,851.10	0.00	0.00	0.00	



# Phoenix Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandrill Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,000.00	89.94	179.55	11,047.20	-4,957.86	-841.01	4,951.10	0.00	0.00	0.00
16,100.00	89.94	179.55	11,047.30	-5,057.86	-840.23	5,051.10	0.00	0.00	0.00
16,200.00	89.94	179.55	11,047.41	-5,157.85	-839.44	5,151.10	0.00	0.00	0.00
16,300.00	89.94	179.55	11,047.51	-5,257.85	-838.66	5,251.10	0.00	0.00	0.00
16,400.00	89.94	179.55	11,047.61	-5,357.85	-837.87	5,351.10	0.00	0.00	0.00
16,500.00	89.94	179.55	11,047.72	-5,457.84	-837.08	5,451.10	0.00	0.00	0.00
16,600.00	89.94	179.55	11,047.82	-5,557.84	-836.30	5,551.10	0.00	0.00	0.00
16,700.00	89.94	179.55	11,047.93	-5,657.84	-835.51	5,651.10	0.00	0.00	0.00
16,800.00	89.94	179.55	11,048.03	-5,757.83	-834.73	5,751.10	0.00	0.00	0.00
16,900.00	89.94	179.55	11,048.14	-5,857.83	-833.94	5,851.10	0.00	0.00	0.00
17,000.00	89.94	179.55	11,048.24	-5,957.83	-833.16	5,951.10	0.00	0.00	0.00
17,100.00	89.94	179.55	11,048.35	-6,057.82	-832.37	6,051.10	0.00	0.00	0.00
17,200.00	89.94	179.55	11,048.45	-6,157.82	-831.59	6,151.10	0.00	0.00	0.00
17,300.00	89.94	179.55	11,048.56	-6,257.82	-830.80	6,251.10	0.00	0.00	0.00
17,400.00	89.94	179.55	11,048.66	-6,357.82	-830.02	6,351.10	0.00	0.00	0.00
17,500.00	89.94	179.55	11,048.77	-6,457.81	-829.23	6,451.10	0.00	0.00	0.00
17,600.00	89.94	179.55	11,048.87	-6,557.81	-828.44	6,551.10	0.00	0.00	0.00
17,700.00	89.94	179.55	11,048.98	-6,657.81	-827.66	6,651.10	0.00	0.00	0.00
17,800.00	89.94	179.55	11,049.08	-6,757.80	-826.87	6,751.10	0.00	0.00	0.00
17,900.00	89.94	179.55	11,049.19	-6,857.80	-826.09	6,851.10	0.00	0.00	0.00
18,000.00	89.94	179.55	11,049.29	-6,957.80	-825.30	6,951.10	0.00	0.00	0.00
18,100.00	89.94	179.55	11,049.40	-7,057.79	-824.52	7,051.10	0.00	0.00	0.00
18,200.00	89.94	179.55	11,049.50	-7,157.79	-823.73	7,151.10	0.00	0.00	0.00
18,300.00	89.94	179.55	11,049.60	-7,257.79	-822.95	7,251.10	0.00	0.00	0.00
18,400.00	89.94	179.55	11,049.71	-7,357.78	-822.16	7,351.10	0.00	0.00	0.00
18,500.00	89.94	179.55	11,049.81	-7,457.78	-821.37	7,451.10	0.00	0.00	0.00
18,600.00	89.94	179.55	11,049.92	-7,557.78	-820.59	7,551.10	0.00	0.00	0.00
18,677.52	89.94	179.55	11,050.00	-7,635.29	-819.98	7,628.61	0.00	0.00	0.00
<b>TD at 18677.52</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP - Minis 1 Fed HK - hit/miss target - Shape	0.00	0.00	11,041.30	95.12	-880.50	554,387.29	759,707.45	12° 31' 19.468241 N	3° 37' 29.462895 W
- plan misses target center by 183.67usft at 11025.74usft MD (10899.60 TVD, -19.45 N, -903.47 E)									
- Point									
LTP - Minis 1 Fed HK - hit/miss target - Shape	0.00	0.00	11,049.94	-7,585.30	-820.43	546,706.87	759,767.52	32° 30' 3.467655 N	3° 37' 29.357535 W
- plan misses target center by 27.52usft at 18600.00usft MD (11049.92 TVD, -7557.78 N, -820.59 E)									
- Point									
BHL - Minis 1 Fed HK - hit/miss target - Shape	0.00	0.00	11,050.00	-7,635.29	-819.98	546,656.88	759,767.97	32° 30' 2.972980 N	3° 37' 29.356159 W
- plan hits target center									
- Point									



# Phoenix Planning Report



<b>Database:</b>	USA Compass	<b>Local Co-ordinate Reference:</b>	Well Minis 1 Fed HKY Com 21H
<b>Company:</b>	Earthstone Operating, LLC	<b>TVD Reference:</b>	RKB @ 3751.30usft (Scandriil Star)
<b>Project:</b>	Lea County, NM (Nad 83 NME)	<b>MD Reference:</b>	RKB @ 3751.30usft (Scandriil Star)
<b>Site:</b>	Minis 1 Fed	<b>North Reference:</b>	Grid
<b>Well:</b>	Minis 1 Fed HKY Com 21H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan 1 09-08-22		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,531.30	1,531.30	Rustler		0.060	179.55	
1,932.04	1,931.30	Salado		0.060	179.55	
3,162.80	3,147.26	Yates		0.060	179.55	
3,622.44	3,601.24	Capitan Reef		0.060	179.55	
5,483.27	5,439.18	Cherry Canyon		0.060	179.55	
6,872.31	6,811.14	Brushy Canyon		0.060	179.55	
8,745.85	8,676.11	Top BSPG Lime		0.060	179.55	
9,815.85	9,746.11	1st BSPG Ss		0.060	179.55	
10,345.85	10,276.11	2nd BSPG Ss		0.060	179.55	
10,937.24	10,836.25	3rd BSPG Carb		0.060	179.55	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,600.00	1,600.00	0.00	0.00	KOP, Begin 2.00°/100' Build	
2,049.84	2,048.00	6.69	-34.60	Hold 9.00° Inc at 280.94° Azm	
7,268.05	7,202.00	161.62	-835.79	Begin 1.00°/100' Drop	
8,167.74	8,098.00	175.00	-905.00	Begin Vertical Hold	
10,539.20	10,469.46	175.00	-905.00	KOP2, Begin 10.00°/100' Build	
11,438.60	11,042.42	-397.34	-900.50	LP, Hold 89.89° Inc at 179.55° Azm	
11,538.60	11,042.52	-497.34	-899.72	Begin 2.00°/100' Turn	
11,689.15	11,042.68	-647.78	-894.58	Hold 176.54° Azm	
11,989.15	11,042.99	-947.23	-876.47	Begin 2.00°/100' Turn	
12,139.70	11,043.15	-1,097.68	-871.34	Hold 179.55° Azm	
18,677.52	11,050.00	-7,635.29	-819.98	TD at 18677.52	

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Earthstone</b>
<b>LEASE NO.:</b>	<b>NMNM0062924</b>
<b>LOCATION:</b>	Section 1, T.21 S., R.32 E., NMPM
<b>COUNTY:</b>	Lea County, New Mexico

<b>WELL NAME &amp; NO.:</b>	Minis 1Fed HKY Com 21H
<b>SURFACE HOLE FOOTAGE:</b>	200'/N & 660'/E
<b>BOTTOM HOLE FOOTAGE:</b>	50'/S & 1540'/E

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input type="radio"/> None	<input type="radio"/> Secretary	<input checked="" type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input checked="" type="checkbox"/> 4 String Area	<input checked="" type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

### B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately feet (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. Wait on cement (WOC) time for a primary cement job will be a minimum of

**24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **10-3/4** inch 1<sup>st</sup> intermediate casing which shall be set at **3550ft**:

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

- ❖ In R111 Potash Areas if cement does not circulate to surface on the first two salt protection casing strings, the cement on the 3rd casing string must come to surface.
  - ❖ In Capitan Reef Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
  - ❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:  
**(Use this for 3 string wells in the Capitan Reef, if 4 string well ensure FW based mud used across the capitan interval)**
    - Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
    - Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.
3. The minimum required fill of cement behind the **8-5/8** inch 2<sup>nd</sup> intermediate casing is:
- Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
  - Cement to surface. If cement does not circulate see B.1.a, c-d above. **Excess calculates to 5%. Additional cement maybe required.**

**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef.**
4. The minimum required fill of cement behind the 5-1/2 inch production casing is:
  - Cement should tie-back at least **50 feet (3575 ft)** on top of Capitan Reef top. If cement does not circulate see B.1.a, c-d above.

**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, potash or capitan reef.**

### C. PRESSURE CONTROL

1. **Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).**
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - a. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - b. Manufacturer representative shall install the test plug for the initial BOP test.
  - c. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

### D. SPECIAL REQUIREMENT (S)

#### Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record),

or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

## GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

Eddy County  
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

Lea County  
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.
    - Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
    - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on

which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

#### A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

**B. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
  - c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
  - d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
  - e. The results of the test shall be reported to the appropriate BLM office.
  - f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
  - g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to

the test at full stack pressure.

- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**ZS030823**

**PECOS DISTRICT  
SURFACE USE  
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Earthstone Operating LLC
LEASE NO.:	NMNM062924
COMM NO.:	NMNM 082516
COUNTY:	Lea

**Wells:**

**East Well Pad**

Minis 1 Fed 1BS Com 20H

Surface Hole Location: 200' FNL & 690' FEL, Section 1, T. 21 S., R. 32 E.

Bottom Hole Location: 50' FSL & 1705' FEL, Section 1, T. 21 S, R 32 E.

Minis 1 Fed HKY Com 21H

Surface Hole Location: 200' FNL & 660' FEL, Section 1, T. 21 S., R. 32 E.

Bottom Hole Location: 50' FSL & 1540' FEL, Section 1, T. 21 S, R 32 E.

Minis 1 Fed 2BS Com 22H

Surface Hole Location: 200' FNL & 630' FEL, Section 1, T. 21 S., R. 32 E.

Bottom Hole Location: 50' FSL & 1045' FEL, Section 1, T. 21 S, R 32 E.

Minis 1 Fed HKY Com 23H

Surface Hole Location: 200' FNL & 600' FEL, Section 1, T. 21 S., R. 32 E.

Bottom Hole Location: 50' FSL & 385' FEL, Section 1, T. 21 S, R 32 E.

Minis 1 Fed 1BS Com 24H

Surface Hole Location: 200' FNL & 570' FEL, Section 1, T. 21 S., R. 32 E.

Bottom Hole Location: 50' FSL & 385' FEL, Section 1, T. 21 S, R 32 E.

**TABLE OF CONTENTS**

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
  - Watershed
  - Range
  - Lesser Prairie Chicken
  - VRM IV
  - Potash Resources
- Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- Road Section Diagram**
- Production (Post Drilling)**
  - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

## **I. GENERAL PROVISIONS**

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

## **II. PERMIT EXPIRATION**

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

## **III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES**

Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See information below discussing NAGPRA.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

#### **IV. NOXIOUS WEEDS**

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

#### **V. SPECIAL REQUIREMENT(S)**

##### **Watershed:**

Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The topsoil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within a bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

##### **TANK BATTERY:**

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

##### **Range:**

##### **Cattleguards**

Where a permanent cattleguard is approved, an appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

##### **Fence Requirement**

Where entry granted across a fence line, the fence must be H-braced or angle iron braced and tied off on both sides of the passageway prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Figure 1. Pipe H-brace specifications

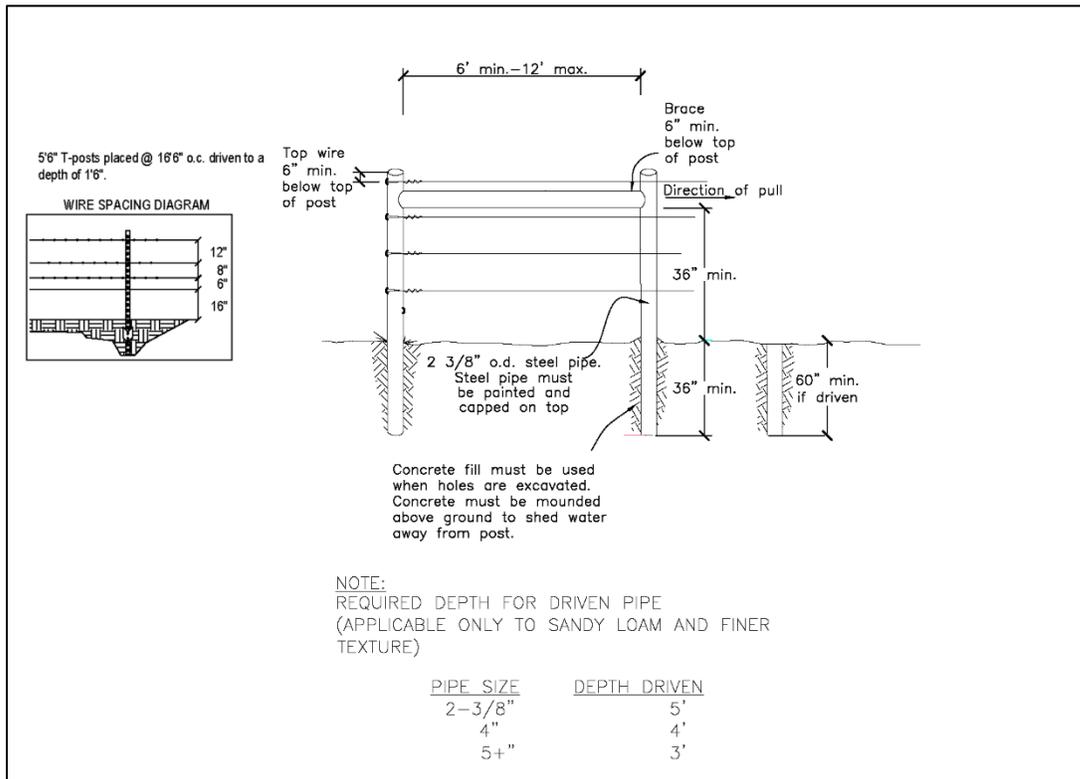
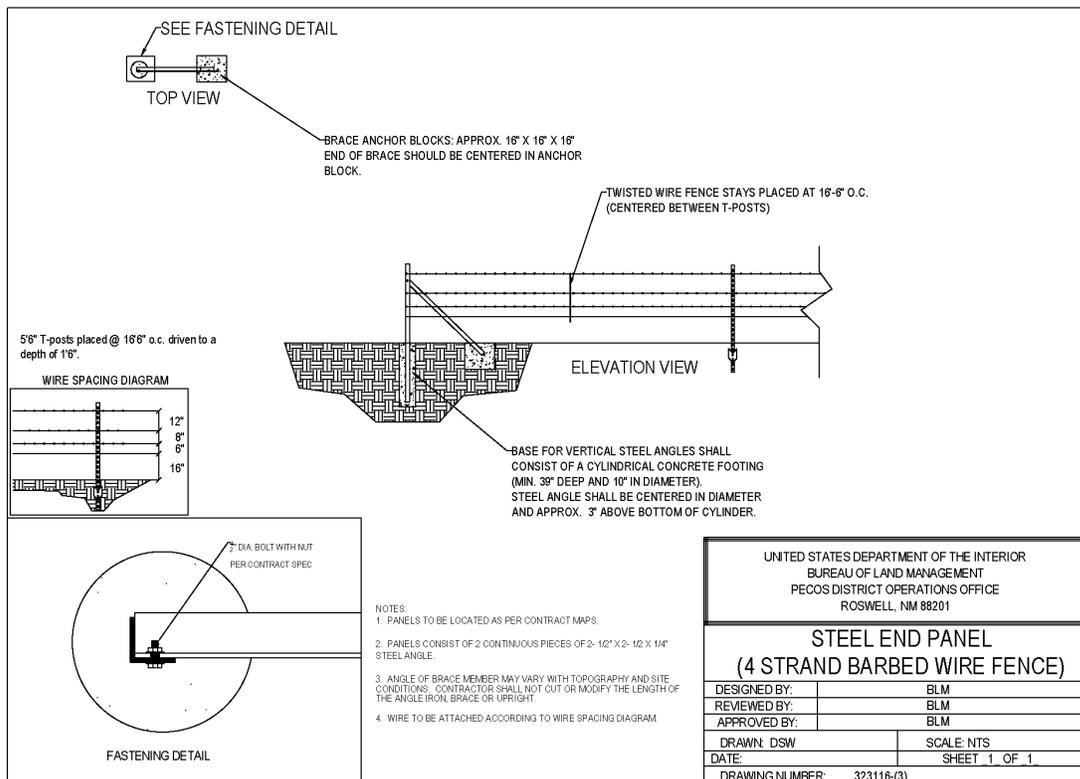


Figure 2. Angle iron brace specifications



**Lesser Prairie Chicken:****Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:**

Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

**Timing Limitation Exceptions:**

The Carlsbad Field Office will publish an annual map of where the LPC timing and noise stipulations and conditions of approval (Limitations) will apply for the identified year (between March 1 and June 15) based on the latest survey information. The LPC Timing Area map will identify areas which are Habitat Areas (HA), Isolated Population Area (IPA), and Primary Population Area (PPA). The LPC Timing Area map will also have an area in red crosshatch. The red crosshatch area is the only area where an operator is required to submit a request for exception to the LPC Limitations. If an operator is operating outside the red crosshatch area, the LPC Limitations do not apply for that year and an exception to LPC Limitations is not required.

**Ground-level Abandoned Well Marker to avoid raptor perching:**

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

**VRM IV:**

Short-term mitigation measures include painting all above-ground structures that are not subject to safety requirements (including meter housing) Shale Green, which is a flat non-reflective paint color listed in the BLM Standard Environmental Color Chart (CC-001: June 2013). Long-term mitigation measures include the removal of wells and associated infrastructure following abandonment (end of cost-effective production). Previously impacted areas will be reclaimed by removing structures and caliche pads, returning disturbed areas to natural grade, and revegetating with an approved BLM seed mixture; thereby eliminating visual impacts.

**Potash Resources**

Lessees must comply with the 2012 Secretarial Potash Order. The Order is designed to manage the efficient development of oil, gas, and potash resources. Section 6 of the Order provides general provisions which must be followed to minimize conflict between the industries and ensure the safety of operations.

To minimize impacts to potash resources, the proposed well is confined within the boundaries of the established Minis Drill Island

**VI. CONSTRUCTION****A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

**B. TOPSOIL**

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

**C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

**D. FEDERAL MINERAL MATERIALS PIT**

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

**E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

**F. EXCLOSURE FENCING (CELLARS & PITS)**

**Exclosure Fencing**

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

**G. ON LEASE ACCESS ROADS**

**Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed twenty-five (25) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

**Surfacing**

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

**Crowning**

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

**Ditching**

Ditching shall be required on both sides of the road.

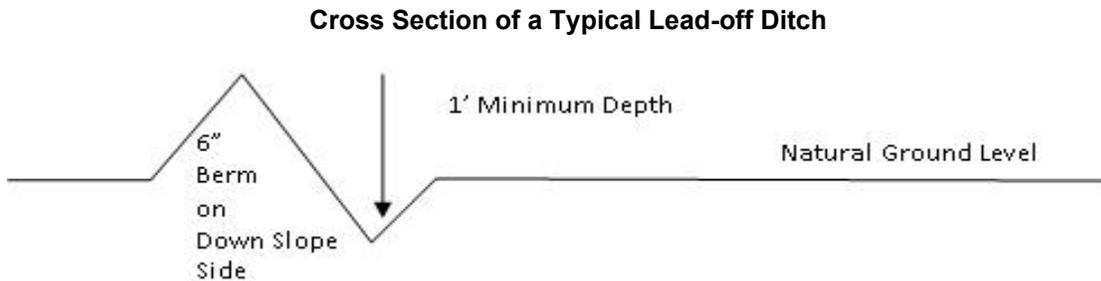
**Turnouts**

Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill out sloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

### Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

### Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

### Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

### Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

- Construction Steps**
1. Salvage topsoil
  2. Construct road
  3. Redistribute topsoil
  4. Revegetate slopes

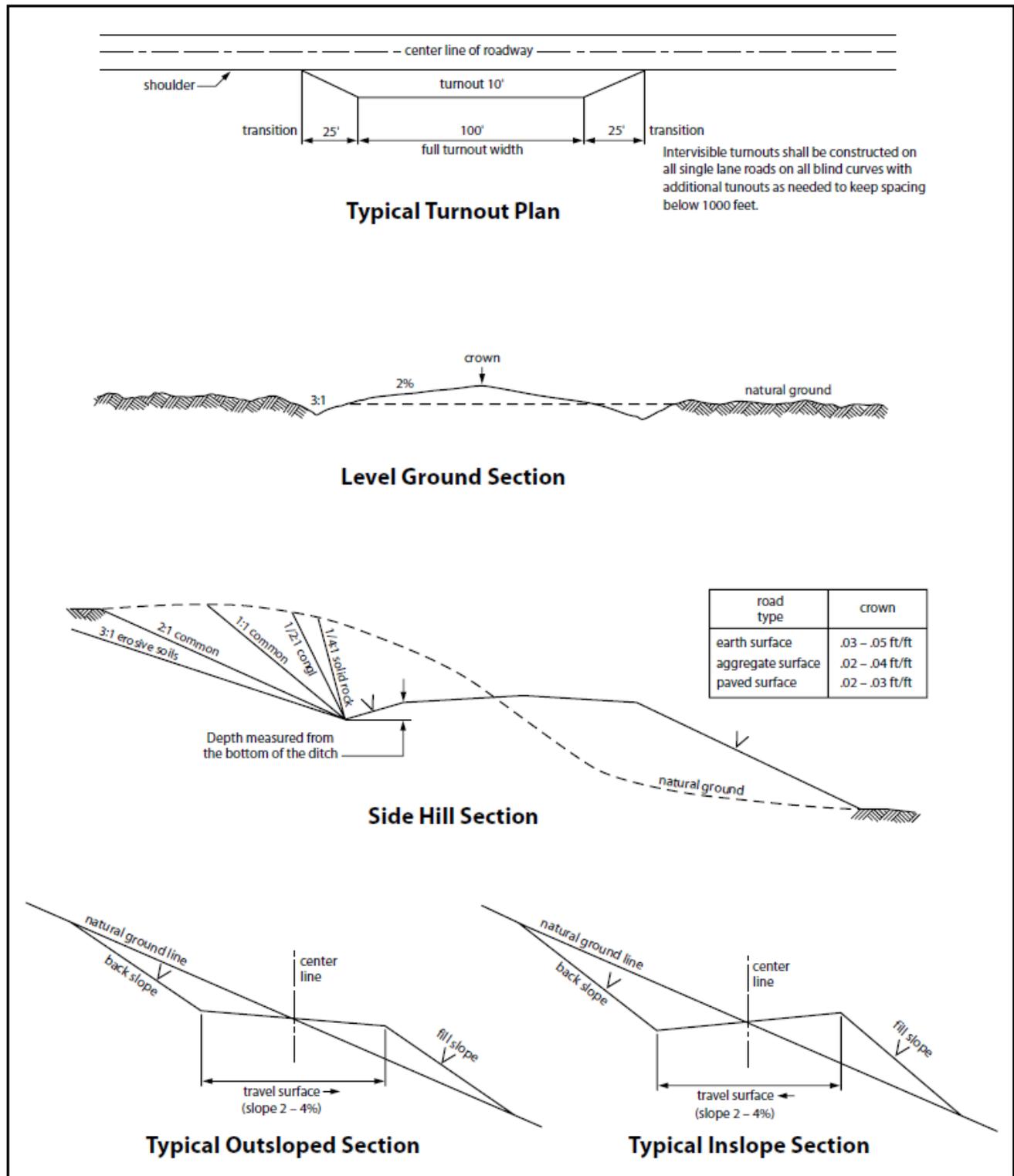


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

## VII. PRODUCTION (POST DRILLING)

### A. WELL STRUCTURES & FACILITIES

#### Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

#### Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

#### Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

#### Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

#### Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

#### Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

## VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

## IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

**Seed Mixture for LPC Sand/Shinnery Sites**

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)\* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed\* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

## **Earthstone Operating, LLC**

1400 Woodloch Forest Drive, Suite 300  
The Woodlands, TX 77380  
Phone: (281) 298-4246  
Fax: (832) 823-0478

## **H2S Contingency Plan**

### **Lea County, NM**

**Escape**

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crew should then block entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are NO homes or buildings in or near the ROE.

Assumed 100 ppm ROE = 3000’  
 100 ppm H2S concentration shall trigger activation of this plan

**Emergency Procedures**

In the event of a release of gas containing H2S, the first responder(s) must:

- « Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- « Evacuate any public places encompassed by the 100 ppm ROE.
- « Be equipped with H2S monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the response.
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- « Have received training
  - in the: Detection of
  - H2S, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of H2S and SO2,**

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H2S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO2	2.21 Air=1	2 ppm	N/A	1000 ppm

## Contacting Authorities

Earthstone Operating, LLC personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Earthstone Operating, LLC response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMERP).

## Hydrogen Sulfide Drilling Operations Plan

1. All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:
  - A. Characteristics of H2S
  - B. Physical effects and hazards
  - C. Principal and operation of H2S detectors, warning system and briefing areas.
  - D. Evacuation procedure, routes and first aid.
  - E. Proper use of safety equipment & life support systems
  - F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30-minute pressure demand air packs.
2. H2S Detection and Alarm Systems:
  - a. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may be placed as deemed necessary.
  - b. An audio alarm system will be installed on the derrick floor and in the top doghouse.
3. Windsock and/or wind streamers:
  - a. Windsock at mudpit area should be high enough to be visible.
  - b. Windsock on the rig floor and/ or top doghouse should be high enough to be visible.
4. Condition Flags and Signs
  - a. Warning sign on access road to location.
  - b. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential

pressure and danger. Red flag indicates danger (H2S present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

- 5. Well control equipment:
  - a. See exhibit BOP and Choke Diagrams
- 6. Communication:
  - a. While working under masks chalkboards will be used for communication.
  - b. Hand signals will be used where chalk board is inappropriate.
  - c. Two-way radio will be used to communicate off location in case of emergency help is required. In most cases, cellular telephones will be available at most drilling foreman's trailer or living quarters.
- 7. Drill stem Testing:
  - No DSTs are planned at this time.
- 8. Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubular goods and other mechanical equipment.
- 9. If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

**Emergency Assistance Telephone List**

Earthstone Operating, LLC

The Woodlands Office (Headquarters): 281-298-4246

Midland Office: 432-686-1100

Vice President of Drilling-Nick Goree

Office: 281-771-3201

Cell: 405-488-7164

Sr. Drilling Engineer/Superintendent- Ben Taylor

Cell: 432-978-3029

Production Superintendent-Paul Martinez

Cell: 325-206-1722

<b>Public Safety:</b>	<b>911 or</b>
Lea County Sheriff's Department	Number: (575)396-3611
Lea County Emergency Management-Lorenzo Velasquez	Number: (575)391-2983
Lea County Fire Marshal	
Lorenzo Velasquez, Director	Number: (575)391-2983
Jeff Broom, Deputy Fire Marshal	Number: (575)391-2988
Fire Department:	
Knowles Fire Department	Number: (505)392-2810
City of Hobbs Fire Department	Number: (505)397-9308
Jal Volunteer Fire Department	Number: (505)395-2221
Lovington Fire Department	Number: (575)396-2359
Maljamar Fire Department	Number: (505)676-4100
Tatum Volunteer Fire Department	Number: (505)398-3473
Eunice Fire Department	Number: (575)394-3258
Hospital: Lea Regional Medical Center	Number: (575)492-5000
AirMed: Medevac	Number: (888)303-9112
Dept. of Public Safety	Number: (505)827-9000
<b>New Mexico OCD-Dist. 1-Hobbs-</b>	Office
	Emergency
	Number: (575)393-6161
	Number: (575)370-3186
Lea County Road Department	Number: (575)391-2940
NMDOT	Number: (505)827-5100
<b>Bureau of Land Management</b>	
Pecos District Office	Number: (575)627-0272
Carlsbad Field Office	Number: (575)234-5972

Earthstone Operating, LLC plans to operate a Closed Loop System.

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

**Is the proposed well in an area containing other mineral resources?** NATURAL GAS,OIL

**Is the proposed well in a Helium production area?** N    **Use Existing Well Pad?** N    **New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:** MINIS  
1 FED EAST-EAST PAD

**Number:**  
20H,21H,22H,23H,24H

**Well Class:** HORIZONTAL

**Number of Legs:** 1

**Well Work Type:** Drill

**Well Type:** OIL WELL

**Describe Well Type:**

**Well sub-Type:** INFILL

**Describe sub-type:**

**Distance to town:** 7 Miles

**Distance to nearest well:** 30 FT

**Distance to lease line:** 100 FT

**Reservoir well spacing assigned acres Measurement:** 239 Acres

**Well plat:** MINIS\_1\_FED\_HKY\_COM\_21H\_APD\_C102\_20221017164508.pdf

**Well work start Date:** 02/28/2023

**Duration:** 30 DAYS

**Section 3 - Well Location Table**

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** 9450

**Reference Datum:** GROUND LEVEL

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
SHL Leg #1	200	FNL	660	FEL	21S	32E	1	Lot 1	32.521797	-103.6219964	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 0062924	3723	0	0	Y
KOP Leg #1	200	FNL	660	FEL	21S	32E	1	Lot 1	32.521797	-103.6219964	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 0062924	-6756	10539	10479	Y
PPP Leg #1-1	100	FNL	1540	FEL	21S	32E	1	Lot 2	32.5220745	-103.6248508	LEA	NEW MEXI CO	NEW MEXI CO	F	NMNM 0062924	-7319	11439	11042	Y

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD	Will this well produce from this
PPP Leg #1-2	1740	FNL	1540	FEL	21S	32E	1	Lot 7	32.5184464	-103.6248793	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 0060777	-7321	12759	11044	Y
EXIT Leg #1	100	FSL	1540	FEL	21S	32E	1	Aliquot SWSE	32.5009632	-103.6248215	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 092187	-7327	18628	11050	Y
BHL Leg #1	50	FSL	1540	FEL	21S	32E	1	Aliquot SWSE	32.5008258	-103.6248212	LEA	NEW MEXICO	NEW MEXICO	F	NMNM 092187	-7327	18678	11050	Y



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

# Drilling Plan Data Report

05/08/2023

**APD ID:** 10400088653

**Submission Date:** 10/18/2022

Highlighted data reflects the most recent changes

**Operator Name:** EARTHSTONE OPERATING LLC

**Well Name:** MINIS 1 FED HKY COM

**Well Number:** 21H

**Well Type:** OIL WELL

**Well Work Type:** Drill

[Show Final Text](#)

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
9377301	RUSTLER	3723	1528	1528	ANHYDRITE	USEABLE WATER	N
9377302	SALADO	1795	1928	1928	SALT	NONE	N
9377304	YATES	579	3144	3144	SANDSTONE, SHALE	NATURAL GAS, OIL	N
9377305	CAPITAN REEF	125	3598	3598	DOLOMITE, LIMESTONE	NONE	N
9377306	CHERRY CANYON	-1713	5436	5436	SANDSTONE, SHALE, SILTSTONE	NATURAL GAS, OIL	N
9377307	BRUSHY CANYON	-3085	6808	6808	LIMESTONE, SANDSTONE, SHALE, SILTSTONE	NATURAL GAS, OIL	N
9377312	BONE SPRING LIME	-4950	8673	8673	LIMESTONE, SHALE	NATURAL GAS, OIL	N
9377316	BONE SPRING 1ST	-6020	9743	9743	SANDSTONE, SHALE, SILTSTONE	NATURAL GAS, OIL	N
9379315	BONE SPRING 2ND	-6550	10273	10273	SANDSTONE, SHALE, SILTSTONE	NATURAL GAS, OIL	N
9379316	BONE SPRING 3RD	-7110	10833	10833	SANDSTONE, SHALE, SILTSTONE	NATURAL GAS, OIL	Y

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 5M

**Rating Depth:** 12000

**Equipment:** Rotating Head, remote kill line, mud-gas sperator

**Requesting Variance?** YES

**Variance request:** We propose utilizing a cactus speed head for this well. Please see attached diagram and pressure testing statement. Also we request to use a co flex hose. Please find attached information regarding co flex hose. Earthstone Operating LLC respectfully proposes that if cement is not returned to surface during the primary cement job on the 8-5/8" Intermediate casing, a planned Bradenhead job will be conducted immediately after the primary cement job.

**Testing Procedure:** BOP will be tested by an independent service company to 250 psi low and 5000 psi high, per onshore order 2. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked each trip out of the hole.

## BOP SHEET

### **Annular Preventer**

13-3/8 2,500 PSI WP

### **Ram Preventers**

13-3/8" 5,000 PSI WP Double Ram

13-3/8" 5,000 PSI WP Single Ram

Test the pipe rams, blind rams, floor valves (IBOP and/or upper Kelly valve), choke lines and manifold to 250 psi/5,000 psi with a test plug and a test pump.

Test the annular to 250 psi/2,500 psi with same as above.

**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 219920

**CONDITIONS**

Operator: Earthstone Operating, LLC 1400 Woodloch Forest; Ste 300 The Woodlands, TX 77380	OGRID: 331165
	Action Number: 219920
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	5/30/2023
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	5/30/2023
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	5/30/2023
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	5/30/2023