

State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Michelle Lujan Grisham**  
Governor

**Sarah Cottrell Propst**  
Cabinet Secretary

**Todd E. Leahy, JD, PhD**  
Deputy Secretary

**Adrienne Sandoval**, Division Director  
**Oil Conservation Division**



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 4/25/2019

Well information;

Operator Enduring, Well Name and Number Rodeo Unit 496H

API# 45-38169, Section 31, Township 23 N/S, Range 8 E/W

Conditions of Approval: (See the below checked and handwritten conditions)

- ✓ Notify Aztec OCD 24hrs prior to casing & cement.
- ✓ If cement doesn't circulate on any casing string or stage tool a CBL will be required. Contact the regulatory agencies prior to proceeding.
- ✓ Hold C-104 for directional survey & "As Drilled" Plat
- ✓ Hold C-104 for: NSL, NSP, DHC, 5.9 Compliance
- Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ✓ 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
- Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ✓ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ✓ 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.
- ✓ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

  
NMOCD Approved by Signature

4/15/2020  
Date

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>N0G14021893</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 <b>EASTERN NAVAJO</b>
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input checked="" type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No. <b>NMNM136328A</b>
2. Name of Operator <b>ENDURING RESOURCES LLC</b>		8. Lease Name and Well No. <b>RODEO UNIT 496H</b>
3a. Address <b>1050 17TH ST STE 2500 DENVER CO 80265</b>	3b. Phone No. (include area code) <b>(505)386-8205</b>	9. API Well No. <b>30-045-38169</b>
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface <b>NWNW / 225 FNL / 855 FWL / LAT 36.190011 / LONG -107.728614</b> At proposed prod. zone <b>SWSE / 330 FSL / 1895 FEL / LAT 36.17701 / LONG -107.720019</b>		10. Field and Pool, or Exploratory <b>MANCOS / BASIN MANCOS</b>
14. Distance in miles and direction from nearest town or post office* <b>53.9 miles</b>		11. Sec., T. R. M. or Blk. and Survey or Area <b>SEC 31 / T23N / R8W / NMP</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>20 feet</b>	16. No of acres in lease <b>161.73</b>	12. County or Parish <b>SAN JUAN</b>
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>225 feet</b>	17. Spacing Unit dedicated to this well <b>961.48</b>	13. State <b>NM</b>
19. Proposed Depth <b>4110 feet / 11676 feet</b>	20. BLM/BIA Bond No. in file <b>FED: NMB001492 / IND: RLB0016899</b>	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>6680 feet</b>	22. Approximate date work will start* <b>06/01/2019</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>Lacey Granillo / Ph: (505)947-1704</b>	Date <b>04/25/2019</b>
Title <b>Permitting Specialist</b>		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) <b>Richard Fields / Ph: (505)564-7612</b>	Date <b>03/19/2020</b>
Title <b>Field Manager</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.

AV



District I  
1625 N. French Drive, Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720

District II  
811 S. First Street, Artesia, NM 88210  
Phone: (575) 748-1263 Fax: (575) 748-9720

District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV  
1220 S. St. Francis Drive, Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department

Form C-102  
Revised August 1, 2011

Submit one copy to  
Appropriate District Office

OIL CONSERVATION DIVISION  
1220 South St. Francis Drive  
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-38169		*Pool Code 97232	*Pool Name BASIN MANCOS
*Property Code 321253	*Property Name RODEO UNIT		*Well Number 496H
*GRID No. 372286	*Operator Name ENDURING RESOURCES, LLC		*Elevation 6680'

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	31	23N	8W	1	225	NORTH	855	WEST	SAN JUAN

<sup>11</sup> Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	31	23N	8W		330	SOUTH	1895	EAST	SAN JUAN

*Dedicated Acres 961.48	Entire Section 31, T23N R8W N/2 - Section 36, T23N R9W	*Joint or Infill	*Consolidation Code	*Order No. R-14313
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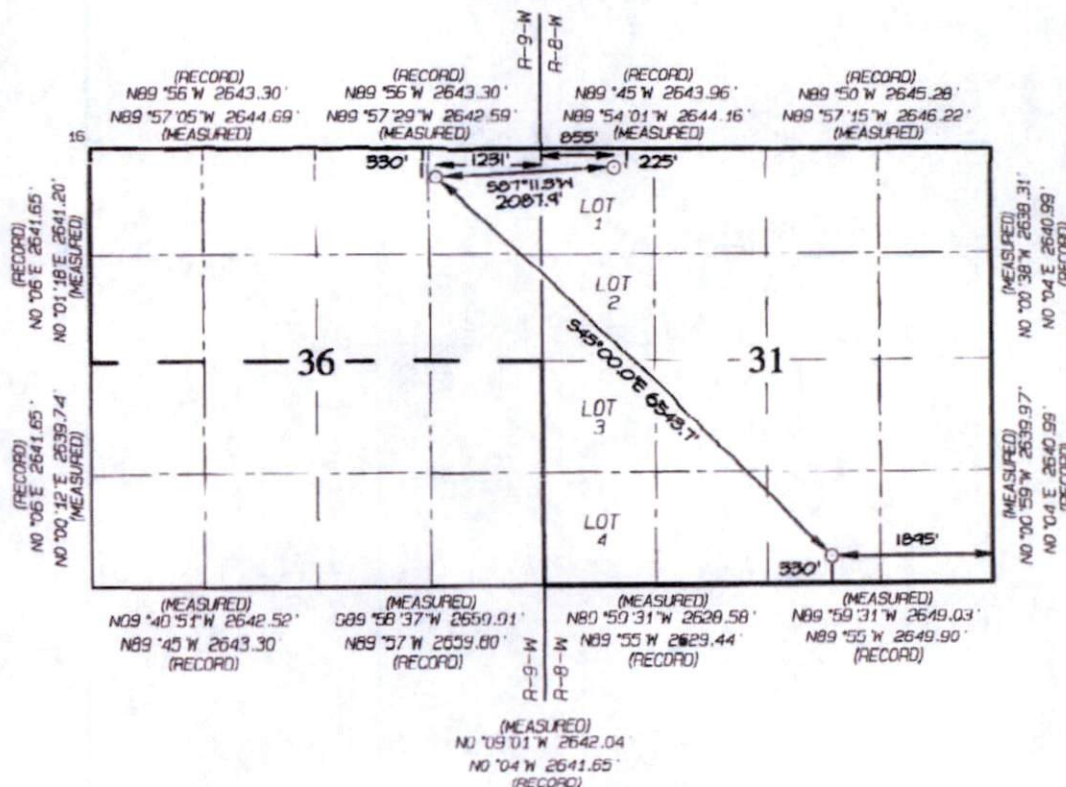
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

POINT-OF-ENTRY  
330' FNL 1231' FEL  
SEC 36, T23N, R9W  
LAT: 36.189722°N  
LONG: 107.735069°W  
DATUM: NAD1927  
LAT: 36.189735°N  
LONG: 107.735682°W  
DATUM: NAD1983

SURFACE LOCATION  
225' FNL 855' FNL  
SEC 31, T23N, R8W  
LAT: 36.189997°N  
LONG: 107.728002°W  
DATUM: NAD1927  
LAT: 36.190011°N  
LONG: 107.728614°W  
DATUM: NAD1983

END-OF-LATERAL  
330' FSL 1895' FEL  
SEC 31, T23N, R8W  
LAT: 36.176996°N  
LONG: 107.719407°W  
DATUM: NAD1927  
LAT: 36.177010°N  
LONG: 107.720019°W  
DATUM: NAD1983

(RECORD)  
NO 104°W 2641.65'  
NO 09°12'W 2642.24'  
(MEASURED)



<sup>17</sup> OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unless mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: [Signature]  
Date: 4/24/19  
Printed Name: [Name]  
E-mail Address: [Email]

<sup>18</sup> SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: APRIL 22, 2019  
Date of Survey: APRIL 12, 2016

Signature and Seal of Professional Surveyor



JASON C. EDWARDS  
Certificate Number 15269



**ENDURING RESOURCES IV, LLC**  
**1050 SEVENTEENTH STREET, SUITE 2500**  
**DENVER, COLORADO 80265**

**DRILLING PLAN:** *Drill, complete, and equip single lateral in the Mancos-Cms formation*

**WELL INFORMATION:**

**Name:** **RODEO UNIT 496H**

**API Number:** **30-045-**

**State:** New Mexico

**County:** San Juan

**Surface Elevation:** 6,680 ft ASL (GL)

6,705 ft ASL (KB)

**Surface Location:** 31-23N-08W Sec-Twn-Rng

225 ft FNL

855 ft FWL

36.190011 ° N latitude

107.728614 ° W longitude

(NAD 83)

**BH Location:** 31-23N-08W Sec-Twn-Rng

330 ft FSL

1,895 ft FEL

36.17701 ° N latitude

107.720019 ° W longitude

(NAD 83)

**Driving Directions:** FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM: South on US Hwy 550 for 38.7 miles to MM 112.7; Right (South) on CR 7900 for 2.3 miles to fork; Right (West) on 7940 for 2.6 miles, Right (North-West) on new acces road for approximately 0.2 miles to Rodeo Unit 492H Pad (includes wells 492H, 493H, 494H, 495H, 496H).

**GEOLOGIC AND RESERVOIR INFORMATION:**

<b>Prognosis:</b>	<b>Formation Tops</b>	<b>TVD (ft ASL)</b>	<b>TVD (ft KB)</b>	<b>MD (ft KB)</b>	<b>O / G / W</b>	<b>Pressure</b>
	Ojo Alamo	6,444	261	261	W	normal
	Kirtland	6,323	382	382	W	normal
	Fruitland	6,118	587	587	G, W	sub
	Pictured Cliffs	5,763	942	954	G, W	sub
	Lewis	5,511	1,194	1,246	G, W	normal
	Chacra	5,378	1,327	1,412	G, W	normal
	Cliff House	4,302	2,403	2,760	G, W	sub
	Menefee	4,296	2,409	2,767	G, W	normal
	Point Lookout	3,316	3,389	4,066	G, W	normal
	Mancos	3,100	3,605	4,387	O,G	sub (~0.38)
	Gallup (MNCS_A)	2,870	3,835	4,677	O,G	sub (~0.38)
	MNCS_B	2,770	3,935	4,814	O,G	sub (~0.38)
	MNCS_Cms	2,645	4,060	5,022	O,G	sub (~0.38)
	<b>P.O.E. TARGET</b>	<b>2,595</b>	<b>4,110</b>	<b>5,142</b>	<b>O,G</b>	<b>sub (~0.38)</b>
	<b>L.P. TARGET</b>	<b>2,545</b>	<b>4,160</b>	<b>5,465</b>	<b>O,G</b>	<b>sub (~0.38)</b>
	<b>PROJECTED TD</b>	<b>2,595</b>	<b>4,110</b>	<b>11,676</b>	<b>O,G</b>	<b>sub (~0.38)</b>

**Surface:** Nacimiento

**Oil & Gas Zones:** Several gas bearing zones will be encountered; target formation is the Gallup

**Pressure:** Normal (0.43 psi/ft) or sub-normal pressure gradients anticipated in all formations

Max. pressure gradient: 0.43 psi/ft Evacuated hole gradient: 0.22 psi/ft

**Maximum anticipated BH pressure, assuming maximum pressure gradient:** 1,790 psi

**Maximum anticipated surface pressure, assuming partially evacuated hole:** 880 psi

**Temperature:** Maximum anticipated BHT is 125° F or less

**H<sub>2</sub>S INFORMATION:**

**H<sub>2</sub>S Zones:** Encountering hydrogen-sulfide bearing zones is **NOT** anticipated.

**Safety:** Sensors and alarms will be placed in the substructure, on the rig floor, above the pits, and at the shakers.

#### LOGGING, CORING, AND TESTING:

**Mud Logs:** None planned; gas detection from drill out of 13-3/8" casing to TD; remote geo-steering from drill out of 9-5/8" casing to TD.

**MWD / LWD:** MWD surveys with inclination and azimuth in 100' stations (minimum) from drill out of 13-3/8" casing to TD; Gamma Ray from drill out of 9-5/8" casing to TD; Gamma Ray optional in 12-1/4" intermediate hole

**Open Hole Logs:** None planned

**Testing:** None planned

**Coring:** None planned

**Cased Hole Logs:** CBL on 5-1/2" casing from deepest free-fall depth to surface

#### DRILLING RIG INFORMATION:

**Contractor:** Aztec

**Rig No.:** 1000

**Draw Works:** E80 AC 1,500 hp

**Mast:** Hyduke Triple (136 ft, 600,000 lbs, 10 lines)

**Top Drive:** NOV IDS-350PE (350 ton)

**Prime Movers:** 4 - GE Jenbacher Natural Gas Generator

**Pumps:** 2 - RS F-1600 (7,500 psi)

**BOPE 1:** Cameron double gate ram (13-5/8", 3,000 psi)

**BOPE 2:** Cameron annular (13-5/8", 5,000 psi)

**Choke:** Cameron (4", 10,000 psi)

**KB-Gl (ft):** 25

**Note:** Actual drilling rig may vary depending on availability at time the well is scheduled to be drilled.

#### BOPE REQUIREMENTS:

*See attached diagram for details regarding BOPE specifications and configuration.*

- 1) Rig will be equipped with upper and lower kelly cocks with handles available.
- 2) Inside BOP and TIW valves will be available to use on all sizes and threads of drill pipe used while drilling the well.
- 2) BOP accumulator will have enough capacity to open the HCR valve, close all rams and annular preventer, and retain minimum of 200 psi above precharge on the closing manifold without the use of closing pumps. The fluid reservoir capacity shall be at least double the usable fluid volume of the accumulator system capacity, and the fluid level shall be maintained at manufacturer's recommendation. There will be two additional sources of power for the closing pumps (electric and air). Sufficient nitrogen bottles will be available and will be recharged when pressure falls below manufacturer's recommended minimum.
- 3) BOP testing shall be conducted (a) when initially installed, (b) whenever any seal is broken or repaired, (c) if the time since the previous test exceeds 30 days. Tests will be conducted using a test plug. BOP ram preventers will be tested to 3,000 psig for 10 minutes, and the annular preventer will be tested to 1,500 psi for 10 minutes. Ram and annular preventers will be tested to 250 psi for 5 minutes. Additionally, BOP and casing strings will be tested to .22 psi/ft or 1,500 psi, whichever is greater but not exceeding 70% of yield strength of the casing, for 30 minutes, prior to drilling out 13-3/8" and 9-5/8" casing. Rams and hydraulically operated remote choke line valve will be function tested daily at a minimum.
- 4) Remote valve for BOP rams, HCR, and choke shall be placed in a location that is readily available to the driller. The remote BOP valve shall be capable of closing and opening the rams.
- 5) Manual locking devices (hand wheels) shall be installed on rams. A valve will be installed on the annular preventer's closing line as close as possible to the preventer to act as a locking device. The valve will be maintained in the open position and shall only be closed when there is no power to the accumulator.

#### FLUIDS AND SOLIDS CONTROL PROGRAM:

**Fluid Measurement:** Pumps shall be equipped with stroke counters with displays in the dog-house. Slow pump speed shall be recorded daily and after mudding up, at a minimum, on the drilling report. A Pit Volume Totalizer will be installed and the readout will be displayed in the dog-house. Gas-detecting equipment will be installed at the shakers, and readouts will be available in the dog-house and the in the geologist's work-station (if geologist or mud-logger is on-site).

**Closed-Loop System:** A fully, closed-loop system will be utilized. The system will consist of above-ground piping and above-ground storage tanks and bins. The system will not entail any earthen pits, below-grade storage, or drying pads. All equipment will be disassembled and removed from the site when drilling operations cease. The system will be capable of storing all fluids and generated cuttings and of preventing uncontrolled releases of the same. The system will be operated in an efficient manner to allow the recycling and reuse of as much fluid as possible and to minimize the amount of fluids and solids that require disposal.

**Fluid Disposal:** Fluids that cannot be reused, recycled, or returned to the supplier will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).

**Solids Disposal:** Drilling solids will be stored (until haul-off) on-site in separate containers with no other waste, debris, or garbage products. Waste solids will be hauled to and disposed of at an approved disposal site (Industrial Ecosystem, Inc. or Envirotech, Inc.).

**Fluid Program:** See "Detailed Drilling Plan" section for specifics.

## DETAILED DRILLING PLAN:

**SURFACE:** *Drill vertically to casing setting depth (plus necessary rathole), run casing, cement casing to surface.*

0 ft (MD)	to	350 ft (MD)	Hole Section Length:	350 ft
0 ft (TVD)	to	350 ft (TVD)	Casing Required:	350 ft

*Note: Surface hole may be drilled, cased, and cemented with a smaller rig in advance of the drilling rig.*

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	Fresh Water	8.4	N/C	2 - 8	2 - 12	9.0	Spud mud

**Hole Size:** 17-1/2"

**Bit / Motor:** Mill Tooth or PDC, no motor

**MWD / Survey:** No MWD, deviation survey

**Logging:** None

Casing Specs:	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	13.375	54.5	J-55	BTC	1,130	2,730	853,000
Loading					153	798	116,634
Min. S.F.					7.39	3.42	7.31

*Assumptions: Collapse: fully evacuated casing with 8.4 ppg equivalent external pressure gradient*

*Burst: maximum anticipated surface pressure with 9.5 ppg fluid inside casing while drilling intermediate hole and 8.4 ppg equivalent external pressure gradient*

*Tension: buoyed weight in 8.4 ppg fluid with 100,000 lbs over-pull*

**MU Torque (ft lbs):** Minimum: N/A Optimum: N/A Maximum: N/A

*Make-up as per API Buttress Connection running procedure.*

**Casing Details:** Float shoe, 1 jt casing, float collar, casing to surface

**Centralizers:** 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 2 jts to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	Hole Cap. (cuft/ft)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
	Class G	15.8	1.174	5.15	0.6946	100%	0	414

*Calculated cement volumes assume gauge hole and the excess noted in table*

*Halliburton HALCEM surface cementing blend*

**Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.**

**INTERMEDIATE:** Drill as per directional plan to casing setting depth, run casing, cement casing to surface.

350 ft (MD)	to	4,513 ft (MD)	Hole Section Length:	4,163 ft
350 ft (TVD)	to	3,705 ft (TVD)	Casing Required:	4,513 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	

Hole Size: 12-1/4"

Bit / Motor: PDC w/mud motor

MWD / Survey: MWD surveys with inclination and azimuth in 100' stations (minimum), GR optional

Logging: None

Pressure Test: NU BOPE and test (as noted above); pressure test 13-3/8" casing to 1,500 psi for 30 minutes.

Casing Specs:	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	9.625	36.0	J-55	LTC	2,020	3,520	564,000
Loading					1,618	1,092	241,680
Min. S.F.					1.25	3.22	2.33

Assumptions: Collapse: fully evacuated casing with 8.4 ppg equivalent external pressure gradient

Burst: maximum anticipated surface pressure with 9.5 ppg fluid inside casing while drilling production hole and 8.4 ppg equivalent external pressure gradient

Tension: buoyed weight in 8.4 ppg fluid with 100,000 lbs over-pull

MU Torque (ft lbs): Minimum: 3,900 Optimum: 5,200 Maximum: 6,500

Casing Details: Float shoe, 1 jt casing, float collar, casing to surface

Centralizers: 2 centralizers per jt stop-banded 10' from each collar on bottom 3 jts, 1 centralizer per 2 jts to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ Blend	12.3	1.987	10.16	40%	0	898
Tail	Class G	15.8	1.148	4.98	10%	4,013	150

Annular Capacity 0.3627 cuft/ft 9-5/8" casing x 13-3/8" casing annulus

0.3132 cuft/ft 9-5/8" casing x 12-1/4" hole annulus

Calculated cement volumes assume gauge hole and the excess noted in table

Halliburton ECONOCEM & HALCEM cementing blend

Notify NMOCD & BLM if cement is not circulated to surface. Cement must achieve 500 psi compressive strength before drilling out.

**PRODUCTION:** Drill to TD following directional plan, run casing, cement casing to surface.

4,513 ft (MD)	to	11,676 ft (MD)	Hole Section Length:	7,163 ft
3,705 ft (TVD)	to	4,110 ft (TVD)	Casing Required:	11,676 ft

Estimated KOP:	3,758 ft (MD)	3,200 ft (TVD)
Estimated Point-of-Entry (70 deg. inc):	5,142 ft (MD)	4,110 ft (TVD)
Estimated Landing Point:	5,465 ft (MD)	4,160 ft (TVD)
Estimated Lateral Length:	6,534 ft (MD)	

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	OBM as contingency

Hole Size: 8-1/2"

Bit / Motor: PDC w/mud motor

MWD / Survey: MWD surveys with inclination and azimuth in 100' stations (minimum) before KOP, every joint from KOP to POE, every 100' (minimum) from POE to TD; Gamma Ray from drill out of 9-5/8" shoe to TD

**Logging:** MWD Gamma Ray for entire section, no mud-log or cuttings sampling, no OH WL logs

**Pressure Test:** NU BOPE and test (as noted above); pressure test 9-5/8" casing to **1,500** psi for 30 minutes.

Casing Specs:	Size (in)	Wt (lb/ft)	Grade	Conn.	Collapse (psi)	Burst (psi)	Tens. Body (lbs)	Tens. Conn (lbs)
Specs	5.500	17.0	P-110	LTC	7,460	10,640	546,000	445,000
Loading					2,030	8,885	271,281	271,281
Min. S.F.					<b>3.67</b>	<b>1.20</b>	<b>2.01</b>	<b>1.64</b>

*Assumptions: Collapse: fully evacuated casing with 9.5 ppg fluid in the annulus (floating casing during running)*

*Burst: 8,500 psi maximum surface treating pressure with 10.2 ppg equivalent mud weight sand laden fluid with 8.4 ppg equivalent external pressure gradient*

*Tension: buoyed weight in 9.0 ppg fluid with 100,000 lbs over-pull*

**MU Torque (ft lbs):** Minimum: 3,400 Optimum: 4,530 Maximum: 5,660

**Casing Details:** Float shoe, float collar, 2 jts casing, float collar, 1 jt casing, toe-initiation sleeve, 20' marker joint, toe-initiation sleeve, casing to KOP with 20' marker joints spaced evenly in lateral every 2,000'. Place Floatation Sub at KOP. Continue running casing to surface. **The toe-initiation sleeves must be positioned INSIDE the 330' unit setback.**

**Centralizers:** Centralizer count and placement may be adjusted based on well conditions and as-drilled surveys.

Lateral: 1 centralizer per joint

POE to KOP: 1 centralizer per joint from landing point to KOP

KOP to surface: 1 centralizer per 2 joints from KOP to 9-5/8" shoe, 1 per 3 joints from 9-5/8" shoe to surface

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	G:POZ blend	12.4	1.907	9.98	40%	0	919
Tail	G:POZ blend	13.3	1.360	6.00	10%	4,677	1,297

Annular Capacity 0.2691 cuft/ft 5-1/2" casing x 9-5/8" casing annulus

0.2291 cuft/ft 5-1/2" casing x 8-1/2" hole annulus

*Calculated cement volumes assume gauge hole and the excess noted in table*

*Halliburton ECONOCEM & EXTENDACEM cementing blend*

**Notify NMOCD & BLM if cement is not circulated to surface.**

**Note:** The lateral may be drilled past applicable setback to maximize the length of the completed interval and to maximize resource recovery. If the well is drilled past the setback, the toe initiation sleeve and all perforations will be placed inside the setback. An unorthodox location application is not required because the completed interval will be entirely within the setback as defined and allowed by NMAC 19.15.16.7B(1), NMAC 19.15.16.14B(2), NMAC 19.15.16.15B(2). Rodeo Unit Order Number is R-14313.

**FINISH WELL: ND BOP, NU WH, RDMO.**

#### COMPLETION AND PRODUCTION PLAN:

**Frac:** Lateral will be fracture-stimulated in approximately 35 plug-and-perf stages with approximately 140,000 bbls slickwater fluid and 11,500,000 lbs of proppant.

**Flowback:** Well will be flowed back through production tubing. An ESP may be used to assist in load water recovery.

**Production:** Well will produce up production tubing via gas-lift into permanent production and storage facilities.

#### ESTIMATED START DATES:

**Drilling:** 6/1/2019

**Completion:** 7/16/2019

**Production:** 8/15/2019

**Prepared by:** Alec Bridge **4/17/2019**



# **Enduring Resources LLC**

**San Juan Basin - Rodeo Unit  
492H Pad  
496H**

**Wellbore #1**

**Plan: Design #2 - Final**

## **Standard Planning Report**

**17 April, 2019**



## Planning Report

<b>Database:</b>	EDM	<b>Local Co-ordinate Reference:</b>	Well 496H
<b>Company:</b>	Enduring Resources LLC	<b>TVD Reference:</b>	KB @ 6705.0usft (Original Well Elev)
<b>Project:</b>	San Juan Basin - Rodeo Unit	<b>MD Reference:</b>	KB @ 6705.0usft (Original Well Elev)
<b>Site:</b>	492H Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	496H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2 - Final		

<b>Project</b>	San Juan Basin - Rodeo Unit		
<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 Western Zone		

Site		492H Pad, San Juan County, New Mexico			
Site Position:		Northing:	1,888,477.95 usft	Latitude:	36.190011°N
From:	Lat/Long	Easting:	2,754,011.92 usft	Longitude:	107.728546°W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	496H, Upper Target					
Well Position	+N/-S	0.0 usft	Northing:	1,888,477.93 usft	Latitude:	36.190011°N
	+E/-W	-20.1 usft	Easting:	2,753,991.86 usft	Longitude:	107.728614°W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	6,680.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/31/2009	9.97	63.04	50,595.09917948

<b>Design</b>	Design #2 - Final			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	151.64

<b>Plan Survey Tool Program</b>	<b>Date</b>	4/17/2019		
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.0	11,675.5	Design #2 - Final (Wellbore #1)	MWD
				OWSG MWD - Standard



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<b>Site:</b>	492H Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	496H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2 - Final		

### 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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
350.0	0.00	0.00	350.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,240.3	37.01	283.24	1,189.8	52.9	-224.8	5.00	5.00	0.00	283.24	
3,757.7	37.01	283.24	3,200.0	400.0	-1,700.0	0.00	0.00	0.00	0.00	496H KOP2
4,004.9	62.41	276.03	3,358.7	429.0	-1,884.6	10.50	10.27	-2.92	-14.73	
5,141.8	70.00	134.86	4,110.0	-102.6	-2,085.5	10.50	0.67	-12.42	-137.46	496H POE 2
5,286.7	83.04	135.07	4,143.7	-202.0	-1,986.0	9.00	9.00	0.14	0.91	
5,382.7	83.04	135.07	4,155.3	-269.5	-1,918.7	0.00	0.00	0.00	0.00	
5,465.1	90.46	134.86	4,160.0	-327.6	-1,860.5	9.00	9.00	-0.25	-1.61	496H LP 2
11,675.5	90.46	134.86	4,110.0	-4,707.9	2,541.7	0.00	0.00	0.00	0.00	496H BHL



# Planning Report

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<b>Project:</b>	San Juan Basin - Rodeo Unit	<b>MD Reference:</b>	KB @ 6705.0usft (Original Well Elev)
<b>Site:</b>	492H Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	496H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2 - Final		

## 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
261.0	0.00	0.00	261.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>Ojo Alamo</b>									
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
350.0	0.00	0.00	350.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>13 3/8"</b>									
382.0	0.00	0.00	382.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>Kirtland</b>									
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
587.1	4.35	283.24	587.0	0.8	-3.2	-2.2	5.00	5.00	0.00
<b>Fruitland</b>									
600.0	5.00	283.24	599.9	1.0	-4.2	-2.9	5.00	5.00	0.00
700.0	10.00	283.24	699.0	4.0	-16.9	-11.6	5.00	5.00	0.00
800.0	15.00	283.24	796.6	8.9	-38.0	-25.9	5.00	5.00	0.00
900.0	20.00	283.24	891.9	15.8	-67.3	-45.9	5.00	5.00	0.00
953.8	22.69	283.24	942.0	20.3	-86.3	-58.9	5.00	5.00	0.00
<b>Pictured Cliffs</b>									
1,000.0	25.00	283.24	984.3	24.6	-104.5	-71.3	5.00	5.00	0.00
1,100.0	30.00	283.24	1,073.0	35.2	-149.4	-101.9	5.00	5.00	0.00
1,200.0	35.00	283.24	1,157.3	47.5	-201.7	-137.6	5.00	5.00	0.00
1,240.3	37.01	283.24	1,189.8	52.9	-224.8	-153.3	5.00	5.00	0.00
1,245.5	37.01	283.24	1,194.0	53.6	-227.8	-155.4	0.00	0.00	0.00
<b>Lewis</b>									
1,300.0	37.01	283.24	1,237.5	61.1	-259.8	-177.2	0.00	0.00	0.00
1,400.0	37.01	283.24	1,317.4	74.9	-318.4	-217.2	0.00	0.00	0.00
1,412.0	37.01	283.24	1,327.0	76.6	-325.4	-222.0	0.00	0.00	0.00
<b>Chacra</b>									
1,500.0	37.01	283.24	1,397.2	88.7	-377.0	-257.1	0.00	0.00	0.00
1,600.0	37.01	283.24	1,477.1	102.5	-435.6	-297.1	0.00	0.00	0.00
1,700.0	37.01	283.24	1,556.9	116.3	-494.2	-337.1	0.00	0.00	0.00
1,800.0	37.01	283.24	1,636.8	130.1	-552.8	-377.1	0.00	0.00	0.00
1,900.0	37.01	283.24	1,716.6	143.9	-611.4	-417.0	0.00	0.00	0.00
2,000.0	37.01	283.24	1,796.5	157.6	-670.0	-457.0	0.00	0.00	0.00
2,100.0	37.01	283.24	1,876.3	171.4	-728.6	-497.0	0.00	0.00	0.00
2,200.0	37.01	283.24	1,956.2	185.2	-787.2	-536.9	0.00	0.00	0.00
2,300.0	37.01	283.24	2,036.0	199.0	-845.8	-576.9	0.00	0.00	0.00
2,400.0	37.01	283.24	2,115.9	212.8	-904.4	-616.9	0.00	0.00	0.00
2,500.0	37.01	283.24	2,195.7	226.6	-963.0	-656.9	0.00	0.00	0.00
2,600.0	37.01	283.24	2,275.6	240.4	-1,021.6	-696.8	0.00	0.00	0.00
2,700.0	37.01	283.24	2,355.4	254.2	-1,080.2	-736.8	0.00	0.00	0.00
2,759.6	37.01	283.24	2,403.0	262.4	-1,115.1	-760.6	0.00	0.00	0.00
<b>Cliff House</b>									
2,767.1	37.01	283.24	2,409.0	263.4	-1,119.5	-763.6	0.00	0.00	0.00
<b>Menefee</b>									
2,800.0	37.01	283.24	2,435.3	267.9	-1,138.8	-776.8	0.00	0.00	0.00
2,900.0	37.01	283.24	2,515.1	281.7	-1,197.4	-816.7	0.00	0.00	0.00
3,000.0	37.01	283.24	2,595.0	295.5	-1,256.0	-856.7	0.00	0.00	0.00
3,100.0	37.01	283.24	2,674.8	309.3	-1,314.6	-896.7	0.00	0.00	0.00
3,200.0	37.01	283.24	2,754.7	323.1	-1,373.2	-936.7	0.00	0.00	0.00
3,300.0	37.01	283.24	2,834.5	336.9	-1,431.8	-976.6	0.00	0.00	0.00



# Planning Report

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<b>Project:</b>	San Juan Basin - Rodeo Unit	<b>MD Reference:</b>	KB @ 6705.0usft (Original Well Elev)
<b>Site:</b>	492H Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	496H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2 - Final		

## 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)
3,400.0	37.01	283.24	2,914.4	350.7	-1,490.4	-1,016.6	0.00	0.00	0.00
3,500.0	37.01	283.24	2,994.2	364.5	-1,549.0	-1,056.6	0.00	0.00	0.00
3,600.0	37.01	283.24	3,074.1	378.3	-1,607.6	-1,096.5	0.00	0.00	0.00
3,700.0	37.01	283.24	3,153.9	392.0	-1,666.2	-1,136.5	0.00	0.00	0.00
3,757.7	37.01	283.24	3,200.0	400.0	-1,700.0	-1,159.6	0.00	0.00	0.00
3,800.0	41.32	281.53	3,232.8	405.7	-1,726.1	-1,177.0	10.50	10.19	-4.04
3,900.0	51.58	278.44	3,301.6	418.1	-1,797.4	-1,221.8	10.50	10.26	-3.09
4,000.0	61.90	276.13	3,356.4	428.6	-1,880.2	-1,270.4	10.50	10.32	-2.31
4,004.9	62.41	276.03	3,358.7	429.0	-1,884.6	-1,272.8	10.50	10.34	-2.05
4,065.8	57.80	270.93	3,389.0	432.3	-1,937.2	-1,300.7	10.50	-7.58	-8.38
<b>Point Lookout</b>									
4,100.0	55.30	267.83	3,407.9	432.0	-1,965.7	-1,314.0	10.50	-7.30	-9.04
4,200.0	48.52	257.62	3,469.6	422.4	-2,043.6	-1,342.5	10.50	-6.78	-10.21
4,300.0	42.85	245.25	3,539.6	400.1	-2,111.3	-1,355.0	10.50	-5.68	-12.38
4,386.6	39.22	232.52	3,605.0	371.0	-2,159.8	-1,352.5	10.50	-4.19	-14.69
<b>Mancos</b>									
4,400.0	38.79	230.39	3,615.4	365.8	-2,166.4	-1,351.0	10.50	-3.20	-15.89
4,500.0	36.90	213.51	3,694.6	320.6	-2,207.2	-1,330.7	10.50	-1.89	-16.88
4,513.0	36.84	211.24	3,705.0	314.1	-2,211.4	-1,326.9	10.50	-0.49	-17.48
<b>9 5/8"</b>									
4,600.0	37.52	196.14	3,774.5	266.2	-2,232.3	-1,294.7	10.50	0.79	-17.36
4,677.3	39.67	183.57	3,835.0	218.9	-2,240.4	-1,256.9	10.50	2.77	-16.26
<b>Gallup (MNCS_A)</b>									
4,700.0	40.54	180.12	3,852.4	204.3	-2,240.9	-1,244.3	10.50	3.84	-15.17
4,800.0	45.46	166.49	3,925.6	136.9	-2,232.6	-1,181.1	10.50	4.92	-13.63
4,813.5	46.24	164.85	3,935.0	127.6	-2,230.2	-1,171.8	10.50	5.77	-12.22
<b>MNCS_B</b>									
4,900.0	51.73	155.24	3,991.8	66.4	-2,207.8	-1,107.3	10.50	6.35	-11.10
5,000.0	58.90	145.89	4,048.8	-4.9	-2,167.2	-1,025.3	10.50	7.17	-9.35
5,022.2	60.58	144.01	4,060.0	-20.6	-2,156.2	-1,006.2	10.50	7.56	-8.43
<b>MNCS_Cms</b>									
5,100.0	66.65	137.90	4,094.6	-74.6	-2,112.3	-937.9	10.50	7.80	-7.86
5,141.8	70.00	134.86	4,110.0	-102.6	-2,085.5	-900.4	10.50	8.02	-7.29
5,200.0	75.24	134.95	4,127.4	-141.9	-2,046.2	-847.2	9.00	9.00	0.15
5,286.7	83.04	135.07	4,143.7	-202.0	-1,986.0	-765.7	9.00	9.00	0.14
5,300.0	83.04	135.07	4,145.3	-211.4	-1,976.7	-753.0	0.00	0.00	0.00
5,382.7	83.04	135.07	4,155.3	-269.5	-1,918.7	-674.4	0.00	0.00	0.00
5,400.0	84.60	135.02	4,157.2	-281.7	-1,906.5	-657.9	9.00	9.00	-0.25
5,465.1	90.46	134.86	4,160.0	-327.6	-1,860.5	-595.6	9.00	8.99	-0.25
5,500.0	90.46	134.86	4,159.7	-352.2	-1,835.8	-562.2	0.00	0.00	0.00
5,600.0	90.46	134.86	4,158.9	-422.7	-1,764.9	-466.5	0.00	0.00	0.00
5,700.0	90.46	134.86	4,158.1	-493.3	-1,694.0	-370.7	0.00	0.00	0.00
5,800.0	90.46	134.86	4,157.3	-563.8	-1,623.1	-275.0	0.00	0.00	0.00
5,900.0	90.46	134.86	4,156.5	-634.3	-1,552.2	-179.2	0.00	0.00	0.00
6,000.0	90.46	134.86	4,155.7	-704.9	-1,481.4	-83.5	0.00	0.00	0.00
6,100.0	90.46	134.86	4,154.9	-775.4	-1,410.5	12.2	0.00	0.00	0.00
6,200.0	90.46	134.86	4,154.1	-845.9	-1,339.6	108.0	0.00	0.00	0.00
6,300.0	90.46	134.86	4,153.3	-916.5	-1,268.7	203.7	0.00	0.00	0.00
6,400.0	90.46	134.86	4,152.5	-987.0	-1,197.8	299.5	0.00	0.00	0.00
6,500.0	90.46	134.86	4,151.7	-1,057.5	-1,126.9	395.2	0.00	0.00	0.00
6,600.0	90.46	134.86	4,150.9	-1,128.0	-1,056.1	490.9	0.00	0.00	0.00
6,700.0	90.46	134.86	4,150.1	-1,198.6	-985.2	586.7	0.00	0.00	0.00
6,800.0	90.46	134.86	4,149.3	-1,269.1	-914.3	682.4	0.00	0.00	0.00



# Planning Report

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<b>Well:</b>	496H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2 - Final		

## 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)
6,900.0	90.46	134.86	4,148.4	-1,339.6	-843.4	778.2	0.00	0.00	0.00
7,000.0	90.46	134.86	4,147.6	-1,410.2	-772.5	873.9	0.00	0.00	0.00
7,100.0	90.46	134.86	4,146.8	-1,480.7	-701.6	969.6	0.00	0.00	0.00
7,200.0	90.46	134.86	4,146.0	-1,551.2	-630.8	1,065.4	0.00	0.00	0.00
7,300.0	90.46	134.86	4,145.2	-1,621.8	-559.9	1,161.1	0.00	0.00	0.00
7,400.0	90.46	134.86	4,144.4	-1,692.3	-489.0	1,256.9	0.00	0.00	0.00
7,500.0	90.46	134.86	4,143.6	-1,762.8	-418.1	1,352.6	0.00	0.00	0.00
7,600.0	90.46	134.86	4,142.8	-1,833.4	-347.2	1,448.3	0.00	0.00	0.00
7,700.0	90.46	134.86	4,142.0	-1,903.9	-276.3	1,544.1	0.00	0.00	0.00
7,800.0	90.46	134.86	4,141.2	-1,974.4	-205.4	1,639.8	0.00	0.00	0.00
7,900.0	90.46	134.86	4,140.4	-2,045.0	-134.6	1,735.5	0.00	0.00	0.00
8,000.0	90.46	134.86	4,139.6	-2,115.5	-63.7	1,831.3	0.00	0.00	0.00
8,100.0	90.46	134.86	4,138.8	-2,186.0	7.2	1,927.0	0.00	0.00	0.00
8,200.0	90.46	134.86	4,138.0	-2,256.6	78.1	2,022.8	0.00	0.00	0.00
8,300.0	90.46	134.86	4,137.2	-2,327.1	149.0	2,118.5	0.00	0.00	0.00
8,400.0	90.46	134.86	4,136.4	-2,397.6	219.9	2,214.2	0.00	0.00	0.00
8,500.0	90.46	134.86	4,135.6	-2,468.2	290.7	2,310.0	0.00	0.00	0.00
8,600.0	90.46	134.86	4,134.8	-2,538.7	361.6	2,405.7	0.00	0.00	0.00
8,700.0	90.46	134.86	4,134.0	-2,609.2	432.5	2,501.5	0.00	0.00	0.00
8,800.0	90.46	134.86	4,133.2	-2,679.8	503.4	2,597.2	0.00	0.00	0.00
8,900.0	90.46	134.86	4,132.3	-2,750.3	574.3	2,692.9	0.00	0.00	0.00
9,000.0	90.46	134.86	4,131.5	-2,820.8	645.2	2,788.7	0.00	0.00	0.00
9,100.0	90.46	134.86	4,130.7	-2,891.4	716.0	2,884.4	0.00	0.00	0.00
9,200.0	90.46	134.86	4,129.9	-2,961.9	786.9	2,980.2	0.00	0.00	0.00
9,300.0	90.46	134.86	4,129.1	-3,032.4	857.8	3,075.9	0.00	0.00	0.00
9,400.0	90.46	134.86	4,128.3	-3,102.9	928.7	3,171.6	0.00	0.00	0.00
9,500.0	90.46	134.86	4,127.5	-3,173.5	999.6	3,267.4	0.00	0.00	0.00
9,600.0	90.46	134.86	4,126.7	-3,244.0	1,070.5	3,363.1	0.00	0.00	0.00
9,700.0	90.46	134.86	4,125.9	-3,314.5	1,141.4	3,458.9	0.00	0.00	0.00
9,800.0	90.46	134.86	4,125.1	-3,385.1	1,212.2	3,554.6	0.00	0.00	0.00
9,900.0	90.46	134.86	4,124.3	-3,455.6	1,283.1	3,650.3	0.00	0.00	0.00
10,000.0	90.46	134.86	4,123.5	-3,526.1	1,354.0	3,746.1	0.00	0.00	0.00
10,100.0	90.46	134.86	4,122.7	-3,596.7	1,424.9	3,841.8	0.00	0.00	0.00
10,200.0	90.46	134.86	4,121.9	-3,667.2	1,495.8	3,937.6	0.00	0.00	0.00
10,300.0	90.46	134.86	4,121.1	-3,737.7	1,566.7	4,033.3	0.00	0.00	0.00
10,400.0	90.46	134.86	4,120.3	-3,808.3	1,637.5	4,129.0	0.00	0.00	0.00
10,500.0	90.46	134.86	4,119.5	-3,878.8	1,708.4	4,224.8	0.00	0.00	0.00
10,600.0	90.46	134.86	4,118.7	-3,949.3	1,779.3	4,320.5	0.00	0.00	0.00
10,700.0	90.46	134.86	4,117.9	-4,019.9	1,850.2	4,416.2	0.00	0.00	0.00
10,800.0	90.46	134.86	4,117.0	-4,090.4	1,921.1	4,512.0	0.00	0.00	0.00
10,900.0	90.46	134.86	4,116.2	-4,160.9	1,992.0	4,607.7	0.00	0.00	0.00
11,000.0	90.46	134.86	4,115.4	-4,231.5	2,062.8	4,703.5	0.00	0.00	0.00
11,100.0	90.46	134.86	4,114.6	-4,302.0	2,133.7	4,799.2	0.00	0.00	0.00
11,200.0	90.46	134.86	4,113.8	-4,372.5	2,204.6	4,894.9	0.00	0.00	0.00
11,300.0	90.46	134.86	4,113.0	-4,443.1	2,275.5	4,990.7	0.00	0.00	0.00
11,400.0	90.46	134.86	4,112.2	-4,513.6	2,346.4	5,086.4	0.00	0.00	0.00
11,500.0	90.46	134.86	4,111.4	-4,584.1	2,417.3	5,182.2	0.00	0.00	0.00
11,600.0	90.46	134.86	4,110.6	-4,654.7	2,488.2	5,277.9	0.00	0.00	0.00
11,675.5	90.46	134.86	4,110.0	-4,707.9	2,541.7	5,350.2	0.00	0.00	0.00



## Planning Report

<b>Database:</b>	EDM	<b>Local Co-ordinate Reference:</b>	Well 496H
<b>Company:</b>	Enduring Resources LLC	<b>TVD Reference:</b>	KB @ 6705.0usft (Original Well Elev)
<b>Project:</b>	San Juan Basin - Rodeo Unit	<b>MD Reference:</b>	KB @ 6705.0usft (Original Well Elev)
<b>Site:</b>	492H Pad	<b>North Reference:</b>	Grid
<b>Well:</b>	496H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #2 - Final		

### Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
496H KOP2 - plan hits target center - Point	0.00	0.00	3,200.0	400.0	-1,700.0	1,888,877.93	2,752,291.86	36.191115°N	107.734374°W
496H BHL - plan hits target center - Point	0.00	0.00	4,110.0	-4,707.9	2,541.7	1,883,770.01	2,756,533.54	36.177070°N	107.720019°W
496H POE 2 - plan hits target center - Point	0.00	0.00	4,110.0	-102.6	-2,085.5	1,888,375.29	2,751,906.36	36.189735°N	107.735682°W
496H LP 2 - plan hits target center - Point	0.00	0.00	4,160.0	-327.6	-1,860.5	1,888,150.33	2,752,131.36	36.189116°N	107.734921°W

### Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
350.0	350.0	13 3/8"	13-3/8	17-1/2
4,513.0	3,705.0	9 5/8"	9-5/8	12-1/4

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
261.0	261.0	Ojo Alamo		0.00	
382.0	382.0	Kirtland		0.00	
587.1	587.0	Fruitland		0.00	
953.8	942.0	Pictured Cliffs		0.00	
1,245.5	1,194.0	Lewis		0.00	
1,412.0	1,327.0	Chacra		0.00	
2,759.6	2,403.0	Cliff House		0.00	
2,767.1	2,409.0	Menefee		0.00	
4,065.8	3,389.0	Point Lookout		0.00	
4,386.6	3,605.0	Mancos		0.00	
4,677.3	3,835.0	Gallup (MNCS_A)		0.00	
4,813.5	3,935.0	MNCS_B		0.00	
5,022.2	4,060.0	MNCS_Cms		0.00	

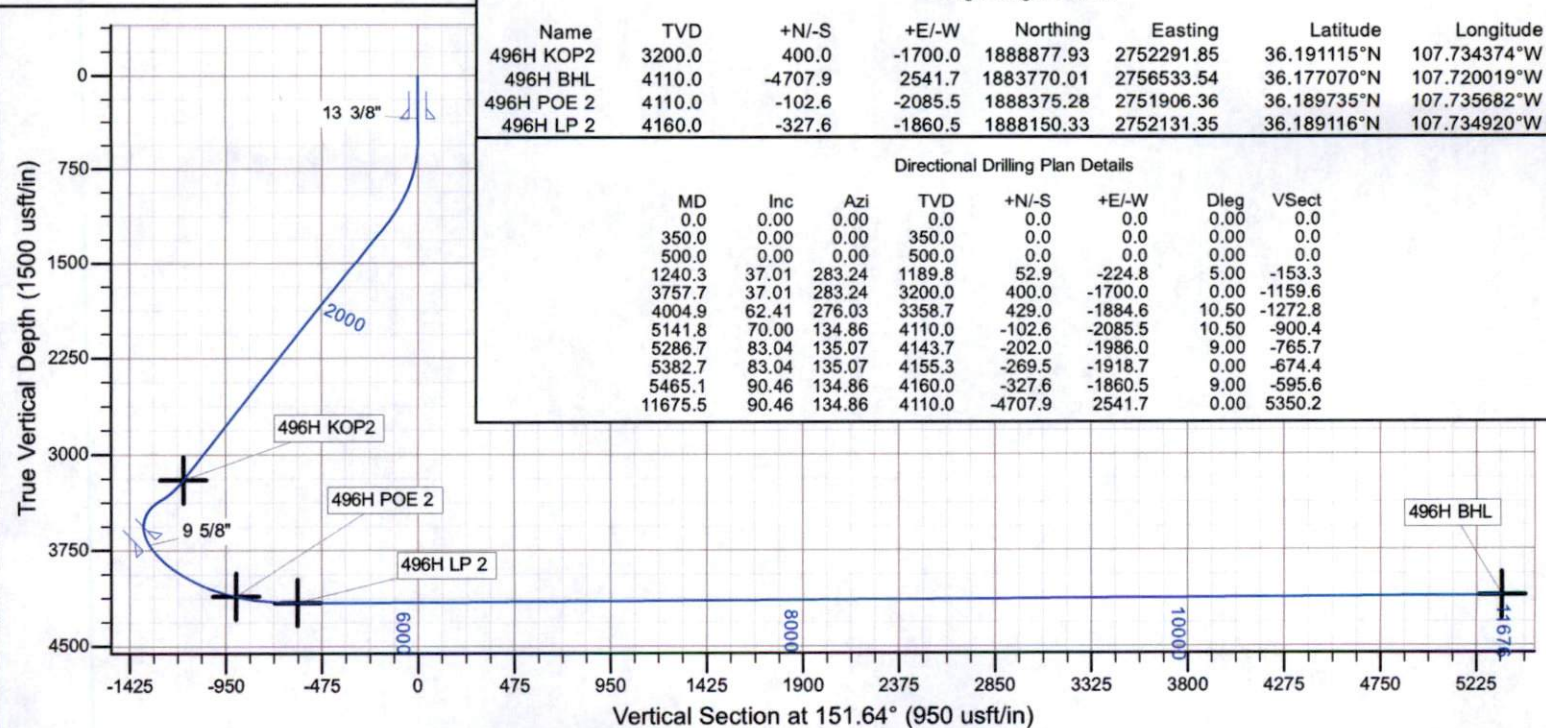
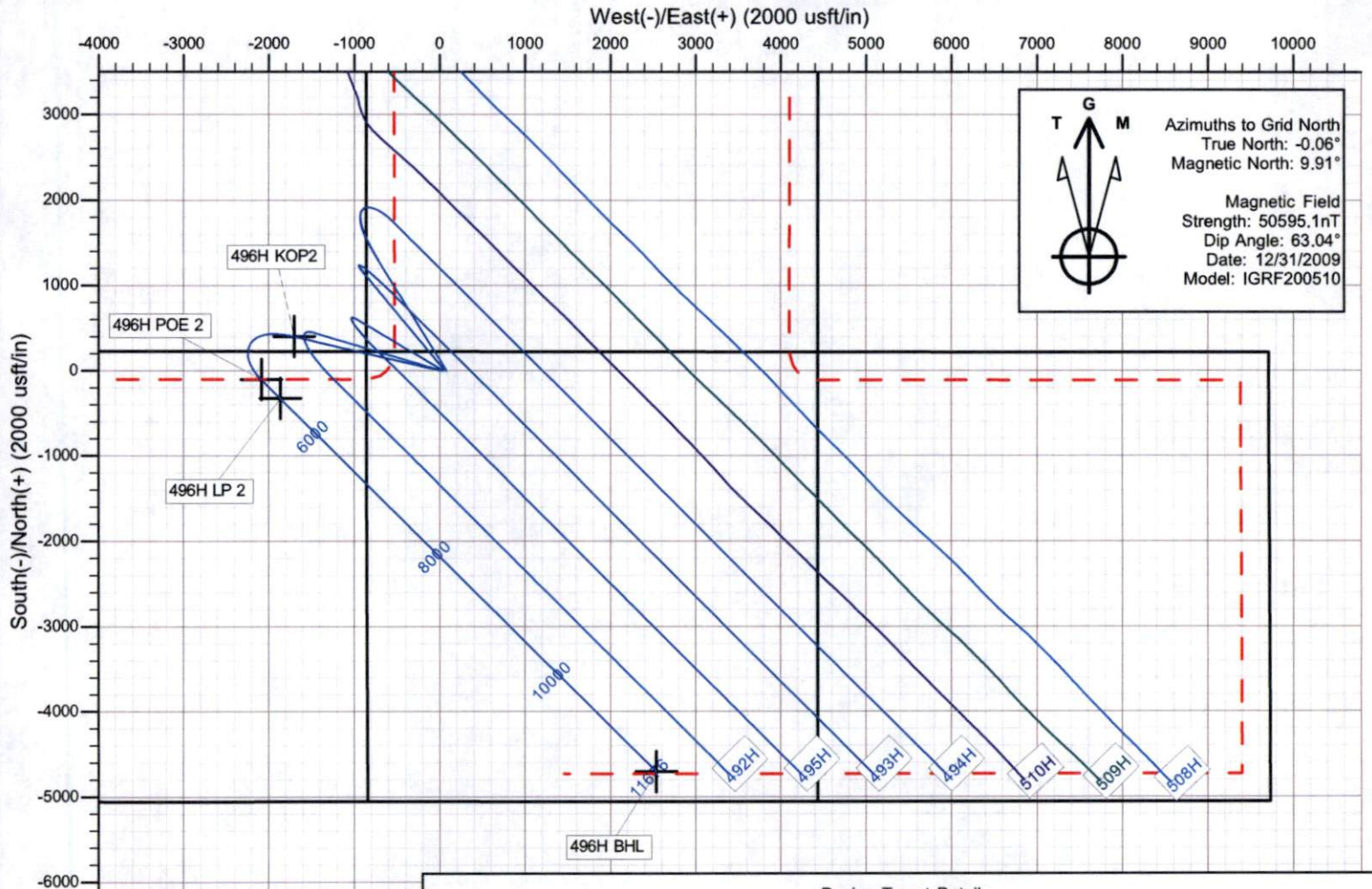


Enduring Resources LLC

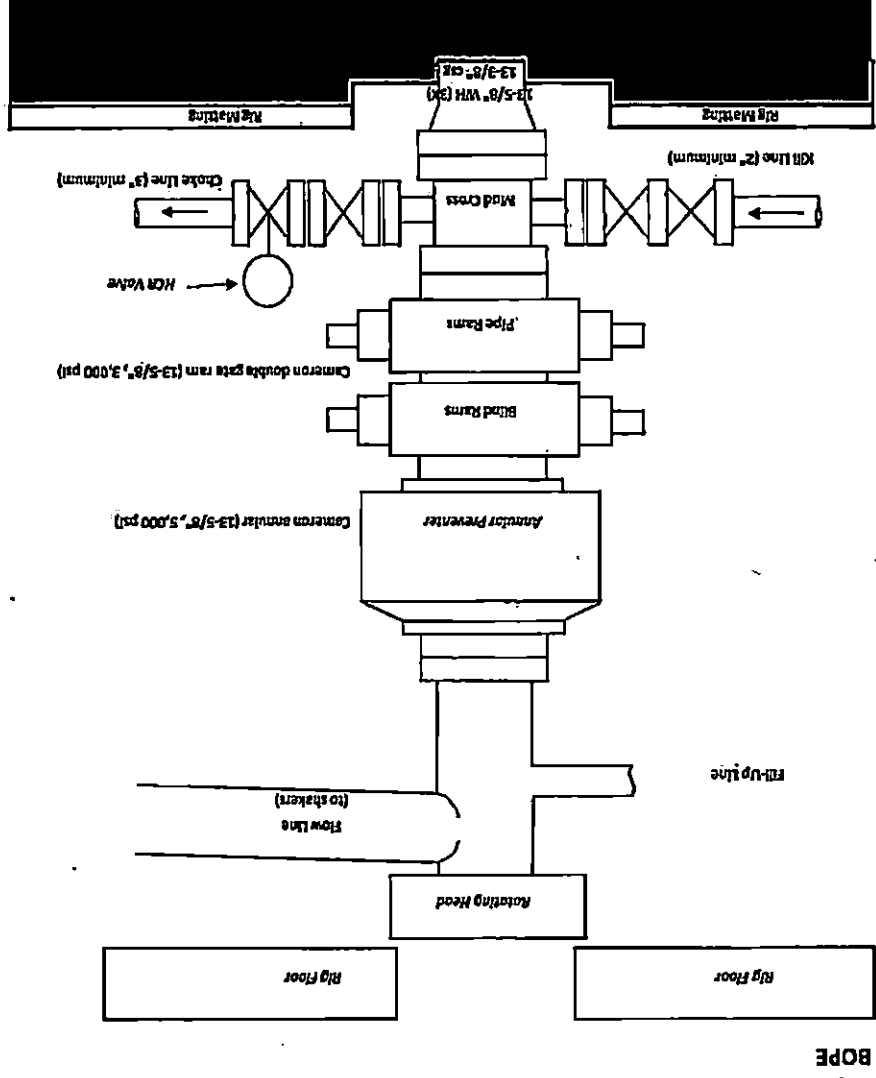
Directional Drilling Plan  
Plan View & Section View

Rodeo Unit 496H

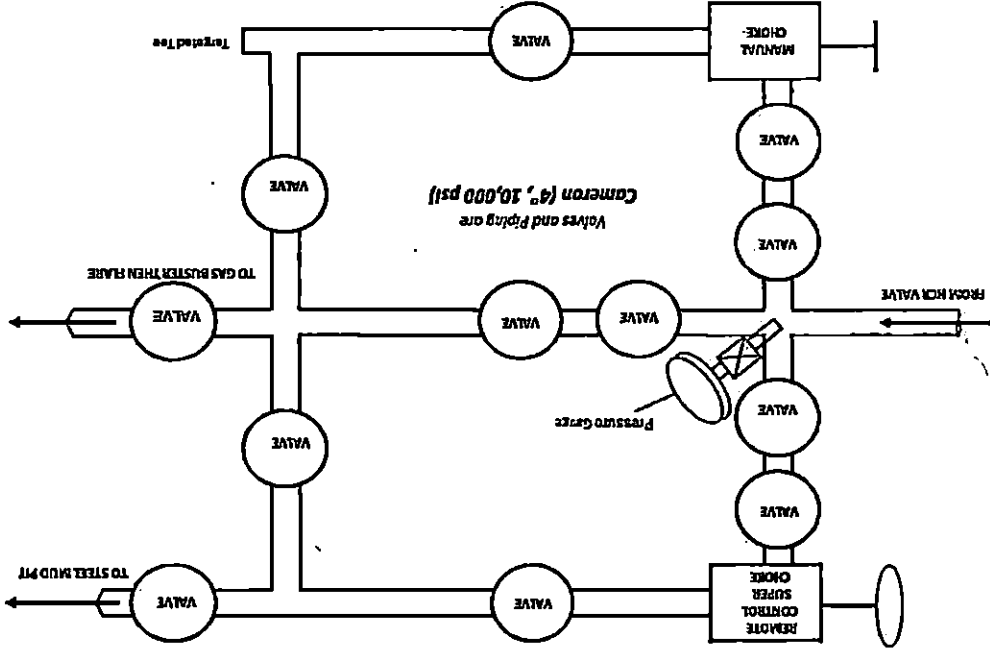
San Juan County, New Mexico  
T23N-R08W-Sec.31-Lot D  
Surface Latitude: 36.190011°N  
Surface Longitude: 107.728614°W  
Ground Level: 6680.0  
Reference Elevation: KB @ 6705.0usft (Original Well Elev)



BOPE & CHOKE MANIFOLD DIAGRAMS



CHOKE MANIFOLD



**Directions from the Intersection of US Hwy 550 & US Hwy 64**

**in Bloomfield, NM to Enduring Resources, LLC Rodeo Unit #496H**

**225' FNL & 855' FWL, Section 31, T23N, R8W, N.M.P.M., San Juan County, NM**

**Latitude: 36.190011°N Longitude: 107.728614°W Datum: NAD1983**

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 38.7 miles to Mile Marker 112.7;

Go Right (Southerly) on County Road #7900 for 2.3 miles to fork in road;

Go Right (Westerly) on County Road #7940 for 2.6 miles to existing access road on right-hand side which continues for 1071.2' to Enduring Rodeo Unit #496H existing location.