

State of New Mexico
Energy, Minerals and Natural Resources Department

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: 1/21/2020

Operator: Enduring **Well Name and Number:** S Escavada Unit 371H

API#: 30-043-21346, **Section:** 29, **Township:** 22 N, **Range:** 6 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 freshwater 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

Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM119281
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☒ Multiple Zone		7. If Unit or CA Agreement, Name and No. NMNM 130812A
2. Name of Operator ENDURING RESOURCES LLC		8. Lease Name and Well No. S ESCAVADA UNIT
3a. Address 1050 17TH ST STE 2500, DENVER, CO 80265	3b. Phone No. (include area code) (505) 386-8205	9. API Well No. 30-043-21346
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NENW / 164 FNL / 2250 FWL / LAT 36.116191 / LONG -107.49345 At proposed prod. zone NESW / 2239 FSL / 2261 FWL / LAT 36.138095 / LONG -107.51069		10. Field and Pool, or Exploratory RUSTY GALLUP/RUSTY GALLUP OIL P
14. Distance in miles and direction from nearest town or post office* 54.4 miles		11. Sec., T. R. M. or Blk. and Survey or Area SEC 29/T22N/R6W/NMP
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 20 feet	16. No of acres in lease 640	12. County or Parish SANDOVAL
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 160 feet	19. Proposed Depth 5206 feet / 15895 feet	13. State NM
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7028 feet	22. Approximate date work will start* 05/01/2020	17. Spacing Unit dedicated to this well 480.0
24. Attachments		20. BLM/BIA Bond No. in file FED: NMB001492
23. Estimated duration 30 days		

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) Lacey Granillo / Ph: (505) 386-8205	Date 01/21/2020
Title Permitting Specialist		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Richard Fields / Ph: (505) 564-7612	Date 03/26/2020
Title Field Manager		
Office Farmington Field Office		

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



Additional Operator Remarks

Location of Well

0. SHL: NENW / 164 FNL / 2250 FWL / TWSP: 22N / RANGE: 6W / SECTION: 29 / LAT: 36.116191 / LONG: -107.49345 (TVD: 0 feet, MD: 0 feet)

PPP: SESE / 973 FSL / 1241 FEL / TWSP: 22N / RANGE: 6W / SECTION: 18 / LAT: 36.119193 / LONG: -107.487415 (TVD: 4520 feet, MD: 5118 feet)

PPP: NENE / 973 FSL / 1241 FEL / TWSP: 22N / RANGE: 6W / SECTION: 19 / LAT: 36.119193 / LONG: -107.487415 (TVD: 4520 feet, MD: 5118 feet)

PPP: SESE / 973 FSL / 1241 FEL / TWSP: 22N / RANGE: 6W / SECTION: 20 / LAT: 36.119193 / LONG: -107.487415 (TVD: 4520 feet, MD: 5118 feet)

BHL: NESW / 2239 FSL / 2261 FWL / TWSP: 22N / RANGE: 6W / SECTION: 18 / LAT: 36.138095 / LONG: -107.51069 (TVD: 5206 feet, MD: 15895 feet)

BLM Point of Contact

Name: Gary Smith

Title: Natural Resource Specialist

Phone: (505) 564-7701

Email: gsmith@blm.gov

CONFIDENTIAL

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) 748-1283 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 30-043-21346		*Pool Code 52860	*Pool Name RUSTY GALLUP OIL POOL
*Property Code 322151	*Property Name S ESCAVADA UNIT		*Well Number 371H
*GRID No. 372286	*Operator Name ENDURING RESOURCES, LLC		*Elevation 7028'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	29	22N	6W		164	NORTH	2250	WEST	SANDOVAL

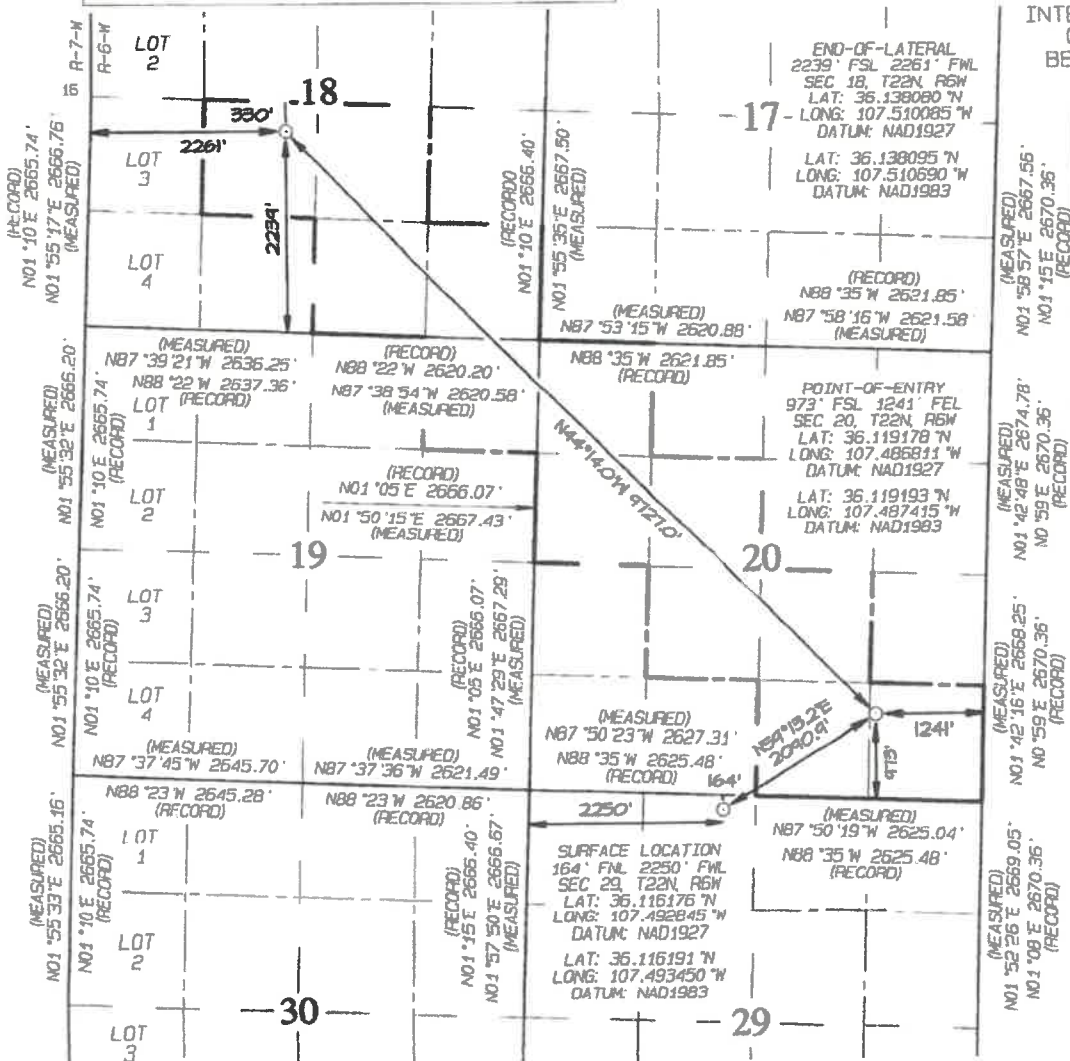
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	18	22N	6W		2239	SOUTH	2261	WEST	SANDOVAL

¹² Dedicated Acres
480.00
NE/4 SW/4, W/2 SE/4
SE/4 SE/4 - Section 18
NE/4 NE/4 - Section 19
W/2 NW/4, SE/4 NW/4, NE/4 SW/4
W/2 SE/4, SE/4 SE/4 - Section 20

¹³ Joint or Infill
¹⁴ Consolidation Code
¹⁵ Order No.
R-14347

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



¹⁷ 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 compulsory pooling order heretofore entered by the division.

Signature: *[Signature]* Date: *1/10/20*

Printed Name: *Jason C. Edwards*

E-mail Address:

¹⁸ 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: JANUARY 7, 2020
Survey Date: DECEMBER 12, 2018

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-H formation*

WELL INFORMATION:

Name: S ESCAVADA UNIT 371H

API Number: not yet assigned

AFE Number: not yet assigned

ER Well Number: not yet assigned

State: New Mexico

County: Sandoval

Surface Elevation: 7,028 ft ASL (GL)

7,056 ft ASL (KB)

Surface Location: 29-22N-06W Sec-Twn-Rng

164 ft FNL

2,250 ft FWL

36.116191 ° N latitude

107.49345 ° W longitude

(NAD 83)

BH Location: 18-22N-06W Sec-Twn-Rng

2,239 ft FSL

2,261 ft FWL

36.138095 ° N latitude

107.51069 ° 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 54.4 miles to MM 97.5; Right (South) on Indian Service Route #46 for 3.5 miles to fork; Right (South) on ISR #36 for 1.1 miles to fork; Right (South) on ISR #46 for 4.9 miles to fork; Right (West) on ISR #46 for 0.3 miles; Right (North) on access road into S Escavada Unit 368H Pad (Wells: 368H, 370H, 371H).

GEOLOGIC AND RESERVOIR INFORMATION:

<i>Prognosis:</i>	Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
	Ojo Alamo	6,100	956	956	W	normal
	Kirtland	6,010	1,046	1,046	W	normal
	Fruitland	5,830	1,226	1,227	G, W	sub
	Pictured Cliffs	5,550	1,506	1,517	G, W	sub
	Lewis	5,405	1,651	1,676	G, W	normal
	Chacra	5,163	1,893	1,956	G, W	normal
	Cliff House	4,090	2,966	3,207	G, W	sub
	Menefee	4,053	3,003	3,251	G, W	normal
	Point Lookout	3,180	3,876	4,269	G, W	normal
	Mancos	3,035	4,021	4,438	O,G	sub (~0.38)
	Gallup (MNCS_A)	2,665	4,391	4,869	O,G	sub (~0.38)
	MNCS_B	2,555	4,501	4,998	O,G	sub (~0.38)
	MNCS_C	2,470	4,586	5,096	O,G	sub (~0.38)
	MNCS_Cms	2,433	4,623	5,139	O,G	sub (~0.38)
	MNCS_D	2,300	4,756	5,295	O,G	sub (~0.38)
	MNCS_E	2,155	4,901	5,482	O,G	sub (~0.38)
	MNCS_F	2,100	4,956	5,565	O,G	sub (~0.38)
	MNCS_G	2,035	5,021	5,681	O,G	sub (~0.38)
	MNCS_H	1,970	5,086	5,850	O,G	sub (~0.38)
	P.O.E. TARGET	1,933	5,123	6,168	O,G	sub (~0.38)
	PROJECTED TD	1,850	5,206	15,895	O,G	sub (~0.38)

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: 2,240 psi

Maximum anticipated surface pressure, assuming partially evacuated hole: 1,100 psi

Temperature: Maximum anticipated BHT is 130° F or less

H₂S INFORMATION:

H₂S 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; remote geo-steering from drill out of 9-5/8" casing to TD; gas detection from drillout of 13-3/8" casing to TD.

MWD / LWD: Gamma Ray from drillout of 13-3/8" casing to TD

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: Ensign

Rig No.: 773

Draw Works: Pacific Rim 1500AC

Mast: ADR 1500S Cantilever Triple (142 ft, 800,000 lbs, 12 lines)

Top Drive: Tesco 500-ESI-1350 (500 ton, 1,350 hp)

Prime Movers: 3 - CAT 3512 (1,475 hp)

Pumps: 3 - Gardner-Denver PZ11 (7,500 psi)

BOPE 1: Cameron single gate ram (pipe) & double gate ram (pipe & blind) (13-5/8", 10,000 psi)

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

Choke 3", 10,000 psi

KB-GL (ft): 28

NOTE: A different rig may be used to drill the well depending on rig availability

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	909,000
Loading					153	672	116,634	116,634
Min. S.F.					7.39	4.06	7.31	7.79

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 Summary: 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	3,367 ft (MD)	Hole Section Length:	3,017 ft
350 ft (TVD)	to	3,103 ft (TVD)	Casing Required:	3,367 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (KCI)	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 Survey with inclination and azimuth survey (every 100' at a 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	453,000
	Loading					1,355	1,277	205,703	205,703
Min. S.F.					1.49	2.76	2.74	2.20	

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): Minumum: 3,400 Optimum: 4,530 Maximum: 5,660

Casing Summary: 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	70%	0	783
Tail	Class G	15.8	1.148	4.98	20%	2,867	164

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.

3,367 ft (MD)	to	15,895 ft (MD)	Hole Section Length:	12,528 ft
3,103 ft (TVD)	to	5,206 ft (TVD)	Casing Required:	15,895 ft

Estimated KOP:	5,118 ft (MD)	4,520 ft (TVD)
Estimated Landing Point (P.O.E.):	6,168 ft (MD)	5,123 ft (TVD)
Estimated Lateral Length:	9,727 ft (MD)	

Fluid:	Type	MW (ppg)	FL (mL/30')	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (FW)	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 with GR, inclination, and azimuth (survey every joint from KOP to Landing Point and survey every 100' minimum before KOP and after Landing Point)

Logging: GR MWD 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					2,572	8,987	333,171	333,171
Min. S.F.					2.90	1.18	1.64	1.34

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: 3,470 Optimum: 4,620 Maximum: 5,780

Casing Summary: Float shoe, 1 jt casing, float collar, 1 jt 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', floatation sub, 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

Curve: 1 centralizer per joint from landing point to KOP

KOP to surf: 1 centralizer per 2 joints

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	9.981	50%	0	984
Tail	G:POZ blend	13.3	1.360	5.999	10%	4,869	2,043

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 outside the applicable unit setback to maximize the length of the completed interval and to maximize resource recovery. If the well is drilled outside the setback, the toe initiation sleeve(s) 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) . S Escavada Unit Order Number is R-14347.

FINISH WELL: ND BOP, cap well, RDMO.

COMPLETION AND PRODUCTION PLAN:

Frac: 55 plug-and-perf stages with 330,000 bbls slickwater fluid and 15,000,000 lbs of proppant (estimated)

Flowback: Flow back through production tubing as pressures allow (ESP may be used for load recovery assistance)

Production: Produce through production tubing via gas-lift into permanent production and storage facilities

ESTIMATED START DATES:

Drilling: TBD

Completion: TBD

Production: TBD

Prepared by: Alec Bridge 12/31/2019



Enduring Resources LLC

**San Juan Basin - S Escavada Unit & Terra Wash CA
368H Pad
371H**

Wellbore #1

Plan: Design #2

Standard Planning Report

30 December, 2019



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 371H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 7056.0usft (Original Well Elev)
Project:	San Juan Basin - S Escavada Unit & Terra Wash CA	MD Reference:	KB @ 7056.0usft (Original Well Elev)
Site:	368H Pad	North Reference:	Grid
Well:	371H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Project	San Juan Basin - S Escavada Unit & Terra Wash CA		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	368H Pad, Sandoval County, New Mexico		
Site Position:		Northing:	1,863,914.26 usft
From:	Lat/Long	Easting:	1,273,097.78 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	36.116207°N
		Longitude:	107.493652°W
		Grid Convergence:	-0.73 °

Well	371H		
Well Position	+N/-S	-6.6 usft	Northing: 1,863,907.67 usft
	+E/-W	59.6 usft	Easting: 1,273,157.37 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Latitude: 36.116191°N
			Longitude: 107.493450°W
			Ground Level: 7,028.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	12/31/2009	9.87
			Dip Angle
			(°)
			63.02
			Field Strength
			(nT)
			50,581.64393735

Design	Design #2		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			328.18

Plan Survey Tool Program	Date	12/30/2019		
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks
(usft)	(usft)			
1	0.0	15,895.0	Design #2 (Wellbore #1)	MWD
				OWSG MWD - Standard

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,774.2	30.97	80.79	1,737.0	32.7	201.5	4.00	4.00	0.00	80.79	
5,019.8	30.97	80.79	4,520.0	300.0	1,850.0	0.00	0.00	0.00	0.00	371H KOP2
5,926.1	80.77	337.84	5,102.3	870.1	1,927.6	9.78	5.50	-11.36	-105.80	
6,167.9	89.51	315.77	5,123.0	1,070.1	1,796.4	9.78	3.61	-9.13	-69.55	371H POE2
15,895.0	89.51	315.77	5,206.0	8,039.5	-4,988.7	0.00	0.00	0.00	0.00	371H BHL



Planning Report

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Site:	368H Pad	North Reference:	Grid
Well:	371H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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	
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	
13 3/8"										
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	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	
956.0	0.00	0.00	956.0	0.0	0.0	0.0	0.00	0.00	0.00	
Ojo Alamo										
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
1,046.0	1.84	80.79	1,046.0	0.1	0.7	-0.3	4.00	4.00	0.00	
Kirtland										
1,100.0	4.00	80.79	1,099.9	0.6	3.4	-1.3	4.00	4.00	0.00	
1,200.0	8.00	80.79	1,199.4	2.2	13.8	-5.4	4.00	4.00	0.00	
1,226.9	9.08	80.79	1,226.0	2.9	17.7	-6.9	4.00	4.00	0.00	
Fruitland										
1,300.0	12.00	80.79	1,297.8	5.0	30.9	-12.0	4.00	4.00	0.00	
1,400.0	16.00	80.79	1,394.8	8.9	54.8	-21.3	4.00	4.00	0.00	
1,500.0	20.00	80.79	1,489.9	13.8	85.3	-33.2	4.00	4.00	0.00	
1,517.2	20.69	80.79	1,506.0	14.8	91.2	-35.5	4.00	4.00	0.00	
Pictured Cliffs										
1,600.0	24.00	80.79	1,582.6	19.8	122.2	-47.6	4.00	4.00	0.00	
1,675.8	27.03	80.79	1,651.0	25.0	154.5	-60.2	4.00	4.00	0.00	
Lewis										
1,700.0	28.00	80.79	1,672.5	26.8	165.5	-64.5	4.00	4.00	0.00	
1,774.2	30.97	80.79	1,737.0	32.7	201.5	-78.5	4.00	4.00	0.00	
1,800.0	30.97	80.79	1,759.2	34.8	214.7	-83.6	0.00	0.00	0.00	
1,900.0	30.97	80.79	1,844.9	43.0	265.4	-103.4	0.00	0.00	0.00	
1,956.1	30.97	80.79	1,893.0	47.7	293.9	-114.5	0.00	0.00	0.00	
Chacra										
2,000.0	30.97	80.79	1,930.7	51.3	316.2	-123.2	0.00	0.00	0.00	
2,100.0	30.97	80.79	2,016.4	59.5	367.0	-142.9	0.00	0.00	0.00	
2,200.0	30.97	80.79	2,102.2	67.8	417.8	-162.7	0.00	0.00	0.00	
2,300.0	30.97	80.79	2,187.9	76.0	468.6	-182.5	0.00	0.00	0.00	
2,400.0	30.97	80.79	2,273.7	84.2	519.4	-202.3	0.00	0.00	0.00	
2,500.0	30.97	80.79	2,359.4	92.5	570.2	-222.1	0.00	0.00	0.00	
2,600.0	30.97	80.79	2,445.1	100.7	621.0	-241.9	0.00	0.00	0.00	
2,700.0	30.97	80.79	2,530.9	108.9	671.8	-261.6	0.00	0.00	0.00	
2,800.0	30.97	80.79	2,616.6	117.2	722.6	-281.4	0.00	0.00	0.00	
2,900.0	30.97	80.79	2,702.4	125.4	773.4	-301.2	0.00	0.00	0.00	
3,000.0	30.97	80.79	2,788.1	133.6	824.1	-321.0	0.00	0.00	0.00	
3,100.0	30.97	80.79	2,873.9	141.9	874.9	-340.8	0.00	0.00	0.00	
3,200.0	30.97	80.79	2,959.6	150.1	925.7	-360.5	0.00	0.00	0.00	
3,207.4	30.97	80.79	2,966.0	150.7	929.5	-362.0	0.00	0.00	0.00	
Cliff House										
3,250.6	30.97	80.79	3,003.0	154.3	951.4	-370.6	0.00	0.00	0.00	
Menefee										



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Project:	San Juan Basin - S Escavada Unit & Terra Wash CA	MD Reference:	KB @ 7056.0usft (Original Well Elev)
Site:	368H Pad	North Reference:	Grid
Well:	371H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)	
3,300.0	30.97	80.79	3,045.4	158.4	976.5	-380.3	0.00	0.00	0.00	
3,367.2	30.97	80.79	3,103.0	163.9	1,010.7	-393.6	0.00	0.00	0.00	
9 5/8"										
3,400.0	30.97	80.79	3,131.1	166.6	1,027.3	-400.1	0.00	0.00	0.00	
3,500.0	30.97	80.79	3,216.9	174.8	1,078.1	-419.9	0.00	0.00	0.00	
3,600.0	30.97	80.79	3,302.6	183.1	1,128.9	-439.7	0.00	0.00	0.00	
3,700.0	30.97	80.79	3,388.4	191.3	1,179.7	-459.5	0.00	0.00	0.00	
3,800.0	30.97	80.79	3,474.1	199.5	1,230.5	-479.2	0.00	0.00	0.00	
3,900.0	30.97	80.79	3,559.8	207.8	1,281.3	-499.0	0.00	0.00	0.00	
4,000.0	30.97	80.79	3,645.6	216.0	1,332.1	-518.8	0.00	0.00	0.00	
4,100.0	30.97	80.79	3,731.3	224.2	1,382.8	-538.6	0.00	0.00	0.00	
4,200.0	30.97	80.79	3,817.1	232.5	1,433.6	-558.4	0.00	0.00	0.00	
4,268.7	30.97	80.79	3,876.0	238.1	1,468.5	-572.0	0.00	0.00	0.00	
Point Lookout										
4,300.0	30.97	80.79	3,902.8	240.7	1,484.4	-578.1	0.00	0.00	0.00	
4,400.0	30.97	80.79	3,988.6	249.0	1,535.2	-597.9	0.00	0.00	0.00	
4,437.8	30.97	80.79	4,021.0	252.1	1,554.4	-605.4	0.00	0.00	0.00	
Mancos										
4,500.0	30.97	80.79	4,074.3	257.2	1,586.0	-617.7	0.00	0.00	0.00	
4,600.0	30.97	80.79	4,160.1	265.4	1,636.8	-637.5	0.00	0.00	0.00	
4,700.0	30.97	80.79	4,245.8	273.7	1,687.6	-657.3	0.00	0.00	0.00	
4,800.0	30.97	80.79	4,331.6	281.9	1,738.4	-677.1	0.00	0.00	0.00	
4,869.3	30.97	80.79	4,391.0	287.6	1,773.6	-690.8	0.00	0.00	0.00	
Gallup (MNCS A)										
4,900.0	30.97	80.79	4,417.3	290.1	1,789.2	-696.8	0.00	0.00	0.00	
4,997.6	30.97	80.79	4,501.0	298.2	1,838.7	-716.1	0.00	0.00	0.00	
MNCS_B										
5,000.0	30.97	80.79	4,503.1	298.4	1,840.0	-716.6	0.00	0.00	0.00	
5,019.8	30.97	80.79	4,520.0	300.0	1,850.0	-720.5	0.00	0.00	0.00	
5,096.1	29.73	66.18	4,586.0	310.8	1,886.8	-730.7	9.78	-1.62	-19.13	
MNCS_C										
5,100.0	29.71	65.42	4,589.4	311.6	1,888.5	-731.0	9.78	-0.48	-19.70	
5,138.7	29.76	57.77	4,623.0	320.7	1,905.4	-732.1	9.78	0.14	-19.73	
MNCS_Cms										
5,200.0	30.73	46.02	4,676.0	339.7	1,929.5	-728.7	9.78	1.57	-19.19	
5,294.6	34.09	29.87	4,756.0	379.6	1,960.2	-711.0	9.78	3.56	-17.06	
MNCS_D										
5,300.0	34.34	29.05	4,760.4	382.2	1,961.7	-709.6	9.78	4.64	-15.31	
5,400.0	39.85	15.60	4,840.3	437.9	1,984.1	-674.1	9.78	5.51	-13.45	
5,482.4	45.32	6.83	4,901.0	492.5	1,994.7	-633.3	9.78	6.64	-10.64	
MNCS_E										
5,500.0	46.57	5.18	4,913.3	505.0	1,996.0	-623.3	9.78	7.09	-9.38	
5,565.1	51.37	359.63	4,956.0	554.1	1,997.9	-582.7	9.78	7.37	-8.53	
MNCS_F										
5,600.0	54.04	356.96	4,977.1	581.8	1,997.1	-558.6	9.78	7.65	-7.66	
5,681.0	60.44	351.39	5,021.0	649.5	1,990.1	-497.4	9.78	7.90	-6.87	
MNCS_G										
5,700.0	61.97	350.19	5,030.1	665.9	1,987.4	-482.1	9.78	8.07	-6.31	
5,800.0	70.18	344.38	5,070.7	754.9	1,967.2	-395.8	9.78	8.22	-5.81	
5,850.3	74.39	341.69	5,086.0	800.8	1,953.2	-349.4	9.78	8.35	-5.34	
MNCS_H										
5,900.0	78.57	339.15	5,097.6	846.2	1,937.0	-302.3	9.78	8.42	-5.13	



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Design:	Design #2		

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)	
5,926.1	80.77	337.84	5,102.3	870.1	1,927.6	-277.0	9.78	8.45	-5.00	
6,000.0	83.36	331.03	5,112.5	936.1	1,896.0	-204.3	9.78	3.50	-9.22	
6,100.0	86.99	321.91	5,120.9	1,019.1	1,841.0	-104.8	9.78	3.64	-9.11	
6,167.9	89.51	315.77	5,123.0	1,070.1	1,796.4	-37.9	9.78	3.71	-9.06	
6,200.0	89.51	315.77	5,123.3	1,093.1	1,774.0	-6.5	0.00	0.00	0.00	
6,300.0	89.51	315.77	5,124.1	1,164.8	1,704.2	91.1	0.00	0.00	0.00	
6,400.0	89.51	315.77	5,125.0	1,236.4	1,634.5	188.8	0.00	0.00	0.00	
6,500.0	89.51	315.77	5,125.8	1,308.1	1,564.7	286.4	0.00	0.00	0.00	
6,600.0	89.51	315.77	5,126.7	1,379.7	1,495.0	384.1	0.00	0.00	0.00	
6,700.0	89.51	315.77	5,127.5	1,451.4	1,425.2	481.8	0.00	0.00	0.00	
6,800.0	89.51	315.77	5,128.4	1,523.0	1,355.5	579.4	0.00	0.00	0.00	
6,900.0	89.51	315.77	5,129.2	1,594.7	1,285.7	677.1	0.00	0.00	0.00	
7,000.0	89.51	315.77	5,130.1	1,666.3	1,216.0	774.7	0.00	0.00	0.00	
7,100.0	89.51	315.77	5,131.0	1,738.0	1,146.2	872.4	0.00	0.00	0.00	
7,200.0	89.51	315.77	5,131.8	1,809.6	1,076.4	970.1	0.00	0.00	0.00	
7,300.0	89.51	315.77	5,132.7	1,881.3	1,006.7	1,067.7	0.00	0.00	0.00	
7,400.0	89.51	315.77	5,133.5	1,952.9	936.9	1,165.4	0.00	0.00	0.00	
7,500.0	89.51	315.77	5,134.4	2,024.6	867.2	1,263.0	0.00	0.00	0.00	
7,600.0	89.51	315.77	5,135.2	2,096.2	797.4	1,360.7	0.00	0.00	0.00	
7,700.0	89.51	315.77	5,136.1	2,167.9	727.7	1,458.4	0.00	0.00	0.00	
7,800.0	89.51	315.77	5,136.9	2,239.5	657.9	1,556.0	0.00	0.00	0.00	
7,900.0	89.51	315.77	5,137.8	2,311.1	588.2	1,653.7	0.00	0.00	0.00	
8,000.0	89.51	315.77	5,138.6	2,382.8	518.4	1,751.3	0.00	0.00	0.00	
8,100.0	89.51	315.77	5,139.5	2,454.4	448.7	1,849.0	0.00	0.00	0.00	
8,200.0	89.51	315.77	5,140.3	2,526.1	378.9	1,946.6	0.00	0.00	0.00	
8,300.0	89.51	315.77	5,141.2	2,597.7	309.1	2,044.3	0.00	0.00	0.00	
8,400.0	89.51	315.77	5,142.0	2,669.4	239.4	2,142.0	0.00	0.00	0.00	
8,500.0	89.51	315.77	5,142.9	2,741.0	169.6	2,239.6	0.00	0.00	0.00	
8,600.0	89.51	315.77	5,143.8	2,812.7	99.9	2,337.3	0.00	0.00	0.00	
8,700.0	89.51	315.77	5,144.6	2,884.3	30.1	2,434.9	0.00	0.00	0.00	
8,800.0	89.51	315.77	5,145.5	2,956.0	-39.6	2,532.6	0.00	0.00	0.00	
8,900.0	89.51	315.77	5,146.3	3,027.6	-109.4	2,630.3	0.00	0.00	0.00	
9,000.0	89.51	315.77	5,147.2	3,099.3	-179.1	2,727.9	0.00	0.00	0.00	
9,100.0	89.51	315.77	5,148.0	3,170.9	-248.9	2,825.6	0.00	0.00	0.00	
9,200.0	89.51	315.77	5,148.9	3,242.6	-318.7	2,923.2	0.00	0.00	0.00	
9,300.0	89.51	315.77	5,149.7	3,314.2	-388.4	3,020.9	0.00	0.00	0.00	
9,400.0	89.51	315.77	5,150.6	3,385.9	-458.2	3,118.6	0.00	0.00	0.00	
9,500.0	89.51	315.77	5,151.4	3,457.5	-527.9	3,216.2	0.00	0.00	0.00	
9,600.0	89.51	315.77	5,152.3	3,529.2	-597.7	3,313.9	0.00	0.00	0.00	
9,700.0	89.51	315.77	5,153.1	3,600.8	-667.4	3,411.5	0.00	0.00	0.00	
9,800.0	89.51	315.77	5,154.0	3,672.5	-737.2	3,509.2	0.00	0.00	0.00	
9,900.0	89.51	315.77	5,154.8	3,744.1	-806.9	3,606.9	0.00	0.00	0.00	
10,000.0	89.51	315.77	5,155.7	3,815.8	-876.7	3,704.5	0.00	0.00	0.00	
10,100.0	89.51	315.77	5,156.6	3,887.4	-946.4	3,802.2	0.00	0.00	0.00	
10,200.0	89.51	315.77	5,157.4	3,959.1	-1,016.2	3,899.8	0.00	0.00	0.00	
10,300.0	89.51	315.77	5,158.3	4,030.7	-1,086.0	3,997.5	0.00	0.00	0.00	
10,400.0	89.51	315.77	5,159.1	4,102.4	-1,155.7	4,095.2	0.00	0.00	0.00	
10,500.0	89.51	315.77	5,160.0	4,174.0	-1,225.5	4,192.8	0.00	0.00	0.00	
10,600.0	89.51	315.77	5,160.8	4,245.7	-1,295.2	4,290.5	0.00	0.00	0.00	
10,700.0	89.51	315.77	5,161.7	4,317.3	-1,365.0	4,388.1	0.00	0.00	0.00	
10,800.0	89.51	315.77	5,162.5	4,389.0	-1,434.7	4,485.8	0.00	0.00	0.00	
10,900.0	89.51	315.77	5,163.4	4,460.6	-1,504.5	4,583.4	0.00	0.00	0.00	
11,000.0	89.51	315.77	5,164.2	4,532.3	-1,574.2	4,681.1	0.00	0.00	0.00	



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 371H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 7056.0usft (Original Well Elev)
Project:	San Juan Basin - S Escavada Unit & Terra Wash CA	MD Reference:	KB @ 7056.0usft (Original Well Elev)
Site:	368H Pad	North Reference:	Grid
Well:	371H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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)
11,100.0	89.51	315.77	5,165.1	4,603.9	-1,644.0	4,778.8	0.00	0.00	0.00
11,200.0	89.51	315.77	5,165.9	4,675.6	-1,713.7	4,876.4	0.00	0.00	0.00
11,300.0	89.51	315.77	5,166.8	4,747.2	-1,783.5	4,974.1	0.00	0.00	0.00
11,400.0	89.51	315.77	5,167.6	4,818.9	-1,853.3	5,071.7	0.00	0.00	0.00
11,500.0	89.51	315.77	5,168.5	4,890.5	-1,923.0	5,169.4	0.00	0.00	0.00
11,600.0	89.51	315.77	5,169.4	4,962.2	-1,992.8	5,267.1	0.00	0.00	0.00
11,700.0	89.51	315.77	5,170.2	5,033.8	-2,062.5	5,364.7	0.00	0.00	0.00
11,800.0	89.51	315.77	5,171.1	5,105.5	-2,132.3	5,462.4	0.00	0.00	0.00
11,900.0	89.51	315.77	5,171.9	5,177.1	-2,202.0	5,560.0	0.00	0.00	0.00
12,000.0	89.51	315.77	5,172.8	5,248.7	-2,271.8	5,657.7	0.00	0.00	0.00
12,100.0	89.51	315.77	5,173.6	5,320.4	-2,341.5	5,755.4	0.00	0.00	0.00
12,200.0	89.51	315.77	5,174.5	5,392.0	-2,411.3	5,853.0	0.00	0.00	0.00
12,300.0	89.51	315.77	5,175.3	5,463.7	-2,481.0	5,950.7	0.00	0.00	0.00
12,400.0	89.51	315.77	5,176.2	5,535.3	-2,550.8	6,048.3	0.00	0.00	0.00
12,500.0	89.51	315.77	5,177.0	5,607.0	-2,620.6	6,146.0	0.00	0.00	0.00
12,600.0	89.51	315.77	5,177.9	5,678.6	-2,690.3	6,243.7	0.00	0.00	0.00
12,700.0	89.51	315.77	5,178.7	5,750.3	-2,760.1	6,341.3	0.00	0.00	0.00
12,800.0	89.51	315.77	5,179.6	5,821.9	-2,829.8	6,439.0	0.00	0.00	0.00
12,900.0	89.51	315.77	5,180.4	5,893.6	-2,899.6	6,536.6	0.00	0.00	0.00
13,000.0	89.51	315.77	5,181.3	5,965.2	-2,969.3	6,634.3	0.00	0.00	0.00
13,100.0	89.51	315.77	5,182.2	6,036.9	-3,039.1	6,732.0	0.00	0.00	0.00
13,200.0	89.51	315.77	5,183.0	6,108.5	-3,108.8	6,829.6	0.00	0.00	0.00
13,300.0	89.51	315.77	5,183.9	6,180.2	-3,178.6	6,927.3	0.00	0.00	0.00
13,400.0	89.51	315.77	5,184.7	6,251.8	-3,248.3	7,024.9	0.00	0.00	0.00
13,500.0	89.51	315.77	5,185.6	6,323.5	-3,318.1	7,122.6	0.00	0.00	0.00
13,600.0	89.51	315.77	5,186.4	6,395.1	-3,387.9	7,220.2	0.00	0.00	0.00
13,700.0	89.51	315.77	5,187.3	6,466.8	-3,457.6	7,317.9	0.00	0.00	0.00
13,800.0	89.51	315.77	5,188.1	6,538.4	-3,527.4	7,415.6	0.00	0.00	0.00
13,900.0	89.51	315.77	5,189.0	6,610.1	-3,597.1	7,513.2	0.00	0.00	0.00
14,000.0	89.51	315.77	5,189.8	6,681.7	-3,666.9	7,610.9	0.00	0.00	0.00
14,100.0	89.51	315.77	5,190.7	6,753.4	-3,736.6	7,708.5	0.00	0.00	0.00
14,200.0	89.51	315.77	5,191.5	6,825.0	-3,806.4	7,806.2	0.00	0.00	0.00
14,300.0	89.51	315.77	5,192.4	6,896.7	-3,876.1	7,903.9	0.00	0.00	0.00
14,400.0	89.51	315.77	5,193.2	6,968.3	-3,945.9	8,001.5	0.00	0.00	0.00
14,500.0	89.51	315.77	5,194.1	7,040.0	-4,015.7	8,099.2	0.00	0.00	0.00
14,600.0	89.51	315.77	5,195.0	7,111.6	-4,085.4	8,196.8	0.00	0.00	0.00
14,700.0	89.51	315.77	5,195.8	7,183.3	-4,155.2	8,294.5	0.00	0.00	0.00
14,800.0	89.51	315.77	5,196.7	7,254.9	-4,224.9	8,392.2	0.00	0.00	0.00
14,900.0	89.51	315.77	5,197.5	7,326.6	-4,294.7	8,489.8	0.00	0.00	0.00
15,000.0	89.51	315.77	5,198.4	7,398.2	-4,364.4	8,587.5	0.00	0.00	0.00
15,100.0	89.51	315.77	5,199.2	7,469.9	-4,434.2	8,685.1	0.00	0.00	0.00
15,200.0	89.51	315.77	5,200.1	7,541.5	-4,503.9	8,782.8	0.00	0.00	0.00
15,300.0	89.51	315.77	5,200.9	7,613.2	-4,573.7	8,880.5	0.00	0.00	0.00
15,400.0	89.51	315.77	5,201.8	7,684.8	-4,643.4	8,978.1	0.00	0.00	0.00
15,500.0	89.51	315.77	5,202.6	7,756.5	-4,713.2	9,075.8	0.00	0.00	0.00
15,600.0	89.51	315.77	5,203.5	7,828.1	-4,783.0	9,173.4	0.00	0.00	0.00
15,700.0	89.51	315.77	5,204.3	7,899.8	-4,852.7	9,271.1	0.00	0.00	0.00
15,800.0	89.51	315.77	5,205.2	7,971.4	-4,922.5	9,368.8	0.00	0.00	0.00
15,895.0	89.51	315.77	5,206.0	8,039.5	-4,988.7	9,461.5	0.00	0.00	0.00



Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well 371H
Company:	Enduring Resources LLC	TVD Reference:	KB @ 7056.0usft (Original Well Elev)
Project:	San Juan Basin - S Escavada Unit & Terra Wash CA	MD Reference:	KB @ 7056.0usft (Original Well Elev)
Site:	368H Pad	North Reference:	Grid
Well:	371H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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
371H KOP2 - plan hits target center - Point	0.00	360.00	4,520.0	300.0	1,850.0	1,864,207.67	1,275,007.37	36.117080°N	107.487201°W
371H POE2 - plan hits target center - Point	0.00	360.00	5,123.0	1,070.1	1,796.4	1,864,977.77	1,274,953.77	36.119193°N	107.487416°W
371H BHL - plan hits target center - Point	0.00	0.00	5,206.0	8,039.5	-4,988.7	1,871,947.13	1,268,168.65	36.138095°N	107.510690°W

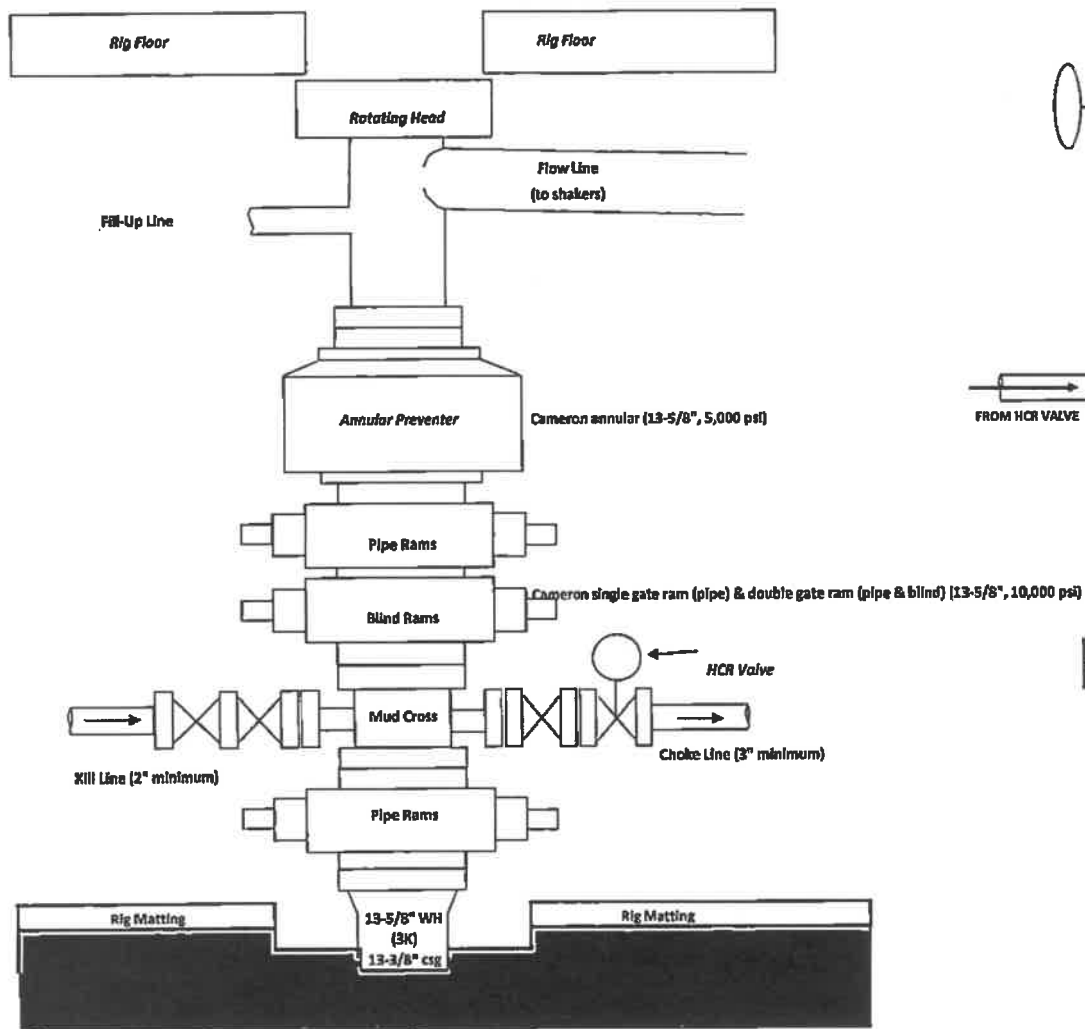
Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
350.0	350.0	13 3/8"	13-3/8	17-1/2	
3,367.2	3,103.0	9 5/8"	9-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
956.0	956.0	Ojo Alamo		0.00		
1,046.0	1,046.0	Kirtland		0.00		
1,226.9	1,226.0	Fruitland		0.00		
1,517.2	1,506.0	Pictured Cliffs		0.00		
1,675.8	1,651.0	Lewis		0.00		
1,956.1	1,893.0	Chacra		0.00		
3,207.4	2,966.0	Cliff House		0.00		
3,250.6	3,003.0	Menefee		0.00		
4,268.7	3,876.0	Point Lookout		0.00		
4,437.8	4,021.0	Mancos		0.00		
4,869.3	4,391.0	Gallup (MNCS A)		0.00		
4,997.6	4,501.0	MNCS_B		0.00		
5,096.1	4,586.0	MNCS_C		0.00		
5,138.7	4,623.0	MNCS_Cms		0.00		
5,294.6	4,756.0	MNCS_D		0.00		
5,482.4	4,901.0	MNCS_E		0.00		
5,565.1	4,956.0	MNCS_F		0.00		
5,681.0	5,021.0	MNCS_G		0.00		
5,850.3	5,086.0	MNCS_H		0.00		

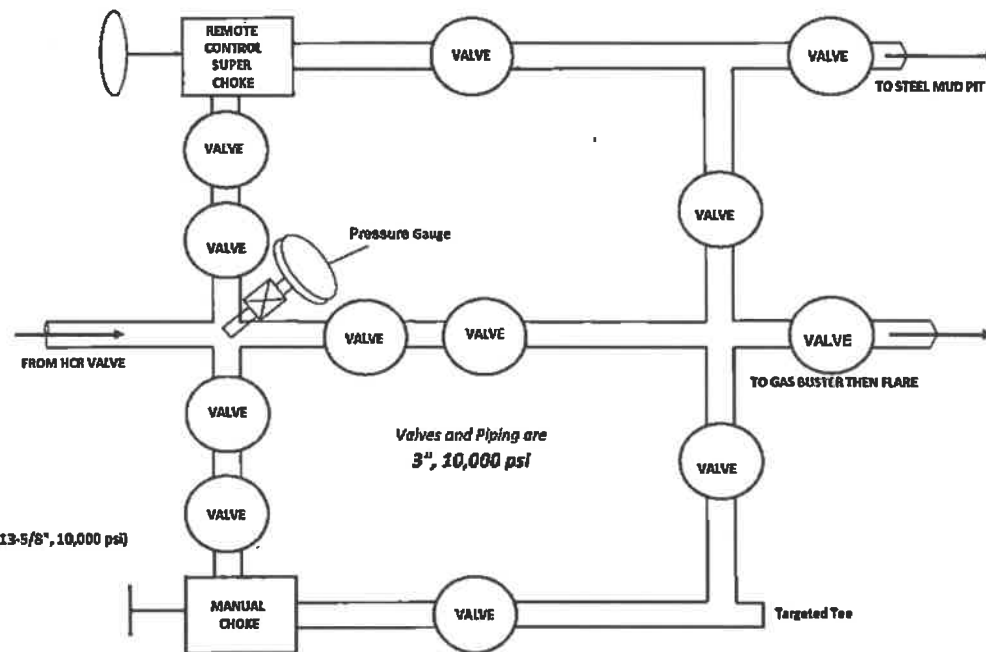
BOPE & CHOKE MANIFOLD DIAGRAMS

NOTE: EXACT BOPE AND CHOKE CONFIGURATION AND COMPONENTS MAY DIFFER FROM WHAT IS DEPICTED IN THE DIGRAMS BELOW DEPENDING ON THE RIG AND ITS ASSOCIATED EQUIPMENT. RAM PREVENTERS, ANNULAR PREVENTERS, AND CHOKE MANIFOLD AND COMPONENTS WILL BE RATED TO 3,000 PSI MINIMUM.

BOPE



CHOKE MANIFOLD



Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Enduring Resources, LLC S Escavada Unit #371H
164' FNL & 2250' FWL, Section 29, T22N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.116191°N Longitude: 107.493450°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 54.4 miles to Mile Marker 97.5;

Go Right (Southerly) exiting US Hwy #550 onto Indian Service Route #46 for 3.5 miles to fork in roadway;

Go Right (Southerly) which is straight remaining on Indian Service Route #46 for 1.1 miles to fork in roadway;

Go Right (Southerly) which is straight remaining on Indian Service Route #46 for 4.9 miles to fork in roadway;

Go Right (Westerly) exiting Indian Service Route #46 for 0.3 miles to begin proposed access on right-hand side of roadway which continues for an additional 135.1' to staked Enduring S Escavada Unit #371H location.