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

5. Lease Serial No.

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☐ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.

2. Name of Operator

9. API Well No.
30-045-38284

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool, or Exploratory

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*

12. County or Parish

13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
Title		
Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Title	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.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 12/12/2022

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

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

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-38284	98157	LYBROOK MANCOS W

[4] Property Code	[5] Property Name	[6] Well Number
332891	GREATER LYBROOK UNIT	049H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372286	ENDURING RESOURCES, LLC	6747'

[10] Surface Location

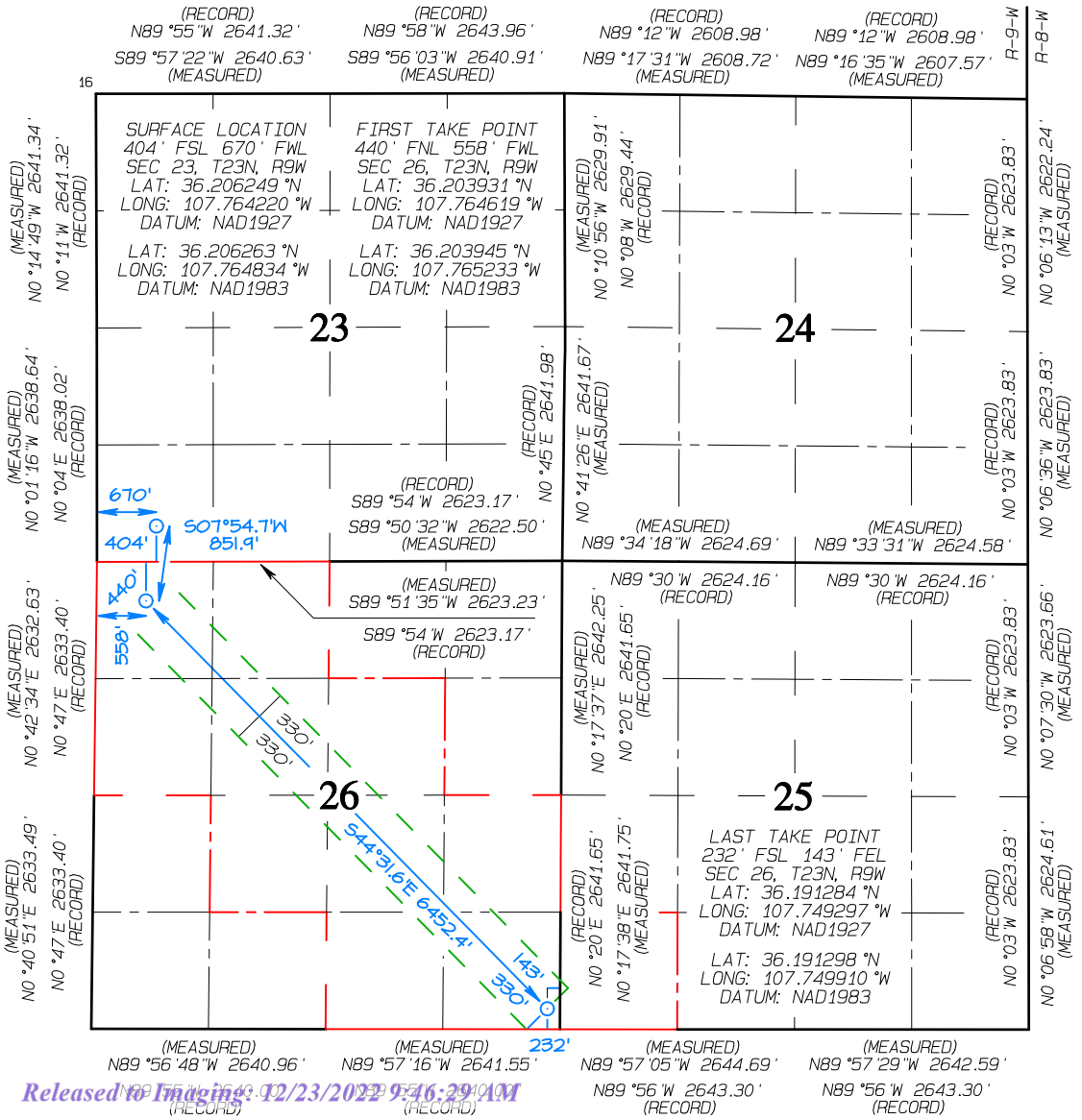
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	23	23N	9W		404	SOUTH	670	WEST	SAN JUAN

[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
P	26	23N	9W		232	SOUTH	143	EAST	SAN JUAN

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
440.0	SW/4 SW/4 – Section 25 NW/4, SW/4 NE/4 NE/4 SW/4, SE/4– Section 26			R-22081

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 unleased 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.

Khem Suthiwan — Signature
6/20/2022 — Date
Khem Suthiwan — Printed Name
ksuthiwan@enduringresources.com — 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: JUNE 7, 2022
Date of Survey: MAY 20, 2021

Signature and Seal of Professional Surveyor

JASON C. EDWARDS
NEW MEXICO
15269
REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS
Certificate Number 15269

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: Enduring Resources IV, LLC **OGRID:** 372286 **Date:** 10/26/2022

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.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water
Greater Lybrook Unit 048H	pending	Sec. 23, T23N, R9W	UL:C SHL:390' FSL & 655' FWL	650	1,700	1,200
Greater Lybrook Unit 049H	pending	Sec. 23, T23N, R9W	UL:C SHL:404' FSL & 670' FWL	650	1,700	1,200
Greater Lybrook Unit 050H	pending	Sec. 23, T23N, R9W	UL:C SHL:417' FSL & 685' FWL	650	1,700	1,200
Greater Lybrook Unit 051H	pending	Sec. 23, T23N, R9W	UL:C SHL:444' FSL & 714' FWL	650	1,700	1,200
Greater Lybrook Unit 052H	pending	Sec. 23, T23N, R9W	UL:C SHL:457' FSL & 729' FWL	650	1,700	1,200

IV. Central Delivery Point Name: 2-9 Gas Receipt & Trunk 1 Transfer Gas Receipt [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 Date
Greater Lybrook Unit 048H	pending	1/26/2023	2/24/2023	2/28/2023	3/29/2023	3/31/2023
Greater Lybrook Unit 049H	pending	1/24/2023	2/19/2023	2/28/2023	3/29/2023	3/31/2023
Greater Lybrook Unit 050H	pending	1/22/2023	2/13/2023	2/28/2023	3/29/2023	3/31/2023
Greater Lybrook Unit 051H	pending	1/20/2023	2/8/2023	2/28/2023	3/29/2023	3/31/2023
Greater Lybrook Unit 052H	pending	1/17/2023	2/3/2023	2/28/2023	3/29/2023	3/31/2023

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.

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: Khem Suthiwan
Printed Name: Khem Suthiwan
Title: Regulatory Manager
E-mail Address: ksuthiwan@enduringresources.com
Date: 10/26/2022
Phone: (303) 350-5721

OIL CONSERVATION DIVISION **(Only applicable when submitted as a standalone form)**
Approved By:
Title:
Approval Date:
Conditions of Approval:

Attachments:

Separation Equipment: Below is a complete description of how Operator will size separation equipment to optimize gas capture.

Description of how separation equipment will be sized to optimize gas capture:
Well separation equipment is sized to have appropriate residence time and vapor space to remove gas particles on the micron scale per typical engineering calculations and/or operational experience. Furthermore, a sales scrubber downstream of the well separators is planned in order to capture any additional liquids if present. All gas is routed to end users or the sales pipeline under normal operating conditions.

Operational & Best Management Practices: Below is a complete description of the actions the Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC. Additionally, below is a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Drilling Operations:
Enduring Resources will minimize venting by:

- Gas will only be vented to the atmosphere to avoid risk of immediate or substantial adverse impact to employee safety, public health, and the environment.
- If utilized, flare stacks shall be located at a minimum of 100 feet from the nearest surface hole location

Completion Operations:
Enduring Resources will minimize venting by:

- Separator operation will commence as soon as technically feasible.
- Gas will route immediately to a collection system or applied to other beneficial use, such as a fuel source for onsite equipment.
- During initial flowback and if technically feasible, flaring shall occur rather than venting.
- If natural gas does not meet pipeline standards, gas will be vented or flared. A gas analysis will be performed twice weekly until standards are met (for up to 60 days). This is not anticipated to occur.
- If required, all venting and flaring of natural gas during flowback operations shall be performed in compliance with Subsections B, C and D of 19.15.27.8 NMAC.

Production Operations:
Enduring Resources will minimize venting by:

- Shutting in the wells if the pipeline is not available. No flaring of high pressure gas will occur.
- Utilizing gas for equipment fuel, heater fuel, and artificial lift when allowable.
- Capturing low pressure gas via a gas capture system when allowable.

In General:

- All venting and flaring from drilling, flowback and operation phases shall be reported in compliance with Subsection G of 19.15.27.8 NMAC.
- If utilized, flare stacks shall be located at a minimum of 100 feet from the nearest surface hole location and 100 ft from the permanent facility storage tanks.

Flowback Strategy
After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on Gas Transporter system at that time. Based on current information, it is Operator's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines
- Power generation for grid;
- Liquids removal on lease;
- Reinjection for underground storage;
- Reinjection for temporary storage;
- Reinjection for enhanced oil recovery;
- Fuel cell production; and
- Other alternative beneficial uses approved by the division.

ENDURING RESOURCES IV, LLC
6300 S SYRACUSE WAY, SUITE 525
CENTENNIAL, COLORADO 80211

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

WELL INFORMATION:

Name: **GREATER LYBROOK UNIT 049H**
API Number: not yet assigned
AFE Number: *not yet assigned*
ER Well Number: *not yet assigned*
State: New Mexico
County: San Juan
Surface Elevation: 6,747 ft ASL (GL) 6,760 ft ASL (KB)
Surface Location: 23-23N-09W Sec-Twn-Rng 404 ft FSL 670 ft FWL
36.206263 ° N latitude 107.764834 ° W longitude (NAD 83)
BH Location: 26-23N-09W Sec-Twn-Rng 232 ft FSL 143 FEL
36.191298 ° N latitude 107.74991 ° 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 38.3 miles to MM 113.4, Right (Southwest) on CR #7890 for 0.8 miles to fork, Left (South) remaining on CR #7890 for 1.3 miles to 4-way intersection, Left (Southeast) remaining on CR #7890 for 1.2 miles to 4-way intersection; Right (West) exiting CR #7890 along existing roadway for 0.6 mile to fork; Left (West) for 0.7 miles to fork in roadway; Right (Northwest) for 0.2 miles to W LYBROOK UNIT 726H PAD & 726H EXPANSION (777H, 778H, 779H, 780H, 781H).

GEOLOGIC AND RESERVOIR INFORMATION:

Prognosis:

Formation Tops	TVD (ft ASL)	TVD (ft KB)	MD (ft KB)	O / G / W	Pressure
Ojo Alamo	6,425	335	335	W	normal
Kirtland	6,320	440	440	W	normal
Fruitland	6,115	645	645	G, W	sub
Pictured Cliffs	5,725	1,035	1,035	G, W	sub
Lewis	5,605	1,155	1,155	G, W	normal
Chacra	5,345	1,415	1,415	G, W	normal
Cliff House	4,305	2,455	2,463	G, W	sub
Menefee	4,285	2,475	2,484	G, W	normal
Point Lookout	3,323	3,437	3,502	G, W	normal
Mancos	3,175	3,585	3,658	O,G	sub (~0.38)
Gallup (MNCS_A)	2,825	3,935	4,036	O,G	sub (~0.38)
MNCS_B	2,725	4,035	4,159	O,G	sub (~0.38)
MNCS_C	2,636	4,124	4,291	O,G	sub (~0.38)
MNCS_Cms	2,589	4,171	4,379	O,G	sub (~0.38)
FTP TARGET	**2,524**	**4,236**	**4,522**	**O,G**	**sub (~0.38)**
PROJECTED LTP	**2,528**	**4,232**	**11,192**	**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: 1,830 psi
Maximum anticipated surface pressure, assuming partially evacuated hole: 900 psi
Temperature: **Maximum anticipated BHT is 125° F or less**

H_2S INFORMATION:

H_2S 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.: 145

Draw Works: Lewco LDS 1500K (1,000 hp)

Mast: ADR 1000 Cantilever Triple (134 ft, 500,000 lbs)

Top Drive: Tesco 350-EXI-600 (250 ton)

Prime Movers: 2 - CAT 3512 (1,350 hp), 1 -CAT C32 (1,100 hp)

Pumps: 2 - Mudder MD11 (5,000 psi)

BOPE 1: T3 Annular & Shaffer double gate ram (13-5/8", 5,000 psi)

Int Hole BOPE 2: T3 annular(13-5/8", 5,000 psi)

Prod Hole BOPE 2: T3 annular/ Townsend Double gate(11", 5,000 psi)

Choke 3", 5,000 psi

KB-GL (ft): 12.5

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

Note: BOPE 2 are alternate stacks to be used only if problems with rig height and BOP 1 height are encountered. Intermediate hole BOPE 2 is designed for 2,000 psi permit requirements.

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 intalled 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 the 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 minimimize 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 additional details. Sufficient barite will be on location to weight up mud system to balance maximum anticipated pressure gradient.

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	561	116,634	116,634
Min. S.F.					**7.39**	**4.87**	**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): *Minumum: 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)
TYPE III	14.6	1.39	6.686	0.6946	100%	0	350

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

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	2,590 ft (MD)	Hole Section Length:	2,240 ft
350 ft (TVD)	to	2,575 ft (TVD)	Casing Required:	2,590 ft

Fluid:	Type	MW (ppg)	FL (mL/30 min)	PV (cp)	YP (lb/100 sqft)	pH	Comments
	LSND (KCl)	8.8 - 9.5	20	8 - 14	8 - 14	9.0 - 9.5	No OBM

Hole Size: 12-1/4"

Bit / Motor: 12-1/4" PDC bit 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					1,125	1,047	181,310	181,310
Min. S.F.					**1.80**	**3.36**	**3.11**	**2.50**

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: 1 per joint in non-vertical hole; 1 per 2-joints in vertical hole

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	III:POZ Blend	12.5	2.140	12.05	70%	0	492
Tail	Type III	14.6	1.380	6.64	20%	2,090	136

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

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.*

2,590 ft (MD)	to	11,192 ft (MD)	Hole Section Length:	8,602 ft
2,575 ft (TVD)	to	4,232 ft (TVD)	Casing Required:	11,192 ft

Estimated KOP:	3,735	ft (MD)	3,659	ft (TVD)
Estimated Landing Point (FTP):	4,522	ft (MD)	4,236	ft (TVD)
Estimated Lateral Length:	6,670	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: 8-1/2" PDC bit 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					2,091	8,896	264,186	264,186
Min. S.F.					**3.57**	**1.20**	**2.07**	**1.68**

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): *Minumum: 3,470 Optimum: 4,620 Maximum: 5,780*

Casing Summary: Float shoe, 1 jt casing, float collar, 1 jt casing, float collar, 20' marker joint, toe-intitiation sleeve, casing to KOP with 20' marker joints spaced evenly in lateral every 2,000', floatation sub at KOP, casing to surface. The toe-initiation sleeve (last-take-point) cannot be placed closer than 330' to the unit boundary when measured perpendicular to the well path.

Centralizers: *Centralizer count and placement may be adjusted based on well conditions and as-drilled surveys.*
Lateral: 1 centralizer per joint
Landing point to 9-5/8" shoe: 1 centralizer per joint
9-5/8" shoe to surface: 1 centralizer per 2 joints

Cement:	Type	Weight (ppg)	Yield (cuft/sk)	Water (gal/sk)	% Excess	Planned TOC (ft MD)	Total Cmt (sx)
Lead	Type III	12.4	2.360	13.40	50%	0	451
Tail	G:POZ blend	13.3	1.560	7.70	10%	3,658	1,217

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

Note: This well will not be considered an unorthodox well location as defined by NMAC19.15.16.15.C.5. As defined in NMAC 19.15.16.15.C.1.a and 19.15.16.15.C.1.b, no point in the completed interval shall be closer to the unit boundary than 100' measured along the azimuth of the well or 330' measured perpendicular to the azimuth well. The boundaries of the completed interval, as defined by NMAC 19.15.16.7.B, are the last take point and first take point, as defined by NMAC 19.15.16.7.E and NMAC 19.15.16.7.J, respectively. In the case of this well, the last take point will be the bottom toe-initiation sleeve, and the first take point will be the top perforation. **Neither the toe-initiation sleeve nor the top perforation shall be closer to the unit boundary than 100' measured along the azimuth of the well or 330' measured perpendicular to the azimuth of the well.**

FINISH WELL: ***ND BOP, cap well, RDMO.***

COMPLETION AND PRODUCTION PLAN:

Frac: 35 plug-and-perf stages with 245,000 bbls slickwater fluid and 15,000,000 lbs of proppant (estimated)
Flowback: Flow back through production tubing as pressures allow
Production: Produce through production tubing via gas-lift into permanent production and storage facilities

ESTIMATED START DATES:

Drilling: 5/1/2022
Completion: 6/30/2022
Production: 8/14/2022

Prepared by: **Alec Bridge** **12/20/2021**

WELL NAME: **GREATER LYBROOK UNIT 049H**

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

API Number: *not yet assigned*

AFE Number: *not yet assigned*

ER Well Number: *not yet assigned*

State: New Mexico

County: San Juan

Surface Elev.: 6,747 ft ASL (GL) 6,760 ft ASL (KB)

Surface Location: 23-23N-09W Sec-Twn- Rng 404 ft FSL 670 ft FWL

BH Location: 26-23N-09W Sec-Twn- Rng 232 ft FSL 143 FEL

Driving Directions: ***FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM:***

South on US Hwy 550 for 38.3 miles to MM 113.4, Right (Southwest) on CR #7890 for 0.8 miles to fork, Left (South) remaining on CR #7890 for 1.3 miles to 4-way intersection, Left (Southeast) remaining on CR #7890 for 1.2 miles to 4-way intersection; Right (West) exiting CR #7890 along existing roadway for 0.6 mile to fork; Left (West) for 0.7 miles to fork in roadway; Right (Northwest) for 0.2 miles to W LYBROOK UNIT 726H PAD & 726H EXPANSION (777H, 778H, 779H, 780H, 781H).

QUICK REFERENCE	
Sur TD (MD)	350 ft
Int TD (MD)	2,590 ft
KOP (MD)	3,735 ft
KOP (TVD)	3,659 ft
Target (TVD)	4,236 ft
Curve BUR	10 °/100 ft
POE (MD)	4,522 ft
TD (MD)	11,192 ft
Lat Len (ft)	6,670 ft

WELL CONSTRUCTION SUMMARY:

	Hole (in)	TD MD (ft)	Csg (in)	Csg (lb/ft)	Csg (grade)	Csg (conn)	Csg Top (ft)	Csg Bot (ft)
Surface	17.500	350	13.375	54.5	J-55	BTC	0	350
Intermediate	12.250	2,590	9.625	36.0	J-55	LTC	0	2,590
Production	8.500	11,192	5.500	17.0	P-110	LTC	0	11,192

CEMENT PROPERTIES SUMMARY:

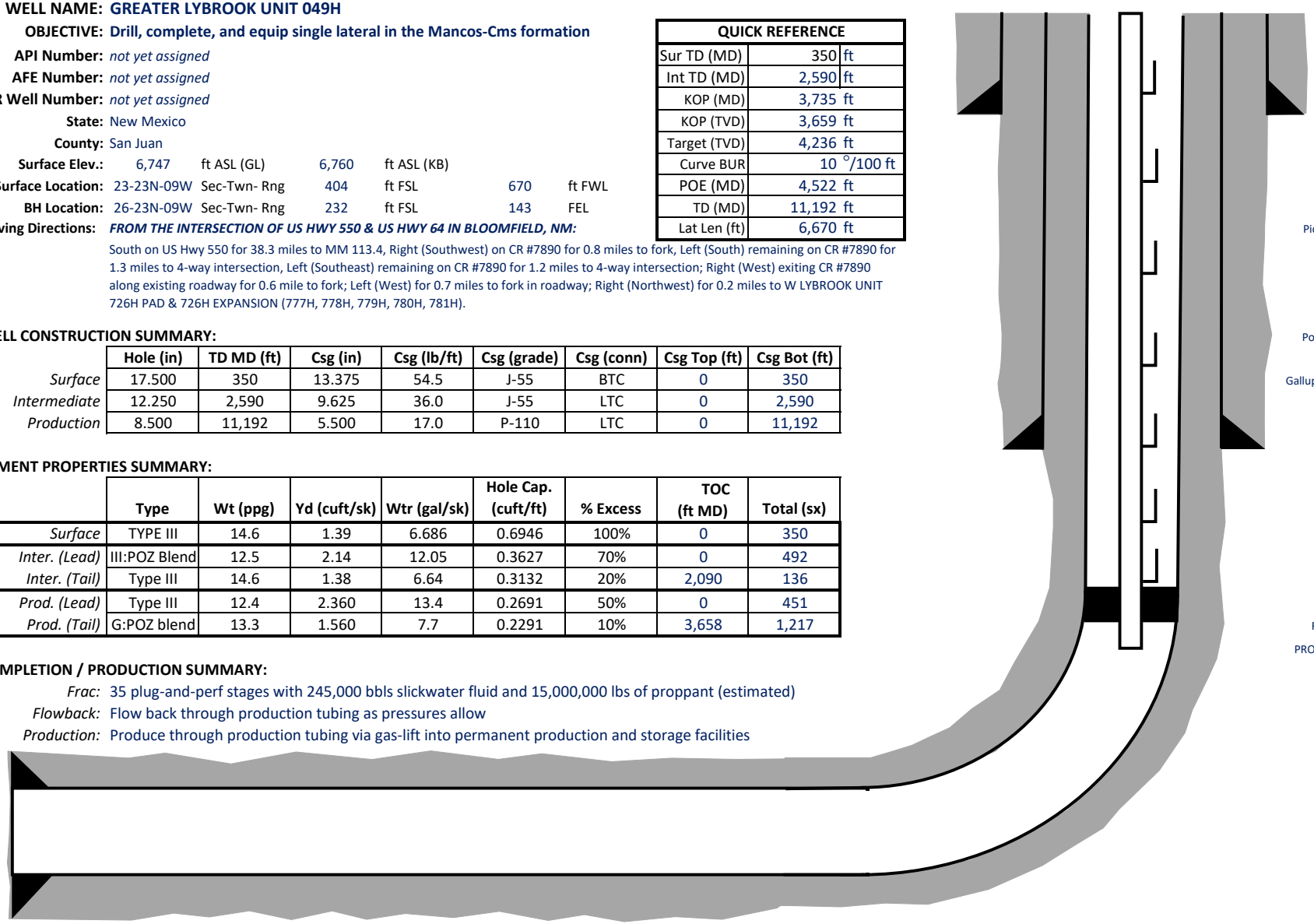
	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	Hole Cap. (cuft/ft)	% Excess	TOC (ft MD)	Total (sx)
Surface	TYPE III	14.6	1.39	6.686	0.6946	100%	0	350
Inter. (Lead)	III:POZ Blend	12.5	2.14	12.05	0.3627	70%	0	492
Inter. (Tail)	Type III	14.6	1.38	6.64	0.3132	20%	2,090	136
Prod. (Lead)	Type III	12.4	2.360	13.4	0.2691	50%	0	451
Prod. (Tail)	G:POZ blend	13.3	1.560	7.7	0.2291	10%	3,658	1,217

COMPLETION / PRODUCTION SUMMARY:

Frac: 35 plug-and-perf stages with 245,000 bbls slickwater fluid and 15,000,000 lbs of proppant (estimated)

Flowback: Flow back through production tubing as pressures allow

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

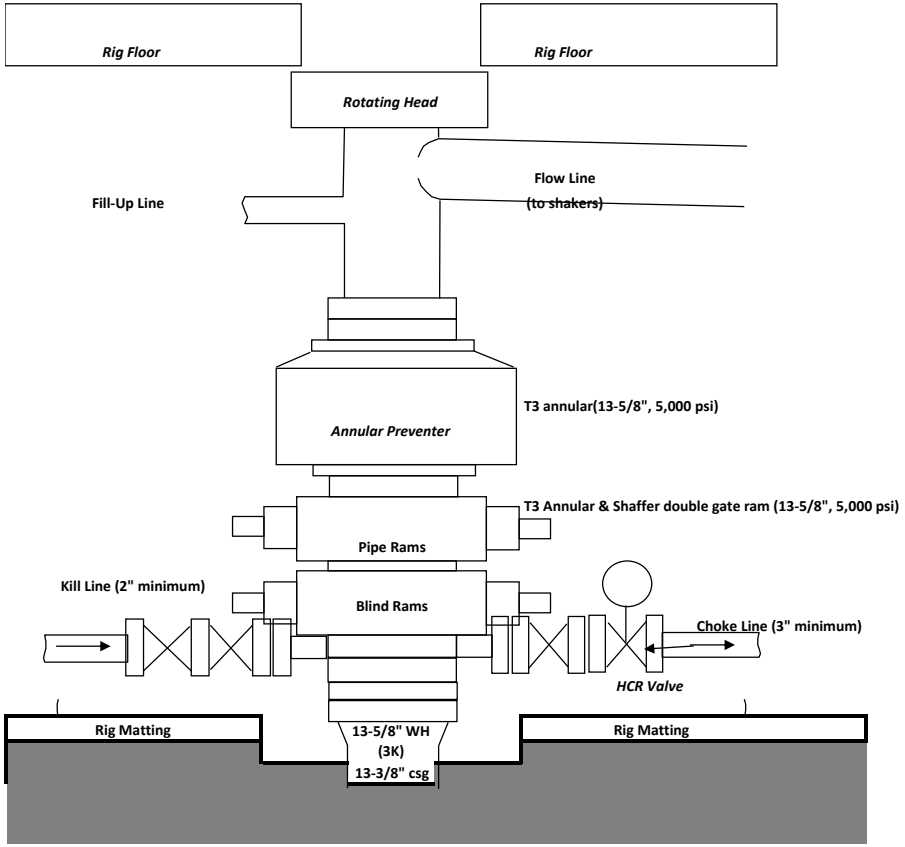


Tops	TVD (ft KB)	MD (ft KB)
Ojo Alamo	335	335
Kirtland	440	440
Fruitland	645	645
Pictured Cliffs	1,035	1,035
Lewis	1,155	1,155
Chacra	1,415	1,415
Cliff House	2,455	2,463
Menefee	2,475	2,484
Point Lookout	3,437	3,502
Mancos	3,585	3,658
Gallup (MNCS_A)	3,935	4,036
MNCS_B	4,035	4,159
MNCS_C	4,124	4,291
MNCS_Cms	4,171	4,379
MNCS_D	0	0
MNCS_E	0	0
MNCS_F	0	0
MNCS_G	0	0
MNCS_H	0	0
MNCS_I	0	0
FTP TARGET	4,236	4,522
PROJECTED LTP	4,232	11,192

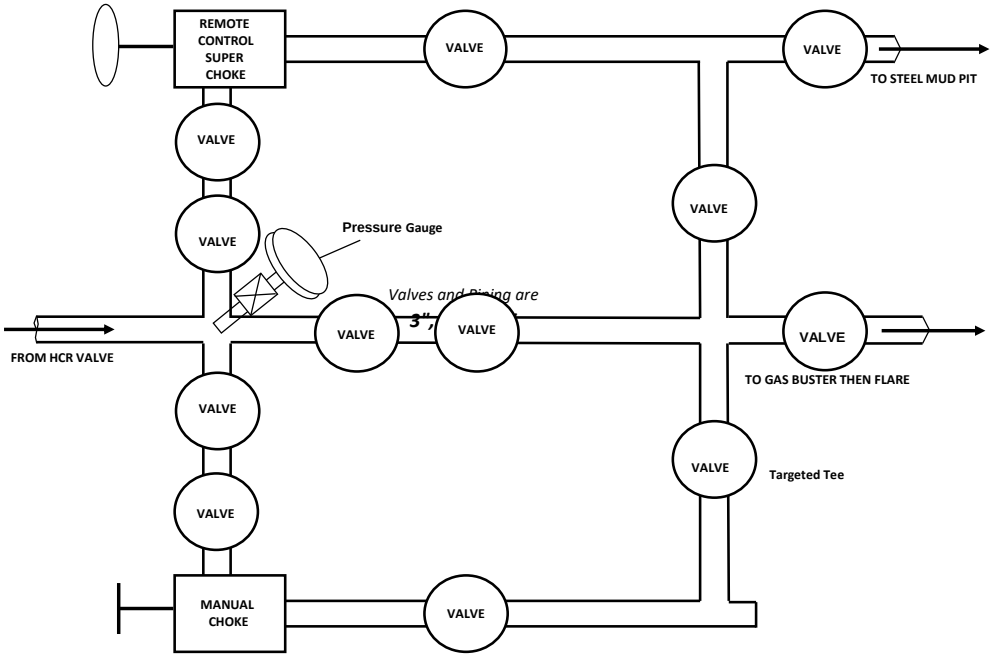
BOPE & CHOKE MANIFOLD DIAGRAMS

NOTE: EXACT BOPE AND CHOKE CONFIRGURATION 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



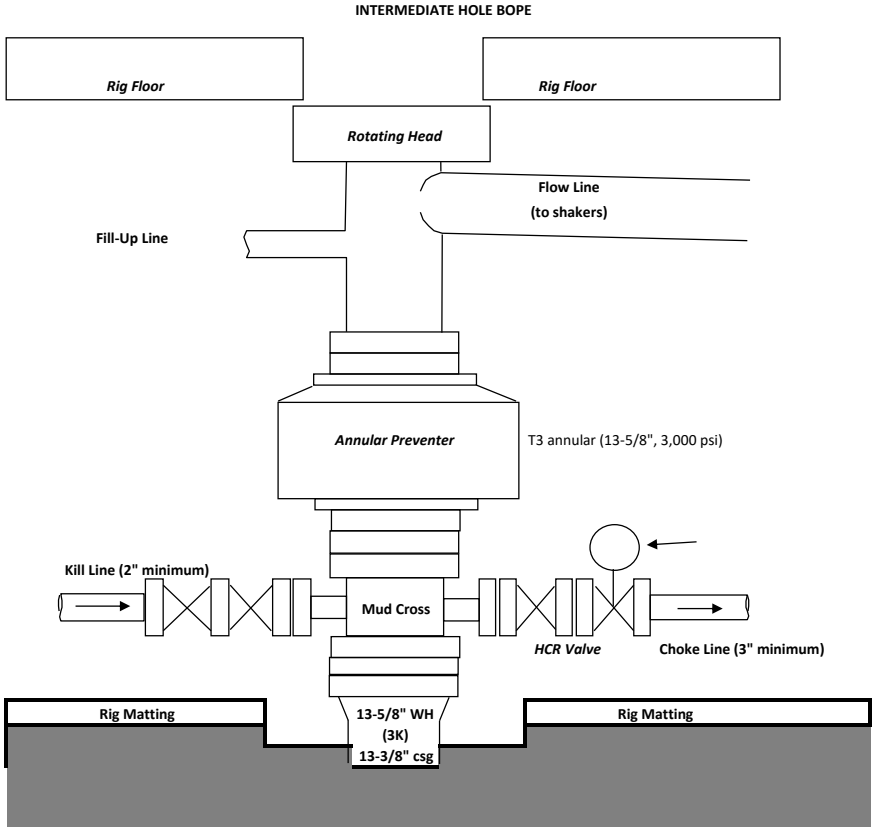
CHOKE MANIFOLD



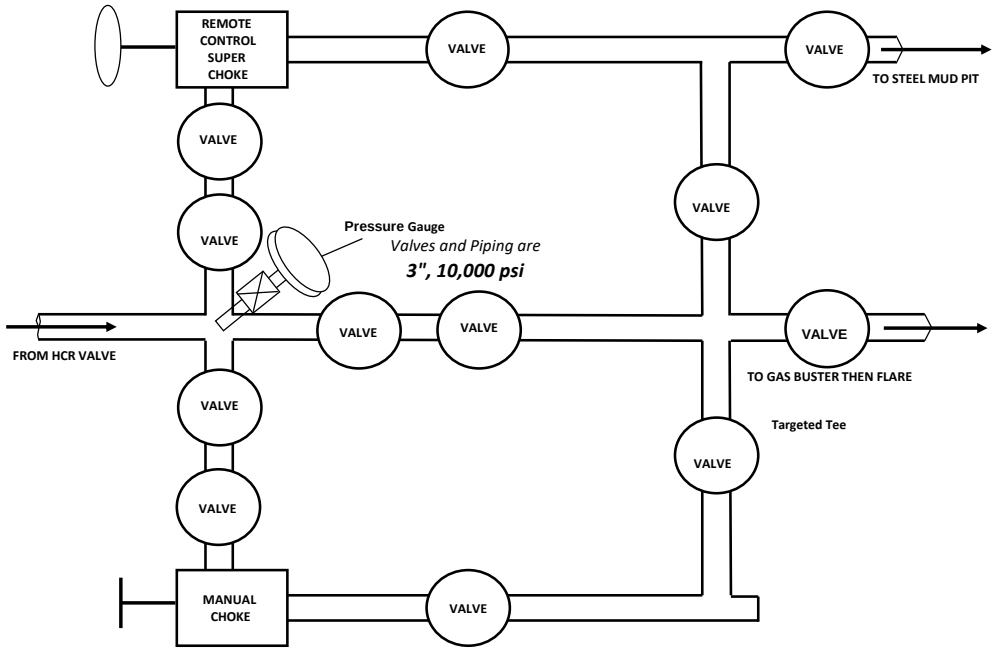
ALTERNATE, INTERMEDIATE HOLE ONLY, BOPE & CHOKE MANIFOLD DIAGRAMS

NOTE: EXACT BOPE AND CHOKE CONFIRGURATION 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 2,000 PSI MINIMUM. THIS BOPE SETUP IS AN ALTERNATE ONLY, DESIGNED FOR ANY POSSIBLE FUTURE DRILLING RIG WITH SUBSTRUCTURE HEIGHT THAT IS TOO SHORT TO ACCOMADATE A FULL 13-5/8" 3,000 PSI BOP STACK

BOPE



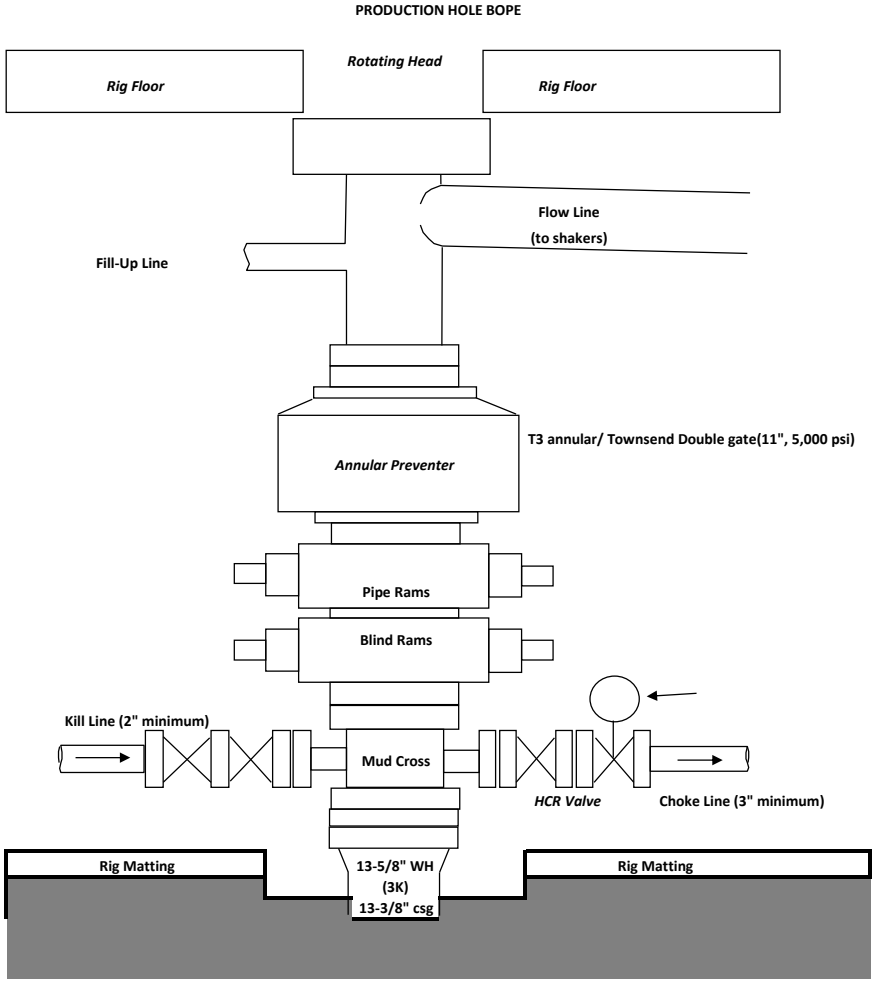
CHOKE MANIFOLD



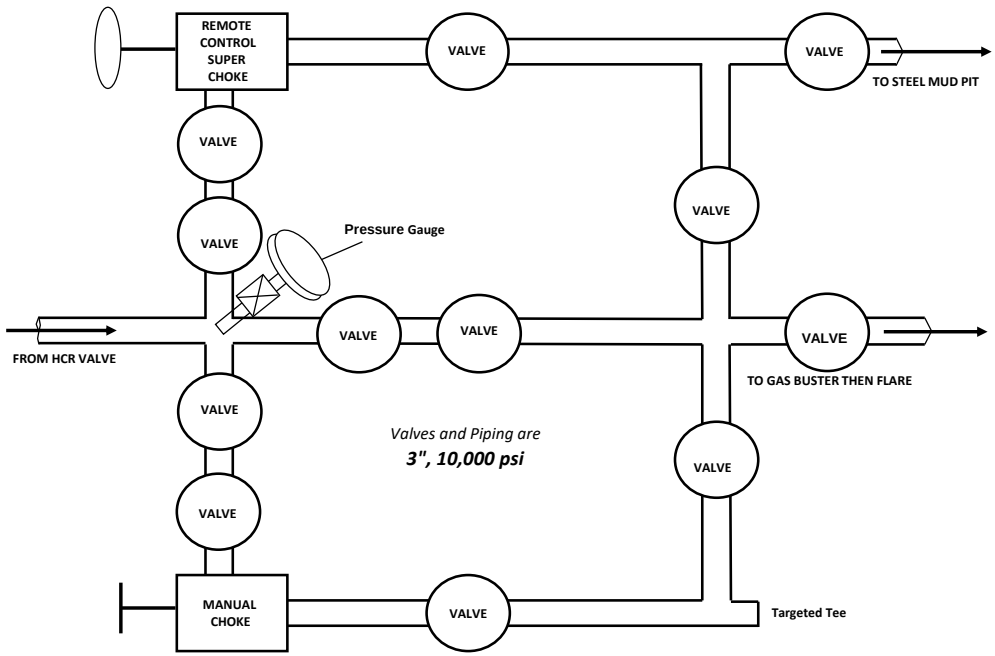
ALTERNATE, PRODUCTION HOLE ONLY, BOPE & CHOKE MANIFOLD DIAGRAMS

NOTE: EXACT BOPE AND CHOKE CONFIRGURATION 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. THIS BOPE SETUP IS AN ALTERNATE ONLY, DESIGNED FOR ANY POSSIBLE FUTURE DRILLING RIG WITH SUBSTRUCTURE HEIGHT THAT IS TOO SHORT TO ACCOMADATE A FULL 13-5/8" 3,000 PSI BOP STACK

BOPE



CHOKE MANIFOLD



Well: Greater Lybrook Unit No. 049H
Site: Greater Lybrook Pad (48,49,50,51 & 52)
Project: San Juan County, New Mexico NAD83 NM W
Design: rev0
Rig: Ensign 773

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
G Lybrook 049 LTP 232 FSL 143 FEL	4232.00	-5444.12	4407.50	1888940.329	2747707.507	36.191298000	-107.749910000
G Lybrook 049 FTP 440 FNL 558 FWL	4274.00	-843.88	-117.12	1893540.556	2743182.895	36.203945000	-107.765233000

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	
2	1900.00	0.00	0.000	1900.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 3°/100' build
3	2532.47	18.97	237.969	2520.98	-55.04	-87.97	3.00	237.97	-22.44	Begin 18.97° tangent
4	3735.48	18.97	237.969	3658.62	-262.49	-419.58	0.00	0.00	-107.03	Begin 10°/100' build/turn
5	4363.06	60.00	144.900	4163.80	-570.35	-341.89	10.00	-103.43	166.94	Begin 60.00° tangent
6	4423.06	60.00	144.900	4193.80	-612.86	-312.01	0.00	0.00	218.20	Begin 10°/100' build/turn
7	4739.79	90.37	135.475	4274.00	-843.88	-117.12	10.00	-18.17	519.58	Begin 90.37° lateral
8	11192.39	90.37	135.475	4232.00	-5444.12	4407.50	0.00	0.00	6972.04	PBHL/TD 11192.39 MD 4232.00

T G M

Azimuths to Grid North
True North: -0.04°
Magnetic North: 8.62°

Magnetic Field
Strength: 49152.1nT
Dip Angle: 62.70°
Date: 11/3/2022
Model: IGRF2020

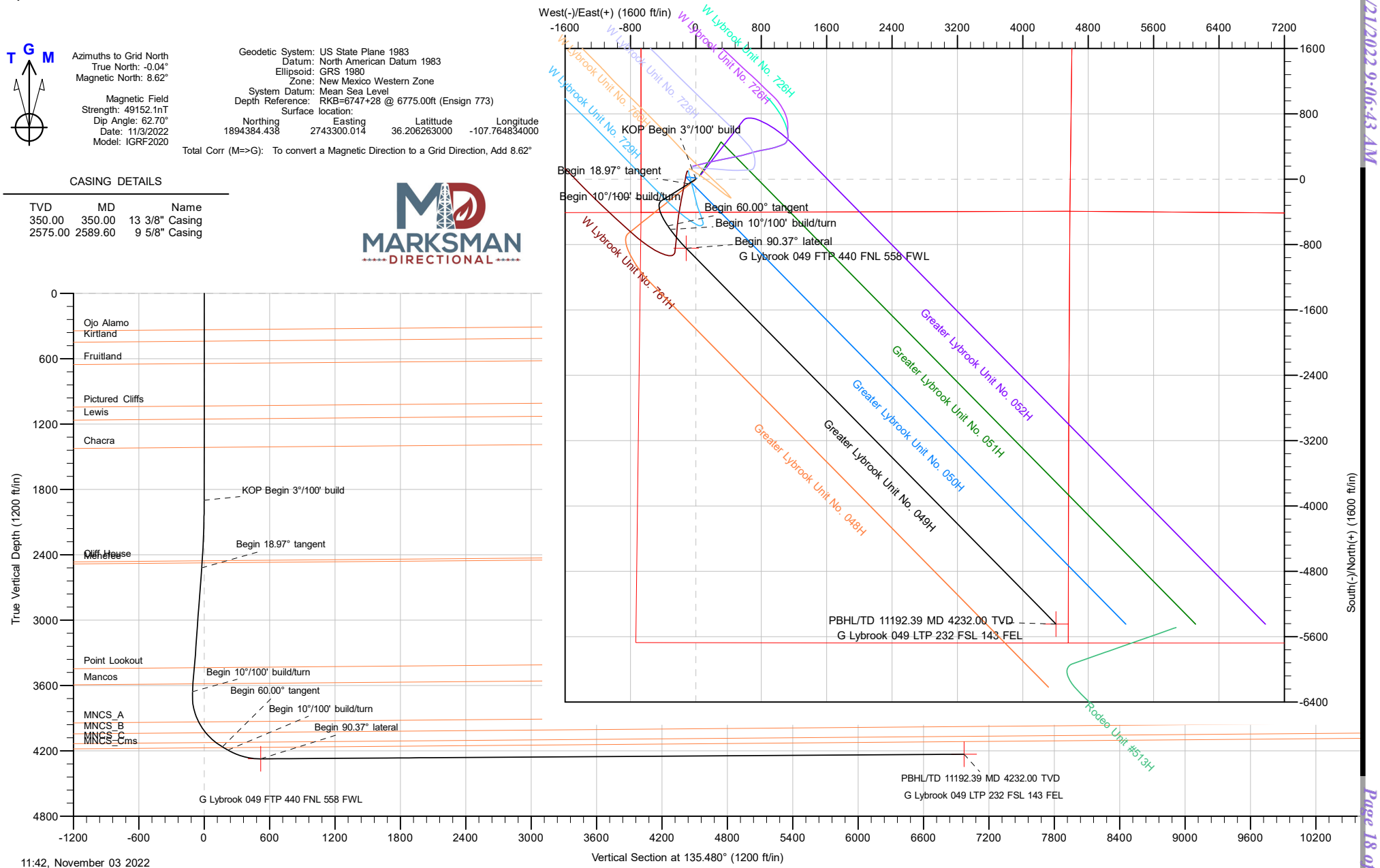
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Western Zone
System Datum: Mean Sea Level
Depth Reference: RKB=6747+28 @ 6775.00ft (Ensign 773)
Surface location:

Northing	Easting	Latitude	Longitude
1894384.438	2743300.014	36.206263000	-107.764834000

Total Corr (M=>G): To convert a Magnetic Direction to a Grid Direction, Add 8.62°

CASING DETAILS

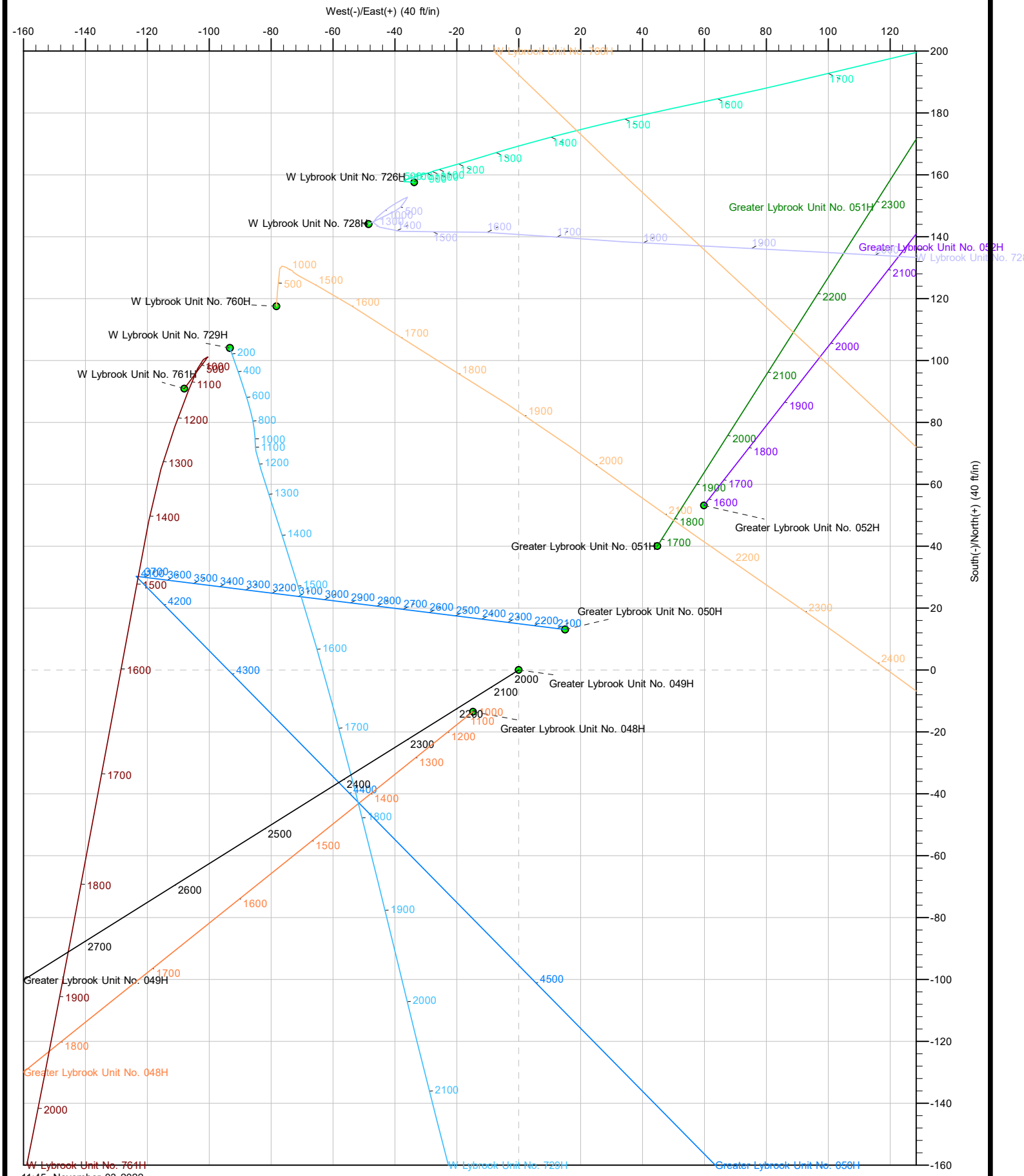
TVD	MD	Name
350.00	350.00	13 3/8" Casing
2575.00	2589.60	9 5/8" Casing



11:42, November 03 2022

Well: Greater Lybrook Unit No. 049H
Site: Greater Lybrook Pad (48,49,50,51 & 52)
Project: San Juan County, New Mexico NAD83 NM W
Design: rev0
Rig: Ensign 773

MARKSMAN DIRECTIONAL



Planning Report

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Project San Juan County, New Mexico NAD83 NM W

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site Greater Lybrook Pad (48,49,50,51 & 52)

Site Position:		**Northing:**	1,894,437.627 usft	**Latitude:**	36.206409000
From:	Lat/Long	**Easting:**	2,743,359.864 usft	**Longitude:**	-107.764631000
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "		

Well Greater Lybrook Unit No. 049H, Surf loc: 404 FSL 670 FWL Section 23-T23N-R07W

Well Position	**+N/-S**	0.00 ft	**Northing:**	1,894,384.438 usft	**Latitude:**	36.206263000
	+E/-W	0.00 ft	**Easting:**	2,743,300.014 usft	**Longitude:**	-107.764834000
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,747.00 ft
Grid Convergence:		0.04 °				

Wellbore Original Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	11/3/2022	8.66	62.70	49,152.06306790

Design rev0

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	135.480

Plan Survey Tool Program **Date** 11/3/2022

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	11,192.39	rev0 (Original Hole)	MWD	
				OWSG MWD - Standard	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.000	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,532.47	18.97	237.969	2,520.98	-55.04	-87.97	3.00	3.00	0.00	237.97	
3,735.48	18.97	237.969	3,658.62	-262.49	-419.58	0.00	0.00	0.00	0.00	
4,363.06	60.00	144.900	4,163.80	-570.35	-341.89	10.00	6.54	-14.83	-103.43	
4,423.06	60.00	144.900	4,193.80	-612.86	-312.01	0.00	0.00	0.00	0.00	
4,739.79	90.37	135.475	4,274.00	-843.88	-117.12	10.00	9.59	-2.98	-18.17	
11,192.39	90.37	135.475	4,232.00	-5,444.12	4,407.50	0.00	0.00	0.00	0.00	G Lybrook 049 LTP 2

Planning Report

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00
335.00	0.00	0.000	335.00	0.00	0.00	0.00	0.00	0.00	0.00
Ojo Alamo									
350.00	0.00	0.000	350.00	0.00	0.00	0.00	0.00	0.00	0.00
13 3/8" Casing									
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00
440.00	0.00	0.000	440.00	0.00	0.00	0.00	0.00	0.00	0.00
Kirtland									
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00
645.00	0.00	0.000	645.00	0.00	0.00	0.00	0.00	0.00	0.00
Fruitland									
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,035.00	0.00	0.000	1,035.00	0.00	0.00	0.00	0.00	0.00	0.00
Pictured Cliffs									
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,155.00	0.00	0.000	1,155.00	0.00	0.00	0.00	0.00	0.00	0.00
Lewis									
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.000	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.000	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,415.00	0.00	0.000	1,415.00	0.00	0.00	0.00	0.00	0.00	0.00
Chacra									
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.000	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.000	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.000	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.000	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 3°/100' build									
2,000.00	3.00	237.969	1,999.95	-1.39	-2.22	-0.57	3.00	3.00	0.00
2,100.00	6.00	237.969	2,099.63	-5.55	-8.87	-2.26	3.00	3.00	0.00
2,200.00	9.00	237.969	2,198.77	-12.47	-19.93	-5.09	3.00	3.00	0.00
2,300.00	12.00	237.969	2,297.08	-22.14	-35.38	-9.03	3.00	3.00	0.00
2,400.00	15.00	237.969	2,394.31	-34.51	-55.17	-14.07	3.00	3.00	0.00
2,463.28	16.90	237.969	2,455.15	-43.74	-69.91	-17.83	3.00	3.00	0.00
Cliff House									
2,484.23	17.53	237.969	2,475.16	-47.02	-75.17	-19.17	3.00	3.00	0.00
Menefee									
2,500.00	18.00	237.969	2,490.18	-49.58	-79.25	-20.21	3.00	3.00	0.00
2,532.47	18.97	237.969	2,520.98	-55.04	-87.97	-22.44	3.00	3.00	0.00
Begin 18.97° tangent									
2,589.60	18.97	237.969	2,575.00	-64.89	-103.72	-26.46	0.00	0.00	0.00
9 5/8" Casing									
2,600.00	18.97	237.969	2,584.83	-66.68	-106.59	-27.19	0.00	0.00	0.00
2,700.00	18.97	237.969	2,679.40	-83.93	-134.15	-34.22	0.00	0.00	0.00
2,800.00	18.97	237.969	2,773.97	-101.17	-161.72	-41.25	0.00	0.00	0.00

Planning Report

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,900.00	18.97	237.969	2,868.53	-118.42	-189.28	-48.28	0.00	0.00	0.00
3,000.00	18.97	237.969	2,963.10	-135.66	-216.85	-55.32	0.00	0.00	0.00
3,100.00	18.97	237.969	3,057.67	-152.91	-244.41	-62.35	0.00	0.00	0.00
3,200.00	18.97	237.969	3,152.23	-170.15	-271.97	-69.38	0.00	0.00	0.00
3,300.00	18.97	237.969	3,246.80	-187.39	-299.54	-76.41	0.00	0.00	0.00
3,400.00	18.97	237.969	3,341.37	-204.64	-327.10	-83.44	0.00	0.00	0.00
3,500.00	18.97	237.969	3,435.93	-221.88	-354.67	-90.47	0.00	0.00	0.00
3,501.92	18.97	237.969	3,437.74	-222.21	-355.20	-90.61	0.00	0.00	0.00
Point Lookout									
3,600.00	18.97	237.969	3,530.50	-239.13	-382.23	-97.51	0.00	0.00	0.00
3,658.51	18.97	237.969	3,585.83	-249.22	-398.36	-101.62	0.00	0.00	0.00
Mancos									
3,700.00	18.97	237.969	3,625.07	-256.37	-409.80	-104.54	0.00	0.00	0.00
3,735.48	18.97	237.969	3,658.62	-262.49	-419.58	-107.03	0.00	0.00	0.00
Begin 10°/100' build/turn									
3,750.00	18.69	233.559	3,672.36	-265.13	-423.45	-107.87	10.00	-1.97	-30.38
3,800.00	18.53	217.854	3,719.78	-276.16	-434.78	-107.94	10.00	-0.32	-31.41
3,850.00	19.64	202.899	3,767.06	-290.19	-442.93	-103.66	10.00	2.22	-29.91
3,900.00	21.82	190.155	3,813.84	-307.09	-447.84	-95.05	10.00	4.37	-25.49
3,950.00	24.80	179.974	3,859.77	-326.73	-449.47	-82.19	10.00	5.96	-20.36
4,000.00	28.32	172.013	3,904.50	-348.98	-447.82	-65.17	10.00	7.04	-15.92
4,035.58	31.06	167.413	3,935.42	-366.30	-444.65	-50.59	10.00	7.69	-12.93
MNCS_A									
4,050.00	32.21	165.755	3,947.69	-373.66	-442.89	-44.12	10.00	7.98	-11.50
4,100.00	36.34	160.749	3,989.01	-400.58	-434.72	-19.20	10.00	8.27	-10.01
4,150.00	40.64	156.654	4,028.14	-429.53	-423.38	9.40	10.00	8.61	-8.19
4,158.94	41.43	155.998	4,034.88	-434.91	-421.02	14.89	10.00	8.76	-7.34
MNCS_B									
4,200.00	45.07	153.227	4,064.79	-460.30	-408.94	41.47	10.00	8.87	-6.75
4,250.00	49.58	150.296	4,098.67	-492.66	-391.53	76.75	10.00	9.03	-5.86
4,290.83	53.32	148.182	4,124.12	-520.08	-375.19	107.76	10.00	9.14	-5.18
MNCS_C									
4,300.00	54.16	147.736	4,129.54	-526.35	-371.26	114.98	10.00	9.20	-4.86
4,350.00	58.79	145.458	4,157.15	-561.12	-348.31	155.86	10.00	9.25	-4.56
4,363.06	60.00	144.900	4,163.80	-570.35	-341.89	166.94	10.00	9.30	-4.27
Begin 60.00° tangent									
4,378.50	60.00	144.900	4,171.52	-581.29	-334.20	180.14	0.00	0.00	0.00
MNCS_Cms									
4,400.00	60.00	144.900	4,182.27	-596.52	-323.49	198.50	0.00	0.00	0.00
4,423.06	60.00	144.900	4,193.80	-612.86	-312.01	218.20	0.00	0.00	0.00
Begin 10°/100' build/turn									
4,450.00	62.56	143.954	4,206.74	-632.07	-298.27	241.54	10.00	9.51	-3.51
4,500.00	67.34	142.307	4,227.91	-668.29	-271.09	286.42	10.00	9.54	-3.29
4,550.00	72.12	140.771	4,245.23	-705.00	-241.91	333.05	10.00	9.58	-3.07
4,600.00	76.92	139.316	4,258.57	-741.92	-210.97	381.07	10.00	9.60	-2.91
4,650.00	81.73	137.916	4,267.83	-778.77	-178.50	430.11	10.00	9.61	-2.80
4,700.00	86.54	136.551	4,272.93	-815.27	-144.73	479.81	10.00	9.62	-2.73
4,739.79	90.37	135.475	4,274.00	-843.88	-117.12	519.58	10.00	9.63	-2.70
Begin 90.37° lateral									
4,800.00	90.37	135.475	4,273.61	-886.81	-74.89	579.79	0.00	0.00	0.00
4,900.00	90.37	135.475	4,272.96	-958.10	-4.77	679.79	0.00	0.00	0.00
5,000.00	90.37	135.475	4,272.31	-1,029.39	65.35	779.78	0.00	0.00	0.00
5,100.00	90.37	135.475	4,271.66	-1,100.69	135.47	879.78	0.00	0.00	0.00

Planning Report

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,200.00	90.37	135.475	4,271.01	-1,171.98	205.59	979.78	0.00	0.00	0.00
5,300.00	90.37	135.475	4,270.36	-1,243.27	275.71	1,079.78	0.00	0.00	0.00
5,400.00	90.37	135.475	4,269.71	-1,314.57	345.83	1,179.77	0.00	0.00	0.00
5,500.00	90.37	135.475	4,269.06	-1,385.86	415.95	1,279.77	0.00	0.00	0.00
5,600.00	90.37	135.475	4,268.40	-1,457.15	486.07	1,379.77	0.00	0.00	0.00
5,700.00	90.37	135.475	4,267.75	-1,528.44	556.19	1,479.77	0.00	0.00	0.00
5,800.00	90.37	135.475	4,267.10	-1,599.74	626.31	1,579.77	0.00	0.00	0.00
5,900.00	90.37	135.475	4,266.45	-1,671.03	696.43	1,679.76	0.00	0.00	0.00
6,000.00	90.37	135.475	4,265.80	-1,742.32	766.56	1,779.76	0.00	0.00	0.00
6,100.00	90.37	135.475	4,265.15	-1,813.61	836.68	1,879.76	0.00	0.00	0.00
6,200.00	90.37	135.475	4,264.50	-1,884.91	906.80	1,979.76	0.00	0.00	0.00
6,300.00	90.37	135.475	4,263.85	-1,956.20	976.92	2,079.76	0.00	0.00	0.00
6,400.00	90.37	135.475	4,263.20	-2,027.49	1,047.04	2,179.75	0.00	0.00	0.00
6,500.00	90.37	135.475	4,262.55	-2,098.79	1,117.16	2,279.75	0.00	0.00	0.00
6,600.00	90.37	135.475	4,261.89	-2,170.08	1,187.28	2,379.75	0.00	0.00	0.00
6,700.00	90.37	135.475	4,261.24	-2,241.37	1,257.40	2,479.75	0.00	0.00	0.00
6,800.00	90.37	135.475	4,260.59	-2,312.66	1,327.52	2,579.75	0.00	0.00	0.00
6,900.00	90.37	135.475	4,259.94	-2,383.96	1,397.64	2,679.74	0.00	0.00	0.00
7,000.00	90.37	135.475	4,259.29	-2,455.25	1,467.76	2,779.74	0.00	0.00	0.00
7,100.00	90.37	135.475	4,258.64	-2,526.54	1,537.88	2,879.74	0.00	0.00	0.00
7,200.00	90.37	135.475	4,257.99	-2,597.83	1,608.00	2,979.74	0.00	0.00	0.00
7,300.00	90.37	135.475	4,257.34	-2,669.13	1,678.13	3,079.73	0.00	0.00	0.00
7,400.00	90.37	135.475	4,256.69	-2,740.42	1,748.25	3,179.73	0.00	0.00	0.00
7,500.00	90.37	135.475	4,256.04	-2,811.71	1,818.37	3,279.73	0.00	0.00	0.00
7,600.00	90.37	135.475	4,255.39	-2,883.01	1,888.49	3,379.73	0.00	0.00	0.00
7,700.00	90.37	135.475	4,254.73	-2,954.30	1,958.61	3,479.73	0.00	0.00	0.00
7,800.00	90.37	135.475	4,254.08	-3,025.59	2,028.73	3,579.72	0.00	0.00	0.00
7,900.00	90.37	135.475	4,253.43	-3,096.88	2,098.85	3,679.72	0.00	0.00	0.00
8,000.00	90.37	135.475	4,252.78	-3,168.18	2,168.97	3,779.72	0.00	0.00	0.00
8,100.00	90.37	135.475	4,252.13	-3,239.47	2,239.09	3,879.72	0.00	0.00	0.00
8,200.00	90.37	135.475	4,251.48	-3,310.76	2,309.21	3,979.72	0.00	0.00	0.00
8,300.00	90.37	135.475	4,250.83	-3,382.05	2,379.33	4,079.71	0.00	0.00	0.00
8,400.00	90.37	135.475	4,250.18	-3,453.35	2,449.45	4,179.71	0.00	0.00	0.00
8,500.00	90.37	135.475	4,249.53	-3,524.64	2,519.57	4,279.71	0.00	0.00	0.00
8,600.00	90.37	135.475	4,248.88	-3,595.93	2,589.70	4,379.71	0.00	0.00	0.00
8,700.00	90.37	135.475	4,248.22	-3,667.23	2,659.82	4,479.70	0.00	0.00	0.00
8,800.00	90.37	135.475	4,247.57	-3,738.52	2,729.94	4,579.70	0.00	0.00	0.00
8,900.00	90.37	135.475	4,246.92	-3,809.81	2,800.06	4,679.70	0.00	0.00	0.00
9,000.00	90.37	135.475	4,246.27	-3,881.10	2,870.18	4,779.70	0.00	0.00	0.00
9,100.00	90.37	135.475	4,245.62	-3,952.40	2,940.30	4,879.70	0.00	0.00	0.00
9,200.00	90.37	135.475	4,244.97	-4,023.69	3,010.42	4,979.69	0.00	0.00	0.00
9,300.00	90.37	135.475	4,244.32	-4,094.98	3,080.54	5,079.69	0.00	0.00	0.00
9,400.00	90.37	135.475	4,243.67	-4,166.27	3,150.66	5,179.69	0.00	0.00	0.00
9,500.00	90.37	135.475	4,243.02	-4,237.57	3,220.78	5,279.69	0.00	0.00	0.00
9,600.00	90.37	135.475	4,242.37	-4,308.86	3,290.90	5,379.69	0.00	0.00	0.00
9,700.00	90.37	135.475	4,241.71	-4,380.15	3,361.02	5,479.68	0.00	0.00	0.00
9,800.00	90.37	135.475	4,241.06	-4,451.45	3,431.14	5,579.68	0.00	0.00	0.00
9,900.00	90.37	135.475	4,240.41	-4,522.74	3,501.27	5,679.68	0.00	0.00	0.00
10,000.00	90.37	135.475	4,239.76	-4,594.03	3,571.39	5,779.68	0.00	0.00	0.00
10,100.00	90.37	135.475	4,239.11	-4,665.32	3,641.51	5,879.68	0.00	0.00	0.00
10,200.00	90.37	135.475	4,238.46	-4,736.62	3,711.63	5,979.67	0.00	0.00	0.00
10,300.00	90.37	135.475	4,237.81	-4,807.91	3,781.75	6,079.67	0.00	0.00	0.00
10,400.00	90.37	135.475	4,237.16	-4,879.20	3,851.87	6,179.67	0.00	0.00	0.00
10,500.00	90.37	135.475	4,236.51	-4,950.49	3,921.99	6,279.67	0.00	0.00	0.00

Planning Report

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,600.00	90.37	135.475	4,235.86	-5,021.79	3,992.11	6,379.66	0.00	0.00	0.00
10,700.00	90.37	135.475	4,235.21	-5,093.08	4,062.23	6,479.66	0.00	0.00	0.00
10,800.00	90.37	135.475	4,234.55	-5,164.37	4,132.35	6,579.66	0.00	0.00	0.00
10,900.00	90.37	135.475	4,233.90	-5,235.67	4,202.47	6,679.66	0.00	0.00	0.00
11,000.00	90.37	135.475	4,233.25	-5,306.96	4,272.59	6,779.66	0.00	0.00	0.00
11,100.00	90.37	135.475	4,232.60	-5,378.25	4,342.71	6,879.65	0.00	0.00	0.00
11,192.39	90.37	135.475	4,232.00	-5,444.12	4,407.50	6,972.04	0.00	0.00	0.00
PBHL/TD 11192.39 MD 4232.00 TVD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
G Lybrook 049 LTP 232 - plan hits target center - Point	0.00	0.000	4,232.00	-5,444.12	4,407.50	1,888,940.329	2,747,707.507	36.191298000	-107.749910000
G Lybrook 049 FTP 440 - plan misses target center by 0.01ft at 4739.79ft MD (4274.00 TVD, -843.88 N, -117.12 E) - Point	0.00	0.000	4,274.00	-843.88	-117.12	1,893,540.556	2,743,182.895	36.203945000	-107.765233000

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
350.00	350.00	13 3/8" Casing	13-5/8	17-1/2
2,589.60	2,575.00	9 5/8" Casing	9-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
335.00	335.00	Ojo Alamo		-0.47	135.480
440.00	440.00	Kirtland		-0.47	135.480
645.00	645.00	Fruitland		-0.47	135.480
1,035.00	1,035.00	Pictured Cliffs		-0.47	135.480
1,155.00	1,155.00	Lewis		-0.47	135.480
1,415.00	1,415.00	Chacra		-0.47	135.480
2,463.28	2,455.15	Cliff House		-0.47	135.480
2,484.23	2,475.16	Menefee		-0.47	135.480
3,501.92	3,437.74	Point Lookout		-0.47	135.480
3,658.51	3,585.83	Mancos		-0.47	135.480
4,035.58	3,935.42	MNCS_A		-0.47	135.480
4,158.94	4,034.88	MNCS_B		-0.47	135.480
4,290.83	4,124.12	MNCS_C		-0.47	135.480
4,378.50	4,171.52	MNCS_Cms		-0.47	135.480

Planning Report

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,900.00	1,900.00	0.00	0.00	KOP Begin 3°/100' build
2,532.47	2,520.98	-55.04	-87.97	Begin 18.97° tangent
3,735.48	3,658.62	-262.49	-419.58	Begin 10°/100' build/turn
4,363.06	4,163.80	-570.35	-341.89	Begin 60.00° tangent
4,423.06	4,193.80	-612.86	-312.01	Begin 10°/100' build/turn
4,739.79	4,274.00	-843.88	-117.12	Begin 90.37° lateral
11,192.39	4,232.00	-5,444.12	4,407.50	PBHL/TD 11192.39 MD 4232.00 TVD

Planning Report - Geographic

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Project San Juan County, New Mexico NAD83 NM W

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site Greater Lybrook Pad (48,49,50,51 & 52)

Site Position:		**Northing:**	1,894,437.627 usft	**Latitude:**	36.206409000
From:	Lat/Long	**Easting:**	2,743,359.864 usft	**Longitude:**	-107.764631000
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "		

Well Greater Lybrook Unit No. 049H, Surf loc: 404 FSL 670 FWL Section 23-T23N-R07W

Well Position	**+N/-S**	0.00 ft	**Northing:**	1,894,384.438 usft	**Latitude:**	36.206263000
	+E/-W	0.00 ft	**Easting:**	2,743,300.014 usft	**Longitude:**	-107.764834000
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,747.00 ft
Grid Convergence:						

Wellbore Original Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	11/3/2022	8.66	62.70	49,152.06306790

Design rev0

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	135.480

Plan Survey Tool Program **Date**

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	11,192.39	rev0 (Original Hole)		

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.000	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,532.47	18.97	237.969	2,520.98	-55.04	-87.97	3.00	3.00	0.00	237.97	
3,735.48	18.97	237.969	3,658.62	-262.49	-419.58	0.00	0.00	0.00	0.00	
4,363.06	60.00	144.900	4,163.80	-570.35	-341.89	10.00	6.54	-14.83	-103.43	
4,423.06	60.00	144.900	4,193.80	-612.86	-312.01	0.00	0.00	0.00	0.00	
4,739.79	90.37	135.475	4,274.00	-843.88	-117.12	10.00	9.59	-2.98	-18.17	
11,192.39	90.37	135.475	4,232.00	-5,444.12	4,407.50	0.00	0.00	0.00	0.00	G Lybrook 049 LTP 2

Planning Report - Geographic

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.000	0.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
100.00	0.00	0.000	100.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
200.00	0.00	0.000	200.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
300.00	0.00	0.000	300.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
335.00	0.00	0.000	335.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
Ojo Alamo									
350.00	0.00	0.000	350.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
13 3/8" Casing									
400.00	0.00	0.000	400.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
440.00	0.00	0.000	440.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
Kirtland									
500.00	0.00	0.000	500.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
600.00	0.00	0.000	600.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
645.00	0.00	0.000	645.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
Fruitland									
700.00	0.00	0.000	700.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
800.00	0.00	0.000	800.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
900.00	0.00	0.000	900.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,000.00	0.00	0.000	1,000.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,035.00	0.00	0.000	1,035.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
Pictured Cliffs									
1,100.00	0.00	0.000	1,100.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,155.00	0.00	0.000	1,155.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
Lewis									
1,200.00	0.00	0.000	1,200.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,300.00	0.00	0.000	1,300.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,400.00	0.00	0.000	1,400.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,415.00	0.00	0.000	1,415.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
Chacra									
1,500.00	0.00	0.000	1,500.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,600.00	0.00	0.000	1,600.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,700.00	0.00	0.000	1,700.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,800.00	0.00	0.000	1,800.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
1,900.00	0.00	0.000	1,900.00	0.00	0.00	1,894,384.438	2,743,300.014	36.206263000	-107.764834000
KOP Begin 3°/100' build									
2,000.00	3.00	237.969	1,999.95	-1.39	-2.22	1,894,383.050	2,743,297.795	36.206259191	-107.764841525
2,100.00	6.00	237.969	2,099.63	-5.55	-8.87	1,894,378.889	2,743,291.144	36.206247774	-107.764864078
2,200.00	9.00	237.969	2,198.77	-12.47	-19.93	1,894,371.967	2,743,280.080	36.206228780	-107.764901599
2,300.00	12.00	237.969	2,297.08	-22.14	-35.38	1,894,362.303	2,743,264.632	36.206202262	-107.764953984
2,400.00	15.00	237.969	2,394.31	-34.51	-55.17	1,894,349.923	2,743,244.844	36.206168291	-107.765021089
2,463.28	16.90	237.969	2,455.15	-43.74	-69.91	1,894,340.702	2,743,230.104	36.206142988	-107.765071074
Cliff House									
2,484.23	17.53	237.969	2,475.16	-47.02	-75.17	1,894,337.414	2,743,224.848	36.206133966	-107.765088896
Menefee									
2,500.00	18.00	237.969	2,490.18	-49.58	-79.25	1,894,334.862	2,743,220.769	36.206126962	-107.765102731
2,532.47	18.97	237.969	2,520.98	-55.04	-87.97	1,894,329.400	2,743,212.039	36.206111976	-107.765132334
Begin 18.97° tangent									
2,589.60	18.97	237.969	2,575.00	-64.89	-103.72	1,894,319.549	2,743,196.292	36.206084944	-107.765185733
9 5/8" Casing									
2,600.00	18.97	237.969	2,584.83	-66.68	-106.59	1,894,317.756	2,743,193.426	36.206080023	-107.765195454
2,700.00	18.97	237.969	2,679.40	-83.93	-134.15	1,894,300.511	2,743,165.862	36.206032704	-107.765288928
2,800.00	18.97	237.969	2,773.97	-101.17	-161.72	1,894,283.267	2,743,138.297	36.205985384	-107.765382403
2,900.00	18.97	237.969	2,868.53	-118.42	-189.28	1,894,266.022	2,743,110.733	36.205938065	-107.765475877

Planning Report - Geographic

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,000.00	18.97	237.969	2,963.10	-135.66	-216.85	1,894,248.777	2,743,083.168	36.205890745	-107.765569352
3,100.00	18.97	237.969	3,057.67	-152.91	-244.41	1,894,231.533	2,743,055.604	36.205843425	-107.765662826
3,200.00	18.97	237.969	3,152.23	-170.15	-271.97	1,894,214.288	2,743,028.039	36.205796106	-107.765756300
3,300.00	18.97	237.969	3,246.80	-187.39	-299.54	1,894,197.044	2,743,000.475	36.205748786	-107.765849774
3,400.00	18.97	237.969	3,341.37	-204.64	-327.10	1,894,179.799	2,742,972.910	36.205701466	-107.765943248
3,500.00	18.97	237.969	3,435.93	-221.88	-354.67	1,894,162.554	2,742,945.346	36.205654146	-107.766036722
3,501.92	18.97	237.969	3,437.74	-222.21	-355.20	1,894,162.224	2,742,944.818	36.205653239	-107.766038512
Point Lookout									
3,600.00	18.97	237.969	3,530.50	-239.13	-382.23	1,894,145.310	2,742,917.782	36.205606826	-107.766130196
3,658.51	18.97	237.969	3,585.83	-249.22	-398.36	1,894,135.219	2,742,901.652	36.205579137	-107.766184891
Mancos									
3,700.00	18.97	237.969	3,625.07	-256.37	-409.80	1,894,128.065	2,742,890.217	36.205559505	-107.766223669
3,735.48	18.97	237.969	3,658.62	-262.49	-419.58	1,894,121.946	2,742,880.436	36.205542715	-107.766256837
Begin 10°/100' build/turn									
3,750.00	18.69	233.559	3,672.36	-265.13	-423.45	1,894,119.313	2,742,876.564	36.205535488	-107.766269967
3,800.00	18.53	217.854	3,719.78	-276.16	-434.78	1,894,108.275	2,742,865.237	36.205505186	-107.766308387
3,850.00	19.64	202.899	3,767.06	-290.19	-442.93	1,894,094.252	2,742,857.087	36.205466681	-107.766336045
3,900.00	21.82	190.155	3,813.84	-307.09	-447.84	1,894,077.353	2,742,852.176	36.205420266	-107.766352732
3,950.00	24.80	179.974	3,859.77	-326.73	-449.47	1,894,057.705	2,742,850.541	36.205366294	-107.766358320
4,000.00	28.32	172.013	3,904.50	-348.98	-447.82	1,894,035.458	2,742,852.195	36.205305176	-107.766352766
4,035.58	31.06	167.413	3,935.42	-366.30	-444.65	1,894,018.134	2,742,855.369	36.205257581	-107.766342048
MNCS_A									
4,050.00	32.21	165.755	3,947.69	-373.66	-442.89	1,894,010.781	2,742,857.125	36.205237378	-107.766336114
4,100.00	36.34	160.749	3,989.01	-400.58	-434.72	1,893,983.863	2,742,865.293	36.205163414	-107.766308489
4,150.00	40.64	156.654	4,028.14	-429.53	-423.38	1,893,954.907	2,742,876.638	36.205083849	-107.766270102
4,158.94	41.43	155.998	4,034.88	-434.91	-421.02	1,893,949.534	2,742,878.994	36.205069084	-107.766262128
MNCS_B									
4,200.00	45.07	153.227	4,064.79	-460.30	-408.94	1,893,924.135	2,742,891.073	36.204999287	-107.766221245
4,250.00	49.58	150.296	4,098.67	-492.66	-391.53	1,893,891.780	2,742,908.488	36.204910373	-107.766162291
4,290.83	53.32	148.182	4,124.12	-520.08	-375.19	1,893,864.356	2,742,924.829	36.204835003	-107.766106966
MNCS_C									
4,300.00	54.16	147.736	4,129.54	-526.35	-371.26	1,893,858.090	2,742,928.751	36.204817782	-107.766093687
4,350.00	58.79	145.458	4,157.15	-561.12	-348.31	1,893,823.319	2,742,951.708	36.204722220	-107.766015957
4,363.06	60.00	144.900	4,163.80	-570.35	-341.89	1,893,814.092	2,742,958.126	36.204696859	-107.765994222
Begin 60.00° tangent									
4,378.50	60.00	144.900	4,171.52	-581.29	-334.20	1,893,803.149	2,742,965.817	36.204666783	-107.765968179
MNCS_Cms									
4,400.00	60.00	144.900	4,182.27	-596.52	-323.49	1,893,787.918	2,742,976.521	36.204624923	-107.765931932
4,423.06	60.00	144.900	4,193.80	-612.86	-312.01	1,893,771.579	2,742,988.004	36.204580017	-107.765893048
Begin 10°/100' build/turn									
4,450.00	62.56	143.954	4,206.74	-632.07	-298.27	1,893,752.366	2,743,001.749	36.204527209	-107.765846504
4,500.00	67.34	142.307	4,227.91	-668.29	-271.09	1,893,716.148	2,743,028.928	36.204427664	-107.765754464
4,550.00	72.12	140.771	4,245.23	-705.00	-241.91	1,893,679.440	2,743,058.099	36.204326767	-107.765655673
4,600.00	76.92	139.316	4,258.57	-741.92	-210.97	1,893,642.520	2,743,089.041	36.204225285	-107.765550881
4,650.00	81.73	137.916	4,267.83	-778.77	-178.50	1,893,605.669	2,743,121.517	36.204123990	-107.765440888
4,700.00	86.54	136.551	4,272.93	-815.27	-144.73	1,893,569.168	2,743,155.281	36.204023653	-107.765326529
4,739.79	90.37	135.475	4,274.00	-843.88	-117.12	1,893,540.558	2,743,182.898	36.203945006	-107.765232989
Begin 90.37° lateral									
4,800.00	90.37	135.475	4,273.61	-886.81	-74.89	1,893,497.631	2,743,225.120	36.203826998	-107.765089978
4,900.00	90.37	135.475	4,272.96	-958.10	-4.77	1,893,426.338	2,743,295.240	36.203631015	-107.764852472
5,000.00	90.37	135.475	4,272.31	-1,029.39	65.35	1,893,355.046	2,743,365.361	36.203435030	-107.764614966
5,100.00	90.37	135.475	4,271.66	-1,100.69	135.47	1,893,283.753	2,743,435.482	36.203239046	-107.764377462
5,200.00	90.37	135.475	4,271.01	-1,171.98	205.59	1,893,212.461	2,743,505.602	36.203043061	-107.764139959

Planning Report - Geographic

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,300.00	90.37	135.475	4,270.36	-1,243.27	275.71	1,893,141.168	2,743,575.723	36.202847075	-107.763902457
5,400.00	90.37	135.475	4,269.71	-1,314.57	345.83	1,893,069.875	2,743,645.844	36.202651089	-107.763664956
5,500.00	90.37	135.475	4,269.06	-1,385.86	415.95	1,892,998.583	2,743,715.964	36.202455103	-107.763427457
5,600.00	90.37	135.475	4,268.40	-1,457.15	486.07	1,892,927.290	2,743,786.085	36.202259116	-107.763189958
5,700.00	90.37	135.475	4,267.75	-1,528.44	556.19	1,892,855.998	2,743,856.206	36.202063129	-107.762952461
5,800.00	90.37	135.475	4,267.10	-1,599.74	626.31	1,892,784.705	2,743,926.326	36.201867141	-107.762714965
5,900.00	90.37	135.475	4,266.45	-1,671.03	696.43	1,892,713.413	2,743,996.447	36.201671152	-107.762477470
6,000.00	90.37	135.475	4,265.80	-1,742.32	766.56	1,892,642.120	2,744,066.567	36.201475164	-107.762239976
6,100.00	90.37	135.475	4,265.15	-1,813.61	836.68	1,892,570.827	2,744,136.688	36.201279174	-107.762002484
6,200.00	90.37	135.475	4,264.50	-1,884.91	906.80	1,892,499.535	2,744,206.809	36.201083185	-107.761764993
6,300.00	90.37	135.475	4,263.85	-1,956.20	976.92	1,892,428.242	2,744,276.929	36.200887194	-107.761527503
6,400.00	90.37	135.475	4,263.20	-2,027.49	1,047.04	1,892,356.950	2,744,347.050	36.200691204	-107.761290014
6,500.00	90.37	135.475	4,262.55	-2,098.79	1,117.16	1,892,285.657	2,744,417.171	36.200495212	-107.761052526
6,600.00	90.37	135.475	4,261.89	-2,170.08	1,187.28	1,892,214.364	2,744,487.291	36.200299221	-107.760815039
6,700.00	90.37	135.475	4,261.24	-2,241.37	1,257.40	1,892,143.072	2,744,557.412	36.200103229	-107.760577554
6,800.00	90.37	135.475	4,260.59	-2,312.66	1,327.52	1,892,071.779	2,744,627.532	36.199907236	-107.760340070
6,900.00	90.37	135.475	4,259.94	-2,383.96	1,397.64	1,892,000.487	2,744,697.653	36.199711243	-107.760102587
7,000.00	90.37	135.475	4,259.29	-2,455.25	1,467.76	1,891,929.194	2,744,767.774	36.199515249	-107.759865105
7,100.00	90.37	135.475	4,258.64	-2,526.54	1,537.88	1,891,857.902	2,744,837.894	36.199319255	-107.759627624
7,200.00	90.37	135.475	4,257.99	-2,597.83	1,608.00	1,891,786.609	2,744,908.015	36.199123261	-107.759390145
7,300.00	90.37	135.475	4,257.34	-2,669.13	1,678.13	1,891,715.316	2,744,978.136	36.198927266	-107.759152667
7,400.00	90.37	135.475	4,256.69	-2,740.42	1,748.25	1,891,644.024	2,745,048.256	36.198731270	-107.758915190
7,500.00	90.37	135.475	4,256.04	-2,811.71	1,818.37	1,891,572.731	2,745,118.377	36.198535274	-107.758677714
7,600.00	90.37	135.475	4,255.39	-2,883.01	1,888.49	1,891,501.439	2,745,188.498	36.198339278	-107.758440239
7,700.00	90.37	135.475	4,254.73	-2,954.30	1,958.61	1,891,430.146	2,745,258.618	36.198143281	-107.758202766
7,800.00	90.37	135.475	4,254.08	-3,025.59	2,028.73	1,891,358.853	2,745,328.739	36.197947283	-107.757965293
7,900.00	90.37	135.475	4,253.43	-3,096.88	2,098.85	1,891,287.561	2,745,398.859	36.197751286	-107.757727822
8,000.00	90.37	135.475	4,252.78	-3,168.18	2,168.97	1,891,216.268	2,745,468.980	36.197555287	-107.757490352
8,100.00	90.37	135.475	4,252.13	-3,239.47	2,239.09	1,891,144.976	2,745,539.101	36.197359288	-107.757252883
8,200.00	90.37	135.475	4,251.48	-3,310.76	2,309.21	1,891,073.683	2,745,609.221	36.197163289	-107.757015416
8,300.00	90.37	135.475	4,250.83	-3,382.05	2,379.33	1,891,002.391	2,745,679.342	36.196967289	-107.756777949
8,400.00	90.37	135.475	4,250.18	-3,453.35	2,449.45	1,890,931.098	2,745,749.463	36.196771289	-107.756540484
8,500.00	90.37	135.475	4,249.53	-3,524.64	2,519.57	1,890,859.805	2,745,819.583	36.196575288	-107.756303020
8,600.00	90.37	135.475	4,248.88	-3,595.93	2,589.70	1,890,788.513	2,745,889.704	36.196379287	-107.756065557
8,700.00	90.37	135.475	4,248.22	-3,667.23	2,659.82	1,890,717.220	2,745,959.824	36.196183285	-107.755828095
8,800.00	90.37	135.475	4,247.57	-3,738.52	2,729.94	1,890,645.928	2,746,029.945	36.195987283	-107.755590635
8,900.00	90.37	135.475	4,246.92	-3,809.81	2,800.06	1,890,574.635	2,746,100.066	36.195791281	-107.755353176
9,000.00	90.37	135.475	4,246.27	-3,881.10	2,870.18	1,890,503.342	2,746,170.186	36.195595277	-107.755115717
9,100.00	90.37	135.475	4,245.62	-3,952.40	2,940.30	1,890,432.050	2,746,240.307	36.195399274	-107.754878260
9,200.00	90.37	135.475	4,244.97	-4,023.69	3,010.42	1,890,360.757	2,746,310.428	36.195203270	-107.754640805
9,300.00	90.37	135.475	4,244.32	-4,094.98	3,080.54	1,890,289.465	2,746,380.548	36.195007265	-107.754403350
9,400.00	90.37	135.475	4,243.67	-4,166.27	3,150.66	1,890,218.172	2,746,450.669	36.194811260	-107.754165898
9,500.00	90.37	135.475	4,243.02	-4,237.57	3,220.78	1,890,146.880	2,746,520.789	36.194615255	-107.753928445
9,600.00	90.37	135.475	4,242.37	-4,308.86	3,290.90	1,890,075.587	2,746,590.910	36.194419249	-107.753690994
9,700.00	90.37	135.475	4,241.71	-4,380.15	3,361.02	1,890,004.294	2,746,661.031	36.194223242	-107.753453545
9,800.00	90.37	135.475	4,241.06	-4,451.45	3,431.14	1,889,933.002	2,746,731.151	36.194027235	-107.753216096
9,900.00	90.37	135.475	4,240.41	-4,522.74	3,501.27	1,889,861.709	2,746,801.272	36.193831228	-107.752978648
10,000.00	90.37	135.475	4,239.76	-4,594.03	3,571.39	1,889,790.417	2,746,871.393	36.193635220	-107.752741202
10,100.00	90.37	135.475	4,239.11	-4,665.32	3,641.51	1,889,719.124	2,746,941.513	36.193439212	-107.752503757
10,200.00	90.37	135.475	4,238.46	-4,736.62	3,711.63	1,889,647.831	2,747,011.634	36.193243203	-107.752266313
10,300.00	90.37	135.475	4,237.81	-4,807.91	3,781.75	1,889,576.539	2,747,081.755	36.193047194	-107.752028870
10,400.00	90.37	135.475	4,237.16	-4,879.20	3,851.87	1,889,505.246	2,747,151.875	36.192851184	-107.751791429
10,500.00	90.37	135.475	4,236.51	-4,950.49	3,921.99	1,889,433.954	2,747,221.996	36.192655174	-107.751553988
10,600.00	90.37	135.475	4,235.86	-5,021.79	3,992.11	1,889,362.661	2,747,292.116	36.192459163	-107.751316549
10,700.00	90.37	135.475	4,235.21	-5,093.08	4,062.23	1,889,291.369	2,747,362.237	36.192263152	-107.751079111

Planning Report - Geographic

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,800.00	90.37	135.475	4,234.55	-5,164.37	4,132.35	1,889,220.076	2,747,432.358	36.192067140	-107.750841674
10,900.00	90.37	135.475	4,233.90	-5,235.67	4,202.47	1,889,148.783	2,747,502.478	36.191871128	-107.750604239
11,000.00	90.37	135.475	4,233.25	-5,306.96	4,272.59	1,889,077.491	2,747,572.600	36.191675115	-107.750366804
11,100.00	90.37	135.475	4,232.60	-5,378.25	4,342.71	1,889,006.198	2,747,642.721	36.191479102	-107.750129371
11,192.39	90.37	135.475	4,232.00	-5,444.12	4,407.50	1,888,940.329	2,747,707.507	36.191298000	-107.749910000
PBHL/TD 11192.39 MD 4232.00 TVD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
G Lybrook 049 LTP 232 - plan hits target center - Point	0.00	0.000	4,232.00	-5,444.12	4,407.50	1,888,940.329	2,747,707.507	36.191298000	-107.749910000
G Lybrook 049 FTP 440 - plan misses target center by 0.01ft at 4739.79ft MD (4274.00 TVD, -843.88 N, -117.12 E) - Point	0.00	0.000	4,274.00	-843.88	-117.12	1,893,540.556	2,743,182.895	36.203945000	-107.765233000

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
350.00	350.00	13 3/8" Casing	13-5/8	17-1/2
2,589.60	2,575.00	9 5/8" Casing	9-5/8	12-1/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
335.00	335.00	Ojo Alamo		-0.47	135.480
440.00	440.00	Kirtland		-0.47	135.480
645.00	645.00	Fruitland		-0.47	135.480
1,035.00	1,035.00	Pictured Cliffs		-0.47	135.480
1,155.00	1,155.00	Lewis		-0.47	135.480
1,415.00	1,415.00	Chacra		-0.47	135.480
2,463.28	2,455.15	Cliff House		-0.47	135.480
2,484.23	2,475.16	Menefee		-0.47	135.480
3,501.92	3,437.74	Point Lookout		-0.47	135.480
3,658.51	3,585.83	Mancos		-0.47	135.480
4,035.58	3,935.42	MNCS_A		-0.47	135.480
4,158.94	4,034.88	MNCS_B		-0.47	135.480
4,290.83	4,124.12	MNCS_C		-0.47	135.480
4,378.50	4,171.52	MNCS_Cms		-0.47	135.480

Planning Report - Geographic

Database:	DB_Feb2822	**Local Co-ordinate Reference:**	Well Greater Lybrook Unit No. 049H
Company:	Enduring Resources LLC	**TVD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Project:	San Juan County, New Mexico NAD83 NM W	**MD Reference:**	RKB=6747+28 @ 6775.00ft (Ensign 773)
Site:	Greater Lybrook Pad (48,49,50,51 & 52)	**North Reference:**	Grid
Well:	Greater Lybrook Unit No. 049H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,900.00	1,900.00	0.00	0.00	KOP Begin 3°/100' build
2,532.47	2,520.98	-55.04	-87.97	Begin 18.97° tangent
3,735.48	3,658.62	-262.49	-419.58	Begin 10°/100' build/turn
4,363.06	4,163.80	-570.35	-341.89	Begin 60.00° tangent
4,423.06	4,193.80	-612.86	-312.01	Begin 10°/100' build/turn
4,739.79	4,274.00	-843.88	-117.12	Begin 90.37° lateral
11,192.39	4,232.00	-5,444.12	4,407.50	PBHL/TD 11192.39 MD 4232.00 TVD

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Farmington District Office
6251 College Blvd, Suite A
Farmington, New Mexico 87402

In Reply Refer To:
3162.3-1(NMF0110)

* ENDURING RESOURCES LLC

#049H GREATER LYBROOK UNIT

Lease: NMNM057164 Unit: NMNM144419X
SH: SW¼SW¼ Section 23, T.23 N., R.9 W.
San Juan County, New Mexico
BH: SE¼SE¼ Section 26, T.23 N., R.9 W.
San Juan County, New Mexico
***Above Data Required on Well Sign**

GENERAL REQUIREMENTS FOR OIL AND GAS OPERATIONS ON FEDERAL AND INDIAN LEASES

The following special requirements apply and are effective when **checked**:

A. ☒ Note all surface/drilling conditions of approval attached.

B. ☒ The required wait on cement (WOC) time will be a minimum of 500 psi compressive strength at 60 degrees. Blowout preventor (BOP) nipple-up operations may then be initiated

C. ☐ Test the surface casing to a minimum of _____ psi for 30 minutes.

D. ☐ Test all casing strings below the surface casing to .22 psi/ft. of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield burst) for a minimum of 30 minutes.

E. ☐ Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the Bureau of Land Management, Farmington District Office, Branch of Reservoir Management, 6251 College Blvd. Suite A, Farmington, New Mexico 87402. The effective date of the agreement must be **prior** to any sales.

F. ☐ The use of co-flex hose is authorized contingent upon the following:
1. From the BOP to the choke manifold: the co-flex hose must be hobbled on both ends and saddle to prevent whip.
2. From the choke manifold to the discharge tank: the co-flex hoses must be as straight as practical, hobbled on both ends and anchored to prevent whip.
3. The co-flex hose pressure rating must be at least commensurate with approved BOPE.

I. GENERAL

A. Full compliance with all applicable laws, regulations, and Onshore Orders, with the approved Permit to drill, and with the approved Surface Use and Operations Plan is required. Lessees and/or operators are fully accountable for the actions of their contractors and subcontractors. Failure to comply with these requirements and the filing of required reports will result in strict enforcement pursuant to 43 CFR 3163.1 or 3163.2.

B. Each well shall have a well sign in legible condition from spud date to final abandonment. The sign should show the operator's name, lease serial number, or unit name, well number, location of the well, and whether lease is Tribal or Allotted, (See 43 CFR 3162.6(b)).

C. A complete copy of the approved Application for Permit to Drill, along with any conditions of approval, shall be available to authorized personnel at the drill site whenever active drilling operations are under way.

D. For Wildcat wells only, a drilling operations progress report is to be submitted, to the BLM-Field Office, weekly from the spud date until the well is completed and the Well Completion Report (Form 3160-4) is filed. The report should be on 8-1/2 x 11 inch paper, and each page should identify the well by; operator's name, well number, location and lease number.

E. As soon as practical, notice is required of all blowouts, fires and accidents involving life-threatening injuries or loss of life. (See NTL-3A).

F. Prior approval by the BLM-Authorized Office (Drilling and Production Section) is required for variance from the approved drilling program and before commencing plugging operations, plug back work casing repair work, corrective cementing operations, or suspending drilling operations indefinitely. Emergency approval may be obtained orally, but such approval is contingent upon filing of a notice of intent (on a Sundry Notice, Form 3160-5) within three business days (original and three copies of Federal leases and an original and four copies on Indian leases). **Any changes to the approved plan or any questions regarding drilling operations should be directed to BLM during regular business hours at 505-564-7600. Emergency program changes after hours should be directed to at Virgil Lucero at 505-793-1836.**

G. The Inspection and Enforcement Section (I&E), phone number (505-564-7750) is to be notified at least 24 hours in advance of BOP test, spudding, cementing, or plugging operations so that a BLM representative may witness the operations.

H. Unless drilling operations are commenced within two years, approval of the Application for Permit to Drill will expire. A written request for a two years extension may be granted if submitted prior to expiration.

I. From the time drilling operations are initiated and until drilling operations are completed, a member of the drilling crew or the tool pusher shall maintain rig surveillance at all time, unless the well is secured with blowout preventers or cement plugs.

J. If for any reason, drilling operations are suspended for more than 90 days, a written notice must be provided to this office outlining your plans for this well.

II. REPORTING REQUIREMENTS

A. For reporting purposes, all well Sundry notices, well completion and other well actions shall be referenced by the appropriate lease, communitization agreement and/or unit agreement numbers.

B. The following reports shall be filed with the BLM-Authorized Officer within 30 days after the work is completed.

1 .Original and three copies on Federal and an Original and five copies on Indian leases of Sundry Notice (Form 3150-5), giving complete information concerning.

a. Setting of each string of casing. Show size and depth of hole, grade and weight of casing, depth set, depth of any and all cementing tools that are used, amount (in cubic feet) and types of cement used, whether cement circulated to surface and all cement tops in the casing annulus, casing test method and results, and the date work was done. Show spud date on first report submitted.

b. Intervals tested, perforated (include; size, number and location of perforations), acidized, or fractured; and results obtained. Provide date work was done on well completion report and completion sundry notice.

c. Subsequent Report of Abandonment, show the manner in which the well was plugged, including depths where casing was cut and pulled, intervals (by depths) where cement plugs were replaced, and dates of the operations.

2. Well Completion Report (Form 3160-4) will be submitted with 30 days after well has been completed.

a. Initial Bottom Hole Pressure (BHP) for the producing formations. Show the BHP on the completion report. The pressure may be: 1) measured with a bottom hole bomb, or; 2) calculated based on shut in surface pressures (minimum seven day buildup) and fluid level shot.

3. Submit a cement evaluation log, if cement is not circulated to surface.

III. DRILLER'S LOG

The following shall be entered in the daily driller's log: 1) Blowout preventer pressures tests, including test pressures and results. 2) Blowout preventer tests for proper functioning, 3) Blowout prevention drills conducted, 4) Casing run, including size, grade, weight, and depth set, 5) How pipe was cemented, including amount of cement, type, whether cement circulated to surface, location of cementing tools, etc., 6) Waiting on cement time for each casing string, 7) Casing pressure tests after cementing, including test pressure and results and 8) Estimated amounts of oil and gas recovered and/or produced during drill stem test.

IV. GAS FLARING

Gas produced from this well may not be vented or flared beyond an initial, authorized test period of * Days or 50 MMCF following its (completion)(recompletion), whichever first occurs, without the prior, written approval of the authorized officer. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue venting or flaring as uneconomic is granted. You shall be required to compensate the lessor for the portion of the gas vented or flared without approval which is determined to have been avoidably lost.

*30 days, unless a longer test period is specifically approved by the authorized officer. The 30-day period will commence upon the first gas to surface.

V. SAFETY

A. All rig heating stoves are to be of the explosion-proof type.

B. Rig safety lines are to be installed.

C. Hard hats and other Personal Protective Equipment (PPE) must be utilized.

VI. CHANGE OF PLANS OR ABANDONMENT

A. Any changes of plans required in order to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth in Section 1.F.

B. If the well is dry, it is to be plugged in accordance with 43 CFR 3162.3-4, approval of the proposed plugging program is required as set forth in Section 1.F. The report should show the total depth reached, the reason for plugging, and the proposed intervals, by depths, where cement plugs are to be placed, type of plugging mud, etc. A Subsequent Report of Abandonment is required as set forth in Section II.B.1c.

C. Unless a well has been properly cased and cemented, or properly plugged, the drilling rig must not be moved from the drill site without prior approval from the BLM-Authorized Officer.

VII. PHONE NUMBERS

A. For BOPE tests, cementing, and plugging operations the phone number is 505-564-7750 and must be called 24 hours in advance in order that a BLM representative may witness the operations.

WELL NAME: **GREATER LYBROOK UNIT 049H**

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

API Number: *not yet assigned*

AFE Number: *not yet assigned*

ER Well Number: *not yet assigned*

State: New Mexico

County: San Juan

Surface Elev.: 6,747 ft ASL (GL) 6,760 ft ASL (KB)

Surface Location: 23-23N-09W Sec-Twn- Rng 404 ft FSL 670 ft FWL

BH Location: 26-23N-09W Sec-Twn- Rng 232 ft FSL 143 FEL

Driving Directions: ***FROM THE INTERSECTION OF US HWY 550 & US HWY 64 IN BLOOMFIELD, NM:***

South on US Hwy 550 for 38.3 miles to MM 113.4, Right (Southwest) on CR #7890 for 0.8 miles to fork, Left (South) remaining on CR #7890 for 1.3 miles to 4-way intersection, Left (Southeast) remaining on CR #7890 for 1.2 miles to 4-way intersection; Right (West) exiting CR #7890 along existing roadway for 0.6 mile to fork; Left (West) for 0.7 miles to fork in roadway; Right (Northwest) for 0.2 miles to W LYBROOK UNIT 726H PAD & 726H EXPANSION (777H, 778H, 779H, 780H, 781H).

QUICK REFERENCE	
Sur TD (MD)	350 ft
Int TD (MD)	2,590 ft
KOP (MD)	3,735 ft
KOP (TVD)	3,659 ft
Target (TVD)	4,274 ft
Curve BUR	10 °/100 ft
POE (MD)	4,707 ft
TD (MD)	12,358 ft
Lat Len (ft)	7,651 ft

WELL CONSTRUCTION SUMMARY:

	Hole (in)	TD MD (ft)	Csg (in)	Csg (lb/ft)	Csg (grade)	Csg (conn)	Csg Top (ft)	Csg Bot (ft)
Surface	17.500	350	13.375	54.5	J-55	BTC	0	350
Intermediate	12.250	2,590	9.625	36.0	J-55	LTC	0	2,590
Production	8.500	12,358	5.500	17.0	P-110	LTC	0	12,358

CEMENT PROPERTIES SUMMARY:

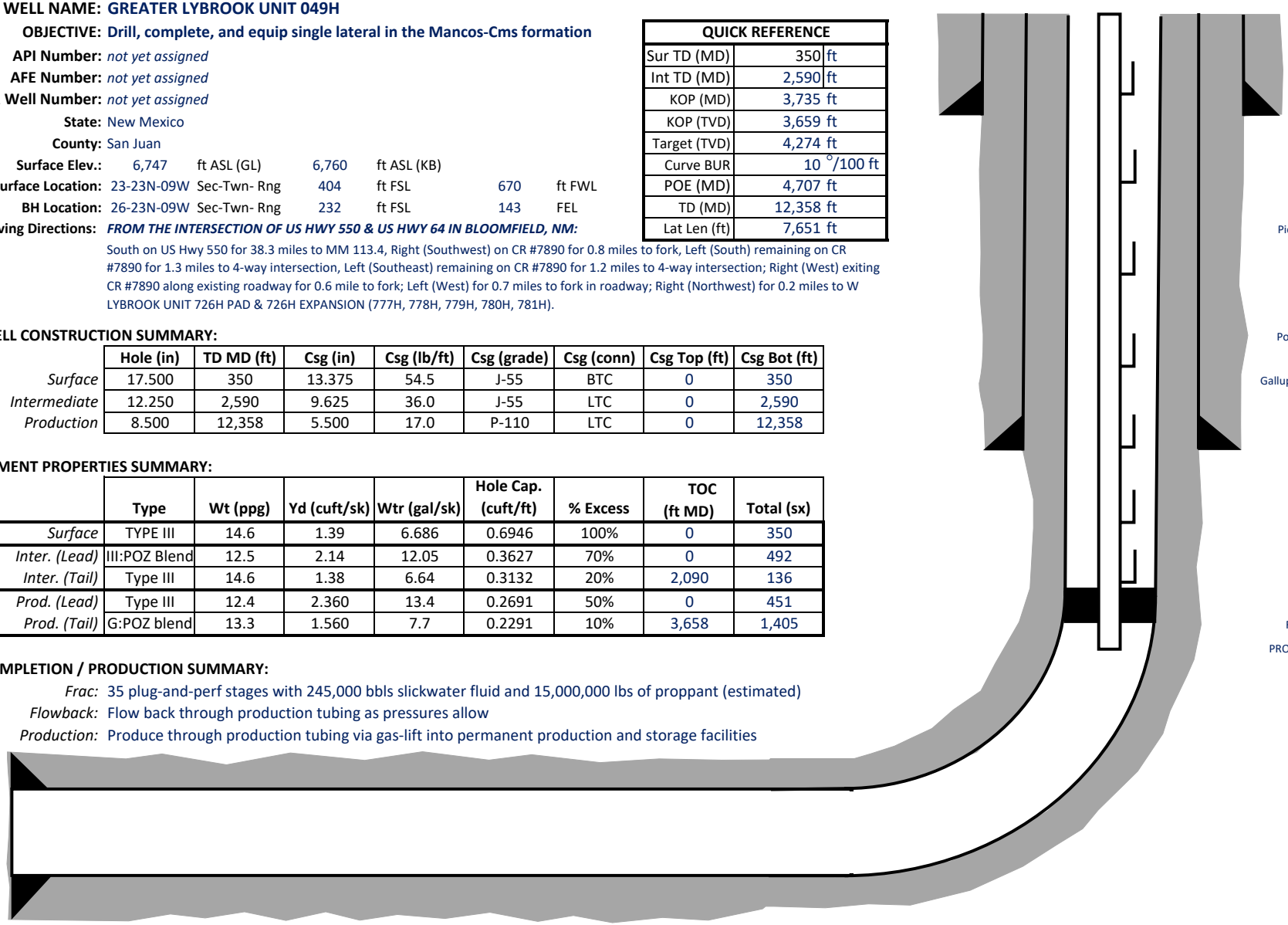
	Type	Wt (ppg)	Yd (cuft/sk)	Wtr (gal/sk)	Hole Cap. (cuft/ft)	% Excess	TOC (ft MD)	Total (sx)
Surface	TYPE III	14.6	1.39	6.686	0.6946	100%	0	350
Inter. (Lead)	III:POZ Blend	12.5	2.14	12.05	0.3627	70%	0	492
Inter. (Tail)	Type III	14.6	1.38	6.64	0.3132	20%	2,090	136
Prod. (Lead)	Type III	12.4	2.360	13.4	0.2691	50%	0	451
Prod. (Tail)	G:POZ blend	13.3	1.560	7.7	0.2291	10%	3,658	1,405

COMPLETION / PRODUCTION SUMMARY:

Frac: 35 plug-and-perf stages with 245,000 bbls slickwater fluid and 15,000,000 lbs of proppant (estimated)

Flowback: Flow back through production tubing as pressures allow

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

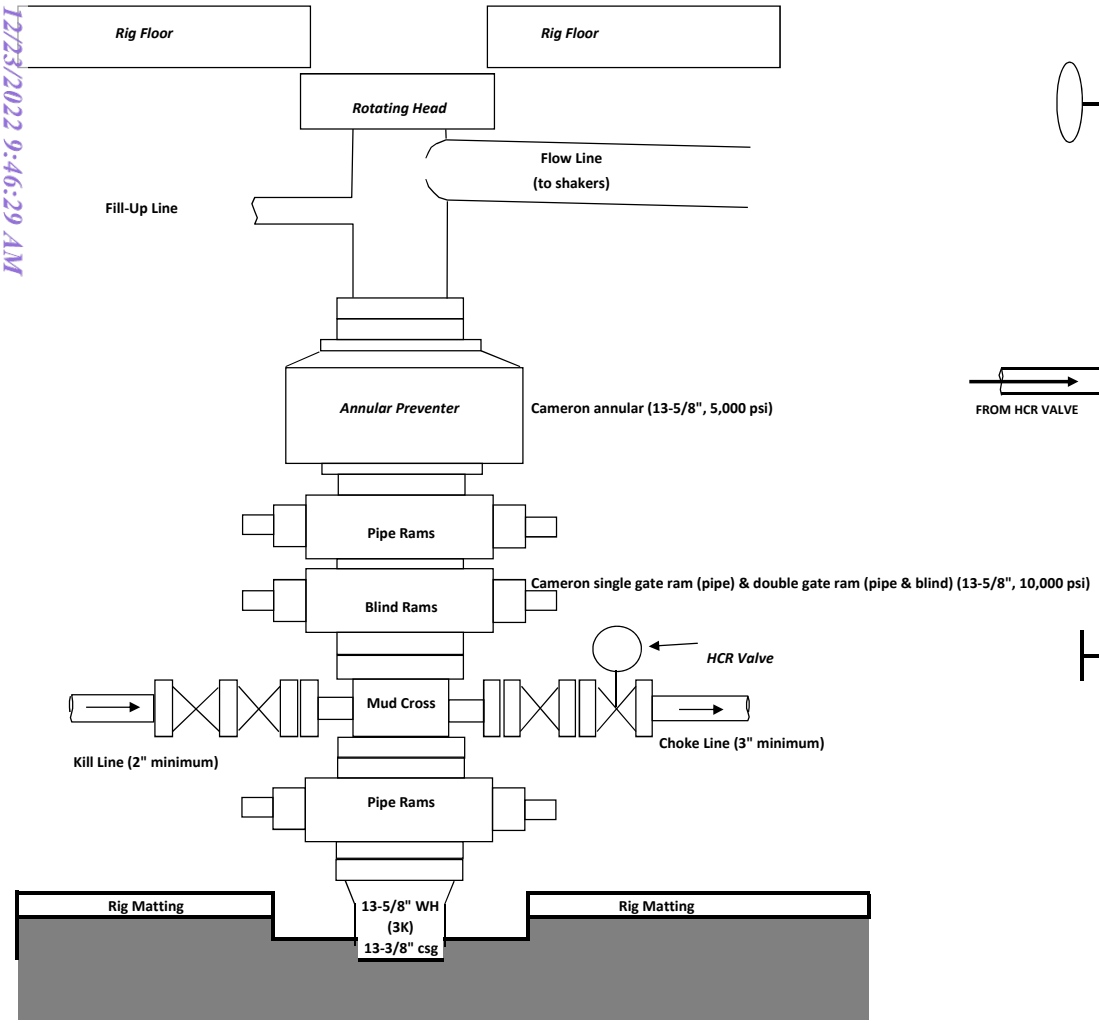


Tops	TVD (ft KB)	MD (ft KB)
Ojo Alamo	335	335
Kirtland	440	440
Fruitland	645	645
Pictured Cliffs	1,035	1,035
Lewis	1,155	1,155
Chacra	1,415	1,415
Cliff House	2,455	2,481
Menefee	2,475	2,503
Point Lookout	3,437	3,510
Mancos	3,585	3,658
Gallup (MNCS_A)	3,935	4,018
MNCS_B	4,040	4,138
MNCS_C	4,135	4,267
MNCS_Cms	4,175	4,353
MNCS_D	0	0
MNCS_E	0	0
MNCS_F	0	0
MNCS_G	0	0
MNCS_H	0	0
MNCS_I	0	0
FTP TARGET	4,274	4,707
PROJECTED LTP	4,232	12,358

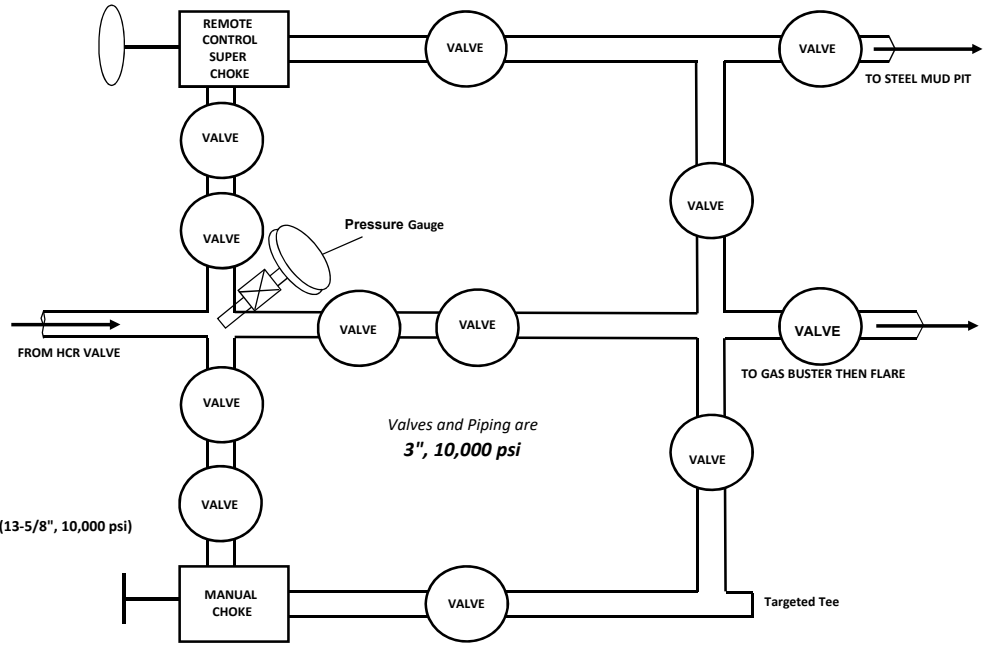
BOPE & CHOKE MANIFOLD DIAGRAMS

NOTE: EXACT BOPE AND CHOKE CONFIRGURATION 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



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 169246

CONDITIONS

Operator: ENDURING RESOURCES, LLC 6300 S Syracuse Way, Suite 525 Centennial, CO 80111	OGRID: 372286
	Action Number: 169246
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	12/23/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	12/23/2022
kpickford	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	12/23/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	12/23/2022
kpickford	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	12/23/2022