

Form 3160-3  
(June 2015)UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

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

|                                                                                                                                                                                                                                                                 |                                                                              |                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER                                                                                                                                                                    |                                                                              | 5. Lease Serial No.<br>NMSF078765                                   |
| 1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other                                                                                                                                 |                                                                              | 6. If Indian, Allottee or Tribe Name                                |
| 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone                                                                                                    |                                                                              | 7. If Unit or CA Agreement, Name and No.<br>NMNM078407E/ROSA UNIT   |
| 2. Name of Operator<br>LOGOS OPERATING LLC                                                                                                                                                                                                                      |                                                                              | 8. Lease Name and Well No.<br>ROSA UNIT<br>550H                     |
| 3a. Address<br>2010 AFTON PLACE, FARMINGTON, NM 87401                                                                                                                                                                                                           | 3b. Phone No. (include area code)<br>(505) 278-8720                          | 9. API Well No.<br>30-045-38439                                     |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *)<br>At surface NENW / 995 FNL / 1888 FWL / LAT 36.918581 / LONG -107.470736<br>At proposed prod. zone NWNW / 455 FNL / 168 FWL / LAT 36.920014 / LONG -107.494704 |                                                                              | 10. Field and Pool, or Exploratory<br>BASIN MANCOS/BASIN MANCOS     |
| 14. Distance in miles and direction from nearest town or post office*<br>12 miles                                                                                                                                                                               |                                                                              | 11. Sec., T. R. M. or Blk. and Survey or Area<br>SEC 9/T31N/R6W/NMP |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)<br>168 feet                                                                                                                               | 16. No of acres in lease<br>17. Spacing Unit dedicated to this well<br>640.0 | 12. County or Parish<br>SAN JUAN                                    |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.<br>10 feet                                                                                                                                           | 19. Proposed Depth<br>6994 feet / 14295 feet                                 | 13. State<br>NM                                                     |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>6429 feet                                                                                                                                                                                                | 22. Approximate date work will start*<br>04/01/2025                          | 20. BLM/BIA Bond No. in file<br>FED:                                |
| 23. Estimated duration<br>45 days                                                                                                                                                                                                                               |                                                                              | 24. Attachments                                                     |

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

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

|                                                            |                                                                |                    |
|------------------------------------------------------------|----------------------------------------------------------------|--------------------|
| 25. Signature<br>(Electronic Submission)                   | Name (Printed/Typed)<br>ETTA TRUJILLO / Ph: (505) 324-4145     | Date<br>04/04/2022 |
| Title<br>Regulatory Specialist                             |                                                                |                    |
| Approved by (Signature)<br>(Electronic Submission)         | Name (Printed/Typed)<br>DAVE J MANKIEWICZ / Ph: (505) 564-7761 | Date<br>03/10/2025 |
| Title<br>AFM-Minerals<br>Office<br>Farmington Field Office |                                                                |                    |

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

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



(Continued on page 2)

\*(Instructions on page 2)

## INSTRUCTIONS

**GENERAL:** This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

**ITEM I:** If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

**ITEM 4:** Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

**ITEM 14:** Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

**ITEMS 15 AND 18:** If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

**ITEM 22:** Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

**ITEM 24:** If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

## NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

**AUTHORITY:** 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

**PRINCIPAL PURPOSES:** The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

**ROUTINE USE:** Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

**EFFECT OF NOT PROVIDING INFORMATION:** Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to an evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

**BURDEN HOURS STATEMENT:** Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

**Additional Operator Remarks****Location of Well**

0. SHL: NENW / 995 FNL / 1888 FWL / TWSP: 31N / RANGE: 6W / SECTION: 9 / LAT: 36.918581 / LONG: -107.470736 ( TVD: 0 feet, MD: 0 feet )

PPP: NWNE / 0 FNL / 0 FWL / TWSP: 31N / RANGE: 6W / SECTION: 8 / LAT: 36.919947 / LONG: -107.471166 ( TVD: 0 feet, MD: 0 feet )

PPP: NENW / 0 FNL / 0 FWL / TWSP: 31N / RANGE: 6W / SECTION: 8 / LAT: 36.919947 / LONG: -107.471166 ( TVD: 0 feet, MD: 0 feet )

PPP: NENE / 0 FNL / 0 FWL / TWSP: 31N / RANGE: 6W / SECTION: 8 / LAT: 36.919947 / LONG: -107.471166 ( TVD: 0 feet, MD: 0 feet )

PPP: NENW / 498 FNL / 1762 FWL / TWSP: 31N / RANGE: 6W / SECTION: 9 / LAT: 36.919947 / LONG: -107.471166 ( TVD: 7001 feet, MD: 7415 feet )

BHL: NWNW / 455 FNL / 168 FWL / TWSP: 31N / RANGE: 6W / SECTION: 8 / LAT: 36.920014 / LONG: -107.494704 ( TVD: 6994 feet, MD: 14295 feet )

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### **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

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### Conditions of Approval

Operator: LOGOS Operating, LLC  
Well Names: Rosa Unit 550H, 554H, 556H (552H previously approved)  
[Rosa Unit Pad 5]  
Legal Location: T31N, R6W, Sec 9, NENW, NMPM  
NEPA Number: DOI-BLM-NM-F010-2025-0006-EA  
Inspection Date: May 20, 2022  
Lease Number: NMNM78407E

The following conditions of approval will apply to the Rosa Unit Pad 5 Natural Gas Wells (Rosa Unit 550H, 554H, and 556H), 60B Point of Diversion, Access Road, and Temporary Lay-Flat Water line Project, and other associated facilities, unless a particular Surface Managing Agency or private surface owner has supplied to Bureau of Land Management and the operator a contradictory environmental stipulation. The failure of the operator to comply with these requirements may result in an assessment or civil penalties pursuant to 43 CFR 3163.1 or 3163.2.

1. **Disclaimers:** BLM's approval of the APD does not relieve the lessee and operator from obtaining any other authorizations that may be required by the BOR, BIA, Navajo Tribe, State, or other jurisdictional entities.
2. **Copy of Plans:** A complete copy of the APD package, including Surface Use Plan of Operations, Bare Soil Reclamation Plan, Plan of Development (if required), Conditions of Approval, Cultural Resource Record of Review, Cultural Resources Compliance Form (if required), and Project Stipulations (if required) shall be at the project area at all times and available to all persons.
3. **Surface Owner:** An agreement between the operator and fee land owner will take precedence over BLM surface stipulations unless (In reference to 43 CFR Part 3160) 1) BLM determines that the operator's actions will affect adjacent Federal or Indian surface, or 2) the operator does not maintain well area and lease premises in a workmanlike manner with due regard for safety, conservation and appearance, or 3) no such agreement exists, or 4) in the event of well abandonment, minimal Federal restoration requirements will be required. If surface owner changes any stipulations in the conditions of approval, the operator will contact the BLM authorized officer before implementing surface owner stipulation.
4. **Review of NEPA documents:** It is the responsibility of the operator to follow all the design features, best management practices, and mitigation measures as contained in the Environmental Assessment DOI-BLM-NM-F010-2025-0006-EA, which contains additional design features and best management practices that must be followed. Copies of the EA, Decision Record, and Finding of No Significant Impact may be obtained from the BLM FFO public room, or online at: [EplanningUi \(blm.gov\)](https://eplanningui.blm.gov).

5. **Best Management Practices (BMPs):** Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2007. Farmington Field Office BMP's are integrated into the Environmental Assessment, Surface Use Plan of Operations, Bare Soil Reclamation Plan, and COAs.

### **Construction, Production, Facilities, Reclamation & Maintenance**

6. **Construction & Reclamation Notification:** The operator or their contractor will contact the Bureau of Land Management, Farmington Field Office Surface and Environmental Protection Staff (505) 564-7600 or by email, at least 48 hours prior to any construction or reclamation on this project.
7. **Grazing Permittee Notification and Concerns:** The operator will notify the grazing lease operator(s) of the Middle Mesa AMP (Allotment number: 05056) at least ten business days prior to beginning any construction activity to ensure there will be no conflicts between construction activities and livestock grazing operations. The operator is not obligated to cease or delay construction unless directed by the Authorized Officer (AO). Any range improvement (fences, pipelines, ponds, etc.) disturbed by construction activities will be repaired immediately following construction and will be repaired to the condition the improvement was in prior to disturbance. Cattle guards will be installed to replace any livestock fencing or gates removed for road construction.
8. **Cattle Guard and Temporary Gate:** A gate will be installed where the proposed 60B access road leaves the existing resource road (location: 36.923032° N, -107.471946° W) to ensure no public use of the 60B POD access road occurs. The gate would include multiple lock holes for the Operator, BLM, and Reclamation's use. The Gate will include wildlife-friendly fencing on either side, tying to existing trees and vegetation on the north side and to the existing range fence on the south side near the existing cattleguard (cattleguard location 36.922714° N, -107.471911° W). The new fencing would not impede use of the existing range fence or maintenance of the cattleguard but would eliminate the opportunities for vehicles to bypass the gate for the 60B POD access road. A wire gate will also be installed where the 60B POD access road crosses from BLM to Bureau of Reclamation surface jurisdiction (STA 52+99.98 on the 60B access road plats or approximately 36.925600° N, -107.463716° W) to ensure the existing range fence is maintained.
9. **Cutting of Fences:** All cut fences are to be tied to H-braces prior to cutting. The opening will be protected as necessary during construction to prevent escape of livestock. A temporary closure will be installed on all cut fences the day the fence is cut. A sixteen-foot gate will be installed adjacent to the cattleguard. The holder shall minimize disturbance to existing fences and other improvements on public land. Holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements

prior to disturbing them.

10. **Facility Layout:** Specific layout of facilities will be deferred until an onsite with BLM-FFO surface protection staff is conducted to determine the best location. LOGOS Operating, LLC or their contractor will contact the Bureau of Land Management, Farmington Field Office, (505) 564-7600 or by email to schedule a facility layout onsite. Production facilities will be placed to allow for maximum interim reclamation and revegetation of the well location. Production facilities will be clustered to maximize the opportunity for interim reclamation. Production, cathodic equipment, and meter runs associated with pipeline construction will be placed on location near tear drop road as not to interfere with reclaiming the cut and fill slopes to their proper ratio. Gas metering equipment will face to the interior of the well pad to provide easy access to equipment from the driving surface. Production equipment [including any facilities associated with pipeline construction] shall be placed on location as not to interfere with reclaiming the cut and fill slopes to their proper ratio. If equipment is found to interfere with the proper reclamation of the slope, the company will be required to move the equipment so proper re-contouring can occur. In instances where chain link fences are constructed around the location, the fence will be engineered and constructed so that the interim reclamation, seeded areas and vegetation are not compromised or degraded. Additionally, the enclosed area will not be utilized as a storage facility. Berms or firewalls will be constructed around all storage facilities sufficient in size to contain the storage capacity of tanks, or the combined capacity of tanks if a rupture could drain more than one tank. Berm walls will be compacted with appropriate equipment to assure proper construction. Containment dikes around oil/water facilities will not be constructed with topsoil. Gravel will not be unloaded or relocated into areas where interim reclamation will occur or onto areas where interim reclamation has been completed.
11. **Open Trenches:** No more than ½ mile of trench or the amount of trench that can be worked in one day will be open at any given time.
12. **Middle Mesa Lake Bore Extension:** Logos Operating, LLC cannot construct the upper section of the Middle Mesa Lake Bore Extension, a 3,554.9-foot section of subsurface 4-inch diameter pipeline for carrying away produced water from their Rosa infrastructure (from Pad 5 to Pad 3), until the consultation period with the BLM has concluded and any and all comments, if received, have been adequately addressed.
13. **Staking:** The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.
14. **Weather:** No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts more than 6 inches deep, the soil shall be deemed too wet.



15. **Stockpile of Soil:** The top 6 inches of soil material will be stripped and stockpiled in the construction zones around the pad [construction zones may be restricted or deleted to provide resource avoidance]. The stockpiled soil will be free of brush and tree limbs, trunks, and roots. The stockpiled soil material will be spread on the reclaimed portions of the pad [including the reserve pit, cut and fill slopes] prior to re-seeding. Spreading shall not be done when the ground or topsoil is frozen or wet.
16. **Visual Resources:** Within 90 days of installation, all above ground structures not subject to safety requirements shall be painted by the Holder to blend with the natural color of the landscape. A reflective material may be used to reduce hazards that may occur when such structures are near roads. Otherwise, the paint use shall be a non-glare, non-reflective, non-chalking color of: JUNIPER GREEN Federal Standard 595a-34127 from the BLM Standard Environmental Color Chart CC-001.
17. **Staging:** Only locations listed in the Application for Permit to Drill (APD) (Rosa Unit 88, Rosa Unit 157, Rosa Unit 60, and Rosa Unit 237) can be utilized for staging.
18. **Storage Tanks:** All open top permanent production or storage tanks regardless of diameter made of fiberglass, steel, or other material used for the containment of oil, condensate, produced water and or other production waste shall be screened, netted, or otherwise covered to protect migratory birds and other wildlife from access.
19. **Compressors:** Compressor units on this well location not equipped with a drip pan for containment of fluids shall be lined with an impervious material at least 8 mils thick and a 12-inch berm. The compressor will be painted to match the well facilities. Any variance to this will be approved by the Authorized Officer (AO). Noise mitigation may be required at the time of compressor installation.
20. **Acquisition of Water:** Water acquired to construct, produce, and maintain actions authorized by this permit to drill must be acquired from permitted water sources, or water authorized for use by the New Mexico Oil Conservation Division (OCD). Upon request the AO shall be provided with documentation of water sources.
21. **New & Existing Access:** All sections of the proposed access road associated with this permit shall be sited, designed, constructed, upgraded and maintained utilizing standards, requirements, guidelines and instructions specified in BLM Manual 9113 "Roads", BLM Manual 9113-1 "Roads Design Handbook", BLM Manual 9113-2 "Roads National Inventory and Condition Assessment Guidance & Instructions Handbook" and Surface Operations and Guidelines for Oil and Gas Exploration and Development "The Gold Book".
22. **Culverts:** Culvert(s) of sufficient size (minimum 18 inches) will be placed where needed along the access road, at the well pad entrance and access take off. Silt Traps will be built upstream of all culvert locations.



23. **Driving Surface Area:** All activities associated within the construction, operation, maintenance, and abandonment of the well location is limited to areas approved in the APD or ROW permit. During the production of the well, vehicular traffic is limited to the daily driving surface area established during interim reclamation construction operations. This area typically forms a keyhole or teardrop driving surface from which all production facilities may be serviced or inspected. A v-type ditch will be constructed on the outside of the driving surface to further define the driving surface and to deter vehicular traffic from entering onto the interim reclamation areas.
24. **Berms:** Berms or firewalls will be constructed around all storage facilities sufficient in size to contain the storage capacity of 110% of the largest tank, or 110% of the combined capacity of tanks if a rupture could drain more than one tank. Berm walls will be compacted with appropriate equipment to assure proper construction. Metal containment barriers, used for secondary containment, will be properly installed, per the manufacturer directions.
25. **Temporary Use Area Reclamation:** All temporary use areas indicated on the plats will be reclaimed at the interim reclamation stage to BLM Standards.
26. **Contouring of Cut and Fill Slopes:** The interim cut and fill slope grade shall be as close to the original contour as possible. To obtain this ratio, pits and slopes shall be back sloped into the pad during interim reclamation. Only subsurface soil and material shall be utilized in the contouring of the cut and fill slopes. Under no circumstances shall topsoil be utilized as substrate material for contouring of cut and fill slopes.
27. **Seed Mix:** The Reclamation Seed Mix for Sagebrush/grass Community Cover will be used for interim and final reclamation. The SUPO in the approved APD contains information on the specific seed mix and application rate. Seeding shall be accomplished within 120 days after final construction (time frame may be extended on a case-by-case basis with AO approval). Seeding shall be repeated if a satisfactory stand is not obtained as determined by the AO upon evaluation after the second growing season.
28. **60B POD Access Road Visual Impacts:** Mitigation measures for limiting the 60B POD access road ROWs visual impact from the proposed action, LOGOS upon the request of the Bureau of Reclamation will retain lake-ward trees along the 60B POD access road ROW, minimizing 60B POD access road improvements, and in-sloping the easternmost 2,000 feet of the 60B POD access road.
29. **Maintenance:** In order to perform subsequent well operations, right-of-way (ROW) operations, or install new/additional equipment, it may be necessary to drive, park, and operate on restored, interim vegetation within the previously disturbed area. This is generally acceptable provided damage is promptly repaired and reclaimed following use. Where vehicular travel has occurred as a "convenience" and interim reclamation/vegetation has been compromised, immediate remediation of the affected areas is required. Additionally, where erosion has occurred and compromised the reclamation of the well location, the affected area must be promptly remediated so that future erosion is prevented, and the landform is stabilized.

30. **Non-Permitted Disturbance:** Construction maintenance or any other activity outside the areas permitted by the APO will require additional approval and may require a new cultural survey and clearance.
31. **Layflat Lines:** Layflat lines used for development of the wells may be on the ground for a maximum of 6 months and shall be retrieved within 30 days following completion operations. If the layflat lines are needed for longer than 6 months, or cannot be retrieved within 30 days of completions ending, a Sundry NOI shall be submitted to the BLM FFO for review and decision that includes a rationale for the time extension.
32. **“Hotwork” and Construction Affecting Fire Safety:** The holder or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization and rehabilitation. In the event of a fire, personal safety will be the first priority of the holder or its contractors.
- The holder or its contractors shall:
- Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrester. Qualified spark arresters are maintained and not modified, and meet the Society of Automotive Engineers (SAE) Recommended Practices J335 or J350. Refer to 43 CFR §8343.1.
  - Refueling of any combustible engine equipment must be minimum of 3 meters away from any ignition source (open flame, smoking, etc.).*
  - Maintain and clean all equipment regularly to remove flammable debris buildup and prevent fluid leaks that can lead to ignitions.
  - Carry at least one shovel or wildland fire hand tool (combi, Pulaski, McLeod) per person working, minimum 5 gallons of water, and a fire extinguisher rated at a minimum as ABC - 10 pound on each piece of equipment and each vehicle.
  - When conducting “hotwork” such as, but not limited to welding, grinding, cutting, spark-producing work with metal, work that creates hot material or slag; choose an area large enough to contain all hot material that is naturally free of all flammable vegetation or remove the flammable vegetation in a manner compliant with the permitted activity. If adequate clearance cannot be made, wet an area large enough to contain all hot material prior to the activity and periodically throughout the activity to reduce the risk of wildfire ignition. Regardless of clearance, maintain readiness to respond to an ignition at all times. In addition, keep one hand tool per person and at least one fire extinguisher ready, minimum, as specified earlier (#3) during this activity.
  - Keep apprised of current and forecasted weather at <https://www.weather.gov/abq/forecasts-fireweather-links> and fire conditions at [www.wfas.net](http://www.wfas.net) and take additional fire precautions when fire danger is rated High or greater. Red Flag Warnings are issued by the National Weather Service when fire conditions are most dangerous, and ignitions escape control quickly. Extra

precautions are required during these warnings such as additional water, designate a fire watch/patrol and tools. If work is being conducted in an area that is not clear of vegetation within 50 feet of work area; then, when fire danger is rated High or greater and 1. There is a predicted Red Flag warning for your area or 2. If winds are predicted to be greater than 10 mph, stop all hotwork activities for the day at 10 am.

- g. In the event of an ignition, initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If a fire spreads beyond the capability of workers with the stipulated tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes.
- h. Call **911** or the **Taos Interagency Fire Dispatch Center (575-758-6208)** immediately of the location and status of any fire.

**AND**

- i. Notify the respective BLM field office for which the permit or contract was issued immediately of the incident.

**Farmington Field Office at 505-564-7600**

**Taos Field Office at 575-758-8851**

### **Noxious Weeds**

33. Inventory the proposed site for the presence of noxious and invasive weeds. Noxious weeds are those listed on the New Mexico Noxious Weed List and USDA's Federal Noxious Weed List. The New Mexico Noxious Weed List or USDA's Noxious Weed List can be updated at any time and should be regularly check for any changes. Invasive species may or may not be listed as a noxious weed but have been identified to likely cause economic or environmental harm or harm to human health. The following noxious weeds have been identified as occurring on lands within the boundaries of the Farmington Field Office (FFO). There are numerous invasive species on the FFO such as Russian thistle (*Salsola spp.*) and field bindweed (*Convolvulus arvensis*).

|                                                     |                                                    |
|-----------------------------------------------------|----------------------------------------------------|
| Russian Knapweed ( <i>Centaurea repens</i> )        | Musk Thistle ( <i>Cardus nutans</i> )              |
| Bull Thistle ( <i>Cirsium vulgare</i> )             | Canada Thistle ( <i>Cirsium arvense</i> )          |
| Scotch Thistle ( <i>Onopordum acanthium</i> )       | Hoary Cress ( <i>Cardaria draba</i> )              |
| Perennial Pepperweed ( <i>Lepidium latifolium</i> ) | Halogeton ( <i>Halogeton glomeratus</i> )          |
| Spotted Knapweed ( <i>Centaurea maculosa</i> )      | Dalmation Toadflax ( <i>Linaria genistifolia</i> ) |
| Yellow Toadflax ( <i>Linaria vulgaris</i> )         | Camelthorn ( <i>Alhagi pseudalhagi</i> )           |
| African Rue ( <i>Peganum harmala</i> )              | Salt Cedar ( <i>Tamarix spp.</i> )                 |
| Diffuse Knapweed ( <i>Centaurea diffusa</i> )       | Leafy Spurge ( <i>Euphorbia esula</i> )            |

- a. Identified weeds will be treated prior to new surface disturbance if determined by the FFO Noxious Weed Coordinator. A Pesticide Use Proposal (PUP) must be submitted to and approved by the FFO Noxious Weed Coordinator prior to

application of pesticide. The FFO Noxious Weeds Coordinator (505-564-7600) can provide assistance in the development of the PUP.

- b. Vehicles and equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.
  - c. Construction equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.
  - d. Fill dirt or gravel may be needed for excavation, road construction/repair, or for spill remediation. If fill dirt or gravel will be required, the source shall be noxious weed free and approved by the FFO Noxious Weed Coordinator.
  - e. The site shall be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found the FFO Coordinator shall be notified at (505) 564-7600 and provided with a Weed Management Plan and if necessary, a Pesticide Use Proposal (PUP) . The FFO Coordinator can provide assistance developing the Weed Management Plan and/or the Pesticide Use Proposal.
  - f. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. (Company Name)'s weed-control contractor would contact the BLM-FFO prior to using these chemicals.
  - g. Noxious/invasive weed treatments must be reported to the FFO Noxious Weed Coordinator. A Pesticide Application Record (PAR) is required to report any mechanical, chemical, biological or cultural treatments used to eradicate, and/or control noxious or invasive species. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.
34. **Bare ground vegetation trim-out:** If bare ground vegetation treatment (trim-out) is desired around facility structures, the operator will submit a bare ground/trim-out design included in their Surface Use Plan of Operations (SUPO). The design will address vegetation safety concerns of the operator and BLM while minimizing impacts to interim reclamation efforts. The design must include what structures to be treated and buffer distances of trim-out. Pesticide use for vegetation control around anchor structures is not approved. If pesticides are used for bare ground trim-out, the trim-out will not exceed three feet from the edge of any eligible permanent structure (i.e., well heads, fences, tanks). Additional distance/areas may be requested and must be approved by the FFO authorized officer. The additional information below must also be provided to the FFO:
- a. Pesticide use for trim out will require a Pesticide Use Proposal (PUP). A PUP is required **prior** to any treatment and must be approved by the FFO Noxious Weed Coordinator. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. Enduring Resources' weed-control contractor would contact the BLM-

FFO prior to using these chemicals and provide Pesticide Use Reports (PURs) post treatment.

- b. A Pesticide Use Report (PUR) or a Biological Use Report (BUR) is required to report any chemical, or biological treatments used to eradicate, or control vegetation on site. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

### **Paleontology**

35. **Paleontology:** Any paleontological resource discovered by the Operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.

### **Visual Resources**

36. All permanent lighting will be pointed straight down at the ground in order to prevent light spill to the sides. All permanent lighting will be 4000° Kelvin or less with 3000° Kelvin preferred. Warmer light colors are less noticeable by humans and cause less impact to wildlife. All permanent lighting will be controlled by a switch and/or timer which allows the lights to be turned on when workers are on location during dark periods but will keep the lights off the majority of the time.

### **Wildlife Resources**

37. **Wildlife:** The proposed project falls within the boundary of the Middle Mesa Big Game Special Designated Area. Big game habitat areas and hunting activities are valuable land uses which support BLM's multiple-use land management objectives. To maintain RMP conformance, no surface use will take place December 1 – March 31.
38. **Hazards:** Wildlife hazards associated with the proposed project would be fenced, covered, and/or contained in storage tanks, as necessary to prevent entry (NTL-FFO-2004-01).
39. **Migratory Birds:** Migratory nest survey stipulation apply for any construction activities that exceed 4.0 acres of ground disturbance from May 15 – July 31 within the same lease, a migratory bird nest survey is required prior to any new ground disturbance. Nest surveys will be conducted within 48 hours of scheduled construction by BLM/FFO personnel or approved biologist. Any active nests will require a disturbance buffer to eliminate impacts to nesting birds. Active nests will not be disturbed. Applicant will adhere to timing limitations and management measures if any new raptor nests are discovered within the

project area. These timing limitations are species specific depending on the raptor that is discovered. The following timing limitations may apply:

| <b>Raptor Species of Nest Discovered</b> | <b>Timing Limitation</b> |
|------------------------------------------|--------------------------|
| Bald Eagle                               | March 1 - June 30        |
| Burrowing Owl                            | April 1 - August 15      |
| Golden Eagle                             | February 1 - June 30     |
| Other Raptors                            | March 1 - June 30        |

40. **Nesting:** If a bird nest containing eggs or young is encountered in the path of construction the operator will cease construction and consult with BLM to determine appropriate actions.
41. **Threatened, Endangered or Sensitive Species:** If, in operations the operator/holder discovers any Threatened, Endangered, or Sensitive species, work in the vicinity of the discovery will be suspended and the discovery promptly reported to the BLM-FFO T&E specialist at (505) 599-8900. The BLM-FFO will then specify what action is to be taken. Failure to notify the BLM-FFO about a discovery may result in civil or criminal penalties in accordance with The Endangered Species Act (as amended).

### **Soil, Air, Water**

42. **Land Farming:** No excavation, remediation or closure activities will be authorized without prior approval, on any federal or Indian mineral estate, federal surface, or federal ROW. A Sundry Notice (DOI, BLM Form 3160-5) must be submitted with an explanation of the remediation or closure plan for on-lease actions.
43. **Emission Control Standard:** Compressor engines 300 horsepower or less used during well production must be rated by the manufacturer as emitting NOx at 2 grams per horsepower hour or less to comply with the New Mexico Environmental Department, Air Quality Bureau's guidance.
44. **Waste Disposal:** Waste materials produced during all phases of operation will be disposed of promptly in an approved manner so it will not impact the air, soil, water, vegetation, or animals. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and equipment. All liquid waste, completion fluids and drilling products associated with oil and gas operations will be removed and deposited in an approved disposal site. Portable toilets will remain on site throughout well pad construction, drilling and reclamation. All fluids (i.e. scrubber cleaners) used during washing of production equipment, including compressors, will be properly disposed of to avoid ground contamination or hazard to livestock or wildlife. Construction sites shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. "Waste"



means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and equipment.

### **Cultural Resources**

- 45. Discovery of Cultural Resources in the Absence of Monitoring:** If, in its operations, operator/holder discovers any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the discovery promptly reported to BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, or in accordance with an approved program alternative. Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive archaeological or alternative mitigation, likely implemented by a permitted cultural resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any mitigations determined appropriate through the agency's Section 106 consultation are completed. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, as amended, and other applicable laws.
- 46. Discovery of Cultural Resources During Monitoring:** If monitoring confirms the presence of previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the monitor will promptly report the discovery to the BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, or in accordance with an approved program alternative. Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive archaeological or alternative mitigation, likely implemented by a permitted cultural resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any mitigations determined appropriate through the agency's Section 106 consultation are completed.
- 47. Damage to Sites:** If, in its operations, operator/holder damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, the operator/holder agrees at his/her

expense to have a permitted cultural resources consultant prepare a BLM approved damage assessment and/or data recovery plan. The operator/holder agrees at his/her expense to implement a mitigation that the agency finds appropriate given the significance of the site, which the agency determines in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property. This mitigation may entail execution of the data recovery plan by a permitted cultural resources consultant and/or alternative mitigations. Damage to cultural resources may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, as amended, and other applicable laws.

- 48. Employee Education:** All employees of the project, including the Project Sponsor and its contractors and sub-contractors will be informed and educated that cultural sites are to be avoided by all personnel, personal vehicles and company equipment. This includes personnel associated with construction, use, maintenance and abandonment of the well pad, well facilities, access and pipeline. They will also be notified that it is illegal to collect, damage, or disturb historic or prehistoric cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the ARPA (16 U.S.C. 470aa-mm), NAGPRA (25 U.S.C. 3001-3013), and other laws, as applicable (for example, NM Stat. § 18-6-9 through § 18-6-11.2, as amended, and NM Stat. § 30-12-12, as amended).

**See below for additional cultural stipulations.**



# 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)

\* LOGOS OPERATING LLC  
#550H ROSA UNIT  
Lease: NMSF078765 Agreement: NMNM78407E  
  
SH: NENW Section 9, T.31N., R.6W.  
San Juan County, New Mexico  
BH: NWNW Section 8, T.31N., R.6W.  
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 all casing strings below the conductor 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. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.
- D. ☐ Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the Bureau of Land Management, New Mexico State Office, Reservoir Management Group, 301 Dinosaur Trail, Santa Fe, New Mexico 87508.  
The effective date of the agreement must be **prior** to any sales.
- E. ☐ 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.

INTERIOR REGION 7 • UPPER COLORADO BASIN

COLORADO, NEW MEXICO, UTAH, WYOMING

## **I. GENERAL**

- A. Full compliance with all applicable laws and regulations, 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 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. BOP equipment (except the annular preventer) shall be tested utilizing a test plug to full working pressure for 10 minutes. No bleed-off of pressure is acceptable. (See 43 CFR 3172.6(b)(9)(ii)).
- G. The operator shall have sufficient weighting materials and lost circulation materials on location in the event of a pressure kick or in the event of lost circulation. (See 43 CFR 3172.8(a)).
- H. The flare line(s) discharge shall be located not less than 100 feet from the well head, having straight lines unless turns are targeted with running tees, and shall be positioned downwind of the prevailing wind direction and shall be anchored. The flare system shall have an effective method for ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and to maintain a continuous flare. (See 43 CFR 3172.8(b)(7)).
- I. 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 sundry within three business days. **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 Virgil Lucero at 505-793-1836.**
- J. **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.**
- K. Unless drilling operations are commenced within three years according to 43 CFR 3171.14, approval of the Application for Permit to Drill will expire. No extensions will be granted.

- L. 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 times, unless the well is secured with blowout preventers or cement plugs.
- M. 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.
- N. **Commingling:** No production (oil, gas, and water) from the subject well should start until Sundry Notices (if necessary) granting variances from applicable regulations as related to commingling and off-lease measurement are approved by this office. (See 43 CFR 3173.14)

## **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 online through AFMSS 2 within 30 days after the work is completed.
  - 1. Provide 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 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 way 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 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.
- C. Production Startup Notification is required no later than the 5<sup>th</sup> business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site or resumes production in the case of a well which has been off production for more than 90 days. The operator shall notify the Authorized Officer by letter or Sundry Notice, Form 3160-5, or orally to be followed by a letter or Sundry Notice, of the date on which such production has begun or resumed. CFR 43 3162.4-1(c).

### **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, 20 MMCF following its (completion)(recompletion), or flowback has been routed to the production separator, whichever first occurs, without the prior, written approval of the authorized officer in accordance with 43 CFR 3179.81. 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 beginning of flowback following completion or recompletion.

### **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 to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth in Section 1.I.
- 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.I. 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.
- B. Emergency program changes after hours contact:

**Virgil Lucero (505) 793-1836**  
**Dustin Porch (505) 386-9876**  
**Kenneth Rennick (505) 564-7742**  
**Matthew Kade (505) 564-7736**

|                                                                                                                                                                                                                                       |                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Santa Fe Main Office<br>Phone: (505) 476-3441<br>General Information<br>Phone: (505) 629-6116<br><br>Online Phone Directory Visit:<br><a href="https://www.emnrd.nm.gov/ocd/contact-us/">https://www.emnrd.nm.gov/ocd/contact-us/</a> | State of New Mexico<br>Energy, Minerals & Natural Resources<br>Department<br><b>OIL CONSERVATION DIVISION</b> | <div style="text-align: right;"> <b>C-102</b><br/>           Revised July 9, 2024<br/>           Submit Electronically<br/>           via OCD Permitting         </div> <div>           Submittal Type:           <div style="border: 1px solid black; padding: 2px;"> <input checked="" type="checkbox"/> Initial Submittal<br/> <input type="checkbox"/> Amended Report<br/> <input type="checkbox"/> As Drilled           </div> </div> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**WELL LOCATION INFORMATION**

|                                                                                                                                                        |                                       |                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| API Number<br><b>30-045-38439</b>                                                                                                                      | Pool Code<br>97232                    | Pool Name<br>BASIN MANCOS                                                                                                                              |
| Property Code<br>320608                                                                                                                                | Property Name<br>ROSA UNIT            | Well Number<br>550H                                                                                                                                    |
| OGRID No.<br>289408                                                                                                                                    | Operator Name<br>LOGOS OPERATING, LLC | Ground Level Elevation<br>6429'                                                                                                                        |
| Surface Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal |                                       | Mineral Owner: <input type="checkbox"/> State <input type="checkbox"/> Fee <input type="checkbox"/> Tribal <input checked="" type="checkbox"/> Federal |

**Surface Location**

|         |              |                 |             |     |                         |                          |                       |                          |                    |
|---------|--------------|-----------------|-------------|-----|-------------------------|--------------------------|-----------------------|--------------------------|--------------------|
| UL<br>C | Section<br>9 | Township<br>31N | Range<br>6W | Lot | Ft. from N/S<br>995 FNL | Ft. from E/W<br>1888 FWL | Latitude<br>36.918581 | Longitude<br>-107.470736 | County<br>SAN JUAN |
|---------|--------------|-----------------|-------------|-----|-------------------------|--------------------------|-----------------------|--------------------------|--------------------|

**Bottom Hole Location**

|         |              |                 |             |     |                         |                         |                       |                          |                    |
|---------|--------------|-----------------|-------------|-----|-------------------------|-------------------------|-----------------------|--------------------------|--------------------|
| UL<br>D | Section<br>8 | Township<br>31N | Range<br>6W | Lot | Ft. from N/S<br>455 FNL | Ft. from E/W<br>168 FWL | Latitude<br>36.920014 | Longitude<br>-107.494704 | County<br>SAN JUAN |
|---------|--------------|-----------------|-------------|-----|-------------------------|-------------------------|-----------------------|--------------------------|--------------------|

|                           |                                   |                   |                                                                                                               |                                   |
|---------------------------|-----------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Dedicated Acres<br>640.00 | Infill or Defining Well<br>INFILL | Defining Well API | Overlapping Spacing Unit (Y/N)<br>N                                                                           | Consolidation Code<br>UNITIZATION |
| Order Numbers. R-13457    |                                   |                   | Well setbacks are under Common Ownership: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |                                   |

**Kick Off Point (KOP)**

|    |         |          |       |     |              |              |          |           |        |
|----|---------|----------|-------|-----|--------------|--------------|----------|-----------|--------|
| UL | Section | Township | Range | Lot | Ft. from N/S | Ft. from E/W | Latitude | Longitude | County |
|----|---------|----------|-------|-----|--------------|--------------|----------|-----------|--------|

**First Take Point (FTP)**

|    |         |          |       |     |              |              |          |           |        |
|----|---------|----------|-------|-----|--------------|--------------|----------|-----------|--------|
| UL | Section | Township | Range | Lot | Ft. from N/S | Ft. from E/W | Latitude | Longitude | County |
|----|---------|----------|-------|-----|--------------|--------------|----------|-----------|--------|

**Last Take Point (LTP)**

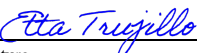
|    |         |          |       |     |              |              |          |           |        |
|----|---------|----------|-------|-----|--------------|--------------|----------|-----------|--------|
| UL | Section | Township | Range | Lot | Ft. from N/S | Ft. from E/W | Latitude | Longitude | County |
|----|---------|----------|-------|-----|--------------|--------------|----------|-----------|--------|

|                                           |                                                                                         |                         |
|-------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------|
| Unitized Area or Area of Uniform Interest | Spacing Unit Type <input type="checkbox"/> Horizontal <input type="checkbox"/> Vertical | Ground Floor Elevation: |
|-------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------|

**OPERATOR CERTIFICATIONS**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, 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 a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.

  
 Signature \_\_\_\_\_ Date **3/10/2025**  
 Etta Trujillo  
 Printed Name  
 etrujillo@logosresourcesllc.com  
 Email Address

**SURVEYOR CERTIFICATIONS**

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.

**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: FEBRUARY 8, 2023  
 Survey Date: JANUARY 13, 2012

Signature and Seal of Professional Surveyor

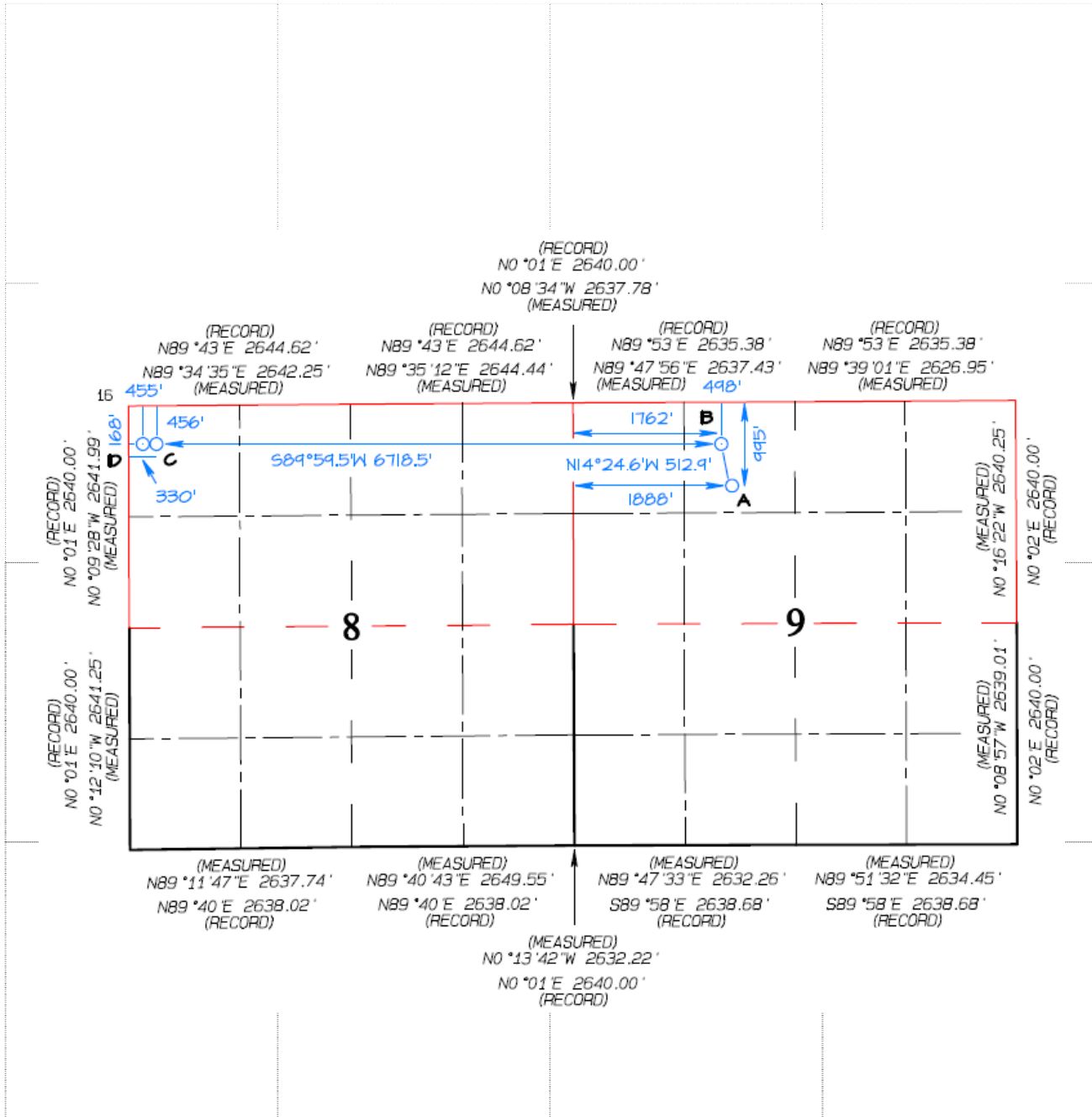


Signature and Seal of Profession   
 Certificate Number 15269  
 Date of Survey 01/13/2012

Note: 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.

This grid represents a standard section. You may superimpose a non-standard section, or larger area, over this grid. Operators must outline the dedicated acreage in a red box, clearly show the well surface location and bottom hole location, if it is directionally drilled, with the dimensions from the section lines in the cardinal directions. If this is a horizontal wellbore show on this plat the location of the First Take Point and Last Take Point, and the point within the Completed interval (other than the First Take Point or Last Take Point) that is closest to any outer boundary of the tract.

Surveyors shall use the latest United States government survey or dependent resurvey. Well locations will be in reference to the New Mexico Principal Meridian. If the land is not surveyed, contact the OCD Engineering Bureau. Independent subdivision surveys will not be acceptable.



State of New Mexico  
Energy, Minerals and Natural Resources Department  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Submit Electronically  
Via E-permitting

## 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:** LOGOS Operating, LLC **OGRID:** 289408 **Date:** 02/03/2022

**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 BBL/D |
|----------------|--------------|---------------|-----------------|-----------------------|-----------------------|----------------------------------|
| Rosa Unit 550H | 30-045-      | C 09 T31N R6W | 1013FNL 1863FWL | N/A                   | 7,870                 | 329                              |
| Rosa Unit 552H | 30-045-35377 | C 09 T31N R6W | 1031FNL 1862FWL | N/A                   | 7,870                 | 328                              |
| Rosa Unit 554H | 30-045-      | C 09 T31N R6W | 1001FNL 1872FWL | N/A                   | 14,349                | 544                              |
| Rosa Unit 556H | 30-045-      | C 09 T31N R6W | 1007FNL 1880FWL | N/A                   | 14,349                | 544                              |
|                |              |               |                 |                       |                       |                                  |

**IV. Central Delivery Point Name:** Harvest Gathering System [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 |
|----------------|--------------|------------|-----------------|------------------------------|------------------------|-----------------------|
| Rosa Unit 550H | 30-045-      | Pending    | Pending         | Pending                      | Pending                | Pending               |
| Rosa Unit 552H | 30-045-35377 | 05/17/2019 | Pending         | Pending                      | Pending                | Pending               |
| Rosa Unit 554H | 30-045-      | Pending    | Pending         | Pending                      | Pending                | Pending               |
| Rosa Unit 556H | 30-045-      | Pending    | Pending         | Pending                      | Pending                | Pending               |
|                |              |            |                 |                              |                        |                       |

**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:

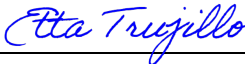
(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit 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:                                                                                       |  |
| Printed Name:                                                                                    | Etta Trujillo                                                                     |
| Title:                                                                                           | Regulatory Specialist                                                             |
| E-mail Address:                                                                                  | etrujillo@logosresourcesllc.com                                                   |
| Date:                                                                                            | 02/03/2022                                                                        |
| Phone:                                                                                           | (505) 324-4154                                                                    |
| <b>OIL CONSERVATION DIVISION</b><br><b>(Only applicable when submitted as a standalone form)</b> |                                                                                   |
| Approved By:                                                                                     |                                                                                   |
| Title:                                                                                           |                                                                                   |
| Approval Date:                                                                                   |                                                                                   |
| Conditions of Approval:                                                                          |                                                                                   |

## VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

## VII. Operational Practices 19.15.27.8 NMAC A through F

- A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
- B. Venting and flaring during drilling operations:
  - a. New Drill HZ Oil Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured or combusted, with an appropriately sized and located flare stack, if technically and safely feasible.
  - b. New Drill HZ Gas Wells: The operator drills wells in the area by balancing the mud weight to safely drill the wellbore with as minimal flaring as possible. When gas kicks enter the wellbore, sometimes it is necessary to circulate it out of the wellbore to an appropriately sized and located flare stack. The operator will estimate the volume flared and appropriately report.
- C. Venting and flaring during completion or recompletion operations:
  - a. New Drill HZ Oil Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. During the separation flowback period natural gas will be routed to a properly sized and located flare until the natural gas is of pipeline quality (less than 60 days). The natural gas will also be utilized on site as needed for fuel gas or injection gas.
  - b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.
- D. Venting and flaring during production operations:

- a. New Drill HZ Oil Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. This facility will operate under a notice of intent (NOI) from the New Mexico Environment Department (NMED).

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

- (a) If there is an emergency or malfunction, vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
- (b) If the wellbore requires liquids to be unloaded to atmosphere, the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
- (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging with minor exceptions.
- (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will utilize a LACT system when available to minimize gas vented during oil tank loading.
- (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
- (f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
- (g) Storage tanks and other low-pressure vessel normal operational venting will be minimized during the early life of the well with the installation of a vapor recovery unit to limit the flash and working and breathing emissions to atmosphere.
- (h) No dehydration or amine units are anticipated to be set on location.
- (i) Compressors, compressor engines, turbines, flanges, connectors, valves, and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operation.
- (j) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
- (k) When natural gas does not meet gathering pipeline specifications, for example high nitrogen content after a nearby frac, gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
- (l) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

- b. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

- (a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
- (b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
- (c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
- (d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
- (e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
- (f) Electric controllers and pumps, or instrument air, will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
- (g) No dehydration or amine units are anticipated to be set on location.
- (h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
- (i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
- (j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
- (k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:

- a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.

- b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
  - c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
  - d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.
- F. Measurement or estimation of vented and flared natural gas.
- a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
  - b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical, then the volume of gas will be estimated.



## LOGOS Operating, LLC Operations Plan

*Note: This procedure will be adjusted onsite based upon actual conditions*

|                       |                                                                          |                 |              |
|-----------------------|--------------------------------------------------------------------------|-----------------|--------------|
| Date:                 | June 13, 2023                                                            | Pool:           | Basin Mancos |
| Well Name:            | Rosa Unit 550H                                                           | GL Elevation:   | 6,429'       |
| Surface Location:     | Sec 9, T31N, R6W 995 FNL, 1888 FWL (36.918581° N, 107.470736° W – NAD83) | Measured Depth: | 14,291' (MD) |
| Bottom Hole Location: | Sec 8, T31N, R6W 455 FNL, 168 FWL (36.920014° N, 107.494704° W – NAD83)  | County:         | San Juan     |

Lease Serial #NMSF078765, CA Serial # NMNM78407E

### I. GEOLOGY

A. Formation Tops (Based on 25' KB Elevation): Estimated top of important geological markers:  
SURFACE FORMATION – NACIMIENTO

| NAME             | MD   | TVD  | NAME           | MD    | TVD  |
|------------------|------|------|----------------|-------|------|
| OJO ALAMO        | 2377 | 2367 | *POINT LOOKOUT | 5716  | 5678 |
| KIRTLAND         | 2497 | 2486 | *MANCOS        | 6232  | 6190 |
| *FRUITLAND       | 3042 | 3027 | KICKOFF POINT  | 6347  | 6304 |
| *PICTURED CLIFFS | 3403 | 3385 | LANDING POINT  | 7411  | 7001 |
| LEWIS            | 3742 | 3721 |                |       |      |
| CHACRA           | 4665 | 4636 |                |       |      |
| *CLIFF HOUSE     | 5448 | 5413 |                |       |      |
| MENEFEE          | 5493 | 5457 | TD             | 14291 | 6994 |

\* Indicates depth at which anticipated water, oil, gas, or other mineral-bearing formations are expected to be encountered.

B. **MUD LOGGING PROGRAM:** Mudlogger on location from KOP to TD.

C. **LOGGING PROGRAM:** LWD GR from surface casing to TD.

D. **NATURAL GAUGES:** Gauge any noticeable increases in gas flow. Record all gauges in the Tour book and on morning reports.

### II. DRILLING

A. **MUD PROGRAM:** LSND mud (WBM) will be used to drill the 26" surface hole, 17-1/2" and 12-1/4" directional / vertical hole. An LSND (WBM) or (OBM) system will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain returns prior to cementing. Notify Engineering of any mud losses.

Above-ground steel pits will be used for fluid and cuttings while drilling. In the unlikely event that a tank develops a leak, upon immediate visual discovery, the fluid would be transferred to another tank and contaminated soil would be removed and disposed of. Any leaks, spills, or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times.

B. **BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10**



**minutes.** Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested on each tour. BOP equipment will be tested a minimum of every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip but not more than once daily. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of the BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30-day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30-day interval of the first full test.

- C. **GeoHazards:** There are no anticipated geohazards
- D. **Maximum Anticipated Pressure:** 7001' TVD x 0.43 = 3010 psi
- E. **H2S Concerns:** — There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

### III. **MATERIALS**

#### A. **CASING EQUIPMENT:**

| CASING TYPE  | OH SIZE (IN) | KB DEPTH (MD) | CSG SIZE | WEIGHT   | GRADE          | CONN    |
|--------------|--------------|---------------|----------|----------|----------------|---------|
| SURFACE      | 26"          | 364'          | 20"      | 94 LBS   | J-55 or equiv  | LTC/BTC |
| INTERMEDIATE | 17.5"        | 3,478'        | 13.375"  | 61 LBS   | N-80 or equiv  | LTC/BTC |
| INTERMEDIATE | 12.25"       | 6,332'        | 9.625"   | 43.5 LBS | N-80 or equiv  | LTC/BTC |
| PRODUCTION   | 8.5"         | 14,291'       | 5.5"     | 20 LBS   | P-110 or equiv | LTC/BTC |

NOTE: All casing depths are approximate, based on KB elevation and will be based on drilling conditions +/- 50'. Weights, grades, and connections will be based on availability and may vary but will be equivalent or greater.

#### B. **FLOAT EQUIPMENT:**

1. **SURFACE CASING:** 20" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing one every 3 joints to Surf.
2. **INTERMEDIATE CASING:** 13-3/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,250ft., 2,000ft., 1,500 ft., 1,000 ft, and 500ft. Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements.
3. **INTERMEDIATE CASING:** 9-5/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 3,400 ft. Run (1) centralizer at 3,000 ft., and 2,500ft. Optional use of DV Tools will be strategically placed above loss circulation zones anticipated in the Mesaverde. Optional cancellation plugs for DV tools may be used if losses while cementing are not encountered. Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The operational use of an external casing packer may be utilized and placed below the DV tool, if a DV tool is utilized.





4. **PRODUCTION CASING:** Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. The centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

### C. **CEMENTING:**

*(Note: Cement type and volumes may be adjusted onsite due to actual conditions and availability)*

1. **SURFACE:** Casing shall be set at ~ 364' and cemented to surface. TOC at Surface.  
693 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 548 sks of 14.6 ppg Type III with 1.39 cuft/sk yield, 30% excess.
2. **INTERMEDIATE 1:** Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 1 stage. If cement does not circulate to the surface, a CBL will be run to determine TOC.

| Intermediate 1 -13-3/8" | Top   | Footage | Cement (ft3/ft)<br>Annular Capacity | Excess<br>(30%) | Total (ft3) | Total (bbl) | Slurry Yield<br>(ft3/sk) | Sacks<br>Cement | Density<br>(PPG) |
|-------------------------|-------|---------|-------------------------------------|-----------------|-------------|-------------|--------------------------|-----------------|------------------|
| Stage 1 Tail            | 2,878 | 600     | 0.6947                              | 1.3             | 575         | 102         | 1.10                     | 523             | 15.8             |
| Stage 1 Lead - OH       | 364   | 2,514   | 0.6947                              | 1.3             | 2,270       | 404         | 1.90                     | 1195            | 12.4             |
| Stage 2 Lead - Cased    | -     | 364     | 1.019                               | 1               | 371         | 66          | 1.90                     | 195             | 12.4             |
|                         |       |         |                                     |                 | 3,217       | 573         |                          | 1913            |                  |

Calculations based on 30% excess for open hole and cement to the surface. Actual excess pumped will be determined by well conditions.

3. **INTERMEDIATE 2:** Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 1 or 2 stages using a DV/STAGE tool to reduce cement losses and maximize cement coverage. The operator proposes optional DV tools above anticipated loss circulation zones in the Mesaverde. If losses are not observed, a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. Top of cement is planned at 100' above the base of the 13-3/8" casing (100' of lap). If cement does not circulate to the DV tool or to the 13-3/8" casing, a CBL will be run to determine TOC.

| Intermediate 2 -9-5/8" | Top   | Footage | Cement (ft3/ft)<br>Annular Capacity | Excess<br>(30%) | Total (ft3) | Total (bbl) | Slurry Yield<br>(ft3/sk) | Sacks<br>Cement | Density<br>(PPG) |
|------------------------|-------|---------|-------------------------------------|-----------------|-------------|-------------|--------------------------|-----------------|------------------|
| Stage 1 Tail           | 5,832 | 500     | 0.3132                              | 1.3             | 220         | 39          | 1.10                     | 200             | 15.8             |
| Stage 1 Lead           | 4,765 | 1,067   | 0.3132                              | 1.3             | 434         | 77          | 1.90                     | 229             | 12.4             |
|                        |       |         |                                     |                 | 654         | 117         |                          | 429             |                  |
| Stage 2 Tail           | 4,165 | 600     | 0.3132                              | 1.3             | 244         | 44          | 1.58                     | 155             | 13.2             |
| Stage 2 Lead           | 3,378 | 787     | 0.3132                              | 1.3             | 320         | 57          | 1.90                     | 169             | 12.4             |
| Stage 2 Lead - Cased   | 3,278 | 100     | 0.3627                              | 1               | 36          | 6           | 1.90                     | 19              | 12.4             |
| Stage 2 Totals         |       |         |                                     |                 | 601         | 107         |                          | 342             |                  |
| Int 2 Totals           |       |         |                                     |                 | 1,255       | 224         |                          | 771             |                  |

Calculations based on 30% excess for open hole and cement to the surface. Actual excess pumped will be determined by well conditions.

4. **PRODUCTION:** Production casing will be cemented in 1 stage with 100' of cement overlap above the intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.



|                       | Top          | ft           | Cement (ft3/ft)<br>Annular Capacity | Excess<br>(15%) | Total (ft3)  | Total (bbl) | Slurry Yield<br>(ft3/sk) | Sacks<br>Cement | Density<br>(PPG) |
|-----------------------|--------------|--------------|-------------------------------------|-----------------|--------------|-------------|--------------------------|-----------------|------------------|
| <b>Cased Lead</b>     | <b>6,232</b> | <b>100</b>   | <b>0.2531</b>                       | <b>1</b>        | <b>25</b>    | <b>5</b>    | <b>1.59</b>              | <b>16</b>       | <b>13.2</b>      |
| <b>Open Hole Lead</b> | <b>6,332</b> | <b>7,984</b> | <b>0.2291</b>                       | <b>1.15</b>     | <b>2,109</b> | <b>376</b>  | <b>1.59</b>              | <b>1,326</b>    | <b>13.2</b>      |
|                       |              |              |                                     |                 | <b>2,134</b> | <b>380</b>  |                          | <b>1,342</b>    |                  |

Calculations based on 15% excess for the open hole and 100' overlap into the intermediate casing. Actual volumes will vary.

*Cement calculations are used for volume estimation. Well conditions will dictate the final cement job design. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries, depending on the service provider selected. Cement yields may change depending on the slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.*

#### IV. COMPLETION

##### A. CBL

CBLs and/or Temperature Surveys will be performed as needed or required to determine the cement top if cement is not circulated.

##### B. PRESSURE TEST

C. Pressure test 5-1/2" casing to 1540 psi (0.22 psi/ft \* 7,001' TVD) for 30 minutes. Increase pressure to Open Toe sleeves.

##### D. STIMULATION

Stimulate with sand and water. Isolate stages with flow-through or dissolvable frac plugs. Drill out frac plugs as required and flow back lateral.

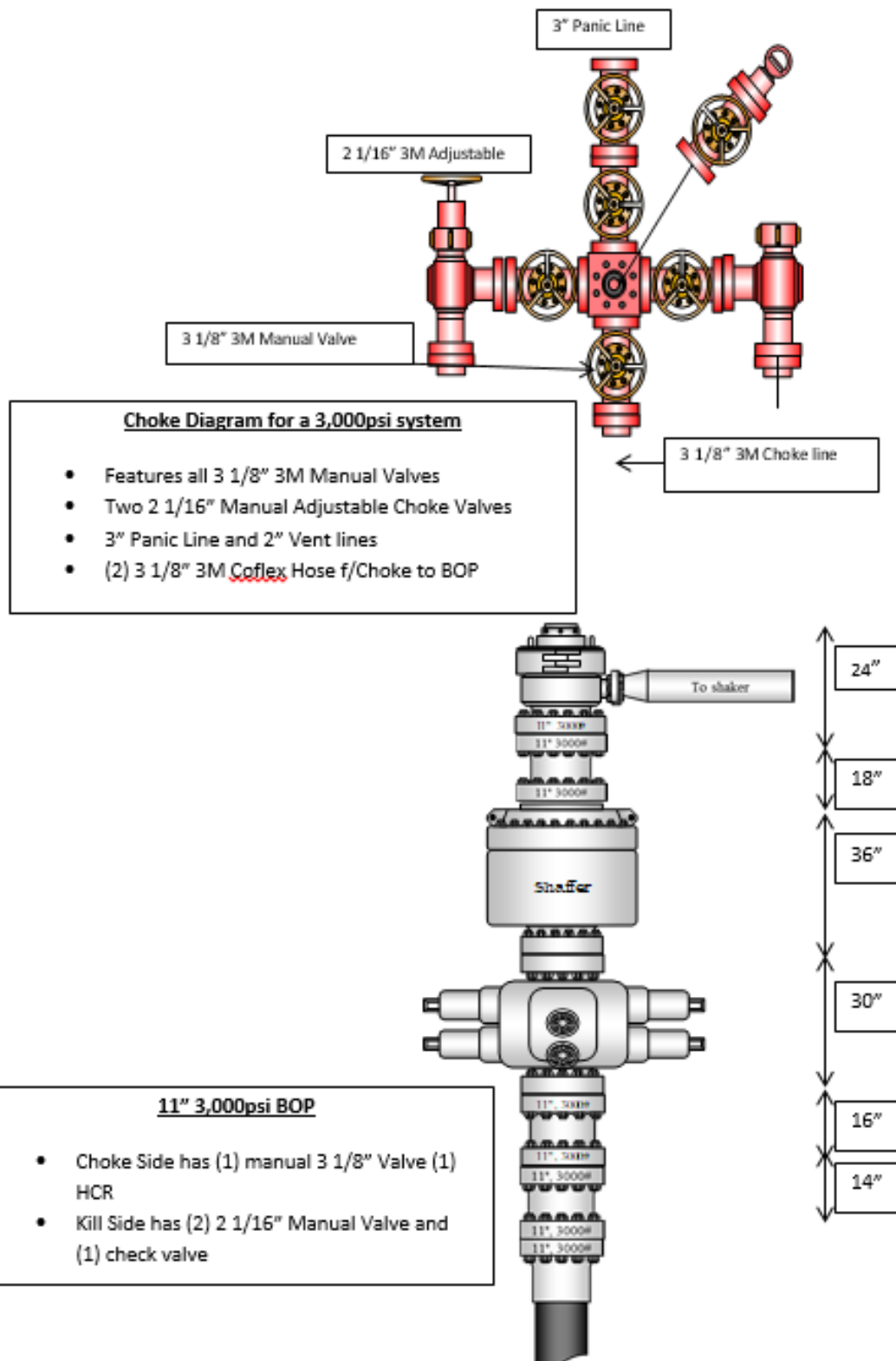
##### E. PRODUCTION TUBING

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-18 months after completion.

\*NOTE: Although this horizontal well may be drilled past the applicable setbacks, an unorthodox location application is not required because the completed interval in this well, as defined by 19.15.16.7 8(1) NMAC, will be entirely within the applicable setbacks. This approach complies with all applicable rules, including 19.15.16.14 A(3) NMAC, 19.15.16.14 8(2) NMAC, 19.15.16.15 8(2)NMAC, and 19.15.16.15. 8(4) NMAC.



## 3M 11" B.O.P.E Diagram



Released to Imaging: 3/11/2023 1:58:25 PM



Company: Logos Operating LLC  
Project: Rio Arriba, NM NAD83  
Site: Rosa Unit 5  
Well: Rosa Unit 550H  
Wellbore: OH  
Design: Plan #4

PROJECT DETAILS: Rio Arriba, NM NAD83  
  
Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: New Mexico Western Zone  
System Datum: Mean Sea Level  
Local North: True



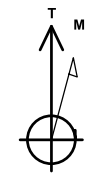
WELL DETAILS: Rosa Unit 550H

GL 6429' @ 6429.00ft

| +N/-S | +E/-W | Northing     | Easting      | Latitude   | Longitude    |    |
|-------|-------|--------------|--------------|------------|--------------|----|
| 0.00  | 0.00  | 2153892.4220 | 2829086.0200 | 36.9185810 | -107.4707360 | B5 |

Plan: Plan #4 (Rosa Unit 550H/OH)

Created By: Janie Collins Date: 18:01, January 19 2023



Azimuths to True North  
Magnetic North: 8  
  
Magnetic Field  
Strength: 49637  
Dip Angle: 63.83°  
Date: 12/6/2021  
Model: HDGM2021\_FIL-E

DESIGN TARGET DETAILS

| Name                | TVD     | +N/-S  | +E/-W    | Northing     | Easting      | Latitude   | Longitude    |
|---------------------|---------|--------|----------|--------------|--------------|------------|--------------|
| Rosa 550H POE Rev 1 | 7001.00 | 497.32 | -125.72  | 2154389.2644 | 2828958.4063 | 36.9199470 | -107.4711661 |
| Rosa 550H BHL       | 6994.00 | 522.59 | -7006.16 | 2154388.3743 | 2822077.9419 | 36.9200140 | -107.4947036 |
| Rosa 550H FPerf     | 6994.00 | 521.82 | -6844.04 | 2154388.2222 | 2822240.0625 | 36.9200120 | -107.4941490 |

SECTION DETAILS

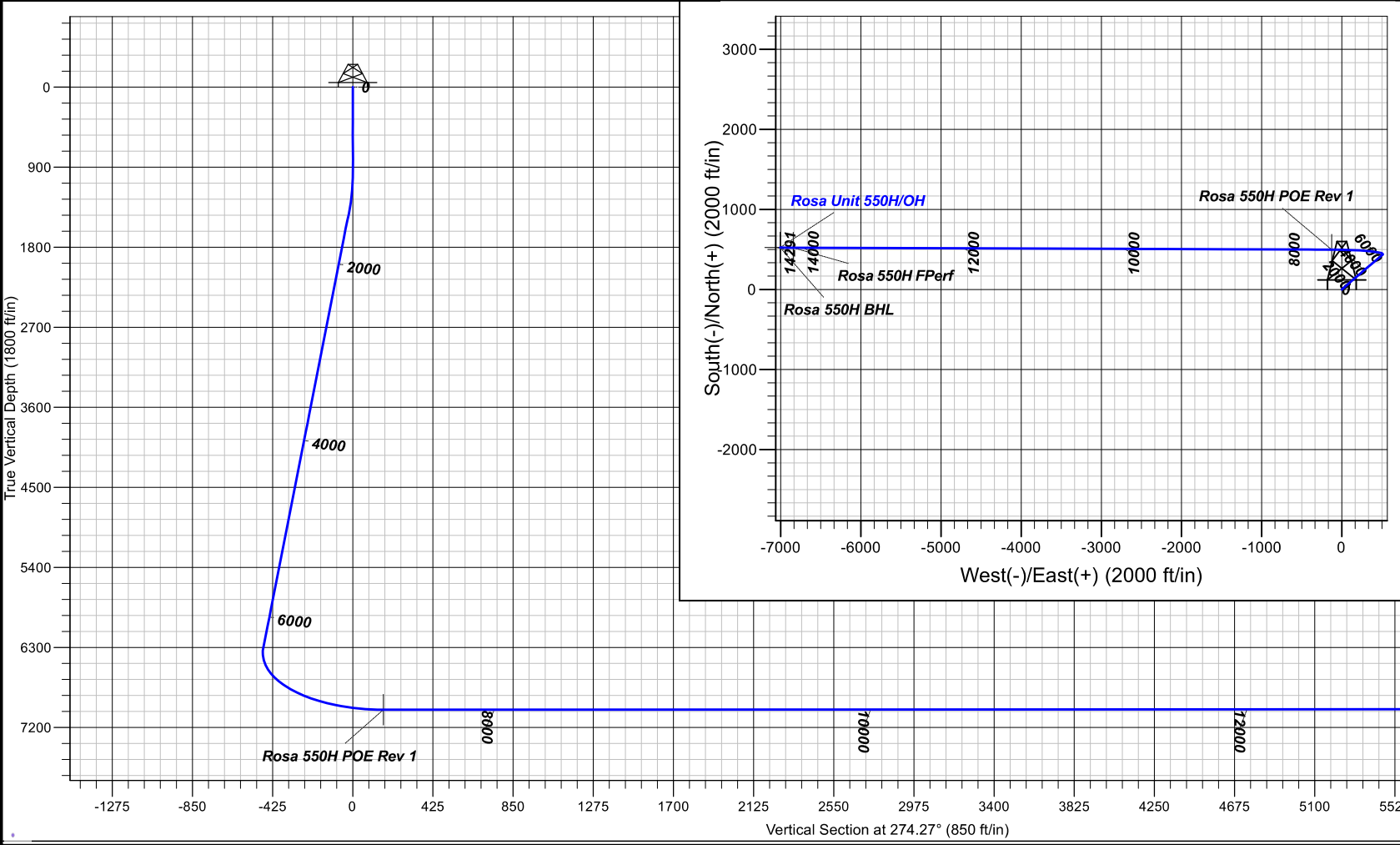
| MD       | Inc   | Azi    | TVD     | +N/-S  | +E/-W    | Dleg | TFace   | VSect   |
|----------|-------|--------|---------|--------|----------|------|---------|---------|
| 0.00     | 0.00  | 0.00   | 0.00    | 0.00   | 0.00     | 0.00 | 0.00    | 0.00    |
| 1000.00  | 0.00  | 0.00   | 1000.00 | 0.00   | 0.00     | 0.00 | 0.00    | 0.00    |
| 1372.51  | 7.45  | 49.41  | 1371.46 | 15.73  | 18.37    | 2.00 | 49.41   | -17.14  |
| 6347.48  | 7.45  | 49.41  | 6304.43 | 435.42 | 508.24   | 0.00 | 0.00    | -474.45 |
| 7410.72  | 90.06 | 270.21 | 7001.00 | 497.32 | -125.72  | 9.00 | -138.96 | 162.37  |
| 14291.20 | 90.06 | 270.21 | 6994.00 | 522.59 | -7006.16 | 0.00 | 0.00    | 7025.62 |

CASING DETAILS

No casing data is available

FORMATION DETAILS

| TVDPath | MDPath  | Formation       |
|---------|---------|-----------------|
| 2367.00 | 2376.53 | Ojo Alamo       |
| 2486.00 | 2496.54 | Kirtland        |
| 3027.01 | 3042.15 | Fruitland       |
| 3385.01 | 3403.20 | Pictured Cliffs |
| 3721.01 | 3742.06 | Lewis           |
| 4636.01 | 4664.85 | Chacra          |
| 5413.01 | 5448.47 | Cliff House     |
| 5457.01 | 5492.84 | Menefee         |
| 5678.01 | 5715.73 | Point Lookout   |
| 6190.01 | 6232.09 | Mancos          |



Rosa 550H BHL  
Rosa 550H FPerf  
Rosa Unit 550H/OH/Plan

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## **Logos Operating LLC**

**Rio Arriba, NM NAD83**

**Rosa Unit 5**

**Rosa Unit 550H - Slot B5**

**OH**

**Plan: Plan #4**

## **Standard Planning Report**

**19 January, 2023**





# Lonestar Consulting, LLC

## Planning Report



|                  |                      |                                     |                               |
|------------------|----------------------|-------------------------------------|-------------------------------|
| <b>Database:</b> | Grand Junction       | <b>Local Co-ordinate Reference:</b> | Well Rosa Unit 550H - Slot B5 |
| <b>Company:</b>  | Logos Operating LLC  | <b>TVD Reference:</b>               | GL 6429' @ 6429.00ft          |
| <b>Project:</b>  | Rio Arriba, NM NAD83 | <b>MD Reference:</b>                | GL 6429' @ 6429.00ft          |
| <b>Site:</b>     | Rosa Unit 5          | <b>North Reference:</b>             | True                          |
| <b>Well:</b>     | Rosa Unit 550H       | <b>Survey Calculation Method:</b>   | Minimum Curvature             |
| <b>Wellbore:</b> | OH                   |                                     |                               |
| <b>Design:</b>   | Plan #4              |                                     |                               |

|                    |                           |                      |                |
|--------------------|---------------------------|----------------------|----------------|
| <b>Project</b>     | Rio Arriba, NM NAD83      |                      |                |
| <b>Map System:</b> | US State Plane 1983       | <b>System Datum:</b> | Mean Sea Level |
| <b>Geo Datum:</b>  | North American Datum 1983 |                      |                |
| <b>Map Zone:</b>   | New Mexico Western Zone   |                      |                |

|                              |             |                     |                     |                                |
|------------------------------|-------------|---------------------|---------------------|--------------------------------|
| <b>Site</b>                  | Rosa Unit 5 |                     |                     |                                |
| <b>Site Position:</b>        |             | <b>Northing:</b>    | 2,153,856.2783 usft | <b>Latitude:</b> 36.9184820    |
| <b>From:</b>                 | Lat/Long    | <b>Easting:</b>     | 2,829,059.5559 usft | <b>Longitude:</b> -107.4708270 |
| <b>Position Uncertainty:</b> | 0.00 ft     | <b>Slot Radius:</b> | 13.200 in           |                                |

|                             |                          |         |                            |                     |
|-----------------------------|--------------------------|---------|----------------------------|---------------------|
| <b>Well</b>                 | Rosa Unit 550H - Slot B5 |         |                            |                     |
| <b>Well Position</b>        | <b>+N/-S</b>             | 0.00 ft | <b>Northing:</b>           | 2,153,892.4220 usft |
|                             | <b>+E/-W</b>             | 0.00 ft | <b>Easting:</b>            | 2,829,086.0200 usft |
| <b>Position Uncertainty</b> |                          | 0.00 ft | <b>Wellhead Elevation:</b> | ft                  |
| <b>Grid Convergence:</b>    |                          | 0.22 °  | <b>Ground Level:</b>       | 6,429.00 ft         |

|                  |                   |                    |                        |                      |                            |
|------------------|-------------------|--------------------|------------------------|----------------------|----------------------------|
| <b>Wellbore</b>  | OH                |                    |                        |                      |                            |
| <b>Magnetics</b> | <b>Model Name</b> | <b>Sample Date</b> | <b>Declination (°)</b> | <b>Dip Angle (°)</b> | <b>Field Strength (nT)</b> |
|                  | HDGM2021_FILE     | 12/6/2021          | 8.72                   | 63.38                | 49,637.10000000            |

|                          |                              |                   |                      |                      |
|--------------------------|------------------------------|-------------------|----------------------|----------------------|
| <b>Design</b>            | Plan #4                      |                   |                      |                      |
| <b>Audit Notes:</b>      |                              |                   |                      |                      |
| <b>Version:</b>          | <b>Phase:</b>                | PLAN              | <b>Tie On Depth:</b> | 0.00                 |
| <b>Vertical Section:</b> | <b>Depth From (TVD) (ft)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b>    | <b>Direction (°)</b> |
|                          | 0.00                         | 0.00              | 0.00                 | 274.27               |

|                                 |                      |                          |                  |                |
|---------------------------------|----------------------|--------------------------|------------------|----------------|
| <b>Plan Survey Tool Program</b> | <b>Date</b>          | 1/19/2023                |                  |                |
| <b>Depth From (ft)</b>          | <b>Depth To (ft)</b> | <b>Survey (Wellbore)</b> | <b>Tool Name</b> | <b>Remarks</b> |
| 1                               | 0.00                 | 14,291.01 Plan #4 (OH)   | MWD+HDGM         |                |
|                                 |                      |                          | OWSG MWD + HDGM  |                |

|                            |                        |                    |                            |                   |                   |                              |                             |                            |                |                   |
|----------------------------|------------------------|--------------------|----------------------------|-------------------|-------------------|------------------------------|-----------------------------|----------------------------|----------------|-------------------|
| <b>Plan Sections</b>       |                        |                    |                            |                   |                   |                              |                             |                            |                |                   |
| <b>Measured Depth (ft)</b> | <b>Inclination (°)</b> | <b>Azimuth (°)</b> | <b>Vertical Depth (ft)</b> | <b>+N/-S (ft)</b> | <b>+E/-W (ft)</b> | <b>Dogleg Rate (°/100ft)</b> | <b>Build Rate (°/100ft)</b> | <b>Turn Rate (°/100ft)</b> | <b>TFO (°)</b> | <b>Target</b>     |
| 0.00                       | 0.00                   | 0.00               | 0.00                       | 0.00              | 0.00              | 0.00                         | 0.00                        | 0.00                       | 0.00           |                   |
| 1,000.00                   | 0.00                   | 0.00               | 1,000.00                   | 0.00              | 0.00              | 0.00                         | 0.00                        | 0.00                       | 0.00           |                   |
| 1,372.51                   | 7.45                   | 49.41              | 1,371.46                   | 15.73             | 18.37             | 2.00                         | 2.00                        | 0.00                       | 49.41          |                   |
| 6,347.48                   | 7.45                   | 49.41              | 6,304.43                   | 435.42            | 508.24            | 0.00                         | 0.00                        | 0.00                       | 0.00           |                   |
| 7,410.72                   | 90.06                  | 270.21             | 7,001.00                   | 497.33            | -125.72           | 9.00                         | 7.77                        | -13.09                     | -138.96        | Rosa 550H POE Rev |
| 14,291.20                  | 90.06                  | 270.21             | 6,994.00                   | 522.59            | -7,006.16         | 0.00                         | 0.00                        | 0.00                       | 0.00           | Rosa 550H BHL     |



## Lonestar Consulting, LLC

## Planning Report



|                  |                      |                                     |                               |
|------------------|----------------------|-------------------------------------|-------------------------------|
| <b>Database:</b> | Grand Junction       | <b>Local Co-ordinate Reference:</b> | Well Rosa Unit 550H - Slot B5 |
| <b>Company:</b>  | Logos Operating LLC  | <b>TVD Reference:</b>               | GL 6429' @ 6429.00ft          |
| <b>Project:</b>  | Rio Arriba, NM NAD83 | <b>MD Reference:</b>                | GL 6429' @ 6429.00ft          |
| <b>Site:</b>     | Rosa Unit 5          | <b>North Reference:</b>             | True                          |
| <b>Well:</b>     | Rosa Unit 550H       | <b>Survey Calculation Method:</b>   | Minimum Curvature             |
| <b>Wellbore:</b> | OH                   |                                     |                               |
| <b>Design:</b>   | Plan #4              |                                     |                               |

| 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            | 0.00        | 0.00                | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 100.00              | 0.00            | 0.00        | 100.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 200.00              | 0.00            | 0.00        | 200.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 300.00              | 0.00            | 0.00        | 300.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 400.00              | 0.00            | 0.00        | 400.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 500.00              | 0.00            | 0.00        | 500.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 600.00              | 0.00            | 0.00        | 600.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 700.00              | 0.00            | 0.00        | 700.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 800.00              | 0.00            | 0.00        | 800.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 900.00              | 0.00            | 0.00        | 900.00              | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 1,000.00            | 0.00            | 0.00        | 1,000.00            | 0.00       | 0.00       | 0.00                  | 0.00                  | 0.00                 | 0.00                |
| 1,100.00            | 2.00            | 49.41       | 1,099.98            | 1.14       | 1.33       | -1.24                 | 2.00                  | 2.00                 | 0.00                |
| 1,200.00            | 4.00            | 49.41       | 1,199.84            | 4.54       | 5.30       | -4.95                 | 2.00                  | 2.00                 | 0.00                |
| 1,300.00            | 6.00            | 49.41       | 1,299.45            | 10.21      | 11.92      | -11.13                | 2.00                  | 2.00                 | 0.00                |
| 1,372.51            | 7.45            | 49.41       | 1,371.46            | 15.73      | 18.37      | -17.14                | 2.00                  | 2.00                 | 0.00                |
| 1,400.00            | 7.45            | 49.41       | 1,398.72            | 18.05      | 21.07      | -19.67                | 0.00                  | 0.00                 | 0.00                |
| 1,500.00            | 7.45            | 49.41       | 1,497.87            | 26.49      | 30.92      | -28.86                | 0.00                  | 0.00                 | 0.00                |
| 1,600.00            | 7.45            | 49.41       | 1,597.03            | 34.93      | 40.77      | -38.06                | 0.00                  | 0.00                 | 0.00                |
| 1,700.00            | 7.45            | 49.41       | 1,696.19            | 43.36      | 50.61      | -47.25                | 0.00                  | 0.00                 | 0.00                |
| 1,800.00            | 7.45            | 49.41       | 1,795.34            | 51.80      | 60.46      | -56.44                | 0.00                  | 0.00                 | 0.00                |
| 1,900.00            | 7.45            | 49.41       | 1,894.50            | 60.23      | 70.31      | -65.63                | 0.00                  | 0.00                 | 0.00                |
| 2,000.00            | 7.45            | 49.41       | 1,993.65            | 68.67      | 80.15      | -74.82                | 0.00                  | 0.00                 | 0.00                |
| 2,100.00            | 7.45            | 49.41       | 2,092.81            | 77.11      | 90.00      | -84.02                | 0.00                  | 0.00                 | 0.00                |
| 2,200.00            | 7.45            | 49.41       | 2,191.97            | 85.54      | 99.85      | -93.21                | 0.00                  | 0.00                 | 0.00                |
| 2,300.00            | 7.45            | 49.41       | 2,291.12            | 93.98      | 109.69     | -102.40               | 0.00                  | 0.00                 | 0.00                |
| 2,400.00            | 7.45            | 49.41       | 2,390.28            | 102.41     | 119.54     | -111.59               | 0.00                  | 0.00                 | 0.00                |
| 2,500.00            | 7.45            | 49.41       | 2,489.43            | 110.85     | 129.39     | -120.78               | 0.00                  | 0.00                 | 0.00                |
| 2,600.00            | 7.45            | 49.41       | 2,588.59            | 119.28     | 139.24     | -129.98               | 0.00                  | 0.00                 | 0.00                |
| 2,700.00            | 7.45            | 49.41       | 2,687.74            | 127.72     | 149.08     | -139.17               | 0.00                  | 0.00                 | 0.00                |
| 2,800.00            | 7.45            | 49.41       | 2,786.90            | 136.16     | 158.93     | -148.36               | 0.00                  | 0.00                 | 0.00                |
| 2,900.00            | 7.45            | 49.41       | 2,886.06            | 144.59     | 168.78     | -157.55               | 0.00                  | 0.00                 | 0.00                |
| 3,000.00            | 7.45            | 49.41       | 2,985.21            | 153.03     | 178.62     | -166.75               | 0.00                  | 0.00                 | 0.00                |
| 3,100.00            | 7.45            | 49.41       | 3,084.37            | 161.46     | 188.47     | -175.94               | 0.00                  | 0.00                 | 0.00                |
| 3,200.00            | 7.45            | 49.41       | 3,183.52            | 169.90     | 198.32     | -185.13               | 0.00                  | 0.00                 | 0.00                |
| 3,300.00            | 7.45            | 49.41       | 3,282.68            | 178.34     | 208.16     | -194.32               | 0.00                  | 0.00                 | 0.00                |
| 3,400.00            | 7.45            | 49.41       | 3,381.84            | 186.77     | 218.01     | -203.51               | 0.00                  | 0.00                 | 0.00                |
| 3,500.00            | 7.45            | 49.41       | 3,480.99            | 195.21     | 227.86     | -212.71               | 0.00                  | 0.00                 | 0.00                |
| 3,600.00            | 7.45            | 49.41       | 3,580.15            | 203.64     | 237.70     | -221.90               | 0.00                  | 0.00                 | 0.00                |
| 3,700.00            | 7.45            | 49.41       | 3,679.30            | 212.08     | 247.55     | -231.09               | 0.00                  | 0.00                 | 0.00                |
| 3,800.00            | 7.45            | 49.41       | 3,778.46            | 220.52     | 257.40     | -240.28               | 0.00                  | 0.00                 | 0.00                |
| 3,900.00            | 7.45            | 49.41       | 3,877.61            | 228.95     | 267.24     | -249.47               | 0.00                  | 0.00                 | 0.00                |
| 4,000.00            | 7.45            | 49.41       | 3,976.77            | 237.39     | 277.09     | -258.67               | 0.00                  | 0.00                 | 0.00                |
| 4,100.00            | 7.45            | 49.41       | 4,075.93            | 245.82     | 286.94     | -267.86               | 0.00                  | 0.00                 | 0.00                |
| 4,200.00            | 7.45            | 49.41       | 4,175.08            | 254.26     | 296.79     | -277.05               | 0.00                  | 0.00                 | 0.00                |
| 4,300.00            | 7.45            | 49.41       | 4,274.24            | 262.70     | 306.63     | -286.24               | 0.00                  | 0.00                 | 0.00                |
| 4,400.00            | 7.45            | 49.41       | 4,373.39            | 271.13     | 316.48     | -295.43               | 0.00                  | 0.00                 | 0.00                |
| 4,500.00            | 7.45            | 49.41       | 4,472.55            | 279.57     | 326.33     | -304.63               | 0.00                  | 0.00                 | 0.00                |
| 4,600.00            | 7.45            | 49.41       | 4,571.71            | 288.00     | 336.17     | -313.82               | 0.00                  | 0.00                 | 0.00                |
| 4,700.00            | 7.45            | 49.41       | 4,670.86            | 296.44     | 346.02     | -323.01               | 0.00                  | 0.00                 | 0.00                |
| 4,800.00            | 7.45            | 49.41       | 4,770.02            | 304.88     | 355.87     | -332.20               | 0.00                  | 0.00                 | 0.00                |
| 4,900.00            | 7.45            | 49.41       | 4,869.17            | 313.31     | 365.71     | -341.39               | 0.00                  | 0.00                 | 0.00                |
| 5,000.00            | 7.45            | 49.41       | 4,968.33            | 321.75     | 375.56     | -350.59               | 0.00                  | 0.00                 | 0.00                |
| 5,100.00            | 7.45            | 49.41       | 5,067.48            | 330.18     | 385.41     | -359.78               | 0.00                  | 0.00                 | 0.00                |
| 5,200.00            | 7.45            | 49.41       | 5,166.64            | 338.62     | 395.25     | -368.97               | 0.00                  | 0.00                 | 0.00                |





## Lonestar Consulting, LLC

## Planning Report



|                  |                      |                                     |                               |
|------------------|----------------------|-------------------------------------|-------------------------------|
| <b>Database:</b> | Grand Junction       | <b>Local Co-ordinate Reference:</b> | Well Rosa Unit 550H - Slot B5 |
| <b>Company:</b>  | Logos Operating LLC  | <b>TVD Reference:</b>               | GL 6429' @ 6429.00ft          |
| <b>Project:</b>  | Rio Arriba, NM NAD83 | <b>MD Reference:</b>                | GL 6429' @ 6429.00ft          |
| <b>Site:</b>     | Rosa Unit 5          | <b>North Reference:</b>             | True                          |
| <b>Well:</b>     | Rosa Unit 550H       | <b>Survey Calculation Method:</b>   | Minimum Curvature             |
| <b>Wellbore:</b> | OH                   |                                     |                               |
| <b>Design:</b>   | Plan #4              |                                     |                               |

| 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) |
| 5,300.00            | 7.45            | 49.41       | 5,265.80            | 347.06     | 405.10     | -378.16               | 0.00                  | 0.00                 | 0.00                |
| 5,400.00            | 7.45            | 49.41       | 5,364.95            | 355.49     | 414.95     | -387.36               | 0.00                  | 0.00                 | 0.00                |
| 5,500.00            | 7.45            | 49.41       | 5,464.11            | 363.93     | 424.79     | -396.55               | 0.00                  | 0.00                 | 0.00                |
| 5,600.00            | 7.45            | 49.41       | 5,563.26            | 372.36     | 434.64     | -405.74               | 0.00                  | 0.00                 | 0.00                |
| 5,700.00            | 7.45            | 49.41       | 5,662.42            | 380.80     | 444.49     | -414.93               | 0.00                  | 0.00                 | 0.00                |
| 5,800.00            | 7.45            | 49.41       | 5,761.57            | 389.23     | 454.34     | -424.12               | 0.00                  | 0.00                 | 0.00                |
| 5,900.00            | 7.45            | 49.41       | 5,860.73            | 397.67     | 464.18     | -433.32               | 0.00                  | 0.00                 | 0.00                |
| 6,000.00            | 7.45            | 49.41       | 5,959.89            | 406.11     | 474.03     | -442.51               | 0.00                  | 0.00                 | 0.00                |
| 6,100.00            | 7.45            | 49.41       | 6,059.04            | 414.54     | 483.88     | -451.70               | 0.00                  | 0.00                 | 0.00                |
| 6,200.00            | 7.45            | 49.41       | 6,158.20            | 422.98     | 493.72     | -460.89               | 0.00                  | 0.00                 | 0.00                |
| 6,300.00            | 7.45            | 49.41       | 6,257.35            | 431.41     | 503.57     | -470.08               | 0.00                  | 0.00                 | 0.00                |
| 6,347.48            | 7.45            | 49.41       | 6,304.43            | 435.42     | 508.24     | -474.45               | 0.00                  | 0.00                 | 0.00                |
| 6,400.00            | 4.97            | 10.74       | 6,356.66            | 439.87     | 511.26     | -477.12               | 9.00                  | -4.73                | -73.64              |
| 6,500.00            | 9.44            | 301.12      | 6,456.00            | 448.38     | 505.03     | -470.27               | 9.00                  | 4.48                 | -69.61              |
| 6,600.00            | 17.76           | 285.69      | 6,553.14            | 456.77     | 483.28     | -447.96               | 9.00                  | 8.31                 | -15.43              |
| 6,700.00            | 26.52           | 280.08      | 6,645.69            | 464.81     | 446.54     | -410.73               | 9.00                  | 8.76                 | -5.61               |
| 6,800.00            | 35.39           | 277.12      | 6,731.37            | 472.32     | 395.73     | -359.50               | 9.00                  | 8.87                 | -2.95               |
| 6,900.00            | 44.31           | 275.24      | 6,808.07            | 479.12     | 332.08     | -295.52               | 9.00                  | 8.92                 | -1.89               |
| 7,000.00            | 53.25           | 273.87      | 6,873.90            | 485.02     | 257.18     | -220.39               | 9.00                  | 8.94                 | -1.36               |
| 7,100.00            | 62.20           | 272.80      | 6,927.24            | 489.90     | 172.85     | -135.93               | 9.00                  | 8.95                 | -1.08               |
| 7,200.00            | 71.17           | 271.89      | 6,966.78            | 493.62     | 81.19      | -44.25                | 9.00                  | 8.96                 | -0.91               |
| 7,300.00            | 80.13           | 271.07      | 6,991.54            | 496.10     | -15.56     | 52.42                 | 9.00                  | 8.97                 | -0.82               |
| 7,400.00            | 89.10           | 270.29      | 7,000.92            | 497.28     | -115.01    | 151.68                | 9.00                  | 8.97                 | -0.77               |
| 7,410.72            | 90.06           | 270.21      | 7,001.00            | 497.33     | -125.72    | 162.37                | 9.00                  | 8.97                 | -0.77               |
| 7,500.00            | 90.06           | 270.21      | 7,000.91            | 497.65     | -215.00    | 251.43                | 0.00                  | 0.00                 | 0.00                |
| 7,600.00            | 90.06           | 270.21      | 7,000.81            | 498.02     | -315.00    | 351.18                | 0.00                  | 0.00                 | 0.00                |
| 7,700.00            | 90.06           | 270.21      | 7,000.71            | 498.39     | -415.00    | 450.93                | 0.00                  | 0.00                 | 0.00                |
| 7,800.00            | 90.06           | 270.21      | 7,000.61            | 498.75     | -515.00    | 550.68                | 0.00                  | 0.00                 | 0.00                |
| 7,900.00            | 90.06           | 270.21      | 7,000.50            | 499.12     | -615.00    | 650.42                | 0.00                  | 0.00                 | 0.00                |
| 8,000.00            | 90.06           | 270.21      | 7,000.40            | 499.49     | -715.00    | 750.17                | 0.00                  | 0.00                 | 0.00                |
| 8,100.00            | 90.06           | 270.21      | 7,000.30            | 499.86     | -815.00    | 849.92                | 0.00                  | 0.00                 | 0.00                |
| 8,200.00            | 90.06           | 270.21      | 7,000.20            | 500.22     | -915.00    | 949.67                | 0.00                  | 0.00                 | 0.00                |
| 8,300.00            | 90.06           | 270.21      | 7,000.10            | 500.59     | -1,015.00  | 1,049.42              | 0.00                  | 0.00                 | 0.00                |
| 8,400.00            | 90.06           | 270.21      | 6,999.99            | 500.96     | -1,115.00  | 1,149.17              | 0.00                  | 0.00                 | 0.00                |
| 8,500.00            | 90.06           | 270.21      | 6,999.89            | 501.32     | -1,215.00  | 1,248.92              | 0.00                  | 0.00                 | 0.00                |
| 8,600.00            | 90.06           | 270.21      | 6,999.79            | 501.69     | -1,315.00  | 1,348.67              | 0.00                  | 0.00                 | 0.00                |
| 8,700.00            | 90.06           | 270.21      | 6,999.69            | 502.06     | -1,415.00  | 1,448.42              | 0.00                  | 0.00                 | 0.00                |
| 8,800.00            | 90.06           | 270.21      | 6,999.59            | 502.43     | -1,515.00  | 1,548.17              | 0.00                  | 0.00                 | 0.00                |
| 8,900.00            | 90.06           | 270.21      | 6,999.49            | 502.79     | -1,614.99  | 1,647.92              | 0.00                  | 0.00                 | 0.00                |
| 9,000.00            | 90.06           | 270.21      | 6,999.38            | 503.16     | -1,714.99  | 1,747.67              | 0.00                  | 0.00                 | 0.00                |
| 9,100.00            | 90.06           | 270.21      | 6,999.28            | 503.53     | -1,814.99  | 1,847.42              | 0.00                  | 0.00                 | 0.00                |
| 9,200.00            | 90.06           | 270.21      | 6,999.18            | 503.89     | -1,914.99  | 1,947.17              | 0.00                  | 0.00                 | 0.00                |
| 9,300.00            | 90.06           | 270.21      | 6,999.08            | 504.26     | -2,014.99  | 2,046.92              | 0.00                  | 0.00                 | 0.00                |
| 9,400.00            | 90.06           | 270.21      | 6,998.98            | 504.63     | -2,114.99  | 2,146.67              | 0.00                  | 0.00                 | 0.00                |
| 9,500.00            | 90.06           | 270.21      | 6,998.88            | 505.00     | -2,214.99  | 2,246.42              | 0.00                  | 0.00                 | 0.00                |
| 9,600.00            | 90.06           | 270.21      | 6,998.77            | 505.36     | -2,314.99  | 2,346.17              | 0.00                  | 0.00                 | 0.00                |
| 9,700.00            | 90.06           | 270.21      | 6,998.67            | 505.73     | -2,414.99  | 2,445.92              | 0.00                  | 0.00                 | 0.00                |
| 9,800.00            | 90.06           | 270.21      | 6,998.57            | 506.10     | -2,514.99  | 2,545.67              | 0.00                  | 0.00                 | 0.00                |
| 9,900.00            | 90.06           | 270.21      | 6,998.47            | 506.46     | -2,614.99  | 2,645.42              | 0.00                  | 0.00                 | 0.00                |
| 10,000.00           | 90.06           | 270.21      | 6,998.37            | 506.83     | -2,714.99  | 2,745.17              | 0.00                  | 0.00                 | 0.00                |
| 10,100.00           | 90.06           | 270.21      | 6,998.27            | 507.20     | -2,814.99  | 2,844.91              | 0.00                  | 0.00                 | 0.00                |
| 10,200.00           | 90.06           | 270.21      | 6,998.16            | 507.57     | -2,914.99  | 2,944.66              | 0.00                  | 0.00                 | 0.00                |
| 10,300.00           | 90.06           | 270.21      | 6,998.06            | 507.93     | -3,014.98  | 3,044.41              | 0.00                  | 0.00                 | 0.00                |
| 10,400.00           | 90.06           | 270.21      | 6,997.96            | 508.30     | -3,114.98  | 3,144.16              | 0.00                  | 0.00                 | 0.00                |



# Lonestar Consulting, LLC

## Planning Report



|                  |                      |                                     |                               |
|------------------|----------------------|-------------------------------------|-------------------------------|
| <b>Database:</b> | Grand Junction       | <b>Local Co-ordinate Reference:</b> | Well Rosa Unit 550H - Slot B5 |
| <b>Company:</b>  | Logos Operating LLC  | <b>TVD Reference:</b>               | GL 6429' @ 6429.00ft          |
| <b>Project:</b>  | Rio Arriba, NM NAD83 | <b>MD Reference:</b>                | GL 6429' @ 6429.00ft          |
| <b>Site:</b>     | Rosa Unit 5          | <b>North Reference:</b>             | True                          |
| <b>Well:</b>     | Rosa Unit 550H       | <b>Survey Calculation Method:</b>   | Minimum Curvature             |
| <b>Wellbore:</b> | OH                   |                                     |                               |
| <b>Design:</b>   | Plan #4              |                                     |                               |

| 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) |
| 10,500.00           | 90.06           | 270.21      | 6,997.86            | 508.67     | -3,214.98  | 3,243.91              | 0.00                  | 0.00                 | 0.00                |
| 10,600.00           | 90.06           | 270.21      | 6,997.76            | 509.03     | -3,314.98  | 3,343.66              | 0.00                  | 0.00                 | 0.00                |
| 10,700.00           | 90.06           | 270.21      | 6,997.65            | 509.40     | -3,414.98  | 3,443.41              | 0.00                  | 0.00                 | 0.00                |
| 10,800.00           | 90.06           | 270.21      | 6,997.55            | 509.77     | -3,514.98  | 3,543.16              | 0.00                  | 0.00                 | 0.00                |
| 10,900.00           | 90.06           | 270.21      | 6,997.45            | 510.14     | -3,614.98  | 3,642.91              | 0.00                  | 0.00                 | 0.00                |
| 11,000.00           | 90.06           | 270.21      | 6,997.35            | 510.50     | -3,714.98  | 3,742.66              | 0.00                  | 0.00                 | 0.00                |
| 11,100.00           | 90.06           | 270.21      | 6,997.25            | 510.87     | -3,814.98  | 3,842.41              | 0.00                  | 0.00                 | 0.00                |
| 11,200.00           | 90.06           | 270.21      | 6,997.15            | 511.24     | -3,914.98  | 3,942.16              | 0.00                  | 0.00                 | 0.00                |
| 11,300.00           | 90.06           | 270.21      | 6,997.04            | 511.60     | -4,014.98  | 4,041.91              | 0.00                  | 0.00                 | 0.00                |
| 11,400.00           | 90.06           | 270.21      | 6,996.94            | 511.97     | -4,114.98  | 4,141.66              | 0.00                  | 0.00                 | 0.00                |
| 11,500.00           | 90.06           | 270.21      | 6,996.84            | 512.34     | -4,214.98  | 4,241.41              | 0.00                  | 0.00                 | 0.00                |
| 11,600.00           | 90.06           | 270.21      | 6,996.74            | 512.71     | -4,314.97  | 4,341.16              | 0.00                  | 0.00                 | 0.00                |
| 11,700.00           | 90.06           | 270.21      | 6,996.64            | 513.07     | -4,414.97  | 4,440.91              | 0.00                  | 0.00                 | 0.00                |
| 11,800.00           | 90.06           | 270.21      | 6,996.54            | 513.44     | -4,514.97  | 4,540.66              | 0.00                  | 0.00                 | 0.00                |
| 11,900.00           | 90.06           | 270.21      | 6,996.43            | 513.81     | -4,614.97  | 4,640.41              | 0.00                  | 0.00                 | 0.00                |
| 12,000.00           | 90.06           | 270.21      | 6,996.33            | 514.17     | -4,714.97  | 4,740.16              | 0.00                  | 0.00                 | 0.00                |
| 12,100.00           | 90.06           | 270.21      | 6,996.23            | 514.54     | -4,814.97  | 4,839.91              | 0.00                  | 0.00                 | 0.00                |
| 12,200.00           | 90.06           | 270.21      | 6,996.13            | 514.91     | -4,914.97  | 4,939.66              | 0.00                  | 0.00                 | 0.00                |
| 12,300.00           | 90.06           | 270.21      | 6,996.03            | 515.28     | -5,014.97  | 5,039.41              | 0.00                  | 0.00                 | 0.00                |
| 12,400.00           | 90.06           | 270.21      | 6,995.93            | 515.64     | -5,114.97  | 5,139.15              | 0.00                  | 0.00                 | 0.00                |
| 12,500.00           | 90.06           | 270.21      | 6,995.82            | 516.01     | -5,214.97  | 5,238.90              | 0.00                  | 0.00                 | 0.00                |
| 12,600.00           | 90.06           | 270.21      | 6,995.72            | 516.38     | -5,314.97  | 5,338.65              | 0.00                  | 0.00                 | 0.00                |
| 12,700.00           | 90.06           | 270.21      | 6,995.62            | 516.74     | -5,414.97  | 5,438.40              | 0.00                  | 0.00                 | 0.00                |
| 12,800.00           | 90.06           | 270.21      | 6,995.52            | 517.11     | -5,514.97  | 5,538.15              | 0.00                  | 0.00                 | 0.00                |
| 12,900.00           | 90.06           | 270.21      | 6,995.42            | 517.48     | -5,614.97  | 5,637.90              | 0.00                  | 0.00                 | 0.00                |
| 13,000.00           | 90.06           | 270.21      | 6,995.31            | 517.85     | -5,714.96  | 5,737.65              | 0.00                  | 0.00                 | 0.00                |
| 13,100.00           | 90.06           | 270.21      | 6,995.21            | 518.21     | -5,814.96  | 5,837.40              | 0.00                  | 0.00                 | 0.00                |
| 13,200.00           | 90.06           | 270.21      | 6,995.11            | 518.58     | -5,914.96  | 5,937.15              | 0.00                  | 0.00                 | 0.00                |
| 13,300.00           | 90.06           | 270.21      | 6,995.01            | 518.95     | -6,014.96  | 6,036.90              | 0.00                  | 0.00                 | 0.00                |
| 13,400.00           | 90.06           | 270.21      | 6,994.91            | 519.31     | -6,114.96  | 6,136.65              | 0.00                  | 0.00                 | 0.00                |
| 13,500.00           | 90.06           | 270.21      | 6,994.81            | 519.68     | -6,214.96  | 6,236.40              | 0.00                  | 0.00                 | 0.00                |
| 13,600.00           | 90.06           | 270.21      | 6,994.70            | 520.05     | -6,314.96  | 6,336.15              | 0.00                  | 0.00                 | 0.00                |
| 13,700.00           | 90.06           | 270.21      | 6,994.60            | 520.42     | -6,414.96  | 6,435.90              | 0.00                  | 0.00                 | 0.00                |
| 13,800.00           | 90.06           | 270.21      | 6,994.50            | 520.78     | -6,514.96  | 6,535.65              | 0.00                  | 0.00                 | 0.00                |
| 13,900.00           | 90.06           | 270.21      | 6,994.40            | 521.15     | -6,614.96  | 6,635.40              | 0.00                  | 0.00                 | 0.00                |
| 14,000.00           | 90.06           | 270.21      | 6,994.30            | 521.52     | -6,714.96  | 6,735.15              | 0.00                  | 0.00                 | 0.00                |
| 14,100.00           | 90.06           | 270.21      | 6,994.20            | 521.88     | -6,814.96  | 6,834.90              | 0.00                  | 0.00                 | 0.00                |
| 14,200.00           | 90.06           | 270.21      | 6,994.09            | 522.25     | -6,914.96  | 6,934.65              | 0.00                  | 0.00                 | 0.00                |
| 14,291.20           | 90.06           | 270.21      | 6,994.00            | 522.59     | -7,006.16  | 7,025.62              | 0.00                  | 0.00                 | 0.00                |



# Lonestar Consulting, LLC

## Planning Report



|                  |                      |                                     |                               |
|------------------|----------------------|-------------------------------------|-------------------------------|
| <b>Database:</b> | Grand Junction       | <b>Local Co-ordinate Reference:</b> | Well Rosa Unit 550H - Slot B5 |
| <b>Company:</b>  | Logos Operating LLC  | <b>TVD Reference:</b>               | GL 6429' @ 6429.00ft          |
| <b>Project:</b>  | Rio Arriba, NM NAD83 | <b>MD Reference:</b>                | GL 6429' @ 6429.00ft          |
| <b>Site:</b>     | Rosa Unit 5          | <b>North Reference:</b>             | True                          |
| <b>Well:</b>     | Rosa Unit 550H       | <b>Survey Calculation Method:</b>   | Minimum Curvature             |
| <b>Wellbore:</b> | OH                   |                                     |                               |
| <b>Design:</b>   | Plan #4              |                                     |                               |

| Design Targets                                                                             |           |          |          |        |           |                |                |            |              |
|--------------------------------------------------------------------------------------------|-----------|----------|----------|--------|-----------|----------------|----------------|------------|--------------|
| Target Name                                                                                |           |          |          |        |           |                |                |            |              |
| - hit/miss target                                                                          | Dip Angle | Dip Dir. | TVD      | +N/-S  | +E/-W     | Northing       | Easting        | Latitude   | Longitude    |
| - Shape                                                                                    | (°)       | (°)      | (ft)     | (ft)   | (ft)      | (usft)         | (usft)         |            |              |
| Rosa 550H FPerf                                                                            | 0.00      | 0.00     | 6,994.00 | 521.82 | -6,844.04 | 2,154,388.2223 | 2,822,240.0625 | 36.9200120 | -107.4941490 |
| - plan misses target center by 0.23ft at 14129.08ft MD (6994.17 TVD, 521.99 N, -6844.04 E) |           |          |          |        |           |                |                |            |              |
| - Point                                                                                    |           |          |          |        |           |                |                |            |              |
| Rosa 550H BHL                                                                              | 0.00      | 0.00     | 6,994.00 | 522.59 | -7,006.16 | 2,154,388.3744 | 2,822,077.9419 | 36.9200140 | -107.4947036 |
| - plan hits target center                                                                  |           |          |          |        |           |                |                |            |              |
| - Point                                                                                    |           |          |          |        |           |                |                |            |              |
| Rosa 550H POE Rev 1                                                                        | 0.00      | 0.00     | 7,001.00 | 497.33 | -125.72   | 2,154,389.2645 | 2,828,958.4063 | 36.9199470 | -107.4711661 |
| - plan hits target center                                                                  |           |          |          |        |           |                |                |            |              |
| - Point                                                                                    |           |          |          |        |           |                |                |            |              |

| Formations     |                |                 |           |      |               |
|----------------|----------------|-----------------|-----------|------|---------------|
| Measured Depth | Vertical Depth | Name            | Lithology | Dip  | Dip Direction |
| (ft)           | (ft)           |                 |           | (°)  | (°)           |
| 2,376.53       | 2,367.00       | Ojo Alamo       |           | 0.00 | 0.00          |
| 2,496.54       | 2,486.01       | Kirtland        |           | 0.00 | 0.00          |
| 3,042.15       | 3,027.01       | Fruitland       |           | 0.00 | 0.00          |
| 3,403.20       | 3,385.01       | Pictured Cliffs |           | 0.00 | 0.00          |
| 3,742.06       | 3,721.01       | Lewis           |           | 0.00 | 0.00          |
| 4,664.85       | 4,636.01       | Chacra          |           | 0.00 | 0.00          |
| 5,448.47       | 5,413.01       | Cliff House     |           | 0.00 | 0.00          |
| 5,492.84       | 5,457.01       | Menefee         |           | 0.00 | 0.00          |
| 5,715.73       | 5,678.01       | Point Lookout   |           | 0.00 | 0.00          |
| 6,232.09       | 6,190.01       | Mancos          |           | 0.00 | 0.00          |

| Plan Annotations |                |                   |            |                                  |
|------------------|----------------|-------------------|------------|----------------------------------|
| Measured Depth   | Vertical Depth | Local Coordinates |            |                                  |
| (ft)             | (ft)           | +N/-S (ft)        | +E/-W (ft) | Comment                          |
| 1,000.00         | 1,000.00       | 0.00              | 0.00       | Start Build 2.00                 |
| 1,389.59         | 1,388.40       | 17.18             | 20.05      | Start 4958.82 hold at 1389.59 MD |
| 6,348.42         | 6,305.36       | 435.50            | 508.34     | Start DLS 9.00 TFO -139.31       |
| 7,414.89         | 7,001.01       | 497.34            | -129.89    | POE @ 7414' MD                   |
| 14,132.96        | 6,994.18       | 522.00            | -6,847.90  | 36.9200125, -107.4941480         |
| 14,132.96        | 6,994.18       | 522.00            | -6,847.90  | First Perf @ 14,132' MD          |
| 14,295.08        |                |                   |            | TD at 14295.35                   |

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/oed/contact-us>

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 440946

**CONDITIONS**

|                                                                               |                                                                       |
|-------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Operator:<br>LOGOS OPERATING, LLC<br>2010 Afton Place<br>Farmington, NM 87401 | OGRID:<br>289408                                                      |
|                                                                               | Action Number:<br>440946                                              |
|                                                                               | Action Type:<br>[C-101] BLM - Federal/Indian Land Lease (Form 3160-3) |

**CONDITIONS**

| Created By    | Condition                                                                                                                                                                                                                                                             | Condition Date |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| etta trujillo | Cement is required to circulate on both surface and intermediate1 strings of casing.                                                                                                                                                                                  | 3/10/2025      |
| etta trujillo | If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.                                                                                                                                                            | 3/10/2025      |
| ward.rikala   | Notify the OCD 24 hours prior to casing & cement.                                                                                                                                                                                                                     | 3/11/2025      |
| ward.rikala   | File As Drilled C-102 and a directional Survey with C-104 completion packet.                                                                                                                                                                                          | 3/11/2025      |
| ward.rikala   | 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. | 3/11/2025      |
| ward.rikala   | 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.                  | 3/11/2025      |