# Carlsbad Field Office
# OCD Artesia

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

| | |
|---|---|
| 5. Lease Serial No. NMNM088128 | |
| 6. If Indian, Allotee or Tribe Name | |
| 7. If Unit or CA Agreement, Name and No. | |
| 8. Lease Name and Well No. RIVERBEND 12-13 FEDERAL C 15H | Com 321482 |
| 9. API Well No. 30-015-45011 | 215099 |
| 10. Field and Pool, or Exploratory WOLFCAMP / PURPLE SAGE WOLFCA | |
| 11. Sec., T. R. M. or Blk. and Survey or Area SEC 1 / T25S / R28E / NMP | |
| 12. County or Parish EDDY | 13. State NM |

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone

2. Name of Operator: CIMAREX ENERGY COMPANY

3a. Address: 202 S. Cheyenne Ave., Ste 1000 Tulsa OK 74

3b. Phone No. *(include area code)*: (432)620-1936

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

At surface: NESW / 1207 FSL / 2522 FWL / LAT 32.155304 / LONG -104.041307

At proposed prod. zone: SWSE / 330 FSL / 2200 FEL / LAT 32.123658 / LONG -104.039417

14. Distance in miles and direction from nearest town or post office*: 5.1 miles

| | | |
|---|---|---|
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 1207 feet | 16. No. of acres in lease: 560.24 | 17. Spacing Unit dedicated to this well: 640 |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 20 feet | 19. Proposed Depth: 10832 feet / 22428 feet | 20. BLM/BIA Bond No. on file: FED: NMB001188 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.): 2935 feet | 22. Approximate date work will start*: 07/01/2018 | 23. Estimated duration: 30 days |

### 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

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

| | | |
|---|---|---|
| 25. Signature: (Electronic Submission) | Name *(Printed/Typed)*: Aricka Easterling / Ph: (918)560-7060 | Date: 09/06/2017 |
| Title: Regulatory Analyst | | |
| Approved by *(Signature)*: (Electronic Submission) | Name *(Printed/Typed)*: Cody Layton / Ph: (575)234-5959 | Date: 05/30/2018 |
| Title: Supervisor Multiple Resources | Office: CARLSBAD | |

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)

APPROVED WITH CONDITIONS

Approval Date: 05/30/2018

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 01 2018

RECEIVED

RNP 6-4-18

## 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 1: 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.

## 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 collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

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## Additional Operator Remarks

### Location of Well

1. SHL: NESW / 1207 FSL / 2522 FWL / TWSP: 25S / RANGE: 28E / SECTION: 1 / LAT: 32.155304 / LONG: -104.041307 ( TVD: 0 feet, MD: 0 feet )
   PPP: NWSE / 1421 FSL / 2190 FEL / TWSP: 25S / RANGE: 28E / SECTION: 1 / LAT: 32.1558889 / LONG: -104.039313 ( TVD: 10576 feet, MD: 10622 feet )
   BHL: SWSE / 330 FSL / 2200 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.123658 / LONG: -104.039417 ( TVD: 10832 feet, MD: 22428 feet )

## BLM Point of Contact

Name: Sipra Dahal
Title: Legal Instruments Examiner
Phone: 5752345983
Email: sdahal@blm.gov

## 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.

# PECOS DISTRICT
# DRILLING CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **Cimarex Energy Company** |
| **LEASE NO.:** | **NMNM16104** |
| **WELL NAME & NO.:** | **1H River Bend 11-14 Fed Com** |
| **SURFACE HOLE FOOTAGE:** | **390'/N & 729'/W** |
| **BOTTOM HOLE FOOTAGE** | **330'/S & 990'/W** |
| **LOCATION:** | **Section 11, R. 28 E, T. 25 S , NMPM** |
| **COUNTY:** | **Eddy County, New Mexico** |

COA

| | | | |
|---|---|---|---|
| H2S | ○ Yes | ◉ No | |
| Potash | ◉ None | ○ Secretary | ○ R-111-P |
| Cave/Karst Potential | ○ Low | ○ Medium | ◉ High |
| Variance | ○ None | ◉ Flex Hose | ○ Other |
| Wellhead | ◉ Conventional | ○ Multibowl | ○ Both |
| Other | ☐ 4 String Area | ☐ Capitan Reef | ☐ WIPP |

**A. Hydrogen Sulfide**

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

**B. CASING**

1. The **13-3/8** inch surface casing shall be set at approximately **475** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
   - Cement to surface. If cement does not circulate see B.1.a, c-d above.

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

❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **7** inch production casing is:
   - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.**Additonal cement maybe required. Excess calculates to -19%.**

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
   - Cement should tie-back 100' into the previous casing. Operator shall provide method of verification. **Additonal cement maybe required. Excess calculates to 8%.**

## C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **7** intermediate casing shoe shall be **5000 (5M)** psi.
5.

# GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

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

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log (one log per well pad is acceptable) run from TD to surface (horizontal well – vertical portion of hole) shall

be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a

larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

**Waste Minimization Plan (WMP)**

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

# PECOS DISTRICT
# SURFACE USE
# CONDITIONS OF APPROVAL

| | |
|---|---|
| OPERATOR'S NAME: | Cimarex Energy Company |
| LEASE NO.: | NMNM88128 |
| WELL NAME & NO.: | 15H-River Bend 12-13 Fed Com |
| SURFACE HOLE FOOTAGE: | 1040'/S & 2020'/W |
| BOTTOM HOLE FOOTAGE | 330'/S & 2200'/E |
| LOCATION: | Section1, R.28E, T25S, NMPM. |
| COUNTY: | Eddy County,NewMexico. |

## TABLE OF CONTENTS

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

## I. GENERAL PROVISIONS

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

## II. PERMIT EXPIRATION

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

## III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator 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 shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

## IV. NOXIOUS WEEDS

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

## V. SPECIAL REQUIREMENT(S)

**Cave/Karst Surface Mitigation**

The following stipulations will be applied to minimize impacts during construction, drilling and production:

**Construction:**

In the advent that any underground voids are opened up during construction activities, construction activities will be halted and the BLM will be notified immediately.

**No Blasting:**

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

**Pad Berming:**

- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

**Tank Battery Liners and Berms:**

Tank battery locations and all facilities will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.

**Leak Detection System:**

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating values and lines so they can be visually inspected, or installing

electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

**Automatic Shut-off Systems**:
Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

**Cave/Karst Subsurface Mitigation**
The following stipulations will be applied to protect cave/karst and ground water concerns:
**Rotary Drilling with Fresh Water:**
Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

**Directional Drilling:**
Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone. SEE ALSO: Drilling COAs for this well.

**Lost Circulation:**
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.
Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

**Abandonment Cementing:**
Upon well abandonment in cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

**Pressure Testing:**
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

**ROADS**

- Roads will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize changes to runoff or possible leaks and spills from entering karst systems.
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction and no further construction will be done until clearance has been issued by the Authorized Officer.

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to increase or decrease the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

**BURIED PIPELINES and/or CABLES**

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
- Special restoration stipulations or realignment may be required at such intersections, if any.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating values and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

**FLOWLINES (SURFACE):**

- Flowlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize the possibility of leaks and spills from entering karst systems.
- If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

**POWERLINES:**

- Smaller powerlines will be routed around sinkholes and other karst features to avoid or lessen the possibility of encountering near surface voids and to minimize

changes to runoff or possible leaks and spills from entering karst systems. Larger powerlines will adjust their pole spacing to avoid cave and karst features.

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction.
- No further construction will be done until clearance has been issued by the Authorized Officer.
- Special restoration stipulations or realignment may be required.

**Hydrology**

The entire well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion.

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

# VI. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the at least 3 working days prior to commencing construction of the access road and/or well pad.

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

## B. TOPSOIL

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

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

## C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

## D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the .

## E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

## F. EXCLOSURE FENCING (CELLARS & PITS)

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

## G. ON LEASE ACCESS ROADS

**Road Width**
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

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

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

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

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

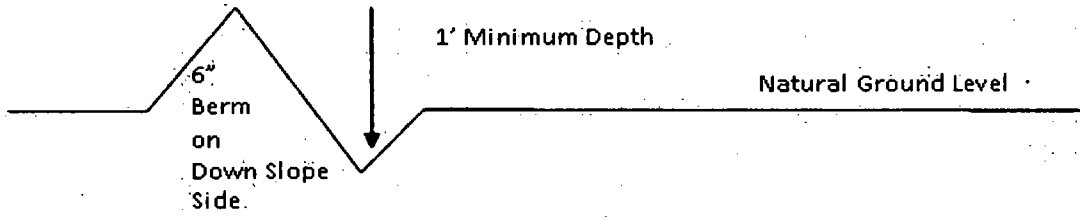
**Ditching**
Ditching shall be required on both sides of the road.

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

**Drainage**

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, leadoff ditches, culvert installation, and low water crossings).

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




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

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

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

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

**Construction Steps**

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

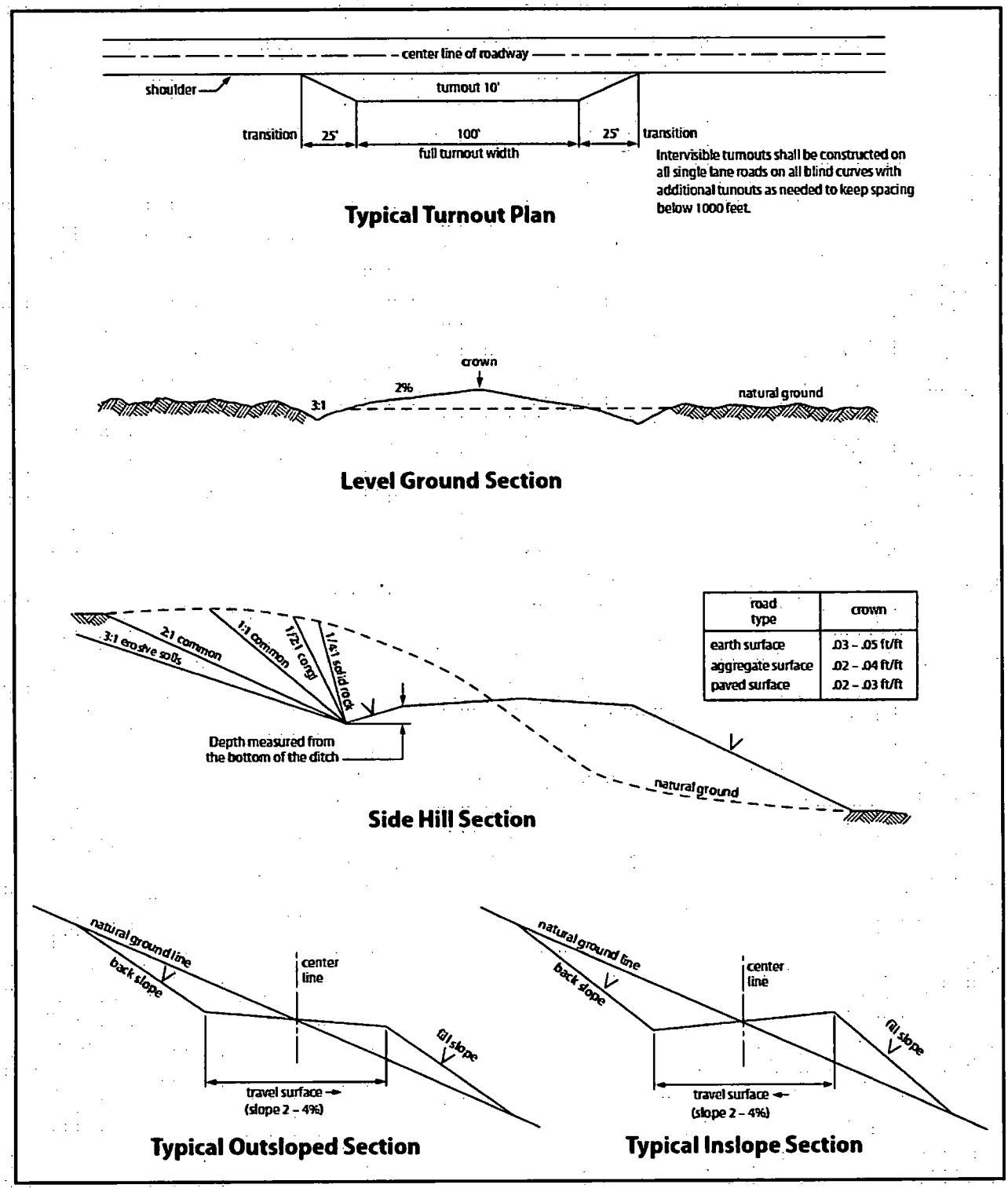



**Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.**

# VII. PRODUCTION (POST DRILLING)

## A. WELL STRUCTURES & FACILITIES

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

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

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

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

**Containment Structures**
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

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

## B. PIPELINES

### BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of

the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of __36__ inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately ___6___ inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The 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. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

| | |
|---|---|
| ( X ) seed mixture 1 | ( ) seed mixture 3 |
| ( ) seed mixture 2 | ( ) seed mixture 4 |
| ( ) seed mixture 2/LPC | ( ) Aplomado Falcon Mixture |

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, 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 cultural or 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.

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

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

## C. ELECTRIC LINES

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

**A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.**

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the

Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The 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. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, 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 cultural or 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.

11. Special Stipulations:
- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

## VIII. INTERIM RECLAMATION

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

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

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

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

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

## IX. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

**Seed Mixture 1 for Loamy Sites**

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

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

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

| Species | lb/acre |
|---|---|
| Plains lovegrass (Eragrostis intermedia) | 0.5 |
| Sand dropseed (Sporobolus cryptandrus) | 1.0 |
| Sideoats grama (Bouteloua curtipendula) | 5.0 |
| Plains bristlegrass (Setaria macrostachya) | 2.0 |

*Pounds of pure live seed:

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

AFMSS

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

# Operator Certification Data Report

05/31/2018

## Operator Certification

*I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.*

**NAME:** Aricka Easterling **Signed on:** 09/06/2017

**Title:** Regulatory Analyst

**Street Address:** 202 S. Cheyenne Ave, Ste 1000

**City:** Tulsa **State:** OK **Zip:** 74103

**Phone:** (918)560-7060

**Email address:** aeasterling@cimarex.com

## Field Representative

**Representative Name:**

**Street Address:**

**City:** **State:** **Zip:**

**Phone:**

**Email address:**

AFMSS

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

# Application Data Report

05/31/2018

**APD ID:** 10400020175 **Submission Date:** 09/06/2017

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

Show Final Text

**Well Type:** CONVENTIONAL GAS WELL **Well Work Type:** Drill

## Section 1 - General

**APD ID:** 10400020175 **Tie to previous NOS?** 10400011330 **Submission Date:** 09/06/2017

**BLM Office:** CARLSBAD **User:** Aricka Easterling **Title:** Regulatory Analyst

**Federal/Indian APD:** FED **Is the first lease penetrated for production Federal or Indian?** FED

**Lease number:** NMNM088128 **Lease Acres:** 560.24

**Surface access agreement in place?** **Allotted?** **Reservation:**

**Agreement in place?** NO **Federal or Indian agreement:**

**Agreement number:**

**Agreement name:**

**Keep application confidential?** YES

**Permitting Agent?** NO **APD Operator:** CIMAREX ENERGY COMPANY

**Operator letter of designation:**

## Operator Info

**Operator Organization Name:** CIMAREX ENERGY COMPANY

**Operator Address:** 202 S. Cheyenne Ave., Ste 1000 **Zip:** 74103

**Operator PO Box:**

**Operator City:** Tulsa **State:** OK

**Operator Phone:** (432)620-1936

**Operator Internet Address:** tstathem@cimarex.com

## Section 2 - Well Information

**Well in Master Development Plan?** NO **Mater Development Plan name:**

**Well in Master SUPO?** NO **Master SUPO name:**

**Well in Master Drilling Plan?** NO **Master Drilling Plan name:**

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H **Well API Number:**

**Field/Pool or Exploratory?** Field and Pool **Field Name:** WOLFCAMP **Pool Name:** PURPLE SAGE WOLFCAMP GAS

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

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Describe other minerals:**

**Is the proposed well in a Helium production area?** N **Use Existing Well Pad?** NO **New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL **Multiple Well Pad Name:** RIVERBEND 12-13 FEDERAL **Number:** W2E2

**Well Class:** HORIZONTAL **Number of Legs:**

**Well Work Type:** Drill

**Well Type:** CONVENTIONAL GAS WELL

**Describe Well Type:**

**Well sub-Type:** EXPLORATORY (WILDCAT)

**Describe sub-type:**

**Distance to town:** 5.1 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 1207 FT

**Reservoir well spacing assigned acres Measurement:** 640 Acres

**Well plat:** Riverbend_12_13_Fed_Com_15H_C102_Plat_20180222085814.pdf

**Well work start Date:** 07/01/2018 **Duration:** 30 DAYS

## Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83 **Vertical Datum:** NAVD88

**Survey number:**

| | NS-Foot | NS Indicator | EW-Foot | EW Indicator | Twsp | Range | Section | Aliquot/Lot/Tract | Latitude | Longitude | County | State | Meridian | Lease Type | Lease Number | Elevation | MD | TVD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL Leg #1 | 1207 | FSL | 2522 | FWL | 25S | 28E | 1 | Aliquot NESW | 32.155304 | -104.041307 | EDDY | NEW MEXICO | NEW MEXICO | F | NMNM 088128 | 2935 | 0 | 0 |
| KOP Leg #1 | 1494 | FSL | 2190 | FEL | 25S | 28E | 1 | Aliquot NWSE | 32.156089 | -104.039311 | EDDY | NEW MEXICO | NEW MEXICO | F | NMNM 088128 | -7387 | 10354 | 10322 |
| PPP Leg #1 | 1421 | FSL | 2190 | FEL | 25S | 28E | 1 | Aliquot NWSE | 32.155889 | -104.039313 | EDDY | NEW MEXICO | NEW MEXICO | F | NMNM 088128 | -7641 | 10622 | 10576 |

AFMSS

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

# Drilling Plan Data Report

05/31/2018

**APD ID:** 10400020175 **Submission Date:** 09/06/2017

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Well Type:** CONVENTIONAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

## Section 1 - Geologic Formations

| Formation ID | Formation Name | Elevation | True Vertical Depth | Measured Depth | Lithologies | Mineral Resources | Producing Formation |
|---|---|---|---|---|---|---|---|
| 1 | RUSTLER | 2934 | 435 | 435 | | USEABLE WATER | No |
| 2 | SALADO | 1031 | 1903 | 1903 | | NONE | No |
| 3 | CASTILE | 469 | 2465 | 2465 | | NONE | No |
| 4 | BELL CANYON | 284 | 2650 | 2650 | | NATURAL GAS,OIL | No |
| 5 | CHERRY CANYON | -731 | 3665 | 3665 | | NATURAL GAS,OIL | No |
| 6 | BRUSHY CANYON | -2315 | 5249 | 5249 | | NATURAL GAS,OIL | No |
| 7 | BONE SPRING | -3433 | 6367 | 6367 | | NATURAL GAS,OIL | No |
| 8 | BONE SPRING A ZONE | -3543 | 6477 | 6477 | | NATURAL GAS,OIL | No |
| 9 | BONE SPRING C ZONE | -4085 | 7019 | 7019 | | NATURAL GAS,OIL | No |
| 10 | BONE SPRING 1ST | -4370 | 7304 | 7304 | | NATURAL GAS,OIL | No |
| 11 | BONE SPRING 2ND | -5831 | 8765 | 8765 | | NATURAL GAS,OIL | No |
| 12 | BONE SPRING 3RD | -6297 | 9231 | 9231 | | NATURAL GAS,OIL | No |
| 13 | WOLFCAMP | -6671 | 9605 | 9605 | | NATURAL GAS,OIL | Yes |

## Section 2 - Blowout Prevention

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Pressure Rating (PSI):** 2M **Rating Depth:** 475

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.
**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi. A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements

**Choke Diagram Attachment:**

Riverbend_12_13_Fed_Com_15H_Choke_2M3M_20180223084537.pdf

**BOP Diagram Attachment:**

Riverbend_12_13_Fed_Com_15H_BOP_2M_20180223084549.pdf

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**Pressure Rating (PSI):** 5M **Rating Depth:** 2630

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.
**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi. A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Choke Diagram Attachment:**

Riverbend_12_13_Fed_Com_15H_Choke_5M_20180223084612.pdf

**BOP Diagram Attachment:**

Riverbend_12_13_Fed_Com_15H_BOP_5M_20180223084621.pdf

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**Pressure Rating (PSI):** 5M **Rating Depth:** 10355

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.
**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi. A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements

**Choke Diagram Attachment:**

Riverbend_12_13_Fed_Com_15H_Choke_5M_20180223084642.pdf

**BOP Diagram Attachment:**

Riverbend_12_13_Fed_Com_15H_BOP_5M_20180223084655.pdf

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## Section 3 - Casing

| Casing ID | String Type | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SURFACE | 17.5 | 13.375 | NEW | NON API | N | 0 | 475 | 0 | 475 | 0 | 475 | 475 | H-40 | 48 | STC | 3.4 | 7.96 | BUOY | 14.12 | BUOY | 14.12 |

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

| Casing ID | String Type | Hole Size | Csg Size | Condition | Standard | Tapered String | Top Set MD | Bottom Set MD | Top Set TVD | Bottom Set TVD | Top Set MSL | Bottom Set MSL | Calculated casing length MD | Grade | Weight | Joint Type | Collapse SF | Burst SF | Joint SF Type | Joint SF | Body SF Type | Body SF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | INTERMEDIATE | 12.25 | 9.625 | NEW | API | N | 0 | 2630 | 0 | 2630 | 0 | 2630 | 2630 | J-55 | 36 | LTC | 1.45 | 2.52 | BUOY | 4.78 | BUOY | 4.78 |
| 3 | PRODUCTION | 8.75 | 7.0 | NEW | API | N | 0 | 10355 | 0 | 10355 | 0 | 10355 | 10355 | L-80 | 29 | LTC | 1.45 | 1.68 | BUOY | 1.87 | BUOY | 1.87 |
| 4 | PRODUCTION | 8.75 | 7.0 | NEW | API | N | 10355 | 11355 | 10355 | 11355 | 10355 | 11355 | 1000 | L-80 | 29 | BUTT | 1.38 | 1.61 | BUOY | 48.87 | BUOY | 48.87 |
| 5 | COMPLETION SYSTEM | 6 | 4.5 | NEW | API | N | 10355 | 22428 | 10355 | 22428 | 10355 | 22428 | 12073 | HCP-110 | 11.6 | BUTT | 1.21 | 1.46 | BUOY | 66.33 | BUOY | 66.33 |

**Casing Attachments**

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

**Inspection Document:**

**Spec Document:**

Riverbend_12_13_Fed_Com_15H_Spec_Sheet_20180223084858.pdf

**Tapered String Spec:**

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

Riverbend_12_13_Fed_Com_15H_Casing_Assumptions_20180223084921.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Riverbend_12_13_Fed_Com_15H_Casing_Assumptions_20180223085038.pdf

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Casing Attachments**

**Casing ID:** 3 **String Type:** PRODUCTION

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Riverbend_12_13_Fed_Com_15H_Casing_Assumptions_20180223085131.pdf

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

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Riverbend_12_13_Fed_Com_15H_Casing_Assumptions_20180223085239.pdf

**Casing ID:** 5 **String Type:** COMPLETION SYSTEM

**Inspection Document:**

**Spec Document:**

**Tapered String Spec:**

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

Riverbend_12_13_Fed_Com_15H_Casing_Assumptions_20180223085326.pdf

## Section 4 - Cement

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

| String Type | Lead/Tail | Stage Tool Depth | Top MD | Bottom MD | Quantity(sx) | Yield | Density | Cu Ft | Excess% | Cement type | Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SURFACE | Lead | | 0 | 475 | 106 | 1.72 | 13.5 | 182 | 50 | Class C | Bentonite |
| SURFACE | Tail | | 0 | 475 | 195 | 1.34 | 14.8 | 260 | 25 | Class C | LCM |
| INTERMEDIATE | Lead | | 0 | 2630 | 503 | 1.88 | 12.9 | 945 | 50 | 35:65 (poz:C) | Salt, Bentonite |
| INTERMEDIATE | Tail | | 0 | 2630 | 153 | 1.34 | 14.8 | 205 | 25 | Class C | LCM |
| PRODUCTION | Lead | | 0 | 10355 | 408 | 3.64 | 10.3 | 1485 | 25 | Tuned light | LCM |
| PRODUCTION | Tail | | 0 | 10355 | 128 | 1.3 | 14.2 | 166 | 10 | 50:50 (poz:H) | Salt, Bentonite,Fluid Loss, Dispersant, SMS |
| PRODUCTION | Lead | | 10355 | 11355 | 408 | 3.64 | 10.3 | 1485 | 1 | Tuned Light | LCM |
| PRODUCTION | Tail | | 10355 | 11355 | 128 | 1.3 | 14.2 | 166 | 10 | 50:50 (poz:H) | Salt, Bentonite,Fluid Loss, Dispersant, SMS |
| COMPLETION SYSTEM | Lead | | 10355 | 22428 | 805 | 1.3 | 14.2 | 1046 | 10 | 50:50 (Poz:H) | Salt, Bentonite,Fluid Loss, Dispersant, SMS |

## Section 5 - Circulating Medium

**Mud System Type:** Closed

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

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

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

**Describe what will be on location to control well or mitigate other conditions:** Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.
**Describe the mud monitoring system utilized:** PVT/Pason/Visual Monitoring

## Circulating Medium Table

| Top Depth | Bottom Depth | Mud Type | Min Weight (lbs/gal) | Max Weight (lbs/gal) | Density (lbs/cu ft) | Gel Strength (lbs/100 sqft) | PH | Viscosity (CP) | Salinity (ppm) | Filtration (cc) | Additional Characteristics |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 475 | SPUD MUD | 8.3 | 8.8 | | | | | | | |
| 2630 | 11355 | OTHER : FW/Cut Brine | 8.5 | 9 | | | | | | | |
| 475 | 2630 | SALT SATURATED | 9.7 | 10.2 | | | | | | | |
| 11355 | 22428 | OIL-BASED MUD | 12.5 | 13 | | | | | | | |

## Section 6 - Test, Logging, Coring

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

No DST Planned

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

CNL,DS,GR

**Coring operation description for the well:**

N/A

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 7322 **Anticipated Surface Pressure:** 4938.96

**Anticipated Bottom Hole Temperature(F):** 177

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** YES

**Describe:**

Lost circulation may be encountered in the Delaware mountain group. Abnormal pressure as well as hole stability issues may be encountered in the Wolfcamp.

**Contingency Plans geoharzards description:**

Lost circulation material will be available, as well as additional drilling fluid along with the fluid volume in the drilling rig pit system. Drilling fluid can be mixed on location or mixed in vendor mud plant and trucked to location if needed. Sufficient barite will be available to maintain appropriate mud weight for the Wolfcamp interval.

**Contingency Plans geohazards attachment:**

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

**Hydrogen sulfide drilling operations plan:**

Riverbend_12_13_Fed_Com_15H_H2S_Plan_20180223092653.pdf

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

## Section 8 - Other Information

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

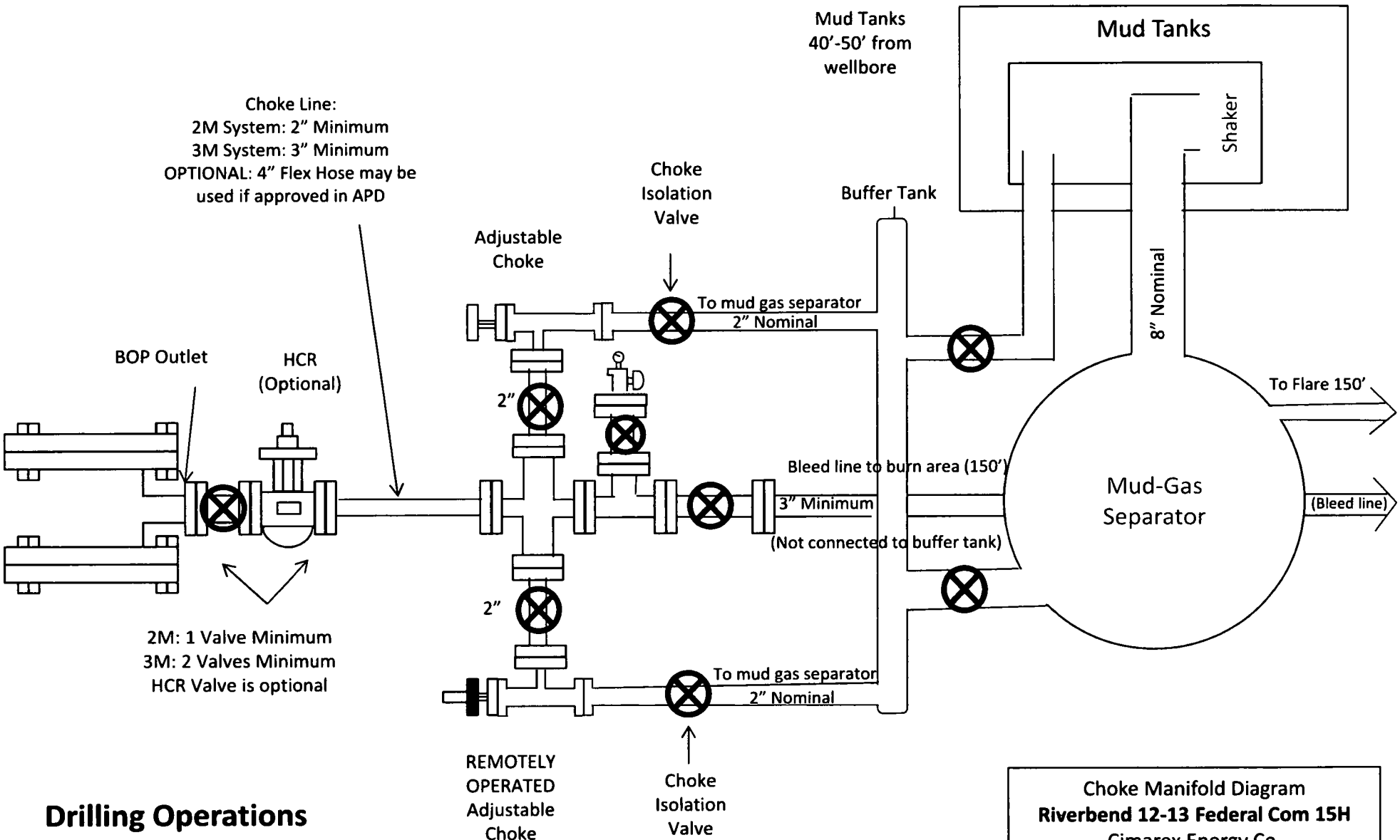
Riverbend_12_13_Fed_Com_15H_Directional_Plan_20180223092730.pdf

**Other proposed operations facets description:**

**Other proposed operations facets attachment:**

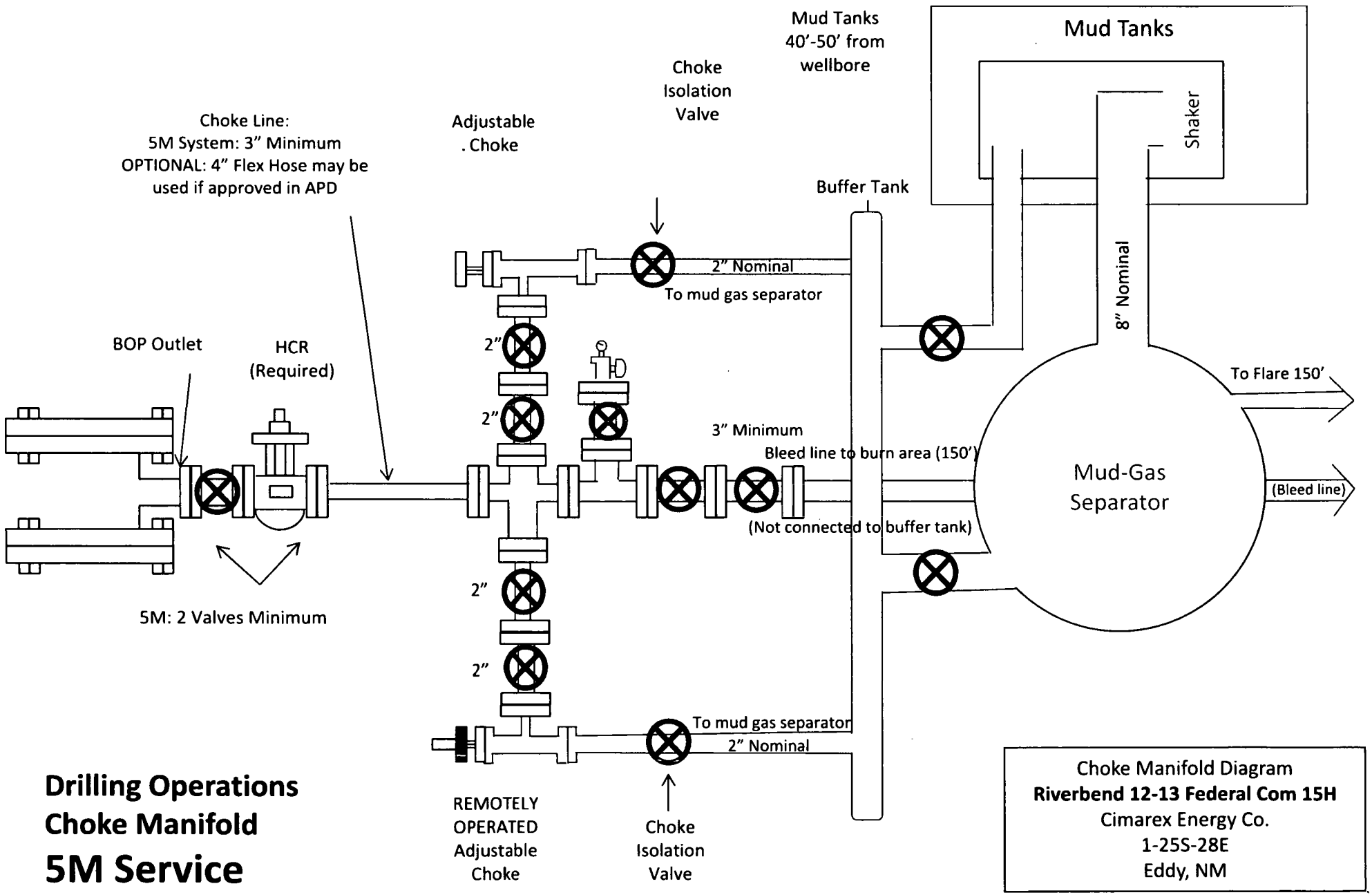
Riverbend_12_13_Fed_Com_15H_AC_Report_20180223092708.pdf
Riverbend_12_13_Fed_Com_15H_Drilling_Plan_20180223092709.pdf
Riverbend_12_13_Fed_Com_15H_Flex_Hose_20180223092713.pdf
Riverbend_12_13_Fed_Com_15H_Gas_Capture_Plan_20180226133702.pdf

**Other Variance attachment:**



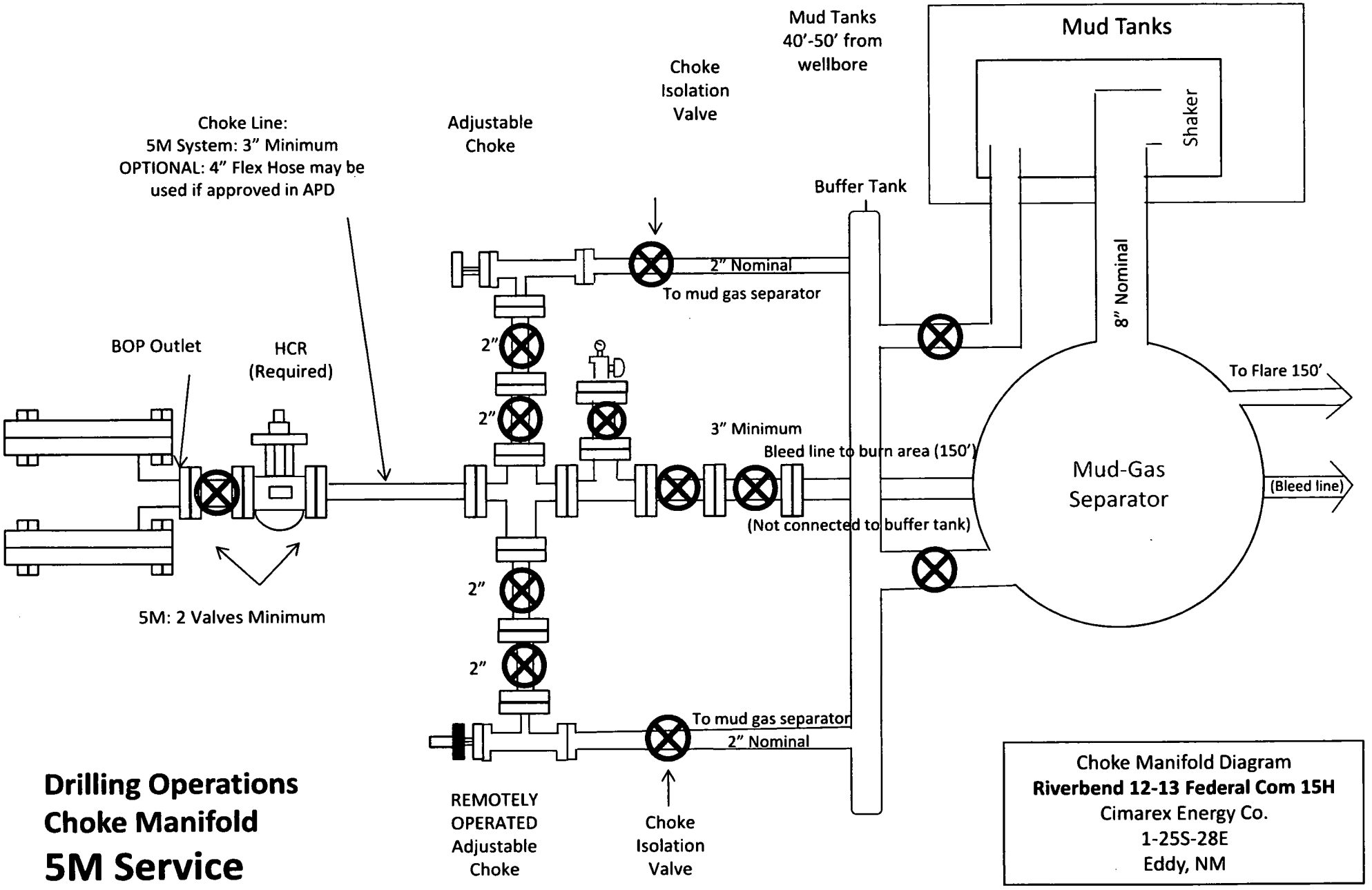

**Drilling Operations**
**Choke Manifold**
**2M/3M Service**

Choke Manifold Diagram
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM




**Drilling Operations**
**Choke Manifold**
**5M Service**

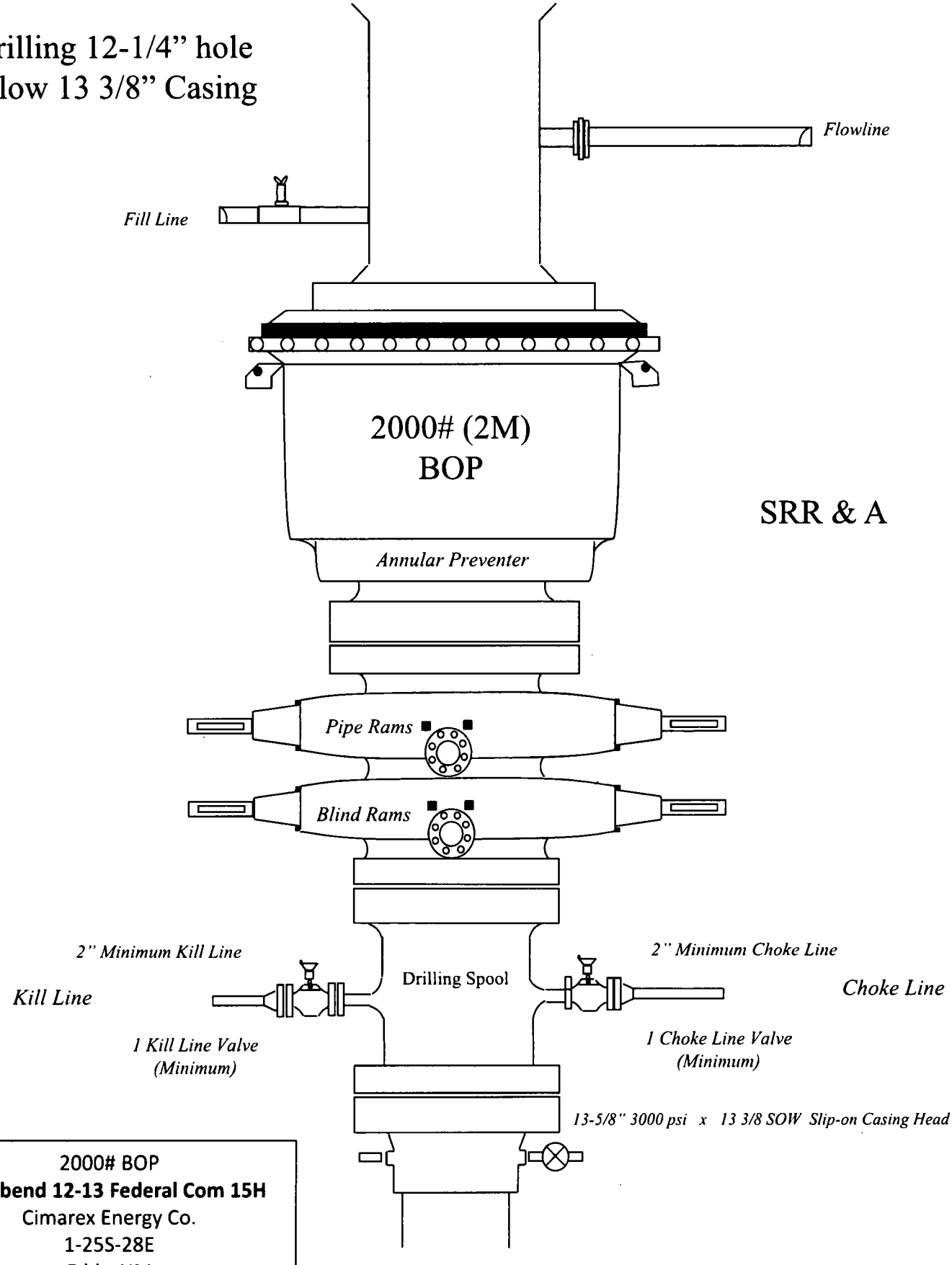
Choke Manifold Diagram
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM




**Drilling Operations**
**Choke Manifold**
**5M Service**

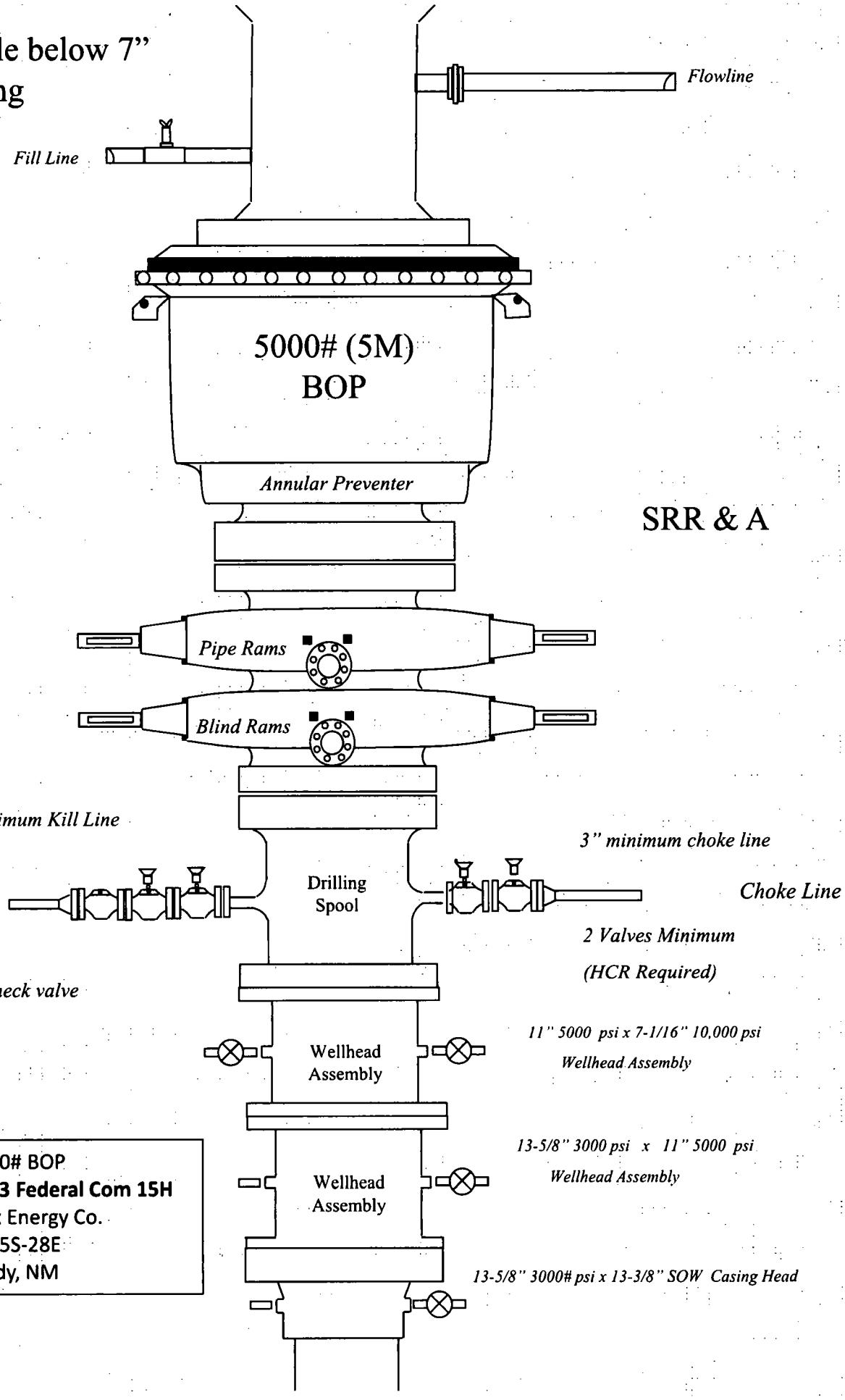
Choke Manifold Diagram
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Drilling 12-1/4" hole
below 13 3/8" Casing



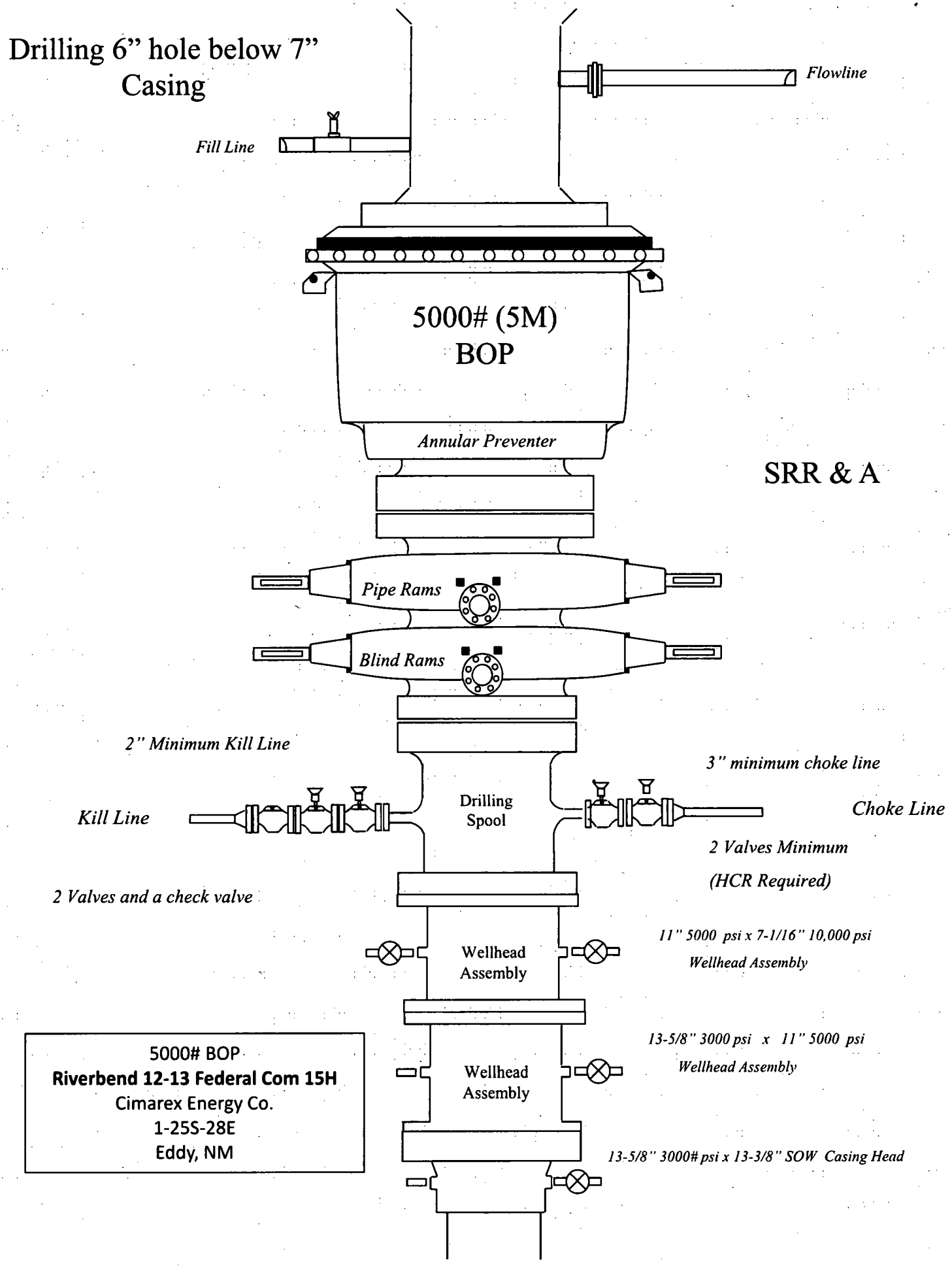

2000# BOP
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Drilling 6" hole below 7" Casing




SRR & A

5000# BOP
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM


Drilling 6" hole below 7" Casing
Flowline
Fill Line
5000# (5M) BOP
Annular Preventer
SRR & A
Pipe Rams
Blind Rams
2" Minimum Kill Line
3" minimum choke line
Kill Line
Drilling Spool
Choke Line
2 Valves Minimum
(HCR Required)
2 Valves and a check valve
11" 5000 psi x 7-1/16" 10,000 psi Wellhead Assembly
Wellhead Assembly
13-5/8" 3000 psi x 11" 5000 psi Wellhead Assembly
Wellhead Assembly
13-5/8" 3000# psi x 13-3/8" SOW Casing Head
5000# BOP
Riverbend 12-13 Federal Com 15H
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Print

EVRAZ

# Riverbend 12-13 Fed Com 15H Surface Casing Spec Sheet

# OCTG Performance Data

## Casing Performance

Availability: ERW

### Pipe Body Geometry

| | | | |
|---|---|---|---|
| Outside Diameter: | 13.375 in | Inside Diameter: | 12.715 in |
| Wall Thickness: | 0.330 in | Cross Section Area: | 13.524 sq in |
| Nominal Weight: | 48.00 lb/ft | Drift Diameter: | 12.559 in |
| Plain End Weight: | 46.02 lb/ft | Alternate Drift Diameter: | - |

### Pipe Body Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Collapse Strength (ERW): | 740 psi |
| Pipe Body Yield Strength: | 541000 lbf | Collapse Strength (SMLS): | - |

## SC Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | 3220 lb·ft | 2420 lb·ft | 4030 lb·ft |
| Coupling Outside Diameter: | 14.375 in | | |

### Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | 1730 psi |
| Joint Strength: | 322000 lbf | | |

## LC Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | - | - | - |
| Coupling Outside Diameter: | 14.375 in | | |

### Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | - |
| Joint Strength: | - | | |

## BC Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | - | - | - |
| Coupling Outside Diameter: | 14.375 in | | |

### Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | - |
| Joint Strength: | - | | |

## PE Connection

### Connection Geometry

| | Optimum | Minimum | Maximum |
|---|---|---|---|
| Make Up Torque: | - | - | - |
| Coupling Outside Diameter: | 14.375 in | | |

## Connection Performance

| | | | |
|---|---|---|---|
| Grade: | H40 | Minimum Internal Yield Pressure: | 1730 psi |
| Joint Strength: | - | | |

# Riverbend 12-13 Federal Com 15H

## Casing Assumptions

### Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 475 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.40 | 7.96 | 14.12 |
| 12 1/4 | 0 | 2630 | 9-5/8" | 36.00 | J-55 | LT&C | 1.45 | 2.52 | 4.78 |
| 8 3/4 | 0 | 10355 | 7" | 29.00 | L-80 | LT&C | 1.45 | 1.68 | 1.87 |
| 8 3/4 | 10355 | 11355 | 7" | 29.00 | L-80 | BT&C | 1.38 | 1.61 | 48.87 |
| 6 | 10355 | 22428 | 4-1/2" | 11.60 | HCP-110 | BT&C | 1.21 | 1.46 | 66.33 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

# Riverbend 12-13 Federal Com 15H

## Casing Assumptions

### Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 475 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.40 | 7.96 | 14.12 |
| 12 1/4 | 0 | 2630 | 9-5/8" | 36.00 | J-55 | LT&C | 1.45 | 2.52 | 4.78 |
| 8 3/4 | 0 | 10355 | 7" | 29.00 | L-80 | LT&C | 1.45 | 1.68 | 1.87 |
| 8 3/4 | 10355 | 11355 | 7" | 29.00 | L-80 | BT&C | 1.38 | 1.61 | 48.87 |
| 6 | 10355 | 22428 | 4-1/2" | 11.60 | HCP-110 | BT&C | 1.21 | 1.46 | 66.33 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

# Riverbend 12-13 Federal Com 15H

## Casing Assumptions

### Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 475 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.40 | 7.96 | 14.12 |
| 12 1/4 | 0 | 2630 | 9-5/8" | 36.00 | J-55 | LT&C | 1.45 | 2.52 | 4.78 |
| 8 3/4 | 0 | 10355 | 7" | 29.00 | L-80 | LT&C | 1.45 | 1.68 | 1.87 |
| 8 3/4 | 10355 | 11355 | 7" | 29.00 | L-80 | BT&C | 1.38 | 1.61 | 48.87 |
| 6 | 10355 | 22428 | 4-1/2" | 11.60 | HCP-110 | BT&C | 1.21 | 1.46 | 66.33 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

# Riverbend 12-13 Federal Com 15H

## Casing Assumptions

### Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 475 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.40 | 7.96 | 14.12 |
| 12 1/4 | 0 | 2630 | 9-5/8" | 36.00 | J-55 | LT&C | 1.45 | 2.52 | 4.78 |
| 8 3/4 | 0 | 10355 | 7" | 29.00 | L-80 | LT&C | 1.45 | 1.68 | 1.87 |
| 8 3/4 | 10355 | 11355 | 7" | 29.00 | L-80 | BT&C | 1.38 | 1.61 | 48.87 |
| 6 | 10355 | 22428 | 4-1/2" | 11.60 | HCP-110 | BT&C | 1.21 | 1.46 | 66.33 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

# Riverbend 12-13 Federal Com 15H

## Casing Assumptions

### Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 475 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.40 | 7.96 | 14.12 |
| 12 1/4 | 0 | 2630 | 9-5/8" | 36.00 | J-55 | LT&C | 1.45 | 2.52 | 4.78 |
| 8 3/4 | 0 | 10355 | 7" | 29.00 | L-80 | LT&C | 1.45 | 1.68 | 1.87 |
| 8 3/4 | 10355 | 11355 | 7" | 29.00 | L-80 | BT&C | 1.38 | 1.61 | 48.87 |
| 6 | 10355 | 22428 | 4-1/2" | 11.60 | HCP-110 | BT&C | 1.21 | 1.46 | 66.33 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Hydrogen Sulfide Drilling Operations Plan
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
UL: N, Sec.1, 25S, 28E
Eddy Co., NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:

A. Characteristics of $H_2S$
B. Physical effects and hazards
C. Principal and operation of H2S detectors, warning system and briefing areas.
D. Evacuation procedure, routes and first aid.
E. Proper use of safety equipment & life support systems
F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

$H_2S$ Detection and Alarm Systems:

A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.

B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:

A. Windsock at mudpit area should be high enough to be visible.

B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.

4 Condition Flags and Signs

A. Warning sign on access road to location.
B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger ($H_2S$ present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

5 Well control equipment:

A. See exhibit "E-1"

6 Communication:

A. While working under masks chalkboards will be used for communication.
B. Hand signals will be used where chalk board is inappropriate.
C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

7 Drillstem Testing:
No DSTs r cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects $H_2S$ has on tubular goods and other mechanical equipment.

9 If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavengers if necessary.

$H_2S$ Contingency Plan
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
UL: N, Sec.1, 25S, 28E
Eddy Co., NM

**Emergency Procedures**

In the event of a release of gas containing $H_2S$, the first responder(s) must:

« Isolate the area and prevent entry by other persons into the 100 ppm ROE.
« Evacuate any public places encompassed by the 100 ppm ROE.
« Be equipped with $H_2S$ monitors and air packs in order to control the release.
« Use the "buddy system" to ensure no injuries occur during the 432-620-1975
« Take precautions to avoid personal injury during this operation.
« Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
« Have received training in the:
  - Detection of $H_2S$, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of $H_2S$ and $SO_2$**

Please see attached International Chemical Safety Cards.

**Contacting Authorities**

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

$H_2S$ Contingency Plan Emergency Contacts

**Riverbend 12-13 Federal Com 15H**

Cimarex Energy Co.

UL: N, Sec.1, 25S, 28E

Eddy Co., NM

| **Company Office** | | | |
|---|---|---|---|
| Cimarex Energy Co. of Colorado | | 800-969-4789 | |
| Co. Office and After-Hours Menu | | | |

**Key Personnel**

| **Name** | **Title** | **Office** | **Mobile** |
|---|---|---|---|
| Larry Seigrist | Drilling Manager | 432-620-1934 | 580-243-8485 |
| Charlie Pritchard | Drilling Superintendent | 432-620-1975 | 432-238-7084 |
| Roy Shirley | Construction Superintendent | | 432-634-2136 |

| **Artesia** | | |
|---|---|---|
| Ambulance | 911 | |
| State Police | 575-746-2703 | |
| City Police | 575-746-2703 | |
| Sheriff's Office | 575-746-9888 | |
| **Fire Department** | **575-746-2701** | |
| Local Emergency Planning Committee | 575-746-2122 | |
| New Mexico Oil Conservation Division | 575-748-1283 | |

| **Carlsbad** | | |
|---|---|---|
| Ambulance | 911 | |
| State Police | 575-885-3137 | |
| City Police | 575-885-2111 | |
| Sheriff's Office | 575-887-7551 | |
| **Fire Department** | **575-887-3798** | |
| Local Emergency Planning Committee | 575-887-6544 | |
| US Bureau of Land Management | 575-887-6544 | |

| **Santa Fe** | | |
|---|---|---|
| New Mexico Emergency Response Commission (Santa Fe) | 505-476-9600 | |
| New Mexico Emergency Response Commission (Santa Fe) 24 Hrs | 505-827-9126 | |
| New Mexico State Emergency Operations Center | 505-476-9635 | |

| **National** | | |
|---|---|---|
| National Emergency Response Center (Washington, D.C.) | 800-424-8802 | |

| **Medical** | | |
|---|---|---|
| Flight for Life - 4000 24th St.; Lubbock, TX | 806-743-9911 | |
| Aerocare - R3, Box 49F; Lubbock, TX | 806-747-8923 | |
| Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM | 505-842-4433 | |
| SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM | 505-842-4949 | |

| **Other** | | | |
|---|---|---|---|
| Boots & Coots IWC | 800-256-9688 | or | 281-931-8884 |
| Cudd Pressure Control | 432-699-0139 | or | 432-563-3356 |
| Halliburton | 575-746-2757 | | |
| B.J. Services | 575-746-3569 | | |

Schlumberger

# Cimarex Riverbend 12-13 Federal Com #15H Rev1 RM 1Feb17 Proposal
## Geodetic Report
### (Non-Def Plan)

CIMAREX

| | | | |
|---|---|---|---|
| **Report Date:** | February 01, 2018 - 01:56 PM | **Survey / DLS Computation:** | Minimum Curvature / Lubinski |
| **Client:** | Cimarex | **Vertical Section Azimuth:** | 180.000 ° (Grid North) |
| **Field:** | NM Eddy County (NAD 83) | **Vertical Section Origin:** | 0.000 ft, 0.000 ft |
| **Structure / Slot:** | Cimarex Riverbend 12-13 Federal Com #15H / Cimarex Riverbend 12-13 Federal Com #15H | **TVD Reference Datum:** | RKB |
| **Well:** | Cimarex Riverbend 12-13 Federal Com #15H | **TVD Reference Elevation:** | 2959.300 ft above MSL |
| **Borehole:** | Original Borehole | **Seabed / Ground Elevation:** | 2935.300 ft above MSL |
| **UWI / API#:** | Unknown / Unknown | **Magnetic Declination:** | 7.157 ° |
| **Survey Name:** | Cimarex Riverbend 12-13 Federal Com #15H Rev1 RM 1Feb17 | **Total Gravity Field Strength:** | 998.4600mgn (9.80665 Based) |
| **Survey Date:** | August 09, 2017 | **Gravity Model:** | GARM |
| **Tort / AHD / DDI / ERD Ratio:** | 101.100 ° / 12478.691 ft / 6.417 / 1.152 | **Total Magnetic Field Strength:** | 48023.541 nT |
| **Coordinate Reference System:** | NAD83 New Mexico State Plane, Eastern Zone, US Feet | **Magnetic Dip Angle:** | 59.930 ° |
| **Location Lat / Long:** | N 32° 9' 19.09605", W 104° 2' 28.70380" | **Declination Date:** | February 01, 2018 |
| **Location Grid N/E Y/X:** | N 420357.600 ftUS, E 631709.550 ftUS | **Magnetic Declination Model:** | HDGM 2017 |
| **CRS Grid Convergence Angle:** | 0.1554 ° | **North Reference:** | Grid North |
| **Grid Scale Factor:** | 0.99991844 | **Grid Convergence Used:** | 0.1554 ° |
| **Version / Patch:** | 2.10.696.0 | **Total Corr Mag North->Grid North:** | 7.0016 ° |
| | | **Local Coord Referenced To:** | Structure Reference Point |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SHL [1207' FSL, 2522' FWL] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | N/A | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 100.00 | 0.00 | 65.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 200.00 | 0.00 | 65.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 300.00 | 0.00 | 65.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 400.00 | 0.00 | 65.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| *Rustler* | *435.00* | *0.00* | *65.00* | *435.00* | *0.00* | *0.00* | *0.00* | *0.00* | *420357.60* | *631709.55* | *N 32 9 19.10* | *W 104 2 28.70* |
| | 500.00 | 0.00 | 65.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 600.00 | 0.00 | 65.00 | 600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 700.00 | 0.00 | 65.00 | 700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 800.00 | 0.00 | 65.00 | 800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 900.00 | 0.00 | 65.00 | 900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1000.00 | 0.00 | 65.00 | 1000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1100.00 | 0.00 | 65.00 | 1100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1200.00 | 0.00 | 65.00 | 1200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1300.00 | 0.00 | 65.00 | 1300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1400.00 | 0.00 | 65.00 | 1400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1500.00 | 0.00 | 65.00 | 1500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1600.00 | 0.00 | 65.00 | 1600.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1700.00 | 0.00 | 65.00 | 1700.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1800.00 | 0.00 | 65.00 | 1800.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 1900.00 | 0.00 | 65.00 | 1900.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| *Salado* | *1903.00* | *0.00* | *65.00* | *1903.00* | *0.00* | *0.00* | *0.00* | *0.00* | *420357.60* | *631709.55* | *N 32 9 19.10* | *W 104 2 28.70* |
| Nudge 2°/100' DLS | 2000.00 | 0.00 | 65.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 420357.60 | 631709.55 | N 32 9 19.10 | W 104 2 28.70 |
| | 2100.00 | 2.00 | 65.00 | 2099.98 | -0.74 | 0.74 | 1.58 | 2.00 | 420358.34 | 631711.13 | N 32 9 19.10 | W 104 2 28.69 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2200.00 | 4.00 | 65.00 | 2199.84 | -2.95 | 2.95 | 6.32 | 2.00 | 420360.55 | 631715.87 | N 32 9 19.13 | W 104 2 28.63 |
| Hold Nudge | 2277.50 | 5.55 | 65.00 | 2277.07 | -5.68 | 5.68 | 12.17 | 2.00 | 420363.28 | 631721.72 | N 32 9 19.15 | W 104 2 28.56 |
| | 2300.00 | 5.55 | 65.00 | 2299.46 | -6.60 | 6.60 | 14.14 | 0.00 | 420364.19 | 631723.69 | N 32 9 19.16 | W 104 2 28.54 |
| | 2400.00 | 5.55 | 65.00 | 2398.99 | -10.68 | 10.68 | 22.91 | 0.00 | 420368.28 | 631732.46 | N 32 9 19.20 | W 104 2 28.44 |
| *Castille* | *2466.32* | *5.55* | *65.00* | *2465.00* | *-13.39* | *13.39* | *28.72* | *0.00* | *420370.99* | *631738.27* | *N 32 9 19.23* | *W 104 2 28.37* |
| | 2500.00 | 5.55 | 65.00 | 2498.52 | -14.77 | 14.77 | 31.67 | 0.00 | 420372.37 | 631741.22 | N 32 9 19.24 | W 104 2 28.33 |
| | 2600.00 | 5.55 | 65.00 | 2598.05 | -18.86 | 18.86 | 40.44 | 0.00 | 420376.46 | 631749.99 | N 32 9 19.28 | W 104 2 28.23 |
| *Bell Canyon* | *2652.19* | *5.55* | *65.00* | *2650.00* | *-20.99* | *20.99* | *45.01* | *0.00* | *420378.59* | *631754.56* | *N 32 9 19.30* | *W 104 2 28.18* |
| | 2700.00 | 5.55 | 65.00 | 2697.59 | -22.94 | 22.94 | 49.20 | 0.00 | 420380.54 | 631758.75 | N 32 9 19.32 | W 104 2 28.13 |
| | 2800.00 | 5.55 | 65.00 | 2797.12 | -27.03 | 27.03 | 57.97 | 0.00 | 420384.63 | 631767.52 | N 32 9 19.36 | W 104 2 28.03 |
| | 2900.00 | 5.55 | 65.00 | 2896.65 | -31.12 | 31.12 | 66.74 | 0.00 | 420388.72 | 631776.28 | N 32 9 19.40 | W 104 2 27.93 |
| | 3000.00 | 5.55 | 65.00 | 2996.18 | -35.21 | 35.21 | 75.50 | 0.00 | 420392.80 | 631785.04 | N 32 9 19.44 | W 104 2 27.82 |
| | 3100.00 | 5.55 | 65.00 | 3095.71 | -39.29 | 39.29 | 84.27 | 0.00 | 420396.89 | 631793.81 | N 32 9 19.48 | W 104 2 27.72 |
| | 3200.00 | 5.55 | 65.00 | 3195.24 | -43.38 | 43.38 | 93.03 | 0.00 | 420400.98 | 631802.57 | N 32 9 19.52 | W 104 2 27.62 |
| | 3300.00 | 5.55 | 65.00 | 3294.77 | -47.47 | 47.47 | 101.80 | 0.00 | 420405.06 | 631811.34 | N 32 9 19.56 | W 104 2 27.52 |
| | 3400.00 | 5.55 | 65.00 | 3394.30 | -51.56 | 51.56 | 110.56 | 0.00 | 420409.15 | 631820.10 | N 32 9 19.60 | W 104 2 27.42 |
| | 3500.00 | 5.55 | 65.00 | 3493.84 | -55.64 | 55.64 | 119.33 | 0.00 | 420413.24 | 631828.87 | N 32 9 19.64 | W 104 2 27.31 |
| | 3600.00 | 5.55 | 65.00 | 3593.37 | -59.73 | 59.73 | 128.09 | 0.00 | 420417.33 | 631837.63 | N 32 9 19.68 | W 104 2 27.21 |
| *Cherry Canyon* | *3671.97* | *5.55* | *65.00* | *3665.00* | *-62.67* | *62.67* | *134.40* | *0.00* | *420420.27* | *631843.94* | *N 32 9 19.71* | *W 104 2 27.14* |
| | 3700.00 | 5.55 | 65.00 | 3692.90 | -63.82 | 63.82 | 136.86 | 0.00 | 420421.41 | 631846.40 | N 32 9 19.72 | W 104 2 27.11 |
| | 3800.00 | 5.55 | 65.00 | 3792.43 | -67.91 | 67.91 | 145.62 | 0.00 | 420425.50 | 631855.16 | N 32 9 19.76 | W 104 2 27.01 |
| | 3900.00 | 5.55 | 65.00 | 3891.96 | -71.99 | 71.99 | 154.39 | 0.00 | 420429.59 | 631863.93 | N 32 9 19.80 | W 104 2 26.91 |
| | 4000.00 | 5.55 | 65.00 | 3991.49 | -76.08 | 76.08 | 163.15 | 0.00 | 420433.67 | 631872.69 | N 32 9 19.84 | W 104 2 26.80 |
| | 4100.00 | 5.55 | 65.00 | 4091.02 | -80.17 | 80.17 | 171.92 | 0.00 | 420437.76 | 631881.45 | N 32 9 19.88 | W 104 2 26.70 |
| | 4200.00 | 5.55 | 65.00 | 4190.55 | -84.25 | 84.25 | 180.68 | 0.00 | 420441.85 | 631890.22 | N 32 9 19.92 | W 104 2 26.60 |
| | 4300.00 | 5.55 | 65.00 | 4290.09 | -88.34 | 88.34 | 189.45 | 0.00 | 420445.93 | 631898.98 | N 32 9 19.97 | W 104 2 26.50 |
| | 4400.00 | 5.55 | 65.00 | 4389.62 | -92.43 | 92.43 | 198.21 | 0.00 | 420450.02 | 631907.75 | N 32 9 20.01 | W 104 2 26.40 |
| | 4500.00 | 5.55 | 65.00 | 4489.15 | -96.52 | 96.52 | 206.98 | 0.00 | 420454.11 | 631916.51 | N 32 9 20.05 | W 104 2 26.29 |
| | 4600.00 | 5.55 | 65.00 | 4588.68 | -100.60 | 100.60 | 215.75 | 0.00 | 420458.20 | 631925.28 | N 32 9 20.09 | W 104 2 26.19 |
| | 4700.00 | 5.55 | 65.00 | 4688.21 | -104.69 | 104.69 | 224.51 | 0.00 | 420462.28 | 631934.04 | N 32 9 20.13 | W 104 2 26.09 |
| | 4800.00 | 5.55 | 65.00 | 4787.74 | -108.78 | 108.78 | 233.28 | 0.00 | 420466.37 | 631942.81 | N 32 9 20.17 | W 104 2 25.99 |
| | 4900.00 | 5.55 | 65.00 | 4887.27 | -112.87 | 112.87 | 242.04 | 0.00 | 420470.46 | 631951.57 | N 32 9 20.21 | W 104 2 25.88 |
| | 5000.00 | 5.55 | 65.00 | 4986.80 | -116.95 | 116.95 | 250.81 | 0.00 | 420474.54 | 631960.34 | N 32 9 20.25 | W 104 2 25.78 |
| | 5100.00 | 5.55 | 65.00 | 5086.33 | -121.04 | 121.04 | 259.57 | 0.00 | 420478.63 | 631969.10 | N 32 9 20.29 | W 104 2 25.68 |
| | 5200.00 | 5.55 | 65.00 | 5185.87 | -125.13 | 125.13 | 268.34 | 0.00 | 420482.72 | 631977.86 | N 32 9 20.33 | W 104 2 25.58 |
| *Brushy Canyon* | *5263.43* | *5.55* | *65.00* | *5249.00* | *-127.72* | *127.72* | *273.90* | *0.00* | *420485.31* | *631983.42* | *N 32 9 20.35* | *W 104 2 25.51* |
| | 5300.00 | 5.55 | 65.00 | 5285.40 | -129.22 | 129.22 | 277.10 | 0.00 | 420486.80 | 631986.63 | N 32 9 20.37 | W 104 2 25.48 |
| | 5400.00 | 5.55 | 65.00 | 5384.93 | -133.30 | 133.30 | 285.87 | 0.00 | 420490.89 | 631995.39 | N 32 9 20.41 | W 104 2 25.37 |
| | 5500.00 | 5.55 | 65.00 | 5484.46 | -137.39 | 137.39 | 294.63 | 0.00 | 420494.98 | 632004.16 | N 32 9 20.45 | W 104 2 25.27 |
| | 5600.00 | 5.55 | 65.00 | 5583.99 | -141.48 | 141.48 | 303.40 | 0.00 | 420499.07 | 632012.92 | N 32 9 20.49 | W 104 2 25.17 |
| | 5700.00 | 5.55 | 65.00 | 5683.52 | -145.56 | 145.56 | 312.16 | 0.00 | 420503.15 | 632021.69 | N 32 9 20.53 | W 104 2 25.07 |
| | 5800.00 | 5.55 | 65.00 | 5783.05 | -149.65 | 149.65 | 320.93 | 0.00 | 420507.24 | 632030.45 | N 32 9 20.57 | W 104 2 24.97 |
| | 5900.00 | 5.55 | 65.00 | 5882.58 | -153.74 | 153.74 | 329.69 | 0.00 | 420511.33 | 632039.22 | N 32 9 20.61 | W 104 2 24.86 |
| | 6000.00 | 5.55 | 65.00 | 5982.12 | -157.83 | 157.83 | 338.46 | 0.00 | 420515.41 | 632047.98 | N 32 9 20.65 | W 104 2 24.76 |
| | 6100.00 | 5.55 | 65.00 | 6081.65 | -161.91 | 161.91 | 347.22 | 0.00 | 420519.50 | 632056.75 | N 32 9 20.69 | W 104 2 24.66 |
| *Brushy Canyon Lower* | *6163.65* | *5.55* | *65.00* | *6145.00* | *-164.52* | *164.52* | *352.80* | *0.00* | *420522.10* | *632062.32* | *N 32 9 20.71* | *W 104 2 24.59* |
| | 6200.00 | 5.55 | 65.00 | 6181.18 | -166.00 | 166.00 | 355.99 | 0.00 | 420523.59 | 632065.51 | N 32 9 20.73 | W 104 2 24.56 |
| | 6300.00 | 5.55 | 65.00 | 6280.71 | -170.09 | 170.09 | 364.76 | 0.00 | 420527.67 | 632074.28 | N 32 9 20.77 | W 104 2 24.46 |
| *Bone Spring* | *6386.70* | *5.55* | *65.00* | *6367.00* | *-173.63* | *173.63* | *372.35* | *0.00* | *420531.22* | *632081.87* | *N 32 9 20.80* | *W 104 2 24.37* |
| | 6400.00 | 5.55 | 65.00 | 6380.24 | -174.18 | 174.18 | 373.52 | 0.00 | 420531.76 | 632083.04 | N 32 9 20.81 | W 104 2 24.35 |
| *Bone Spring "A" Shale* | *6497.22* | *5.55* | *65.00* | *6477.00* | *-178.15* | *178.15* | *382.04* | *0.00* | *420535.73* | *632091.56* | *N 32 9 20.85* | *W 104 2 24.25* |
| | 6500.00 | 5.55 | 65.00 | 6479.77 | -178.26 | 178.26 | 382.29 | 0.00 | 420535.85 | 632091.80 | N 32 9 20.85 | W 104 2 24.25 |
| | 6600.00 | 5.55 | 65.00 | 6579.30 | -182.35 | 182.35 | 391.05 | 0.00 | 420539.94 | 632100.57 | N 32 9 20.89 | W 104 2 24.15 |
| | 6700.00 | 5.55 | 65.00 | 6678.83 | -186.44 | 186.44 | 399.82 | 0.00 | 420544.02 | 632109.33 | N 32 9 20.93 | W 104 2 24.05 |
| | 6800.00 | 5.55 | 65.00 | 6778.37 | -190.52 | 190.52 | 408.58 | 0.00 | 420548.11 | 632118.10 | N 32 9 20.97 | W 104 2 23.95 |
| | 6900.00 | 5.55 | 65.00 | 6877.90 | -194.61 | 194.61 | 417.35 | 0.00 | 420552.20 | 632126.86 | N 32 9 21.01 | W 104 2 23.84 |
| | 7000.00 | 5.55 | 65.00 | 6977.43 | -198.70 | 198.70 | 426.11 | 0.00 | 420556.28 | 632135.63 | N 32 9 21.05 | W 104 2 23.74 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Bone Spring "C" Shale* | *7041.77* | *5.55* | *65.00* | *7019.00* | *-200.41* | *200.41* | *429.77* | *0.00* | *420557.99* | *632139.29* | *N 32 9 21.07* | *W 104 2 23.70* |
| | 7100.00 | 5.55 | 65.00 | 7076.96 | -202.79 | 202.79 | 434.88 | 0.00 | 420560.37 | 632144.39 | N 32 9 21.09 | W 104 2 23.64 |
| | 7200.00 | 5.55 | 65.00 | 7176.49 | -206.87 | 206.87 | 443.64 | 0.00 | 420564.46 | 632153.16 | N 32 9 21.13 | W 104 2 23.54 |
| | 7300.00 | 5.55 | 65.00 | 7276.02 | -210.96 | 210.96 | 452.41 | 0.00 | 420568.54 | 632161.92 | N 32 9 21.17 | W 104 2 23.43 |
| *1st Bone Spring Ss* | *7328.11* | *5.55* | *65.00* | *7304.00* | *-212.11* | *212.11* | *454.87* | *0.00* | *420569.69* | *632164.38* | *N 32 9 21.18* | *W 104 2 23.41* |
| | 7400.00 | 5.55 | 65.00 | 7375.55 | -215.05 | 215.05 | 461.17 | 0.00 | 420572.63 | 632170.69 | N 32 9 21.21 | W 104 2 23.33 |
| | 7500.00 | 5.55 | 65.00 | 7475.08 | -219.14 | 219.14 | 469.94 | 0.00 | 420576.72 | 632179.45 | N 32 9 21.25 | W 104 2 23.23 |
| | 7600.00 | 5.55 | 65.00 | 7574.62 | -223.22 | 223.22 | 478.70 | 0.00 | 420580.80 | 632188.21 | N 32 9 21.29 | W 104 2 23.13 |
| | 7700.00 | 5.55 | 65.00 | 7674.15 | -227.31 | 227.31 | 487.47 | 0.00 | 420584.89 | 632196.98 | N 32 9 21.33 | W 104 2 23.03 |
| | 7800.00 | 5.55 | 65.00 | 7773.68 | -231.40 | 231.40 | 496.23 | 0.00 | 420588.98 | 632205.74 | N 32 9 21.37 | W 104 2 22.92 |
| | 7900.00 | 5.55 | 65.00 | 7873.21 | -235.49 | 235.49 | 505.00 | 0.00 | 420593.07 | 632214.51 | N 32 9 21.41 | W 104 2 22.82 |
| | 8000.00 | 5.55 | 65.00 | 7972.74 | -239.57 | 239.57 | 513.77 | 0.00 | 420597.15 | 632223.27 | N 32 9 21.45 | W 104 2 22.72 |
| | 8100.00 | 5.55 | 65.00 | 8072.27 | -243.66 | 243.66 | 522.53 | 0.00 | 420601.24 | 632232.04 | N 32 9 21.49 | W 104 2 22.62 |
| *2nd Bone Spring Ss* | *8136.90* | *5.55* | *65.00* | *8109.00* | *-245.17* | *245.17* | *525.77* | *0.00* | *420602.75* | *632235.27* | *N 32 9 21.51* | *W 104 2 22.58* |
| | 8200.00 | 5.55 | 65.00 | 8171.80 | -247.75 | 247.75 | 531.30 | 0.00 | 420605.33 | 632240.80 | N 32 9 21.53 | W 104 2 22.52 |
| | 8300.00 | 5.55 | 65.00 | 8271.33 | -251.83 | 251.83 | 540.06 | 0.00 | 420609.41 | 632249.57 | N 32 9 21.57 | W 104 2 22.41 |
| | 8400.00 | 5.55 | 65.00 | 8370.87 | -255.92 | 255.92 | 548.83 | 0.00 | 420613.50 | 632258.33 | N 32 9 21.61 | W 104 2 22.31 |
| | 8500.00 | 5.55 | 65.00 | 8470.40 | -260.01 | 260.01 | 557.59 | 0.00 | 420617.59 | 632267.10 | N 32 9 21.65 | W 104 2 22.21 |
| | 8600.00 | 5.55 | 65.00 | 8569.93 | -264.10 | 264.10 | 566.36 | 0.00 | 420621.67 | 632275.86 | N 32 9 21.69 | W 104 2 22.11 |
| | 8700.00 | 5.55 | 65.00 | 8669.46 | -268.18 | 268.18 | 575.12 | 0.00 | 420625.76 | 632284.62 | N 32 9 21.73 | W 104 2 22.01 |
| *2nd BS Ss Lower* | *8795.99* | *5.55* | *65.00* | *8765.00* | *-272.11* | *272.11* | *583.54* | *0.00* | *420629.68* | *632293.04* | *N 32 9 21.77* | *W 104 2 21.91* |
| | 8800.00 | 5.55 | 65.00 | 8768.99 | -272.27 | 272.27 | 583.89 | 0.00 | 420629.85 | 632293.39 | N 32 9 21.77 | W 104 2 21.90 |
| | 8900.00 | 5.55 | 65.00 | 8868.52 | -276.36 | 276.36 | 592.65 | 0.00 | 420633.94 | 632302.15 | N 32 9 21.81 | W 104 2 21.80 |
| | 9000.00 | 5.55 | 65.00 | 8968.05 | -280.45 | 280.45 | 601.42 | 0.00 | 420638.02 | 632310.92 | N 32 9 21.85 | W 104 2 21.70 |
| Drop to Vertical 2°/100' DLS | 9032.10 | 5.55 | 65.00 | 9000.00 | -281.76 | 281.76 | 604.23 | 0.00 | 420639.33 | 632313.73 | N 32 9 21.87 | W 104 2 21.67 |
| | 9100.00 | 4.19 | 65.00 | 9067.66 | -284.19 | 284.19 | 609.46 | 2.00 | 420641.77 | 632318.96 | N 32 9 21.89 | W 104 2 21.61 |
| | 9200.00 | 2.19 | 65.00 | 9167.49 | -286.55 | 286.55 | 614.50 | 2.00 | 420644.12 | 632324.00 | N 32 9 21.91 | W 104 2 21.55 |
| *3rd Bone Spring Ss* | *9263.53* | *0.92* | *65.00* | *9231.00* | *-287.28* | *287.28* | *616.07* | *2.00* | *420644.85* | *632325.57* | *N 32 9 21.92* | *W 104 2 21.53* |
| | 9300.00 | 0.19 | 65.00 | 9267.47 | -287.43 | 287.43 | 616.39 | 2.00 | 420645.00 | 632325.89 | N 32 9 21.92 | W 104 2 21.52 |
| Hold | 9309.60 | 0.00 | 65.00 | 9277.07 | -287.43 | 287.43 | 616.40 | 2.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 9400.00 | 0.00 | 65.00 | 9367.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 9500.00 | 0.00 | 65.00 | 9467.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 9600.00 | 0.00 | 65.00 | 9567.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| *Wolfcamp* | *9637.53* | *0.00* | *65.00* | *9605.00* | *-287.43* | *287.43* | *616.40* | *0.00* | *420645.01* | *632325.90* | *N 32 9 21.92* | *W 104 2 21.52* |
| | 9700.00 | 0.00 | 65.00 | 9667.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 9800.00 | 0.00 | 65.00 | 9767.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 9900.00 | 0.00 | 65.00 | 9867.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 10000.00 | 0.00 | 65.00 | 9967.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 10100.00 | 0.00 | 65.00 | 10067.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 10200.00 | 0.00 | 65.00 | 10167.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 10300.00 | 0.00 | 65.00 | 10267.47 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| *Wolfcamp B* | *10315.53* | *0.00* | *65.00* | *10283.00* | *-287.43* | *287.43* | *616.40* | *0.00* | *420645.01* | *632325.90* | *N 32 9 21.92* | *W 104 2 21.52* |
| KOP - Build 12°/100' DLS | 10354.53 | 0.00 | 65.00 | 10322.00 | -287.43 | 287.43 | 616.40 | 0.00 | 420645.01 | 632325.90 | N 32 9 21.92 | W 104 2 21.52 |
| | 10400.00 | 5.46 | 180.00 | 10367.40 | -285.27 | 285.27 | 616.40 | 12.00 | 420642.85 | 632325.90 | N 32 9 21.90 | W 104 2 21.52 |
| *Wolfcamp C* | *10479.97* | *15.05* | *180.00* | *10446.00* | *-271.05* | *271.05* | *616.40* | *12.00* | *420628.63* | *632325.90* | *N 32 9 21.76* | *W 104 2 21.53* |
| | 10500.00 | 17.46 | 180.00 | 10465.23 | -265.44 | 265.44 | 616.40 | 12.00 | 420623.02 | 632325.90 | N 32 9 21.71 | W 104 2 21.53 |
| | 10600.00 | 29.46 | 180.00 | 10556.80 | -225.71 | 225.71 | 616.40 | 12.00 | 420583.29 | 632325.90 | N 32 9 21.31 | W 104 2 21.53 |
| *Wolfcamp D* | *10622.36* | *32.14* | *180.00* | *10576.00* | *-214.27* | *214.27* | *616.40* | *12.00* | *420571.85* | *632325.90* | *N 32 9 21.20* | *W 104 2 21.53* |
| | 10700.00 | 41.46 | 180.00 | 10638.10 | -167.81 | 167.81 | 616.40 | 12.00 | 420525.40 | 632325.90 | N 32 9 20.74 | W 104 2 21.53 |
| | 10800.00 | 53.46 | 180.00 | 10705.60 | -94.27 | 94.27 | 616.40 | 12.00 | 420451.86 | 632325.90 | N 32 9 20.01 | W 104 2 21.53 |
| | 10900.00 | 65.46 | 180.00 | 10756.32 | -8.30 | 8.30 | 616.40 | 12.00 | 420365.90 | 632325.90 | N 32 9 19.16 | W 104 2 21.53 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Build 4°/100' DLS | 10979.53 | 75.00 | 180.00 | 10783.20 | 66.45 | -66.45 | 616.40 | 12.00 | 420291.15 | 632325.90 | N 32 9 18.42 | W 104 2 21.54 |
| | 11000.00 | 75.82 | 180.00 | 10788.35 | 86.26 | -86.26 | 616.40 | 4.00 | 420271.35 | 632325.90 | N 32 9 18.23 | W 104 2 21.54 |
| | 11100.00 | 79.82 | 180.00 | 10809.45 | 183.99 | -183.99 | 616.40 | 4.00 | 420173.62 | 632325.90 | N 32 9 17.26 | W 104 2 21.54 |
| | 11200.00 | 83.82 | 180.00 | 10823.68 | 282.95 | -282.95 | 616.40 | 4.00 | 420074.67 | 632325.90 | N 32 9 16.28 | W 104 2 21.54 |
| | 11300.00 | 87.82 | 180.00 | 10830.97 | 382.67 | -382.67 | 616.40 | 4.00 | 419974.97 | 632325.90 | N 32 9 15.29 | W 104 2 21.55 |
| Landing Point | 11354.53 | 90.00 | 180.00 | 10832.00 | 437.19 | -437.19 | 616.40 | 4.00 | 419920.45 | 632325.90 | N 32 9 14.75 | W 104 2 21.55 |
| | 11400.00 | 90.00 | 180.00 | 10832.00 | 482.65 | -482.65 | 616.40 | 0.00 | 419874.99 | 632325.90 | N 32 9 14.30 | W 104 2 21.55 |
| | 11500.00 | 90.00 | 180.00 | 10832.00 | 582.65 | -582.65 | 616.40 | 0.00 | 419775.00 | 632325.89 | N 32 9 13.31 | W 104 2 21.55 |
| | 11600.00 | 90.00 | 180.00 | 10832.00 | 682.65 | -682.65 | 616.39 | 0.00 | 419675.00 | 632325.89 | N 32 9 12.32 | W 104 2 21.56 |
| | 11700.00 | 90.00 | 180.00 | 10832.00 | 782.65 | -782.65 | 616.39 | 0.00 | 419575.01 | 632325.89 | N 32 9 11.33 | W 104 2 21.56 |
| | 11800.00 | 90.00 | 180.00 | 10832.00 | 882.65 | -882.65 | 616.39 | 0.00 | 419475.02 | 632325.89 | N 32 9 10.35 | W 104 2 21.56 |
| | 11900.00 | 90.00 | 180.00 | 10832.00 | 982.65 | -982.65 | 616.39 | 0.00 | 419375.03 | 632325.88 | N 32 9 9.36 | W 104 2 21.57 |
| | 12000.00 | 90.00 | 180.00 | 10832.00 | 1082.65 | -1082.65 | 616.38 | 0.00 | 419275.04 | 632325.88 | N 32 9 8.37 | W 104 2 21.57 |
| | 12100.00 | 90.00 | 180.00 | 10832.00 | 1182.65 | -1182.65 | 616.38 | 0.00 | 419175.05 | 632325.88 | N 32 9 7.38 | W 104 2 21.57 |
| | 12200.00 | 90.00 | 180.00 | 10832.00 | 1282.65 | -1282.65 | 616.38 | 0.00 | 419075.05 | 632325.88 | N 32 9 6.39 | W 104 2 21.57 |
| | 12300.00 | 90.00 | 180.00 | 10832.00 | 1382.65 | -1382.65 | 616.38 | 0.00 | 418975.06 | 632325.87 | N 32 9 5.40 | W 104 2 21.58 |
| | 12400.00 | 90.00 | 180.00 | 10832.00 | 1482.65 | -1482.65 | 616.37 | 0.00 | 418875.07 | 632325.87 | N 32 9 4.41 | W 104 2 21.58 |
| | 12500.00 | 90.00 | 180.00 | 10832.00 | 1582.65 | -1582.65 | 616.37 | 0.00 | 418775.08 | 632325.87 | N 32 9 3.42 | W 104 2 21.58 |
| | 12600.00 | 90.00 | 180.00 | 10832.00 | 1682.65 | -1682.65 | 616.37 | 0.00 | 418675.09 | 632325.87 | N 32 9 2.43 | W 104 2 21.59 |
| | 12700.00 | 90.00 | 180.00 | 10832.00 | 1782.65 | -1782.65 | 616.36 | 0.00 | 418575.10 | 632325.86 | N 32 9 1.44 | W 104 2 21.59 |
| | 12800.00 | 90.00 | 180.00 | 10832.00 | 1882.65 | -1882.65 | 616.36 | 0.00 | 418475.10 | 632325.86 | N 32 9 0.45 | W 104 2 21.59 |
| | 12900.00 | 90.00 | 180.00 | 10832.00 | 1982.65 | -1982.65 | 616.36 | 0.00 | 418375.11 | 632325.86 | N 32 8 59.46 | W 104 2 21.60 |
| | 13000.00 | 90.00 | 180.00 | 10832.00 | 2082.65 | -2082.65 | 616.36 | 0.00 | 418275.12 | 632325.86 | N 32 8 58.47 | W 104 2 21.60 |
| | 13100.00 | 90.00 | 180.00 | 10832.00 | 2182.65 | -2182.65 | 616.35 | 0.00 | 418175.13 | 632325.85 | N 32 8 57.48 | W 104 2 21.60 |
| | 13200.00 | 90.00 | 180.00 | 10832.00 | 2282.65 | -2282.65 | 616.35 | 0.00 | 418075.14 | 632325.85 | N 32 8 56.49 | W 104 2 21.61 |
| | 13300.00 | 90.00 | 180.00 | 10832.00 | 2382.65 | -2382.65 | 616.35 | 0.00 | 417975.15 | 632325.85 | N 32 8 55.50 | W 104 2 21.61 |
| | 13400.00 | 90.00 | 180.00 | 10832.00 | 2482.65 | -2482.65 | 616.35 | 0.00 | 417875.15 | 632325.85 | N 32 8 54.51 | W 104 2 21.61 |
| | 13500.00 | 90.00 | 180.00 | 10832.00 | 2582.65 | -2582.65 | 616.34 | 0.00 | 417775.16 | 632325.84 | N 32 8 53.52 | W 104 2 21.62 |
| | 13600.00 | 90.00 | 180.00 | 10832.00 | 2682.65 | -2682.65 | 616.34 | 0.00 | 417675.17 | 632325.84 | N 32 8 52.53 | W 104 2 21.62 |
| | 13700.00 | 90.00 | 180.00 | 10832.00 | 2782.65 | -2782.65 | 616.34 | 0.00 | 417575.18 | 632325.84 | N 32 8 51.54 | W 104 2 21.62 |
| | 13800.00 | 90.00 | 180.00 | 10832.00 | 2882.65 | -2882.65 | 616.34 | 0.00 | 417475.19 | 632325.84 | N 32 8 50.55 | W 104 2 21.63 |
| | 13900.00 | 90.00 | 180.00 | 10832.00 | 2982.65 | -2982.65 | 616.33 | 0.00 | 417375.20 | 632325.83 | N 32 8 49.57 | W 104 2 21.63 |
| | 14000.00 | 90.00 | 180.00 | 10832.00 | 3082.65 | -3082.65 | 616.33 | 0.00 | 417275.20 | 632325.83 | N 32 8 48.58 | W 104 2 21.63 |
| | 14100.00 | 90.00 | 180.00 | 10832.00 | 3182.65 | -3182.65 | 616.33 | 0.00 | 417175.21 | 632325.83 | N 32 8 47.59 | W 104 2 21.64 |
| | 14200.00 | 90.00 | 180.00 | 10832.00 | 3282.65 | -3282.65 | 616.33 | 0.00 | 417075.22 | 632325.83 | N 32 8 46.60 | W 104 2 21.64 |
| | 14300.00 | 90.00 | 180.00 | 10832.00 | 3382.65 | -3382.65 | 616.32 | 0.00 | 416975.23 | 632325.82 | N 32 8 45.61 | W 104 2 21.64 |
| | 14400.00 | 90.00 | 180.00 | 10832.00 | 3482.65 | -3482.65 | 616.32 | 0.00 | 416875.24 | 632325.82 | N 32 8 44.62 | W 104 2 21.65 |
| | 14500.00 | 90.00 | 180.00 | 10832.00 | 3582.65 | -3582.65 | 616.32 | 0.00 | 416775.25 | 632325.82 | N 32 8 43.63 | W 104 2 21.65 |
| | 14600.00 | 90.00 | 180.00 | 10832.00 | 3682.65 | -3682.65 | 616.32 | 0.00 | 416675.25 | 632325.82 | N 32 8 42.64 | W 104 2 21.65 |
| | 14700.00 | 90.00 | 180.00 | 10832.00 | 3782.65 | -3782.65 | 616.31 | 0.00 | 416575.26 | 632325.81 | N 32 8 41.65 | W 104 2 21.66 |
| | 14800.00 | 90.00 | 180.00 | 10832.00 | 3882.65 | -3882.65 | 616.31 | 0.00 | 416475.27 | 632325.81 | N 32 8 40.66 | W 104 2 21.66 |
| | 14900.00 | 90.00 | 180.00 | 10832.00 | 3982.65 | -3982.65 | 616.31 | 0.00 | 416375.28 | 632325.81 | N 32 8 39.67 | W 104 2 21.66 |
| | 15000.00 | 90.00 | 180.00 | 10832.00 | 4082.65 | -4082.65 | 616.31 | 0.00 | 416275.29 | 632325.81 | N 32 8 38.68 | W 104 2 21.66 |
| | 15100.00 | 90.00 | 180.00 | 10832.00 | 4182.65 | -4182.65 | 616.30 | 0.00 | 416175.30 | 632325.80 | N 32 8 37.69 | W 104 2 21.67 |
| | 15200.00 | 90.00 | 180.00 | 10832.00 | 4282.65 | -4282.65 | 616.30 | 0.00 | 416075.30 | 632325.80 | N 32 8 36.70 | W 104 2 21.67 |
| | 15300.00 | 90.00 | 180.00 | 10832.00 | 4382.65 | -4382.65 | 616.30 | 0.00 | 415975.31 | 632325.80 | N 32 8 35.71 | W 104 2 21.67 |
| | 15400.00 | 90.00 | 180.00 | 10832.00 | 4482.65 | -4482.65 | 616.30 | 0.00 | 415875.32 | 632325.80 | N 32 8 34.72 | W 104 2 21.68 |
| | 15500.00 | 90.00 | 180.00 | 10832.00 | 4582.65 | -4582.65 | 616.29 | 0.00 | 415775.33 | 632325.79 | N 32 8 33.73 | W 104 2 21.68 |
| | 15600.00 | 90.00 | 180.00 | 10832.00 | 4682.65 | -4682.65 | 616.29 | 0.00 | 415675.34 | 632325.79 | N 32 8 32.74 | W 104 2 21.68 |
| | 15700.00 | 90.00 | 180.00 | 10832.00 | 4782.65 | -4782.65 | 616.29 | 0.00 | 415575.35 | 632325.79 | N 32 8 31.75 | W 104 2 21.69 |
| | 15800.00 | 90.00 | 180.00 | 10832.00 | 4882.65 | -4882.65 | 616.29 | 0.00 | 415475.35 | 632325.79 | N 32 8 30.76 | W 104 2 21.69 |
| | 15900.00 | 90.00 | 180.00 | 10832.00 | 4982.65 | -4982.65 | 616.28 | 0.00 | 415375.36 | 632325.78 | N 32 8 29.77 | W 104 2 21.69 |
| | 16000.00 | 90.00 | 180.00 | 10832.00 | 5082.65 | -5082.65 | 616.28 | 0.00 | 415275.37 | 632325.78 | N 32 8 28.79 | W 104 2 21.70 |
| | 16100.00 | 90.00 | 180.00 | 10832.00 | 5182.65 | -5182.65 | 616.28 | 0.00 | 415175.38 | 632325.78 | N 32 8 27.80 | W 104 2 21.70 |
| | 16200.00 | 90.00 | 180.00 | 10832.00 | 5282.65 | -5282.65 | 616.28 | 0.00 | 415075.39 | 632325.78 | N 32 8 26.81 | W 104 2 21.70 |
| | 16300.00 | 90.00 | 180.00 | 10832.00 | 5382.65 | -5382.65 | 616.27 | 0.00 | 414975.40 | 632325.77 | N 32 8 25.82 | W 104 2 21.71 |
| | 16400.00 | 90.00 | 180.00 | 10832.00 | 5482.65 | -5482.65 | 616.27 | 0.00 | 414875.40 | 632325.77 | N 32 8 24.83 | W 104 2 21.71 |
| | 16500.00 | 90.00 | 180.00 | 10832.00 | 5582.65 | -5582.65 | 616.27 | 0.00 | 414775.41 | 632325.77 | N 32 8 23.84 | W 104 2 21.71 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 16600.00 | 90.00 | 180.00 | 10832.00 | 5682.65 | -5682.65 | 616.27 | 0.00 | 414675.42 | 632325.77 | N 32 8 22.85 | W 104 2 21.72 |
| | 16700.00 | 90.00 | 180.00 | 10832.00 | 5782.65 | -5782.65 | 616.26 | 0.00 | 414575.43 | 632325.76 | N 32 8 21.86 | W 104 2 21.72 |
| | 16800.00 | 90.00 | 180.00 | 10832.00 | 5882.65 | -5882.65 | 616.26 | 0.00 | 414475.44 | 632325.76 | N 32 8 20.87 | W 104 2 21.72 |
| | 16900.00 | 90.00 | 180.00 | 10832.00 | 5982.65 | -5982.65 | 616.26 | 0.00 | 414375.45 | 632325.76 | N 32 8 19.88 | W 104 2 21.73 |
| | 17000.00 | 90.00 | 180.00 | 10832.00 | 6082.65 | -6082.65 | 616.26 | 0.00 | 414275.45 | 632325.76 | N 32 8 18.89 | W 104 2 21.73 |
| | 17100.00 | 90.00 | 180.00 | 10832.00 | 6182.65 | -6182.65 | 616.25 | 0.00 | 414175.46 | 632325.75 | N 32 8 17.90 | W 104 2 21.73 |
| | 17200.00 | 90.00 | 180.00 | 10832.00 | 6282.65 | -6282.65 | 616.25 | 0.00 | 414075.47 | 632325.75 | N 32 8 16.91 | W 104 2 21.74 |
| | 17300.00 | 90.00 | 180.00 | 10832.00 | 6382.65 | -6382.65 | 616.25 | 0.00 | 413975.48 | 632325.75 | N 32 8 15.92 | W 104 2 21.74 |
| | 17400.00 | 90.00 | 180.00 | 10832.00 | 6482.65 | -6482.65 | 616.25 | 0.00 | 413875.49 | 632325.75 | N 32 8 14.93 | W 104 2 21.74 |
| | 17500.00 | 90.00 | 180.00 | 10832.00 | 6582.65 | -6582.65 | 616.24 | 0.00 | 413775.50 | 632325.74 | N 32 8 13.94 | W 104 2 21.74 |
| | 17600.00 | 90.00 | 180.00 | 10832.00 | 6682.65 | -6682.65 | 616.24 | 0.00 | 413675.51 | 632325.74 | N 32 8 12.95 | W 104 2 21.75 |
| | 17700.00 | 90.00 | 180.00 | 10832.00 | 6782.65 | -6782.65 | 616.24 | 0.00 | 413575.51 | 632325.74 | N 32 8 11.96 | W 104 2 21.75 |
| | 17800.00 | 90.00 | 180.00 | 10832.00 | 6882.65 | -6882.65 | 616.24 | 0.00 | 413475.52 | 632325.74 | N 32 8 10.97 | W 104 2 21.75 |
| | 17900.00 | 90.00 | 180.00 | 10832.00 | 6982.65 | -6982.65 | 616.23 | 0.00 | 413375.53 | 632325.73 | N 32 8 9.98 | W 104 2 21.76 |
| | 18000.00 | 90.00 | 180.00 | 10832.00 | 7082.65 | -7082.65 | 616.23 | 0.00 | 413275.54 | 632325.73 | N 32 8 8.99 | W 104 2 21.76 |
| | 18100.00 | 90.00 | 180.00 | 10832.00 | 7182.65 | -7182.65 | 616.23 | 0.00 | 413175.55 | 632325.73 | N 32 8 8.01 | W 104 2 21.76 |
| | 18200.00 | 90.00 | 180.00 | 10832.00 | 7282.65 | -7282.65 | 616.23 | 0.00 | 413075.56 | 632325.73 | N 32 8 7.02 | W 104 2 21.77 |
| | 18300.00 | 90.00 | 180.00 | 10832.00 | 7382.65 | -7382.65 | 616.22 | 0.00 | 412975.56 | 632325.72 | N 32 8 6.03 | W 104 2 21.77 |
| | 18400.00 | 90.00 | 180.00 | 10832.00 | 7482.65 | -7482.65 | 616.22 | 0.00 | 412875.57 | 632325.72 | N 32 8 5.04 | W 104 2 21.77 |
| | 18500.00 | 90.00 | 180.00 | 10832.00 | 7582.65 | -7582.65 | 616.22 | 0.00 | 412775.58 | 632325.72 | N 32 8 4.05 | W 104 2 21.78 |
| | 18600.00 | 90.00 | 180.00 | 10832.00 | 7682.65 | -7682.65 | 616.22 | 0.00 | 412675.59 | 632325.72 | N 32 8 3.06 | W 104 2 21.78 |
| | 18700.00 | 90.00 | 180.00 | 10832.00 | 7782.65 | -7782.65 | 616.21 | 0.00 | 412575.60 | 632325.71 | N 32 8 2.07 | W 104 2 21.78 |
| | 18800.00 | 90.00 | 180.00 | 10832.00 | 7882.65 | -7882.65 | 616.21 | 0.00 | 412475.61 | 632325.71 | N 32 8 1.08 | W 104 2 21.79 |
| | 18900.00 | 90.00 | 180.00 | 10832.00 | 7982.65 | -7982.65 | 616.21 | 0.00 | 412375.61 | 632325.71 | N 32 8 0.09 | W 104 2 21.79 |
| | 19000.00 | 90.00 | 180.00 | 10832.00 | 8082.65 | -8082.65 | 616.21 | 0.00 | 412275.62 | 632325.71 | N 32 7 59.10 | W 104 2 21.79 |
| | 19100.00 | 90.00 | 180.00 | 10832.00 | 8182.65 | -8182.65 | 616.20 | 0.00 | 412175.63 | 632325.70 | N 32 7 58.11 | W 104 2 21.80 |
| | 19200.00 | 90.00 | 180.00 | 10832.00 | 8282.65 | -8282.65 | 616.20 | 0.00 | 412075.64 | 632325.70 | N 32 7 57.12 | W 104 2 21.80 |
| | 19300.00 | 90.00 | 180.00 | 10832.00 | 8382.65 | -8382.65 | 616.20 | 0.00 | 411975.65 | 632325.70 | N 32 7 56.13 | W 104 2 21.80 |
| | 19400.00 | 90.00 | 180.00 | 10832.00 | 8482.65 | -8482.65 | 616.20 | 0.00 | 411875.66 | 632325.70 | N 32 7 55.14 | W 104 2 21.81 |
| | 19500.00 | 90.00 | 180.00 | 10832.00 | 8582.65 | -8582.65 | 616.19 | 0.00 | 411775.66 | 632325.69 | N 32 7 54.15 | W 104 2 21.81 |
| | 19600.00 | 90.00 | 180.00 | 10832.00 | 8682.65 | -8682.65 | 616.19 | 0.00 | 411675.67 | 632325.69 | N 32 7 53.16 | W 104 2 21.81 |
| | 19700.00 | 90.00 | 180.00 | 10832.00 | 8782.65 | -8782.65 | 616.19 | 0.00 | 411575.68 | 632325.69 | N 32 7 52.17 | W 104 2 21.82 |
| | 19800.00 | 90.00 | 180.00 | 10832.00 | 8882.65 | -8882.65 | 616.19 | 0.00 | 411475.69 | 632325.69 | N 32 7 51.18 | W 104 2 21.82 |
| | 19900.00 | 90.00 | 180.00 | 10832.00 | 8982.65 | -8982.65 | 616.18 | 0.00 | 411375.70 | 632325.68 | N 32 7 50.19 | W 104 2 21.82 |
| | 20000.00 | 90.00 | 180.00 | 10832.00 | 9082.65 | -9082.65 | 616.18 | 0.00 | 411275.71 | 632325.68 | N 32 7 49.20 | W 104 2 21.82 |
| | 20100.00 | 90.00 | 180.00 | 10832.00 | 9182.65 | -9182.65 | 616.18 | 0.00 | 411175.71 | 632325.68 | N 32 7 48.21 | W 104 2 21.83 |
| | 20200.00 | 90.00 | 180.00 | 10832.00 | 9282.65 | -9282.65 | 616.18 | 0.00 | 411075.72 | 632325.68 | N 32 7 47.23 | W 104 2 21.83 |
| | 20300.00 | 90.00 | 180.00 | 10832.00 | 9382.65 | -9382.65 | 616.17 | 0.00 | 410975.73 | 632325.67 | N 32 7 46.24 | W 104 2 21.83 |
| | 20400.00 | 90.00 | 180.00 | 10832.00 | 9482.65 | -9482.65 | 616.17 | 0.00 | 410875.74 | 632325.67 | N 32 7 45.25 | W 104 2 21.84 |
| | 20500.00 | 90.00 | 180.00 | 10832.00 | 9582.65 | -9582.65 | 616.17 | 0.00 | 410775.75 | 632325.67 | N 32 7 44.26 | W 104 2 21.84 |
| | 20600.00 | 90.00 | 180.00 | 10832.00 | 9682.65 | -9682.65 | 616.17 | 0.00 | 410675.76 | 632325.67 | N 32 7 43.27 | W 104 2 21.84 |
| | 20700.00 | 90.00 | 180.00 | 10832.00 | 9782.65 | -9782.65 | 616.16 | 0.00 | 410575.76 | 632325.66 | N 32 7 42.28 | W 104 2 21.85 |
| | 20800.00 | 90.00 | 180.00 | 10832.00 | 9882.65 | -9882.65 | 616.16 | 0.00 | 410475.77 | 632325.66 | N 32 7 41.29 | W 104 2 21.85 |
| | 20900.00 | 90.00 | 180.00 | 10832.00 | 9982.65 | -9982.65 | 616.16 | 0.00 | 410375.78 | 632325.66 | N 32 7 40.30 | W 104 2 21.85 |
| | 21000.00 | 90.00 | 180.00 | 10832.00 | 10082.65 | -10082.65 | 616.16 | 0.00 | 410275.79 | 632325.66 | N 32 7 39.31 | W 104 2 21.86 |
| | 21100.00 | 90.00 | 180.00 | 10832.00 | 10182.65 | -10182.65 | 616.15 | 0.00 | 410175.80 | 632325.65 | N 32 7 38.32 | W 104 2 21.86 |
| | 21200.00 | 90.00 | 180.00 | 10832.00 | 10282.65 | -10282.65 | 616.15 | 0.00 | 410075.81 | 632325.65 | N 32 7 37.33 | W 104 2 21.86 |
| | 21300.00 | 90.00 | 180.00 | 10832.00 | 10382.65 | -10382.65 | 616.15 | 0.00 | 409975.81 | 632325.65 | N 32 7 36.34 | W 104 2 21.87 |
| | 21400.00 | 90.00 | 180.00 | 10832.00 | 10482.65 | -10482.65 | 616.15 | 0.00 | 409875.82 | 632325.65 | N 32 7 35.35 | W 104 2 21.87 |
| | 21500.00 | 90.00 | 180.00 | 10832.00 | 10582.65 | -10582.65 | 616.14 | 0.00 | 409775.83 | 632325.64 | N 32 7 34.36 | W 104 2 21.87 |
| | 21600.00 | 90.00 | 180.00 | 10832.00 | 10682.65 | -10682.65 | 616.14 | 0.00 | 409675.84 | 632325.64 | N 32 7 33.37 | W 104 2 21.88 |
| | 21700.00 | 90.00 | 180.00 | 10832.00 | 10782.65 | -10782.65 | 616.14 | 0.00 | 409575.85 | 632325.64 | N 32 7 32.38 | W 104 2 21.88 |
| | 21800.00 | 90.00 | 180.00 | 10832.00 | 10882.65 | -10882.65 | 616.14 | 0.00 | 409475.86 | 632325.64 | N 32 7 31.39 | W 104 2 21.88 |
| | 21900.00 | 90.00 | 180.00 | 10832.00 | 10982.65 | -10982.65 | 616.13 | 0.00 | 409375.86 | 632325.63 | N 32 7 30.40 | W 104 2 21.89 |
| | 22000.00 | 90.00 | 180.00 | 10832.00 | 11082.65 | -11082.65 | 616.13 | 0.00 | 409275.87 | 632325.63 | N 32 7 29.41 | W 104 2 21.89 |
| | 22100.00 | 90.00 | 180.00 | 10832.00 | 11182.65 | -11182.65 | 616.13 | 0.00 | 409175.88 | 632325.63 | N 32 7 28.42 | W 104 2 21.89 |
| | 22200.00 | 90.00 | 180.00 | 10832.00 | 11282.65 | -11282.65 | 616.13 | 0.00 | 409075.89 | 632325.63 | N 32 7 27.43 | W 104 2 21.90 |
| | 22300.00 | 90.00 | 180.00 | 10832.00 | 11382.65 | -11382.65 | 616.12 | 0.00 | 408975.90 | 632325.62 | N 32 7 26.45 | W 104 2 21.90 |
| | 22400.00 | 90.00 | 180.00 | 10832.00 | 11482.65 | -11482.65 | 616.12 | 0.00 | 408875.91 | 632325.62 | N 32 7 25.46 | W 104 2 21.90 |

| Comments | MD (ft) | Incl (°) | Azim Grid (°) | TVD (ft) | VSEC (ft) | NS (ft) | EW (ft) | DLS (°/100ft) | Northing (ftUS) | Easting (ftUS) | Latitude (N/S ° ' ") | Longitude (E/W ° ' ") |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cimarex Riverbend 12-13 Federal Com #15H PBHL [330' FSL, 2200' FEL] | 22428.48 | 90.00 | 180.00 | 10832.00 | 11511.13 | -11511.13 | 616.12 | 0.00 | 408847.43 | 632325.62 | N 32 7 25.17 | W 104 2 21.90 |

**Survey Type:** Non-Def Plan

**Survey Error Model:** ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

**Survey Program:**

| Description | Part | MD From (ft) | MD To (ft) | EOU Freq (ft) | Hole Size (in) | Casing Diameter (in) | Expected Max Inclination (deg) | Survey Tool Type | Borehole / Survey |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 0.000 | 24.000 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_PLUS_0.5_DEG-Depth Only | Original Borehole / Cimarex Riverbend 12-13 Federal Com #15H Rev1 RM 1Feb17 |
| | 1 | 24.000 | 22428.478 | 1/100.000 | 30.000 | 30.000 | | NAL_MWD_PLUS_0.5_DEG | Original Borehole / Cimarex Riverbend 12-13 Federal Com |

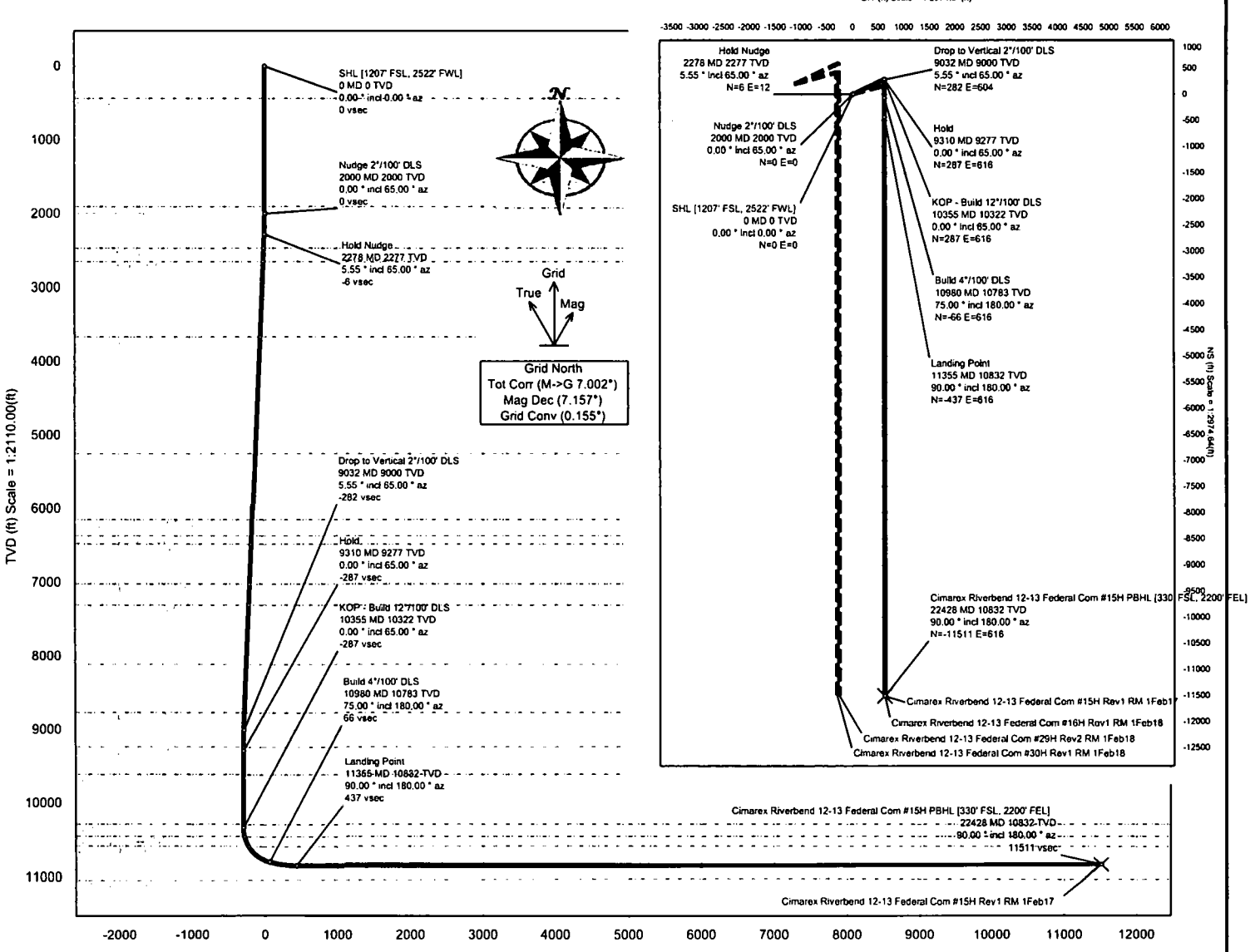
# Schlumberger

# Cimarex Rev 1

CIMAREX

| Borehole: | Well: | Field: | Structure: |
|---|---|---|---|
| Original Borehole | Cimarex Riverbend 12-13 Federal Com # 15H | NM Eddy County (NAD 83) | Cimarex Riverbend 12-13 Federal Com # 15H |

| Gravity & Magnetic Parameters | | | | Surface Location | NAD83 New Mexico State Plane, Eastern Zone, US Feet | | | | Miscellaneous | |
|---|---|---|---|---|---|---|---|---|---|---|
| Model: | HDGM 2017 | Dip: 59.93° | Date: 01-Feb-2018 | Lat: | N 32 9 19.10 | Northing: | 429357.67USft | Grid Conv: 0.1554° | Slot: | Riverbend 12-13 Federal Com # TVD Ref: RKB(2959.3ft above MSL) |
| MagDec: | 7.157° | FS: 48023.541nT | Gravity FS: 998.46mgn (9.80665 Based) | Lon: | W 104 2 28.70 | Easting: | 631709.55USft | Scale Fact: 0.99991844 | Plan: | Cimarex Riverbend 12-13 Federal Com #15H Rev1 RM 1Feb17 |




Vertical Section (ft) Azim = 180.00° Scale = 1:2110.00(ft) Origin = 0N/-S, 0E/-W

## Critical Points

| Critical Point | MD | INCL | AZIM | TVD | VSEC | N(+)/S(-) | E(+)/W(-) | DLS |
|---|---|---|---|---|---|---|---|---|
| SHL [1207' FSL, 2522' FWL] | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Rustler | 435.00 | 0.00 | 65.00 | 435.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Salado | 1903.00 | 0.00 | 65.00 | 1903.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Nudge 2°/100' DLS | 2000.00 | 0.00 | 65.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Hold Nudge | 2277.50 | 5.55 | 65.00 | 2277.07 | -5.68 | 5.68 | 12.17 | 2.00 |
| Castile | 2466.32 | 5.55 | 65.00 | 2465.00 | -13.39 | 13.39 | 28.72 | 0.00 |
| Bell Canyon | 2652.19 | 5.55 | 65.00 | 2650.00 | -20.99 | 20.99 | 45.01 | 0.00 |
| Cherry Canyon | 3671.97 | 5.55 | 65.00 | 3665.00 | -62.67 | 62.67 | 134.40 | 0.00 |
| Brushy Canyon | 5263.43 | 5.55 | 65.00 | 5249.00 | -127.72 | 127.72 | 273.90 | 0.00 |
| Brushy Canyon Lower | 6163.65 | 5.55 | 65.00 | 6145.00 | -164.52 | 164.52 | 352.80 | 0.00 |
| Bone Spring | 6386.70 | 5.55 | 65.00 | 6367.00 | -173.63 | 173.63 | 372.35 | 0.00 |
| Bone Spring "A" Shale | 6497.22 | 5.55 | 65.00 | 6477.00 | -178.15 | 178.15 | 382.04 | 0.00 |
| Bone Spring "C" Shale | 7041.77 | 5.55 | 65.00 | 7019.00 | -200.41 | 200.41 | 429.77 | 0.00 |
| 1st Bone Spring Ss | 7328.11 | 5.55 | 65.00 | 7304.00 | -212.11 | 212.11 | 454.87 | 0.00 |
| 2nd Bone Spring Ss | 8136.90 | 5.55 | 65.00 | 8109.00 | -245.17 | 245.17 | 525.77 | 0.00 |
| 2nd BS Ss Lower | 8795.99 | 5.55 | 65.00 | 8765.00 | -272.11 | 272.11 | 583.54 | 0.00 |
| Drop to Vertical 2°/100' DLS | 9032.10 | 5.55 | 65.00 | 9000.00 | -281.76 | 281.76 | 604.23 | 0.00 |
| 3rd Bone Spring Ss | 9263.53 | 0.92 | 65.00 | 9231.00 | -287.28 | 287.28 | 616.07 | 2.00 |
| Hold | 9309.60 | 0.00 | 65.00 | 9277.07 | -287.43 | 287.43 | 616.40 | 2.00 |
| Wolfcamp | 9637.53 | 0.00 | 65.00 | 9605.00 | -287.43 | 287.43 | 616.40 | 0.00 |
| Wolfcamp B | 10315.53 | 0.00 | 65.00 | 10283.00 | -287.43 | 287.43 | 616.40 | 0.00 |
| KOP - Build 12°/100' DLS | 10354.53 | 0.00 | 65.00 | 10322.00 | -287.43 | 287.43 | 616.40 | 0.00 |
| Wolfcamp C | 10479.97 | 15.05 | 180.00 | 10446.00 | -271.05 | 271.05 | 616.40 | 12.00 |
| Wolfcamp D | 10622.38 | 32.14 | 180.00 | 10576.00 | -214.27 | 214.27 | 616.40 | 12.00 |
| Build 4°/100' DLS | 10979.53 | 75.00 | 180.00 | 10783.20 | 66.45 | -66.45 | 616.40 | 12.00 |
| Landing Point | 11354.53 | 90.00 | 180.00 | 10832.00 | 437.19 | -437.19 | 616.40 | 4.00 |
| Cimarex Riverbend 12-13 Federal Com #15H PBHL [330' FSL, 2200' FEL] | 22428.48 | 90.00 | 180.00 | 10832.00 | 11511.13 | -11511.13 | 616.12 | 0.00 |
| Wolfcamp E | NaN | | | 11037.00 | | | | |

Schlumberger

CIMAREX

# Cimarex Riverbend 12-13 Federal Com #15H Rev1 RM 1Feb17 Anti-Collision Summary Report

| | | | |
|---|---|---|---|
| **Analysis Date-24hr Time:** | February 01, 2018 - 13:57 | **Analysis Method:** | 3D Least Distance |
| **Client:** | Cimarex | **Reference Trajectory:** | Cimarex Riverbend 12-13 Federal Com #15H Rev1 RM 1Feb17 (Non-Def Plan) |
| **Field:** | NM Eddy County (NAD 83) | **Depth Interval:** | Every 10.00 Measured Depth (ft) |
| **Structure:** | Cimarex Riverbend 12-13 Federal Com #15H | **Rule Set:** | NAL Procedure: D&M AntiCollision Standard S002 |
| **Slot:** | Cimarex Riverbend 12-13 Federal Com #15H | **Min Pts:** | All local minima indicated. |
| **Well:** | Cimarex Riverbend 12-13 Federal Com #15H | **Version / Patch:** | 2.10.696.0 |
| **Borehole:** | Original Borehole | **Database \ Project:** | US1153APP452.dir.slb.com\drilling-NM Eddy County 2.10 |
| **Scan MD Range:** | 0.00ft ~ 22428.48ft | | |

**Trajectory Error Model:** ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

**Offset Trajectories Summary**

**Offset Selection Criteria**

Wellhead distance scan: Not performed!

Selection filters: Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans
- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| Results highlighted: Sep-Factor separation <= 1.50 ft | | | | | | | | | | | | | |
| Cimarex Riverbend 12-13 Federal Com #16H Rev1 RM 1Feb18 (Non-Def Plan) | | | | | | | | | | | | | Fail Minor |
| | 20.02 | 16.51 | 17.52 | 3.50 | N/A | MAS = 5.03 (m) | 0.00 | 0.00 | CtCt<=15m<15.00 | | | Enter Alert | |
| | 20.02 | 16.51 | 17.52 | 3.50 | N/A | MAS = 5.03 (m) | 24.00 | 24.00 | | | | WRP | |
| | 20.02 | 20.11 | 5.78 | -0.09 | 1.49 | OSF1.50 | 1930.00 | 1930.00 | | OSF<1.50 | | Enter Minor | |
| | 20.02 | 20.77 | 5.34 | -0.75 | 1.44 | OSF1.50 | 2000.00 | 2000.00 | | | | MinPt-CtCt | |
| | 20.08 | 20.93 | 5.29 | -0.85 | 1.43 | OSF1.50 | 2020.00 | 2020.00 | | | | MinPts | |
| | 20.16 | 21.01 | 5.32 | -0.85 | 1.43 | OSF1.50 | 2030.00 | 2030.00 | | | | MinPt-O-ADP | |
| | 21.29 | 21.50 | 6.13 | -0.20 | 1.48 | OSF1.50 | 2090.00 | 2089.99 | | OSF>1.50 | | Exit Minor | |
| | 52.21 | 39.15 | 25.28 | 13.06 | 2.03 | OSF1.50 | 4600.00 | 4588.68 | | | | MinPt-CtCt | |
| | 54.72 | 46.25 | 23.05 | 8.47 | 1.79 | OSF1.50 | 5310.00 | 5295.35 | | | | MINPT-O-EOU | |
| | 58.67 | 50.95 | 23.86 | 7.71 | 1.74 | OSF1.50 | 5760.00 | 5743.24 | | | | MinPt-O-ADP | |
| | 61.38 | 53.47 | 24.90 | 7.91 | 1.73 | OSF1.50 | 6000.00 | 5982.12 | | | | MinPt-O-SF | |
| | 105.98 | 80.03 | 51.79 | 25.95 | 2.00 | OSF1.50 | 8760.00 | 8729.18 | | | | MinPt-O-SF | |
| | 218.43 | 69.01 | 171.59 | 149.42 | 4.87 | OSF1.50 | 9610.00 | 9577.47 | OSF>5.00 | | | Exit Alert | |
| | 1107.00 | 333.88 | 883.58 | 773.12 | 5.00 | OSF1.50 | 21420.00 | 10832.00 | OSF<5.00 | | | Enter Alert | |
| | 1107.00 | 364.83 | 862.95 | 742.17 | 4.57 | OSF1.50 | 22428.48 | 10832.00 | | | | MinPts | |
| Cimarex Riverbend 12-13 Federal Com #29H Rev2 RM 1Feb18 (Non-Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 1140.60 | 32.81 | 1138.10 | 1107.79 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 1140.60 | 32.81 | 1138.10 | 1107.79 | 269597.48 | MAS = 10.00 (m) | 24.00 | 24.00 | | | | WRP | |
| | 937.14 | 87.24 | 878.04 | 849.90 | 16.60 | OSF1.50 | 9840.00 | 9807.47 | | | | MinPt-O-SF | |
| | 936.87 | 89.59 | 876.20 | 847.28 | 16.15 | OSF1.50 | 10354.53 | 10322.00 | | | | MinPt-O-SF | |
| | 895.19 | 82.58 | 839.17 | 812.61 | 16.80 | OSF1.50 | 10760.00 | 10680.46 | | | | MinPt-O-SF | |

| Offset Trajectory | Separation | | | Allow | Sep. | Controlling | Reference Trajectory | | Risk Level | | | Alert | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ct-Ct (ft) | MAS (ft) | EOU (ft) | Dev. (ft) | Fact. | Rule | MD (ft) | TVD (ft) | Alert | Minor | Major | | |
| | 891.96 | 82.33 | 836.11 | 809.63 | 16.79 | OSF1.50 | 10820.00 | 10717.16 | | | | MinPt-O-SF | |
| | 889.04 | 81.99 | 833.41 | 807.06 | 16.81 | OSF1.50 | 10920.00 | 10764.25 | | | | MinPt-O-SF | |
| | 887.34 | 83.02 | 831.02 | 804.32 | 16.56 | OSF1.50 | 11220.00 | 10825.69 | | | | MinPt-CtCt | |
| | 887.27 | 268.34 | 707.40 | 618.93 | 5.00 | OSF1.50 | 15340.00 | 10832.00 | OSF<5.00 | | | Enter Alert | |
| | 887.10 | 669.03 | 440.11 | 218.07 | 1.99 | OSF1.50 | 22410.00 | 10832.00 | | | | MinPt-CtCt | |
| | 887.10 | 669.43 | 439.84 | 217.67 | 1.99 | OSF1.50 | 22420.00 | 10832.00 | | | | MinPts | |
| | 887.16 | 669.16 | 440.08 | 218.00 | 1.99 | OSF1.50 | 22428.48 | 10832.00 | | | | TD | |
| Cimarex Riverbend 12-13 Federal Com #30H Rev1 RM 1Feb18 (Non-Def Plan) | | | | | | | | | | | | | Warning Alert |
| | 1160.40 | 32.81 | 1157.90 | 1127.59 | N/A | MAS = 10.00 (m) | 0.00 | 0.00 | | | | Surface | |
| | 1160.40 | 32.81 | 1157.89 | 1127.59 | 226584.72 | MAS = 10.00 (m) | 24.00 | 24.00 | | | | WRP | |
| | 1160.40 | 32.81 | 1145.71 | 1127.59 | 95.02 | MAS = 10.00 (m) | 2000.00 | 2000.00 | | | | MinPts | |
| | 1160.45 | 32.81 | 1145.66 | 1127.64 | 94.19 | MAS = 10.00 (m) | 2020.00 | 2020.00 | | | | MINPT-O-EOU | |
| | 921.62 | 78.12 | 868.57 | 843.50 | 18.32 | OSF1.50 | 8800.00 | 8768.99 | | | | MinPts | |
| | 921.64 | 78.15 | 868.58 | 843.49 | 18.31 | OSF1.50 | 8810.00 | 8778.94 | | | | MinPt-O-ADP | |
| | 922.95 | 78.34 | 869.76 | 844.61 | 18.29 | OSF1.50 | 8900.00 | 8868.52 | | | | MinPt-O-SF | |
| | 930.35 | 76.04 | 878.71 | 854.31 | 19.01 | OSF1.50 | 9550.00 | 9517.47 | | | | MinPt-O-ADP | |
| | 930.32 | 76.00 | 878.70 | 854.32 | 19.02 | OSF1.50 | 9560.00 | 9527.47 | | | | MinPts | |
| | 1450.91 | 437.15 | 1158.65 | 1013.77 | 5.00 | OSF1.50 | 20960.00 | 10832.00 | OSF<5.00 | | | Enter Alert | |
| | 1450.81 | 500.41 | 1116.37 | 950.40 | 4.36 | OSF1.50 | 22410.00 | 10832.00 | | | | MinPt-CtCt | |
| | 1450.81 | 500.73 | 1116.16 | 950.08 | 4.36 | OSF1.50 | 22420.00 | 10832.00 | | | | MinPts | |
| | 1450.85 | 500.70 | 1116.21 | 950.15 | 4.36 | OSF1.50 | 22428.48 | 10832.00 | | | | TD | |

## 1. Geological Formations

TVD of target 10,832
MD at TD 22,428

Pilot Hole TD N/A
Deepest expected fresh water

| Formation | Depth (TVD) from KB | Water/Mineral Bearing/Target Zone | Hazards |
|---|---|---|---|
| Rustler | 435 | N/A | |
| Salado | 1903 | N/A | |
| Castille | 2465 | N/A | |
| Bell Canyon | 2650 | Hydrocarbons | |
| Cherry Canyon | 3665 | Hydrocarbons | |
| Brushy Canyon | 5249 | Hydrocarbons | |
| Bone Spring | 6367 | Hydrocarbons | |
| Bone Spring A Shale | 6477 | Hydrocarbons | |
| Bone Spring C Shale | 7019 | Hydrocarbons | |
| 1st Bone spring | 7304 | Hydrocarbons | |
| 2nd Bone Spring | 8765 | Hydrocarbons | |
| 3rd Bone Spring | 9231 | Hydrocarbons | |
| Wolfcamp | 9605 | Hydrocarbons | |

## 2. Casing Program

| Hole Size | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension |
|---|---|---|---|---|---|---|---|---|---|
| 17 1/2 | 0 | 475 | 13-3/8" | 48.00 | H-40/J-55 Hybrid | ST&C | 3.40 | 7.96 | 14.12 |
| 12 1/4 | 0 | 2630 | 9-5/8" | 36.00 | J-55 | LT&C | 1.45 | 2.52 | 4.78 |
| 8 3/4 | 0 | 10355 | 7" | 29.00 | L-80 | LT&C | 1.45 | 1.68 | 1.87 |
| 8 3/4 | 10355 | 11355 | 7" | 29.00 | L-80 | BT&C | 1.38 | 1.61 | 48.87 |
| 6 | 10355 | 22428 | 4-1/2" | 11.60 | HCP-110 | BT&C | 1.21 | 1.46 | 66.33 |
| | | | | BLM Minimum Safety Factor | | | 1.125 | 1 | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

| | Y or N |
|---|---|
| Is casing new? If used, attach certification as required in Onshore Order #1 | Y |
| Does casing meet API specifications? If no, attach casing specification sheet. | Y |
| Is premium or uncommon casing planned? If yes attach casing specification sheet. | N |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing? | N |
| Is well located within Capitan Reef? | N |
| If yes, does production casing cement tie back a minimum of 50' above the Reef? | N |
| Is well within the designated 4 string boundary. | N |
| Is well located in SOPA but not in R-111-P? | N |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing? | N |
| Is well located in R-111-P and SOPA? | N |
| If yes, are the first three strings cemented to surface? | N |
| Is 2nd string set 100' to 600' below the base of salt? | N |
| Is well located in high Cave/Karst? | N |
| If yes, are there two strings cemented to surface? | N |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs? | N |
| Is well located in critical Cave/Karst? | N |
| If yes, are there three strings cemented to surface? | N |

### 3. Cementing Program

| Casing | # Sks | Wt. lb/gal | Yld ft3/sack | H2O gal/sk | 500# Comp. Strength (hours) | Slurry Description |
|---|---|---|---|---|---|---|
| **Surface** | 106 | 13.50 | 1.72 | 9.15 | 15.5 | Lead: Class C + Bentonite |
| | 195 | 14.80 | 1.34 | 6.32 | 9.5 | Tail: Class C + LCM |
| | | | | | | |
| **Intermediate** | 503 | 12.90 | 1.88 | 9.65 | 12 | Lead: 35:65 (Poz:C) + Salt + Bentonite |
| | 153 | 14.80 | 1.34 | 6.32 | 9.5 | Tail: Class C + LCM |
| | | | | | | |
| **Production** | 408 | 10.30 | 3.64 | 22.18 | | Lead: Tuned Light + LCM |
| | 128 | 14.20 | 1.30 | 5.86 | 14:30 | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS |
| | | | | | | |
| **Completion System** | 805 | 14.20 | 1.30 | 5.86 | 14:30 | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS |
| | | | | | | |

| Casing String | TOC | % Excess |
|---|---|---|
| Surface | 0 | 34 |
| Intermediate | 0 | 45 |
| Production | 2430 | 23 |
| Completion System | 11355 | 10 |

## 4. Pressure Control Equipment

| | |
|---|---|
| | A variance is requested for the use of a diverter on the surface casing. See attached for schematic. |

| BOP installed and tested before drilling which hole? | Size | Min Required WP | Type | | Tested To |
|---|---|---|---|---|---|
| 12 1/4 | 13 5/8 | 2M | Annular | X | 50% of working pressure |
| | | | Blind Ram | | 2M |
| | | | Pipe Ram | | |
| | | | Double Ram | X | |
| | | | Other | | |
| 8 3/4 | 13 5/8 | 5M | Annular | X | 50% of working pressure |
| | | | Blind Ram | | 5M |
| | | | Pipe Ram | X | |
| | | | Double Ram | X | |
| | | | Other | | |
| 6 | 13 5/8 | 5M | Annular | X | 50% of working pressure |
| | | | Blind Ram | | 5M |
| | | | Pipe Ram | X | |
| | | | Double Ram | X | |
| | | | Other | | |

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

| | | |
|---|---|---|
| X | Formation integrity test will be performed per Onshore Order #2.<br>On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. | |
| X | A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart. | |
| | N | Are anchors required by manufacturer? |

## 5. Mud Program

| Depth | Type | Weight (ppg) | Viscosity | Water Loss |
|---|---|---|---|---|
| 0' to 475' | FW Spud Mud | 8.30 - 8.80 | 30-32 | N/C |
| 475' to 2630' | Brine Water | 9.70 - 10.20 | 30-32 | N/C |
| 2630' to 11355' | FW/Cut Brine | 8.50 - 9.00 | 30-32 | N/C |
| 11355' to 22428' | Oil Based Mud | 12.50 - 13.00 | 50-70 | N/C |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

| | |
|---|---|
| What will be used to monitor the loss or gain of fluid? | PVT/Pason/Visual Monitoring |

## 6. Logging and Testing Procedures

| Logging, Coring and Testing | |
|---|---|
| X | Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
| | No logs are planned based on well control or offset log information. |
| | Drill stem test? |
| | Coring? |

| Additional Logs Planned | Interval |
|---|---|

## 7. Drilling Conditions

| Condition | |
|---|---|
| BH Pressure at deepest TVD | 7322 psi |
| Abnormal Temperature | No |

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

| | |
|---|---|
| X | H2S is present |
| X | H2S plan is attached |

## 8. Other Facets of Operation

## 9. Wellhead

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

The casing string utilizing steel body pack-off will be tested to 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

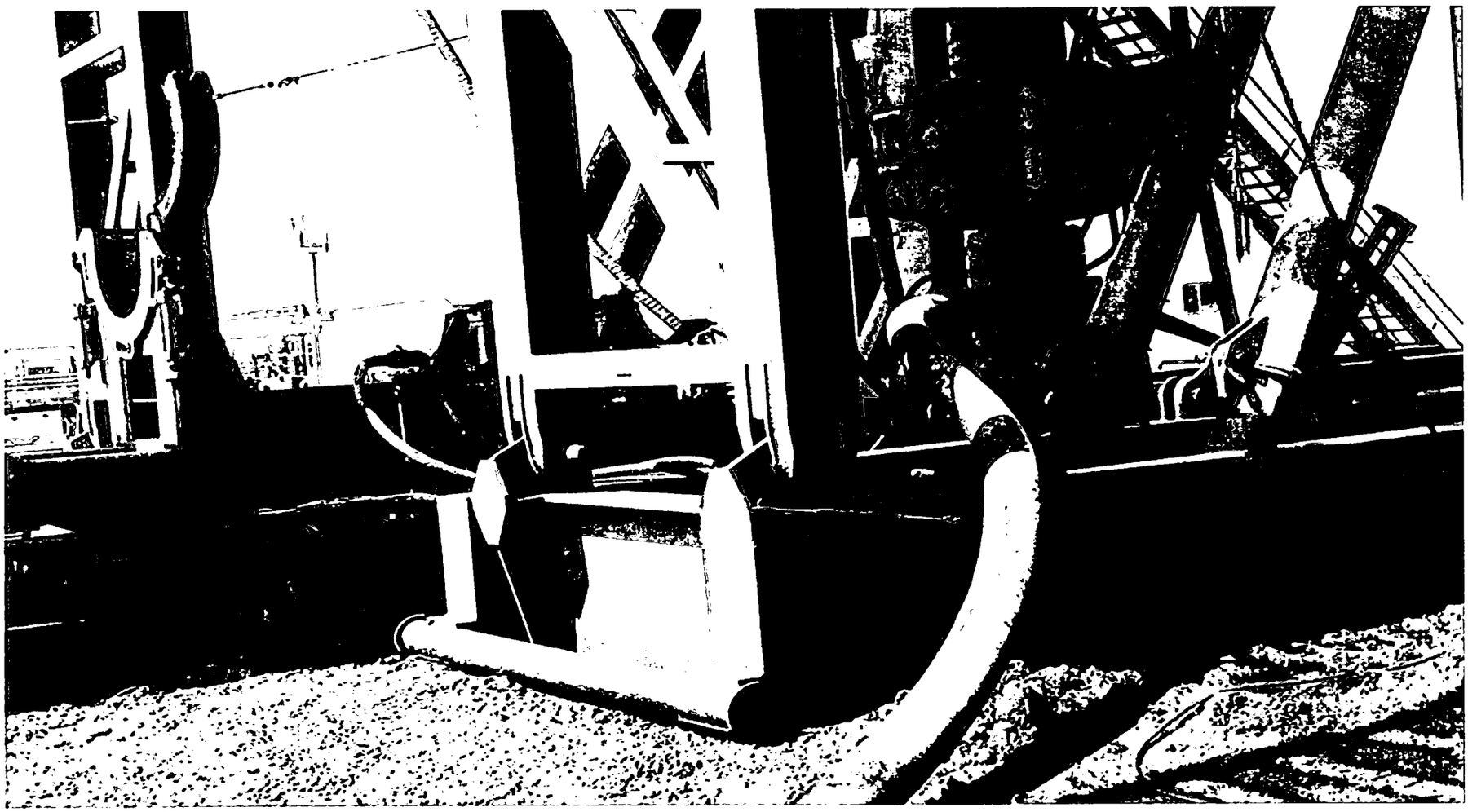
Co-Flex Hose

**Riverbend 12-13 Federal Com 15H**

Cimarex Energy Co.

1-25S-28E

Eddy, NM



Co-Flex Hose Hydrostatic Test
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Midwest Hose
& Specialty, Inc.

# INTERNAL HYDROSTATIC TEST REPORT

| Customer: | P.O. Number: |
|---|---|
| Oderco Inc | odyd-271 |

## HOSE SPECIFICATIONS

| Type: Stainless Steel Armor Choke & Kill Hose | Hose Length: 45'ft. |
|---|---|
| I.D. 4 *INCHES* | O.D. 9 *INCHES* |

| WORKING PRESSURE | TEST PRESSURE | BURST PRESSURE |
|---|---|---|
| 10,000 *PSI* | 15,000 *PSI* | 0 *PSI* |

## COUPLINGS

| Stem Part No. | Ferrule No. |
|---|---|
| OKC<br>OKC | OKC<br>OKC |
| Type of Coupling: Swage-It | |

## PROCEDURE

*Hose assembly pressure tested with water at ambient temperature.*

| TIME HELD AT TEST PRESSURE | ACTUAL BURST PRESSURE: |
|---|---|
| 15 *MIN.* | 0 *PSI* |

| Hose Assembly Serial Number: | Hose Serial Number: |
|---|---|
| 79793 | OKC |

Comments:

| Date: | Tested: | Approved: |
|---|---|---|
| 3/8/2011 | | |

Midwest Hose & Specialty, Inc.

# Internal Hydrostatic Test Graph

March 3, 2011

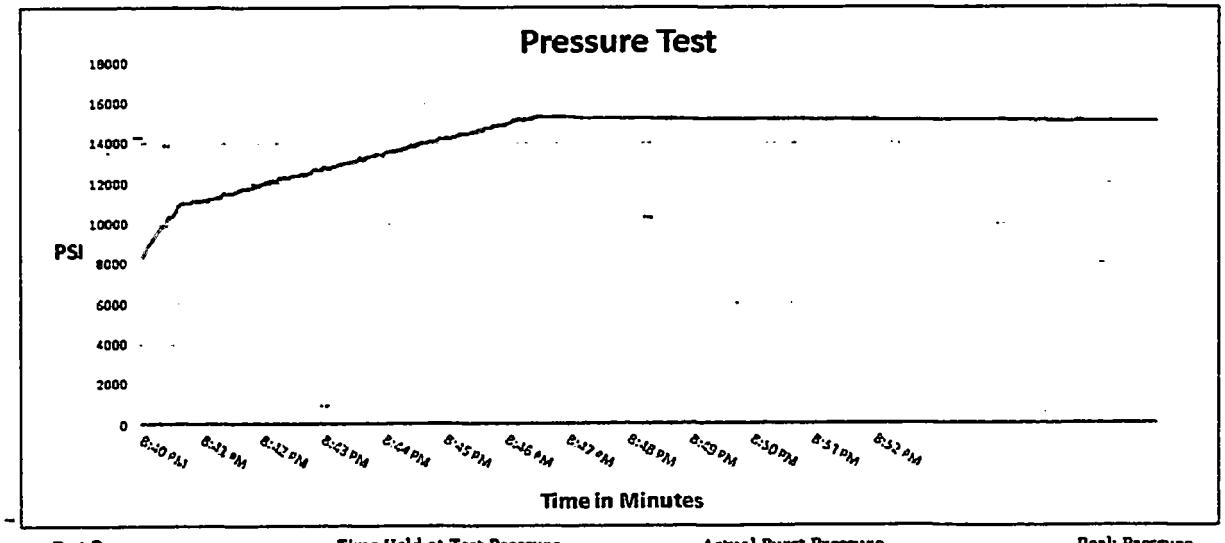
**Customer:** Houston

**Pick Ticket #:** 94260

## Hose Specifications

| Hose Type | Length | Type of Fitting | Coupling Method |
|---|---|---|---|
| C & K | 45' | 4 1/16 10K | Swage |
| **I.D.** | **O.D.** | **Die Size** | **Final O.D.** |
| 4" | 6.09" | 6.38" | 6.25" |
| **Working Pressure** | **Burst Pressure** | **Hose Serial #** | **Hose Assembly Serial #** |
| 10000 PSI | Standard Safety Multiplier Applies | 5544 | 79793 |

## Verification




| Test Pressure | Time Held at Test Pressure | Actual Burst Pressure | Peak Pressure |
|---|---|---|---|
| 15000 PSI | 11 Minutes | | 15483 PSI |

**Comments:** Hose assembly pressure tested with water at ambient temperature.

**Tested By:** *Zac Mcconnell*

**Approved By:** *Kim Thomas*

Co-Flex Hose Hydrostatic Test
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Co-Flex Hose
**Riverbend 12-13 Federal Com 15H**
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Midwest Hose
& Specialty, Inc.

## Certificate of Conformity

| Customer: | PO |
|---|---|
| DEM | ODYD-271 |

**SPECIFICATIONS**

| Sales Order | Dated: |
|---|---|
| 79793 | 3/8/2011 |

We hereby cerify that the material supplied for the referenced purchase order to be true according to the requirements of the purchase order and current industry standards

Supplier:
Midwest Hose & Specialty, Inc.
10640 Tanner Road
Houston, Texas 77041

**Comments:**

| Approved: | Date: |
|---|---|
| Jamal Garcia. | 3/8/2011. |

**APD ID:** 10400020175 **Submission Date:** 09/06/2017

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Well Type:** CONVENTIONAL GAS WELL **Well Work Type:** Drill

Show Final Text

## Section 1 - Existing Roads

**Will existing roads be used?** NO

## Section 2 - New or Reconstructed Access Roads

**Will new roads be needed?** YES

**New Road Map:**

Riverbend_12_13_Fed_Com_CTB_Road_ROW_20180223082900.pdf

**New road type:** COLLECTOR

**Length:** 3185 Feet **Width (ft.):** 30

**Max slope (%):** 2 **Max grade (%):** 6

**Army Corp of Engineers (ACOE) permit required?** NO

**ACOE Permit Number(s):**

**New road travel width:** 18

**New road access erosion control:** The side slopes of any drainage channels or swales that are crossed will be re-contoured to original grade and compacted and mulched as necessary to avoid erosion. Where steeper slopes cannot be avoided, water bars or silt fence will be constructed, mulch/rip-rap applied, or other measures employed as necessary to control erosion. Hay bales, straw waddles or silt fence may also be installed to control erosion as needed. All disturbed areas will be seeded with a mix appropriate for the area unless specified otherwise by the landowner.

**New road access plan or profile prepared?** NO

**New road access plan attachment:**

**Access road engineering design?** NO

**Access road engineering design attachment:**

**Access surfacing type:** GRAVEL

**Access topsoil source:** ONSITE

**Access surfacing type description:**

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** Push off and stockpile alongside the location.

**Access other construction information:** The operator will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations or other events.
**Access miscellaneous information:**

**Number of access turnouts:** **Access turnout map:**

## Drainage Control

**New road drainage crossing:** CULVERT,LOW WATER

**Drainage Control comments:** To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.
**Road Drainage Control Structures (DCS) description:** n/a

**Road Drainage Control Structures (DCS) attachment:**

## Access Additional Attachments

**Additional Attachment(s):**

## Section 3 - Location of Existing Wells

**Existing Wells Map?** YES

**Attach Well map:**

Riverbend_12_13_Fed_Com_W2E2_One_Mile_Radius_and_Existing_wells_20180223083032.pdf

**Existing Wells description:**

## Section 4 - Location of Existing and/or Proposed Production Facilities

**Submit or defer a Proposed Production Facilities plan?** SUBMIT

**Production Facilities description:**

**Production Facilities map:**

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

Riverbend_12_13_Fed_Com_CTB_Layout_20180223083046.pdf

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source use type:** INTERMEDIATE/PRODUCTION CASING, SURFACE CASING

**Water source type:** MUNICIPAL

**Describe type:**

**Source latitude:**

**Source longitude:**

**Source datum:**

**Water source permit type:** WATER RIGHT

**Permit Number:**

**Source land ownership:** FEDERAL

**Water source transport method:** PIPELINE,TRUCKING

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 5000

**Source volume (acre-feet):** 0.6444655

**Source volume (gal):** 210000

**Water source and transportation map:**

Riverbend_12_13_Fed_Com_W2E2_Drilling_Water_Source_Route_20180223083102.pdf

**Water source comments:**

**New water well?** NO

### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

**Est. depth to top of aquifer(ft):**

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

**Well casing outside diameter (in.):**

**Well casing inside diameter (in.):**

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

**Casing top depth (ft.):**

**Well Production type:**

**Completion Method:**

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

**Water well additional information:**

**State appropriation permit:**

**Additional information attachment:**

## Section 6 - Construction Materials

**Construction Materials description:** The drilling and testing operations will be conducted on a watered and compacted native soil grade. Soft spots will be covered with scoria, free of large rocks (3" diameter). Upon completion as a commercial producer the location will be covered with scoria, free of large rocks (3" dia.) from an existing privately owned gravel pit.
**Construction Materials source location attachment:**

## Section 7 - Methods for Handling Waste

**Waste type:** DRILLING

**Waste content description:** Drilling Fluids, drill cuttings, water and other waste produced from the well during drilling operations.
**Amount of waste:** 15000 barrels

**Waste disposal frequency :** Weekly

**Safe containment description:** N/A

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
**Disposal type description:**

**Disposal location description:** Haul to R360 commercial disposal.

**Waste type:** GARBAGE

**Waste content description:** Garbage and trash produced during drilling and completion operations

**Amount of waste:** 32500 pounds

**Waste disposal frequency :** Weekly

**Safe containment description:** n/a

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** COMMERCIAL
**Disposal type description:**

**Disposal location description:** Windmill Spraying Service hauls trash to Lea County Landfill

## Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)** **Reserve pit width (ft.)**

**Reserve pit depth (ft.)** **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

## Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** NO

**Description of cuttings location**

**Cuttings area length (ft.)** **Cuttings area width (ft.)**

**Cuttings area depth (ft.)** **Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Riverbend_12_13_Fed_Com_15H_Well_Location_20180223083150.pdf

**Comments:**

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 12-13 FEDERAL COM **Well Number:** 15H

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** New Surface Disturbance **Multiple Well Pad Name:** RIVERBEND 12-13 FEDERAL

**Multiple Well Pad Number:** W2E2

**Recontouring attachment:**

Riverbend_12_13_Fed_Com_W2E2_Interim_Reclaim_20180223083206.pdf

**Drainage/Erosion control construction:** To control and prevent potentially contaminated precipitation from leaving the pad site, a perimeter berm and settlement pond will be installed. Contaminated water will be removed from pond, stored in waste tanks, and disposed of at a state approved facility. Standing water or puddles will not be allowed. Drainage ditches would be established and maintained on the pad and along access roads to divert water away from operations. Natural drainage areas disturbed during construction would be re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured to near original condition prior to construction. Erosion Control Best Management Practices would be used where necessary and consist of seeding, fiber rolls, water bars, silt fences, and temporary diversion dikes. Areas disturbed during construction that are no longer needed for operations would be obliterated, re-contoured, and reclaimed to near original condition to re-establish natural drainage.

**Drainage/Erosion control reclamation:** All disturbed and re-contoured areas would be reseeded according to specifications. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

**Wellpad long term disturbance (acres):** 3.439

**Wellpad short term disturbance (acres):** 3.356

**Access road long term disturbance (acres):** 2.193

**Access road short term disturbance (acres):** 0

**Pipeline long term disturbance (acres):** 5.8932505

**Pipeline short term disturbance (acres):** 0

**Other long term disturbance (acres):** 5.25

**Other short term disturbance (acres):** 0

**Total long term disturbance:** 16.775251

**Total short term disturbance:** 3.356

**Disturbance Comments:** Battery pad 5.25 Acres Temp water line 4.33 acres ( 18733 ' X 10') Power 19052 ' Sales 8557' Flow & Gas lift 1947'

**Reconstruction method:** After well plugging, all disturbed areas would be returned to the original contour or a contour that blends with the surrounding landform including roads unless the surface owner requests that they be left intact. In consultation with the surface owners it will be determined if any gravel or similar materials used to reinforce an area are to be removed, buried, or left in place during final reclamation. Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated. As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching, or fertilizing. Reclamation, Re-vegetation, and Drainage: All disturbed and recontoured areas would be reseeded using techniques outlined under Phase I and II of this plan or as specified by the land owner. Approved seed mixtures would be certified weed free and consist of grasses, forbs, or shrubs similar to the surrounding area. Compacted soil areas may need to be obliterated and reclaimed to near natural conditions by re-contouring all slopes to facilitate and re-establish natural drainage.

**Topsoil redistribution:** Salvaged topsoil, if any, would be re-spread evenly over the surfaces to be re-vegetated.

**Soil treatment:** As necessary, the soil surface would be prepared to provide a seedbed for re-establishment of desirable vegetation. Site preparation may include gouging, scarifying, dozer track-walking, mulching or fertilizing.

**Existing Vegetation at the well pad:**

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:**

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:**

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:**

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

## Seed Management

### Seed Table

**Seed type:** **Seed source:**

**Seed name:**

**Source name:** **Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:** **Proposed seeding season:**

### Seed Summary

**Total pounds/Acre:**

| Seed Type | Pounds/Acre |
|---|---|

**Seed reclamation attachment:**

## Operator Contact/Responsible Official Contact Info

**First Name:** **Last Name:**

**Phone:** **Email:**

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** n/a

**Weed treatment plan attachment:**

**Monitoring plan description:** n/a

**Monitoring plan attachment:**

**Success standards:** n/a

**Pit closure description:** n/a

**Pit closure attachment:**

## Section 11 - Surface Ownership

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:** **USFS Ranger District:**

## Section 12 - Other Information

**Right of Way needed?** YES **Use APD as ROW?** YES

**ROW Type(s):** 281001 ROW - ROADS,288100 ROW – O&G Pipeline,288101 ROW – O&G Facility Sites,289001 ROW-O&G Well Pad,FLPMA (Powerline)

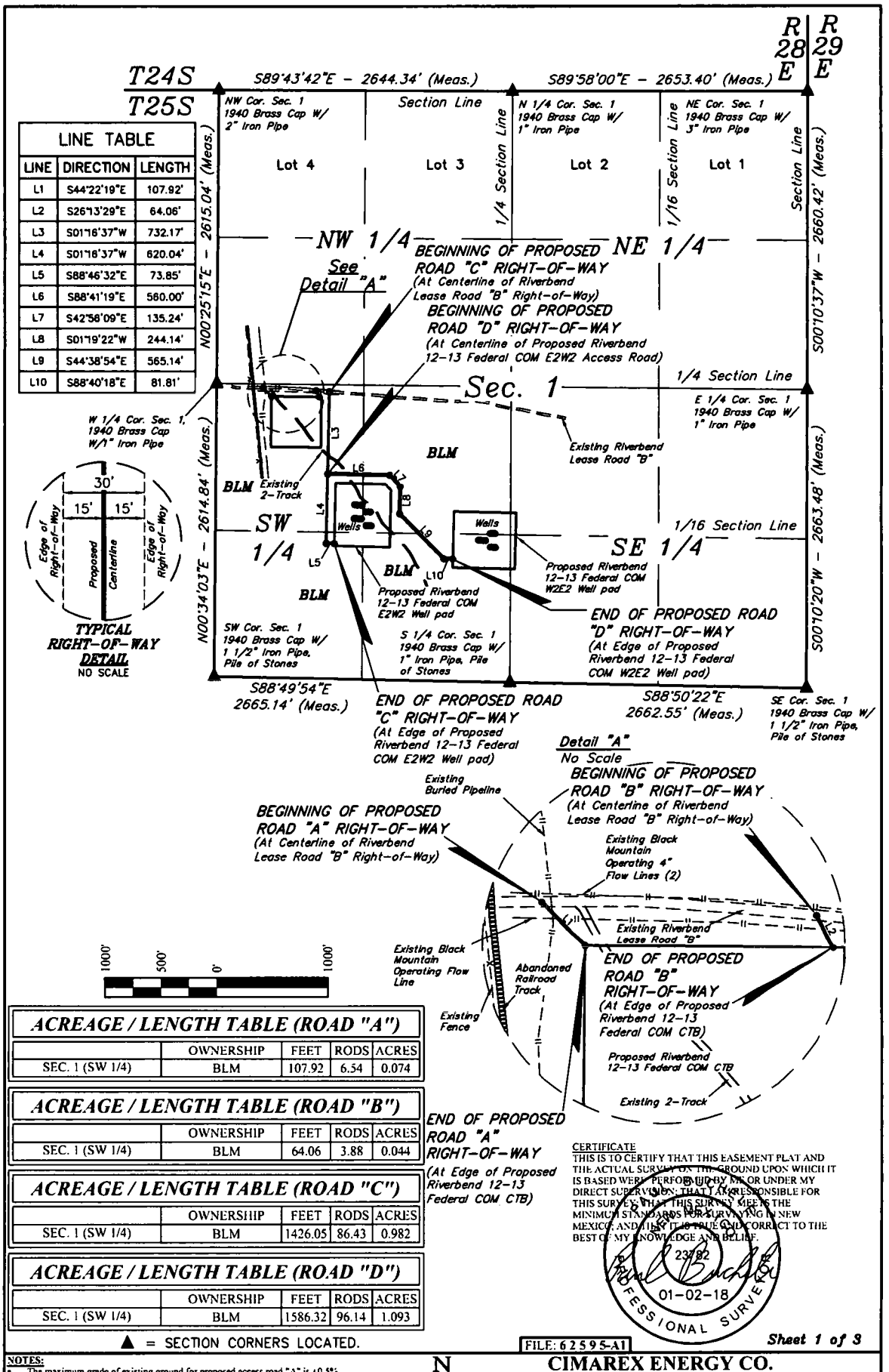
### ROW Applications

**SUPO Additional Information:** The proposed routes for Road, Sales, Power, Gas Lift & flow line are the same for the Riverbend 12-13 # 15H & 16H APD applications.
**Use a previously conducted onsite?** YES

**Previous Onsite information:** Onsite with BLM (Jeff Robertson & Jim Goodbar) and Cimarex (Barry Hunt) on 12/05/17.

### Other SUPO Attachment

Riverbend_12_13_Fed_Com_CTB_Gas_Sales_ROW_20180223084325.pdf
Riverbend_12_13_Fed_Com_CTB_Power_ROW_20180223084327.pdf
Riverbend_12_13_Fed_Com_W2E2_Flow_line__Gas_lift_ROW_20180223084328.pdf
Riverbend_12_13_Fed_Com_W2E2_Public_Access_20180223084330.pdf
Riverbend_12_13_Fed_Com_W2E2_Road_Description_20180223084331.pdf
Riverbend_12_13_Fed_Com_W2E2_Temp_Fresh_Water_Route_20180223084332.pdf
Riverbend_12_13_Fed_Com_15H_SUPO_20180314131915.pdf




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | S44°22'19"E | 107.92' |
| L2 | S26°13'29"E | 64.06' |
| L3 | S01°16'37"W | 732.17' |
| L4 | S01°16'37"W | 620.04' |
| L5 | S88°46'32"E | 73.85' |
| L6 | S88°41'19"E | 560.00' |
| L7 | S42°58'09"E | 135.24' |
| L8 | S01°19'22"W | 244.14' |
| L9 | S44°38'54"E | 565.14' |
| L10 | S88°40'18"E | 81.81' |

## ACREAGE / LENGTH TABLE (ROAD "A")

| | OWNERSHIP | FEET | RODS | ACRES |
|---|---|---|---|---|
| SEC. 1 (SW 1/4) | BLM | 107.92 | 6.54 | 0.074 |

## ACREAGE / LENGTH TABLE (ROAD "B")

| | OWNERSHIP | FEET | RODS | ACRES |
|---|---|---|---|---|
| SEC. 1 (SW 1/4) | BLM | 64.06 | 3.88 | 0.044 |

## ACREAGE / LENGTH TABLE (ROAD "C")

| | OWNERSHIP | FEET | RODS | ACRES |
|---|---|---|---|---|
| SEC. 1 (SW 1/4) | BLM | 1426.05 | 86.43 | 0.982 |

## ACREAGE / LENGTH TABLE (ROAD "D")

| | OWNERSHIP | FEET | RODS | ACRES |
|---|---|---|---|---|
| SEC. 1 (SW 1/4) | BLM | 1586.32 | 96.14 | 1.093 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE

THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782 — 01-02-18 — PROFESSIONAL SURVEYOR

FILE: 62595-A1

Sheet 1 of 3

NOTES:

- The maximum grade of existing ground for proposed access road "A" is ±0.5%.
- The maximum grade of existing ground for proposed access road "B" is ±0.2%.
- The maximum grade of existing ground for proposed access road "C" is ±0.64%.
- The maximum grade of existing ground for proposed access road "D" is ±0.9%.
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

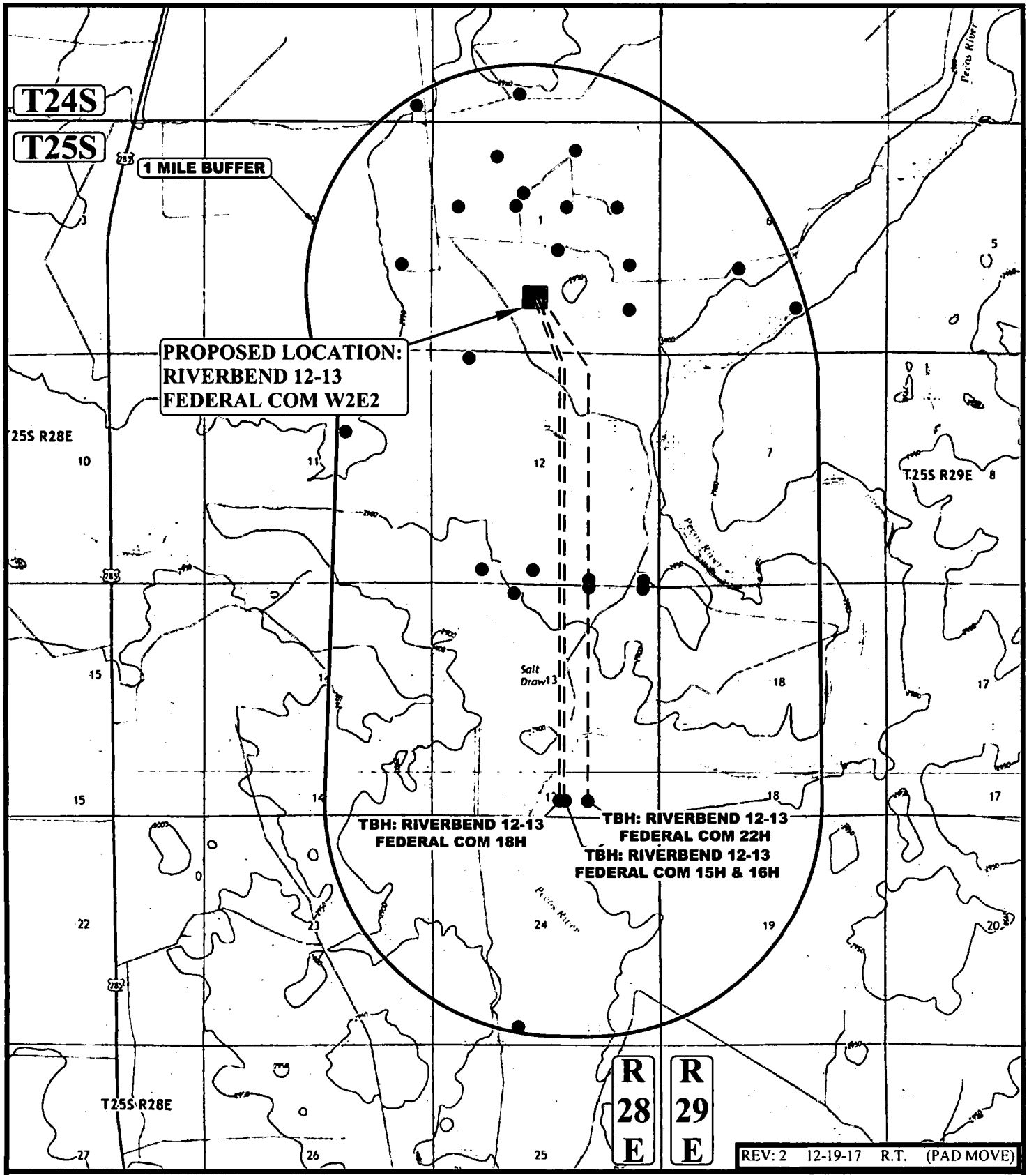
N

CIMAREX ENERGY CO.

RIVERBEND 12-13 FEDERAL COM
ACCESS ROAD NETWORK
SECTION 1, T25S, R28E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

| SURVEYED BY | J.A.V., R.D. | 12-08-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 12-21-17 | 1" = 1000' |

ACCESS ROAD R-O-W EXHIBIT D




**LEGEND:**

● EXISTING WELLS

N

**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM W2E2**
**E 1/2 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| | | | |
|---|---|---|---|
| SURVEYED BY | G.M. | 03-13-17 | SCALE |
| DRAWN BY | B.R. | 03-16-17 | 1 : 36,000 |

**ONE MILE RADIUS PLAT EXHIBIT A**

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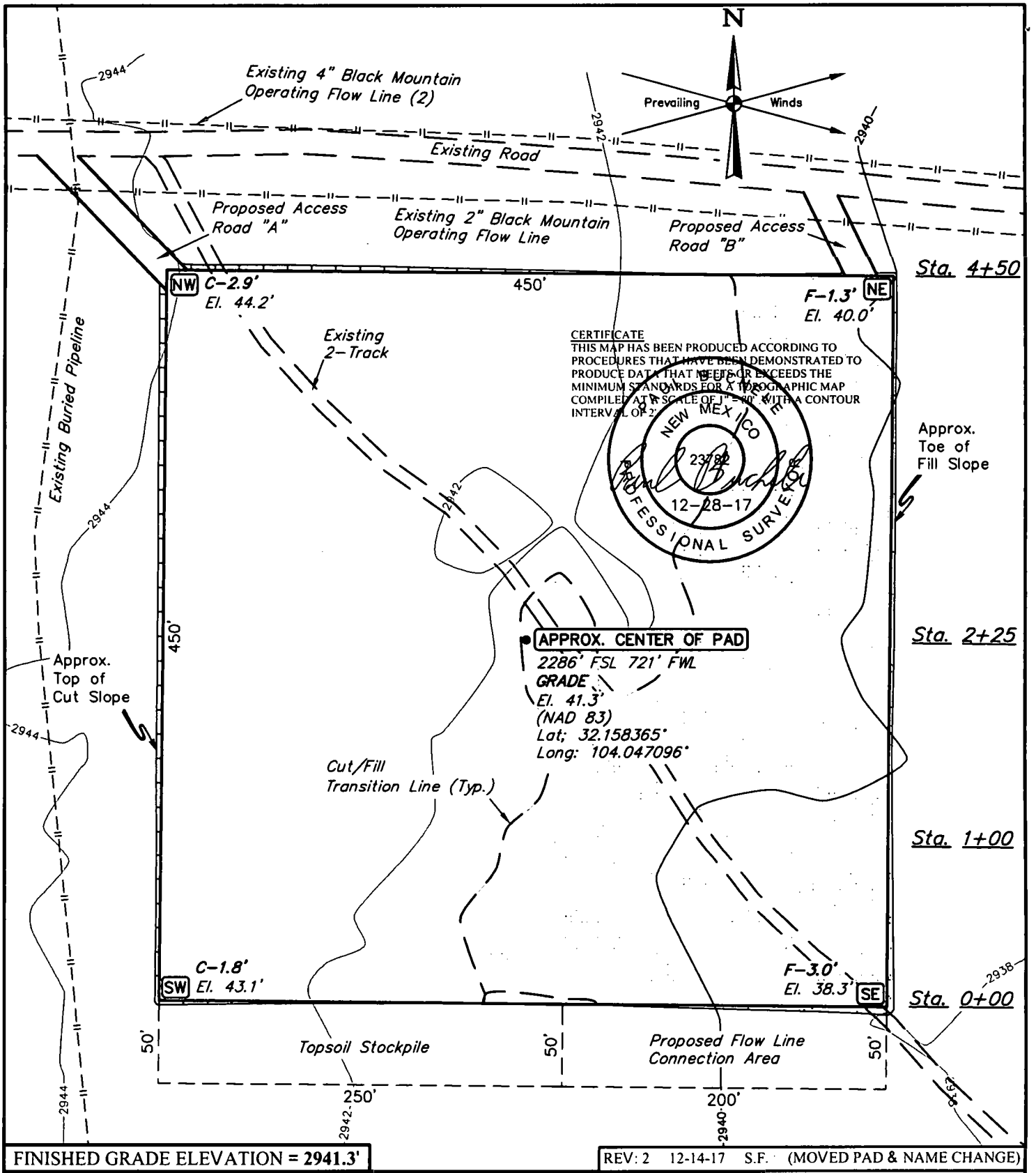


FINISHED GRADE ELEVATION = **2941.3'**

REV: 2 12-14-17 S.F. (MOVED PAD & NAME CHANGE)

**NOTES:**

- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)
- Underground utilities shown on this sheet are for visualization purposes only, actual locations to be determined prior to construction.

# CIMAREX ENERGY CO.

**RIVERBEND 12-13 FEDERAL COM CTB**
**2286' FSL 721' FWL (APPROX. CENTER OF PAD)**
**NW 1/4 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | A.V., J.R. | 12-08-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 03-20-17 | 1" = 80' |

**LOCATION LAYOUT** | **EXHIBIT F**


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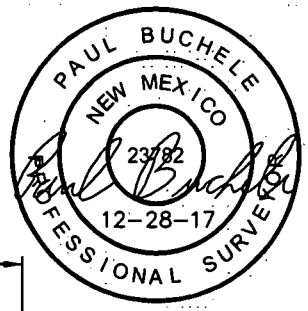
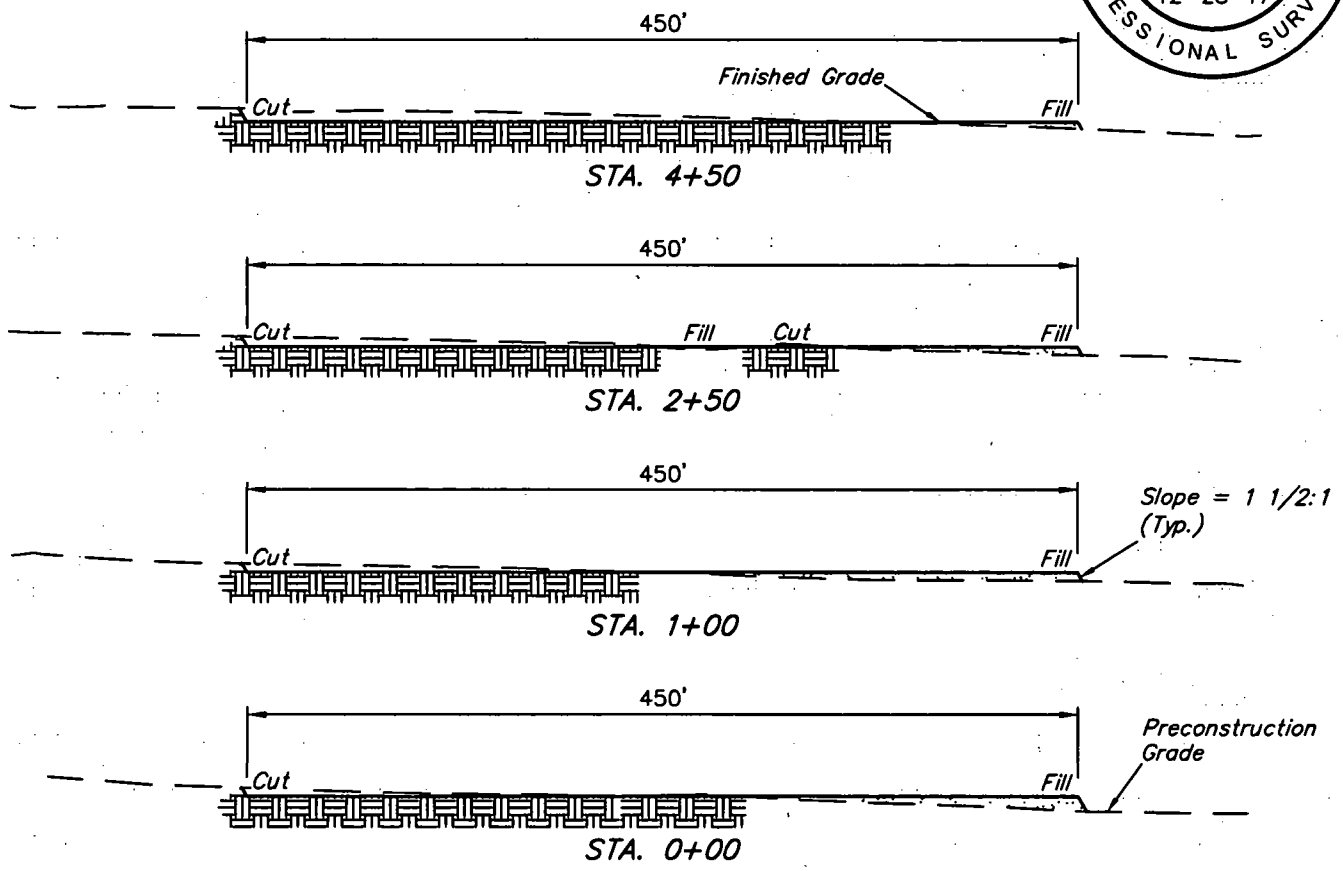
**Vernal, UT 84078 * (435) 789-1017**

1" = 40'
X-Section Scale
1" = 100'




| APPROXIMATE EARTHWORK QUANTITIES | |
|---|---|
| (4") TOPSOIL STRIPPING | 2,550 Cu. Yds. |
| REMAINING LOCATION | 3,990 Cu. Yds. |
| **TOTAL CUT** | **6,540 Cu. Yds.** |
| **FILL** | **3,990 Cu. Yds.** |
| EXCESS MATERIAL | 2,550 Cu. Yds. |
| TOPSOIL | 2,550 Cu. Yds. |
| **EXCESS UNBALANCE** (After Interim Rehabilitation) | **0 Cu. Yds.** |

| APPROXIMATE SURFACE DISTURBANCE AREAS | | |
|---|---|---|
| | **DISTANCE** | **ACRES** |
| WELL SITE DISTURBANCE | NA | ±5.020 |
| FLOW LINE CONNECTION AREA DISTURBANCE | NA | ±0.230 |
| 30' WIDE GAS SALES PIPELINE R-O-W DISTURBANCE | ±8,556.14' | ±5.893 |
| 30' WIDE SWD PIPELINE R-O-W DISTURBANCE | ±7,464.72' | ±5.141 |
| **TOTAL SURFACE USE AREA** | | **±16.284** |

REV: 2 12-14-17 S.F. (MOVED PAD & NAME CHANGE)

**NOTES:**
- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1 (Typ. except where noted)

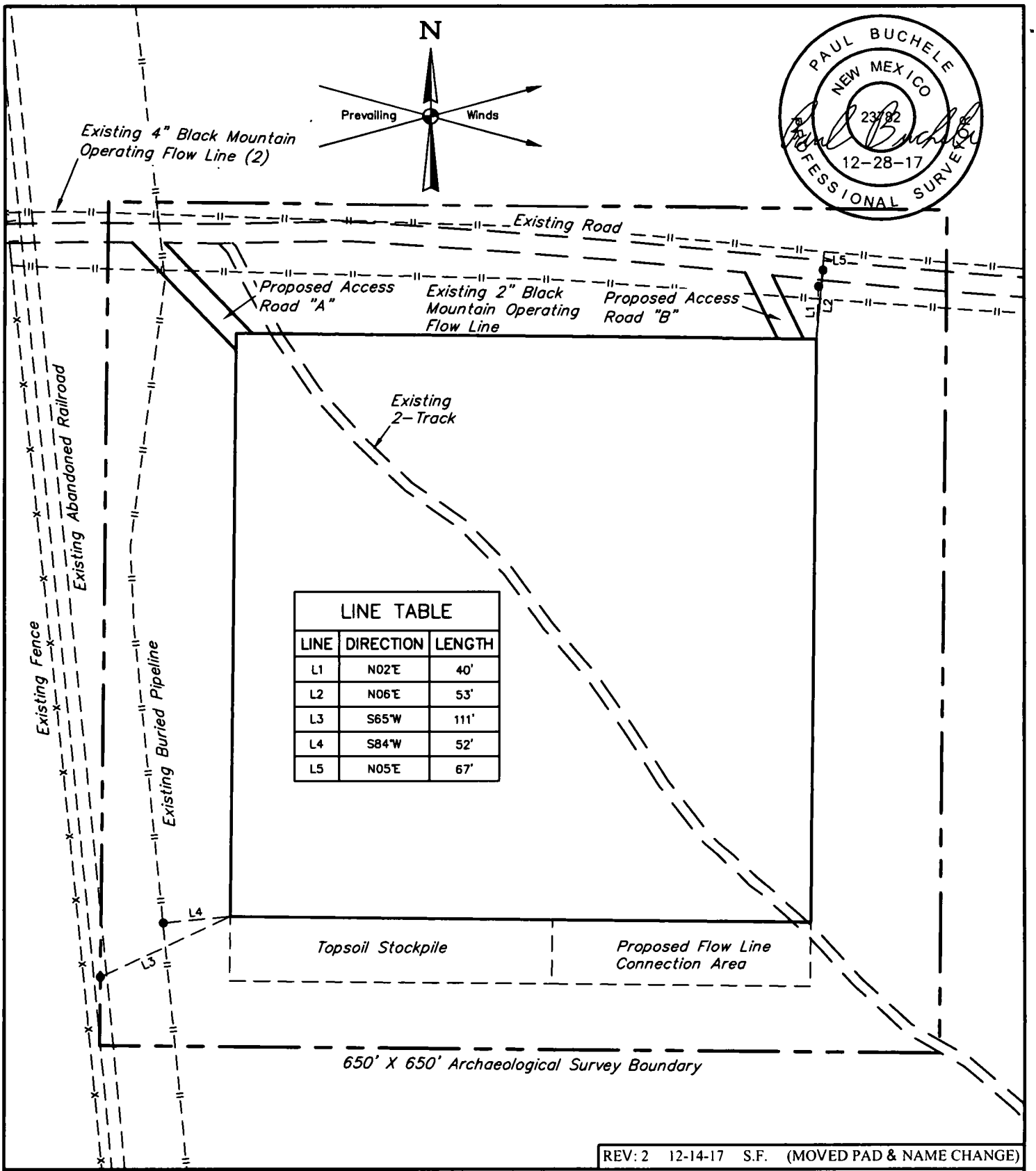
**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM CTB**
**2286' FSL 721' FWL (APPROX. CENTER OF PAD)**
**NW 1/4 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

UINTAH ENGINEERING & LAND SURVEYING
**UELS, LLC**
**Corporate Office * 85 South 200 East**
**Vernal, UT 84078 * (435) 789-1017**

| SURVEYED BY | A.V., J.R. | 12-08-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 03-20-17 | AS SHOWN |

**TYPICAL CROSS SECTIONS EXHIBIT F**




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | N02°E | 40' |
| L2 | N06°E | 53' |
| L3 | S65°W | 111' |
| L4 | S84°W | 52' |
| L5 | N05°E | 67' |

REV: 2 12-14-17 S.F. (MOVED PAD & NAME CHANGE)

NOTES:

- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

# CIMAREX ENERGY CO.

## RIVERBEND 12-13 FEDERAL COM CTB
## 2286' FSL 721' FWL (APPROX. CENTER OF PAD)
## NW 1/4 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.
## EDDY COUNTY, NEW MEXICO

| | | | |
|---|---|---|---|
| SURVEYED BY | A.V., J.R. | 12-08-17 | SCALE |
| DRAWN BY | C.D. | 03-20-17 | 1" = 100' |

ARCHAEOLOGICAL SURVEY BOUNDARY **EXHIBIT F**


UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

BEGINNING AT THE INTERSECTION OF HIGHWAY 285 AND AN EXISTING ROAD TO THE EAST (LOCATED AT NAD83 LATITUDE N32.1664° AND LONGITUDE W104.0717°), PROCEED IN AN EASTERLY, THEN SOUTHERLY DIRECTION APPROXIMATELY 1.8 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY DIRECTION APPROXIMATELY 0.1 MILES TO THE BEGINNING OF THE PROPOSED ACCESS ROAD "A" TO THE SOUTHEAST; FOLLOW ROAD FLAGS APPROXIMATELY 108' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM THE INTERSECTION OF HIGHWAY 285 AND AN EXISTING ROAD TO THE EAST (LOCATED AT NAD83 LATITUDE N32.1664° AND LONGITUDE W104.0717°) TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 1.9 MILES.

REV: 2 12-18-17 R.T. (PAD MOVE)

**CIMAREX ENERGY CO.**

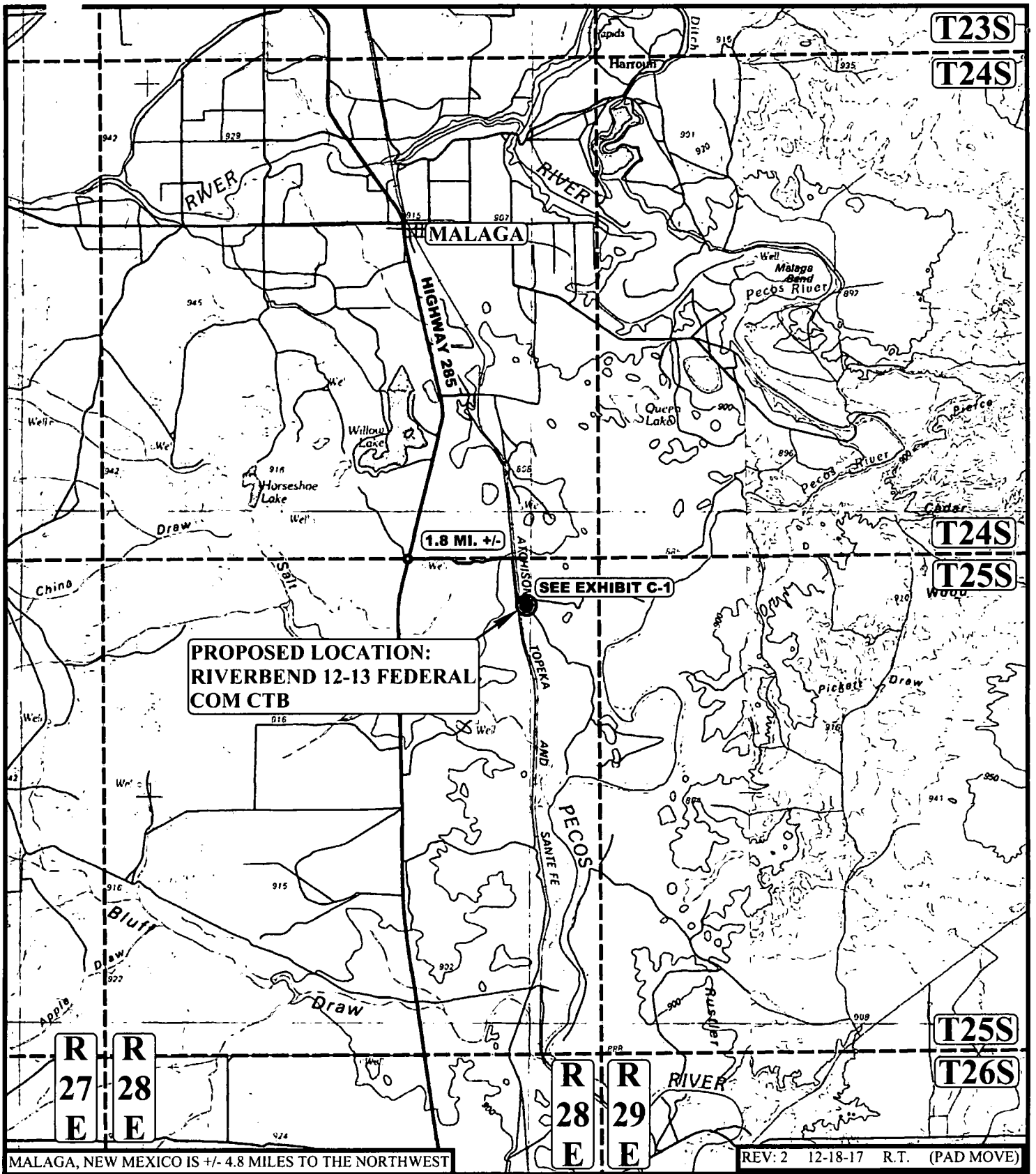
**RIVERBEND 12-13 FEDERAL COM CTB**
**2286' FSL 721' FWL(APPROX. CENTER OF PAD)**
**NW 1/4 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| | | | |
|---|---|---|---|
| SURVEYED BY | G.M. | 03-13-17 | |
| DRAWN BY | B.R. | 03-16-17 | |

**ROAD DESCRIPTION** **EXHIBIT F**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
**Corporate Office * 85 South 200 East**
**Vernal, UT 84078 * (435) 789-1017**




MALAGA, NEW MEXICO IS +/- 4.8 MILES TO THE NORTHWEST

REV: 2 12-18-17 R.T. (PAD MOVE)

**LEGEND:**

**PROPOSED LOCATION**

N

## CIMAREX ENERGY CO.

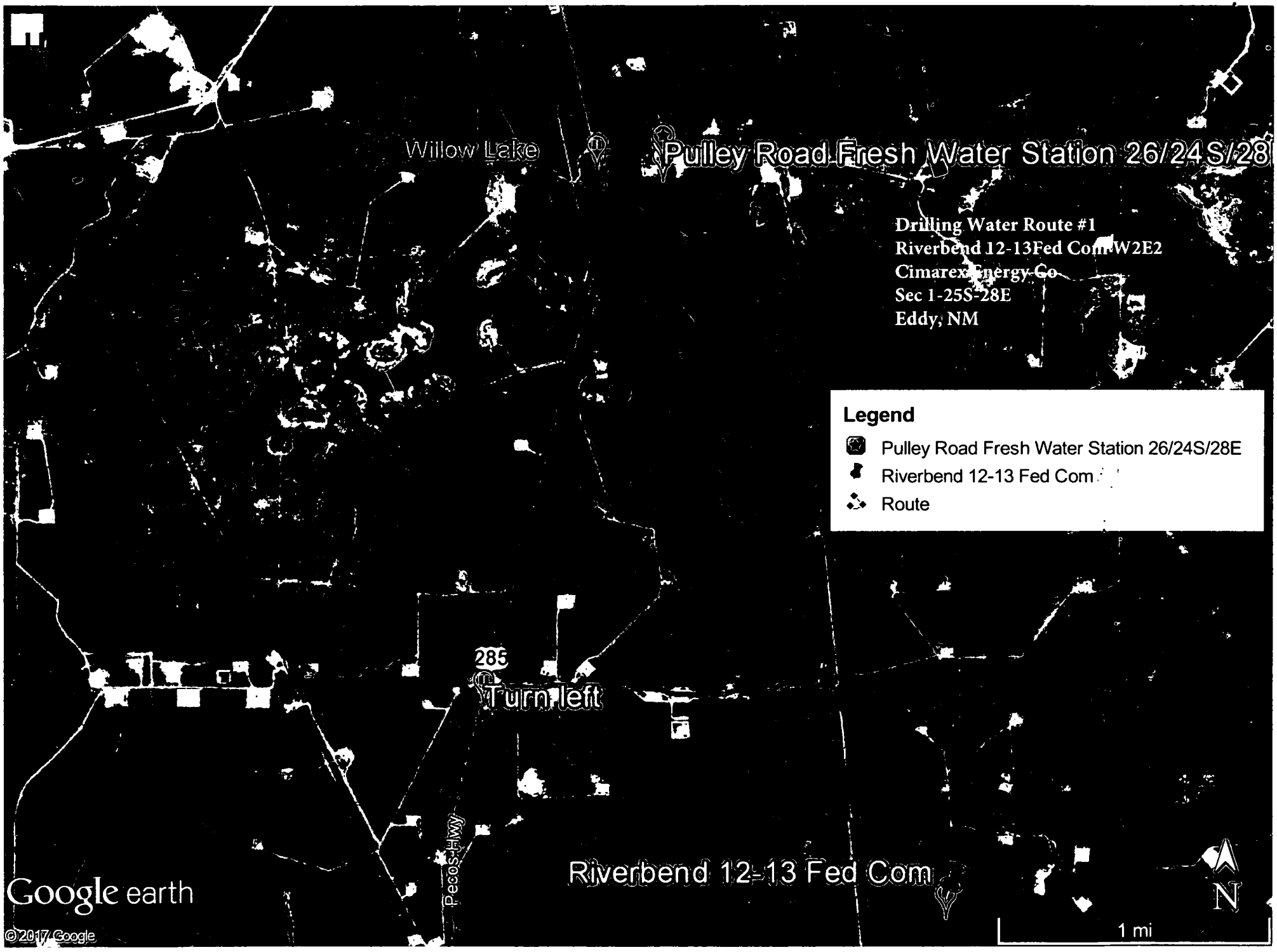
**RIVERBEND 12-13 FEDERAL COM CTB**
**2286' FSL 721' FWL(APPROX. CENTER OF PAD)**
**NW 1/4 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

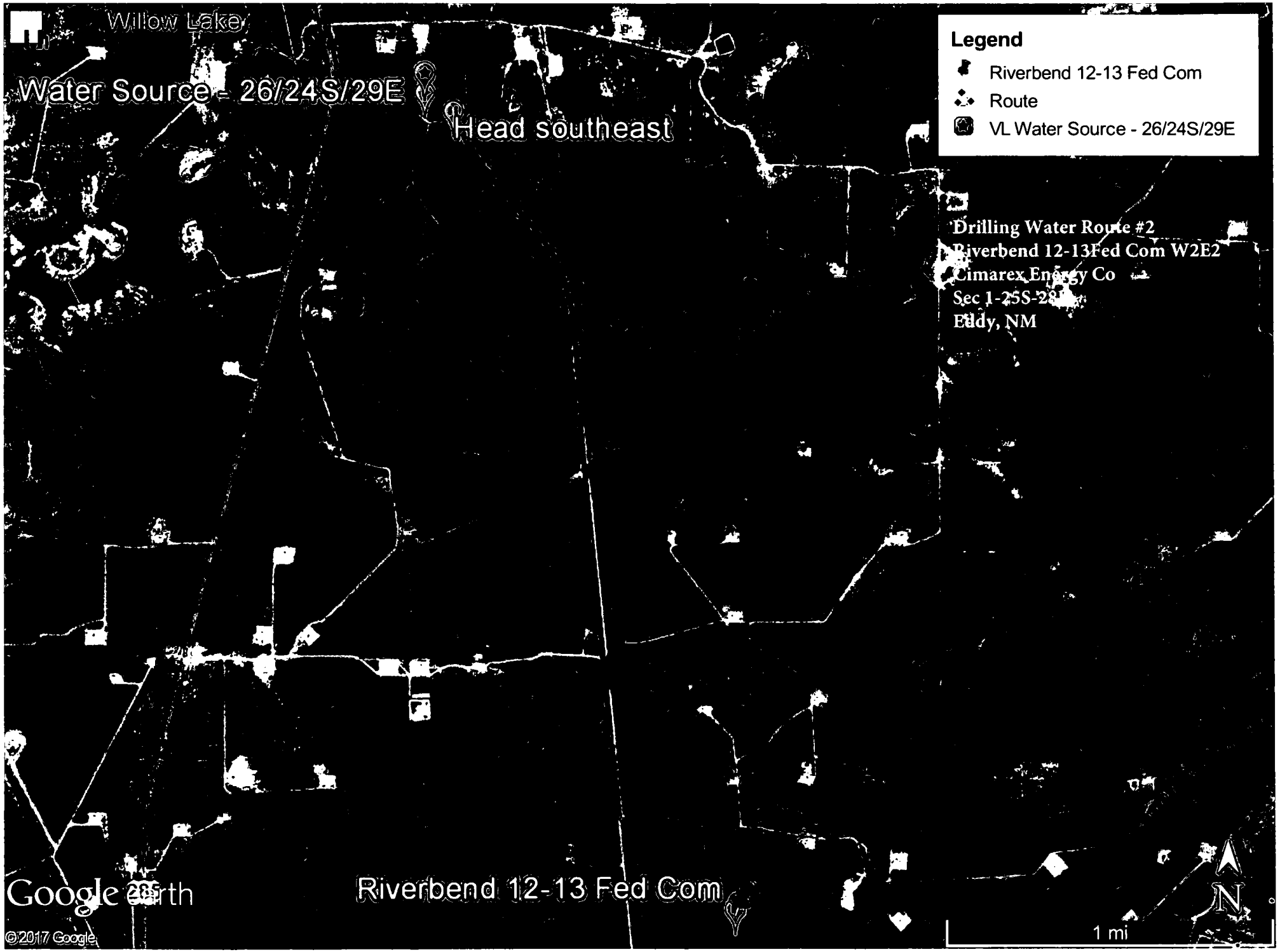
| SURVEYED BY | G.M. | 03-13-17 | SCALE |
|---|---|---|---|
| DRAWN BY | B.R. | 03-16-17 | 1 : 100,000 |

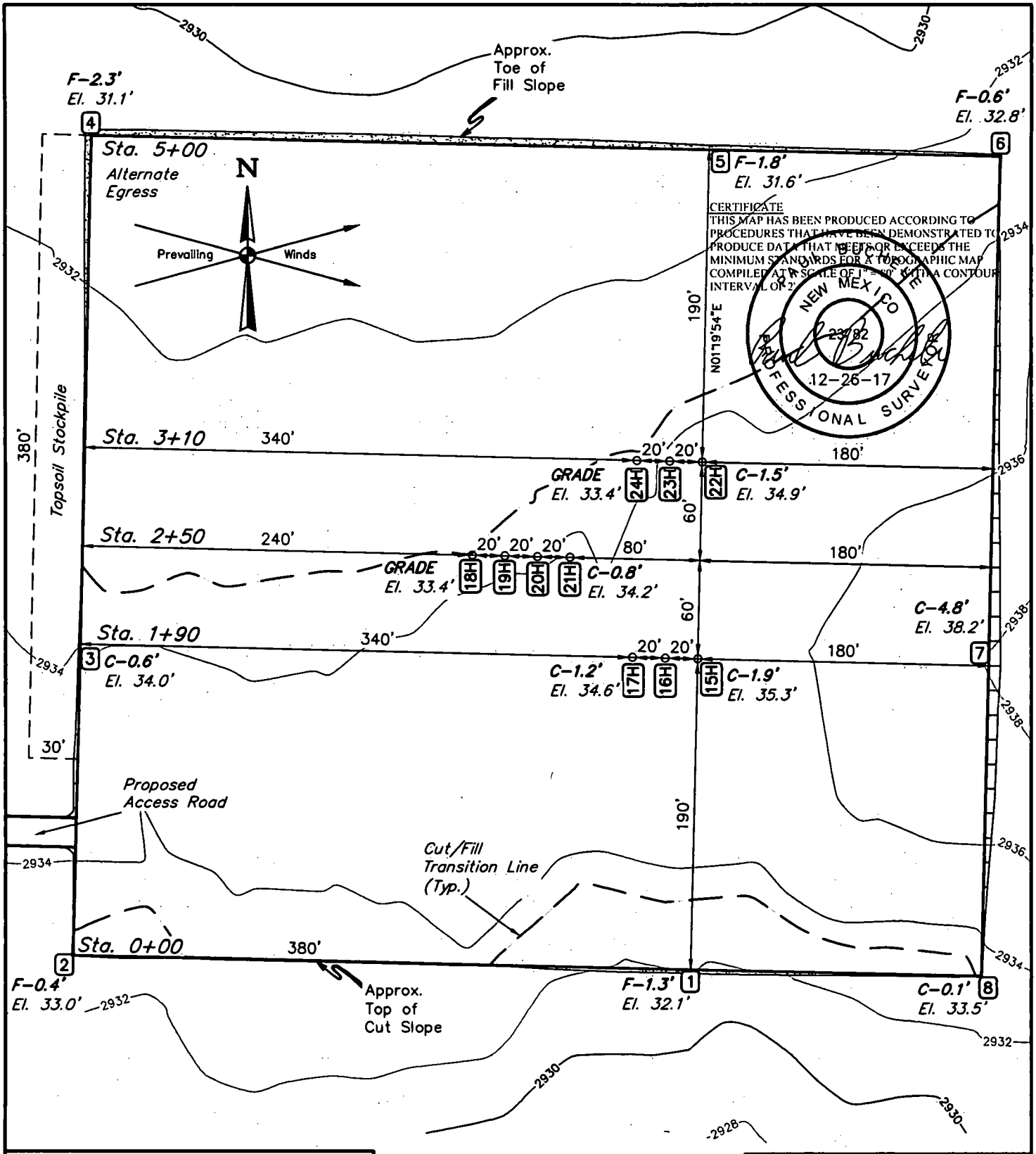
**PUBLIC ACCESS ROAD MAP EXHIBIT F**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017


Willow Lake
Pulley Road Fresh Water Station 26/24 S/28
Drilling Water Route #1
Riverbend 12-13Fed Com W2E2
Cimarex Energy Co
Sec 1-25S-28E
Eddy, NM
Legend
Pulley Road Fresh Water Station 26/24S/28E
Riverbend 12-13 Fed Com
Route
285
Turn left
Pecos Hwy
Riverbend 12-13 Fed Com
Google earth
© 2017 Google
N
1 mi


Willow Lake
Water Source - 26/24S/29E
Head southeast
Legend
Riverbend 12-13 Fed Com
Route
VL Water Source - 26/24S/29E
Drilling Water Route #2
Riverbend 12-13Fed Com W2E2
Cimarex Energy Co
Sec 1-25S-28
Eddy, NM
Riverbend 12-13 Fed Com
Google Earth
©2017 Google
1 mi
N




FINISHED GRADE ELEVATION = **2933.4'**

REV: 2 12-19-17 C.D. (PAD MOVE)

**NOTES:**

- Contours shown at 2' intervals.
- Cut/Fill slopes 1 1/2:1.

# CIMAREX ENERGY CO.

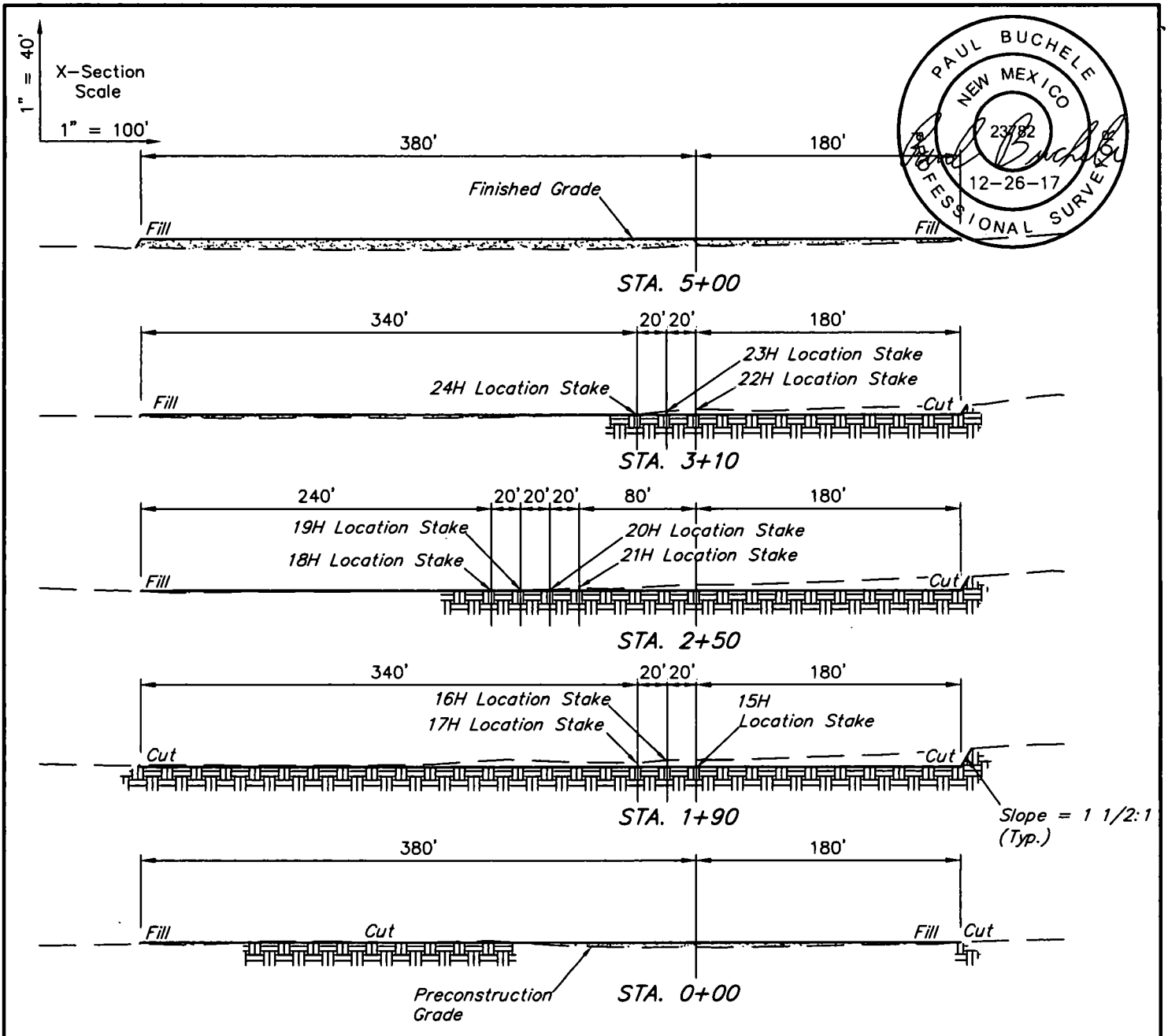
**RIVERBEND 12-13 FEDERAL COM W2E2**
**E 1/2 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
**Corporate Office * 85 South 200 East**
**Vernal, UT 84078 * (435) 789-1017**

| SURVEYED BY | C.J., S.R. | 06-27-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 03-22-17 | 1" = 80' |

**LOCATION LAYOUT** **EXHIBIT D**




PAUL BUCHELE
NEW MEXICO
23782
12-26-17
PROFESSIONAL SURVEYOR

| APPROXIMATE EARTHWORK QUANTITIES | |
|---|---|
| (3") TOPSOIL STRIPPING | 2,640 Cu. Yds. |
| REMAINING LOCATION | 6,800 Cu. Yds. |
| **TOTAL CUT** | **9,440 Cu. Yds.** |
| **FILL** | **6,800 Cu. Yds.** |
| EXCESS MATERIAL | 2,640 Cu. Yds. |
| TOPSOIL | 2,640 Cu. Yds. |
| **EXCESS UNBALANCE** (After Interim Rehabilitation) | **0 Cu. Yds.** |

REV: 3 12-19-17 C.D. (PAD MOVE)

| APPROXIMATE SURFACE DISTURBANCE AREAS | | |
|---|---|---|
| | **DISTANCE** | **ACRES** |
| WELL SITE DISTURBANCE | NA | ±6.795 |
| 60' WIDE FLOW LINE R-O-W DISTURBANCE | ±1946.78' | ±2.682 |
| **TOTAL SURFACE USE AREA** | | **±9.477** |

**NOTES:**

- Fill quantity includes 5% for compaction.
- Cut/Fill slopes 1 1/2:1.

## CIMAREX ENERGY CO.

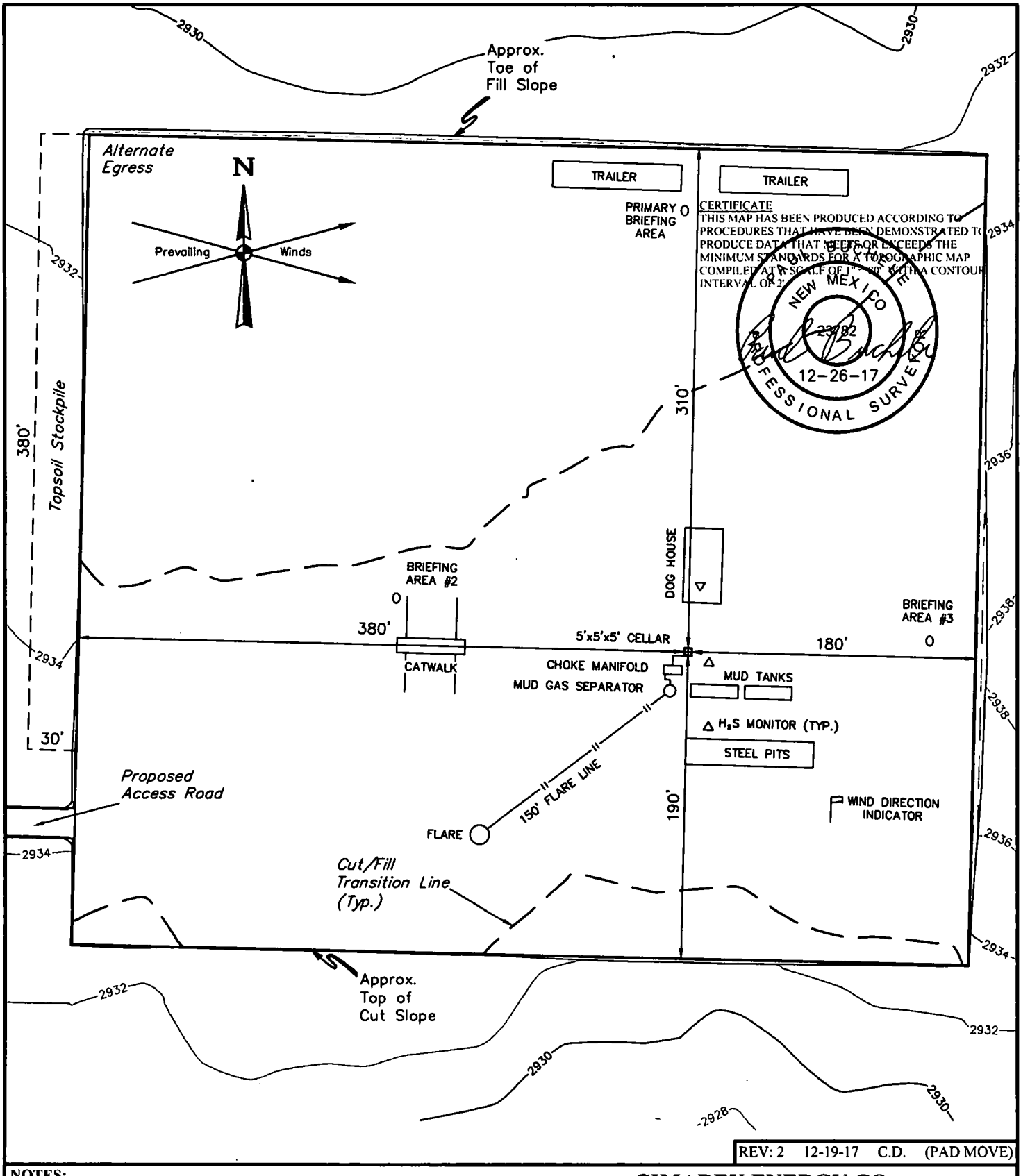
**RIVERBEND 12-13 FEDERAL COM W2E2**
**E 1/2 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**


UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
**Corporate Office * 85 South 200 East**
**Vernal, UT 84078 * (435) 789-1017**


| SURVEYED BY | C.J., S.R. | 06-27-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 03-22-17 | AS SHOWN |

**TYPICAL CROSS SECTIONS | EXHIBIT D**




REV: 2 12-19-17 C.D. (PAD MOVE)

**NOTES:**

- Contours shown at 2' intervals.

# CIMAREX ENERGY CO.

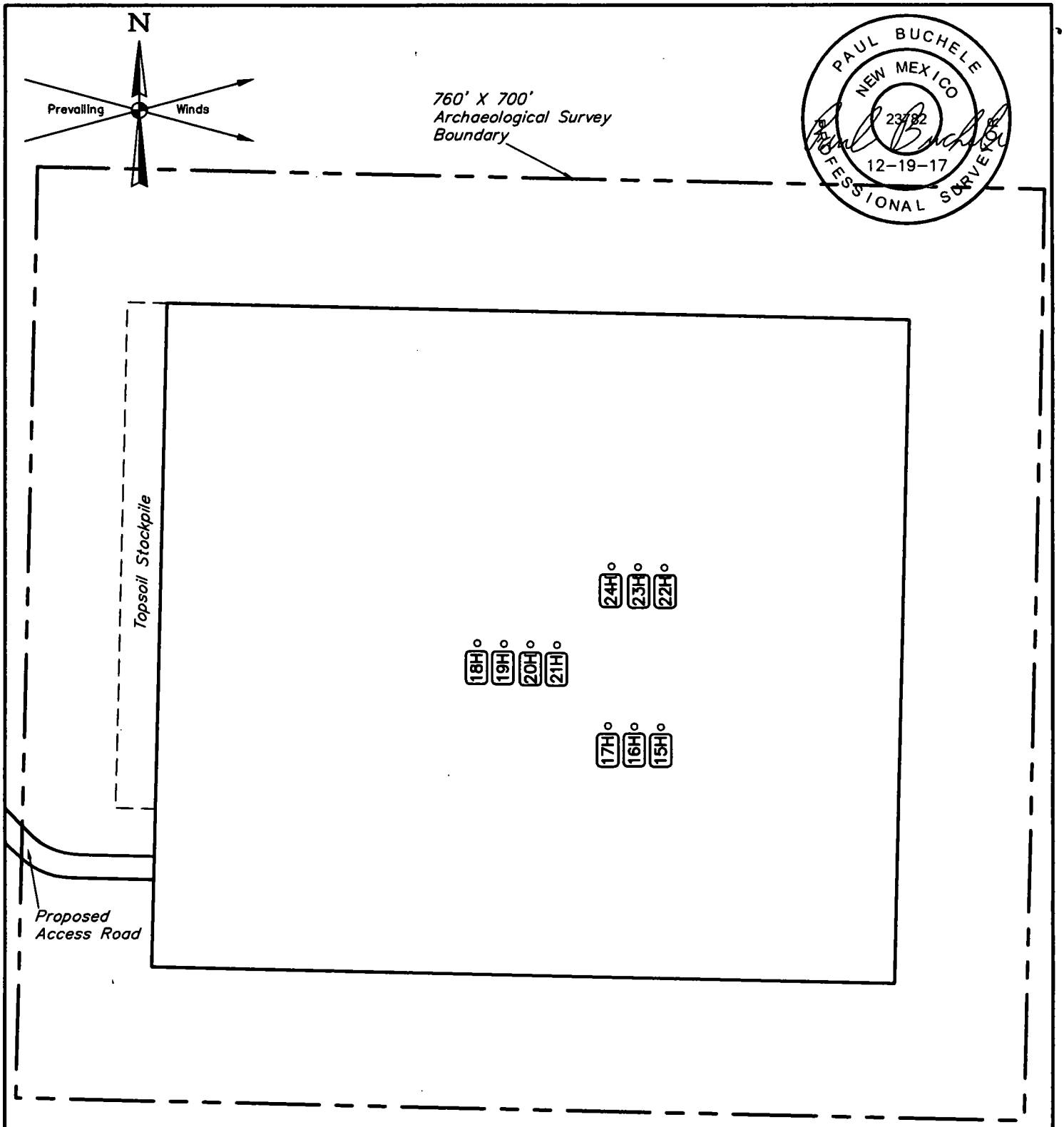
**RIVERBEND 12-13 FEDERAL COM 15H**
**1207' FSL 2522' FWL**
**SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| | | | |
|---|---|---|---|
| SURVEYED BY | C.J., S.R. | 06-27-17 | SCALE |
| DRAWN BY | C.D. | 03-22-17 | 1" = 80' |

**TYPICAL RIG LAYOUT** **EXHIBIT D**


UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




REV: 2 12-19-17 C.D. (PAD MOVE)

**NOTES:**

## CIMAREX ENERGY CO.

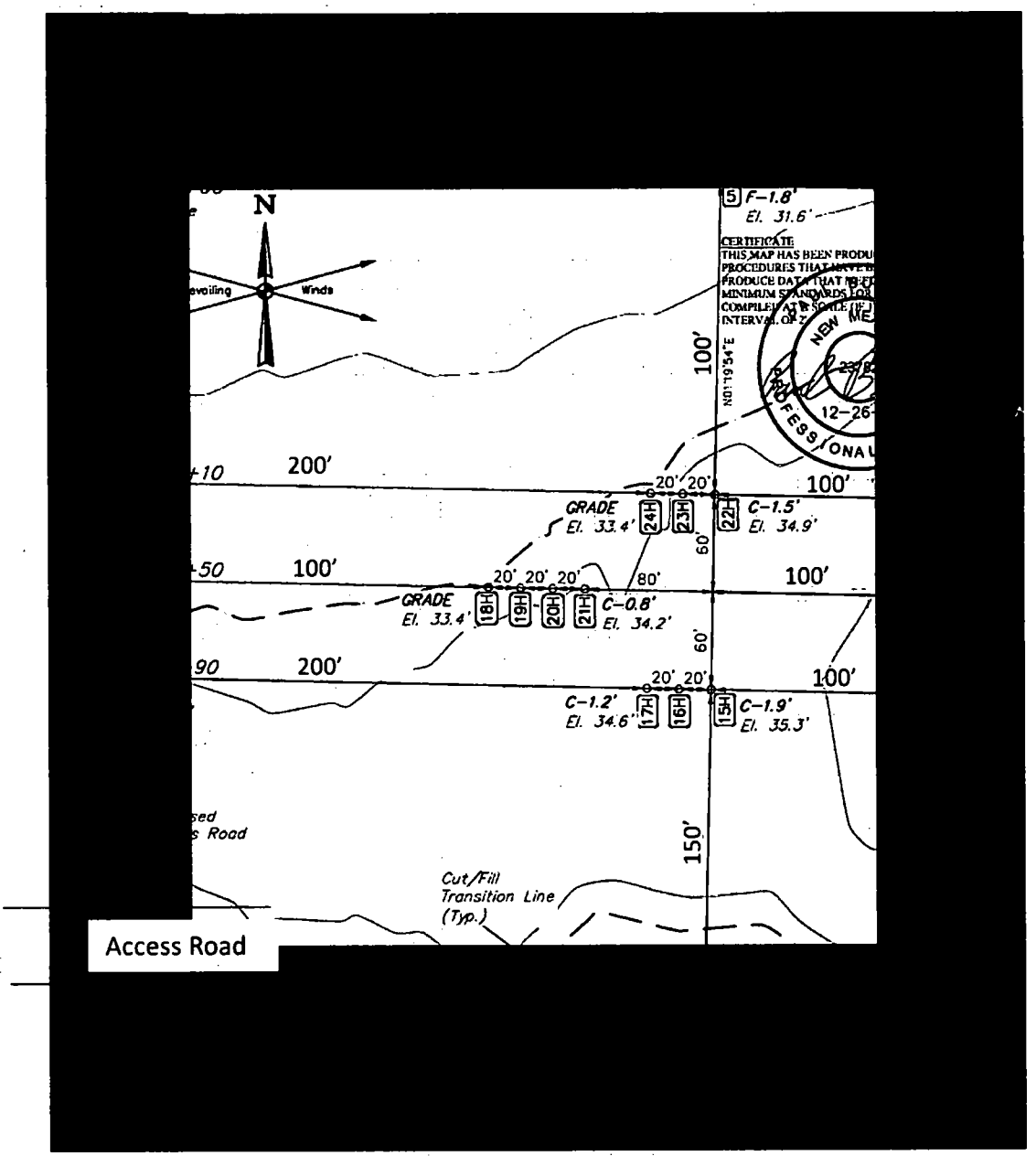
**RIVERBEND 12-13 FEDERAL COM W2E2**
**E 1/2 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

| SURVEYED BY | C.J., S.R. | 06-27-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 03-22-17 | 1" = 100' |

**ARCHAEOLOGICAL SURVEY BOUNDARY** **EXHIBIT D**



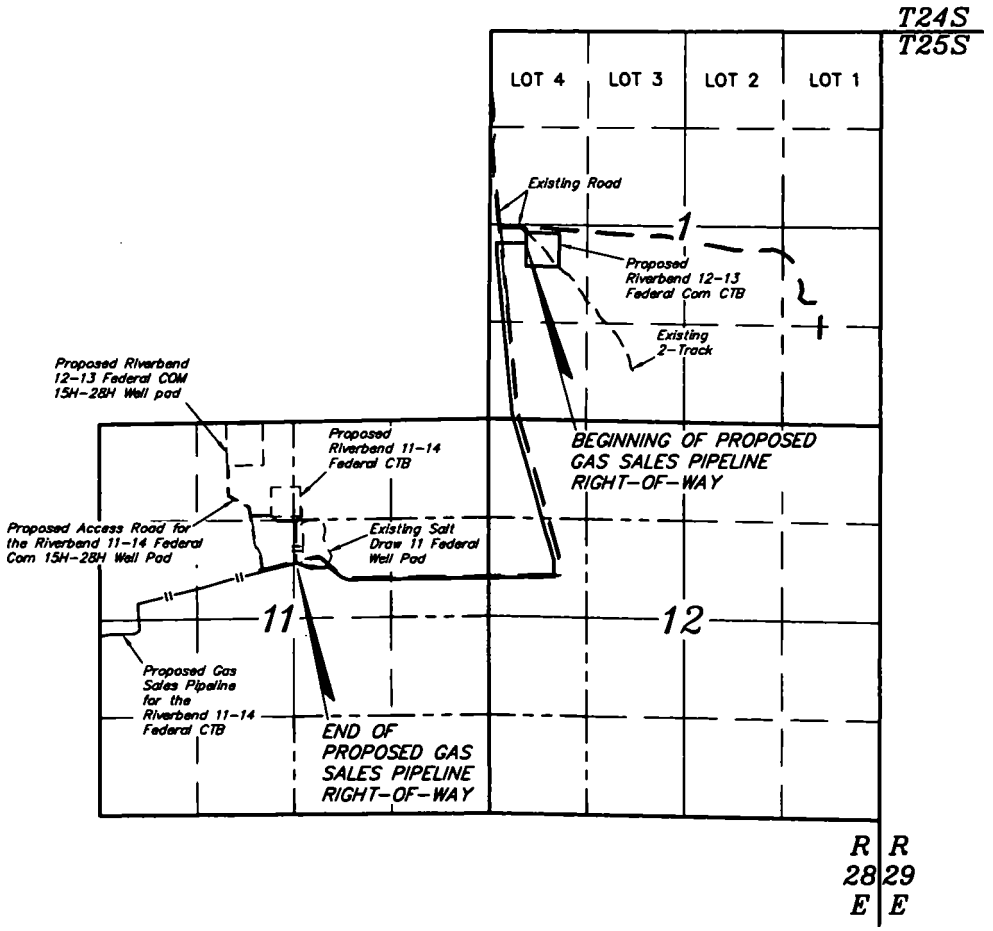

Pad will be reclaimed after cessation of drilling operations.
Please see Surface Use Plan for pad reclamation plans.

N

Well locations

Interim Reclamation

Exhibit P
Interim Reclamation Diagram
Riverbend 12-13 Federal Com W2E2 pad
Cimarex Energy Co.
Sec 1-25S-28E
Eddy Cty, NM




LEGEND:

- PROPOSED CENTERLINE
- SECTION LINE
- 1/4 SECTION LINE
- 1/16 SECTION LINE
- PROPERTY LINE

N

2000' 1000' 0' 2000'

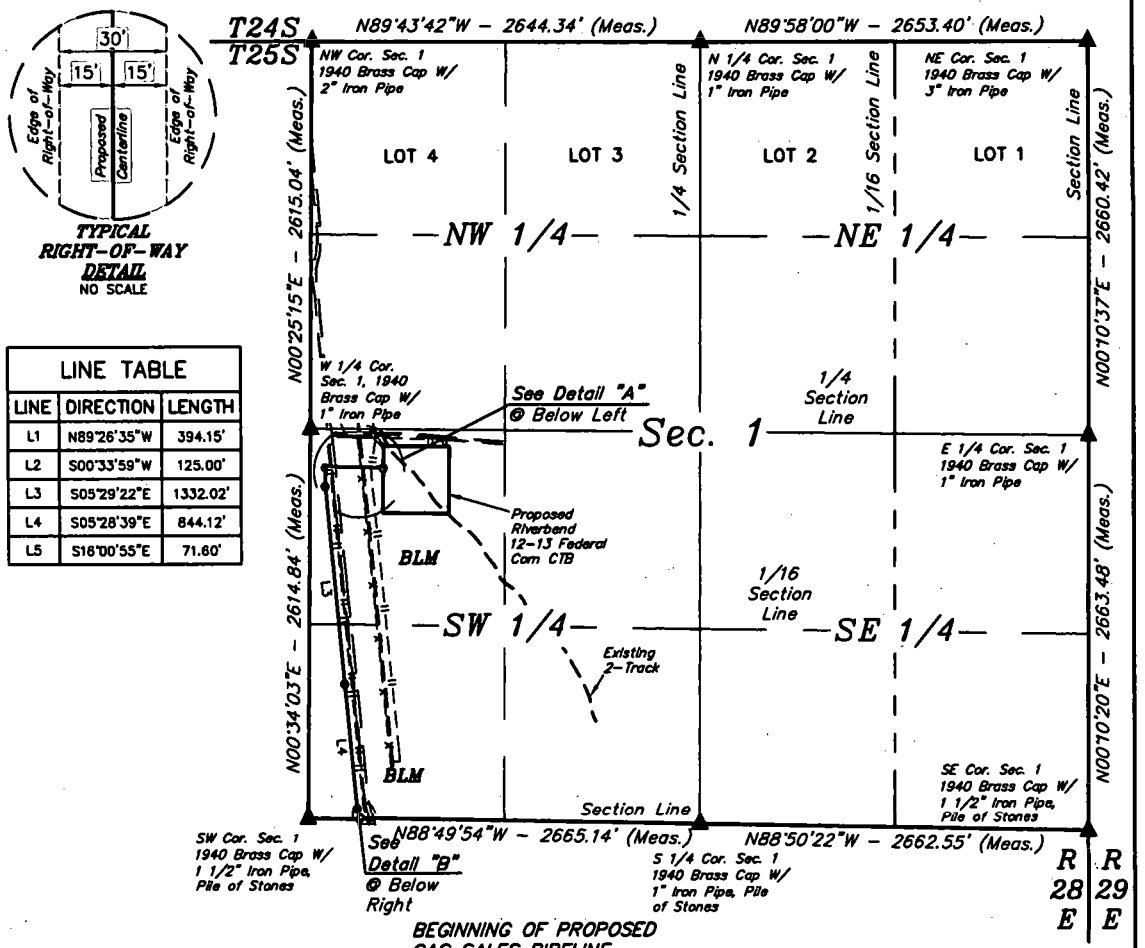
REV: 2 12-14-17 S.F. (MOVED PAD & RE-ROUTED PIPELINE)

**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM CTB**
**SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| | | | |
|---|---|---|---|
| SURVEYED BY | G.M. | 03-14-17 | SCALE |
| DRAWN BY | S.F. | 03-24-17 | 1" = 2000' |

**OVERALL GAS SALES PIPELINE MAP**




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | N89°26'35"W | 394.15' |
| L2 | S00°33'59"W | 125.00' |
| L3 | S05°29'22"E | 1332.02' |
| L4 | S05°28'39"E | 844.12' |
| L5 | S16°00'55"E | 71.60' |

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 1 (SW 1/4) | BLM | 2766.89 | 167.69 | 1.906 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
12-28-17
PROFESSIONAL SURVEYOR

Sheet 1 of 2

FILE: 61537-A1
REV: 2 12-14-17 S.F. (MOVED PAD & RE-ROUTED PIPELINE)

NOTES:
* Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

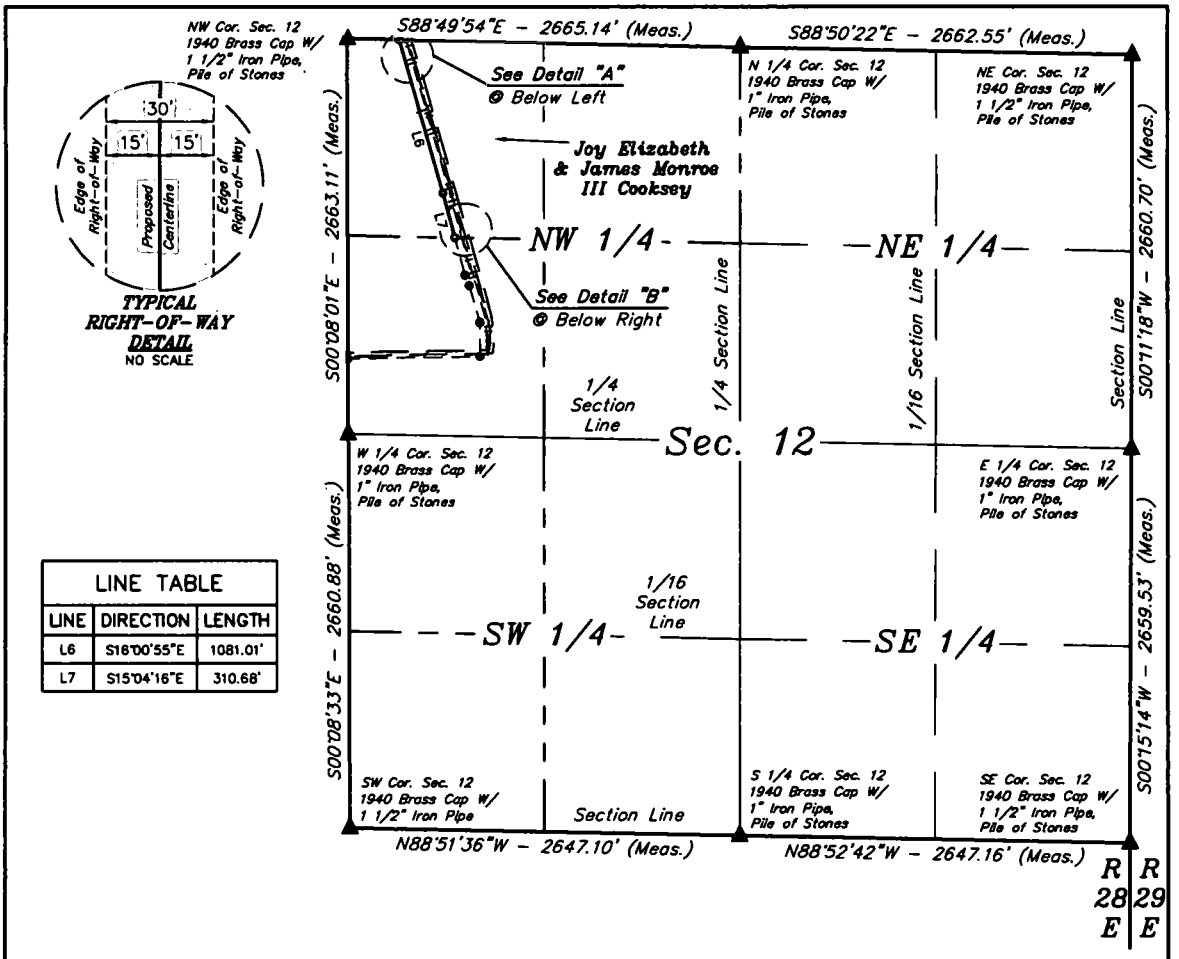
# CIMAREX ENERGY CO.

## RIVERBEND 12-13 FEDERAL COM CTB
## SECTION 1, T25S, R28E, N.M.P.M.
## EDDY COUNTY, NEW MEXICO

| SURVEYED BY | G.M. | 03-14-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.F. | 03-24-17 | 1" = 1000' |

**GAS SALES PIPELINE R-O-W EXHIBIT G**

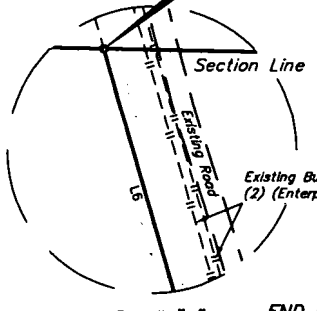

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




TYPICAL RIGHT-OF-WAY DETAIL
NO SCALE

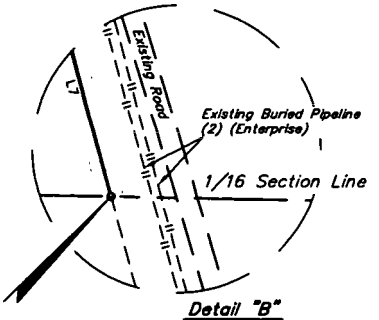
| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L6 | S16°00'55"E | 1081.01' |
| L7 | S15°04'16"E | 310.68' |

BEGINNING OF PROPOSED GAS SALES PIPELINE RIGHT-OF-WAY ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS
(At Section Line)




Detail "A"
No Scale

END OF PROPOSED GAS SALES PIPELINE RIGHT-OF-WAY ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS
(At 1/16 Section Line)



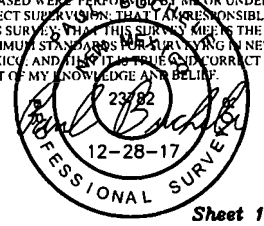

Detail "B"
No Scale

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| JOY ELIZABETH & JAMES MONROE III COOKSEY | 1391.69 | 84.34 | 0.958 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.




Sheet 1 of 2

FILE: 615 37-B1
REV: 2 12-14-17 S.F. (MOVED PAD & RE-ROUTED PIPELINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

CIMAREX ENERGY CO.

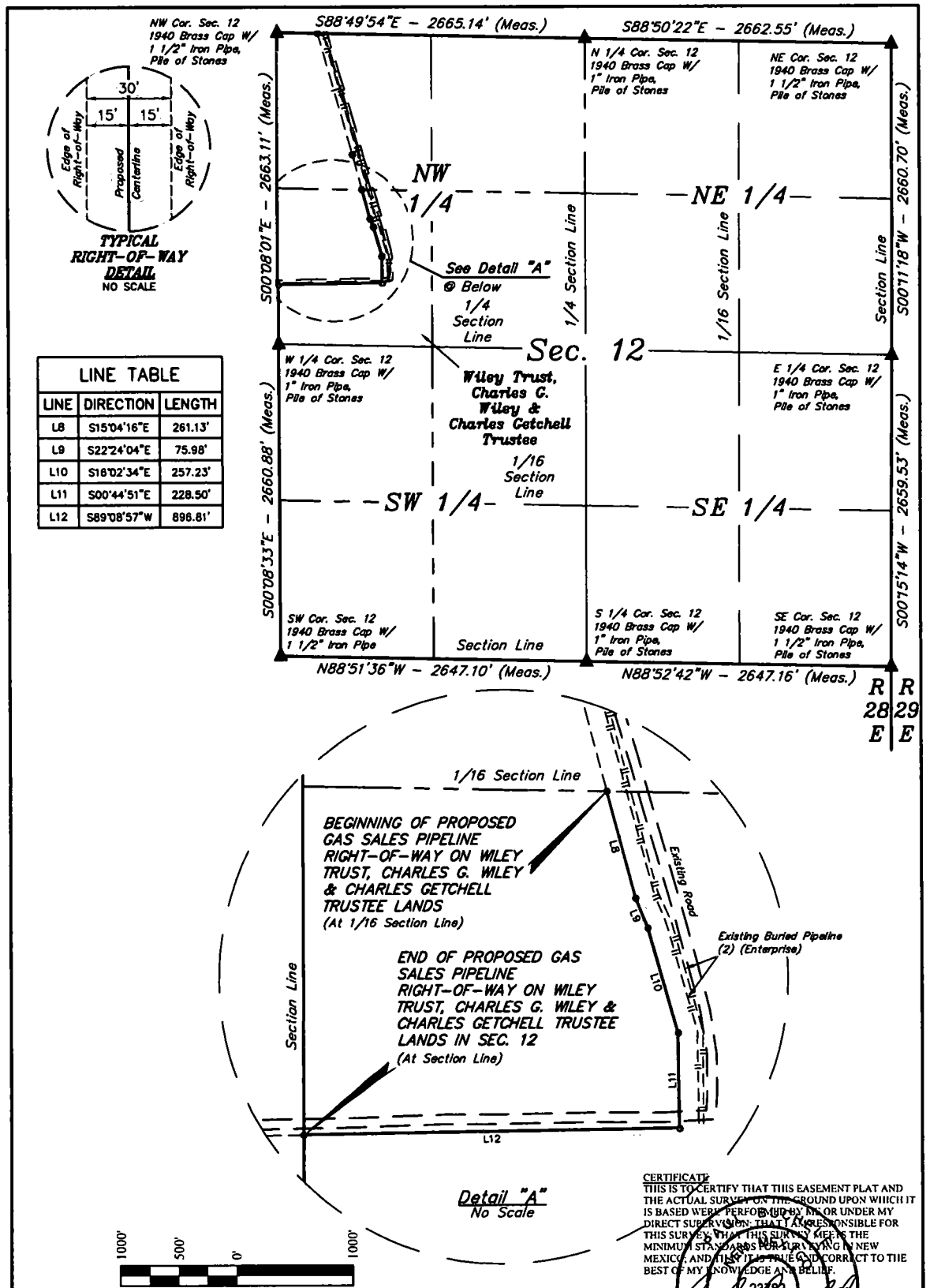
RIVERBEND 12-13 FEDERAL COM CTB
SECTION 12, T25S, R28E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

| SURVEYED BY | G.M. | 03-14-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.F. | 03-24-17 | 1" = 1000' |

GAS SALES PIPELINE R-O-W EXHIBIT G

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L8 | S15°04'16"E | 261.13' |
| L9 | S22°24'04"E | 75.98' |
| L10 | S16°02'34"E | 257.23' |
| L11 | S00°44'51"E | 228.50' |
| L12 | S89°08'57"W | 896.81' |

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| WILEY TRUST, CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE | 1719.66 | 104.22 | 1.184 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NEW MEXICO 23782 PROFESSIONAL SURVEYOR
12-28-17

Sheet 1 of 2

FILE: 61537-C1
REV: 2 12-14-17 S.F. (MOVED PAD & RE-ROUTED PIPELINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

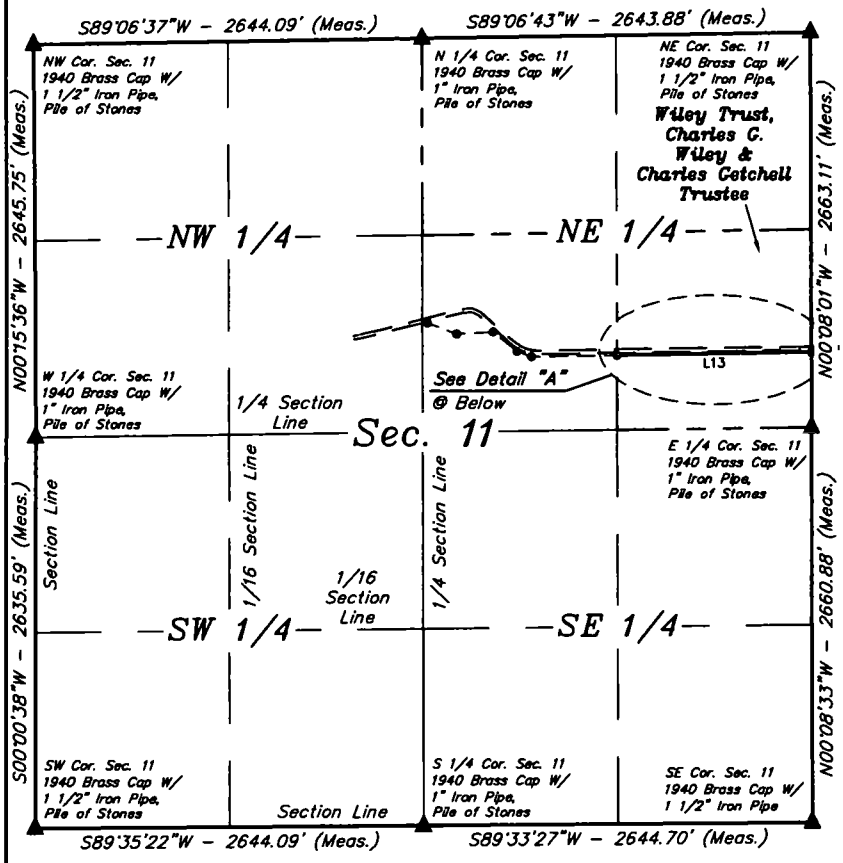
# CIMAREX ENERGY CO.

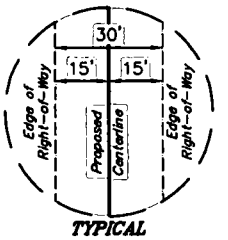
## RIVERBEND 12-13 FEDERAL COM CTB
## SECTION 12, T25S, R28E, N.M.P.M.
## EDDY COUNTY, NEW MEXICO

| SURVEYED BY | G.M. | 03-14-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.F. | 03-24-17 | 1" = 1000' |

GAS SALES PIPELINE R-O-W EXHIBIT G

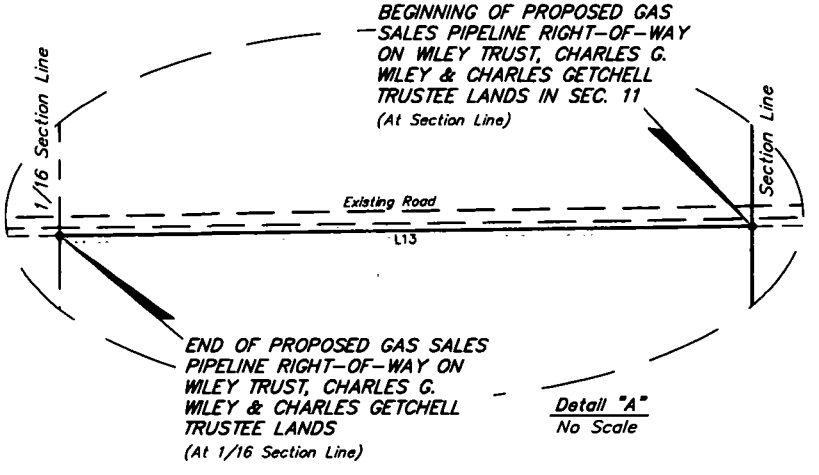

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




**TYPICAL RIGHT-OF-WAY DETAIL**
NO SCALE

| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L13 | S89°08'57"W | 1322.05' |




Detail "A"
No Scale

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
12-28-17
PROFESSIONAL SURVEYOR

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| WILEY TRUST, CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE | 1322.05 | 80.12 | 0.911 |

▲ = SECTION CORNERS LOCATED.

FILE: 615377-D1
REV: 2 12-14-17 S.F. (MOVED PAD & RE-ROUTED PIPELINE)

*Sheet 1 of 2*

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

**CIMAREX ENERGY CO.**

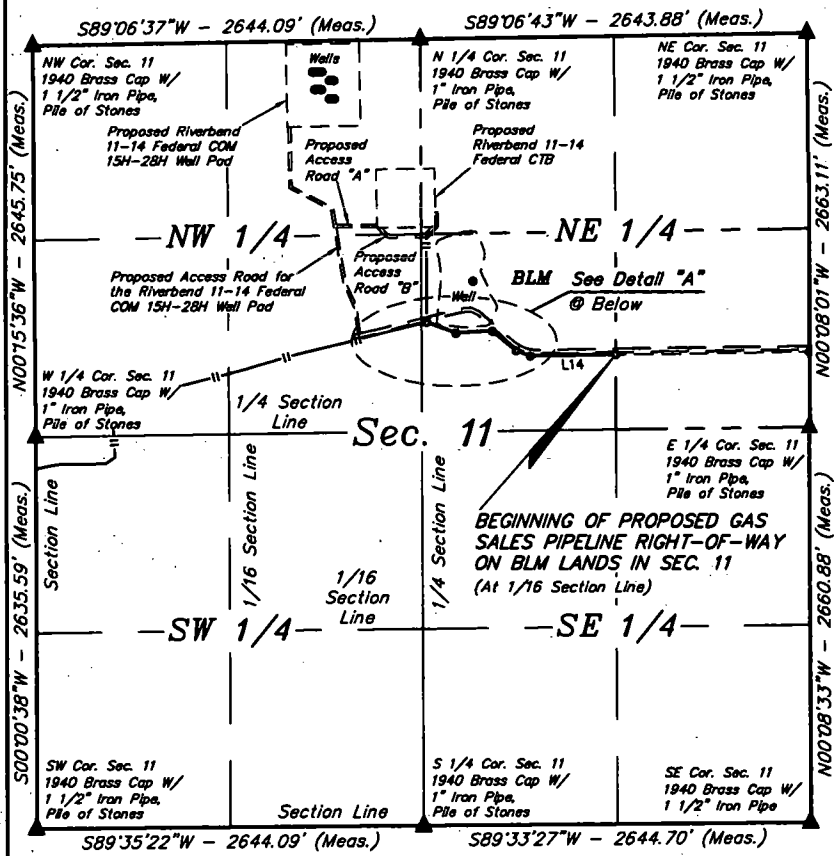
**RIVERBEND 12-13 FEDERAL COM CTB**
**SECTION 11, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

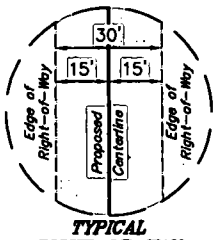
| SURVEYED BY | G.M. | 03-14-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.F. | 03-24-17 | 1" = 1000' |

**GAS SALES PIPELINE R-O-W EXHIBIT G**

UINTAH ENGINEERING & LAND SURVEYING

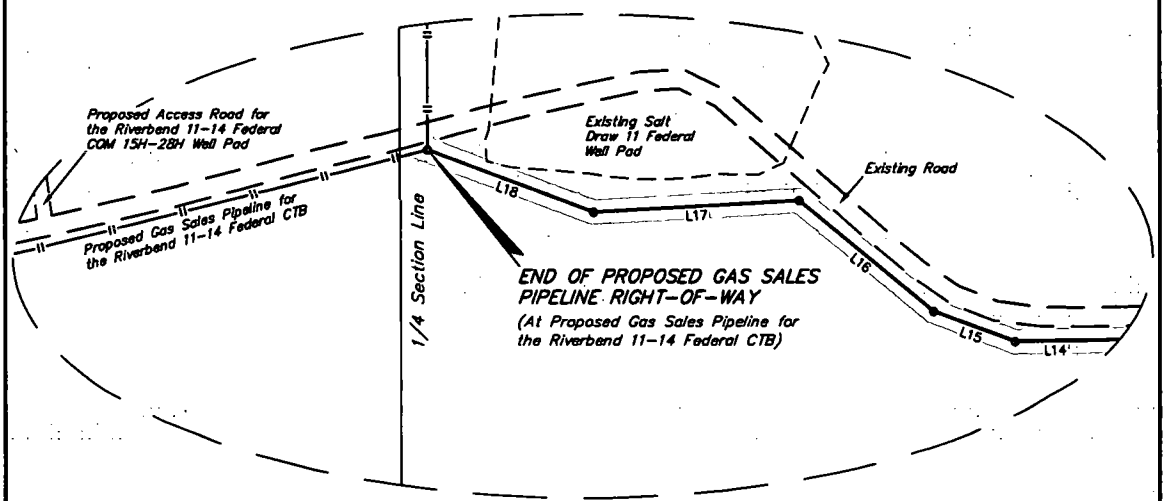

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




**TYPICAL RIGHT-OF-WAY DETAIL**
NO SCALE

| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L14 | S89°08'57"W | 581.16' |
| L15 | N69°52'56"W | 104.61' |
| L16 | N50°54'09"W | 208.88' |
| L17 | S86°51'27"W | 248.02' |
| L18 | N69°44'28"W | 213.18' |




**Detail "A"**
No Scale

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 11 (NE 1/4) | BLM | 1355.85 | 82.17 | 0.934 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
12-28-17
PROFESSIONAL SURVEYOR

FILE: 61537-E1
REV: 2 12-14-17 S.F. (MOVED PAD & RE-ROUTED PIPELINE)



NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

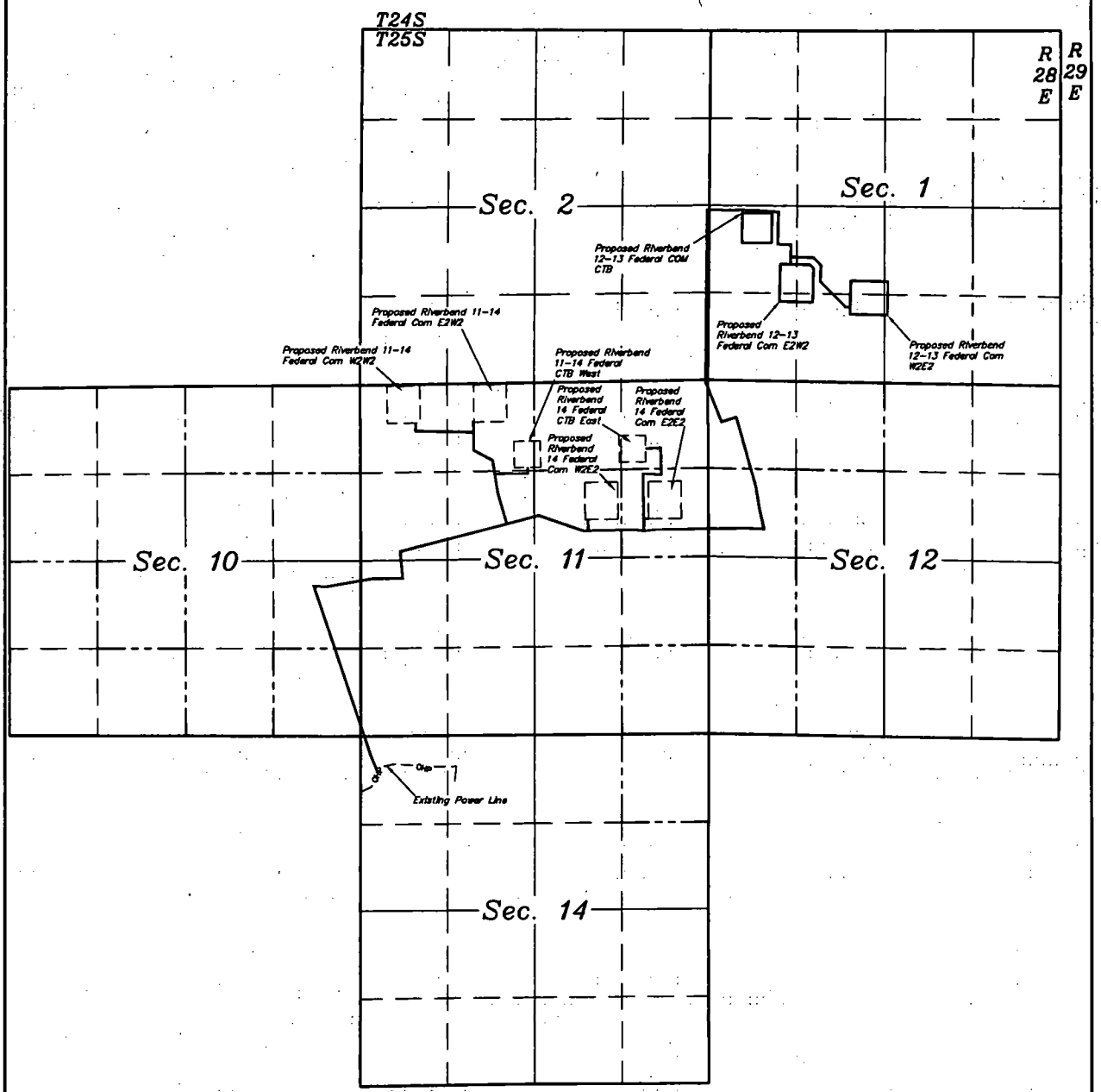
**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM CTB**
**SECTION 11, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | G.M. | 03-14-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.F. | 03-24-17 | 1" = 1000' |

**GAS SALES PIPELINE R-O-W EXHIBIT G**

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




LEGEND:
- PROPOSED POWER LINE
- SECTION LINE
- 1/4 SECTION LINE
- 1/16 SECTION LINE
- PROPERTY LINE

N

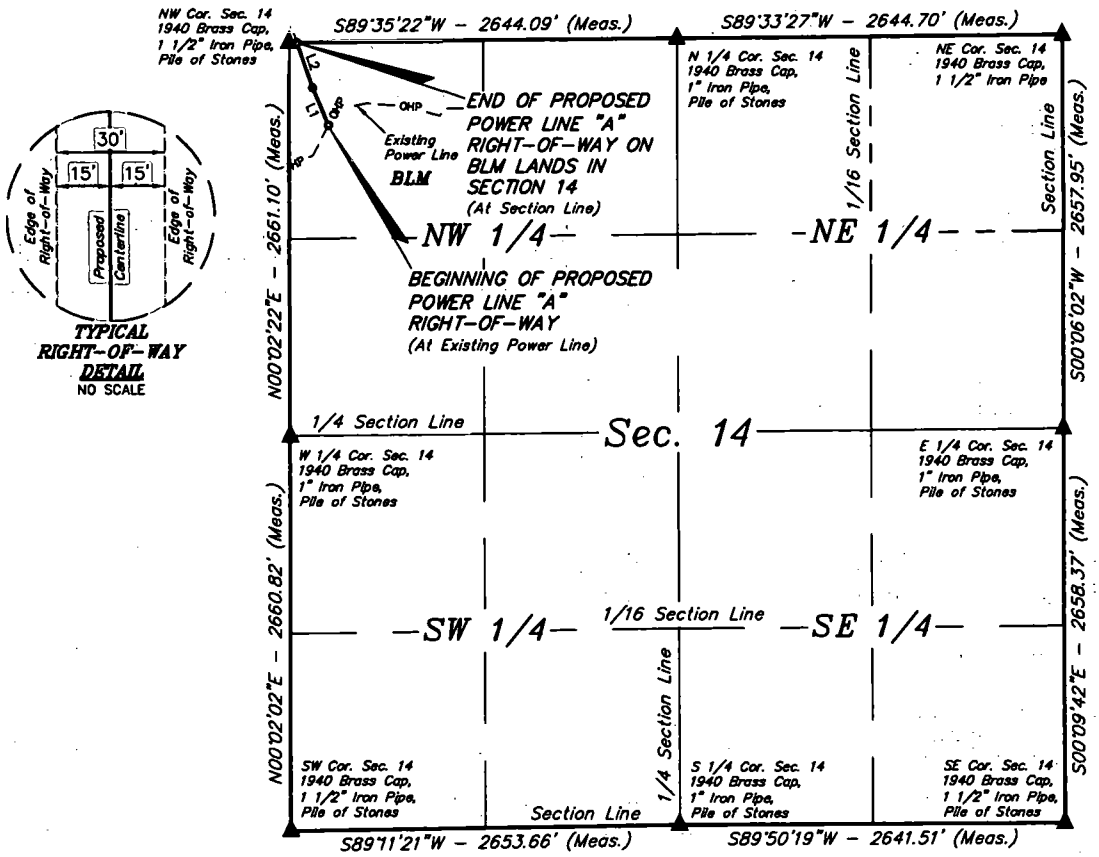
REV: 2 12-22-17 S.S. (MOVED PAD & POWER LINE)

**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTIONS 1, 2, 10, 11, 12 & 14, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | NO SCALE |

**POWER LINE R-O-W** | **EXHIBIT H**




## POWER LINE "A" RIGHT-OF-WAY DESCRIPTION ON BLM LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE NW 1/4 NW 1/4 OF SECTION 14, T25S, R28E, N.M.P.M., WHICH BEARS S25°25'41"E 619.90' FROM THE NORTHWEST CORNER OF SAID SECTION 14, THENCE N22°57'28"W 275.29'; THENCE N18°53'22"W 324.22' TO A POINT ON THE NORTH LINE OF THE NW 1/4 NW 1/4 OF SAID SECTION 14, WHICH BEARS N89°35'22"E 53.83' FROM THE NORTHWEST CORNER OF SAID SECTION 14. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 0.413 ACRES MORE OR LESS.

| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | N22°57'28"W | 275.29' |
| L2 | N18°53'22"W | 324.22' |

BEGINNING OF POWER LINE "A" BEARS S25°25'41"E 619.90' FROM THE NORTHWEST CORNER OF SECTION 14, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON BLM LANDS IN SECTION 14 BEARS N89°35'22"E 53.83' FROM THE NORTHWEST CORNER OF SECTION 14, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 14 (NW 1/4) | BLM | 599.51 | 36.33 | 0.413 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
12-29-17
PROFESSIONAL SURVEYOR

Sheet 1 of 2

FILE: 61576-A1
REV: 1 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

**CIMAREX ENERGY CO.**

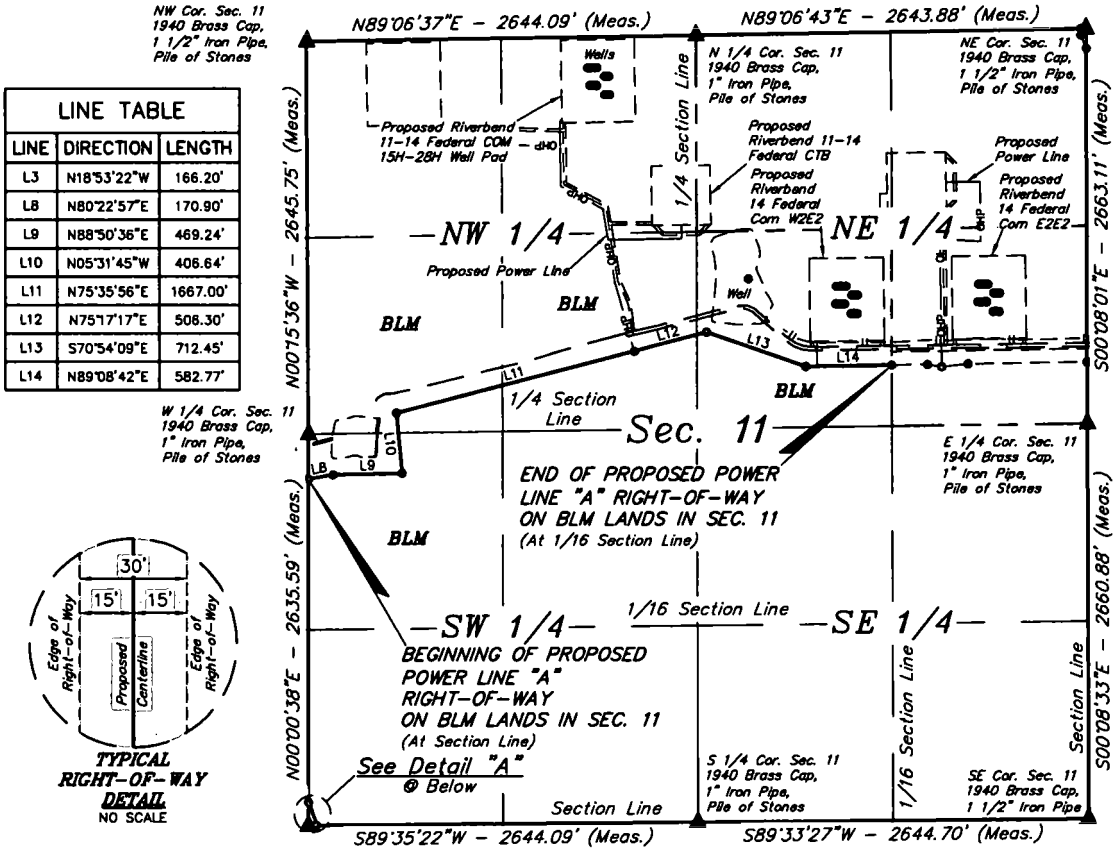
**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTION 14, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | 1" = 1000' |

**POWER LINE R-O-W** **EXHIBIT H**

UINTAH ENGINEERING & LAND SURVEYING

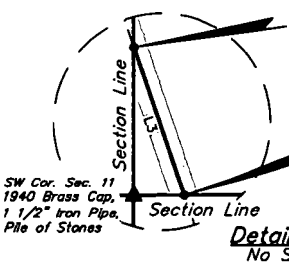
**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L3 | N18°53'22"W | 166.20' |
| L8 | N80°22'57"E | 170.90' |
| L9 | N88°50'36"E | 469.24' |
| L10 | N05°31'45"W | 406.64' |
| L11 | N75°35'56"E | 1667.00' |
| L12 | N75°17'17"E | 508.30' |
| L13 | S70°54'09"E | 712.45' |
| L14 | N89°08'42"E | 582.77' |




TYPICAL RIGHT-OF-WAY DETAIL
NO SCALE




Detail "A"
No Scale

BEGINNING OF POWER LINE "A" ON BLM LANDS IN SECTION 11 BEARS N89°35'22"E 53.83' FROM THE SOUTHWEST CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON BLM LANDS IN SECTION 11 BEARS N00°00'38"E 157.63' FROM THE SOUTHWEST CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

BEGINNING OF POWER LINE "A" ON BLM LANDS IN SECTION 11 BEARS S00°00'38"W 301.13' FROM THE WEST 1/4 CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON BLM LANDS IN SECTION 11 BEARS N73°20'40"W 1380.81' FROM THE EAST 1/4 CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 11 (SW 1/4) | BLM | 1078.20 | 65.35 | 0.743 |
| SEC. 11 (NW 1/4) | BLM | 2239.36 | 135.72 | 1.542 |
| SEC. 11 (NE 1/4) | BLM | 1363.94 | 82.66 | 0.939 |
| TOTAL | | 4681.50 | 283.73 | 3.224 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

23782
12-29-17
PROFESSIONAL SURVEYOR

FILE: 61576-B1 **Sheet 1 of 2**
REV: 1 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

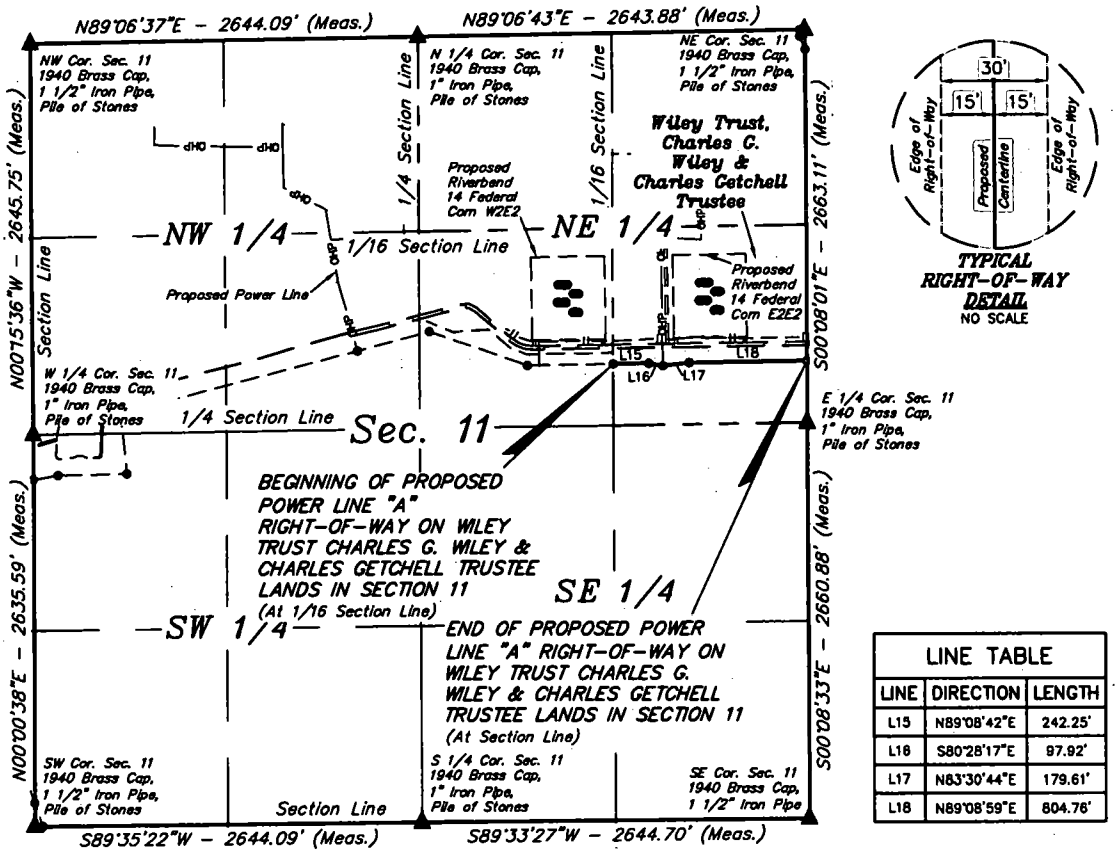
# CIMAREX ENERGY CO.

## RIVERBEND 12-13 FEDERAL COM POWER LINE NETWORK SECTION 11, T25S, R28E, N.M.P.M. EDDY COUNTY, NEW MEXICO

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | 1" = 1000' |

POWER LINE R-O-W EXHIBIT H

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L15 | N89°08'42"E | 242.25' |
| L16 | S80°28'17"E | 97.92' |
| L17 | N83°30'44"E | 179.61' |
| L18 | N89°08'59"E | 804.76' |

## POWER LINE "A" RIGHT-OF-WAY DESCRIPTION ON WILEY TRUST CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT ON THE WEST LINE OF THE SE 1/4 NE 1/4 OF SECTION 11, T25S, R28E, N.M.P.M., WHICH BEARS N73°20'40"W 1380.81' FROM THE EAST 1/4 CORNER OF SAID SECTION 11, THENCE N89°08'42"E 242.25'; THENCE S80°28'17"E 97.92'; THENCE N83°30'44"E 179.61'; THENCE N89°08'59"E 804.76' TO A POINT ON THE EAST LINE OF THE SE 1/4 NE 1/4 OF SAID SECTION 11, WHICH BEARS N00°08'01"W 415.41' FROM THE EAST 1/4 CORNER OF SAID SECTION 11. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 0.912 ACRES MORE OR LESS.

BEGINNING OF POWER LINE "A" ON WILEY TRUST CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE LANDS IN SECTION 11 BEARS N73°20'40"W 1380.81' FROM THE EAST 1/4 CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON WILEY TRUST CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE LANDS IN SECTION 11 BEARS N00°08'01"W 415.41' FROM THE EAST 1/4 CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| WILEY TRUST, CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE | 1324.54 | 80.28 | 0.912 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NEW MEXICO 23782 PROFESSIONAL SURVEYOR
12-29-17

FILE: 61576-E1 Sheet 1 of 2
REV: 1 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
• Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

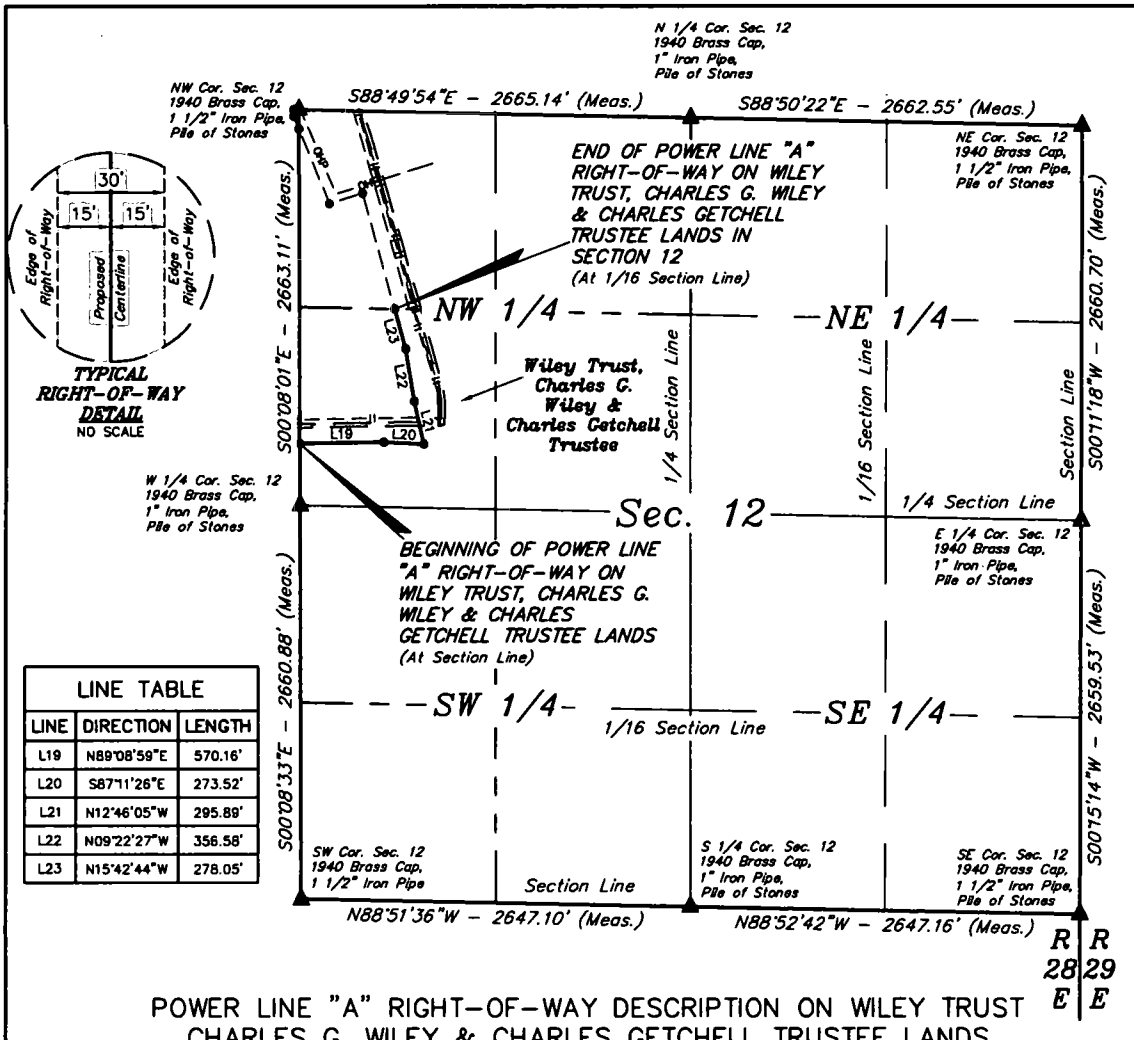
CIMAREX ENERGY CO.
RIVERBEND 12-13 FEDERAL COM
POWER LINE NETWORK
SECTION 11, T25S, R28E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | 1" = 1000' |

POWER LINE R-O-W EXHIBIT H

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L19 | N89°08'59"E | 570.16' |
| L20 | S87°11'26"E | 273.52' |
| L21 | N12°46'05"W | 295.89' |
| L22 | N09°22'27"W | 356.58' |
| L23 | N15°42'44"W | 278.05' |

# POWER LINE "A" RIGHT-OF-WAY DESCRIPTION ON WILEY TRUST CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT ON THE WEST LINE OF THE SW 1/4 NW 1/4 OF SECTION 12, T25S, R28E, N.M.P.M., WHICH BEARS N00°08'01"W 415.41' FROM THE WEST 1/4 CORNER OF SAID SECTION 12, THENCE N89°08'59"E 570.16'; THENCE S87°11'26"E 273.52'; THENCE N12°46'05"W 295.89'; THENCE N09°22'27"W 356.58'; THENCE N15°42'44"W 278.05' TO A POINT ON THE NORTH LINE OF THE SW 1/4 NW 1/4 OF SAID SECTION 12, WHICH BEARS N26°01'00"E 1467.19' FROM THE WEST 1/4 CORNER OF SAID SECTION 12. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 1.222 ACRES MORE OR LESS.

BEGINNING OF POWER LINE "A" ON WILEY TRUST
CHARLES G. WILEY & CHARLES GETCHELL
TRUSTEE LANDS IN SECTION 12 BEARS
N00°08'01"W 415.41' FROM THE WEST 1/4
CORNER OF SECTION 12, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON WILEY TRUST
CHARLES G. WILEY & CHARLES GETCHELL
TRUSTEE LANDS IN SECTION 12 BEARS
N26°01'00"E 1467.19' FROM THE WEST 1/4
CORNER OF SECTION 12, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| WILEY TRUST, CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE | 1774.20 | 107.53 | 1.222 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Paul Buchanan 23782 PROFESSIONAL SURVEYOR 12-29-17

FILE: 61576-F1 Sheet 1 of 2
REV: 2 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

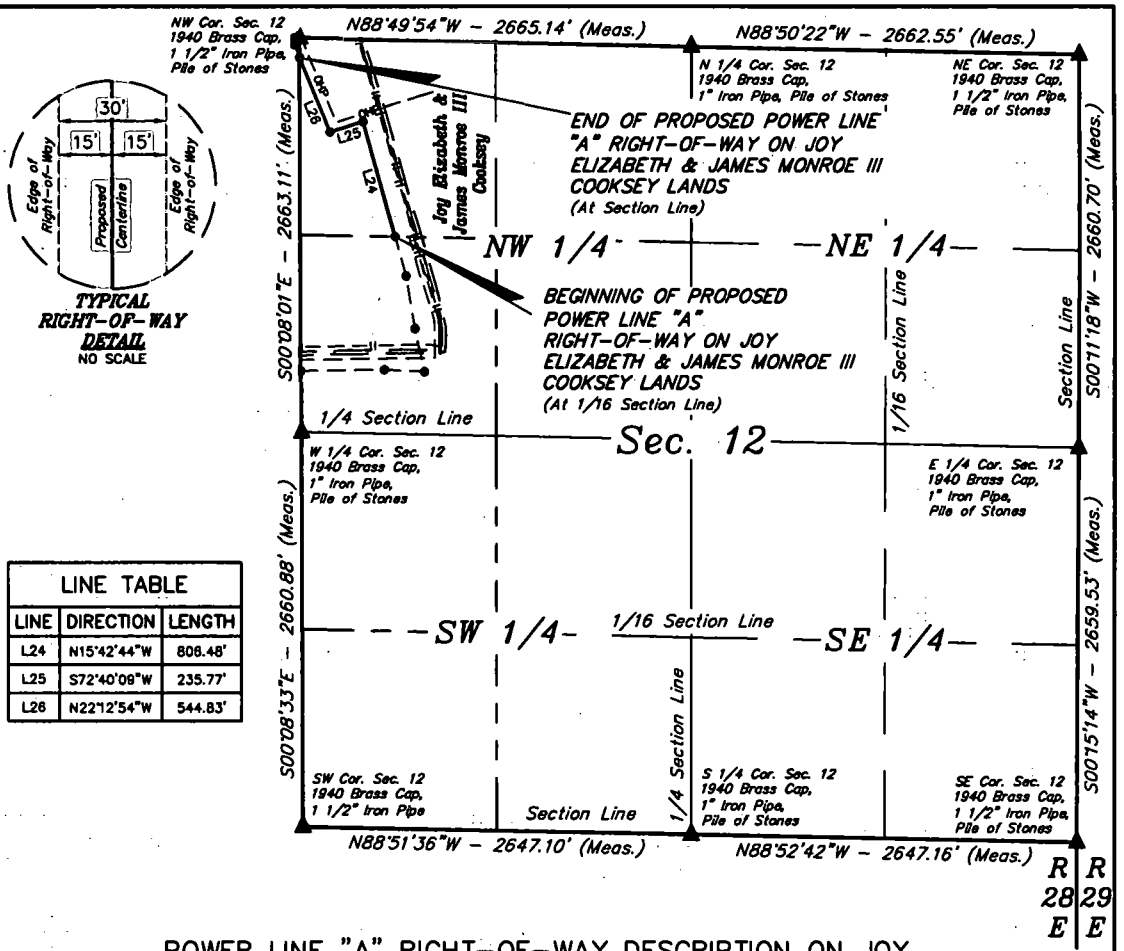
CIMAREX ENERGY CO.
RIVERBEND 12-13 FEDERAL COM
POWER LINE NETWORK
SECTION 12, T25S, R28E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | 1" = 1000' |

POWER LINE R-O-W EXHIBIT H

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L24 | N15°42'44"W | 808.48' |
| L25 | S72°40'09"W | 235.77' |
| L26 | N22°12'54"W | 544.83' |

# POWER LINE "A" RIGHT-OF-WAY DESCRIPTION ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT ON THE SOUTH LINE OF THE NW 1/4 NW 1/4 OF SECTION 12, T25S, R28E, N.M.P.M., WHICH BEARS N26°01'00"E 1467.19' FROM THE WEST 1/4 CORNER OF SAID SECTION 12, THENCE N15°42'44"W 808.48'; THENCE S72°40'09"W 235.77'; THENCE N22°12'54"W 544.83' TO A POINT ON THE NORTH LINE OF THE NW 1/4 NW 1/4 OF SAID SECTION 12, WHICH BEARS S88°49'54"E 273.14' FROM THE NORTHWEST CORNER OF SAID SECTION 12. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 1.093 ACRES MORE OR LESS.

BEGINNING OF POWER LINE "A" ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS BEARS N26°01'00"E 1467.19' FROM THE WEST 1/4 CORNER OF SECTION 12, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS BEARS S88°49'54"E 273.14' FROM THE WEST 1/4 CORNER OF SECTION 12, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| JOY ELIZABETH & JAMES MONROE III COOKSEY | 1587.08 | 96.19 | 1.093 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

STATE OF NEW MEXICO 23782 PROFESSIONAL SURVEYOR 12-29-17

FILE: 61576-G1 Sheet 1 of 2
REV: 2 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

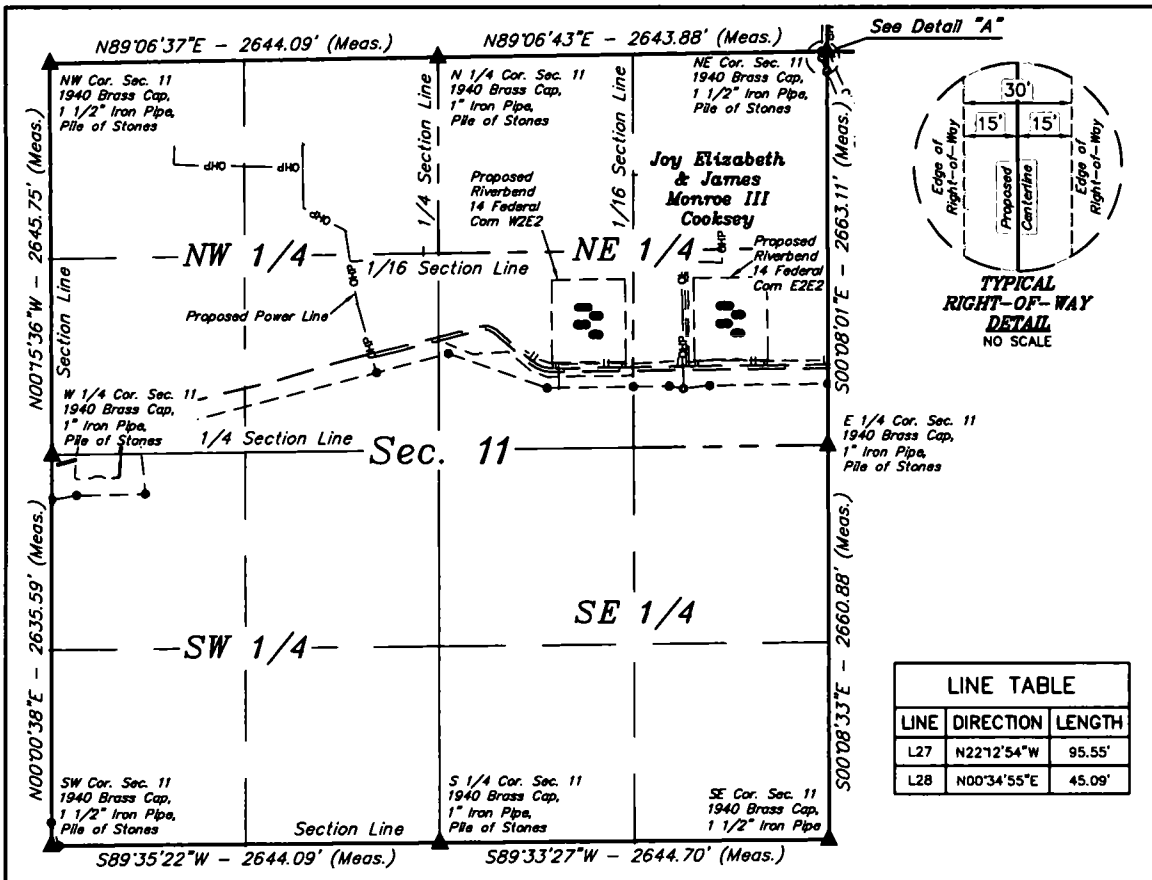
N

**CIMAREX ENERGY CO.**
**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTION 12, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.J. | 04-14-17 | 1" = 1000' |

**POWER LINE R-O-W** **EXHIBIT H**

UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L27 | N22°12'54"W | 95.55' |
| L28 | N00°34'55"E | 45.09' |

## POWER LINE "A" RIGHT-OF-WAY DESCRIPTION ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

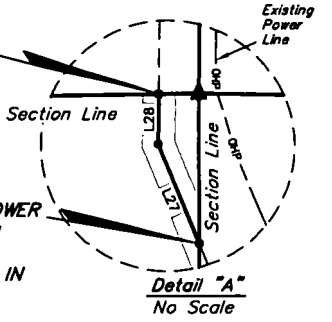
BEGINNING AT A POINT ON THE EAST LINE OF THE NE 1/4 NE 1/4 OF SECTION 11, T25S, R28E, N.M.P.M., WHICH BEARS S00°08'01"E 134.10' FROM THE NORTHEAST CORNER OF SAID SECTION 11, THENCE N22°12'54"W 95.55'; THENCE N00°34'55"E 45.09' TO A POINT ON THE NORTH LINE OF THE NE 1/4 NE 1/4 OF SAID SECTION 11, WHICH BEARS S89°06'43"W 35.36' FROM THE NORTHEAST CORNER OF SAID SECTION 11. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 0.097 ACRES MORE OR LESS.

BEGINNING OF POWER LINE "A" ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS IN SECTION 11 BEARS S00°08'01"E 134.10' FROM THE NORTHEAST CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS IN SECTION 11 BEARS S89°06'43"W 35.36' FROM THE NORTHEAST CORNER OF SECTION 11, T25S, R28E, N.M.P.M.

*END OF PROPOSED POWER LINE "A" RIGHT-OF-WAY ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS IN SECTION 11*
*(At Section Line)*

*BEGINNING OF PROPOSED POWER LINE "A" RIGHT-OF-WAY ON JOY ELIZABETH & JAMES MONROE III COOKSEY LANDS IN SECTION 11*
*(At Section Line)*




*Detail "A"*
*No Scale*

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| WILEY TRUST, CHARLES G. WILEY & CHARLES GETCHELL TRUSTEE | 140.64 | 8.52 | 0.097 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
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STATE OF NEW MEXICO 23782 PROFESSIONAL SURVEYOR 12-29-17

FILE: 61576-11

Sheet 1 of 2

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

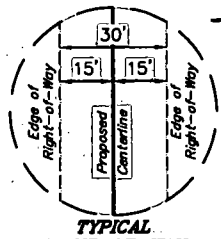
**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTION 11, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

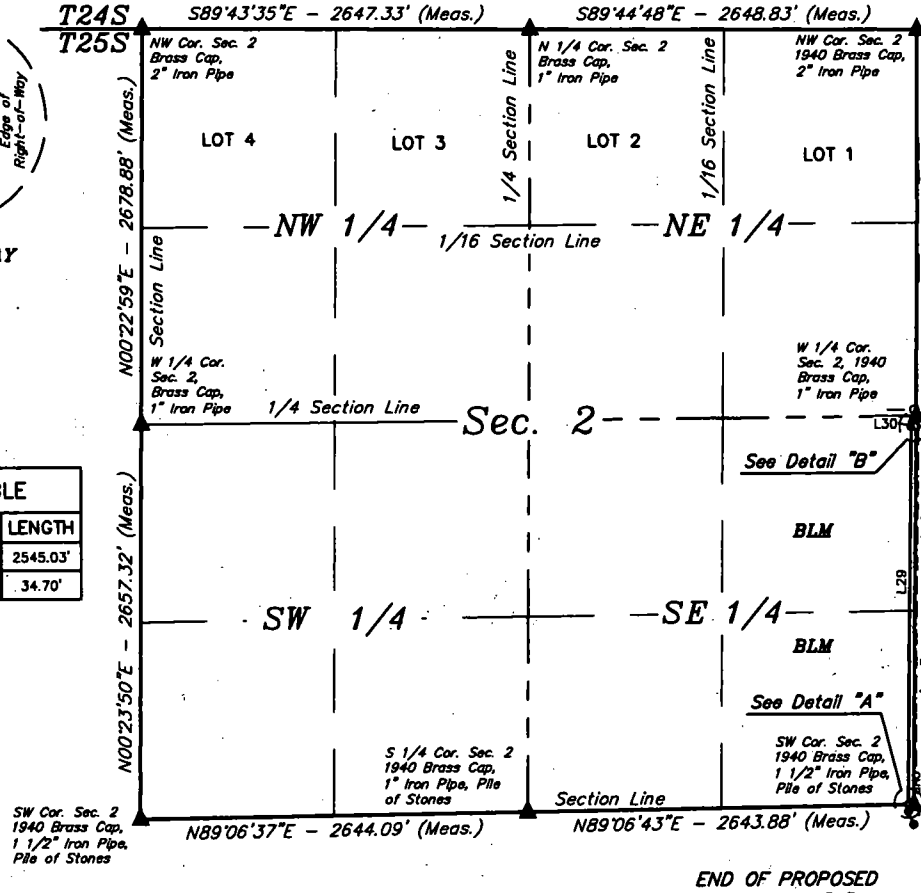
| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.S. | 12-27-17 | 1" = 1000' |
| POWER LINE R-O-W | | | EXHIBIT H |

UINTAH ENGINEERING & LAND SURVEYING

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

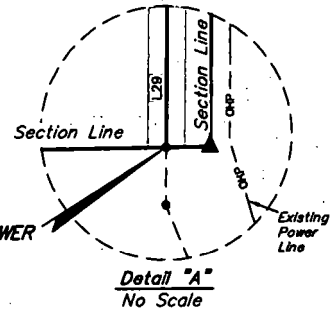



**TYPICAL RIGHT-OF-WAY DETAIL**
NO SCALE



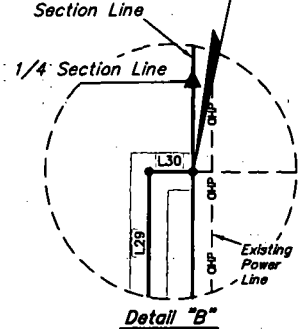

| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L29 | N00°34'55"E | 2545.03' |
| L30 | S89°24'44"E | 34.70' |

END OF PROPOSED POWER LINE "A" RIGHT-OF-WAY ON BLM LANDS IN SECTION 2
(At Section Line)




BEGINNING OF PROPOSED POWER LINE "A" RIGHT-OF-WAY ON BLM LANDS IN SECTION 2
(At Section Line)

**Detail "A"**
No Scale




**Detail "B"**
No Scale

BEGINNING OF POWER LINE "A" ON BLM LANDS IN SECTION 2 BEARS S89°06'43"W 35.36' FROM THE SOUTHEAST CORNER OF SECTION 2, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON BLM LANDS IN SECTION 2 BEARS S00°34'03"W 70.72' FROM THE EAST 1/4 CORNER OF SECTION 2, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 1 (SE 1/4) | BLM | 2579.73 | 156.35 | 1.777 |

▲ = SECTION CORNERS LOCATED.

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

STATE OF NEW MEXICO 23782 PROFESSIONAL SURVEYOR 12-29-17

Sheet 1 of 2

FILE: 61576-J1

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

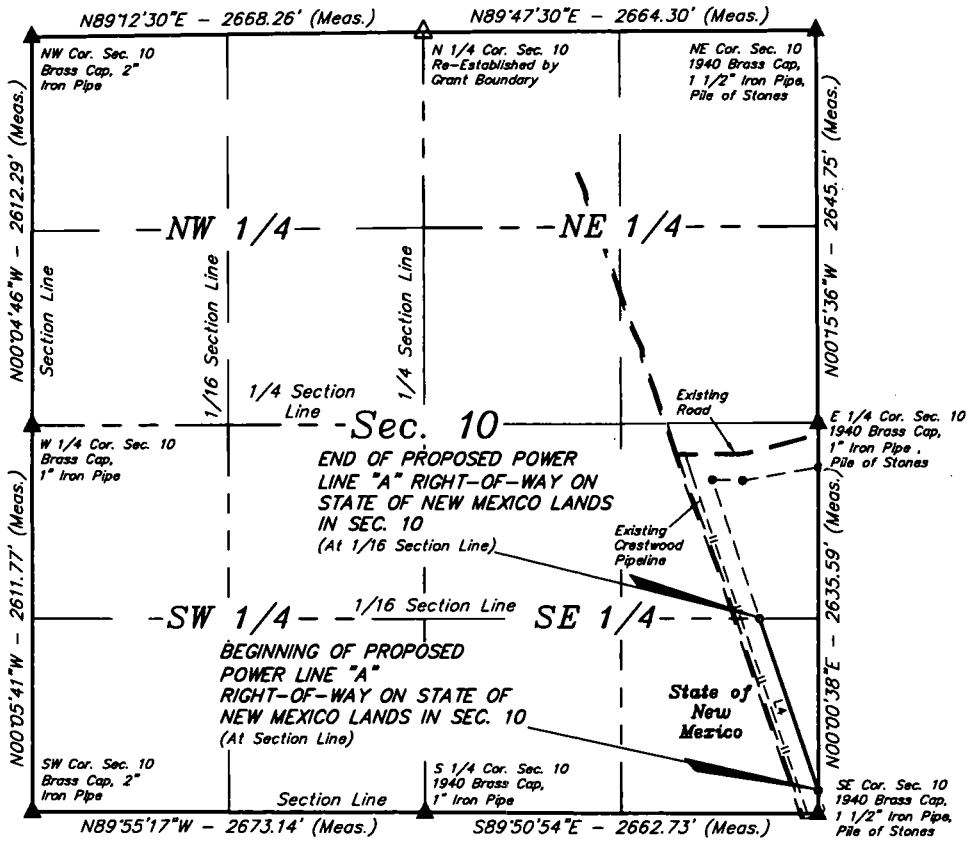
N

**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTION 2, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | S.S. | 12-27-17 | 1" = 1000' |
| POWER LINE R-O-W | | | EXHIBIT H |


UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




BEGINNING OF POWER LINE "A" ON STATE OF NEW MEXICO LANDS IN SEC. 10 BEARS N00°00'38"E 157.63' FROM THE SOUTHEAST CORNER OF SECTION 10, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON STATE OF NEW MEXICO LANDS IN SEC. 10 BEARS N16°45'48"W 1376.32' FROM THE SOUTHEAST CORNER OF SECTION 10, T25S, R28E, N.M.P.M.

| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L4 | N18°53'22"W | 1226.24' |

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| (SEC. 10 SE 1/4 SE 1/4) | STATE OF NEW MEXICO | 1226.24 | 74.32 | 0.845 |

▲ = SECTION CORNERS LOCATED.
△ = SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground.)

CERTIFICATE
THIS IS TO CERTIFY THAT THIS EASEMENT PLAT AND THE ACTUAL SURVEY ON THE GROUND UPON WHICH IT IS BASED WERE PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION; THAT I AM RESPONSIBLE FOR THIS SURVEY; THAT THIS SURVEY MEETS THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO; AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

STATE OF NEW MEXICO
23782
PROFESSIONAL SURVEYOR
12-29-17

Sheet 1 of 2

FILE: 61576-C1
REV: 1 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
• Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

**CIMAREX ENERGY CO.**
**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTION 10, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.L. | 04-14-17 | 1" = 1000' |

**POWER LINE R-O-W EXHIBIT H**

UINTAH ENGINEERING & LAND SURVEYING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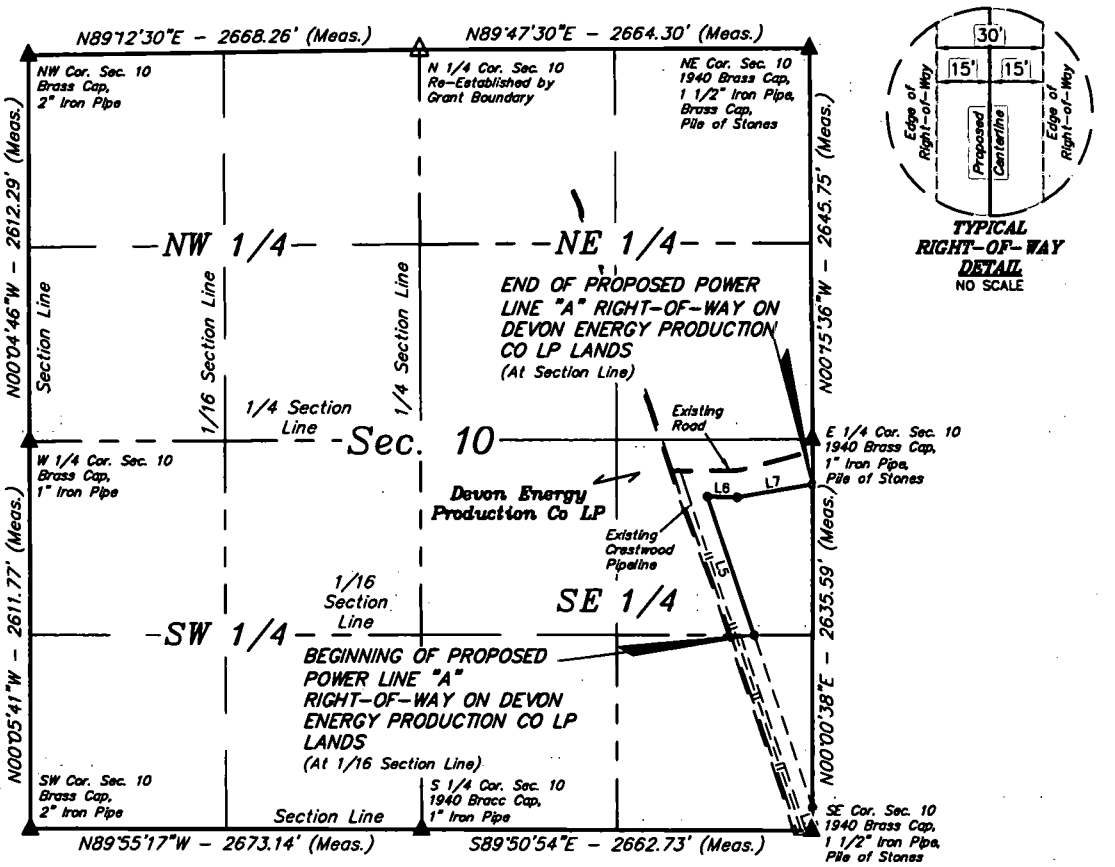
Vernal, UT 84078 * (435) 789-1017




## POWER LINE "A" RIGHT-OF-WAY DESCRIPTION ON DEVON ENERGY PRODUCTION CO LP LANDS

A 30' WIDE RIGHT-OF-WAY 15' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT ON THE SOUTH LINE OF THE NE 1/4 SE 1/4 OF SECTION 10, T25S, R28E, N.M.P.M., WHICH BEARS N16°45'48"W 1376.32' FROM THE SOUTHEAST CORNER OF SAID SECTION 10, THENCE N18°53'22"W 988.26'; THENCE S88°31'43"E 204.84'; THENCE N80°22'57"E 519.86' TO A POINT ON THE EAST LINE OF THE NE 1/4 SE 1/4 OF SAID SECTION 10, WHICH BEARS S00°00'38"W 301.13' FROM THE EAST 1/4 CORNER OF SAID SECTION 10. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 1.180 ACRES MORE OR LESS.

| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L5 | N18°53'22"W | 988.26' |
| L6 | S88°31'43"E | 204.84' |
| L7 | N80°22'57"E | 519.86' |

BEGINNING OF POWER LINE "A" ON DEVON ENERGY PRODUCTION CO LP LANDS IN SECTION 10 BEARS N16°45'48"W 1376.32' FROM THE SOUTHEAST CORNER OF SECTION 10, T25S, R28E, N.M.P.M.

END OF POWER LINE "A" ON DEVON ENERGY PRODUCTION CO LP LANDS IN SECTION 10 BEARS S00°00'38"W 301.13' FROM THE EAST 1/4 CORNER OF SECTION 10, T25S, R28E, N.M.P.M.

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | |
|---|---|---|---|
| OWNERSHIP | FEET | RODS | ACRES |
| DEVON ENERGY PRODUCTION CO LP | 1712.96 | 103.82 | 1.180 |

▲ = SECTION CORNERS LOCATED.

△ = SECTION CORNERS RE-ESTABLISHED. (Not Set on Ground.)

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23782 PROFESSIONAL SURVEYOR 12-29-17

FILE: 61576-D1 Sheet 1 of 2

REV: 1 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:

- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM**
**POWER LINE NETWORK**
**SECTION 10, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | 1" = 1000' |

**POWER LINE R-O-W** **EXHIBIT H**

UINTAH ENGINEERING & LAND SURVEYING


**UELS, LLC**
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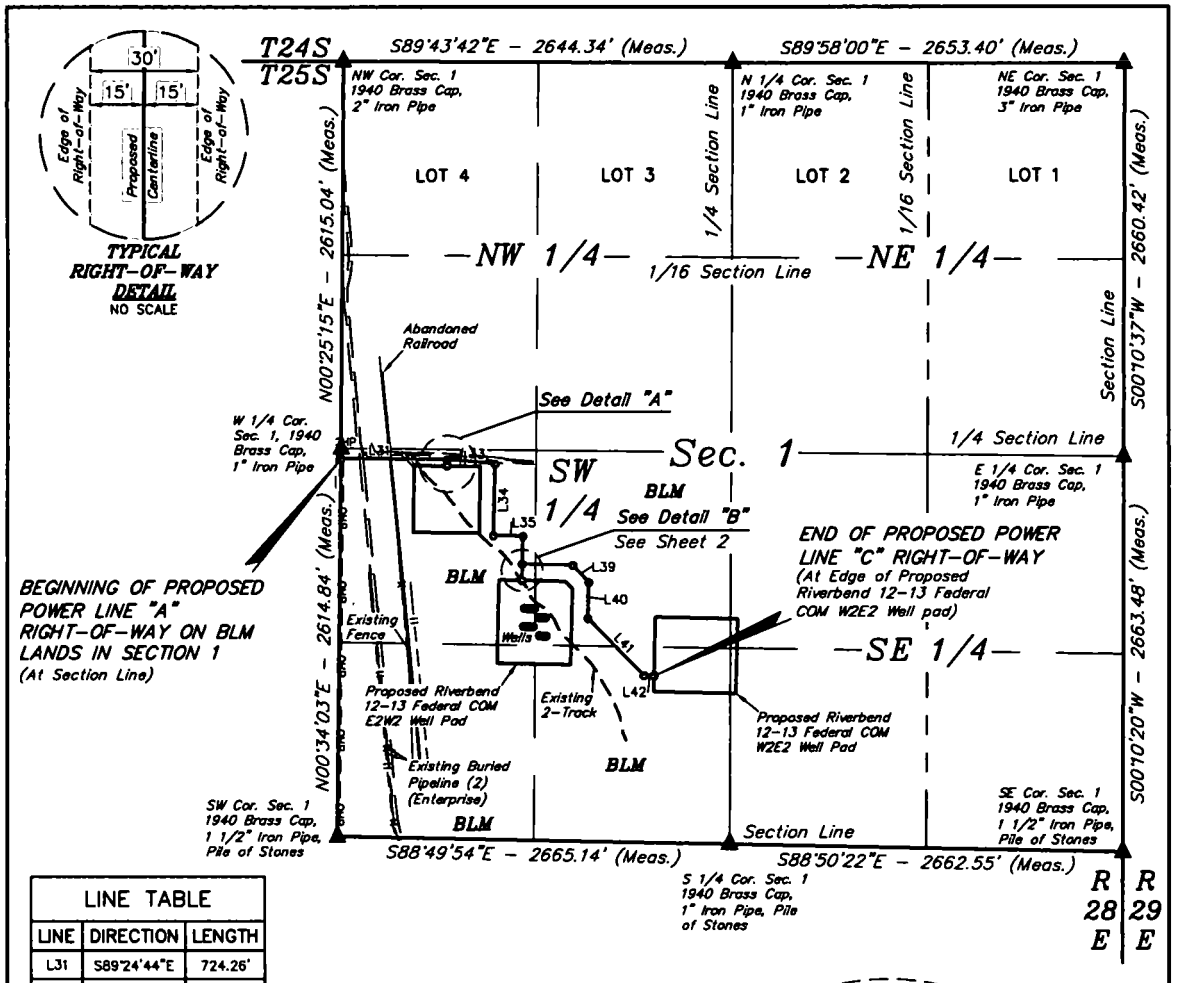
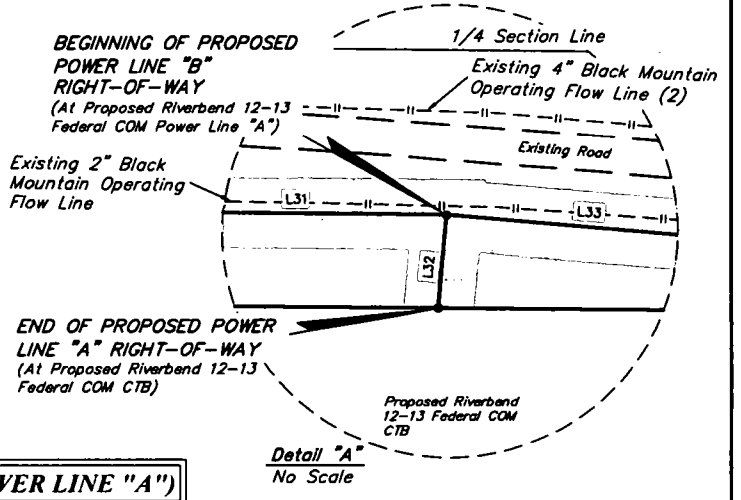
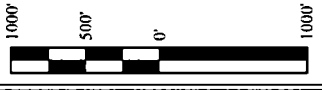



| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L31 | S89°24'44"E | 724.26' |
| L32 | S04°59'10"W | 40.00' |
| L33 | S85°00'56"E | 323.39' |
| L34 | S01°20'01"W | 482.65' |
| L35 | S88°32'03"E | 200.08' |
| L36 | S01°19'29"W | 187.02' |
| L37 | S01°19'29"W | 110.01' |
| L38 | S88°40'56"E | 344.74' |
| L39 | S42°35'58"E | 158.98' |
| L40 | S01°19'34"W | 243.76' |
| L41 | S44°39'13"E | 540.23' |
| L42 | S88°37'28"E | 69.70' |




| ACREAGE / LENGTH TABLE (POWER LINE "A") | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 1 (SW 1/4) | BLM | 764.26 | 46.32 | 0.526 |

| ACREAGE / LENGTH TABLE (POWER LINE "B") | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 1 (SW 1/4) | BLM | 1303.14 | 78.98 | 0.897 |

| ACREAGE / LENGTH TABLE (POWER LINE "C") | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 1 (SW 1/4) | BLM | 1357.40 | 82.27 | 0.935 |

▲ = SECTION CORNERS LOCATED.

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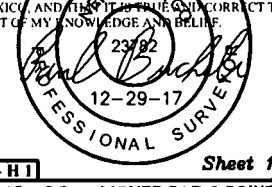



FILE: 61576-H1 **Sheet 1 of 3**
REV: 2 12-27-17 S.S. (MOVED PAD & POWER LINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

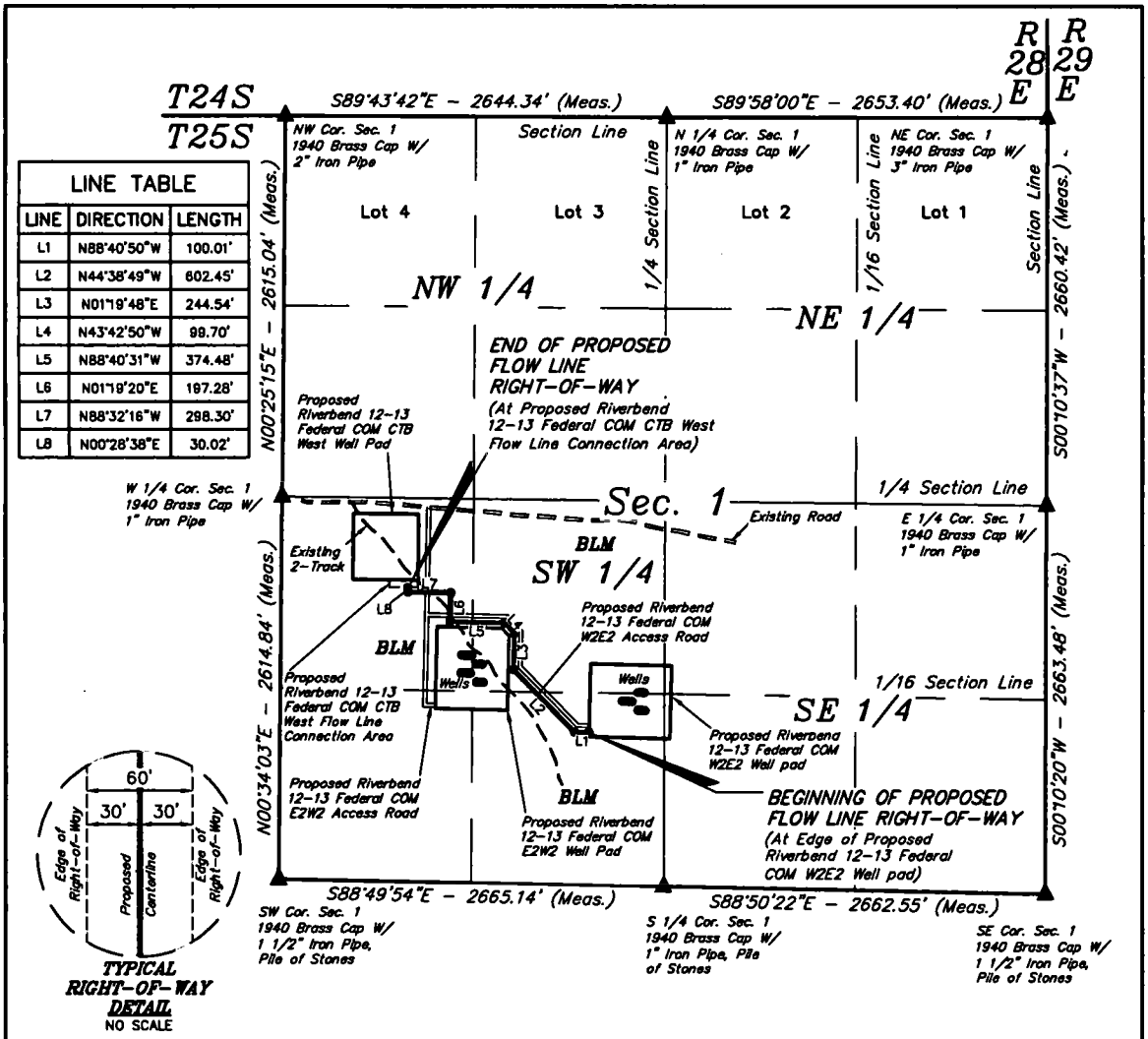
# CIMAREX ENERGY CO.

## RIVERBEND 12-13 FEDERAL COM POWER LINE NETWORK SECTION 1, T25S, R28E, N.M.P.M. EDDY COUNTY, NEW MEXICO

| SURVEYED BY | C.J., D.J. | 03-31-17 | SCALE |
|---|---|---|---|
| DRAWN BY | J.I. | 04-14-17 | 1" = 1000' |

POWER LINE R-O-W EXHIBIT H


UINTAH ENGINEERING & LAND SURVEYING
UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017




| LINE TABLE | | |
|---|---|---|
| LINE | DIRECTION | LENGTH |
| L1 | N88°40'50"W | 100.01' |
| L2 | N44°38'49"W | 602.45' |
| L3 | N01°19'48"E | 244.54' |
| L4 | N43°42'50"W | 99.70' |
| L5 | N88°40'31"W | 374.48' |
| L6 | N01°19'20"E | 197.28' |
| L7 | N88°32'16"W | 298.30' |
| L8 | N00°28'38"E | 30.02' |




TYPICAL RIGHT-OF-WAY DETAIL
NO SCALE

## FLOW LINE RIGHT-OF-WAY DESCRIPTION

A 60' WIDE RIGHT-OF-WAY 30' ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE.

BEGINNING AT A POINT IN THE SE 1/4 SW 1/4 OF SECTION 1, T25S, R28E, N.M.P.M., WHICH BEARS N25°54'45"W 1176.93' FROM THE SOUTH 1/4 CORNER OF SAID SECTION 1, THENCE N88°40'50"W 100.01'; THENCE N44°38'49"W 602.45'; THENCE N01°19'48"E 244.54'; THENCE N43°42'50"W 99.70'; THENCE N88°40'31"W 374.48'; THENCE N01°19'20"E 197.28'; THENCE N88°32'16"W 298.30'; THENCE N00°28'38"E 30.02' TO A POINT IN THE NW 1/4 SW 1/4 OF SAID SECTION 1, WHICH BEARS S54°32'55"E 1068.04' FROM THE WEST 1/4 CORNER OF SAID SECTION 1. THE SIDE LINES OF SAID DESCRIBED RIGHT-OF-WAY BEING SHORTENED OR ELONGATED TO MEET THE GRANTOR'S PROPERTY LINES. BASIS OF BEARINGS IS A TRANSVERSE MERCATOR PROJECTION WITH A CENTRAL MERIDIAN OF W103°53'00". CONTAINS 2.682 ACRES MORE OR LESS.

BEGINNING OF FLOW LINE BEARS N25°54'45"W
1176.93' FROM THE SOUTH 1/4 CORNER OF
SECTION 1, T25S, R28E, N.M.P.M.

END OF FLOW LINE BEARS S54°32'55"E
1068.04' FROM THE WEST 1/4 CORNER OF
SECTION 1, T25S, R28E, N.M.P.M.

CERTIFICATE
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23782
12-26-17
PROFESSIONAL SURVEYOR

1000' 500' 0' 1000'

| ACREAGE / LENGTH TABLE | | | | |
|---|---|---|---|---|
| | OWNERSHIP | FEET | RODS | ACRES |
| SEC. 1 (SW 1/4) | BLM | 1946.78 | 117.99 | 2.682 |

▲ = SECTION CORNERS LOCATED.

FILE: 61528-A1 Sheet 1 of 2
REV: 2 12-19-17 C.D. (MOVED PAD & FLOW LINE)

NOTES:
- Basis of Bearings is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

N

CIMAREX ENERGY CO.

RIVERBEND 12-13 FEDERAL COM W2E2
SECTION 1, T25S, R28E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

| SURVEYED BY | C.J., S.R. | 06-27-17 | SCALE |
|---|---|---|---|
| DRAWN BY | C.D. | 03-22-17 | 1" = 1000' |
| Flow Line & Gas Lift ROW | | Exhibit M & N | |

UINTAH ENGINEERING & LAND SURVEYING

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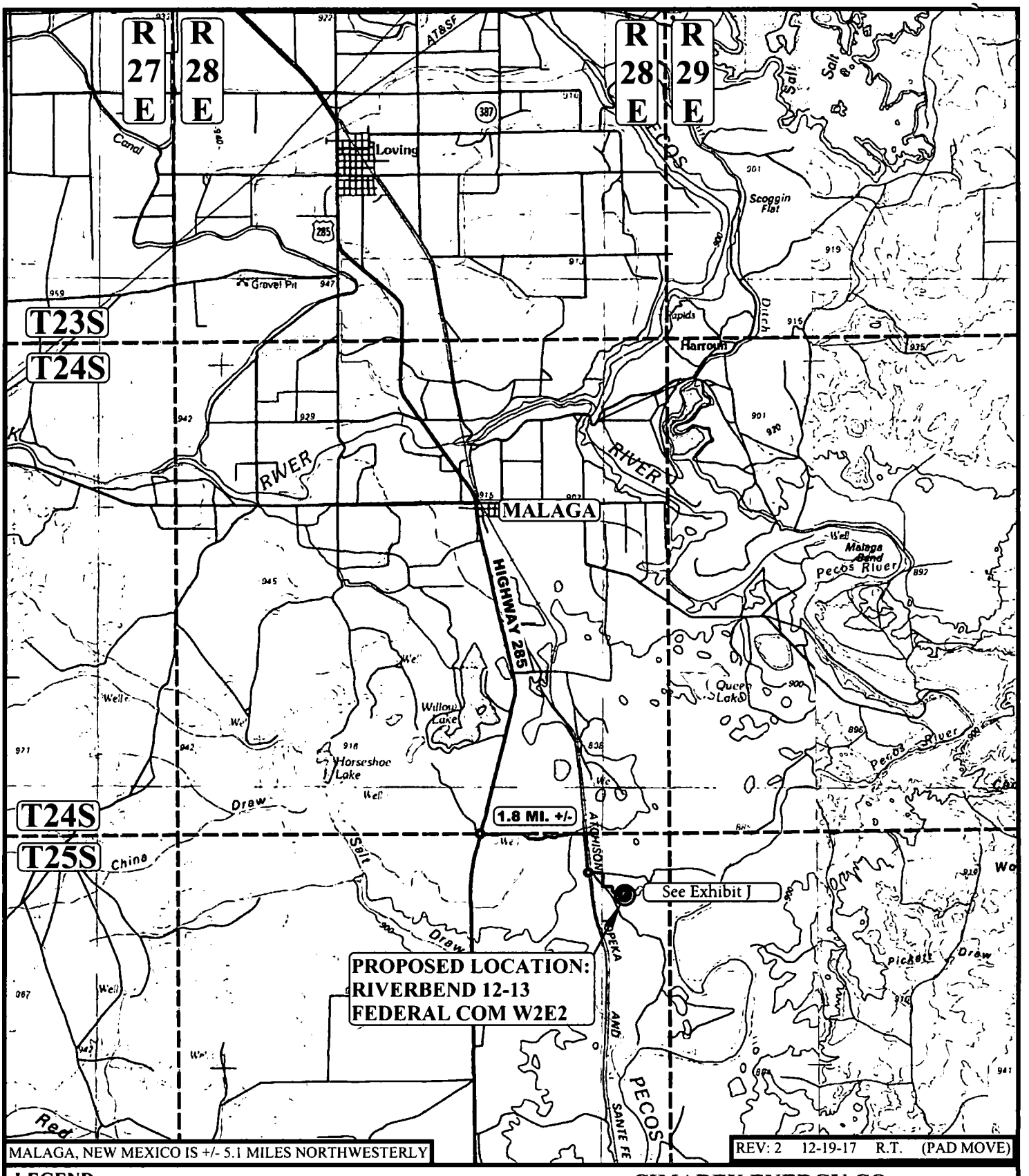



**LEGEND:**

● **PROPOSED LOCATION**

N

## CIMAREX ENERGY CO.

**RIVERBEND 12-13 FEDERAL COM W2E2**
**E 1/2 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

| | | | |
|---|---|---|---|
| SURVEYED BY | G.M. | 03-13-17 | SCALE |
| DRAWN BY | B.R. | 03-16-17 | 1 : 100,000 |

**PUBLIC ACCESS ROAD MAP EXHIBIT B**


UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

BEGINNING AT THE INTERSECTION OF HIGHWAY 285 AND AN EXISTING ROAD TO THE EAST (LOCATED AT NAD83 LATITUDE N32.1664° AND LONGITUDE W104.0717°), PROCEED IN AN EASTERLY, THEN SOUTHERLY DIRECTION APPROXIMATELY 1.8 MILES TO THE JUNCTION OF THIS ROAD AND AN EXISTING ROAD TO THE EAST; TURN LEFT AND PROCEED IN AN EASTERLY DIRECTION APPROXIMATELY 0.2 MILES TO THE BEGINNING OF THE PROPOSED ACCESS FOR THE RIVERBEND 12-13 FEDERAL E2W2 TO THE SOUTH; FOLLOW ROAD FLAGS IN A SOUTHERLY DIRECTION APPROXIMATELY 732' TO THE BEGINNING OF THE PROPOSED ACCESS TO THE EAST; FOLLOW ROAD FLAGS IN AN EASTERLY, THEN SOUTHEASTERLY DIRECTION APPROXIMATELY 1,586' TO THE PROPOSED LOCATION.

TOTAL DISTANCE FROM THE INTERSECTION OF HIGHWAY 285 AND AN EXISTING ROAD TO THE EAST (LOCATED AT NAD83 LATITUDE N32.1664° AND LONGITUDE W104.0717°) TO THE PROPOSED WELL LOCATION IS APPROXIMATELY 2.4 MILES.

REV: 2 12-19-17 R.T. (PAD MOVE)

**CIMAREX ENERGY CO.**

**RIVERBEND 12-13 FEDERAL COM W2E2**
**E 1/2 SW 1/4, SECTION 1, T25S, R28E, N.M.P.M.**
**EDDY COUNTY, NEW MEXICO**

UINTAH ENGINEERING & LAND SURVEYING

**UELS, LLC**
**Corporate Office * 85 South 200 East**
**Vernal, UT 84078 * (435) 789-1017**

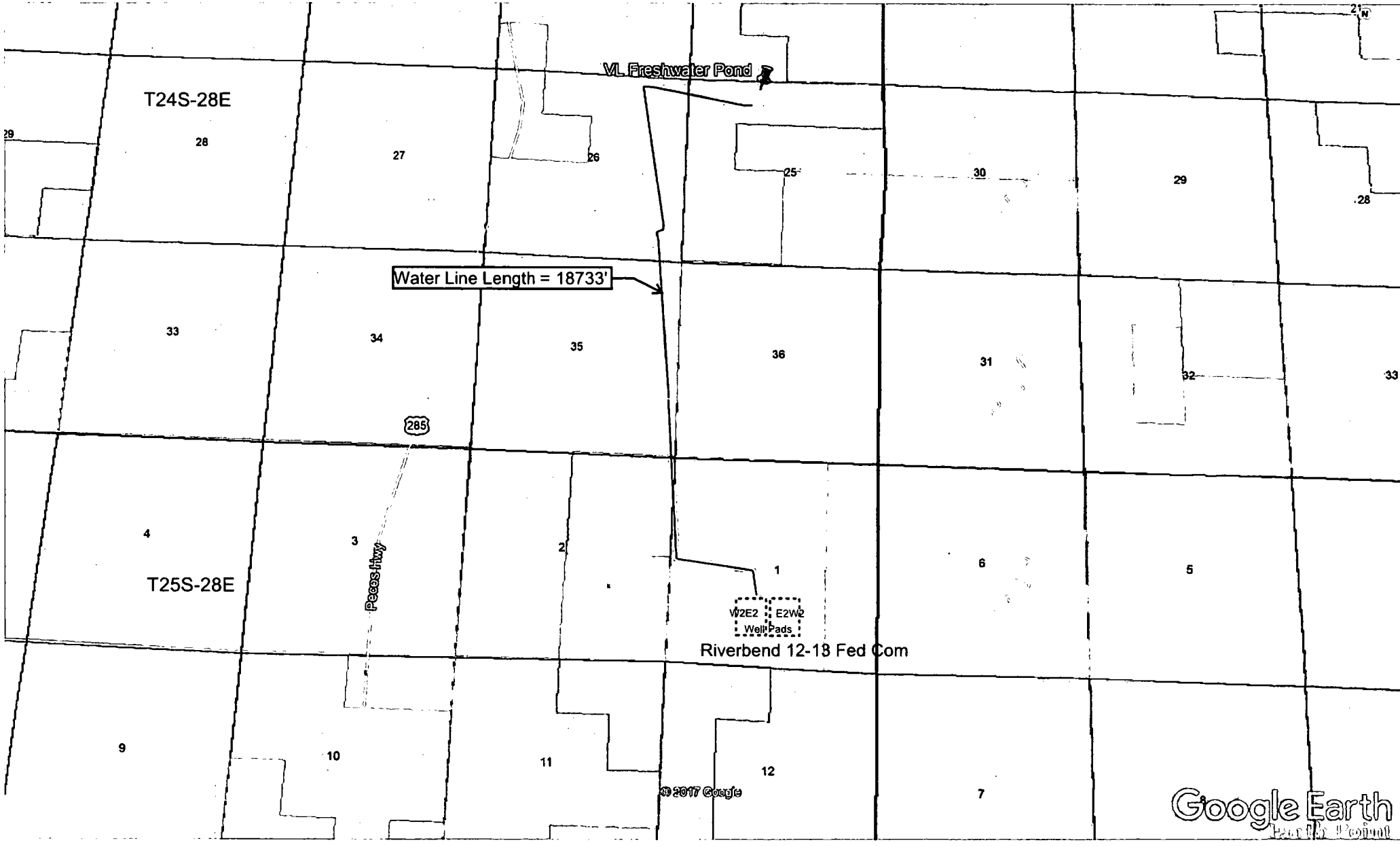
| | | | |
|---|---|---|---|
| SURVEYED BY | G.M. | 03-13-17 | |
| DRAWN BY | B.R. | 03-16-17 | |

**ROAD DESCRIPTION** **EXHIBIT J**

Riverbend 12-13 Federal Com W2E2 & E2W2 - Proposed Frac Water Route

Eddy County, NM

# EXHIBIT O



# Cimarex Riverbend 12-13 Federal Com 15H
## Surface Use Plan

Upon approval of the Application for Permit to Drill (APD) the following surface use plan of operations will be followed and carried out. The surface use plan outlines the proposed surface disturbance. If any other disturbance is needed after the APD is approved, a BLM sundry notice or right of way application will be submitted for approval prior to any additional surface disturbance.

**Existing Roads**

- Directions to location - Exhibit A.
- Public access route - Exhibit B.
- Existing access road for the proposed project. Please see Exhibit B and C.
- Cimarex Energy will:
    - Improve and/or maintain existing road(s) condition the same as or better than before the operations began.
    - Provide plans for improvement and /or maintenance of existing roads if requested.
    - Repair or replace damaged or deteriorated structures as needed. Including cattle guards and culverts.
    - Prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events.
    - Obtain written BLM approval prior to the application of surfactants, binding agents, or other dust suppression chemicals on the roadways.
- The maximum width of the driving surface will be 18'. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.

**New or Reconstructed Access Roads**

Cimarex Energy plans to construct a new on-lease access road

- Length: 3,068'.
- Width: 30'.
- Road Plat - Exhibit D.
- Cimarex Energy will complete improvements to the driving surface as needed.
- The maximum width of the driving surface for all roads above will be 18'.
- The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface.
- The ditches will be 1' deep with 3:1 slopes.
- The driving surface will be made of 6" rolled and compacted caliche.
- Cimarex Energy will prevent and abate fugitive dust as needed, whether created by vehicular traffic, equipment operations, or other events.

**Well Radius Map**

Please see Exhibit E for wells within one mile or proposed well SHL and BHL.

**Proposed or Existing Production Facility**

A new facility will be constructed for this project if the well is productive.

- Riverbend 12-13 Federal Com CTB East - Exhibit F
    - Direction to facility
    - Facility pad location layout and cut and fill
    - Facility pad archeological boundary
    - Facility pad flowline corridor
    - Facility pad access road

**Gas Pipeline Specifications**

- Cimarex plans to construct an on-lease gas pipeline to service this battery location.
- Please see Exhibit G for proposed pipeline route.
- Three pipelines: 12" LP Steel, 8" HP Steel, 4" HP Steel.
- Pipeline Length: 65'. Pipeline Width: 30'.
- Pipeline will be buried and will require a construction width of 30'.
- MAOP: 1,440psi.
- Anticipated working pressure: 12": 300psi; 8" & 4": 1100 psi.

# Cimarex Riverbend 12-13 Federal Com 15H
# Surface Use Plan

**Salt Water Disposal Specifications**

- No new SWD pipelines are required for this project.

**Power Lines**

- Cimarex plans to construct an on-lease power line to service the Riverbend 12-13 Federal Com W2E2 & Riverbend 12-13 Federal Com CTB East.
- Overhead power line from an existing power source located in the SW 1/4 Sec 1-25S-28E.
- Length: 190'.
- Poles: 1
- Specifications: 480 volt, 4 wire, 3 phase.
- Please see Exhibit I for proposed route.

**Well Site Location**

- Proposed well pad/location layout - Exhibit J.
- Proposed Rig layout - Exhibit K
    - The rig layout, including V-door and flare line may change depending on rig availability. The pad dimensions and orientation will remain the same. No additional disturbance is anticipated if a rig layout change is necessary to accommodate the drilling rig. If additional disturbance is required a sundry notice will be submitted to the BLM for approval.
    - Mud pits in the closed circulation system will be steel pits and the cuttings will be stored in the steel containment pits.
    - Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- Archeological boundary - Exhibit L
- Multi well pad: Riverbend 12-13 Federal Com 16H thru 28H
- Pad Size: 490x560
- Construction Material
    - If possible, native caliche will be obtained from the excavation of drill site. The primary way of obtaining caliche will be by "turning over" the location. This means caliche will be obtained from the actual well site. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2,400 cu yds is the max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:
        - The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.
        - An approximate 120' x 120' area is used within the proposed well site to remove caliche.
        - Subsoil is removed and piled alongside the 120' x 120' area within the pad site.
        - When caliche is found, material will be stockpiled within the pad site to build the location and road.
        - Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.
        - Once well is drilled, the stockpiled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stockpiled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in Exhibit J - Layout Diagram.
        - In the event that no caliche is found onsite, caliche will be hauled in from BLM-approved caliche pit in Sec 26-24S-28E or Sec 22-25S-28E.
    - Mud pits in the closed circulation system will be steel pits and the cuttings will be stored in steel containment pits.
- Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements. Exhibit P: Interim Reclamation Diagram.
- There are no known dwellings within 1.5 miles of this location.

**Flowlines and Gas Lift Pipelines**

All proposed pipelines will be constructed in a 60' ROW corridor.

- Flowlines
  - Cimarex Energy plans to construct on-lease flowlines to service the well.
  - 6" HP steel for oil, gas, and water production.
  - Length: 740'.
  - MAOP: 1,500 psi; Anticipated working pressure: 200-300 psi.
  - Please see Exhibit M for proposed on lease route.
- Gas Lift Pipeline
  - Cimarex Energy plans to construct on-lease gas lift pipelines to service the well.
  - 6" HP steel for gas lift.
  - Length: 740'.
  - MAOP: 1,500 psi; Anticipated working pressure: 200-300 psi.
  - Please see Exhibit N for proposed on lease route.

**Water Resources**

- A temporary surface fresh water pipeline(s) will be utilized for this project.
- Cimarex plans to lay the fresh water surface pipeline(s) prior to commencement of the stimulation job.
- 10" lay-flat surface pipeline.
- The surface pipeline(s) will follow the road from a frac pit to the well.
- Length: 18,733'.
- Operating pressure: <140 psi.
- Fresh water will be purchased from a 3rd party.
- Please see Exhibit O for proposed route.

**Methods of Handling Waste**

- Drilling fluids, produced oil, and water from the well during drilling and completion operations will be stored safely and disposed of properly in a NMOCD approved disposal facility.
- Garbage and trash produced during drilling and completion operations will be collected in a trash container and disposed of properly at a state approved disposal facility. All trash on and around well site will be collected for disposal.
- Human waste and grey water will be contained and disposed of properly at a state approved disposal site.
- After drilling and completion operations, trash, chemicals, salts, frac sand and other waste will be removed and disposed of properly at a state approved disposal site.
- The well will be drilled utilizing a closed loop system. Drill cuttings will be properly disposed of into steel tanks and taken to an NMOCD approved disposal facility.

**Ancillary Facilities**

No camps or airstrips to be constructed.

**Interim and Final Reclamation**

- Rehabilitation of the location will start in a timely manner after all proposed drilling wells have been drilled from the pad or if drilling operations have ceased as outlined below:
  - No approved or pending drill permits for wells located on the drill pad
  - No drilling activity for 5 years from the drill pad
- Surfacing materials will be removed and returned to a mineral pit or recycled to repair or build roads and well pads.
- Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.
- Exhibit P illustrates the proposed Surface Reclamation plans after cessation of drilling operations as outlined above.
  - The areas of the location not essential to production facilities and operations will be reclaimed and seeded per BLM requirements.
- Operator will amend the surface reclamation plan if well is a dry hole and/or a single well pad.

**Surface Ownership**

- The wellsite is on surface owned by Bureau of Land Management.
- A copy of Surface Use Agreement has been given to the surface owner.
- The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.

# Cimarex Riverbend 12-13 Federal Com 15H
# Surface Use Plan

**Cultural Resource Survey - Archeology**

- Cultural Resources Survey will be conducted for the entire project as proposed in the APD and submitted to the BLM for review and approval.

**On Site Notes and Information**

Onsite Date: 6/20/2017
BLM Personnel on site: Bob Ballard
Cimarex Energy personnel on site: Barry Hunt
Pertinent information from onsite:

## Section 1 - General

**Would you like to address long-term produced water disposal?** NO

## Section 2 - Lined Pits

**Would you like to utilize Lined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:**

**PWD disturbance (acres):**

**Lined pit PWD on or off channel:**

**Lined pit PWD discharge volume (bbl/day):**

**Lined pit specifications:**

**Pit liner description:**

**Pit liner manufacturers information:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Lined pit precipitated solids disposal schedule:**

**Lined pit precipitated solids disposal schedule attachment:**

**Lined pit reclamation description:**

**Lined pit reclamation attachment:**

**Leak detection system description:**

**Leak detection system attachment:**

**Lined pit Monitor description:**

**Lined pit Monitor attachment:**

**Lined pit: do you have a reclamation bond for the pit?**

**Is the reclamation bond a rider under the BLM bond?**

**Lined pit bond number:**

**Lined pit bond amount:**

**Additional bond information attachment:**

## Section 3 - Unlined Pits

**Would you like to utilize Unlined Pit PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Unlined pit PWD on or off channel:**

**Unlined pit PWD discharge volume (bbl/day):**

**Unlined pit specifications:**

**Precipitated solids disposal:**

**Decribe precipitated solids disposal:**

**Precipitated solids disposal permit:**

**Unlined pit precipitated solids disposal schedule:**

**Unlined pit precipitated solids disposal schedule attachment:**

**Unlined pit reclamation description:**

**Unlined pit reclamation attachment:**

**Unlined pit Monitor description:**

**Unlined pit Monitor attachment:**

**Do you propose to put the produced water to beneficial use?**

**Beneficial use user confirmation:**

**Estimated depth of the shallowest aquifer (feet):**

**Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?**

**TDS lab results:**

**Geologic and hydrologic evidence:**

**State authorization:**

**Unlined Produced Water Pit Estimated percolation:**

**Unlined pit: do you have a reclamation bond for the pit?**

**Is the reclamation bond a rider under the BLM bond?**

**Unlined pit bond number:**

**Unlined pit bond amount:**

**Additional bond information attachment:**

## Section 4 - Injection

**Would you like to utilize Injection PWD options?** NO

**Produced Water Disposal (PWD) Location:**

**PWD surface owner:** **PWD disturbance (acres):**

**Injection PWD discharge volume (bbl/day):**

**Injection well mineral owner:**

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

## Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

## Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

# Bond Info Data Report

05/31/2018

## Bond Information

**Federal/Indian APD:** FED

**BLM Bond number:** NMB001188

**BIA Bond number:**

**Do you have a reclamation bond?** NO

**Is the reclamation bond a rider under the BLM bond?**

**Is the reclamation bond BLM or Forest Service?**

**BLM reclamation bond number:**

**Forest Service reclamation bond number:**

**Forest Service reclamation bond attachment:**

**Reclamation bond number:**

**Reclamation bond amount:**

**Reclamation bond rider amount:**

**Additional reclamation bond information attachment:**