RECEIVED
OCD Artesia
APR 08 2014
NMOCD ARTESIA

13-1121

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.
NM-048344

6. If Indian, Allotee or Tribe Name
NA

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.
Williams A Federal 13 <309877>

2. Name of Operator LRE Operating, LLC <281994>

9. API Well No.
30-015- 42303

3a. Address 1111 Bagby St., Ste. 4600; Houston, TX 77002

3b. Phone No. *(include area code)*
713/292-9528

10. Field and Pool, or Exploratory
AR2851A
Red Lake; Glorieta-Yeso NE <96830>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 1620' FWL & 2455' FSL
At proposed prod. zone 1667' FWL & 2271' FSL

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 29, 17S, 28E, Unit K

14. Distance in miles and direction from nearest town or post office*
12.0 air miles SE from Artesia, NM

12. County or Parish
Eddy

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
185' FSL; 369' FBHL

16. No. of acres in lease
400

17. Spacing Unit dedicated to this well
40

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
656' FSL; 417' FBHL

19. Proposed Depth
3600'TVD/3611' MD

20. BLM/BIA Bond No. on file
NMB-000797 & NMB-00817

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3652.8' GL

22. Approximate date work will start*
01/01/2014

23. Estimated duration
1 month

## 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 Carla Martin
Name *(Printed/Typed)* Carla Martin
Date 08/26/2013

Title
Regulatory Technician

Approved by *(Signature)* /S/ STEPHEN J. CAFFEY
Name *(Printed/Typed)*
Date APR 4 2014

Title FIELD MANAGER
Office CARLSBAD FIELD OFFICE

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

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

(Continued on page 2)

*(Instructions on page 2)

Roswell Controlled Water Basin

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised October 15,2009
Submit one copy to appropriate District Office

☐ AMENDED REPORT

# WELL LOCATION AND ACREAGE DEDICATION PLAT

| [1] API Number | [2] Pool Code | [3] Pool Name |
|---|---|---|
| 30-015- 42303 | ~~96830~~ 96830 | ARTESIA ~~Red Lake, Glorieta – Yeso NE~~ |

| [4] Property Code | [5] Property Name | [6] Well Number |
|---|---|---|
| 309877 | WILLIAMS A FEDERAL | 13 |

| [7] OGRID No. | [8] Operator Name | [9] Elevation |
|---|---|---|
| 281994 | LRE OPERATING, LLC | 3652.8 |

## [10] Surface Location

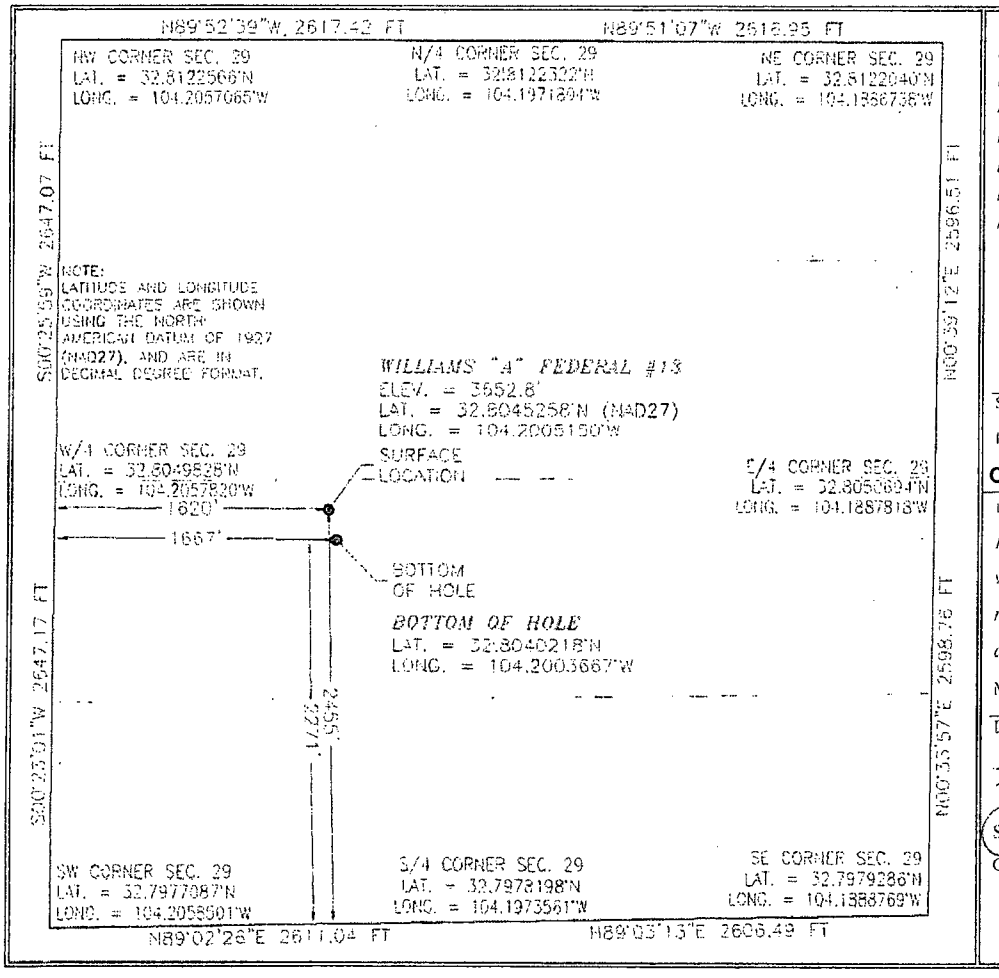
| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| K | 29 | 17 S | 28 E | | 2455 | SOUTH | 1620 | WEST | EDDY |

## [11] Bottom Hole Location If Different From Surface

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| K | 29 | 17 S | 28 E | | 2271 | SOUTH | 1667 | WEST | EDDY |

| [12] Dedicated Acres | [13] Joint or Infill | [14] Consolidation Code | [15] Order No. |
|---|---|---|---|
| 40 | | | 3611 4-4-14 |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.




## [17] OPERATOR CERTIFICATION

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

Carla Martin 8/26/13
Signature Date

Printed Name
**Carla Martin**

## [18] SURVEYOR CERTIFICATION

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

MAY 30, 2012
Date of Survey

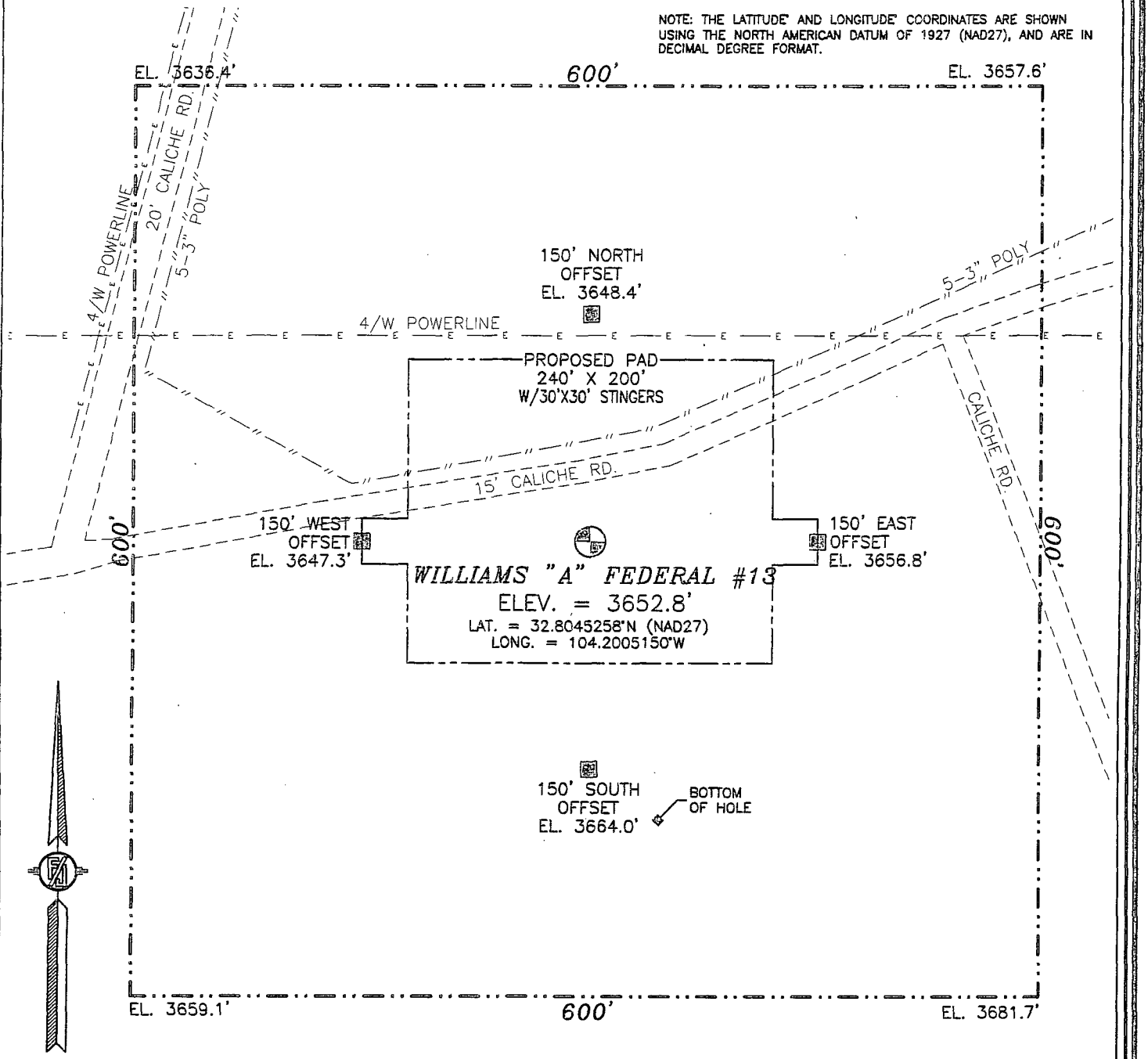
FILIMON F. JARAMILLO
NEW MEXICO
REGISTERED LAND SURVEYOR

Signature and Seal of Professional Surveyor:

Certificate Number FILIMON F. JARAMILLO PLS 12797
SURVEY NO. 931

# SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
# EDDY COUNTY, STATE OF NEW MEXICO

NOTE: THE LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1927 (NAD27), AND ARE IN DECIMAL DEGREE FORMAT.




010 50 100 200

SCALE 1" = 100'

**DIRECTIONS TO LOCATION**

FROM STATE HWY. 82 AND PAVED CR. 206 (ILLINOIS CAMP) GO WEST ON HWY. 82 0.5 MILES, TURN RIGHT ON CALICHE ROAD AND GO NORTH-NORTHEAST 0.43 MILES BEND RIGHT AND GO EAST-NORTHEAST 0.14 MILES AND LOCATION IS ON THE RIGHT (SOUTH) 50'.

*LRE OPERATING, LLC*

***WILLIAMS "A" FEDERAL #13***

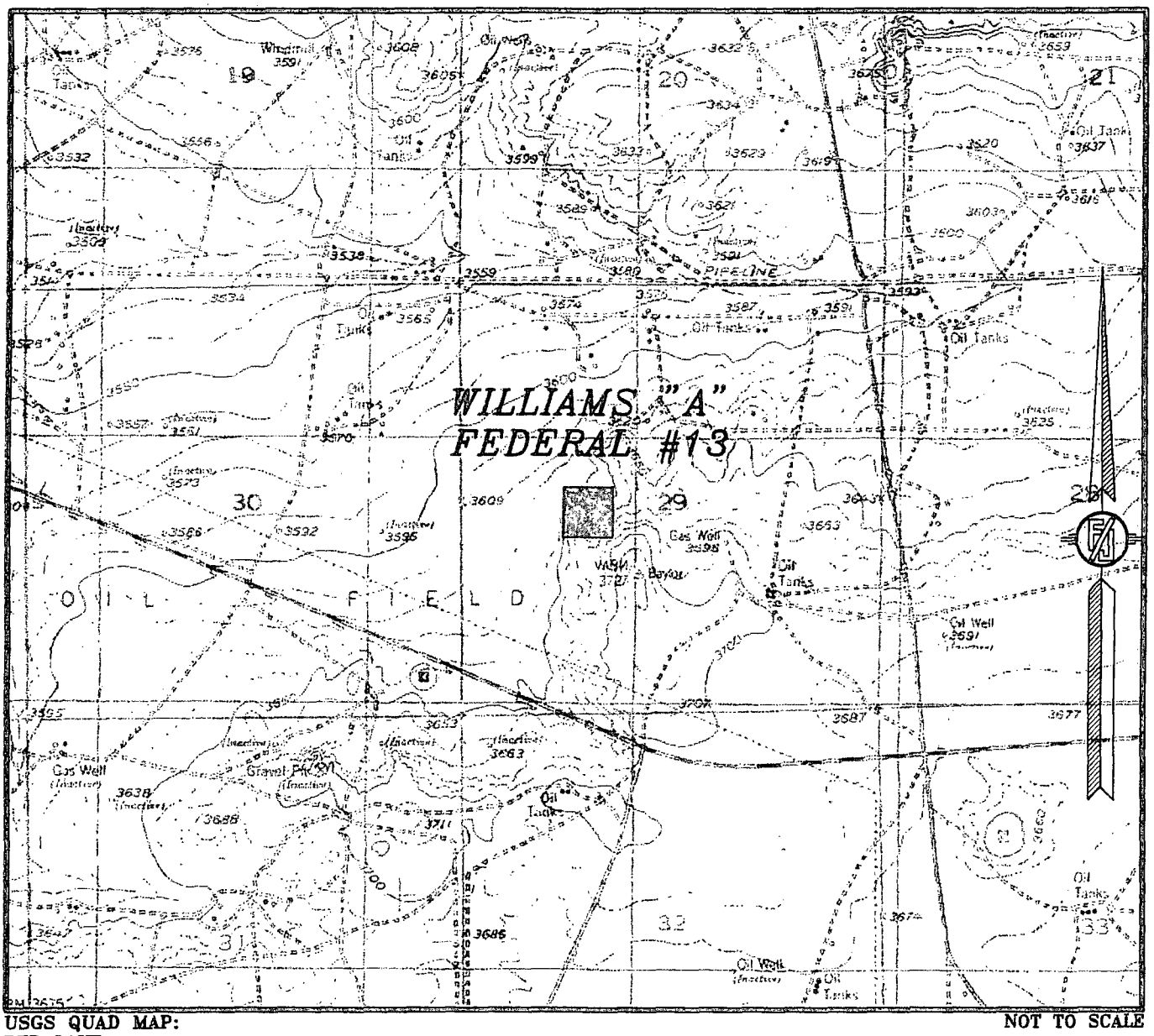
*LOCATED 2455 FT. FROM THE SOUTH LINE AND 1620 FT. FROM THE WEST LINE OF SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.*
*EDDY COUNTY, STATE OF NEW MEXICO*

*MAY 30, 2012*

*SURVEY NO. 931*

*MADRON SURVEYING, INC.* 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

# SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
# EDDY COUNTY, STATE OF NEW MEXICO
# LOCATION VERIFICATION MAP




**USGS QUAD MAP:**
**RED LAKE**

**NOT TO SCALE**

*LRE OPERATING, LLC*

***WILLIAMS "A" FEDERAL #13***

*LOCATED 2455 FT. FROM THE SOUTH LINE*
*AND 1620 FT. FROM THE WEST LINE OF*
*SECTION 29, TOWNSHIP 17 SOUTH,*
*RANGE 28 EAST, N.M.P.M.*
*EDDY COUNTY, STATE OF NEW MEXICO*

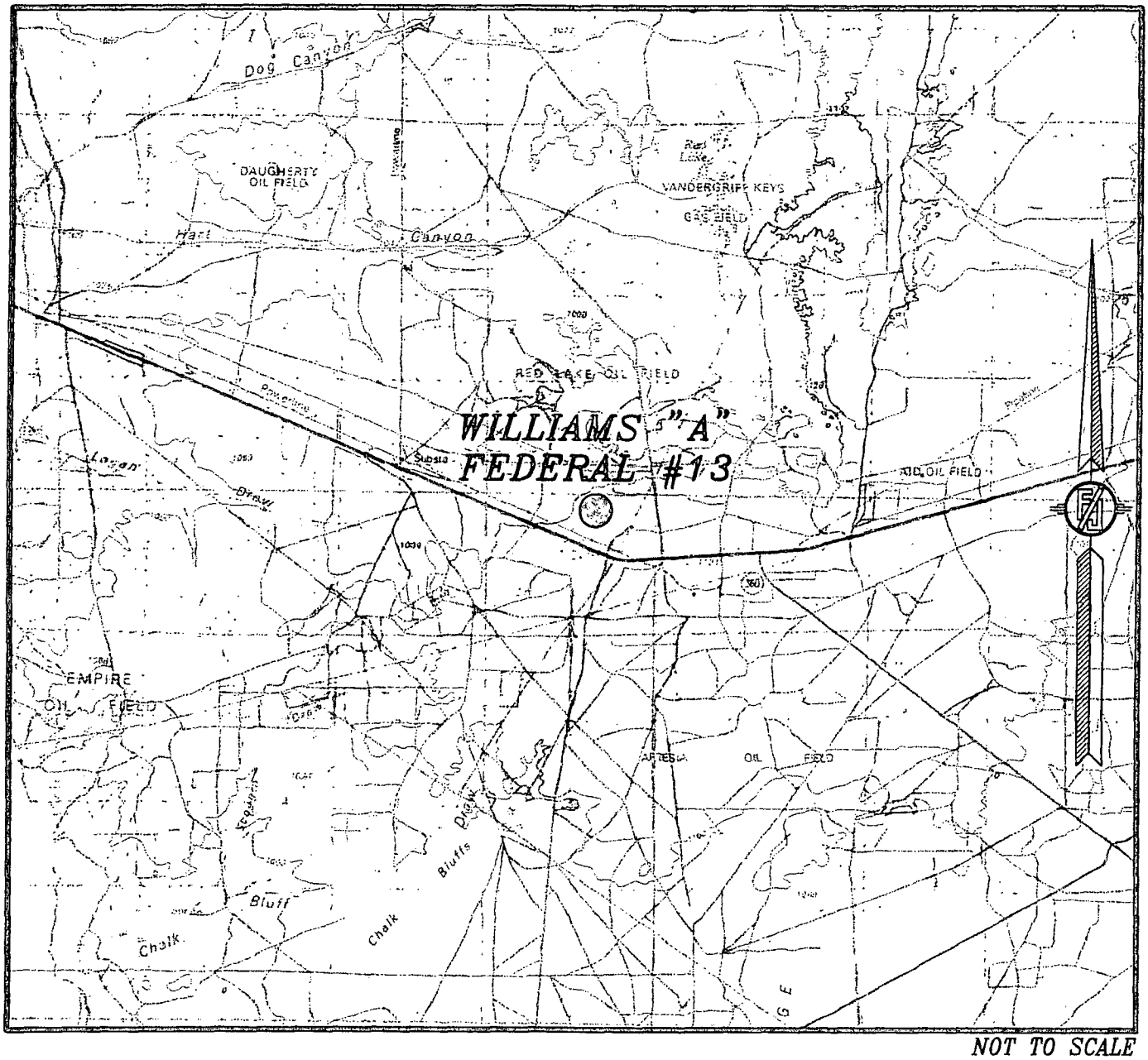
*MAY 30, 2012*

*SURVEY NO. 931*

*MADRON SURVEYING, INC.* 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

# VICINITY MAP




NOT TO SCALE

LRE OPERATING, LLC
**WILLIAMS "A" FEDERAL #13**
LOCATED 2455 FT. FROM THE SOUTH LINE
AND 1620 FT. FROM THE WEST LINE OF
SECTION 29, TOWNSHIP 17 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

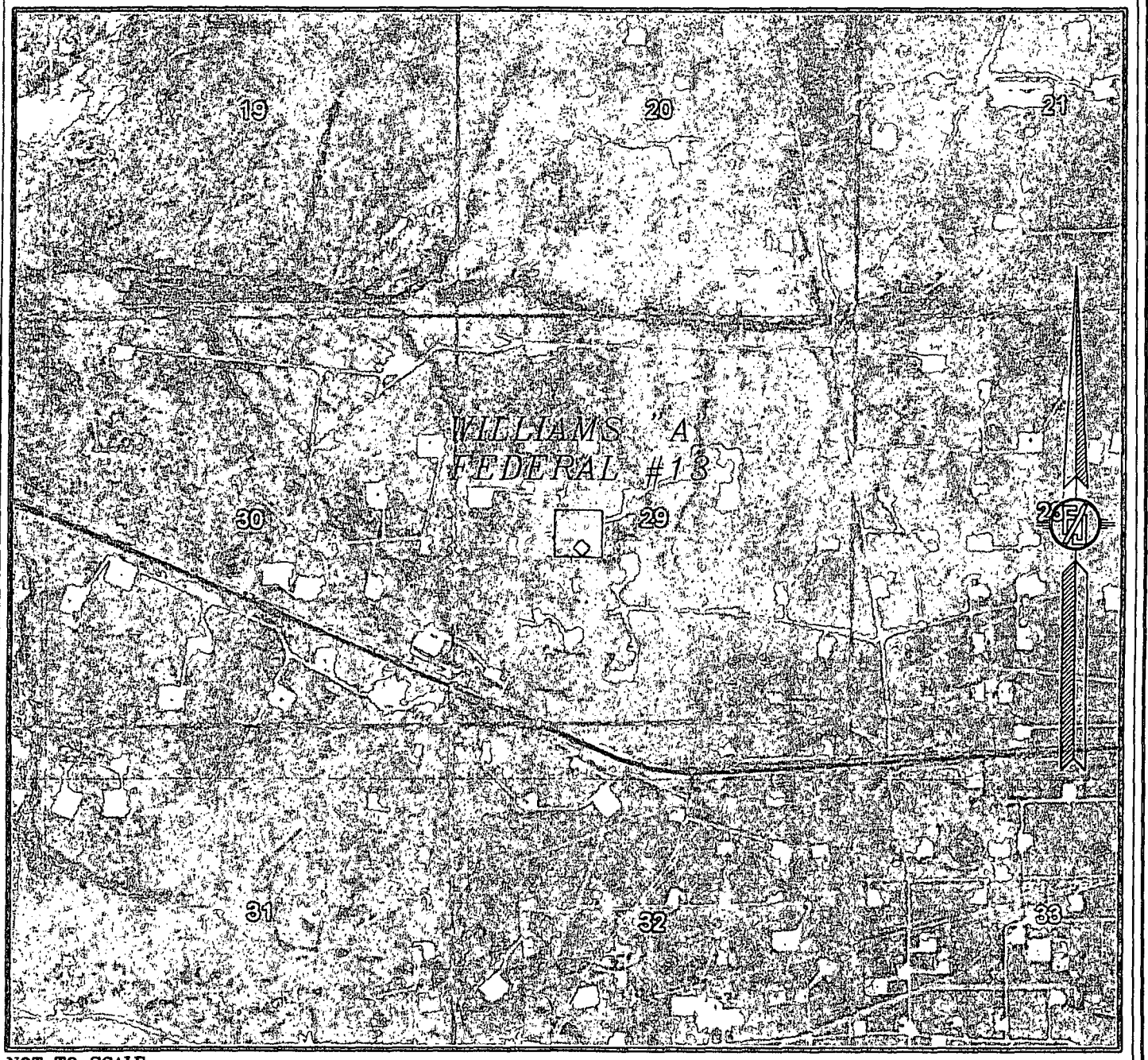
MAY 30, 2012

SURVEY NO. 931

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

# AERIAL PHOTO




NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
JUNE 2011

LRE OPERATING, LLC

**WILLIAMS "A" FEDERAL #13**

LOCATED 2455 FT. FROM THE SOUTH LINE
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SECTION 29, TOWNSHIP 17 SOUTH,
RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

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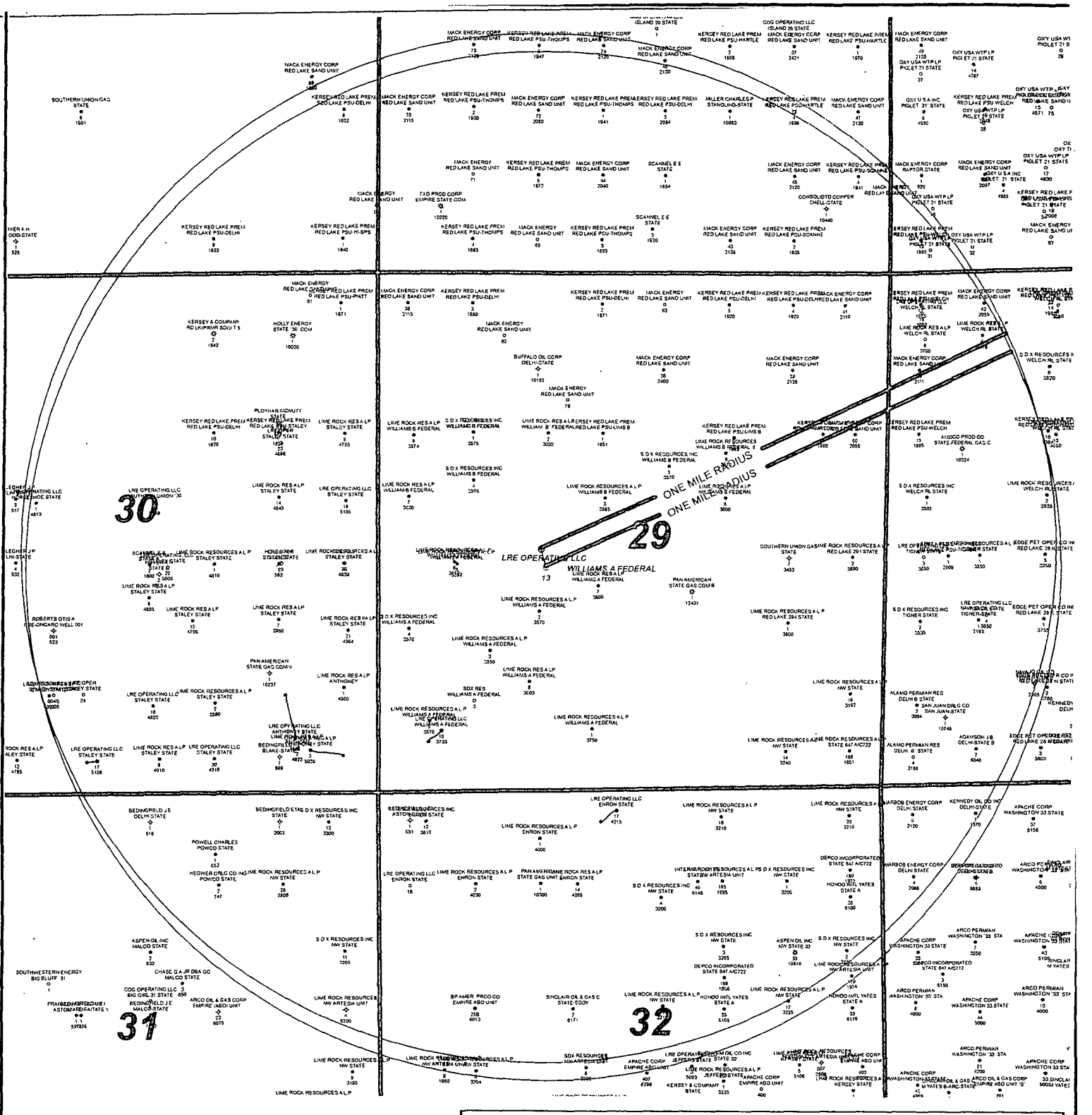


(K) S29-T17S-R28E

1 inch = 1400 feet

1000 0 1000 ft

LIME ROCK RESOURCES

LRE OPERATING, LLC
ONE MILE RADIUS AROUND
WILLIAMS A FEDERAL 13

| Author: <name> | | Date: 12 June, 2013 |
|---|---|---|
| | Scale: <scale> | |

LRE Operating, LLC
Williams A Federal 13
SHL: 1620' FWL & 2455' FSL
BHL: 1667' FWL & 2271' FSL
Sec. 29, T. 17S., R. 28E., Eddy County, NM



Drilling Program

1. ESTIMATED TOPS

| Name | TVD | MD | Content |
|---|---|---|---|
| Salado | 0' | 0' | water |
| Yates | 353' | 353' | water |
| 7 Rivers | 590' | 590' | -- |
| Queen | 1155' | 1160' | oil, gas |
| Grayburg | 1574' | 1583' | oil, gas |
| San Andres | 1880' | 1891' | oil, gas |
| Glorieta | 3259' | 3270' | oil, gas |
| Yeso | 3374' | 3385' | oil, gas |
| TD | 3600' | 3611' | oil, gas |

2. NOTABLE ZONES

Water zones will be protected with casing, cement, and weighted mud. Fresh water found while drilling will be recorded. Closest water well (RA 0366) is 1773' southwest. Top of water bearing strata was at a depth of 100'.

3. PRESSURE CONTROL

A 2,000 psi BOP stack and manifold system will be used. A typical 2,000 psi system is shown after the Drilling Plan and Directional Standard Planning Report. If the equipment changes, then a Sundry Notice will be filed. System will meet Onshore Orders 2 (BOP) and 6 ($H_2S$) requirements. If the equipment changes, then a Sundry Notice will be filed. System will meet Onshore Orders 2 (BOP) and 6 ($H_2S$) requirements.

The blowout preventer equipment (BOP) will consist of a 2000 psi rated, "XLT" type, National Varco double ram preventer that will be tested to a maximum pressure of 2000 psi. The unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and drill pipe rams on bottom. The 2M BOP will be installed on the 8-5/8" surface casing and utilized continuously until total depth is reached. All casing strings will be tested as per Onshore Order #2. This also includes a thirty-day (30) test, should the rig still be operating on the same well in thirty days.

LRE Operating, LLC
Williams A Federal 13
SHL: 1620' FWL & 2455' FSL
BHL: 1667' FWL & 2271' FSL
Sec. 29, T. 17S., R. 28E., Eddy County, NM



Drilling Program

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| Yeso | 3374' | 3385' | oil, gas |
| TD | 3600' | 3611' | oil, gas |

2. NOTABLE ZONES

Water zones will be protected with casing, cement, and weighted mud. Fresh water found while drilling will be recorded. Closest water well (RA 11857 POD1) is 4893' southeast. Top of water bearing strata was at a depth of 3558'.

3. PRESSURE CONTROL

A 2,000 psi BOP stack and manifold system will be used. A typical 2,000 psi system is shown after the Drilling Plan and Directional Standard Planning Report. If the equipment changes, then a Sundry Notice will be filed. System will meet Onshore Orders 2 (BOP) and 6 ($H_2S$) requirements. If the equipment changes, then a Sundry Notice will be filed. System will meet Onshore Orders 2 (BOP) and 6 ($H_2S$) requirements.

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Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily drilling logs.

The BOP equipment will consist of the following:

- Double ram with blind rams (top) and pipe rams (bottom),
- Drilling spool, or blowout preventer with 2 side outlets (choke side and kill side shall be at least 2" diameter),
- Kill line (2" minimum),
- At least 2 choke line valves (2" minimum),
- 2" diameter choke line,
- 2 kill valves, one of which will be a check valve (2" minimum)
- 2 chokes, one of which will be capable of remote operation,
- Pressure gauge on choke manifold,
- Upper Kelly cock valve with handle available,
- Safety valve and subs to fit all drill string connections in use,
- All BOPE connections subjected to well pressure will be flanged, welded, or clamped,
- A fill-up line above the uppermost preventer.

4. CASING & CEMENT

| Type | Setting Depth | Hole | Casing | #/ft | Grade | Casing Thread | API | Age |
|---|---|---|---|---|---|---|---|---|
| Conductor | 40' | 26" | 20" | 91.5 | B | Weld | No | New |
| Surface | 425' | 12-1/4" | 8-5/8" | 24.0 | J55 | ST&C | Yes | New |
| Production | 3611' | 7-7/8" | 5-1/2" | 17.0 | J55 | LT&C | Yes | New |

All casing designed with a minimum of:

| Burst Safety Factor | Collapse Safety Factor | Tension Safety Factor |
|---|---|---|
| 1.18 | 1.20 | 2.00 |

| Casing | Depth Set (feet) | sacks cement | cement top | density (ppg) | yield (cu ft/sack) | total (cubic feet) | % excess | blend |
|---|---|---|---|---|---|---|---|---|
| conductor | 40 | NA | GL | Ready mix | Ready mix | Ready mix | Ready mix | Ready mix |
| surface | 425 | 300 | GL | 14.8 | 1.4 | 420 | 200 | 1 |
| production lead | 3611 | 310 | GL | 12.8 | 1.903 | 590 | 80 | 2 |
| production tail | 3611 | 375 | GL | 14.8 | 1.33 | 499 | 50 | 3 |

Surface casing blend (1) will be Class C + ¼ pound/sack cello flake + 2% $CaCl_2$.
Centralizers will be installed as required by Onshore Order 2.

Production casing lead blend (2) will be 35:65 poz Class C + 5% NaCl + 1/4 pound/sack cello flake + 5 pounds per sack LCM-1 + 0.2% R-3 + 6% gel.

Production casing tail blend (3) will be Class C + 0.6% R-3 + ¼ pound/sack cello flake.

Cement volumes will be adjusted based on caliper log volumes and depths of casing and adjusted proportionately for depth changes of the multi stage tool of applicable.

A 13-3/8", 48#, H-40, ST&C, New, API contingency string will be set at 375' in a reamed 17-1/2" hole if circulation is lost in cave or karst (cave & karst potential to 350') and not regained. Contingency string will be cemented to the surface with 400 sacks (536 cubic feet) Class C+ ¼ pound per sack cello flake + 2% $CaCl_2$ mixed to yield 1.34 cubic feet per sack and 14.8 pounds per gallon. Excess >100%

Upon the setting of a 13-3/8" contingency string, a 13-5/8" x 13-3/8" weld on wellhead will be installed. A 13-3/8" to 11" adapter flange will be installed and the 11" XLT 2000 psi NOV double ram BOP/BOPE (Schematic attached) will be installed. The BOP will be tested against the casing to 70% of the internal yield pressure of the 13-3/8", 48#, H-40, ST&C (1211 psi) casing and held for 30 min before drilling out the 13-3/8" casing shoe. The formation will be drilled with a 10-3/4" bit +/- 50 ft past the 13-3/8" casing shoe into competent formation and 8-5/8" casing will be set and cemented with 200 sacks (268 cubic feet) Class C + ¼ pound per sack cell flake + 2% CaCl2 mixed to yield 1.34 cubic feet per sack and 14.8 pounds per gallon. Excess >125%

See COA

5. MUD PROGRAM

An electronic/mechanical mud monitor will with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. All necessary mud products will be onsite to handle any abnormal hole conditions that could possibly be encountered during the drilling of this well. Circulation could be lost in the Grayburg and San Andres.

| Interval | 0-425 | 425-3450 | 3450-3611 |
|---|---|---|---|
| Type | fresh water | brine | brine w/gal & starch |
| weight | 8.4-9.2 | 9.8-10.1 | 9.9-10.1 |
| ph | 9.0-10.5 | 10.0-12.0 | 10.0-12.0 |
| WL | NC | NC | 20-30 |
| viscosity | 28-34 | 28-29 | 32-34 |
| MC | NC | NC | <2 |
| solids | NC | <2% | <3% |
| pump rate | 300-500 gpm | 375-425 gpm | 400-425 gpm |
| other | | Use Poymers sticks and MF-55 Hi-Vis Sweeps as necessary | Hi Vis Sweeps, add acid and starch as req. Raise Vis to 35 for log. |

6. CORES, TESTS, & LOGS

No core or drill stem test is planned. A triple combo with spectral GR – dual lateral log, micro spherical focused log, & spectral density log will be run after tagging total depth. Will log from total depth to surface. A dual spaced neutron log and compensated spectral natural GR log will be run from total depth to surface.

7. DOWNHOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is 2,205 psi and the estimated bottom hole temperature will be 125°F. No $H_2S$ is expected during the drilling phase. Nevertheless, $H_2S$ monitoring equipment will be on the rig floor and air packs will be available before drilling out of the surface casing. The mud logger will be warned to use a gas trap to detect $H_2S$. If any $H_2S$ is detected, then the mud weight will be increased and $H_2S$ inhibitors will be added to control the gas. An $H_2S$ drilling operations contingency plan is attached.

The well is located in a potential cave or karst area. Thus, lost circulation is possible down to 350'. See the contingency casing string and cement plan on the preceding page.

8. OTHER INFORMATION

The anticipated spud date is upon approval. It is expected it will take ≈1 month to drill and complete the well.

LIME ROCK RESOURCES

# Lime Rock Resources

**EDDY COUNTY, NM (NAD 27)**
**Sec 29-T17S-R28E**
**Williams A Federal #13**

**Wellbore #1**

**Plan: Plan #2**

# Standard Planning Report

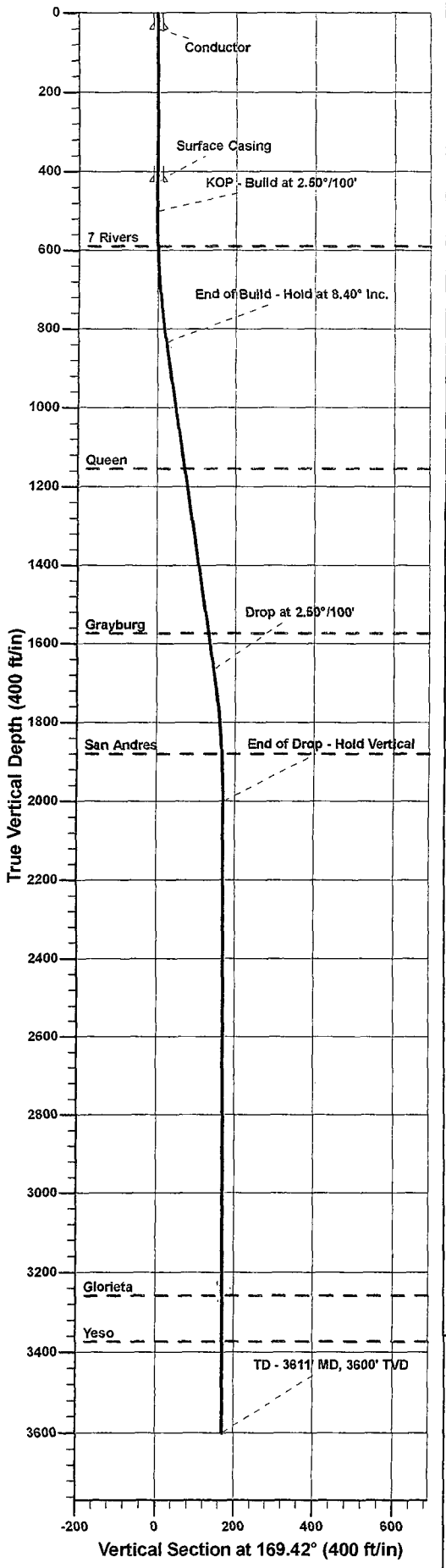
**14 August, 2013**

CHILDRESS DIRECTIONAL DRILLING

LIME ROCK RESOURCES

Project: EDDY COUNTY, NM (NAD 27)
Site: Sec 29-T17S-R28E
Well: Williams A Federal #13
Wellbore: Wellbore #1
Design: Plan #2

CHILDRESS DIRECTIONAL DRILLING




ANNOTATIONS

| MD | TVD | Inc | Azi | +N/-S | +E/-W | VS | Departure | Annotation |
|---|---|---|---|---|---|---|---|---|
| 500.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP - Build at 2.50°/100' |
| 835.84 | 834.64 | 8.40 | 169.42 | -24.15 | 4.51 | 24.56 | 24.56 | End of Build - Hold at 8.40° Inc. |
| 1675.57 | 1665.37 | 8.40 | 169.42 | -144.67 | 27.02 | 147.17 | 147.17 | Drop at 2.50°/100' |
| 2011.40 | 2000.00 | 0.00 | 0.00 | -168.82 | 31.53 | 171.73 | 171.73 | End of Drop - Hold Vertical |
| 3611.40 | 3600.00 | 0.00 | 0.00 | -168.82 | 31.53 | 171.73 | 171.73 | TD - 3611' MD, 3600' TVD, 169' S & 32' E of SHL |

WELL DETAILS: Williams A Federal #13

Ground Level: 3662.80

| +N/-S | +E/-W | Northing | Easting | Latitude | Longitude |
|---|---|---|---|---|---|
| 0.00 | 0.00 | 656424.45 | 540810.53 | 32.8045258 | -104.2006150 |

DESIGN TARGET DETAILS

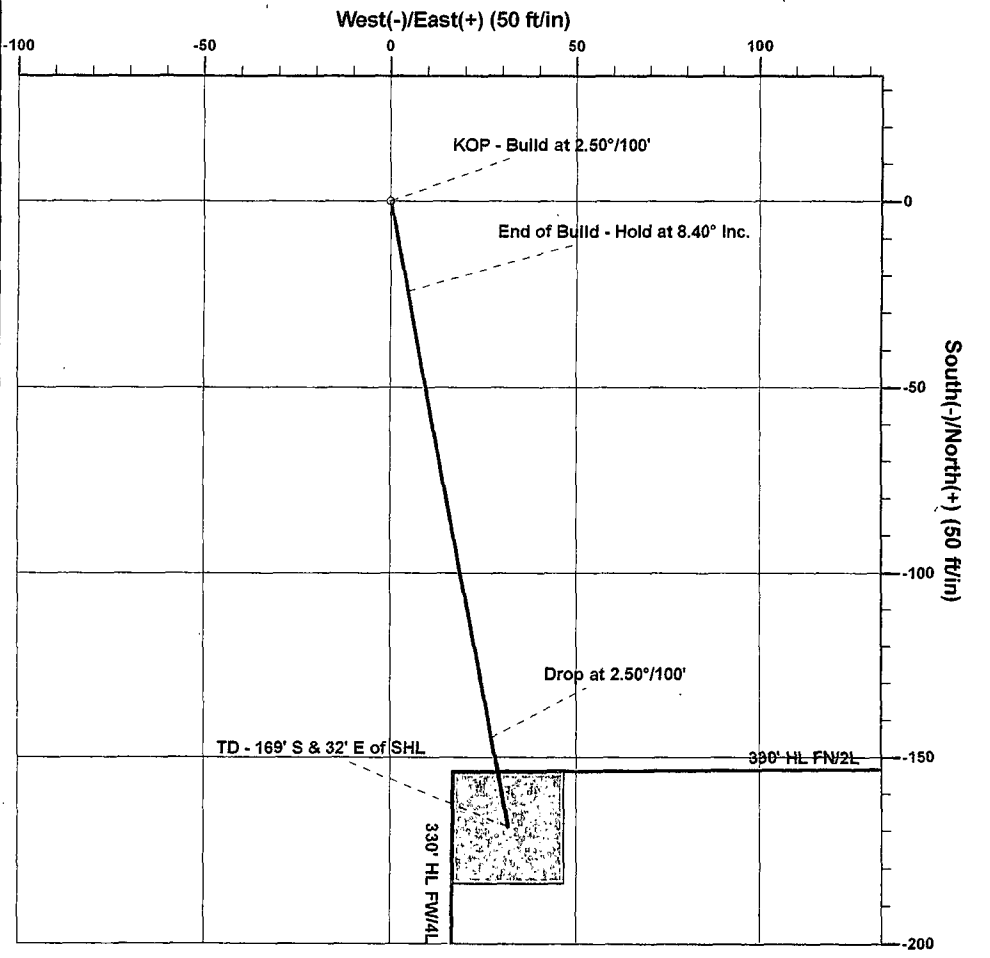
| Name | TVD | +N/-S | +E/-W | Northing | Easting |
|---|---|---|---|---|---|
| WAF #13 Vert | 2000.00 | -168.82 | 31.53 | 656255.68 | 540842.27 |

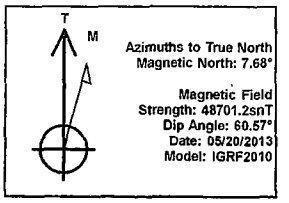
FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---|---|---|
| 590.00 | 590.02 | 7 Rivers |
| 1155.00 | 1159.67 | Queen |
| 1574.00 | 1583.21 | Grayburg |
| 1880.00 | 1891.35 | San Andres |
| 3259.00 | 3270.40 | Glorieta |
| 3374.00 | 3385.40 | Yeso |

CASING DETAILS

| TVD | MD | Name | Size |
|---|---|---|---|
| 425.00 | 425.00 | Surface Casing | 8-5/8 |
| 40.00 | 40.00 | Conductor | 20 |




Azimuths to True North
Magnetic North: 7.68°

Magnetic Field
Strength: 48701.2snT
Dip Angle: 60.57°
Date: 05/20/2013
Model: IGRF2010

To convert a Magnetic Direction to a True Direction, Add 7.68° East
Magnetic North is 7.68° East of True North (Magnetic Declination)

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well Williams A Federal #13 |
| **Company:** | Lime Rock Resources | **TVD Reference:** | WELL @ 3665.80ft (Original Well Elev) |
| **Project:** | EDDY COUNTY, NM (NAD 27) | **MD Reference:** | WELL @ 3665.80ft (Original Well Elev) |
| **Site:** | Sec 29-T17S-R28E | **North Reference:** | True |
| **Well:** | Williams A Federal #13 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Plan #2 | | |

**Project** EDDY COUNTY, NM (NAD 27)

| | | | |
|---|---|---|---|
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico East 3001 | | |

**Site** Sec 29-T17S-R28E

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 655,953.88 ft | **Latitude:** | 32.8032300 |
| **From:** | Lat/Long | **Easting:** | 541,476.65 ft | **Longitude:** | -104.1983490 |
| **Position Uncertainty:** | 0.00 ft | **Slot Radius:** | 13-3/16 " | **Grid Convergence:** | 0.07 ° |

**Well** Williams A Federal #13

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 471.42 ft | **Northing:** | 656,424.46 ft | **Latitude:** | 32.8045258 |
| | **+E/-W** | -665.52 ft | **Easting:** | 540,810.53 ft | **Longitude:** | -104.2005150 |
| **Position Uncertainty** | | 0.00 ft | **Wellhead Elevation:** | | **Ground Level:** | 3,652.80 ft |

**Wellbore** Wellbore #1

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | IGRF2010 | 05/20/13 | 7.68 | 60.57 | 48,701 |

**Design** Plan #2

**Audit Notes:**

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

| Vertical Section: | Depth From (TVD) (ft) | +N/-S (ft) | +E/-W (ft) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 169.42 |

**Plan Sections**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 835.84 | 8.40 | 169.42 | 834.63 | -24.14 | 4.51 | 2.50 | 2.50 | 0.00 | 169.42 | |
| 1,675.57 | 8.40 | 169.42 | 1,665.37 | -144.67 | 27.02 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2,011.40 | 0.00 | 0.00 | 2,000.00 | -168.82 | 31.53 | 2.50 | -2.50 | 0.00 | 180.00 | WAF #13 Vert |
| 3,611.40 | 0.00 | 0.00 | 3,600.00 | -168.82 | 31.53 | 0.00 | 0.00 | 0.00 | 0.00 | |

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well Williams A Federal #13 |
| **Company:** | Lime Rock Resources | **TVD Reference:** | WELL @ 3665.80ft (Original Well Elev) |
| **Project:** | EDDY COUNTY, NM (NAD 27) | **MD Reference:** | WELL @ 3665.80ft (Original Well Elev) |
| **Site:** | Sec 29-T17S-R28E | **North Reference:** | True |
| **Well:** | Williams A Federal #13 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Plan #2 | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 0.00 | 40.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Conductor** | | | | | | | | | |
| 100.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 200.00 | 0.00 | 0.00 | 200.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 300.00 | 0.00 | 0.00 | 300.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 400.00 | 0.00 | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 425.00 | 0.00 | 0.00 | 425.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **Surface Casing** | | | | | | | | | |
| 500.00 | 0.00 | 0.00 | 500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| **KOP - Build at 2.50°/100'** | | | | | | | | | |
| 590.02 | 2.25 | 169.42 | 590.00 | -1.74 | 0.32 | 1.77 | 2.50 | 2.50 | 0.00 |
| **7 Rivers** | | | | | | | | | |
| 600.00 | 2.50 | 169.42 | 599.97 | -2.14 | 0.40 | 2.18 | 2.50 | 2.50 | 0.00 |
| 700.00 | 5.00 | 169.42 | 699.75 | -8.57 | 1.60 | 8.72 | 2.50 | 2.50 | 0.00 |
| 800.00 | 7.50 | 169.42 | 799.14 | -19.27 | 3.60 | 19.61 | 2.50 | 2.50 | 0.00 |
| 835.84 | 8.40 | 169.42 | 834.64 | -24.15 | 4.51 | 24.56 | 2.50 | 2.50 | 0.00 |
| **End of Build - Hold at 8.40° Inc.** | | | | | | | | | |
| 900.00 | 8.40 | 169.42 | 898.11 | -33.35 | 6.23 | 33.93 | 0.00 | 0.00 | 0.00 |
| 1,000.00 | 8.40 | 169.42 | 997.04 | -47.71 | 8.91 | 48.53 | 0.00 | 0.00 | 0.00 |
| 1,100.00 | 8.40 | 169.42 | 1,095.97 | -62.06 | 11.59 | 63.13 | 0.00 | 0.00 | 0.00 |
| 1,159.67 | 8.40 | 169.42 | 1,155.00 | -70.62 | 13.19 | 71.85 | 0.00 | 0.00 | 0.00 |
| **Queen** | | | | | | | | | |
| 1,200.00 | 8.40 | 169.42 | 1,194.90 | -76.41 | 14.27 | 77.73 | 0.00 | 0.00 | 0.00 |
| 1,300.00 | 8.40 | 169.42 | 1,293.82 | -90.77 | 16.95 | 92.34 | 0.00 | 0.00 | 0.00 |
| 1,400.00 | 8.40 | 169.42 | 1,392.75 | -105.12 | 19.63 | 106.94 | 0.00 | 0.00 | 0.00 |
| 1,500.00 | 8.40 | 169.42 | 1,491.68 | -119.47 | 22.31 | 121.54 | 0.00 | 0.00 | 0.00 |
| 1,583.21 | 8.40 | 169.42 | 1,574.00 | -131.42 | 24.54 | 133.69 | 0.00 | 0.00 | 0.00 |
| **Grayburg** | | | | | | | | | |
| 1,600.00 | 8.40 | 169.42 | 1,590.61 | -133.83 | 24.99 | 136.14 | 0.00 | 0.00 | 0.00 |
| 1,675.57 | 8.40 | 169.42 | 1,665.37 | -144.67 | 27.02 | 147.17 | 0.00 | 0.00 | 0.00 |
| **Drop at 2.50°/100'** | | | | | | | | | |
| 1,700.00 | 7.79 | 169.42 | 1,689.56 | -148.05 | 27.65 | 150.61 | 2.50 | -2.50 | 0.00 |
| 1,800.00 | 5.29 | 169.42 | 1,788.90 | -159.24 | 29.74 | 161.99 | 2.50 | -2.50 | 0.00 |
| 1,891.35 | 3.00 | 169.42 | 1,880.00 | -165.73 | 30.95 | 168.59 | 2.50 | -2.50 | 0.00 |
| **San Andres** | | | | | | | | | |
| 1,900.00 | 2.79 | 169.42 | 1,888.64 | -166.15 | 31.03 | 169.03 | 2.50 | -2.50 | 0.00 |
| 2,000.00 | 0.29 | 169.42 | 1,988.60 | -168.79 | 31.52 | 171.71 | 2.50 | -2.50 | 0.00 |
| 2,011.40 | 0.00 | 0.00 | 2,000.00 | -168.82 | 31.53 | 171.73 | 2.50 | -2.50 | -1,486.15 |
| **End of Drop - Hold Vertical** | | | | | | | | | |
| 2,100.00 | 0.00 | 0.00 | 2,088.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,200.00 | 0.00 | 0.00 | 2,188.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,300.00 | 0.00 | 0.00 | 2,288.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,400.00 | 0.00 | 0.00 | 2,388.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,500.00 | 0.00 | 0.00 | 2,488.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,600.00 | 0.00 | 0.00 | 2,588.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,700.00 | 0.00 | 0.00 | 2,688.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,800.00 | 0.00 | 0.00 | 2,788.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 2,900.00 | 0.00 | 0.00 | 2,888.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,000.00 | 0.00 | 0.00 | 2,988.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,100.00 | 0.00 | 0.00 | 3,088.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,200.00 | 0.00 | 0.00 | 3,188.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,270.40 | 0.00 | 0.00 | 3,259.00 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |

| | | | |
|---|---|---|---|
| **Database:** | EDM 5000.1 Single User Db | **Local Co-ordinate Reference:** | Well Williams A Federal #13 |
| **Company:** | Lime Rock Resources | **TVD Reference:** | WELL @ 3665.80ft (Original Well Elev) |
| **Project:** | EDDY COUNTY, NM (NAD 27) | **MD Reference:** | WELL @ 3665.80ft (Original Well Elev) |
| **Site:** | Sec 29-T17S-R28E | **North Reference:** | True |
| **Well:** | Williams A Federal #13 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Wellbore #1 | | |
| **Design:** | Plan #2 | | |

**Planned Survey**

| Measured Depth (ft) | Inclination (°) | Azimuth (°) | Vertical Depth (ft) | +N/-S (ft) | +E/-W (ft) | Vertical Section (ft) | Dogleg Rate (°/100ft) | Build Rate (°/100ft) | Turn Rate (°/100ft) |
|---|---|---|---|---|---|---|---|---|---|
| **Glorieta** | | | | | | | | | |
| 3,300.00 | 0.00 | 0.00 | 3,288.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,385.40 | 0.00 | 0.00 | 3,374.00 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| **Yeso** | | | | | | | | | |
| 3,400.00 | 0.00 | 0.00 | 3,388.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,500.00 | 0.00 | 0.00 | 3,488.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,600.00 | 0.00 | 0.00 | 3,588.60 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |
| 3,611.40 | 0.00 | 0.00 | 3,600.00 | -168.82 | 31.53 | 171.73 | 0.00 | 0.00 | 0.00 |

**TD - 3611' MD, 3600' TVD, 169' S & 32' E of SHL**

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (ft) | +N/-S (ft) | +E/-W (ft) | Northing (ft) | Easting (ft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| WAF #13 Vert<br>- plan hits target center<br>- Rectangle (sides W30.00 H30.00 D0.00) | 0.00 | 0.00 | 2,000.00 | -168.82 | 31.53 | 656,255.68 | 540,842.27 | 32.8040618 | -104.2004124 |

**Casing Points**

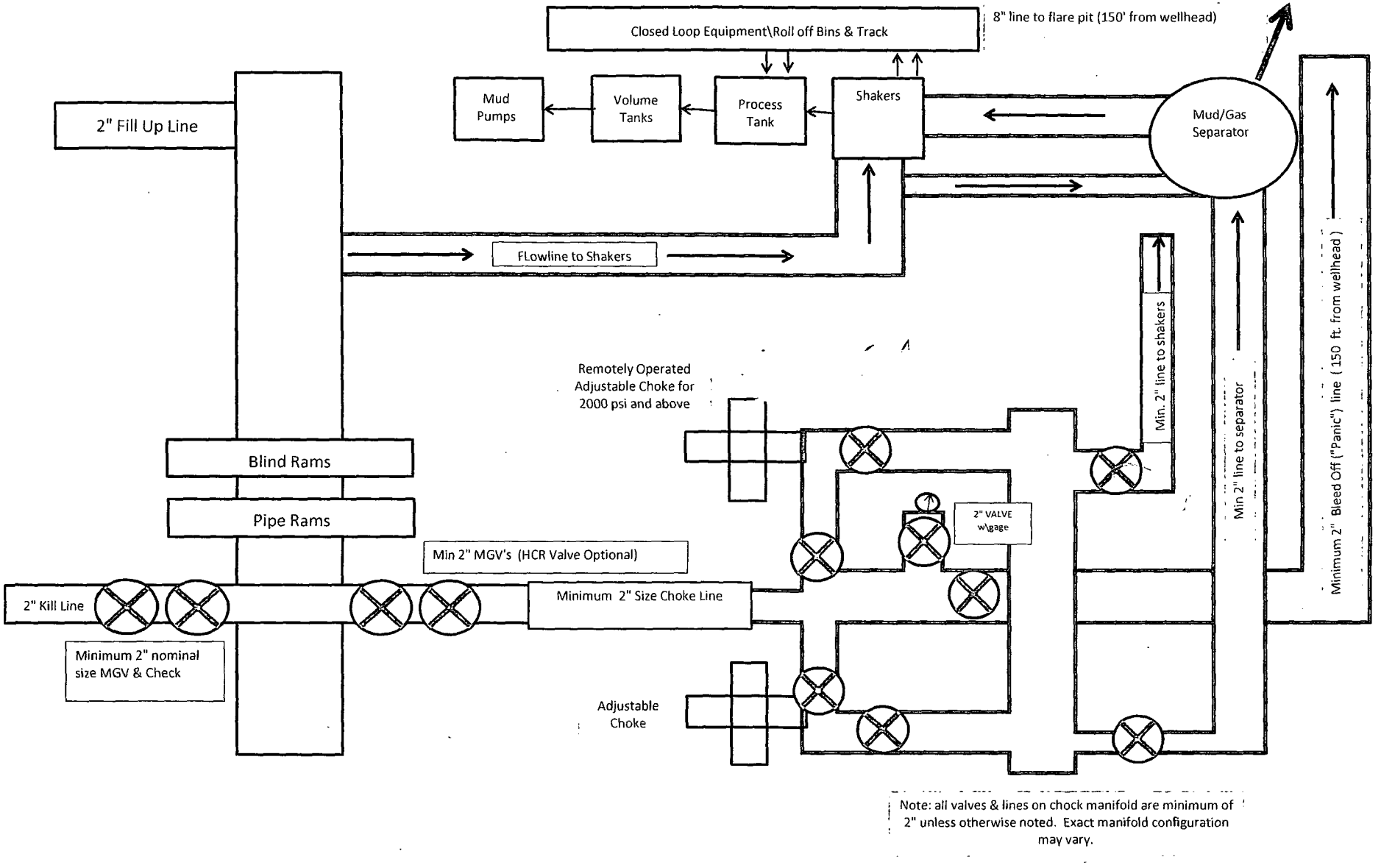
| Measured Depth (ft) | Vertical Depth (ft) | Name | Casing Diameter (") | Hole Diameter (") |
|---|---|---|---|---|
| 40.00 | 40.00 | Conductor | 20 | 26 |
| 425.00 | 425.00 | Surface Casing | 8-5/8 | 12-1/4 |

**Formations**

| Measured Depth (ft) | Vertical Depth (ft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 590.02 | 590.00 | 7 Rivers | | 0.00 | |
| 1,159.67 | 1,155.00 | Queen | | 0.00 | |
| 1,583.21 | 1,574.00 | Grayburg | | 0.00 | |
| 1,891.35 | 1,880.00 | San Andres | | 0.00 | |
| 3,270.40 | 3,259.00 | Glorieta | | 0.00 | |
| 3,385.40 | 3,374.00 | Yeso | | 0.00 | |

**Plan Annotations**

| Measured Depth (ft) | Vertical Depth (ft) | Local Coordinates +N/-S (ft) | Local Coordinates +E/-W (ft) | Comment |
|---|---|---|---|---|
| 500.00 | 500.00 | 0.00 | 0.00 | KOP - Build at 2.50°/100' |
| 835.84 | 834.64 | -24.15 | 4.51 | End of Build - Hold at 8.40° Inc. |
| 1,675.57 | 1,665.37 | -144.67 | 27.02 | Drop at 2.50°/100' |
| 2,011.40 | 2,000.00 | -168.82 | 31.53 | End of Drop - Hold Vertical |
| 3,611.40 | 3,600.00 | -168.82 | 31.53 | TD - 3611' MD, 3600' TVD, 169' S & 32' E of SHL |




**11" Minimum 2000 psi BOP and**
**Minimum 2000 psi BOPE System Schematic**
**W/ Closed Loop System Equipment**

# LRE Operating, LLC

# Williams A Federal #13

# Unit K, S29-T17S-R28E, Eddy County, NM

## Design: Closed Loop System with roll-off steel bins (pits)

CRI/HOBBS will supply (2) bins (100 bbl) volume, rails and transportation relating to the Close Loop System. Specification of the Closed Loop System is attached.

Contacts: Gary Wallace (432) 638-4076 Cell (575) 393-1079 Office

**Scomi Oil Tool: Supervisor – Armando Soto (432) 553-7979 Hobbs, NM**
Monitoring 24 Hour service
Equipment:
Centrifuges – Derrick Brand
Rig Shakers – Brandt Brand
D-watering Unit
Air pumps on location for immediate remediation process
Layout of Close Loop System with bins, centrifuges and shakers attached.

Cuttings and associated liquids will be hauled to a State regulated third party disposal site (CRI or Controlled Recovery, Inc.). The disposal site permit is DFP = #R9166.

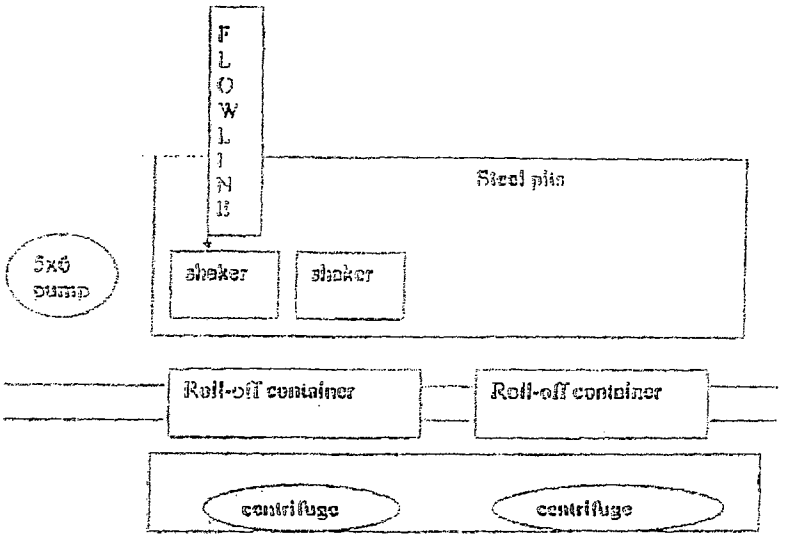
2- (250 bbl) tanks to hold fluid
2-CRI bins with track system
2-500 bbl frac tanks with fresh water
2-500 bbl frac tanks for brine water

## Operations:

Closed Loop System equipment will be inspected daily by each tour and any necessary maintenance performed. leak in system will be repaired and/or contained immediately. OCD will be notified within 48 hours of any spill. Remediation process will start immediately.

## Closure:

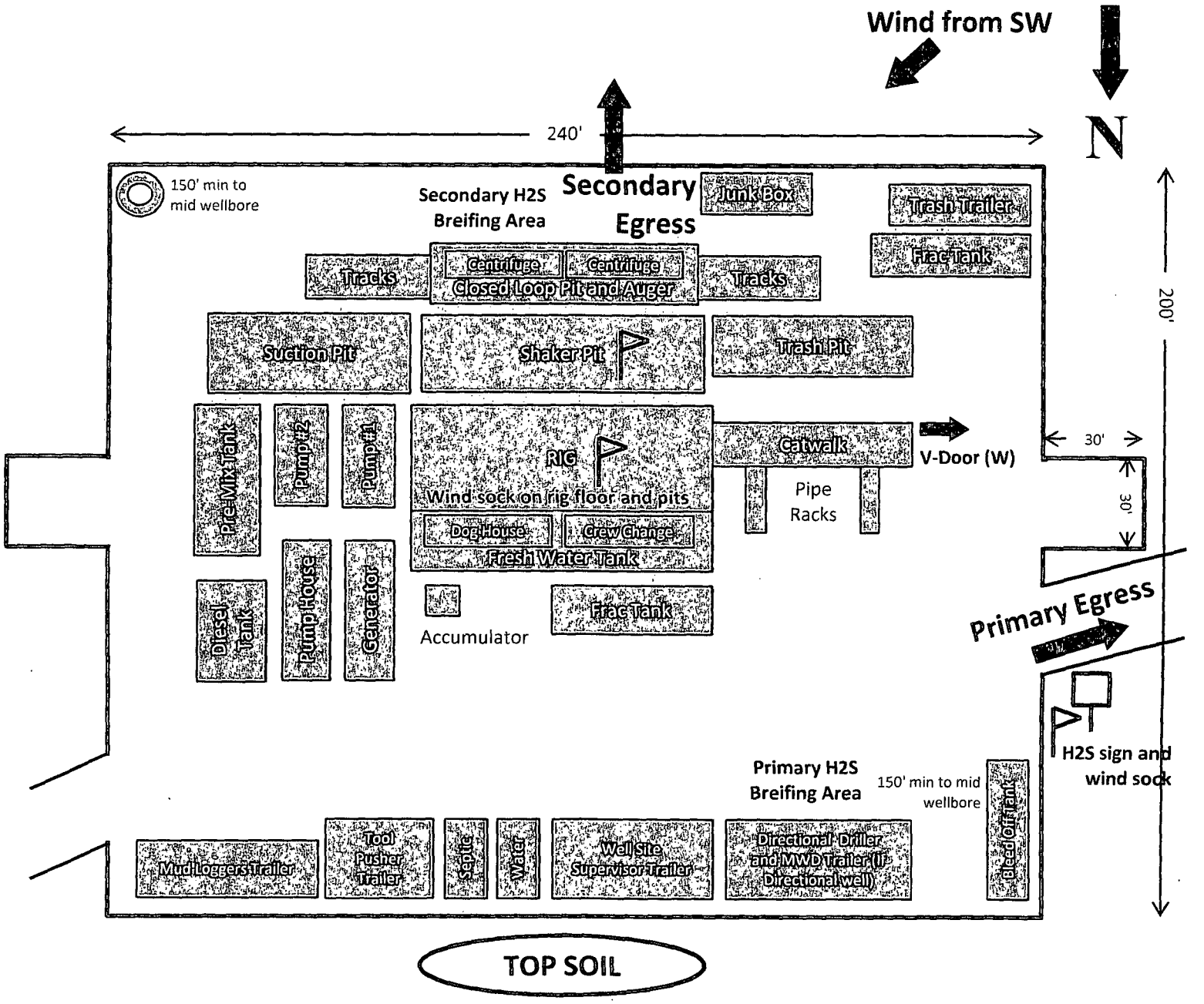
During drilling operations all liquids, drilling fluids and cuttings will be hauled off via CRI equipment to DFP #R9166.




This will be maintained by 24 hour solids control personnel that stay on location.

TOMMY WILSON
CLS
CLOSED LOOP SPECIALTY
Office: 979.746.1689 Cell: 979.740.6367

LRE Operating, LLC
Location Layout
**Williams A Federal #13**



# Hydrogen Sulfide Drilling Plan Summary

A. All personnel shall receive proper H2S training in accordance with Onshore Order 6 III.C.3.a.

B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.

C. Required Emergency Equipment:

- Well control equipment
  a. Flare line 150' from wellhead to be ignited by flare gun.
  b. Choke manifold with a remotely operated choke.
  c. Mud/gas separator

- Protective equipment for essential personnel.

  Breathing apparatus:
  a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
  b. Work/Escape packs —4 packs shall be stored on the rig floor and contain sufficiently long air hoses as to not to restrict work activity.
  c. Emergency Escape Packs —4 packs shall be stored in the doghouse for emergency evacuation.

  Auxiliary Rescue Equipment:
  a. Stretcher
  b. Two OSHA full body harness
  c. 100 ft 5/8 inch OSHA approved rope
  d. 1-20# class ABC fire extinguisher

- H2S detection and monitoring equipment:
  The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.
  (Gas sample tubes will be stored in the safety trailer)

- Visual warning systems.
  a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
  b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
  c. Two wind socks will be placed in strategic locations, visible from all angles.

- Mud program:
  The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.

- Metallurgy:

a. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.
b. All elastomers used for packing and seals shall be H2S trim.

- Communication:
  Communication will be via two way radio in emergency and company vehicles. Cell phones and land lines where available.

# H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

| | | |
|---|---|---|
| Company Offices - | Lime Rock Houston Office | 713·292·9510 |
| | Answering Service(After Hours) | 713·292-9555 |
| | Artesia, NM Office | 575-748-9724 |
| | Roswell, NM | 575-623-8424 |

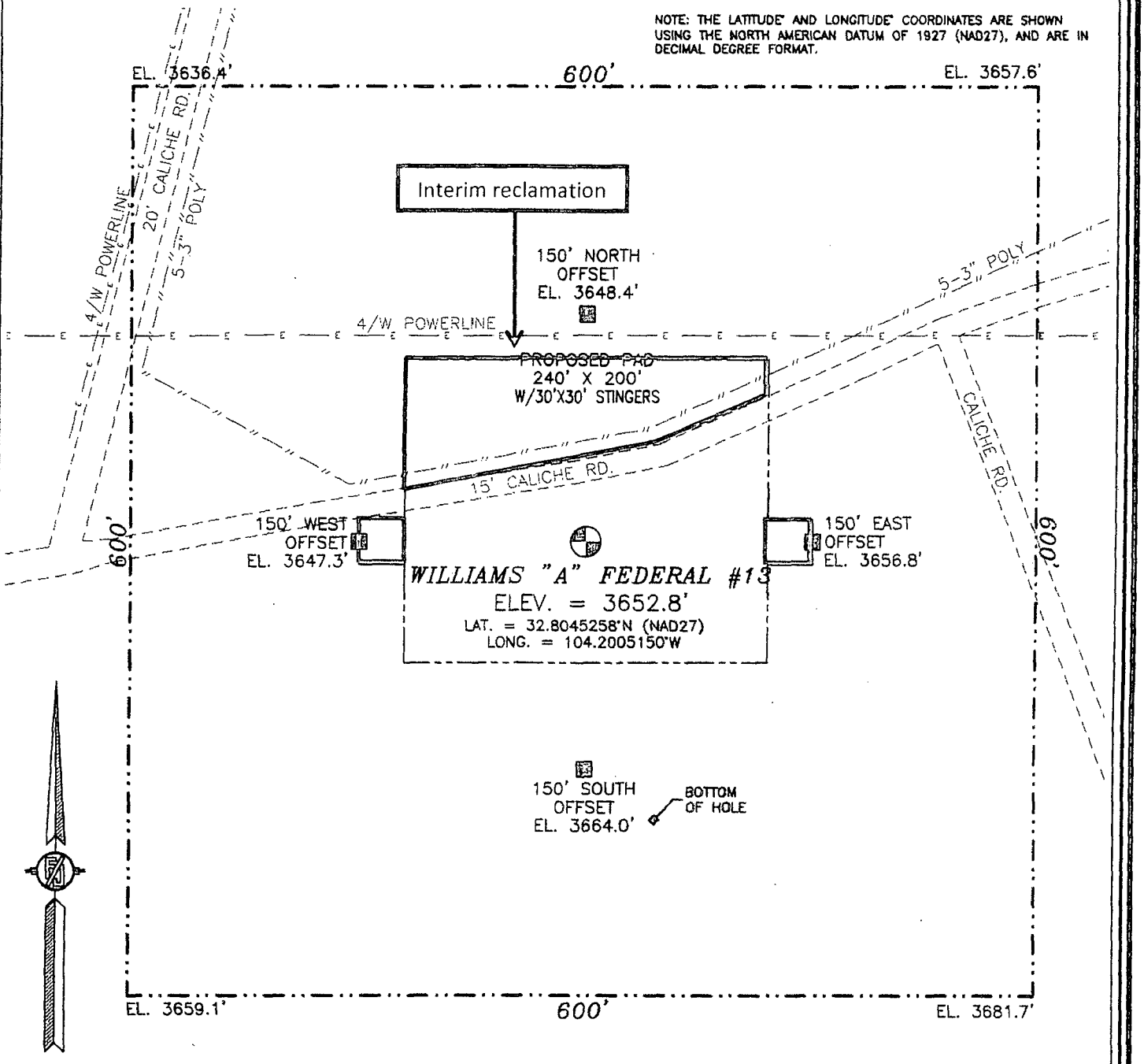
| KEY PERSONNEL | | | | | |
|---|---|---|---|---|---|
| Name | Title | Location | Office # | Cell # | Home # |
| MIKE LOUDERMILK | OPERATIONS MANAGER | HOUSTON | 713-292-9526 | 832-331-7367 | SAME AS CELL |
| SPENCER COX | PRODUCTION ENGINEER | HOUSTON | 713-292-9528 | 432-254-5140 | SAME AS CELL |
| ERIC MCCLUSKY | PRODUCTION ENGINEER | HOUSTON | 713-360-5714 | 405-821-0534 | 832-491-3079 |
| JERRY SMITH | ASSISTANT PRODUCTION SUPERVISOR | ARTESIA | 575-748-9724 | 505-918-0556 | 575-746-2478 |
| MICHAEL BARRETT | PRODUCTION SUPERVISOR | ROSWELL | 575-623-8424 | 505-353-2644 | 575-623-4707 |
| GARY MCCELLAND | WELL SITE SUPERVISOR | ROTATES ON SITE | NA | 903-503-8997 | NA |
| DAVE WILLIAMSON | WELL SITE SUPERVISOR | ROTATES ON SITE | NA | 575-308-9980 | NA |

| Agency Call List | | |
|---|---|---|
| City | Agency or Office | Telephone Number |
| Artesia | Ambulance | 911 |
| Artesia | State Police | 575-746-2703 |
| Artesia | Sheriff's Office | 575-746-9888 |
| Artesia | City Police | 575-746-2703 |
| Artesia | Fire Department | 575-746-2701 |
| Artesia | Local Emergency Planning Committee | 575-746-2122 |
| Artesia | New Mexico OCD District II | 575-748-1283 |
| Carlsbad | Ambulance | 911 |
| Carlsbad | State Police | 575-885-3137 |
| Carlsbad | Sheriff's Office | 575-887-7551 |
| Carlsbad | City Police | 575-885-2111 |
| Carlsbad | Fire Department | 575-885-2111 |
| Carlsbad | Local Emergency Planning Committee | 575-887-3798 |
| Carlsbad | US DOI Bureau of Land Management | 575-887-6544 |
| State Wide | New Mexico Emergency Response Commission ("NMERC") | 505-476-9600 |
| State Wide | NMERC 24 hour Number | 505-827-9126 |
| State Wide | New Mexico State Emergency Operations Center | 505-476-9635 |
| National | National Emergency Response Center (Washington, D.C.) | 800-424-8802 |

# H2S CONTINGENCY DRILLING PLAN EMERGENCY CONTACTS

| Emergency Services | | | | |
|---|---|---|---|---|
| Name | Service | Location | Telephone Number | Alternate Number |
| Boots & Coots International Well Control | Well Control | Houston / Odessa | 1-800-256-9688 | 281-931-8884 |
| Cudd Pressure Control | Well Control & Pumping | Odessa | 915-699-0139 | 915-563-3356 |
| Baker Hughes Inc. | Pumping Service | Artesia, Hobbs and Odessa | 575-746-2757 | SAME |
| Total Safety | Safety Equipment and Personnel | Artesia | 575-746-2847 | SAME |
| Cutter Oilfield Services | Drilling Systems Equipment | Midland | 432-488-6707 | SAME |
| Safety Dog | Safety Equipment and Personnel | Artesia | 575-748-5847 | 575-441-1370 |
| Flight for Life | Emergency Helicopter Evacuation | Lubbock | 806-743-9911 | SAME |
| Aerocare | Emergency Helicopter Evacuation | Lubbock | 806-747-8923 | SAME |
| Med Flight Air Ambulance | Emergency Helicopter Evacuation | Albuquerque | 505-842-4433 | SAME |
| Artesia General Hospital | Emergency Medical Care | Artesia | 575-748-3333 | 702 North 13 Street |

# SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.
# EDDY COUNTY, STATE OF NEW MEXICO




010 50 100 200

SCALE 1" = 100'

**DIRECTIONS TO LOCATION**

FROM STATE HWY. 82 AND PAVED CR. 206 (ILLINOIS CAMP) GO WEST ON HWY. 82 0.5 MILES, TURN RIGHT ON CALICHE ROAD AND GO NORTH–NORTHEAST 0.43 MILES BEND RIGHT AND GO EAST–NORTHEAST 0.14 MILES AND LOCATION IS ON THE RIGHT (SOUTH) 50'.

*LRE OPERATING, LLC*

***WILLIAMS "A" FEDERAL #13***

*LOCATED 2455 FT. FROM THE SOUTH LINE AND 1620 FT. FROM THE WEST LINE OF SECTION 29, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO*

*MAY 30, 2012*

*SURVEY NO. 931*

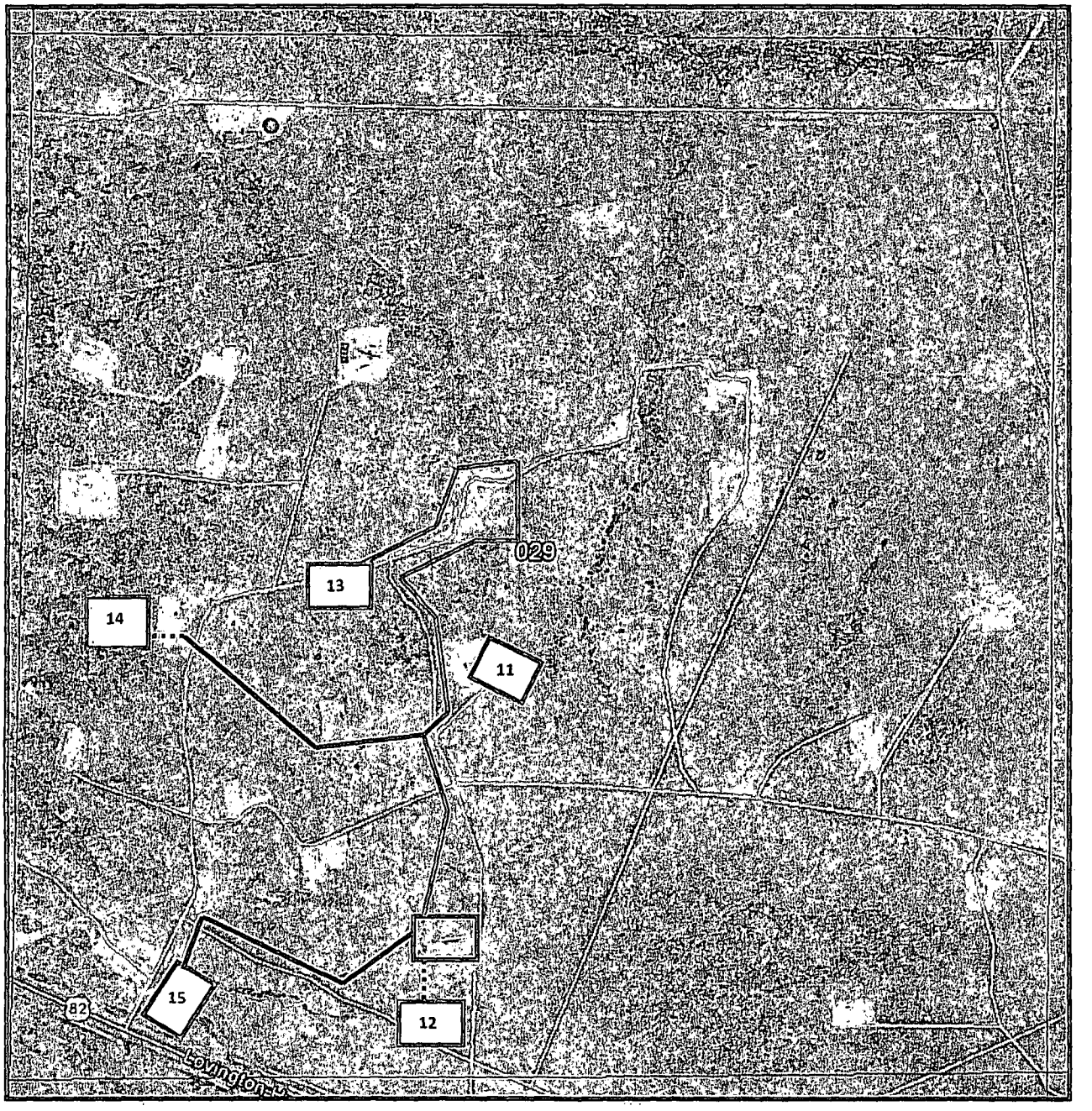
*MADRON SURVEYING, INC.* 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*


## (K) S29-T17S-R28E

From State Hwy 82 and paved CR #206 (Illinois Camp) go West on Hwy 82 0.5 miles. Turn right on caliche road and go North-Northeast 0.43 miles. Bend right and go East-Northeast 0.14 miles and location is on the right (south) 50'.

**LIME ROCK RESOURCES**

**LRE Operating, LLC**
**Directions to Location**
**Williams A Federal 13**




S29-T17S-R28E

LIME ROCK RESOURCES

**LRE Operating, LLC**
**Williams A Federal #13 Flow line to Williams A Battery**

LRE Operating, LLC
Williams A Federal 13
SHL: 1620' FWL & 2455' FSL
BHL: 1667' FWL & 2271' FSL
Sec. 29, T. 17S., R. 28E., Eddy County, NM



Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 – 3)

   From State Hwy 82 and paved CR #206 (Illinois Camp) go West on Hwy 82 0.5 miles. Turn right on caliche road and go North-Northeast 0.43 miles. Bend right and go East-Northeast 0.14 miles and location is on the right (south) 50'.

   Roads will be maintained to a standard at least equal to or better than their present condition.

2. ROAD TO BE BUILT OR UPGRADED changes

   No new road is needed. The proposed pad overlaps a plugged and abandoned pad. Upgrading of the existing road will consists of filling potholes with caliche.

3. EXISTING WELLS (See MAP 2)

   Existing oil, gas, injection, disposal, water, and P&A wells are within a mile.

4. PROPOSED PRODUCTION FACILITIES

   Production equipment will be installed on the south and east sides of the pad. Equipment type, sizes, and dimensions will be described in a Sundry before installation.

5. WATER SUPPLY

   Water will be trucked from private land in Riverside.

6. CONSTRUCTION MATERIALS & METHODS

NM One Call (1-800-321-ALERT) will be notified before construction starts. Lime Rock will remove an un-engergized power line pole on the south side of the pad. The southwest corner of the pad will be rounded off to keep a road open. The scant topsoil and brush will be stockpiled south of the pad. V door will be to the southeast. The existing road on the northeast corner of the pad leads only to Lime Rock's West Red Lake Unit 36, a water injection well. That road may be blocked during drilling. A closed loop drilling system will be used. Caliche will be bought and hauled from an existing approved caliche pit. Dirt contractor will be responsible for caliche.

7. WASTE DISPOSAL

All trash will be placed in a portable trash cage. It will be hauled to a county landfill. There will be no trash burning. Contents of the mud tanks will be hauled to state approved disposal sites. Human waste will be disposed of in chemical toilets and hauled to an approved dump station.

8. ANCILLARY FACILITIES

There will no airstrip or camp. Camper trailers will be on location for the company man, tool pusher, or mud logger.

9. WELL SITE LAYOUT

See rig layout for depictions of the well pad, trash cage, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION

Interim reclamation will consist of reclaiming the stringer footprint and the north side of the pad. Disturbed areas will be contoured to a natural shape and no steeper that 3:1. Soil and brush will be evenly spread over disturbed areas. Seeded areas will be ripped or harrowed. A BLM approved seed mix will be sown in a BLM approved manner. Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the well is plugged, then the remainder of the pad will be similarly reclaimed. Noxious weeds will be controlled.

11. SURFACE OWNER

All construction will be on BLM.

12. OTHER INFORMATION

On site inspection was held with **John Fast (BLM) on September 29, 2012.**

REPRESENTATION

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. Executed this 15th day of August, 2013.

Carla Martin

Carla Martin, Regulatory Technician
LRE Operating, LLC
1111 Bagby St., Ste. 4600
Houston, TX 77002
Office: (713) 360-5720

Field representative will be:

Eric McClusky, Production Engineer
LRE Operating, LLC
1111 Bagby St., Ste. 4600
Houston, TX 77002
Office: (713) 360-5714
Cell: (832) 491-3079
FAX: (713) 360-5764

# PECOS DISTRICT
# CONDITIONS OF APPROVAL

| | |
|---|---|
| **OPERATOR'S NAME:** | **LRE Operating, LLC.** |
| **LEASE NO.:** | **NMLC-048344B** |
| **WELL NAME & NO.:** | **Williams A Federal 13** |
| **SURFACE HOLE FOOTAGE:** | **2455' FSL & 1620' FWL** |
| **BOTTOM HOLE FOOTAGE:** | **2271' FSL & 1667' FWL** |
| **LOCATION:** | **Section 29, T. 17 S., R 28 E., NMPM** |
| **COUNTY:** | **Eddy County, New Mexico** |

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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 and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

#### 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 pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

**Tank Battery Liners and Berms:**
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.

**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 high 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.

# I. CONSTRUCTION

## A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 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 Carlsbad Field Office at (575) 234-5972.

## 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.

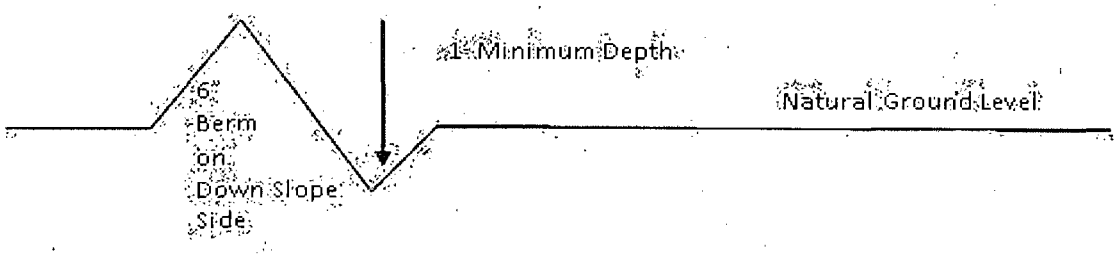
**Ditching**
Ditching shall be required on both sides of the road.

**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, lead-off 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.

**Cross Section of a Typical 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 %);

**Formula for Spacing Interval of Lead-off Ditches**

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$\text{400 foot road with 4\% road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

**Culvert Installations**

Appropriately sized culverts shall be installed at deep waterway channel flow crossings through the road.

**Cattleguards**

An appropriately sized cattleguard sufficient to carry out the project shall be installed and maintained at fence/road crossings.

Any existing cattleguards 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 cattleguards 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

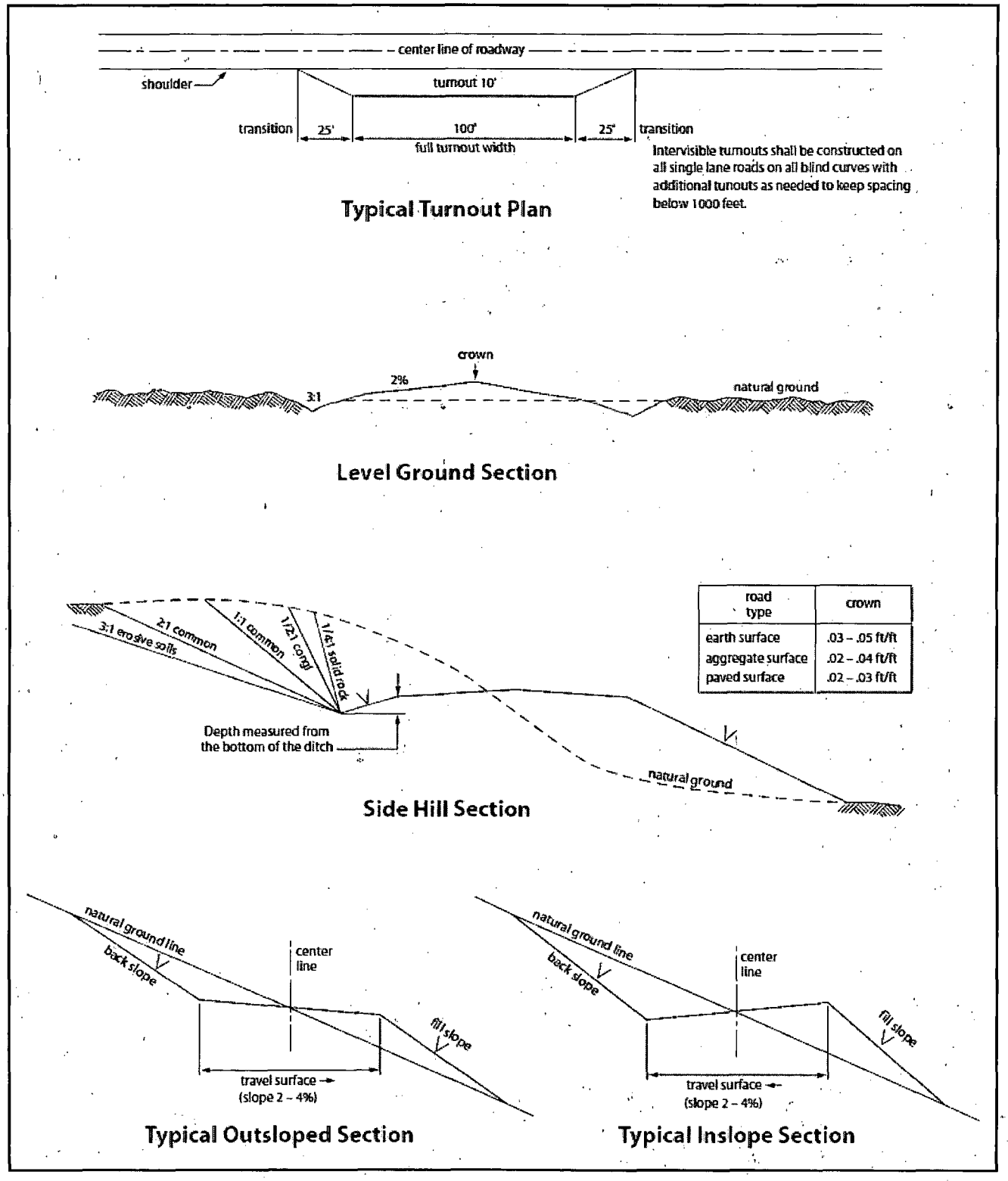



Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

# II. DRILLING

## A. DRILLING OPERATIONS 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)

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

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**

2. 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. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. **The record of the drilling rate along with the GR/N well log run from TD to surface 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.**

## B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. 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.).**

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.**

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

**HIGH CAVE/KARST – OPERATOR HAS PROPOSED A CONTINGENCY CASING IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE. IF LOST CIRCULATION OCCURS WHILE DRILLING THE 7-7/8" HOLE, THE CEMENT PROGRAM FOR THE 5-1/2" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED**

**Possible water flows in the Artesia Group.**
**Possible lost circulation in the Grayburg and San Andres.**

**Contingency Surface Casing Plan:**

1. The **13-3/8** inch **contingency surface casing** shall be set at approximately **375** feet 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 is to include the lead cement slurry.**

    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.

**Casing Plan without Contingency:**

2. The **8-5/8** inch surface casing shall be set at approximately **425** feet and cemented to the surface. **(If contingency casing is used set 8-5/8" casing 50 feet below 13-3/8" shoe.)**

   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 is to include the lead cement slurry.**

   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.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. 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.

## C. 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. **Contingency -** Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **13-3/8 inch** surface casing shoe shall be **2000 (2M)** psi. Operator is approved to test against the casing for the contingency plan.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **8-5/8 inch** casing shoe shall be **2000 (2M)** psi.

4. 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).

    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    b. 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.

    c. The results of the test shall be reported to the appropriate BLM office.

    d. 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.**

    e. 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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

## D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

## E. 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.

**JAM 120513**

# III. 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).

## IV. 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).

## X. 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 4, for Gypsum Sites

The 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 will 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 will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will 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 |
|---|---|
| Alkali Sacaton (Sporobolus airoides) | 1.0 |
| DWS□Four-wing saltbush (Atriplex canescens) | 5.0 |

DWS: DeWinged Seed

*Pounds of pure live seed:

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