13-284

Form 3160-3
(August 2007)

Split Estate

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED
JUL 09 2013
OCD Artesia
NMOCD ARTESIA

FORM APPROVED
OMB No. 1004-013
Expires July 31, 2010

5. Lease Serial No. 7/10/2013
UL"P"of 17-26S-29E: NMNM114972
BHL: NMNM122616

6. If Indian, Allotee or Tribe Name

1a. Type of Work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No. <40009>
Riverwalk Federal Com #1H

2. Name of Operator
COG Production LLC. <229137>

9. API Well No.
30-015-41527

3a. Address
2208 West Main Street
Artesia, NM 88210

3b. Phone No. *(include area code)*
575-748-6940

10. Field and Pool, or Exploratory
WILDCAT G-04 S262908A; B.S. ~~Corral Canyon; Bone Spring~~ <97801>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface **2398' FSL & 1052' FEL Unit Letter I NESE Section 20-T26S-R29E**
At proposed prod. Zone 330' FNL & 380' FEL Unit Letter A NENE Section 17-T26S-R29E

11. Sec., T.R.M. or Blk and Survey or Area
Section 20-T26S-R29E

14. Distance in miles and direction from nearest town or post office*
About 12 miles from Malaga

12. County or Parish
Eddy

13. State
New Mexico

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 330'

16. No. of acres in lease
UL "P" 17-26S-29E: 267.300
BHL: 360

17. Spacing Unit dedicated to this well
240

18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL:1019' BHL: 3916'

TVD: 8,630' MD: 16,109'
PH: 9,869'

20. BLM/BIA Bond No. on file
NMB000845 & NMB000860

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
2899.2 GL

22. Approximate date work will start*
3/1/2013

23. Estimated duration
30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall 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 shall 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 authorized officer.

25. Signature Mayte Reyes | Name *(Printed/Typed)* Mayte Reyes | Date 12/20/2012

Title
Regulatory Analyst

Approved by *(Signature)* /s/George MacDonell | Name *(Printed/Typed)* | Date JUL - 5 2013

Title **FIELD MANAGER** | Office **CARLSBAD FIELD OFFICE**

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

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)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., AZTEC, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

11885 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to apprpriate

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 41527	~~13354~~ 97801	~~Corral Canyon, Bone Spring~~ WILDCAT G-04 S262908A; BS
Property Code	**Property Name**	**Well Number**
40009	RIVERWALK FEDERAL COM	1H
OGRID No.	**Operator Name**	**Elevation**
229137	COG PRODUCTION LLC	2899.2

Surface Location

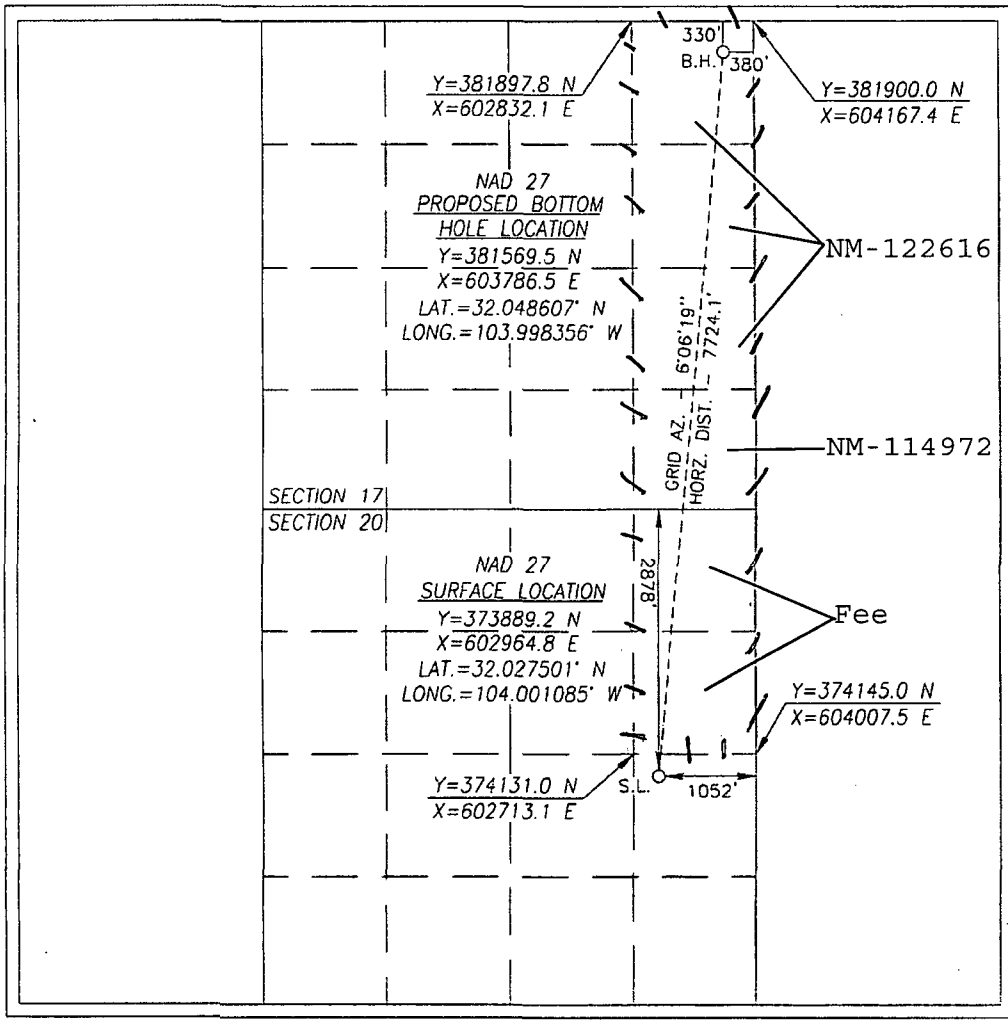
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	20	26-S	29-E		2398	SOUTH	1052	EAST	EDDY

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
A	17	26-S	29-E		330	NORTH	380	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
240			

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



OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Melanie Parker 4/1/2013
Signature Date

Melanie J Parker
Printed Name

mparker@concho.com
E-mail Address

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.

MARCH 7, 2013
Date of Survey

Signature & Seal of Professional Surveyor

CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 3/19/13

Certificate No. CHAD HARCROW 17777

W.O. # 13-94 DRAWN BY: VD

COG PRODUCTION LLC
Riverwalk Federal Com #1H
Section 20-T26S-R29E

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 the 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 20th day of December, 2012

Signed: Melanie Parker

Name : Melanie Parker

Position Title: Regulatory Coordinator

Address: 2208 West Main Street, Artesia, NM 88210

Telephone: 575-748-6940

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

The undersigned accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land or portion thereof, as described below:

Date: March 8, 2013

Lease #: UL "P" of 17-26S-29E: NMNM114972
BHL: NMNM122616

Well Name: Riverwalk Federal Com #1H

Legal Description: Sec. 20– T26S – R29E
Eddy County, New Mexico

Formation(s): Bone Spring

Bond Coverage: Statewide

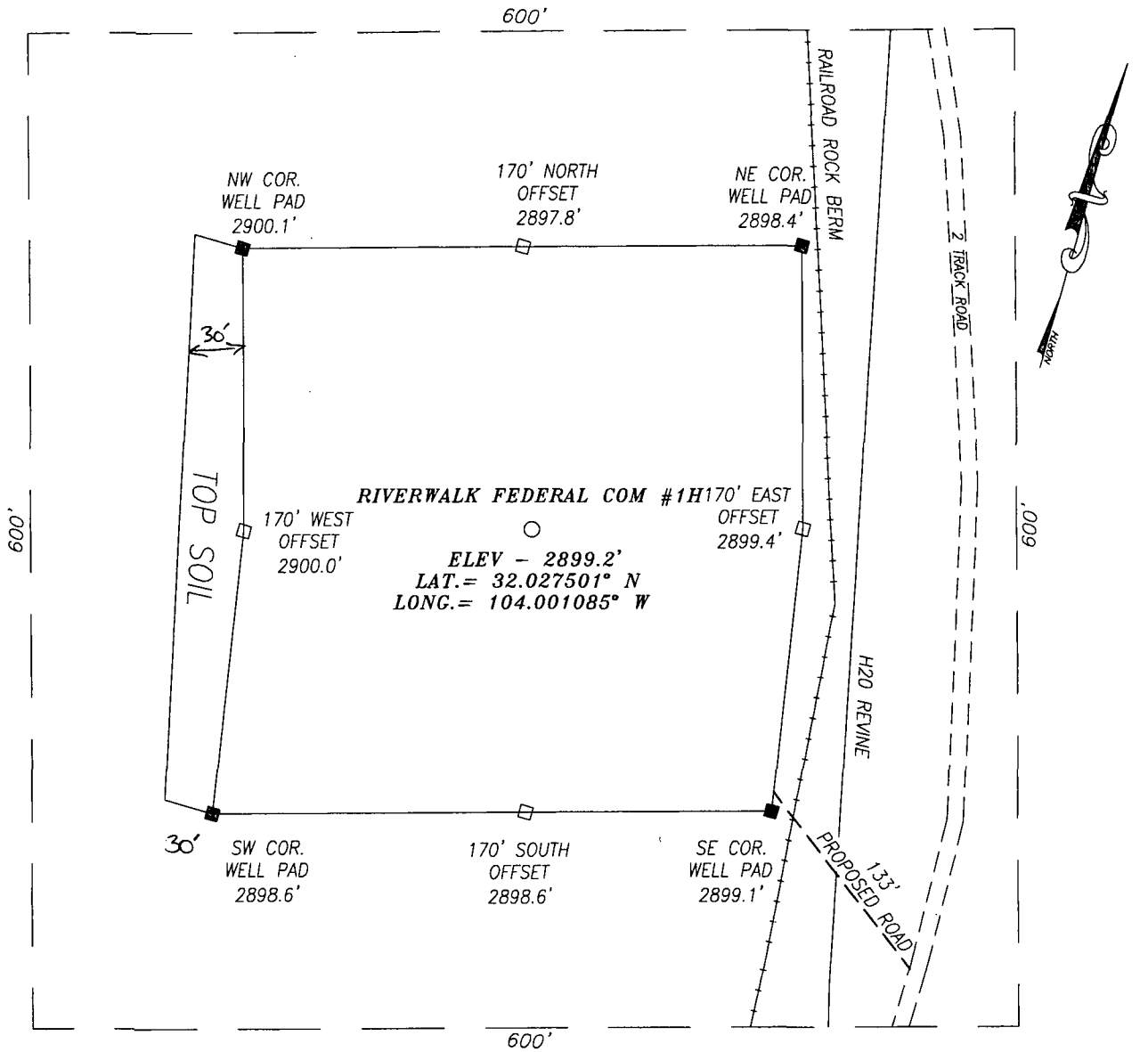
BLM Bond File #: **NMB000845 & NMB00860**

COG PRODUCTION LLC

Mayte Reyes

SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

HEADING SOUTH ON HWY 285 TURN LEFT (EAST) ONTO CR #726 (CATFISH RD.) AND GO APPROX. 1.6 MILES TURN LEFT (NORTH) ONTO A TWO TRACK ROAD. GO APPROX. 1.9 MILES AND PROPOSED WELL IS APPROX. 315 FEET WEST.

100 0 100 200 Feet

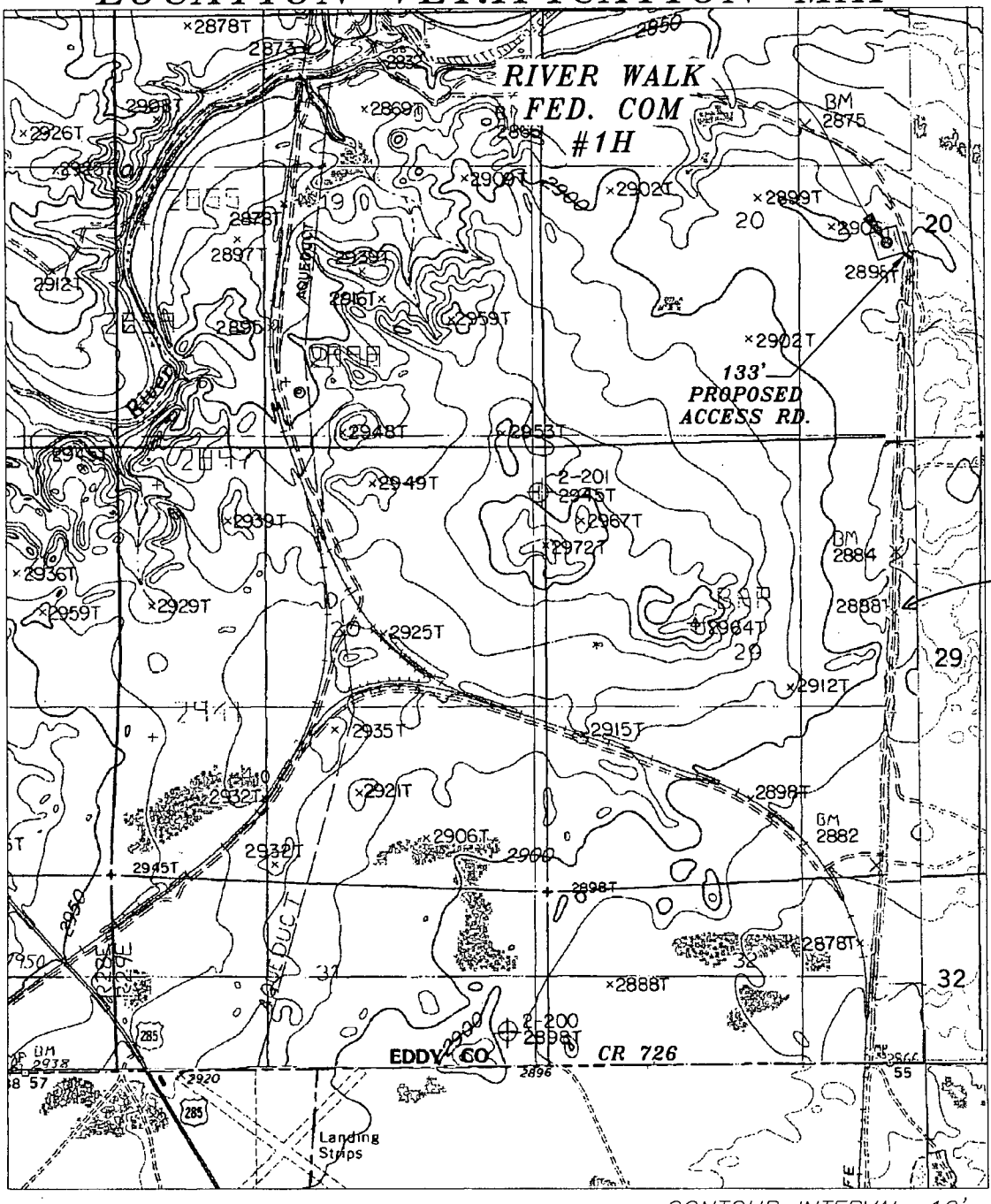
Scale: 1"=100'

HARCROW SURVEYING, LLC
1107 WATSON, ARTESIA, N.M. 88210
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com

COG PRODUCTION LLC		
RIVERWALK FEDERAL COM #1H WELL LOCATED 2398 FEET FROM THE SOUTH LINE AND 1052 FEET FROM THE EAST LINE OF SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO		
SURVEY DATE: 03/07/2013		PAGE: 1 OF 1
DRAFTING DATE: 03/11/2013		
APPROVED BY: CH	DRAWN BY: VD	FILE: 13-94

Exhibit 2

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

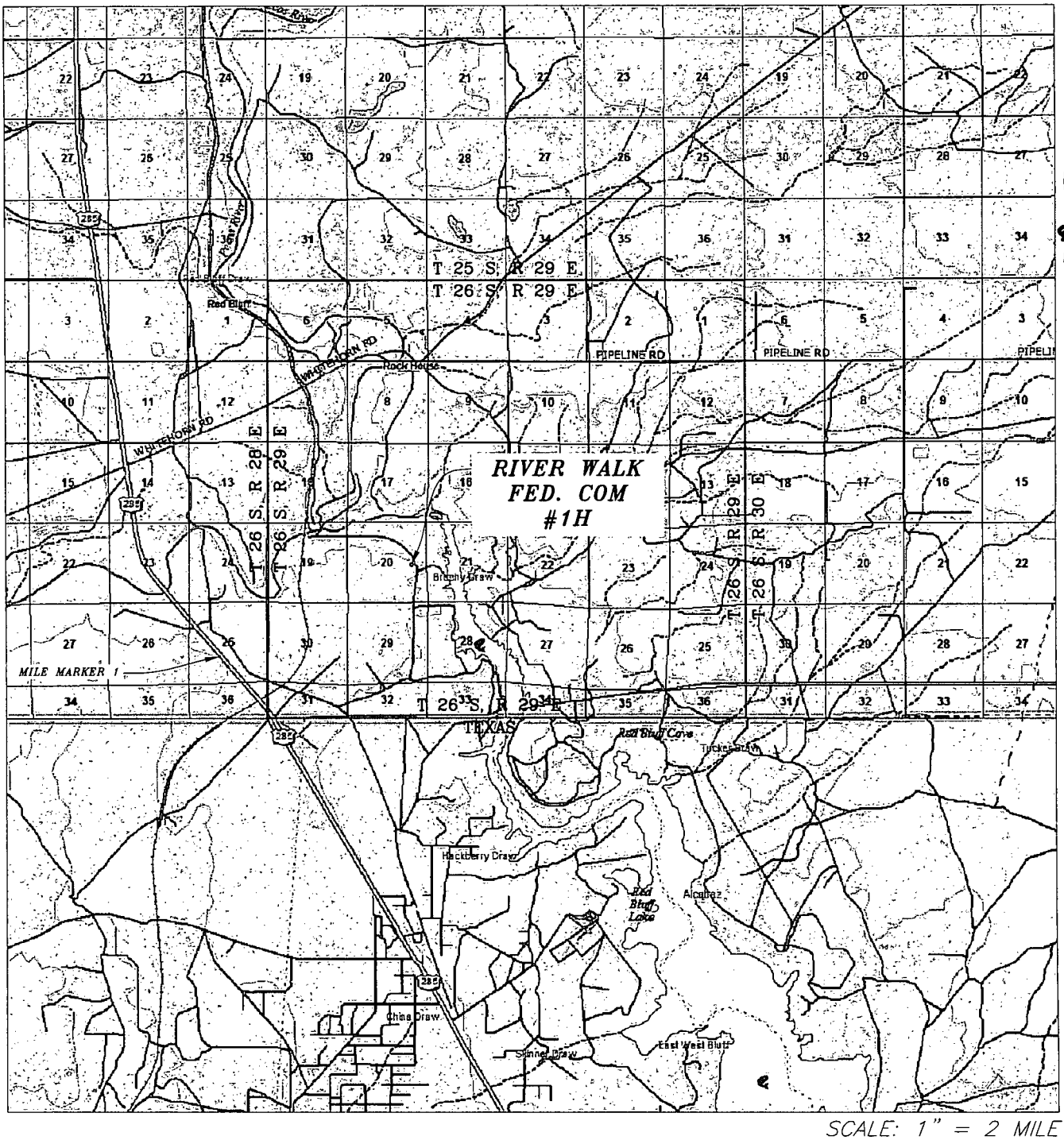
CONTOUR INTERVAL: 10'

SEC. 20 TWP. 26-S RGE. 29-E
SURVEY N.M.P.M.
COUNTY EDDY STATE NEW MEXICO
DESCRIPTION 2398' FSL & 1052' FEL
ELEVATION 2899.2'
OPERATOR COG PRODUCTION LLC
LEASE RIVER WALK FEDERAL COM
U.S.G.S. TOPOGRAPHIC MAP
RED BLUFF, N.M.

HARCROW SURVEYING, LLC
1107 WATSON, ARTESIA N.M. 88210
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com

COG PRODUCTION LLC		
SURVEY DATE: MAR. 07, 2013		PAGE: 1 OF 1
DRAFTING DATE: MAR. 11, 2013		
APPROVED BY: CH	DRAWN BY: DDSI	FILE: 13-094

VICINITY MAP



SCALE: 1" = 2 MILE

SEC. 20 TWP. 26-S RGE. 29-E
SURVEY N.M.P.M.
COUNTY EDDY STATE NEW MEXICO
DESCRIPTION 2398' FSL & 1052' FEL
ELEVATION 2899.2'
OPERATOR COG PRODUCTION LLC
LEASE RIVER WALK FEDERAL COM

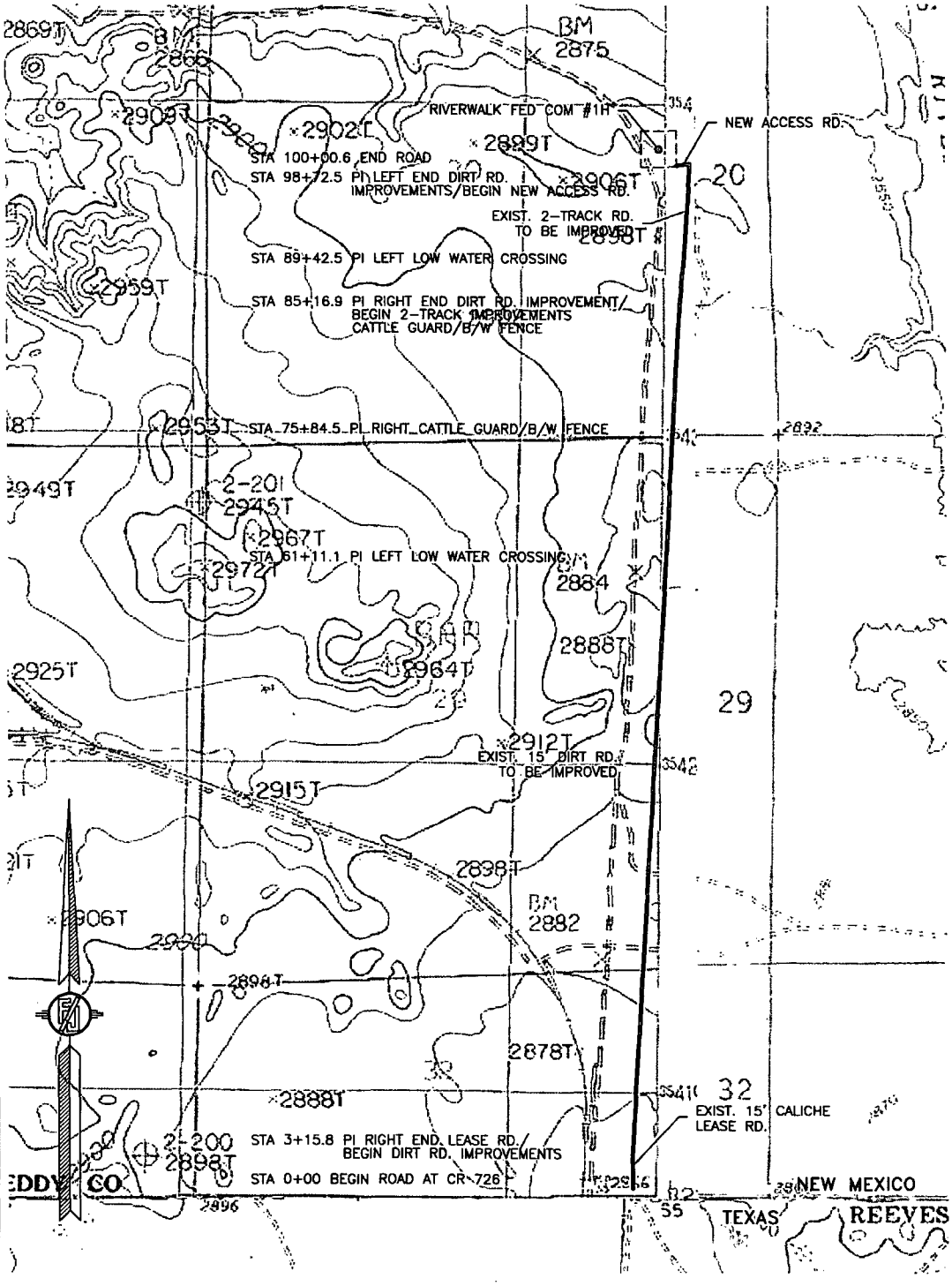
HARCROW SURVEYING, LLC
1107 WATSON, ARTESIA N.M. 88210
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com

COG PRODUCTION LLC		
SURVEY DATE: MAR. 07, 2013		PAGE: 1 OF 1
DRAFTING DATE: MAR. 11, 2013		
APPROVED BY: CH	DRAWN BY: DDSI	FILE: 13-094

ACCESS ROAD TO RIVERWALK FED COM #1H

COG OPERATING, LLC

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 32, 29, 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 8, 2013



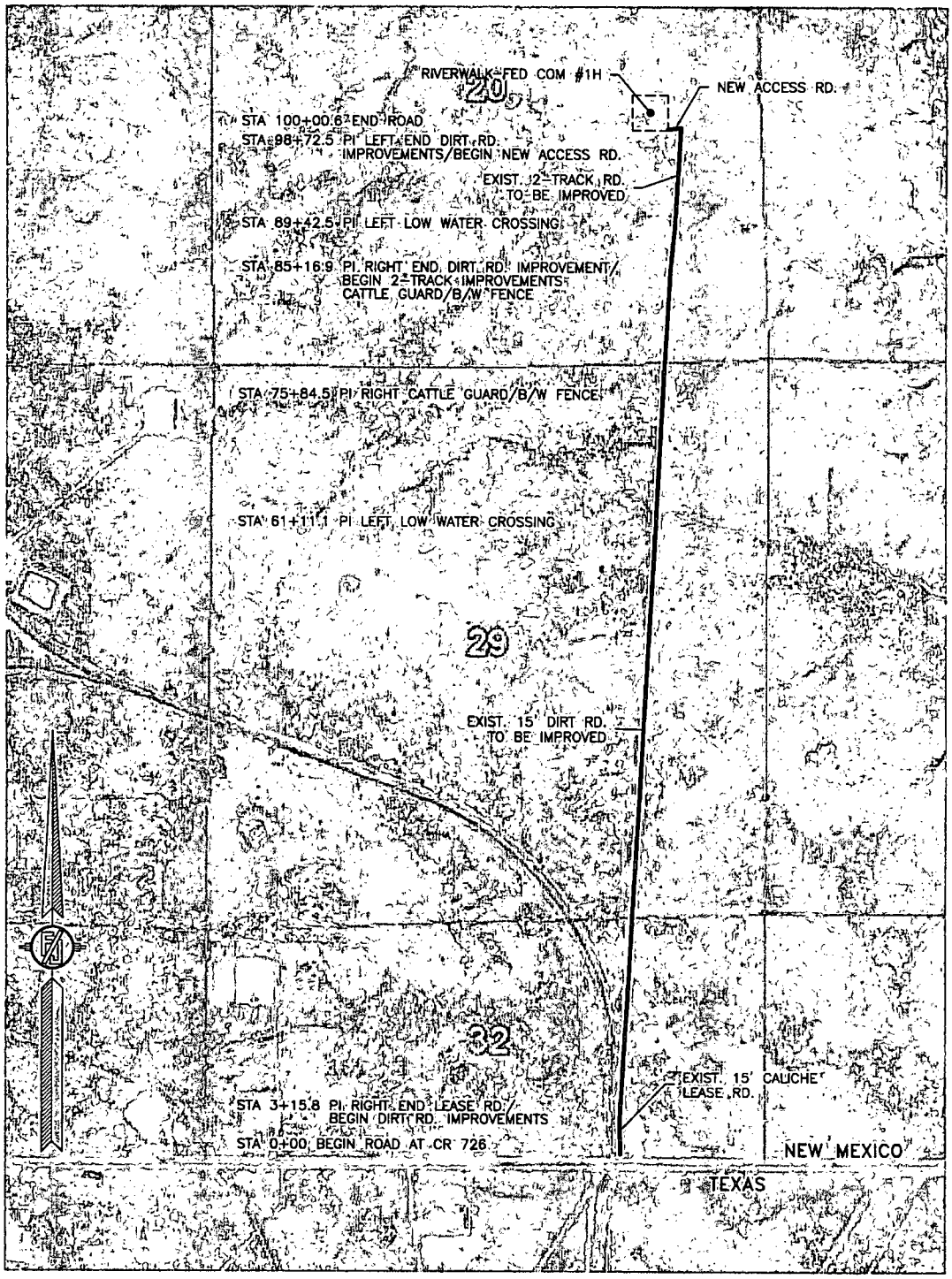
SHEET: 4-5 *SURVEY NO. 1701*

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

ACCESS ROAD TO RIVERWALK FED COM #1H

COG OPERATING, LLC

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 32, 29, 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 8, 2013



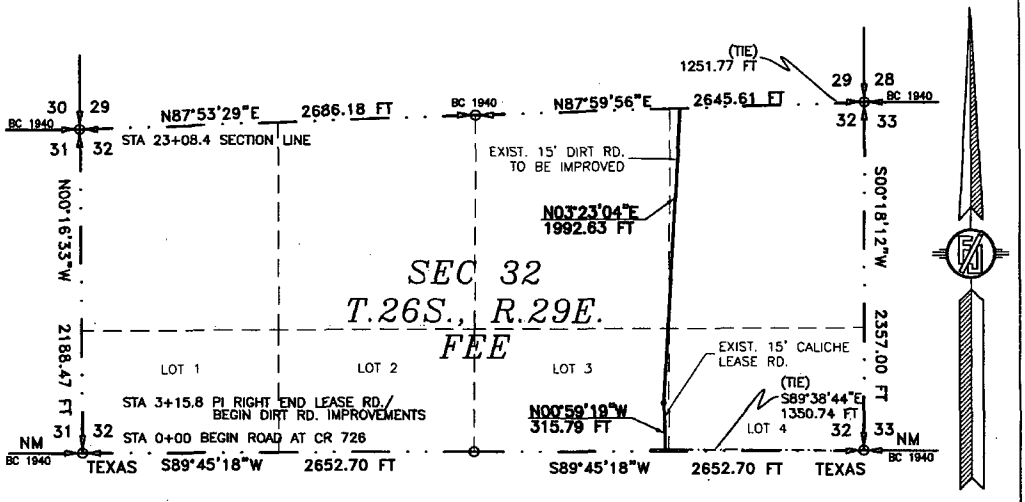
SHEET: 5-5 *SURVEY NO. 1701*

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

ACCESS ROAD TO RIVERWALK FED COM #1H

COG OPERATING, LLC

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 32, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 8, 2013



DESCRIPTION

A STRIP OF LAND 20 FEET WIDE CROSSING FEE LAND IN SECTION 32, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 10 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN LOT 3 OF SAID SECTION 32, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE SOUTHEAST CORNER OF SAID SECTION 32, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS S89°38'44"E, A DISTANCE OF 1350.74 FEET; THENCE N00°59'19"W A DISTANCE OF 315.79 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE N03°23'04"E A DISTANCE OF 1992.63 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 32, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N87°59'56"E, A DISTANCE OF 1251.77 FEET;

SAID STRIP OF LAND BEING 2308.42 FEET OR 139.91 RODS IN LENGTH, CONTAINING 1.060 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

LOT 3	820.37 L.F.	49.72 RODS	0.377 ACRES
NW/4 NE/4	118.10 L.F.	7.16 RODS	0.054 ACRES
NE/4 NE/4	1369.95 L.F.	83.03 RODS	0.629 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12 DAY OF APRIL 2013

FILIMON F. JARAMILLO PLS. 12797

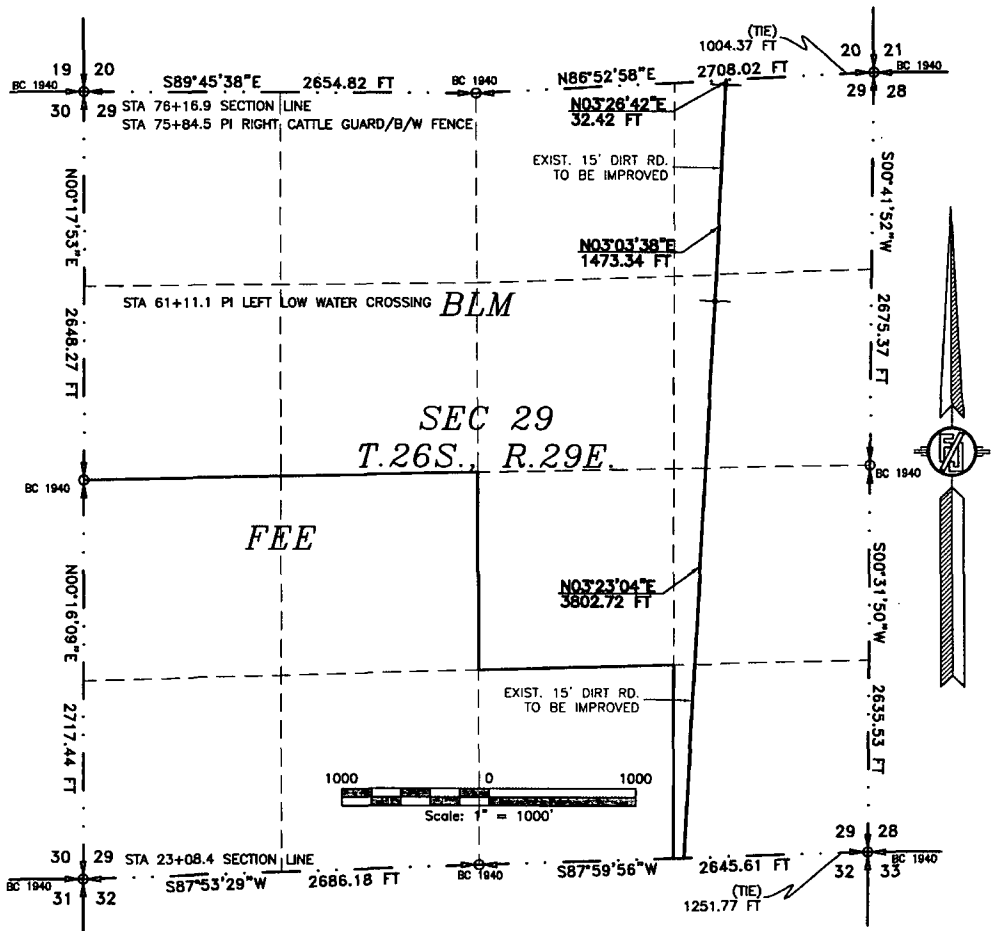
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 1-5

SURVEY NO. 1701

ACCESS ROAD TO RIVERWALK FED COM #1H

COG OPERATING, LLC
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 8, 2013



DESCRIPTION

A STRIP OF LAND 20 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 10 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE SE/4 SE/4 OF SAID SECTION 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE SOUTHEAST CORNER OF SAID SECTION 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N87°59'56"E, A DISTANCE OF 1251.77 FEET;
THENCE N03°23'04"E A DISTANCE OF 3802.72 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N03°03'38"E A DISTANCE OF 1473.34 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N03°26'42"E A DISTANCE OF 32.42 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N86°52'58"E, A DISTANCE OF 1004.37 FEET;

SAID STRIP OF LAND BEING 5308.48 FEET OR 321.72 RODS IN LENGTH, CONTAINING 2.437 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SE/4 SE/4	1330.97 L.F.	80.66 RODS	0.611 ACRES
NE/4 SE/4	1329.92 L.F.	80.60 RODS	0.611 ACRES
SE/4 NE/4	1322.99 L.F.	80.18 RODS	0.607 ACRES
NE/4 NE/4	1324.60 L.F.	80.28 RODS	0.608 ACRES

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12 DAY OF APRIL 2013

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO P.L.S. 12797

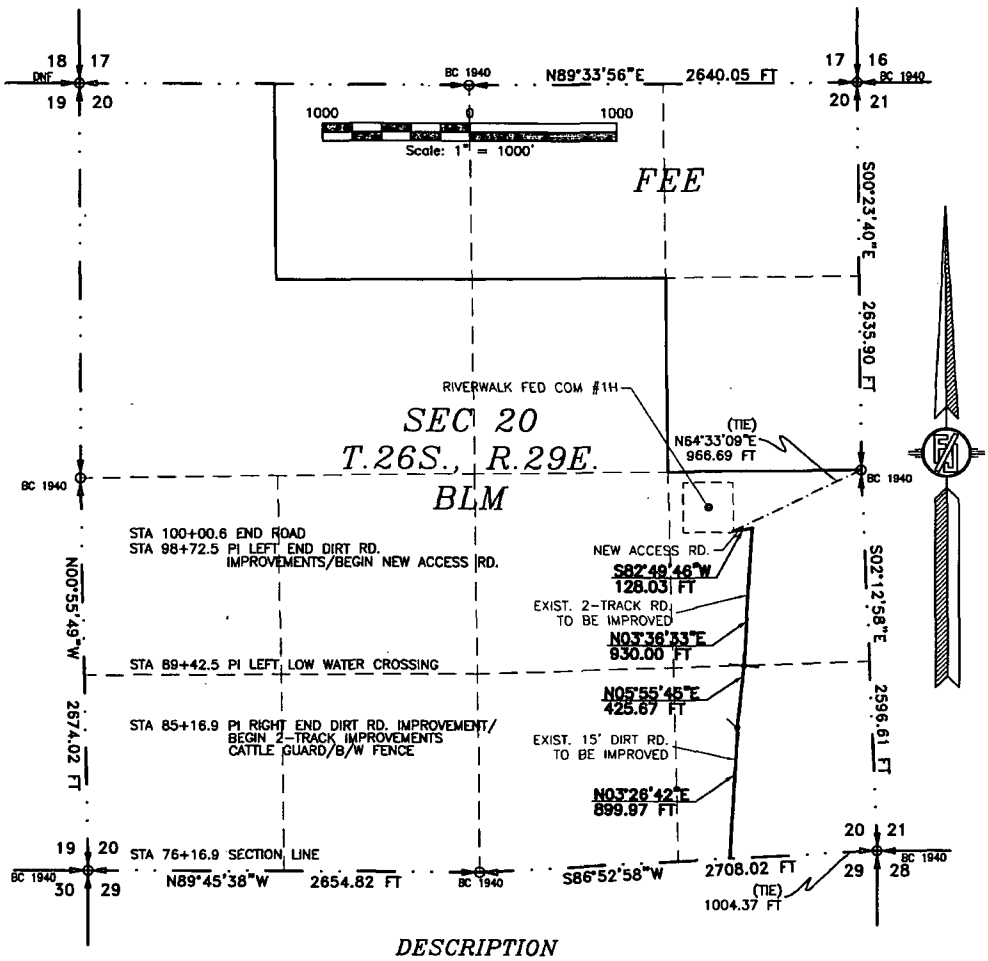
GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

ACCESS ROAD TO RIVERWALK FED COM #1H

COG OPERATING, LLC
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
APRIL 8, 2013



DESCRIPTION

A STRIP OF LAND 20 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 10 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE SE/4 SE/4 OF SAID SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE SOUTHEAST CORNER OF SAID SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N86°52'58"E, A DISTANCE OF 1004.37 FEET;
THENCE N03°26'42"E A DISTANCE OF 899.97 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N05°55'45"E A DISTANCE OF 425.67 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N03°36'33"E A DISTANCE OF 930.00 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S82°49'46"W A DISTANCE OF 128.03 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS N64°33'09"E, A DISTANCE OF 966.69 FEET;

SAID STRIP OF LAND BEING 2383.67 FEET OR 144.47 RODS IN LENGTH, CONTAINING 1.095 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SE/4 SE/4	1327.73 L.F.	80.47 RODS	0.610 ACRES
NE/4 SE/4	1055.94 L.F.	64.00 RODS	0.485 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST MODIFIED TO SURFACE COORDINATES.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT, I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12 DAY OF APRIL 2013

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO PLS 12797

SHEET: 3-5

SURVEY NO. 1701

SECTION 20, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO

NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
JULY 2011

COG PRODUCTION LLC

RIVERWALK FED. COM #1H

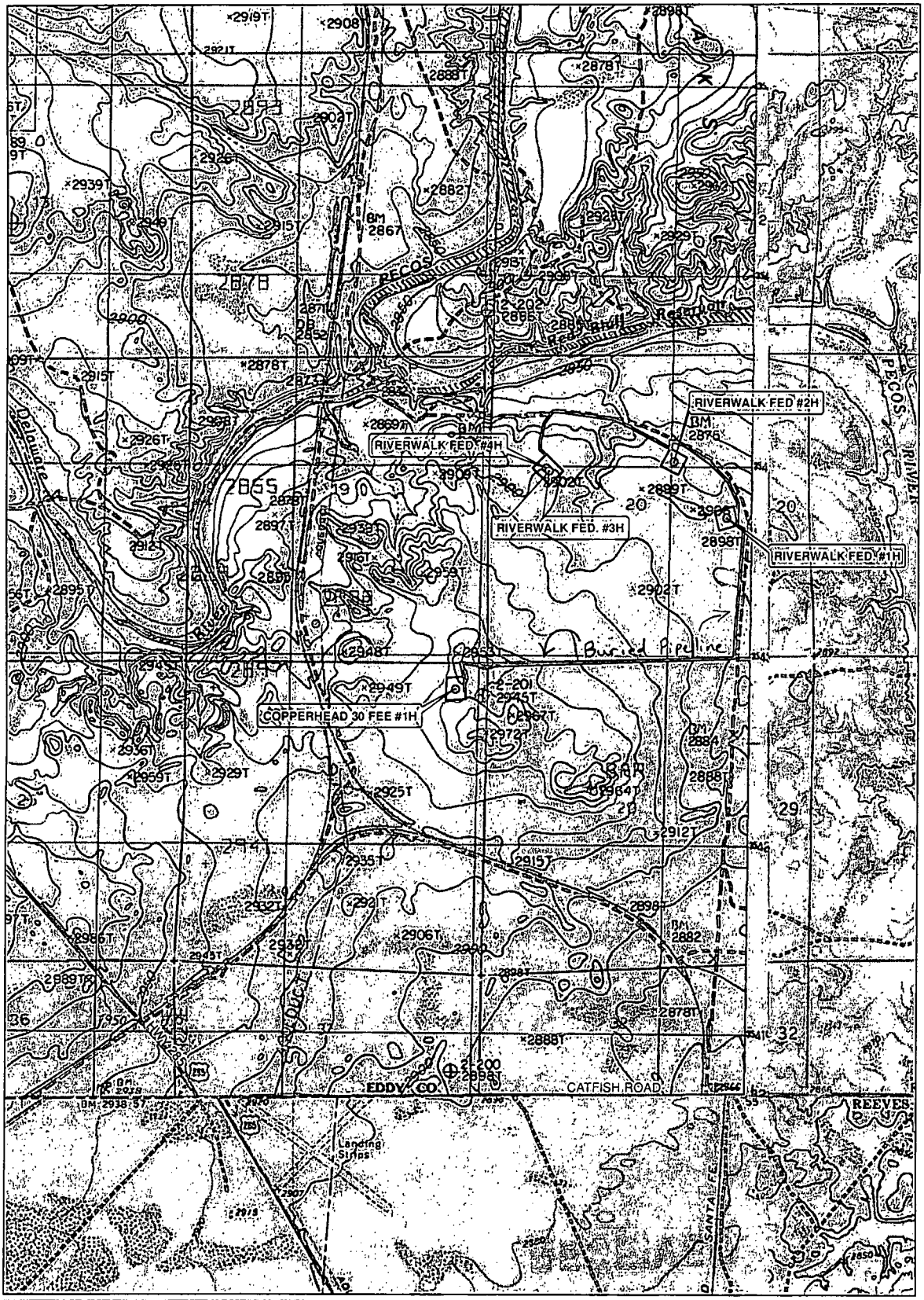
LOCATED 2310 FT. FROM THE NORTH LINE
AND 790 FT. FROM THE EAST LINE OF
SECTION 20, TOWNSHIP 26 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

OCTOBER 4, 2012

SURVEY NO. 1121

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

Pipeline Overview



PIPELINE: RIVER WALK

OPERATOR: COG OPERATING, LLC.
LENGTH: 12,846 FEET

SEC. 20, TWP. 26S, RNG. 29E

SURVEY: N.M.P.M
COUNTY: EDDY STATE: NEW MEXICO

W.O. # 13-143

PIPELINE
WELL
WELL PAD

1 IN = 2,000 FT

0 1,000 2,000 3,000 4,000 FEET

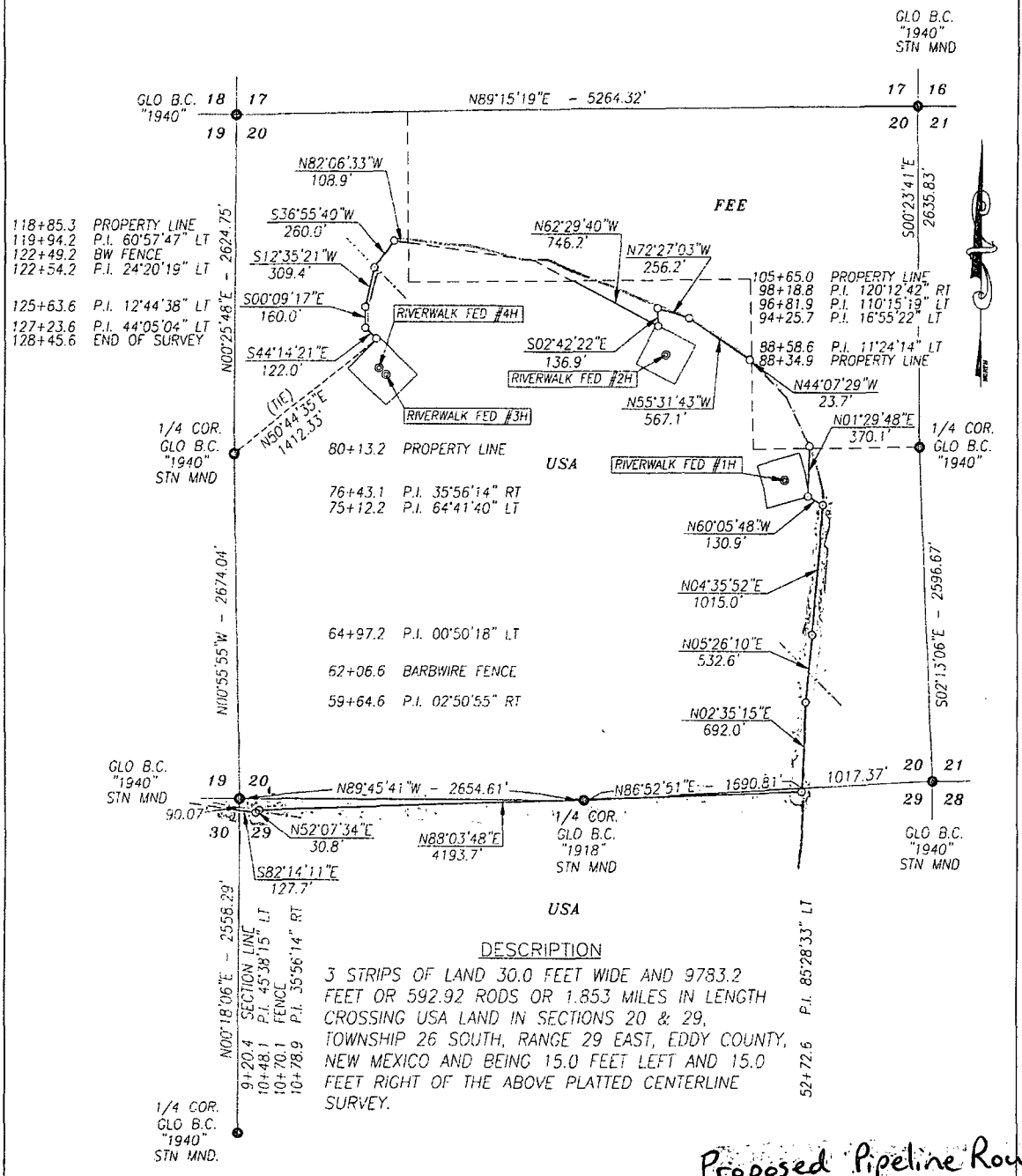
0 0.2 0.4 0.6 0.8 MILES

HARCROW SURVEYING, LLC
1107 WATSON, ARTESIA N.M. 88210
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com

MAP DATE: 4/1/2013

Buried Pipeline Route Plat

SECTIONS 20 & 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



Proposed Pipeline Route

DESCRIPTION

3 STRIPS OF LAND 30.0 FEET WIDE AND 9783.2 FEET OR 592.92 RODS OR 1.853 MILES IN LENGTH CROSSING USA LAND IN SECTIONS 20 & 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

BASIS OF BEARING:
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

CERTIFICATION
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHAD L. HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 4/1/13
CHAD HARCROW N.M.P.S. NO. 17777 DATE

HARCROW SURVEYING, LLC
1107 WATSON, ARTESIA, N.M. 88210
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com

1000 0 1000 2000 FEET
SCALE: 1"=1000'

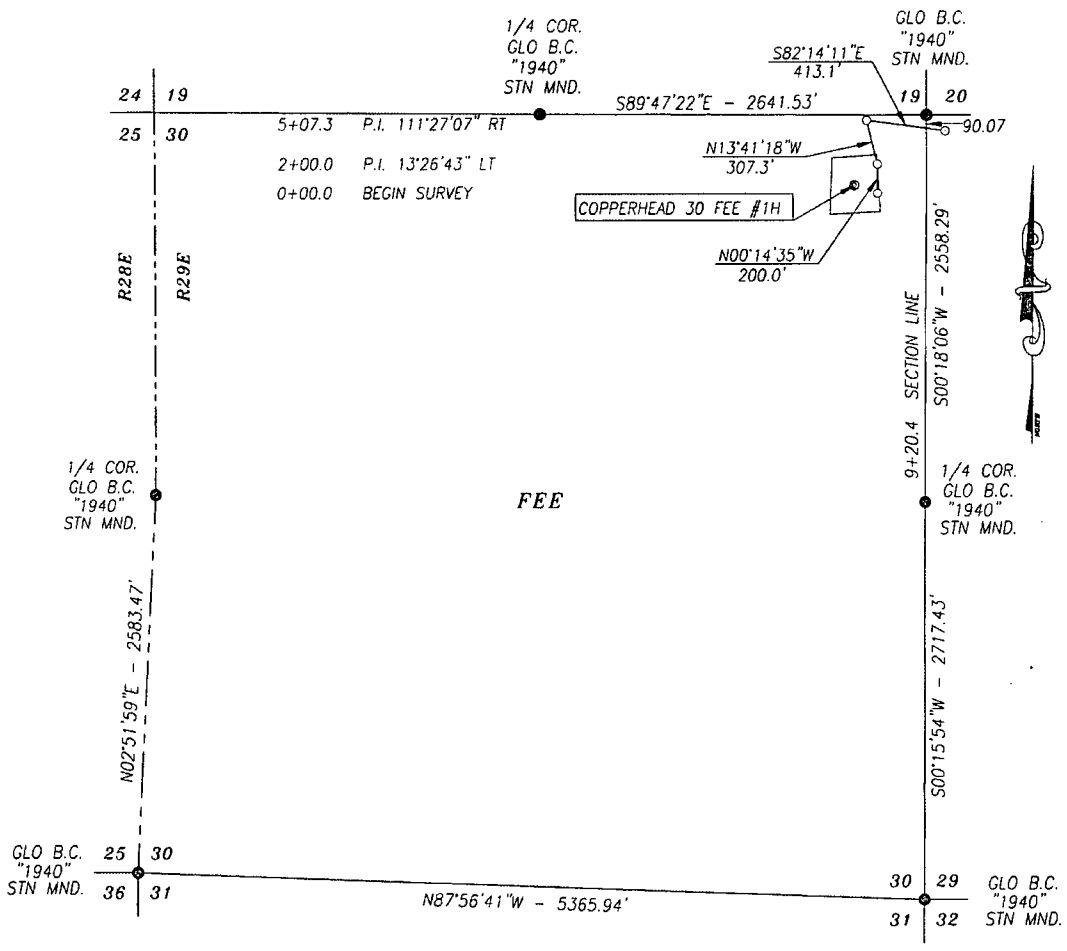
COG OPERATING, LLC

SURVEY OF A PROPOSED PIPELINE LOCATED IN SECTIONS 20 & 29, TOWNSHIP 26 SOUTH, RANGE 29 EAST, EDDY COUNTY, NMPM, NEW MEXICO

SURVEY DATE: MARCH 11, 2013		
DRAFTING DATE: MARCH 25, 2013		PAGE 2 OF 3
APPROVED BY: CH	DRAWN BY: VD	FILE: 13-143

SECTION 30, TOWNSHIP 26 SOUTH, RANGE 29 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE AND 920.4 FEET OR 55.78 RODS OR .174 MILES IN LENGTH CROSSING USA LAND IN SECTION 30, TOWNSHIP 26 SOUTH, RANGE 29 EAST, EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

BASIS OF BEARING:
BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

CERTIFICATION
I, CHAD HARCROW, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

CHAD L. HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 4/1/13

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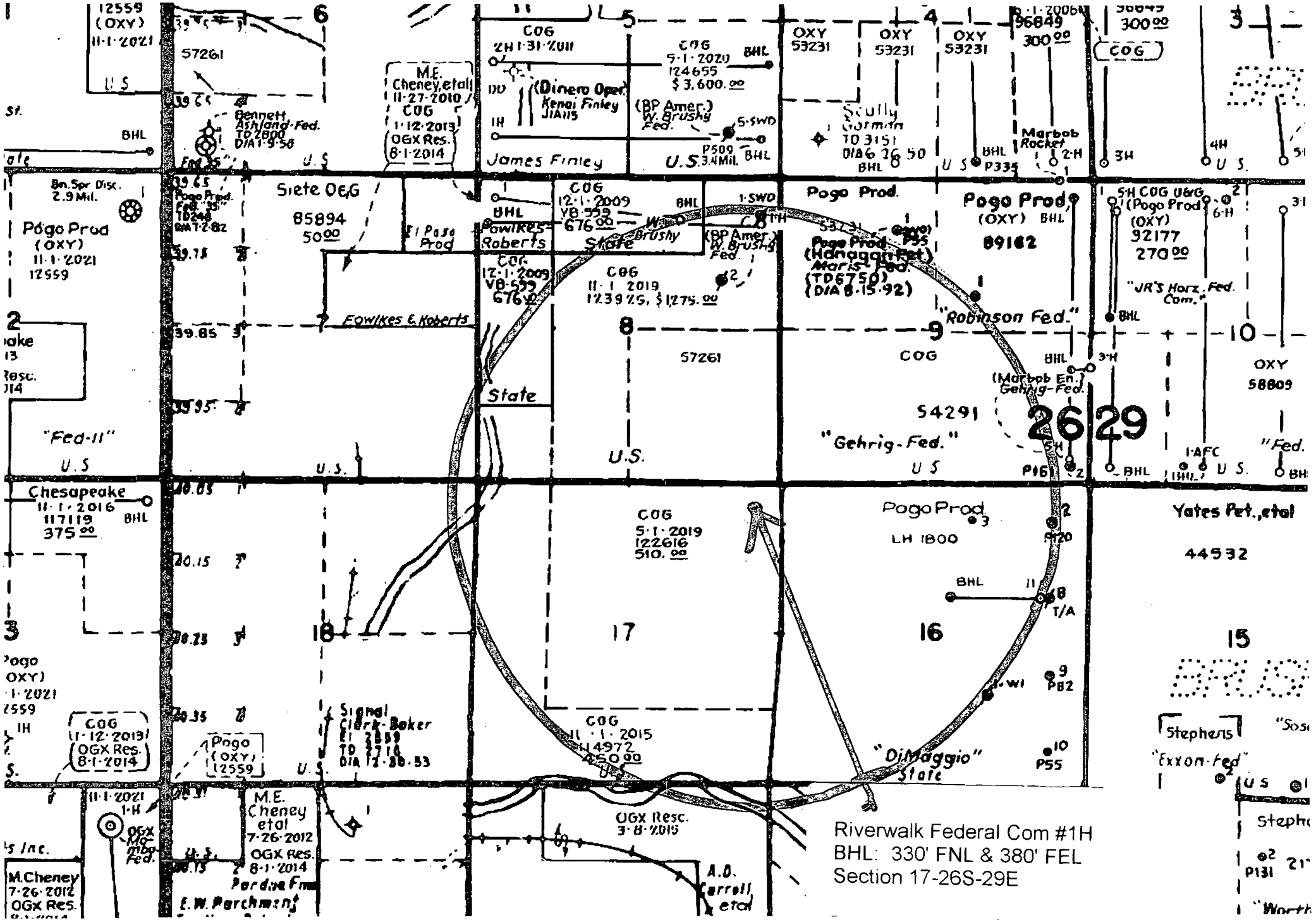
PH: (575) 513-2570 FAX: (575) 746-2158
chad_harcrow77@yahoo.com

1000 0 1000 2000 FEET
SCALE: 1"=1000'

COG OPERATING, LLC

SURVEY OF A PROPOSED PIPELINE LOCATED IN SECTION 30, TOWNSHIP 26 SOUTH, RANGE 29 EAST, EDDY COUNTY, NMPM, NEW MEXICO

SURVEY DATE: MARCH 11, 2013		
DRAFTING DATE: MARCH 25, 2013		PAGE 1 OF 3
APPROVED BY: CH	DRAWN BY: VD	FILE: 13-143


Riverwalk Federal Com #1H
BHL: 330' FNL & 380' FEL
Section 17-26S-29E
17
16
15
2629
"Robinson Fed."
"Gehrig-Fed."
"DiMaggio"
State
Pogo Prod.
(OXY)
11-1-2021
12559
Siete O&G
85894
50.00
Fowlkes & Roberts
Pogo Prod
89162
Pogo Prod
(OXY)
92177
270.00
Yates Pet., etal
44532
Chesapeake
11-1-2016
117119
375.00
COG
5-1-2019
122616
510.00
COG
11-1-2015
114972
450.00
OXY
58809
"Fed."
"Fed-11"
Stephens
"Exxon-Fed"
OGX Resc.
3-8-2015
A.D. Carroll, etal
M.E. Cheney etal
7-26-2012
OGX Res.
8-1-2014
Pardue Frm
E.W. Parchman
Signal
Clark-Baker
TD 3716
DIA 12-30-53
Pogo
(OXY)
12559
COG
11-12-2013
OGX Res.
8-1-2014
M.E.
Cheney, etal
11-27-2010
COG
1-12-2013
OGX Res.
8-1-2014
Bennett
Ashland-Fed.
TD 2800
DIA 1-9-50
James Finley
(Dinero Oper.)
Kenai Finley
JIA 15
(BP Amer.)
W. Brushy
Fed.
Scully
German
TD 3151
DIA 6-26-50
Marbob
Rocket
Marbob En.
Gehrig-Fed.
54291
Pogo Prod.
(Hanagan Pet.)
Maris Fed.
(TD 6750)
(DIA 8-15-92)
"JR's Horz. Fed. Com."
Pogo Prod
LH 1800
Bn. Spr. Dist.
2.9 Mil.
El Paso
Prod
Fowlkes
Roberts
State
COG
12-1-2009
VB-559
676.00
COG
11-1-2019
123975, $1275.00
COG
5-1-2020
124655
$3,600.00
OXY
53231
OXY
53231
OXY
53231
OXY
96849
300.00
COG
300.00
Pogo Prod.
(OXY)
11-1-2021
12559
Pogo Prod
(OXY) BHL
89162
Pogo Prod
(OXY)
92177
270.00
Yates Pet., etal
44532
Chesapeake
11-1-2016
117119
375.00
COG
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COG
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114972
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"Fed."
"Fed-11"
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OGX Resc.
3-8-2015
A.D. Carroll, etal
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OGX Res.
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TD 3716
DIA 12-30-53
Pogo
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12559
COG
11-12-2013
OGX Res.
8-1-2014
M.E.
Cheney, etal
11-27-2010
COG
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TD 3151
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54291
Pogo Prod.
(Hanagan Pet.)
Maris Fed.
(TD 6750)
(DIA 8-15-92)
"JR's Horz. Fed. Com."
Pogo Prod
LH 1800
Bn. Spr. Dist.
2.9 Mil.
El Paso
Prod
Fowlkes
Roberts
State
COG
12-1-2009
VB-559
676.00
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123975, $1275.00
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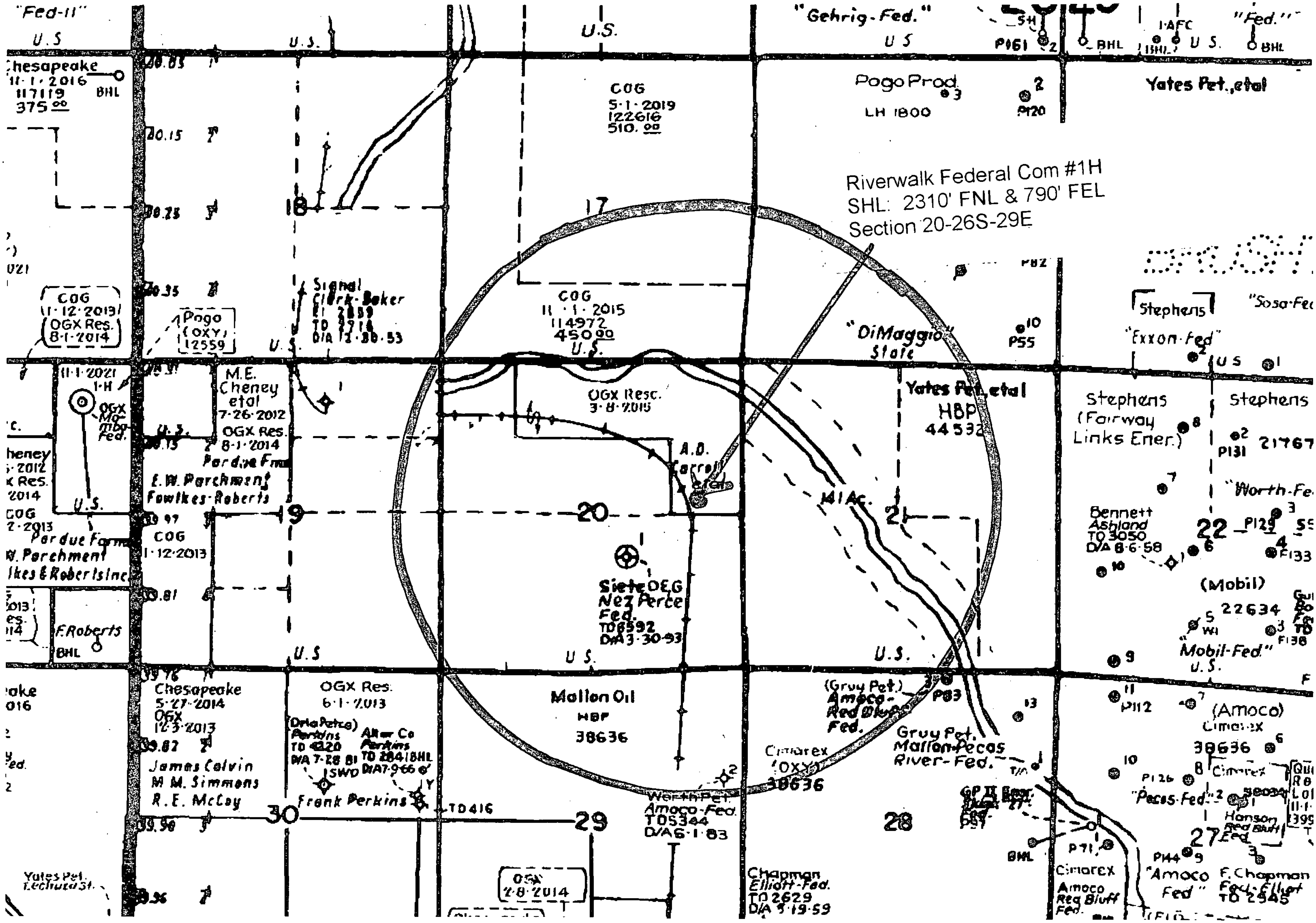
OXY
96849
300.00
COG
300.00



Riverwalk Federal Com #1H
SHL: 2310' FNL & 790' FEL
Section 20-26S-29E
"Gehrig-Fed."
Pogo Prod.
Yates Pet.,etal
COG
5-1-2019
122616
510.00
Chesapeake
11-1-2016
117119
375 00
COG
11-1-2015
114972
450 00
"DiMaggio" State
Yates Pet.,etal
HBP
44532
Stephens
"Exxon-Fed"
Stephens (Fairway Links Ener.)
OGX Resc.
3-8-2015
A.D. Carroll etal
141 Ac.
M.E. Cheney etal
7-26-2012
OGX Res.
8-1-2014
Pardue Farms
E.W. Parchment
Fowlkes-Roberts
Signal
Clark-Baker
Siete OEG
Nez Perce Fed.
TD 6592
D/A 3-30-93
Bennett
Ashland
TD 3050
D/A 8-6-58
(Mobil)
22634
"Mobil-Fed"
Mallon Oil
HBP
38636
Chesapeake
5-27-2014
OGX Res.
6-1-2013
(Gruy Pet.)
Amoco-Red Bluff Fed.
Gruy Pet.
Mallon-Pecos River-Fed.
Cimarex
(OXY)
38636
(Amoco)
Cimarex
38636
James Calvin
M.M. Simmons
R.E. McCoy
Frank Perkins
Worth Pet.
Amoco-Fed.
TD 5344
D/A 6-1-83
"Pecos-Fed"
"Amoco Fed"
F. Chapman
Chapman
Elliott-Fed.
TD 2629
D/A 5-19-59
17
18
19
20
21
22
27
28
29
30

COG Production LLC
DRILLING AND OPERATIONS PROGRAM
Riverwalk Fed Com 1H
SHL: 2398' FSL & 1052' FEL, Section 20
BHL: 330' FNL & 380' FEL, Section 17
T26S R29E
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following eleven items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Fresh Water	76'	
Rustler	373'	
Top of Salt	613'	
Base of Salt	2,607'	
Delaware	2,799'	Oil
Bone Spring	6,526'	Oil
U Avalon Sh	7,013'	Oil
L Avalon Sh	7,315'	Oil
1st BS Sand	7,617'	Oil
2nd BS Sand	8,480'	Oil
3rd BS Sand	9,494'	Oil
Wolfcamp	9,869'	Oil
PH TD/TVD	9,869'	
TD TVD	8,630'	
TD MD	16,109'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 350' ~~450'~~ and circulating cement back to surface. All intervals will be isolated by setting 5-1/2" casing to total depth and circulating cement.

3. **Proposed Casing Program: All casing is new and API approved**

Hole Size	Depths	Section	OD Casing	New/ Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 ½"	0' - ~~450'~~ 350'	Surface	13 3/8"	New	48#	STC	H-40	1.125	1.125	1.6
12 ¼"	0' – ~~2,820'~~ 2750'	Intrmd	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
7 7/8"	0' – 16,109'	Production Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

- While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.
- Will run one centralizer per joint in lateral section of well.

4. Proposed Cement Program

a. 13 3/8" Surface
Lead: None
Tail: 500 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.34 cuft/sk)
**Calculated w/100% excess on OH volumes

b. 9 5/8" Intermediate:
Lead: 700 sx Class C + 4% Gel + 2% $CaCl_2$
(13.5 ppg /1.73 cuft/sk)
Tail: 250 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.34 cuft/sk)
**Calculated w/85% excess on OH volumes

d. 5 1/2" Production
Lead: 1000 sx 50:50:10 H w/ salt, gilsonite, CFR-3, P-E-F, & HR601 (11.9 ppg / 2.51 cuft/sk)
Tail: 1800 sx 50:50:2 H w/ salt, GasStop, HR601, & CFR-3 (14.4 ppg /1.25 cuft/sk)
**Calculated w/70% excess on OH volumes

- The above cement volumes could be revised pending caliper measurements.
- All strings are designed to circulate to surface.
- Pilot hole will be plugged back with the below plugs:
  1. Plug #1
     - 250' from 9,619' – 9,869' WOC 4 hrs and tag.
     - 100 sx Class H
     - 17.2 ppg 0.98 cuft/sk
  2. Plug #2
     - 900' from 7,900' – 8,800'
     - 340 sx Class H
     - 17.2 ppg 0.98 cuft/sk

See COA

5. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8" with minimum 2M annular preventer. Annular will be tested to 50% of WP and remainder of system tested to 2000 psi by independent tester.
Nipple up on 9 5/8" with minimum 3M annular and double ram preventers. Annular will be tested to 50% of WP and remainder of system tested to 3000 psi by independent tester.
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. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 5000 psi WP rating.

6. Estimated BHP & BHT:

Lateral TD = 3770 psi
Lateral TD = 141° F
PHTD = 4841 psi
PHTD = 153° F

7. Mud Program: The applicable depths and properties of this system are as follows:

See COA

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' – ~~450'~~ 350'	Fresh Water	8.4	29	N.C.
~~450' – 2,820'~~ 2750'	Brine	10	29	N.C.
~~2,820'~~ – 10,120' (PH)	Cut Brine	8.6 - 9.5	29	N.C.
8,000' – 16,109' (Crv/Lat)	Cut Brine	8.9 - 9.2	29	N.C.

- The necessary mud products for weight addition and fluid loss control will be on location at all times.
- A visual and electronic mud monitoring system will be rigged up prior to spud to detect changes in the volume of mud system. The electronic system consists of a pit volume totalizer, stroke counter and flow sensor at flow line.
- If weight and/or viscosity are introduced to the mud system a daily mud check will be performed by mud contractor, along with tourly check by rig personnel.
- After setting intermediate casing, a third party gas unit detection system will be installed at the flow line.

8. Auxiliary Well Control and Monitoring Equipment:

a. A Kelly cock will be in the drill string at all times.
b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 ½" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

See COA

9. Testing, Logging and Coring Program:

a. Drill stem tests will be based on geological sample shows.
b. If open hole electrical logging is performed, the program will be:
   i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
   ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
   iii. No coring program is planned
   iv. Additional testing will be initiated subsequent to setting the 5 ½" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

CONCHO

COG PRODUCTION LLC

Eddy County, NM (NAD 27)
Sec 20, T26S, R29E (NEW SHL)
Riverwalk Fed Com #1H

Wellbore #1

Plan: Design #2 New SHL

DDC Well Planning Report

20 March, 2013

DDC
The DIRECTIONAL DRILLING COMPANY

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Riverwalk Fed Com #1H
Company:	COG Production LLC	**TVD Reference:**	WELL @ 2916.2usft (Patriot #3)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	WELL @ 2916.2usft (Patriot #3)
Site:	Sec 20, T26S, R29E (NEW SHL)	**North Reference:**	Grid
Well:	Riverwalk Fed Com #1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2 New SHL		

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 20, T26S, R29E (NEW SHL)

Site Position:		**Northing:**	373,889.20 usft	**Latitude:**	32° 1' 39.002 N
From:	Map	**Easting:**	602,964.80 usft	**Longitude:**	104° 0' 3.905 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.18 °

Well Riverwalk Fed Com #1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	373,889.20 usft	**Latitude:**	32° 1' 39.002 N
	+E/-W	0.0 usft	**Easting:**	602,964.80 usft	**Longitude:**	104° 0' 3.905 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	2,899.2 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/20/2013	7.55	59.89	48,278

Design Design #2 New SHL

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	6.11

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,112.5	0.00	0.00	8,112.5	0.0	0.0	0.00	0.00	0.00	0.00	
8,859.9	89.68	6.11	8,590.0	472.1	50.5	12.00	12.00	0.82	6.11	
16,109.3	89.68	6.11	8,630.0	7,680.3	821.7	0.00	0.00	0.00	0.00	PBHL Riverwalk Fe

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Riverwalk Fed Com #1H
Company:	COG Production LLC	**TVD Reference:**	WELL @ 2916.2usft (Patriot #3)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	WELL @ 2916.2usft (Patriot #3)
Site:	Sec 20, T26S, R29E (NEW SHL)	**North Reference:**	Grid
Well:	Riverwalk Fed Com #1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2 New SHL		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Build 12° / 100'									
8,112.5	0.00	0.00	8,112.5	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	10.50	6.11	8,199.5	7.9	0.9	8.0	12.00	12.00	0.00
8,300.0	22.50	6.11	8,295.2	36.1	3.9	36.3	12.00	12.00	0.00
8,400.0	34.50	6.11	8,382.9	83.5	8.9	84.0	12.00	12.00	0.00
8,500.0	46.50	6.11	8,458.8	148.0	15.8	148.8	12.00	12.00	0.00
SBSG Sand									
8,535.7	50.78	6.11	8,482.4	174.6	18.7	175.6	12.00	12.00	0.00
8,600.0	58.50	6.11	8,519.6	226.7	24.3	228.0	12.00	12.00	0.00
8,700.0	70.50	6.11	8,562.6	316.3	33.8	318.1	12.00	12.00	0.00
8,800.0	82.50	6.11	8,585.9	412.8	44.2	415.1	12.00	12.00	0.00
EOB @ 89.68° Inc / 6.11° Azm / 8590' TVD									
8,859.9	89.68	6.11	8,590.0	472.1	50.5	474.8	12.00	12.00	0.00
8,900.0	89.68	6.11	8,590.2	512.0	54.8	515.0	0.00	0.00	0.00
9,000.0	89.68	6.11	8,590.7	611.5	65.4	615.0	0.00	0.00	0.00
9,100.0	89.68	6.11	8,591.3	710.9	76.1	715.0	0.00	0.00	0.00
9,200.0	89.68	6.11	8,591.8	810.3	86.7	815.0	0.00	0.00	0.00
9,300.0	89.68	6.11	8,592.4	909.8	97.3	915.0	0.00	0.00	0.00
9,400.0	89.68	6.11	8,592.9	1,009.2	108.0	1,015.0	0.00	0.00	0.00
9,500.0	89.68	6.11	8,593.5	1,108.6	118.6	1,115.0	0.00	0.00	0.00
9,600.0	89.68	6.11	8,594.0	1,208.1	129.2	1,215.0	0.00	0.00	0.00
9,700.0	89.68	6.11	8,594.6	1,307.5	139.9	1,315.0	0.00	0.00	0.00
9,800.0	89.68	6.11	8,595.2	1,406.9	150.5	1,415.0	0.00	0.00	0.00
9,900.0	89.68	6.11	8,595.7	1,506.4	161.2	1,514.9	0.00	0.00	0.00
10,000.0	89.68	6.11	8,596.3	1,605.8	171.8	1,614.9	0.00	0.00	0.00
10,100.0	89.68	6.11	8,596.8	1,705.2	182.4	1,714.9	0.00	0.00	0.00
10,200.0	89.68	6.11	8,597.4	1,804.6	193.1	1,814.9	0.00	0.00	0.00
10,300.0	89.68	6.11	8,597.9	1,904.1	203.7	1,914.9	0.00	0.00	0.00
10,400.0	89.68	6.11	8,598.5	2,003.5	214.4	2,014.9	0.00	0.00	0.00
10,500.0	89.68	6.11	8,599.0	2,102.9	225.0	2,114.9	0.00	0.00	0.00
10,600.0	89.68	6.11	8,599.6	2,202.4	235.6	2,214.9	0.00	0.00	0.00
10,700.0	89.68	6.11	8,600.1	2,301.8	246.3	2,314.9	0.00	0.00	0.00
10,800.0	89.68	6.11	8,600.7	2,401.2	256.9	2,414.9	0.00	0.00	0.00
10,900.0	89.68	6.11	8,601.2	2,500.7	267.5	2,514.9	0.00	0.00	0.00
11,000.0	89.68	6.11	8,601.8	2,600.1	278.2	2,614.9	0.00	0.00	0.00
11,100.0	89.68	6.11	8,602.3	2,699.5	288.8	2,714.9	0.00	0.00	0.00
11,200.0	89.68	6.11	8,602.9	2,799.0	299.5	2,814.9	0.00	0.00	0.00
11,300.0	89.68	6.11	8,603.4	2,898.4	310.1	2,914.9	0.00	0.00	0.00
11,400.0	89.68	6.11	8,604.0	2,997.8	320.7	3,014.9	0.00	0.00	0.00
11,500.0	89.68	6.11	8,604.5	3,097.2	331.4	3,114.9	0.00	0.00	0.00
11,600.0	89.68	6.11	8,605.1	3,196.7	342.0	3,214.9	0.00	0.00	0.00
11,700.0	89.68	6.11	8,605.6	3,296.1	352.6	3,314.9	0.00	0.00	0.00
11,800.0	89.68	6.11	8,606.2	3,395.5	363.3	3,414.9	0.00	0.00	0.00
11,900.0	89.68	6.11	8,606.7	3,495.0	373.9	3,514.9	0.00	0.00	0.00
12,000.0	89.68	6.11	8,607.3	3,594.4	384.6	3,614.9	0.00	0.00	0.00
12,100.0	89.68	6.11	8,607.9	3,693.8	395.2	3,714.9	0.00	0.00	0.00
12,200.0	89.68	6.11	8,608.4	3,793.3	405.8	3,814.9	0.00	0.00	0.00
12,300.0	89.68	6.11	8,609.0	3,892.7	416.5	3,914.9	0.00	0.00	0.00
12,400.0	89.68	6.11	8,609.5	3,992.1	427.1	4,014.9	0.00	0.00	0.00
12,500.0	89.68	6.11	8,610.1	4,091.6	437.7	4,114.9	0.00	0.00	0.00
12,600.0	89.68	6.11	8,610.6	4,191.0	448.4	4,214.9	0.00	0.00	0.00
12,700.0	89.68	6.11	8,611.2	4,290.4	459.0	4,314.9	0.00	0.00	0.00
12,800.0	89.68	6.11	8,611.7	4,389.9	469.7	4,414.9	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Riverwalk Fed Com #1H
Company:	COG Production LLC	**TVD Reference:**	WELL @ 2916.2usft (Patriot #3)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	WELL @ 2916.2usft (Patriot #3)
Site:	Sec 20, T26S, R29E (NEW SHL)	**North Reference:**	Grid
Well:	Riverwalk Fed Com #1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2 New SHL		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,900.0	89.68	6.11	8,612.3	4,489.3	480.3	4,514.9	0.00	0.00	0.00
13,000.0	89.68	6.11	8,612.8	4,588.7	490.9	4,614.9	0.00	0.00	0.00
13,100.0	89.68	6.11	8,613.4	4,688.1	501.6	4,714.9	0.00	0.00	0.00
13,200.0	89.68	6.11	8,613.9	4,787.6	512.2	4,814.9	0.00	0.00	0.00
13,300.0	89.68	6.11	8,614.5	4,887.0	522.9	4,914.9	0.00	0.00	0.00
13,400.0	89.68	6.11	8,615.0	4,986.4	533.5	5,014.9	0.00	0.00	0.00
13,500.0	89.68	6.11	8,615.6	5,085.9	544.1	5,114.9	0.00	0.00	0.00
13,600.0	89.68	6.11	8,616.1	5,185.3	554.8	5,214.9	0.00	0.00	0.00
13,700.0	89.68	6.11	8,616.7	5,284.7	565.4	5,314.9	0.00	0.00	0.00
13,800.0	89.68	6.11	8,617.2	5,384.2	576.0	5,414.9	0.00	0.00	0.00
13,900.0	89.68	6.11	8,617.8	5,483.6	586.7	5,514.9	0.00	0.00	0.00
14,000.0	89.68	6.11	8,618.3	5,583.0	597.3	5,614.9	0.00	0.00	0.00
14,100.0	89.68	6.11	8,618.9	5,682.5	608.0	5,714.9	0.00	0.00	0.00
14,200.0	89.68	6.11	8,619.5	5,781.9	618.6	5,814.9	0.00	0.00	0.00
14,300.0	89.68	6.11	8,620.0	5,881.3	629.2	5,914.9	0.00	0.00	0.00
14,400.0	89.68	6.11	8,620.6	5,980.7	639.9	6,014.9	0.00	0.00	0.00
14,500.0	89.68	6.11	8,621.1	6,080.2	650.5	6,114.9	0.00	0.00	0.00
14,600.0	89.68	6.11	8,621.7	6,179.6	661.1	6,214.9	0.00	0.00	0.00
14,700.0	89.68	6.11	8,622.2	6,279.0	671.8	6,314.9	0.00	0.00	0.00
14,800.0	89.68	6.11	8,622.8	6,378.5	682.4	6,414.9	0.00	0.00	0.00
14,900.0	89.68	6.11	8,623.3	6,477.9	693.1	6,514.9	0.00	0.00	0.00
15,000.0	89.68	6.11	8,623.9	6,577.3	703.7	6,614.9	0.00	0.00	0.00
15,100.0	89.68	6.11	8,624.4	6,676.8	714.3	6,714.9	0.00	0.00	0.00
15,200.0	89.68	6.11	8,625.0	6,776.2	725.0	6,814.9	0.00	0.00	0.00
15,300.0	89.68	6.11	8,625.5	6,875.6	735.6	6,914.9	0.00	0.00	0.00
15,400.0	89.68	6.11	8,626.1	6,975.1	746.2	7,014.9	0.00	0.00	0.00
15,500.0	89.68	6.11	8,626.6	7,074.5	756.9	7,114.9	0.00	0.00	0.00
15,600.0	89.68	6.11	8,627.2	7,173.9	767.5	7,214.9	0.00	0.00	0.00
15,700.0	89.68	6.11	8,627.7	7,273.4	778.2	7,314.9	0.00	0.00	0.00
15,800.0	89.68	6.11	8,628.3	7,372.8	788.8	7,414.9	0.00	0.00	0.00
15,900.0	89.68	6.11	8,628.8	7,472.2	799.4	7,514.9	0.00	0.00	0.00
16,000.0	89.68	6.11	8,629.4	7,571.6	810.1	7,614.9	0.00	0.00	0.00
16,100.0	89.68	6.11	8,629.9	7,671.1	820.7	7,714.9	0.00	0.00	0.00
16,109.3	89.68	6.11	8,630.0	7,680.3	821.7	7,724.1	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL Riverwalk Fed - plan hits target center - Point	0.00	0.00	8,630.0	7,680.3	821.7	381,569.50	603,786.50	32° 2' 54.985 N	103° 59' 54.083 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Riverwalk Fed Com #1H
Company:	COG Production LLC	**TVD Reference:**	WELL @ 2916.2usft (Patriot #3)
Project:	Eddy County, NM (NAD 27)	**MD Reference:**	WELL @ 2916.2usft (Patriot #3)
Site:	Sec 20, T26S, R29E (NEW SHL)	**North Reference:**	Grid
Well:	Riverwalk Fed Com #1H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2 New SHL		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
373.0	373.0	Rustler		0.79	6.11
613.0	613.0	TOS		0.79	6.11
2,607.0	2,607.0	BOS		0.79	6.11
2,799.0	2,799.0	Delaware		0.79	6.11
6,526.0	6,526.0	Bone Spring		0.79	6.11
7,013.0	7,013.0	U Avalon Sh		0.79	6.11
7,315.0	7,315.0	L Avalon Sh		0.79	6.11
7,617.0	7,617.0	FBSG Sand		0.79	6.11
8,535.7	8,482.4	SBSG Sand		0.79	6.11

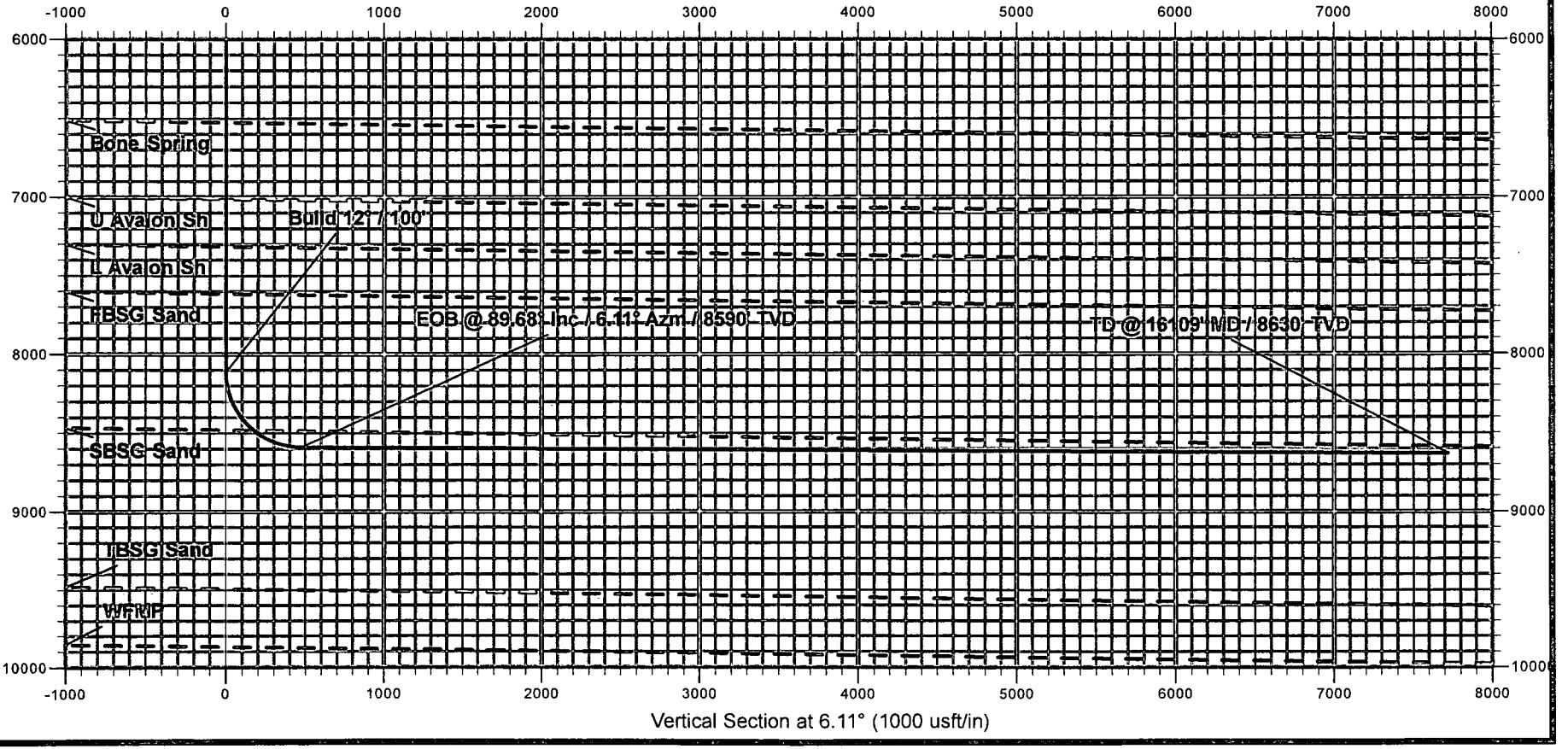
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
8,112.5	8,112.5	0.0	0.0	Build 12° / 100'
8,859.9	8,590.0	472.1	50.5	EOB @ 89.68° Inc / 6.11° Azm / 8590' TVD
16,109.3	8,630.0	7,680.3	821.7	TD @ 16109' MD / 8630' TVD

CONCHO

Eddy County, NM (NAD 27)
Riverwalk Fed Com #1H
Quote 120915
Design #2 New SHL

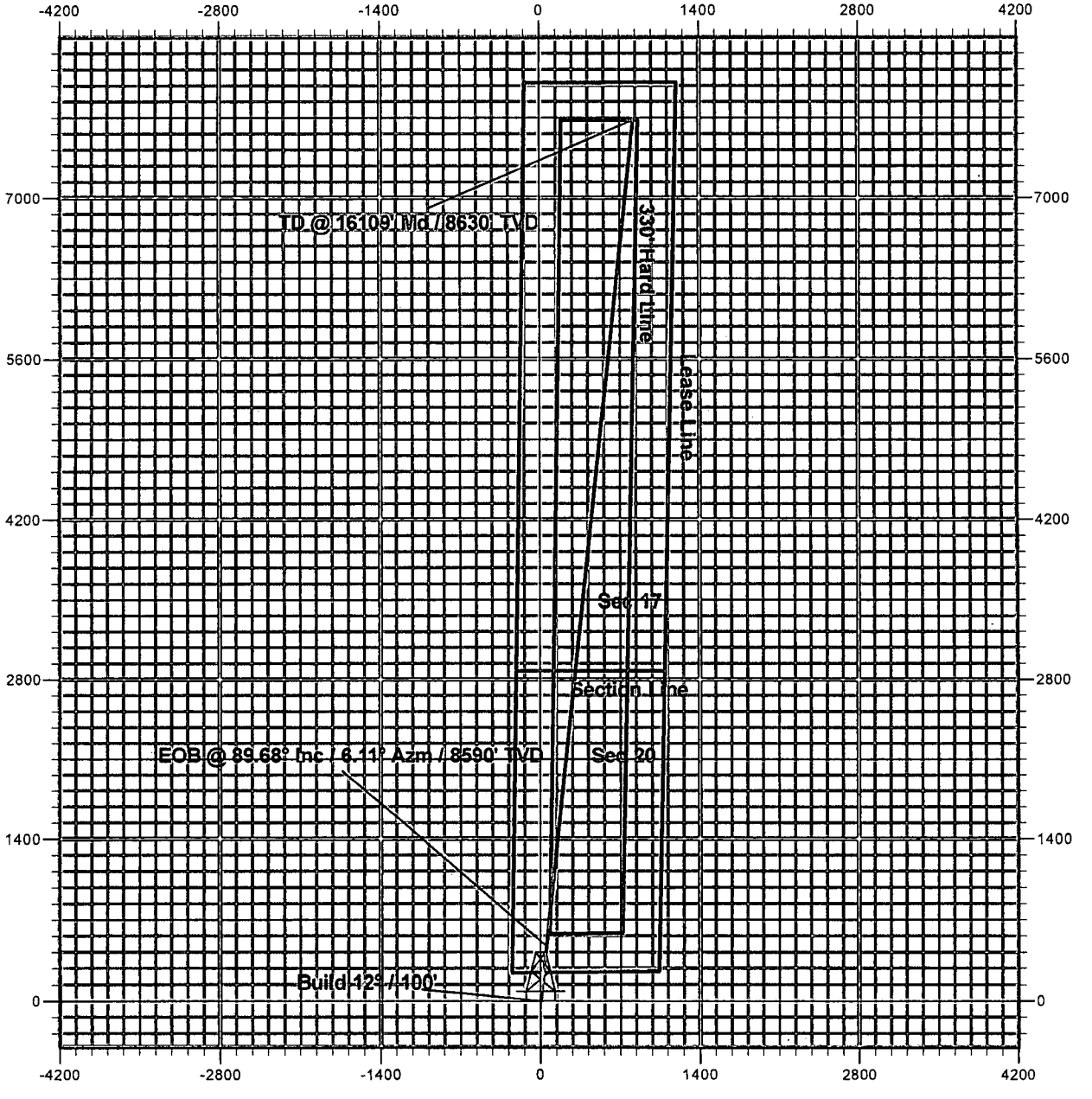
PDC
The DIRECTIONAL DRILLING COMPANY



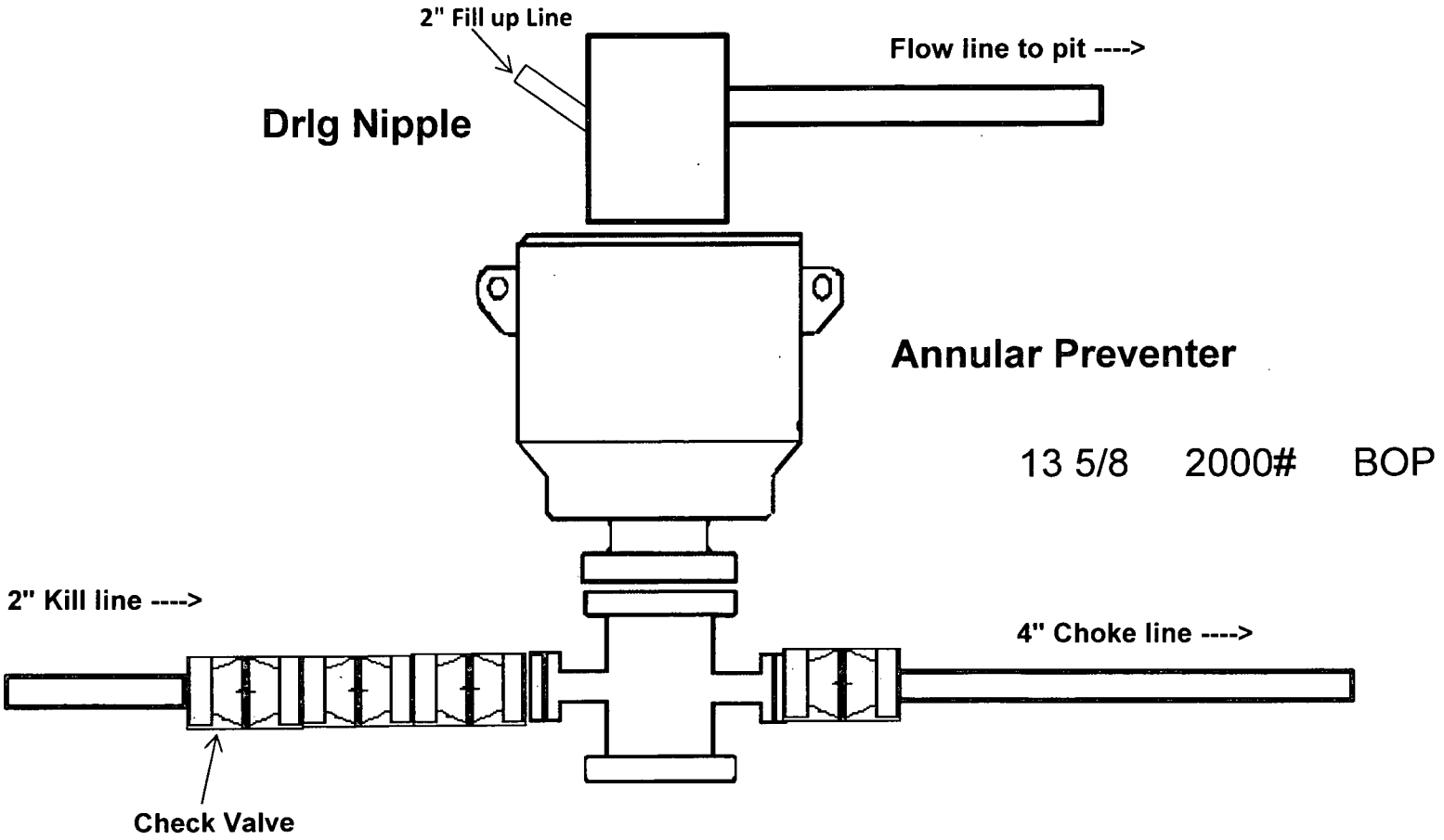
CONCHO

The DIRECTIONAL DRILLING COMPANY

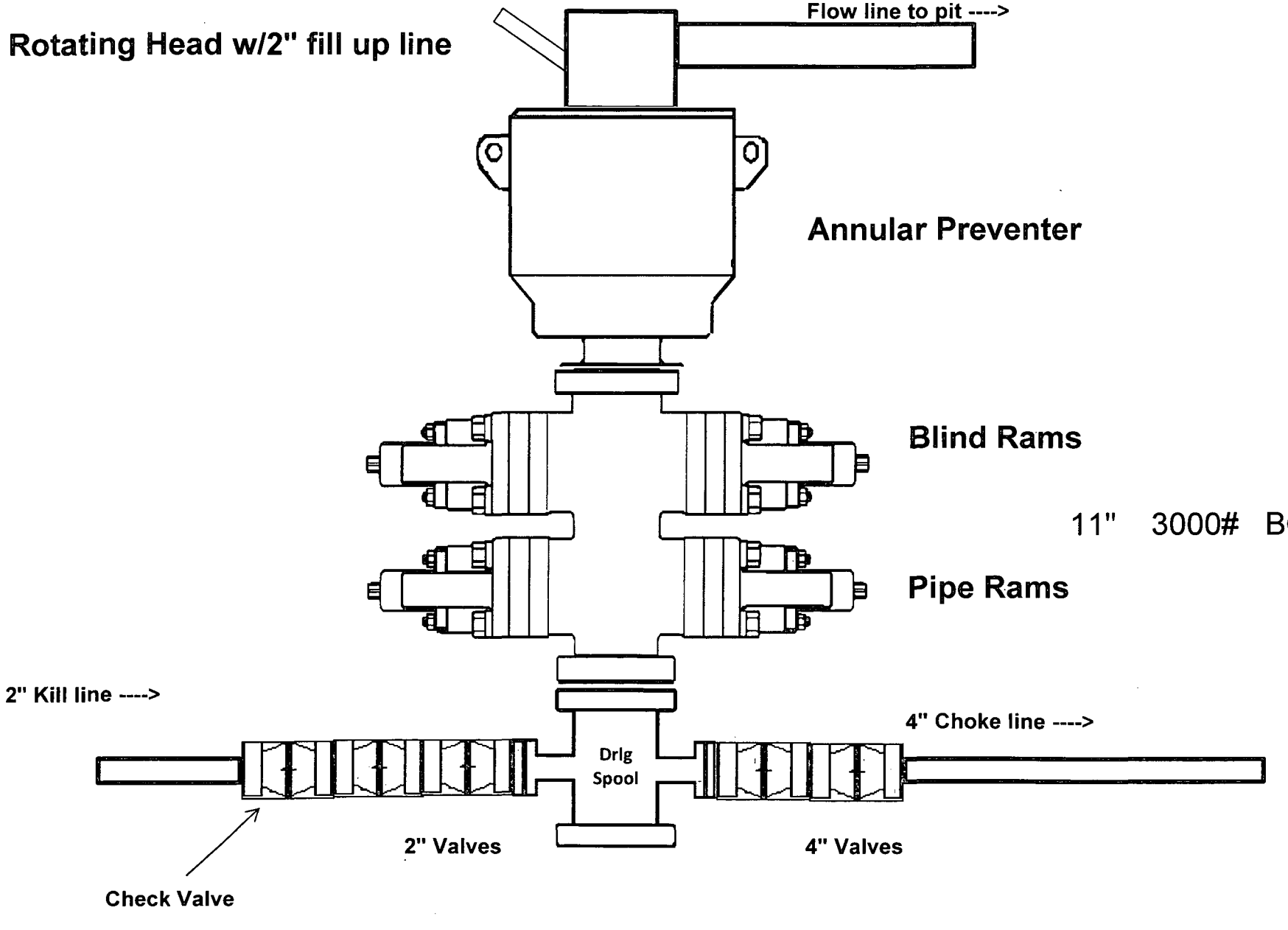
Eddy County, NM (NAD 27)
Riverwalk Fed Com #1H
Quote 120915
Design #2 New SHL



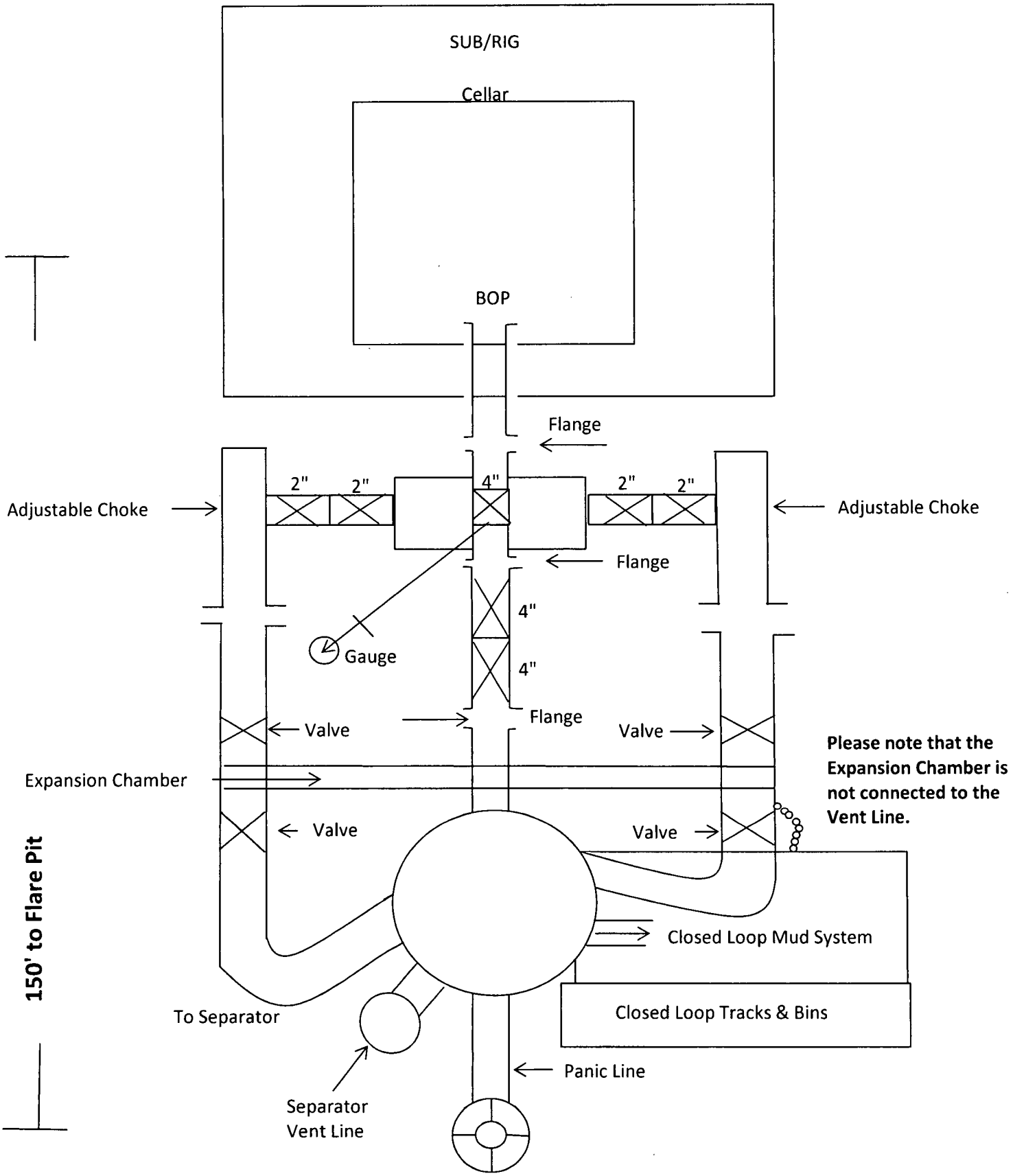
2,000 psi BOP Schematic



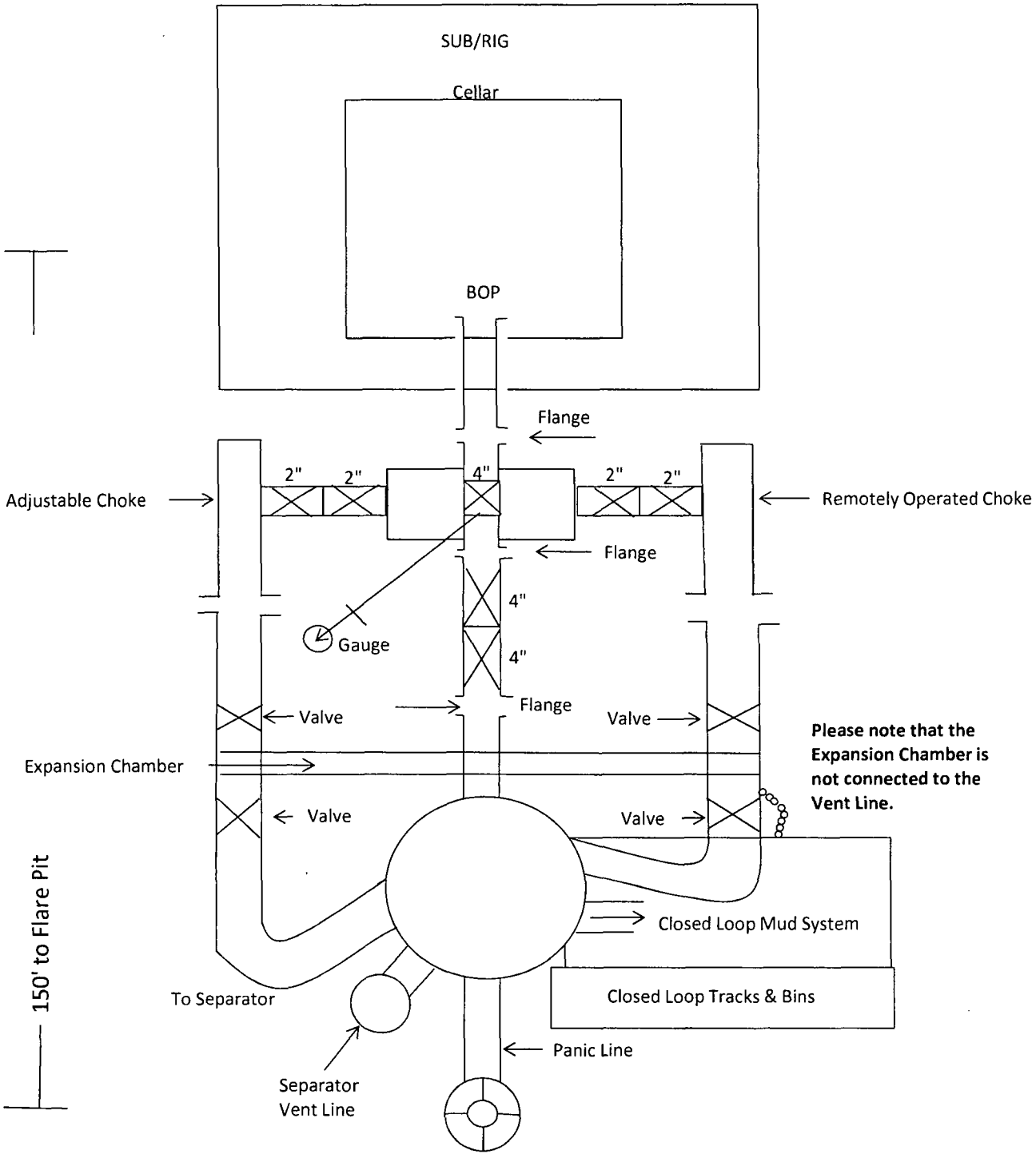
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



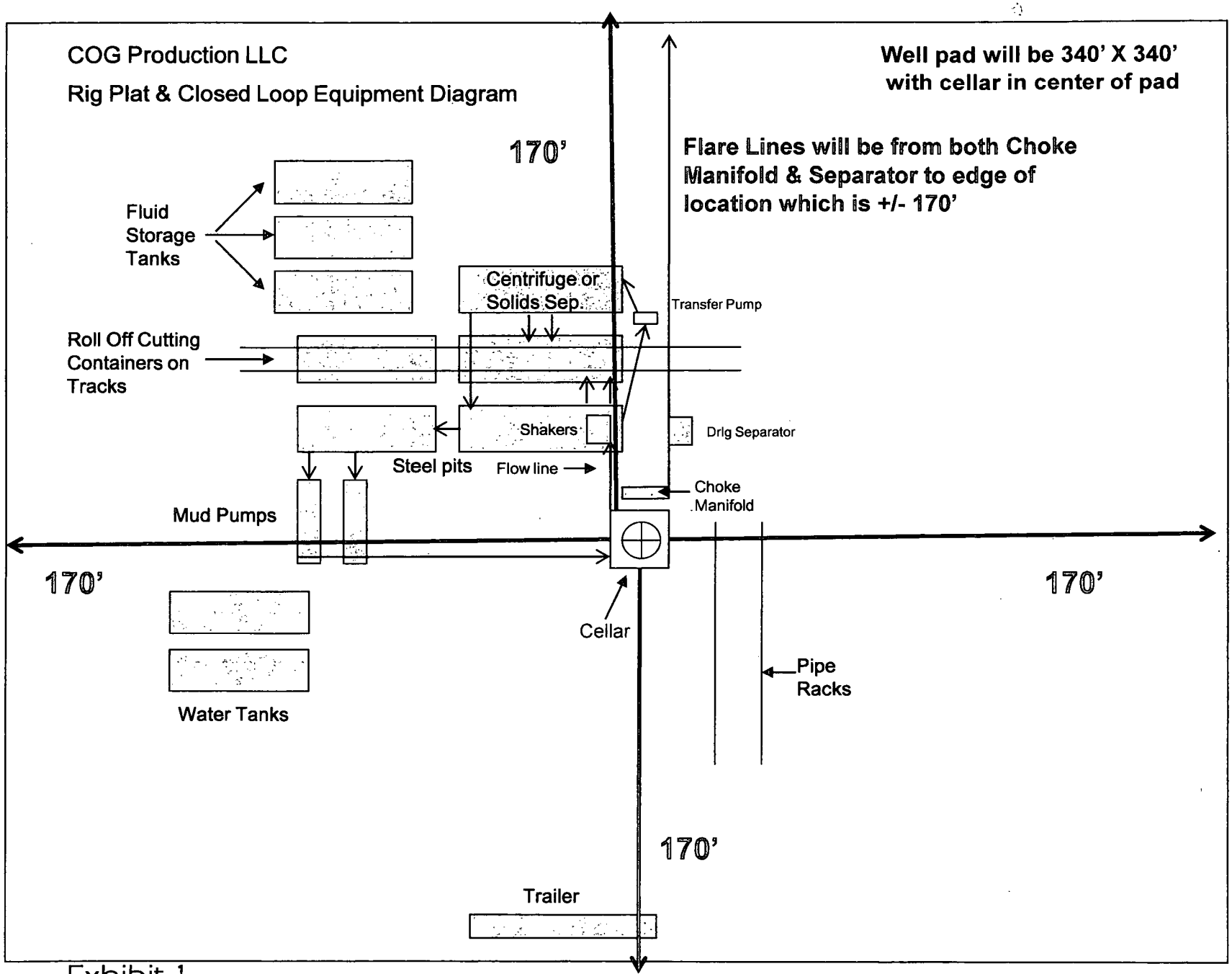

COG Production LLC
Rig Plat & Closed Loop Equipment Diagram
Well pad will be 340' X 340'
with cellar in center of pad
Flare Lines will be from both Choke Manifold & Separator to edge of location which is +/- 170'
170'
Fluid Storage Tanks
Centrifuge or Solids Sep.
Transfer Pump
Roll Off Cutting Containers on Tracks
Shakers
Drlg Separator
Steel pits
Flow line
Choke Manifold
Mud Pumps
170'
170'
Cellar
Pipe Racks
Water Tanks
170'
Trailer

Exhibit 1

Design Plan
Operating and Maintenance Plan
Closure Plan

Riverwalk Fed Com 1H
SHL: 2310' FNL & 790' FEL, Section 20
BHL: 330' FNL & 380' FEL, Section 17
T26S R29E
Eddy County, New Mexico

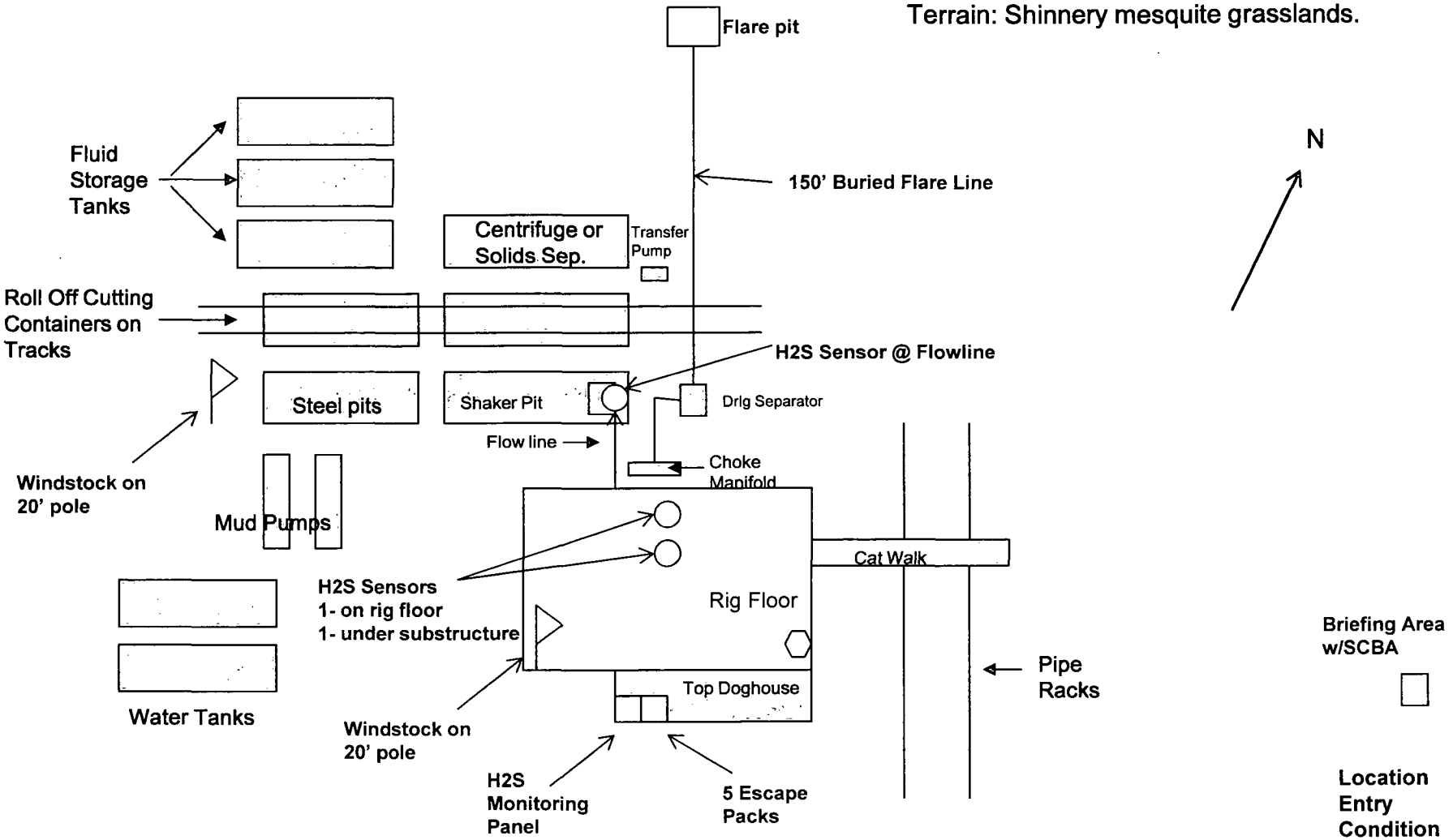
COG Production LLC will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. All leaks should be kept to less than 5 barrels. Rig crews will monitor the tanks at all times.

Equipment List:
2- Mongoose Shale Shakers
1- 414 Centrifuge
1- 518 Centrifuge
2- Roll Off Bins w/ Tracks
2- 500 BBL Frac Tanks

During drilling operations all liquids, drilling fluids and cuttings will be hauled off via CRI (Controlled Recovery Inc.) Permit R-9166 or any other approved facility.

Well pad will be 340' X 340' with cellar in center of pad

COG Operating LLC
H_2S Equipment Schematic
Terrain: Shinnery mesquite grasslands.



COG PRODUCTION LLC
HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

1. HYDROGEN SULFIDE TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

a. The hazards and characteristics of hydrogen sulfide (H_2S).
b. The proper use and maintenance of personal protective equipment and life support systems.
c. The proper use of H2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
d. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

a. The effects of H2S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
b. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
c. The contents and requirements of the H2S Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

2. H_2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S.

a. Well Control Equipment:
Flare line.
Choke manifold. w/ remotely operated choke
Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
Auxiliary equipment to include: annular preventer, mud-gas

separator, rotating head.

b. Protective equipment for essential personnel:
Mark II Surviveair 30-minute units located in the dog house and at briefing areas.

c. H2S detection and monitoring equipment:
2 - portable H2S monitor positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.

d. Visual warning systems:
Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

e. Mud Program:
The mud program has been designed to minimize the volume of H2S circulated to the surface.

f. Metallurgy:
All drill strings, casings, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

g. Communication:
Company vehicles equipped with cellular telephone.

COG PRODUCTION LLC has conducted a review to determine if an H2S contingency plan is required for the above referenced well. We were able to conclude that any potential hazardous volume would be minimal. H2S concentrations of wells in this area from surface to TD are low enough; therefore, we do not believe that an H2S contingency plan is necessary.

W A R N I N G

YOU ARE ENTERING AN H_2S AREA
AUTHORIZED PERSONNEL ONLY

1. ***BEARDS OR CONTACT LENSES NOT ALLOWED***
2. ***HARD HATS REQUIRED***
3. ***SMOKING IN DESIGNATED AREAS ONLY***
4. ***BE WIND CONSCIOUS AT ALL TIMES***
5. ***CK WITH COG PRODUCTION LLC FOREMAN AT MAIN OFFICE***

COG PRODUCTION LLC

1-575-748-6940

EMERGENCY CALL LIST

	OFFICE	MOBILE
COG OPERATING LLC OFFICE	575-748-6940	
SHERYL BAKER	575-748-6940	432-934-1873
KENT GREENWAY	575-746-2010	432-557-1694
SETH WILD	575-748-6940	432-528-3633
WALTER ROYE	575-748-6940	432-934-1886

EMERGENCY RESPONSE NUMBERS

	OFFICE
STATE POLICE	575-748-9718
EDDY COUNTY SHERIFF	575-746-2701
EMERGENCY MEDICAL SERVICES (AMBULANCE)	911 or 575-746-2701
EDDY COUNTY EMERGENCY MANAGEMENT (HARRY BURGESS)	575-887-9511
STATE EMERGENCY RESPONSE CENTER (SERC)	575-476-9620
CARLSBAD POLICE DEPARTMENT	575-885-2111
CARLSBAD FIRE DEPARTMENT	575-885-3125
NEW MEXICO OIL CONSERVATION DIVISION	575-748-1283
INDIAN FIRE & SAFETY	800-530-8693
HALLIBURTON SERVICES	800-844-8451

Surface Use & Operating Plan

Riverwalk Federal Com #1H

- Surface Tenant: WP Ranches Family Limited Partnetship, P O Box 24, Cherokee, TX 76832.
- New Road: 133' from pad to existing two track road.
- COG Operating will be upgrading and constructing 8970' of existing two track road.
- Flow Line: on well pad
- Facilities: will be constructed on well pad – see Exhibit 3

Well Site Information

V Door: East
Topsoil: West
Interim Reclamation: No reclamation if used as centralized tank battery.

Notes

Moved location due to slopes and possible drainage into the Pecos River.

Onsite: Rand French and Gerald Herrera, COG; Tanner Nygren, BLM. February 22, 2013

COG Operating LLC
2208 West Main
Artesia, NM 88210

Production Facility Layout

Riverwalk Federal Com #1H

Section 20-T26S-R29E

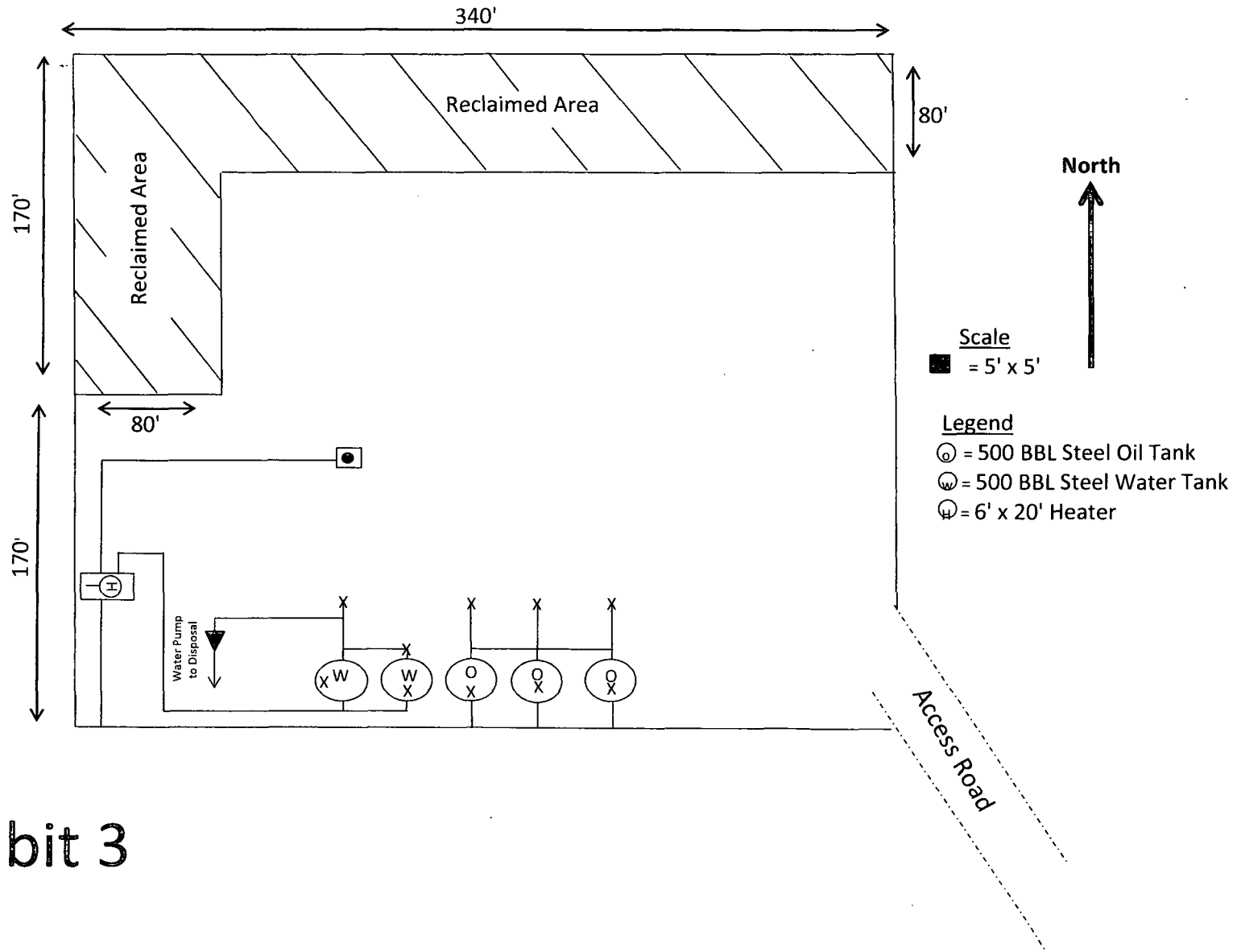


Exhibit 3

COG PRODUCTION LLC
MULTI-POINT SURFACE USE AND OPERATIONS PLAN

Riverwalk Fed Com 1H
SHL: 2398' FSL & 1052' FEL, Section 20
BHL: 330' FNL & 380' FEL, Section 17
T26S R29E
Eddy County, New Mexico

This plan is submitted with Form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

1. EXISTING ROADS:

a. The well site and elevation plat for the proposed well are reflected on the well site layout; Form C-102. The well was staked by Madron Surveying, Inc.

b. Exhibit 2 is a portion of a topo map showing the well and roads in the vicinity of the location. The wellsite and the access route to the location are indicated in ~~red~~ blue on Exhibit 2. Right of way using this proposed route is being requested if necessary.

c. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

DIRECTIONS:
Heading south on Highway 285 turn left (east) onto County Road #726 (Catfish Road) and go approximately 1.6 miles turn left (north) onto a two track road. Go approximately 1.9 miles and proposed well is approximately 315 feet west.

PLANNED ACCESS ROAD:
133' of new access road will be required for this location. COG will be upgrading and constructing 8970' of existing two track road.

a. The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

b. The average grade will be less than 1%.

c. No turnouts are planned.

d. A low water crossing and a cattleguard will be installed and are shown on the attached plats.

e. Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit.

2. LOCATION OF EXISTING WELLS:
The One-Mile Radius Map shows existing wells within a one-mile radius of surface hole location and the bottom hole location.

3. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

a. In the event the well is found productive a tank battery would be constructed and the necessary production equipment will be installed at the well site. See Exhibit #3.

b. All flowlines will adhere to API standards

c. COG Operating proposes to construct a 6 inch SWD trunk line from the Riverwalk Federal Com #1H to the Cooperhead 30 Fee #1H and then on to the Perkins SWD located in T.26S. R. 29E. Sec. 30 unit letter G. COG will construct and bury the SWD line along the access road up to the cattleguard. Then head west along the fence line to the Copperhead 30 Fee #1H, where it will tie into an existing SWD line to the Perkins SWD well. In the event a gas line is needed, Southern Union will be applying for its own ROW. Location unknown at this time depending upon their route and tie in point.

TN 5/2/13

d. If electricity is needed, power will be obtained from Xcel Energy. Xcel Energy will apply for ROW for their power lines.

e. If the well is productive, rehabilitation plans are as follows:
1. The original topsoil from the well site will be returned to the location. The drill site will then be contoured as close as possible to the original state.

4. LOCATION AND TYPES OF WATER SUPPLY:
This well will be drilled using a combination of water mud systems (outlined in the Drilling Program). The water will be obtained from commercial water stations in the area and hauled to location by transport truck using the existing and proposed roads shown in Exhibit #2. On occasion, water will be obtained form a pre-existing water well, running a pump directly to the drill rig. In these cases where a poly pipeline is used to transport water for drilling purposes, the existing and proposed road shown in Exhibit "2" will be utilized.

5. SOURCE OF CONSTRUCTION MATERIALS AND LOCATION "TURN-OVER" PROCEDURE:
Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by "turning over" the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

a. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.

b. An approximate 160' X 160' area is used within the proposed well site to remove caliche.

c. Subsoil is removed and stockpiled along the entire length of one side of a 340' x 340' pad.

d. When caliche is found, material will be stock piled within the pad site to build the location and road.

e. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.

f. Once well is drilled, the stock piled 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 stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.

In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit or other source.

6. ANCILLARY FACILITIES:

No campsite or other facilities will be constructed as a result of this well.

7. WELLSITE LAYOUT:

a. Exhibit 1 shows the proposed well site layout with dimensions of the pad layout.
b. This exhibit indicates proposed location of reserve and sump pits if utilized and living facilities.
c. Mud pits in the active circulating system will be steel pits and a closed loop system will be utilized.

8. PLANS FOR SURFACE RECLAMATION:

a. After finishing drilling and/or completion operations, if the well is found non commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original state.
b. The location and road will be rehabilitated as recommended by the BLM.
c. As per the Onsite conducted by Rand French and Tanner Nygren, there will be no interim reclamation done at this time. If the other wells are not drilled within 2 years the interim reclamation will be completed for this well.

9. SURFACE OWNERSHIP:

a. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

b. The surface tenant is WP Ranches Family Limited Partnership, P O Box 24, Cherokee, TX 76832.

c. The proposed road routes and surface location will be restored as directed by the BLM

10. OTHER INFORMATION:

a. The area surrounding the well site is grassland. The vegetation is moderately sparse with native prairie grass and mesquite bushes. No wildlife was observed but it is likely that deer, rabbits, coyotes, and rodents traverse the area. Due to the influence of the Pecos River there is the potential for migratory bird species.

b. The Pecos River is located approximately one half mile from this location.

c. If the well is deemed commercially productive, caliche from areas of the pad site not required for operations will be reclaimed. The original top soil will be returned to the area of the drill pad not necessary to operate the well. These unused areas of the drill pad will be contoured, as close as possible, to match the original topography. Reserve pit will not be used on this location therefore no reclamation is needed.

d. Topsoil will be stockpiled on the *NORTH SIDE* of the location until it is needed for interim reclamation described in paragraph above.

11. OPERATOR'S REPRESENTATIVE:

a. Through A.P.D. Approval:
Melanie Parker, Regulatory Coordinator
COG PRODUCTION LLC
Artesia, NM 88210
Phone (575)748-6940
Cell (432) 553-9834

b. Through Drilling Operations
Sheryl Baker, Drilling Supervisor
COG PRODUCTION LLC
Artesia, NM 88210
Phone (575)748-6940
Cell (432)934-7873

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**COG Operating LLC**
LEASE NO.:	**NMNM-122616**
WELL NAME & NO.:	**Riverwalk Federal Com 1H**
SURFACE HOLE FOOTAGE:	**2398' FSL & 1052' FEL**
BOTTOM HOLE FOOTAGE	**0330' FNL & 0380' FEL Sec. 17, T. 26 S., R 29 E.,**
LOCATION:	**Section 20, T. 26 S., R 29 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

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)

Cattleguard Requirement

There are two cattle guards on the access road that need replaced with larger cattle guards sufficient to carry out the project. The existing cattle guards shall be placed near the new cattle guards once they are replaced. Appropriately sized cattle guards sufficient to carry out the project shall be installed and maintained at the road-fence crossings. When installing the large cattle guards, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition with an appropriately sized cattle guard sufficient to carry out the project. Cattle guards on the access road 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 cattle guards that are in place and are utilized during lease operations. The operator must notify the grazing allotment holder prior to replacing the cattle guards.

Low Water Crossing Requirement

Approximately 1.17 miles north of CR 726, you will come to a significant drainage crossing the road. Approximately 1.7 miles north of CR 726, you will come to another significant drainage crossing the road. A low water crossing shall be constructed on the access road where these two drainages/arroyos cross the road as well as other drainages cross the road. The low water crossing shall be accomplished by dipping the road down to the bed of the drainage. The road shall be at the same grade as the drainage. Material moved from the banks of the crossing shall be stockpiled near the road edge and used to reclaim the slopes. The side slopes must be reclaimed and revegetated. Gravel or cobble shall be used as the primary material for the road bed in the low water crossing.

Berming of the Well Pad

The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.

- The 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 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.)

SWD Pipeline Requirement:

- The SWD pipeline proposed in the APD must be buried from the Riverwalk Federal Com #1H well location to the Copperhead 30 Fee #1H. Only a 30 foot wide right-of-way is granted for the installation of this pipeline. See more requirements further in this document regarding buried pipelines.
- *Fence Requirement*
  The pipeline will cross two fence lines on its route. Where entry is granted across a fence line, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Erosion Control

Any water erosion that may occur due to the construction of the well pad during the life of the well must be quickly corrected and proper measures must be taken to prevent future erosion.

Ground-level Abandoned Well Marker:

Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Drilling:

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales. In addition, the well sign shall include the surface and bottom hole lease numbers. If the Communitization Agreement number is known, it shall also be on the sign. If not, it shall be placed on the sign when the sign is replaced.

VI. 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 stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be used 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. 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.

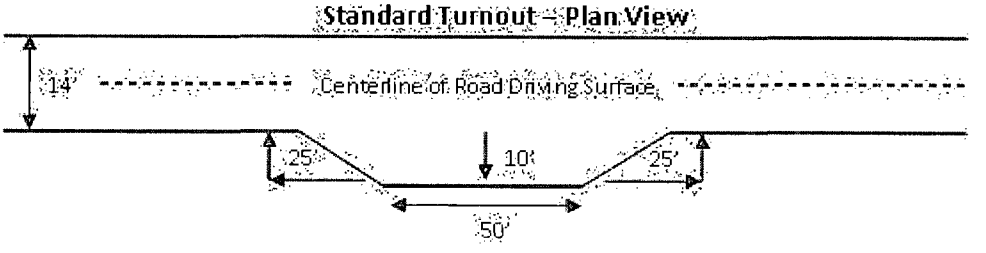
Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

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.

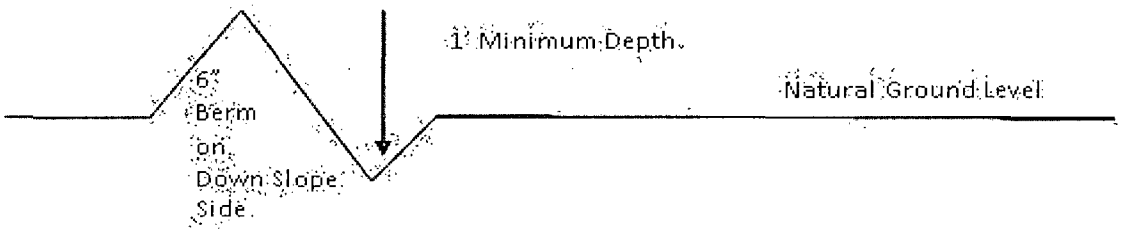
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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

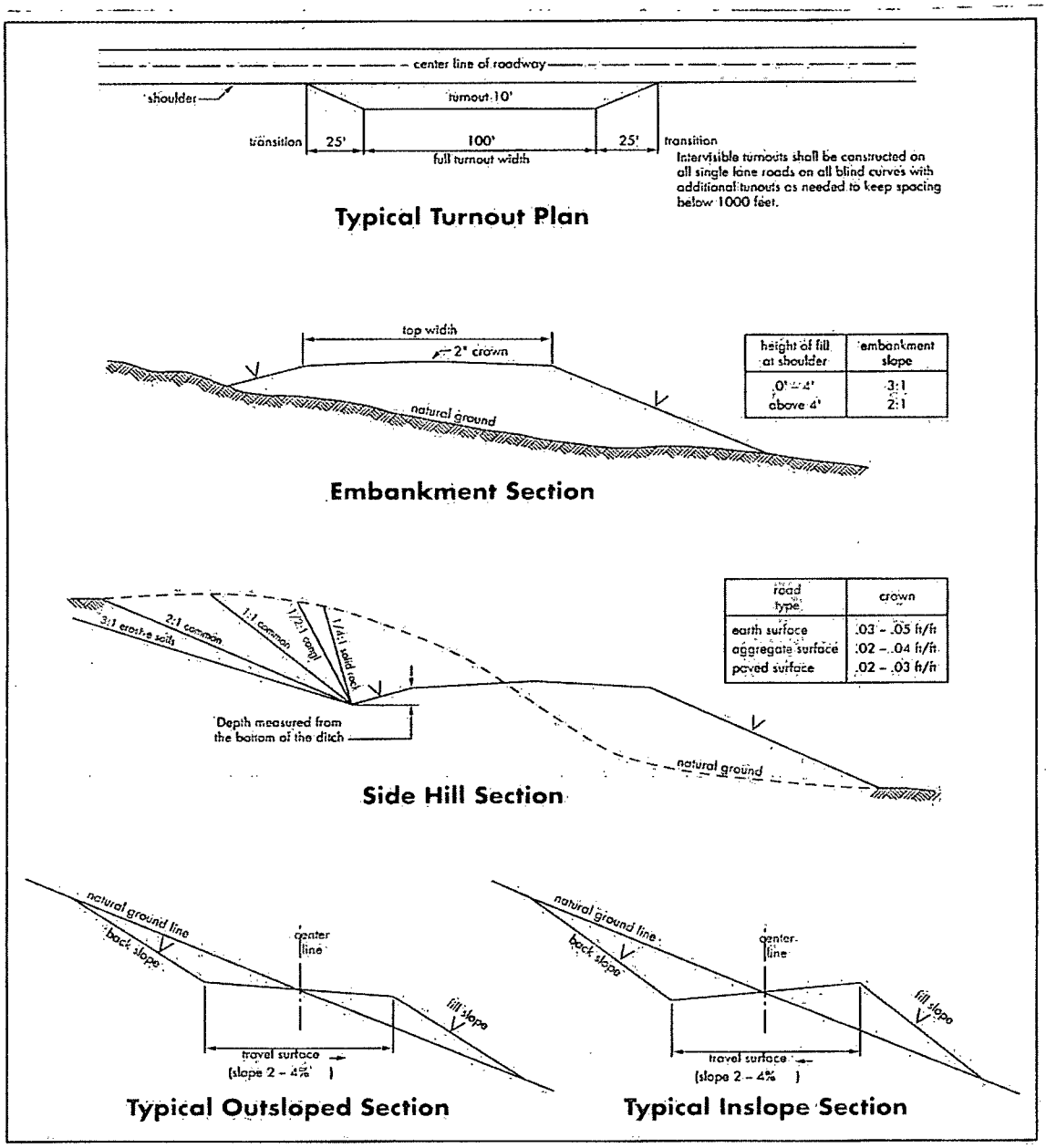
Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

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

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. 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. **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.**

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. 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 is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log 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.** Operator shall run Density logs and Gamma Ray logs to surface. Operator shall also run a caliper log through the salt, Rustler, and surface alluvium.

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.

Medium Cave/Karst
Possibility of water flows in the Salado and Delaware.
Possibility of lost circulation in the Rustler, Delaware, and Bone Springs.
Abnormal pressures may be encountered near the Wolfcamp Formation.

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    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.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **2750** feet, 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 medium cave/karst.**

Pilot hole plugging procedure approved as proposed.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one per joint.

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. 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.

   a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

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. 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. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

   c. 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.

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

   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 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.

   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. **(pilot hole)**

D. DRILLING MUD (Pilot Hole)

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating a minimum of 500' before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

Proposed mud weight may not be adequate for drilling into the top of the Wolfcamp.

E. DRILL STEM TEST

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

F. 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 062813

VIII. 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.

Containment Structures
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

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.

IX. 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).

Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at ground level on a plate containing the pertinent information for the plugged well.

Seed Mixture 1, for Loamy 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 regulator to ensure proper depth of planting where drilling is possible. The seed mixture will 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). 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
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