ATS-15-990

Form 3160-3
(March 2012)

OCD Hobbs

NM OIL CONSERVATION
ARTESIA DISTRICT
OCD Hobbs
AUG 02 2016
RECEIVED

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
SHL: NMNM023002, NMNM104685
BHL: NMNM099041

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.
Spruce Goose Federal Com #2H

2. Name of Operator
COG Operating LLC.

9. API Well No.
30-015-43878

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

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

10. Field and Pool, or Exploratory
Lusk; Bone Spring, North

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

At surface: 985' FNL & 390' FEL Unit Letter A (NENE) Sec. 12.T19S.R31E — SHL

At proposed prod. Zone: 330' FNL & 50' FEL Unit Letter A (NENE) Sec 7.T19S.R32E — BHL

11. Sec., T.R.M. or Blk and Survey or Area
Sec. 12 - T19S - R31E

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

12. County or Parish: Lea County

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
50'	NMNM023002: 600 NMNM104685: 443.40 NMNM099041: 160	160.89
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	**20. BLM/BIA Bond No. on file**
SHL: 708' BHL: 380'	MD TVD TVD: 14,550' MD: 9,300'	NMB000740 &NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3626.2' GL	8/1/2016	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	Name *(Printed/Typed)*	Date
Mayte Reyes	Mayte Reyes	7-14-2016

Title: Regulatory Analyst

Approved by *(Signature)*: /s/George MacDonell	Name *(Printed/Typed)*	Date
		JUL 29 2016

Title	Office
FIELD MANAGER	CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the ap[illegible] subject lease which would entitle the applicant to conduct operations theron.

Conditions of approval, if any, are attached.

Must be in compliance with NMOCD Rule 5.9 prior to placing well on production

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212 make to any department or agency of the United States any false, fictitious or fraudulent statements or repres[illegible] to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

Capitan Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

OPERATOR CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating LLC, 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 14th day of July, 2016.

Signed: Mayte Reyes

Printed Name: Mayte Reyes
Position: Regulatory Analyst
Address: 2208 W. Main Street, Artesia, NM 88210
Telephone: (575) 748-6940
Field Representative (if not above signatory): Rand French
E-mail: mreyes1@concho.com

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

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

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

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-~~025~~-15 43878	41450	Lusk; Bone Spring, North

Property Code	Property Name	Well Number
316703	SPRUCE GOOSE FEDERAL COM	2H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3626.2'

Surface Location

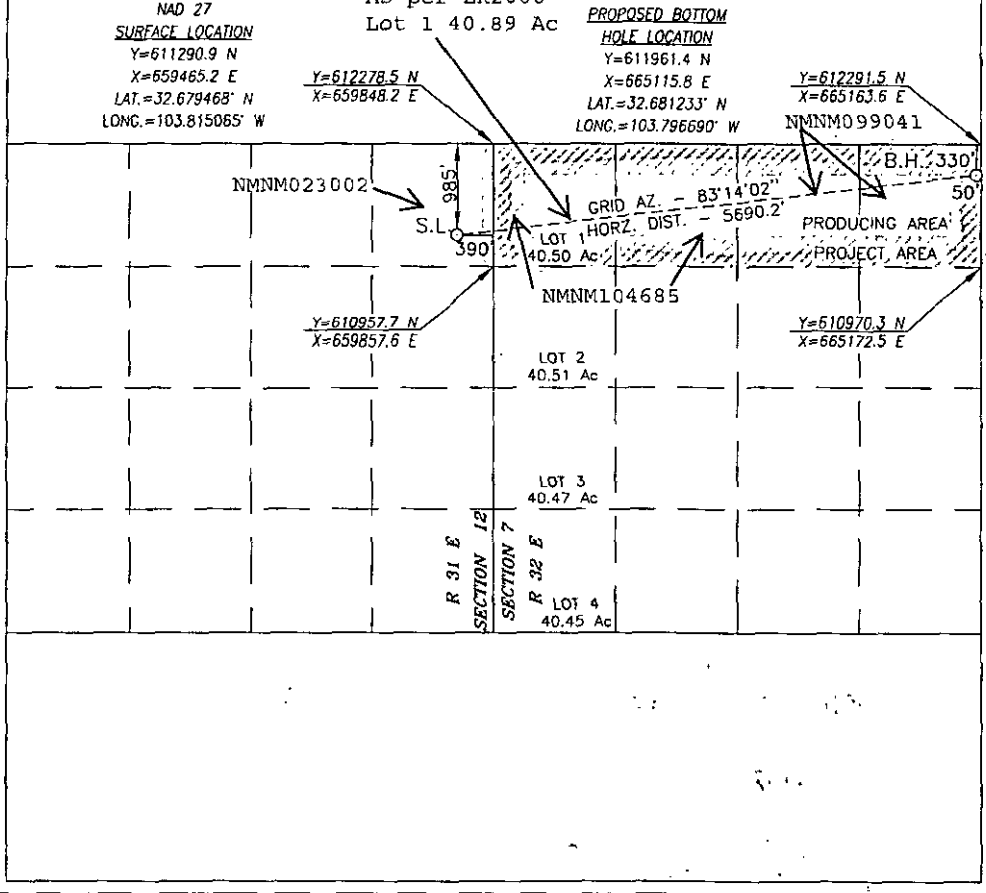
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	12	19-S	31-E		985	NORTH	390	EAST	EDDY

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	7	19-S	32-E		330	NORTH	50	EAST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160.89			

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.

Mayte Reyes 7-14-16
Signature Date

Mayte Reyes
Printed Name

mreyes1@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.

MAY 9, 2016
Date of Survey

Signature & Seal of Professional Surveyor

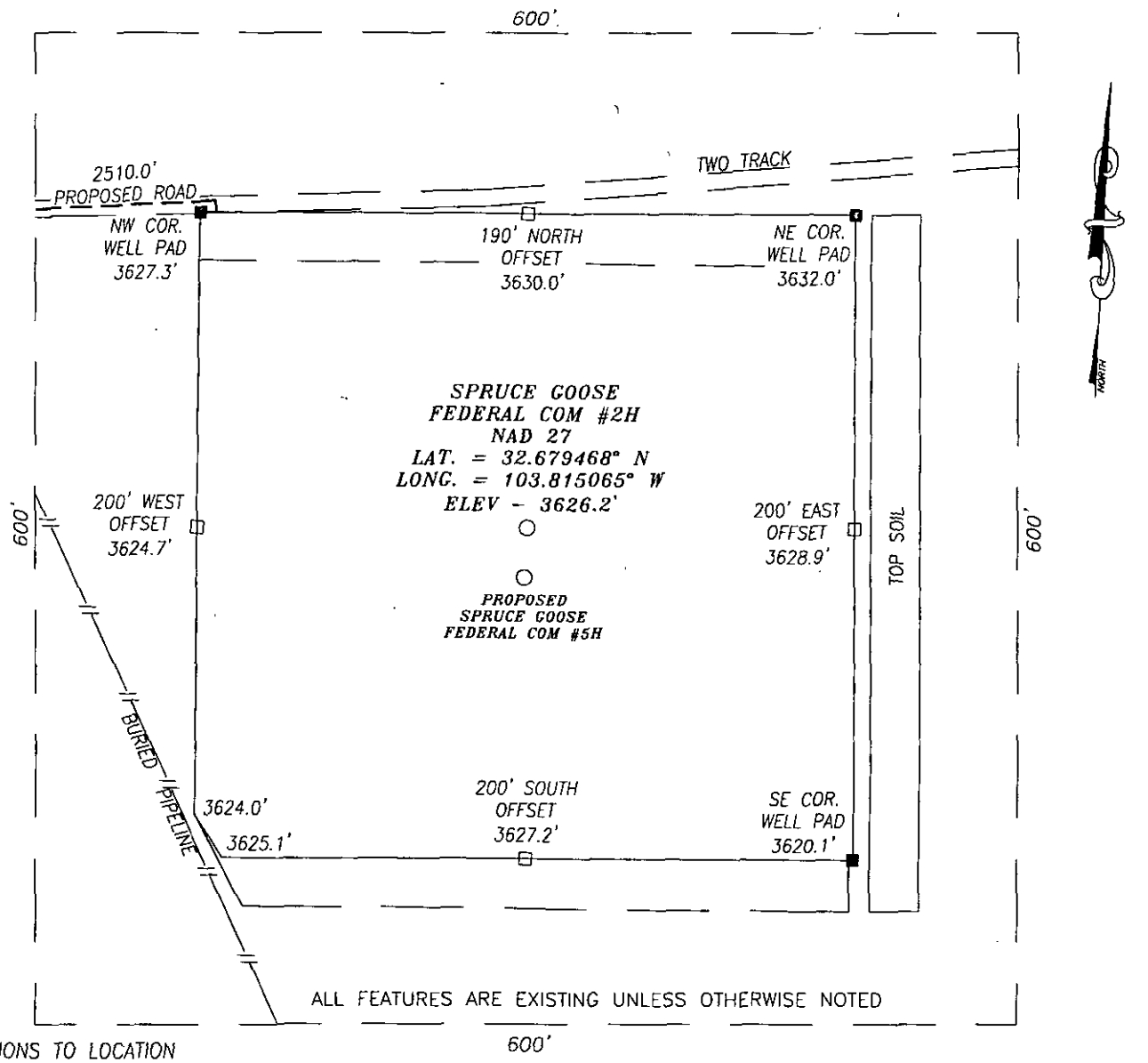
CHAD L. HARCROW
NEW MEXICO
17777
LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow 5/16/16
Certificate No. CHAD HARCROW 17777

W.O. # 16-322 DRAWN BY: AF

SECTION 12, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.,

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF LUSK ROAD AND MALJAMAR RD. (CR-126A) GO NORTH ON MALJAMAR RD. FOR APPROX. 1.5 MILES; THEN TURN LEFT (SOUTHWEST) AND GO APPROX 0.3 MILES; THEN TURN RIGHT (WESTNORTHWEST) AND GO 0.7 MILES; THEN TURN RIGHT (NORTHWEST) AND GO 0.9 MILES TO A TWO TRACK ROAD; THEN TURN RIGHT (EAST) AND GO APPROX. 0.5 MILES; PROPOSED WELL IS APPROX. 200 FEET SOUTH.

HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com

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 5/16/16

CHAD HARCROW N.M.P.S. NO. 17777 DATE

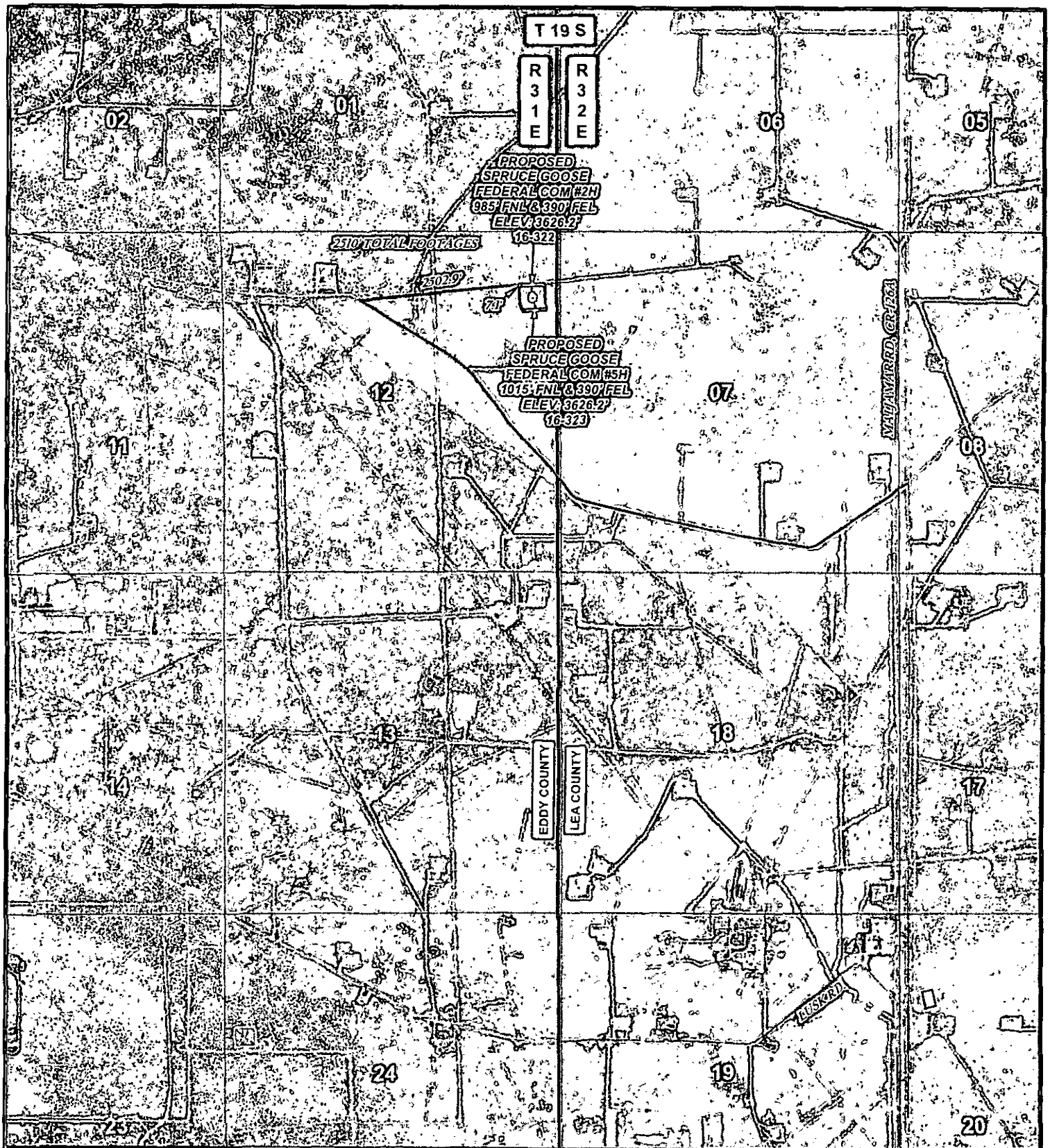
100 0 100 200 Feet

Scale: 1"=100'

COG OPERATING, LLC

SPRUCE GOOSE FEDERAL COM #2H WELL
LOCATED 985 FEET FROM THE NORTH LINE
AND 390 FEET FROM THE EAST LINE OF SECTION 12,
TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

SURVEY DATE: MAY 9, 2016		PAGE: 1 OF 1
DRAFTING DATE: MAY 12, 2016		
APPROVED BY: CH	DRAWN BY: AF	FILE: 16-322



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

SPRUCE GOOSE FEDERAL COM'S

SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-322,323	LEASE: SPRUCE GOOSE FED COM	

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

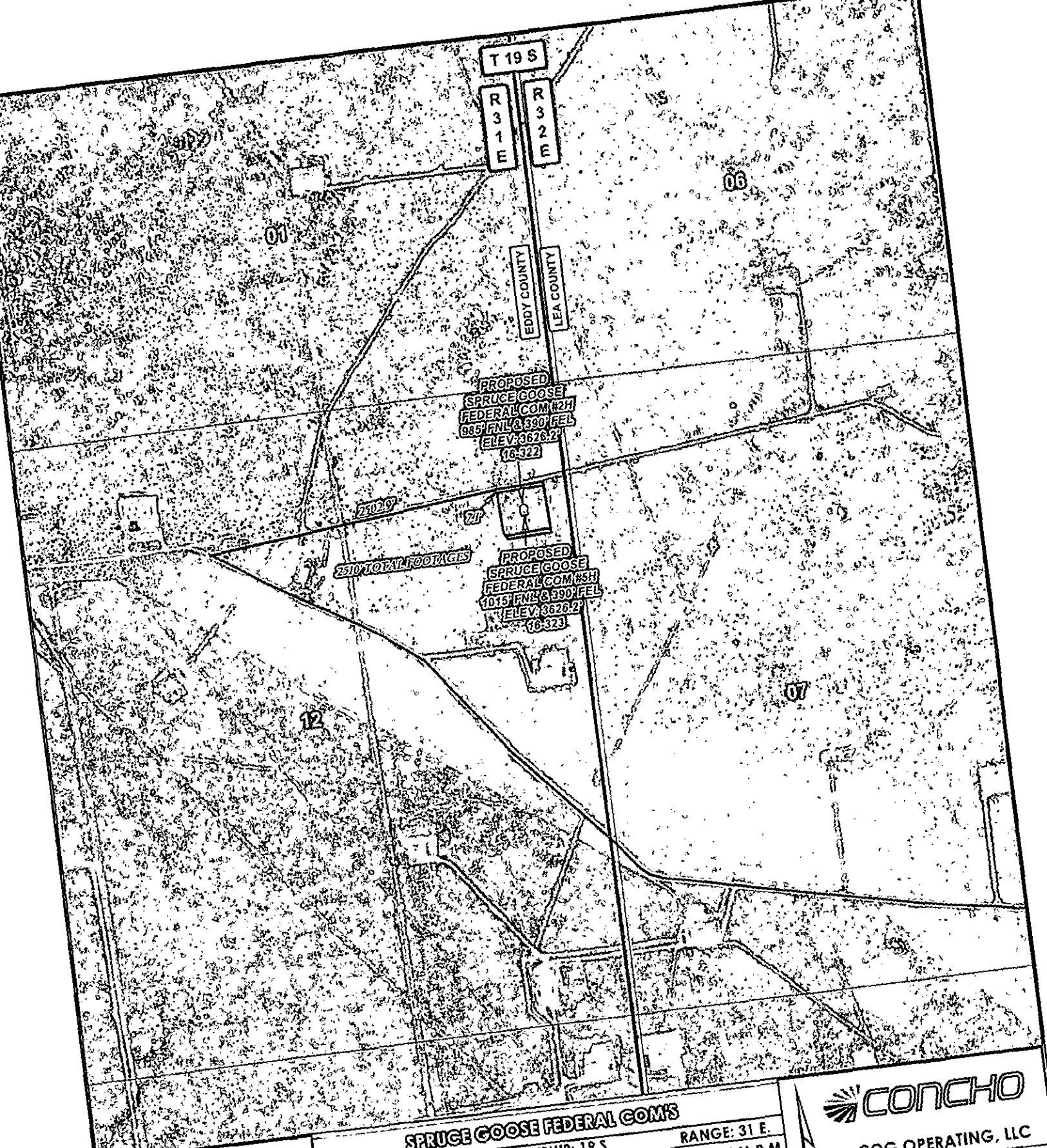
LOCATION MAP IMAGERY 05/13/2016 A.F

N

CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

SPRUCE GOOSE FEDERAL COM'S

SECTION: 12 TOWNSHIP: 19 S. RANGE: 31 E.

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

W.O. # 16-322,323 LEASE: SPRUCE GOOSE FED COM

2,500 FEET

0

1 IN = 1,000 FT

0 0.05 0.1 0.2 Miles

LOCATION MAP IMAGERY ROAD 05/13/2016 AF

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CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 8821
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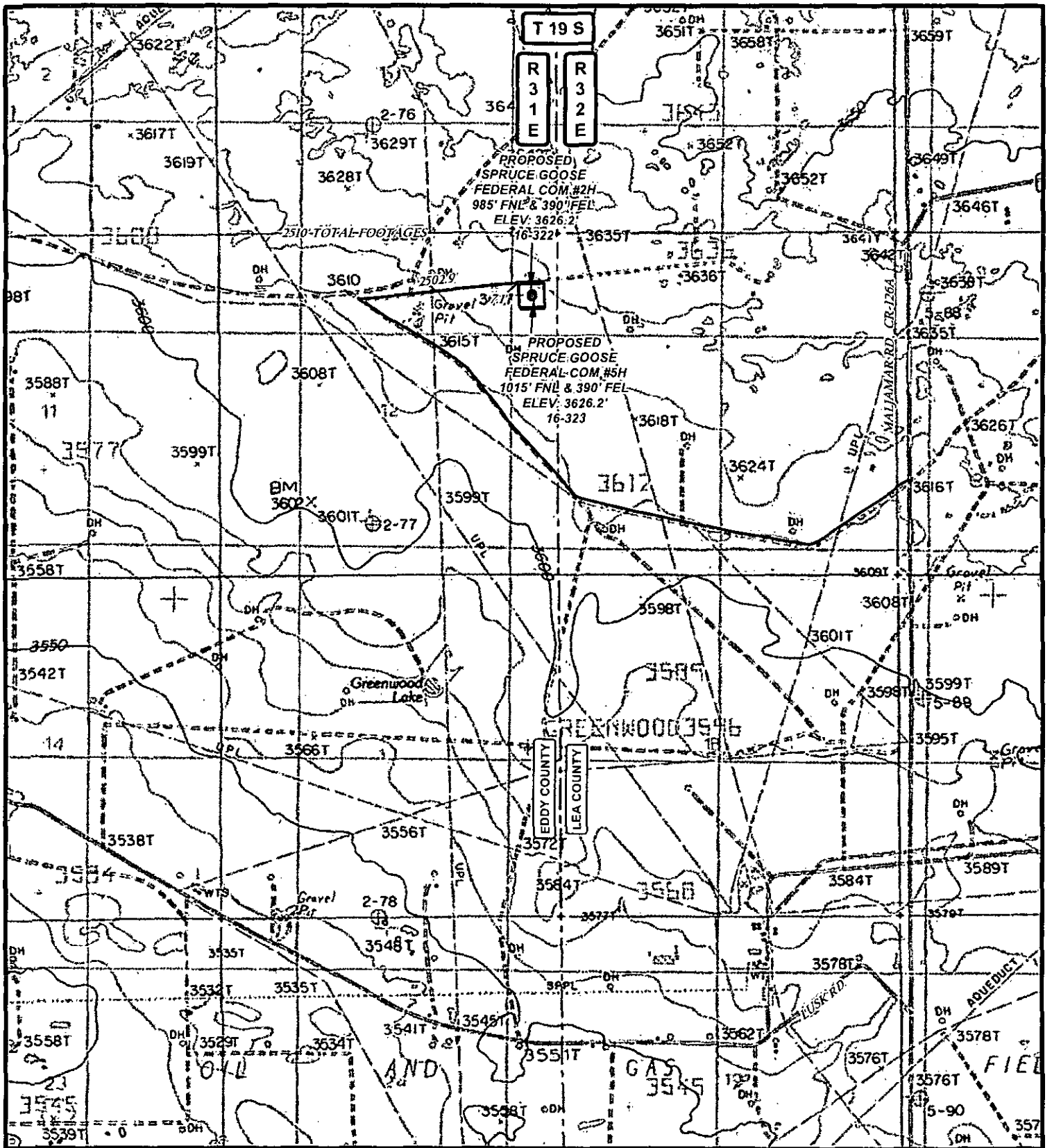
c.harcrow@harcrowsurveying.com



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

SPRUCE GOOSE FEDERAL COM'S		
SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-322,323	LEASE: SPRUCE GOOSE FED COM	

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

LOCATION MAP | TOPO | 05/13/2016 | A.F

N

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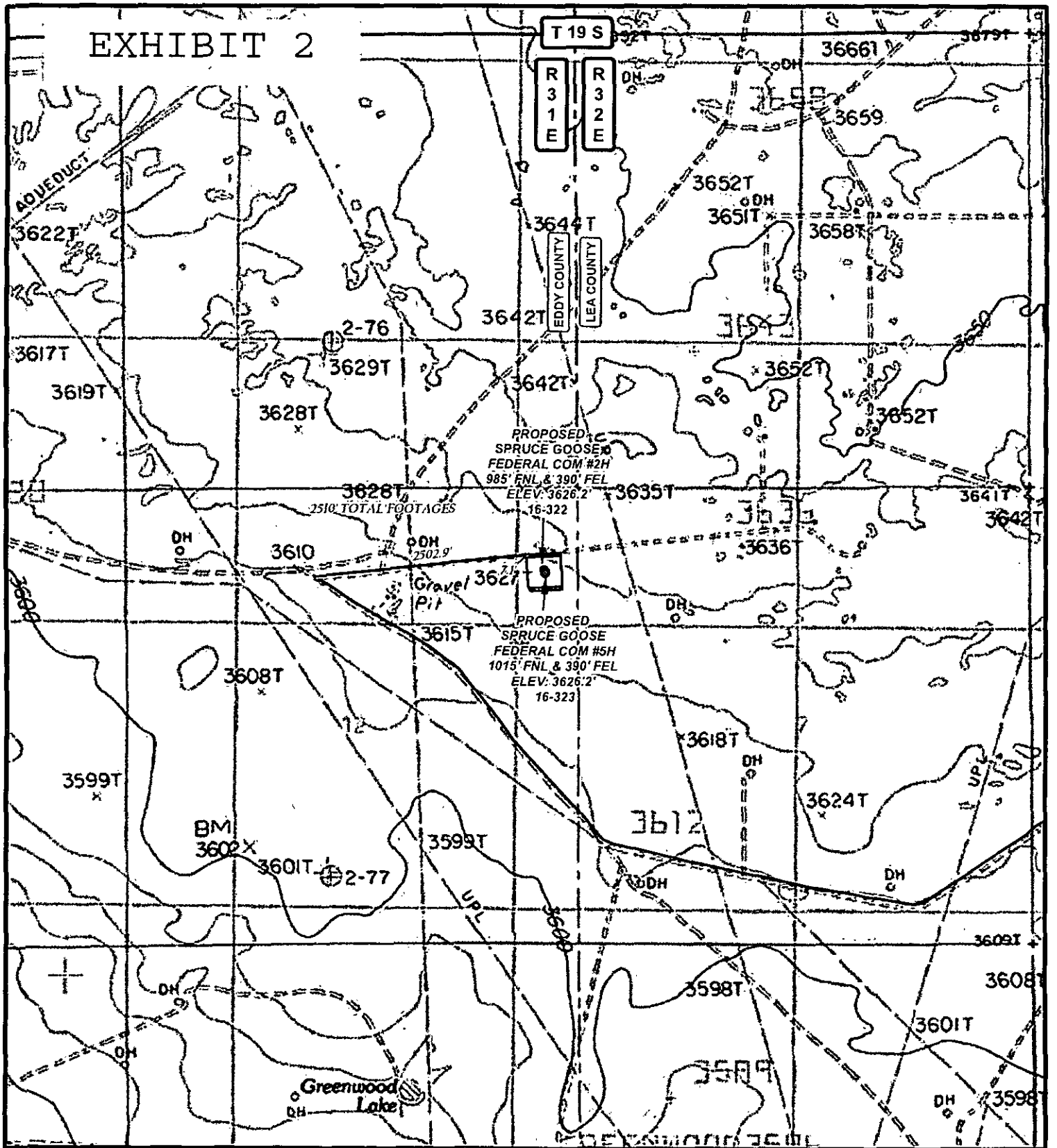
EXHIBIT 2



LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

SPRUCE GOOSE FEDERAL COM'S		
SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-322,323	LEASE: SPRUCE GOOSE FED COM	

0 2,500 FEET

0 0.1 0.2 0.4 Miles

1 IN = 1,500 FT

LOCATION MAP | TOPO ROAD | 05/13/2016 | A.F

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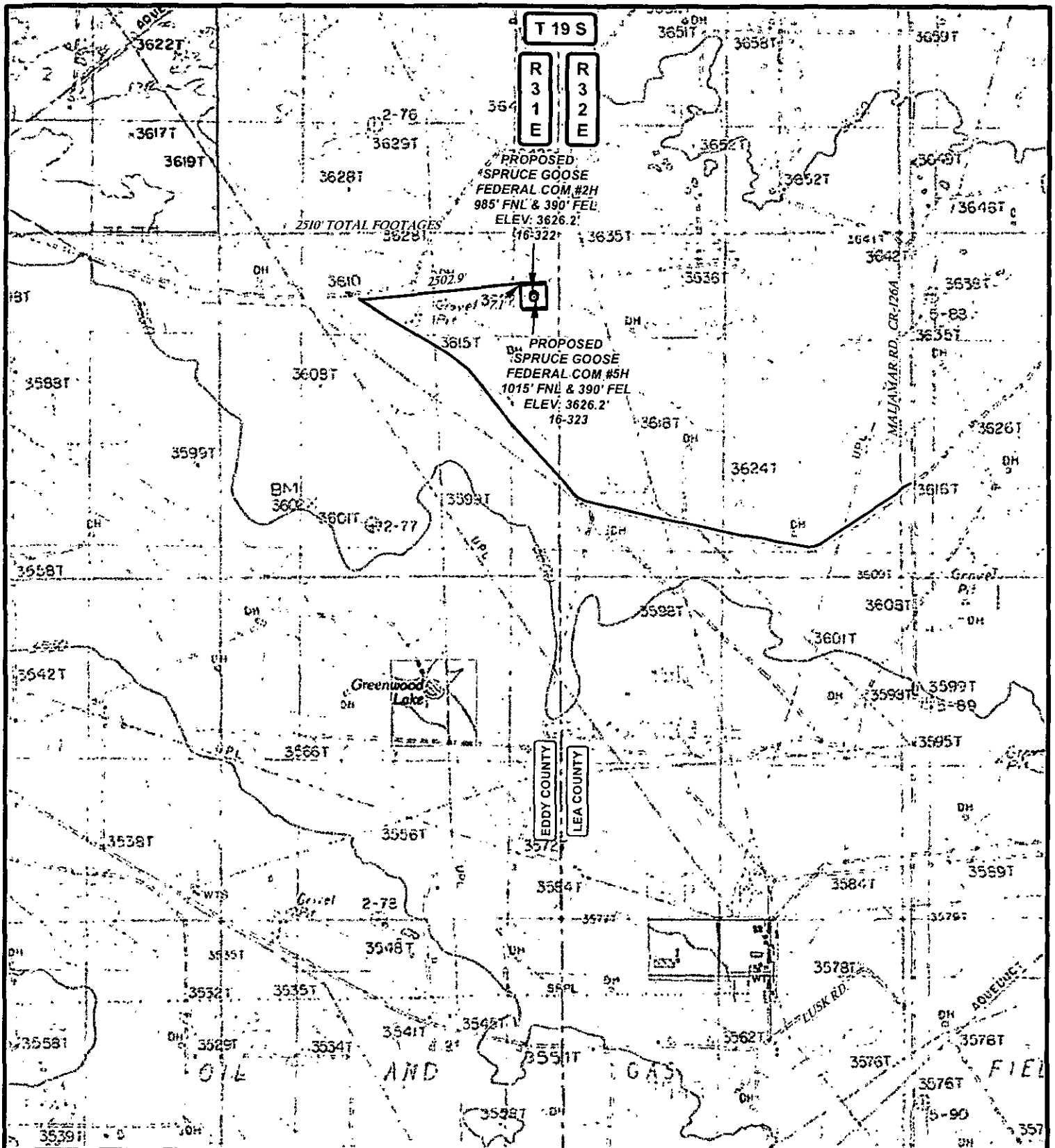

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- PRIVATE
- STATE OF NM
- US BLM

SPRUCE GOOSE FEDERAL COM'S

SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-322,323	LEASE: SPRUCE GOOSE FED COM	

0 2,500 5,000 FEET

0 0.125 0.25 0.5 Miles 1 IN = 2,000 FT

LOCATION MAP | LAND STATUS | 05/13/2016 | A.F

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CONCHO

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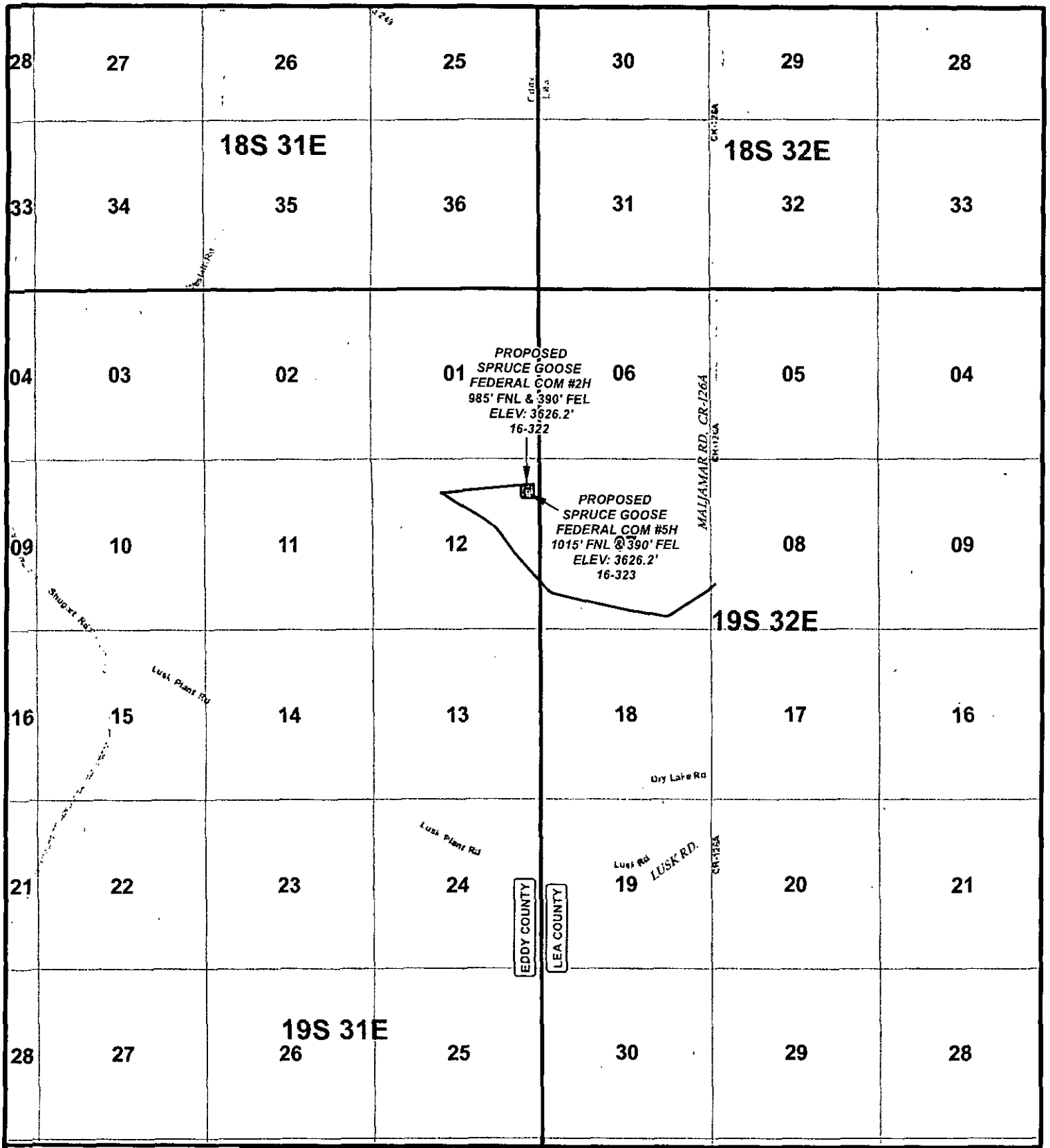

LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

SPRUCE GOOSE FEDERAL COM'S

SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-322,323	LEASE: SPRUCE GOOSE FED COM	

0 2,500 5,000 7,500 10,000 FEET

0 0.275 0.55 1.1 Miles

1 IN = 4,000 FT

VICINITY MAP 05/13/2016 A.F

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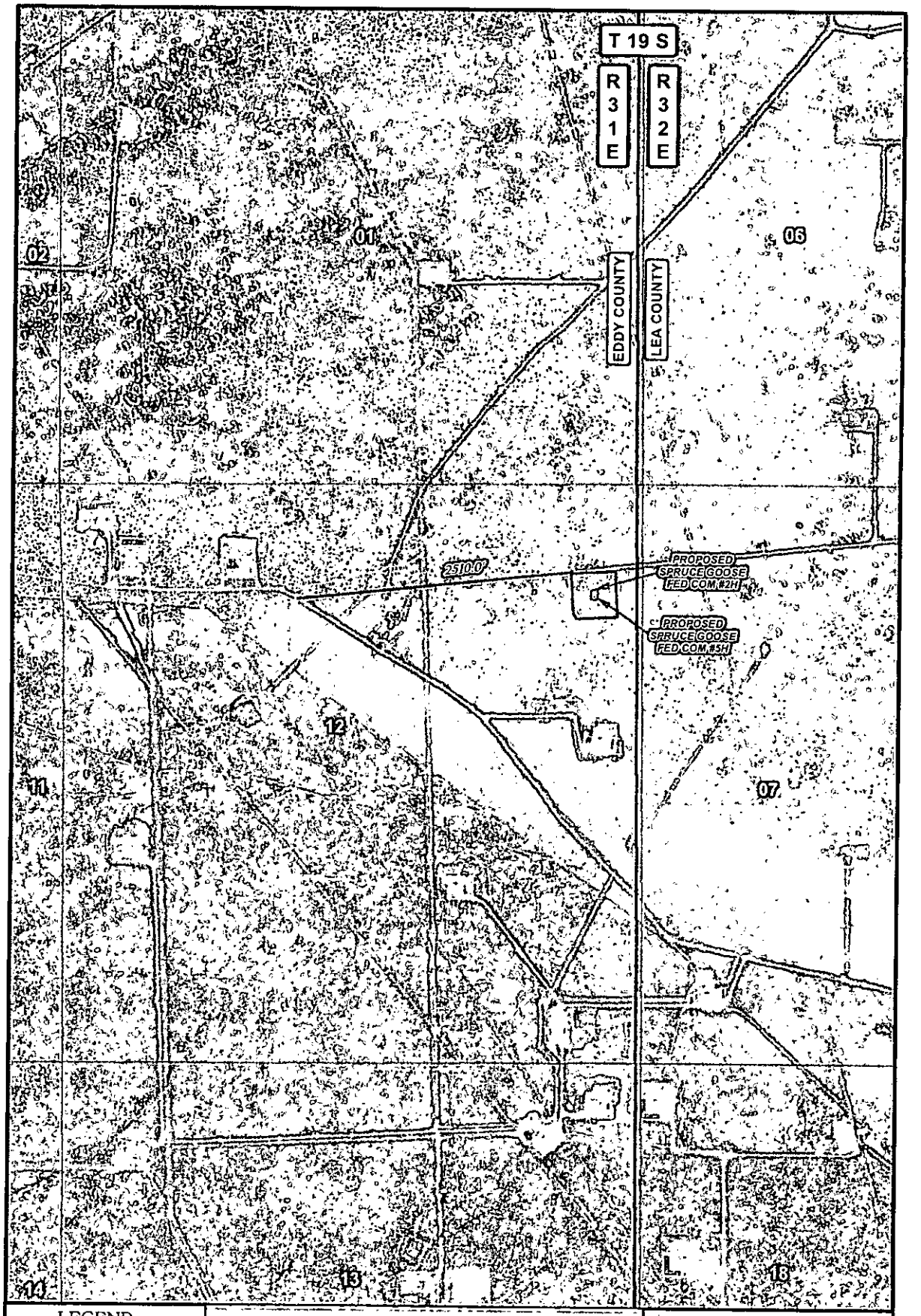


LEGEND

- WELL
- WELLPAD
- ACCESS ROAD

SPRUCE GOOSE FED COM #2H & #5H ACCESS ROAD

SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-385	LEASE: SPRUCE GOOSE FED COM	

0 2,500 FEET

0 0.075 0.15 0.3 Miles

1 IN = 1,000 FT

ACCESS ROAD MAP | IMAGERY | 05/18/2016 | S.P.

CONCHO

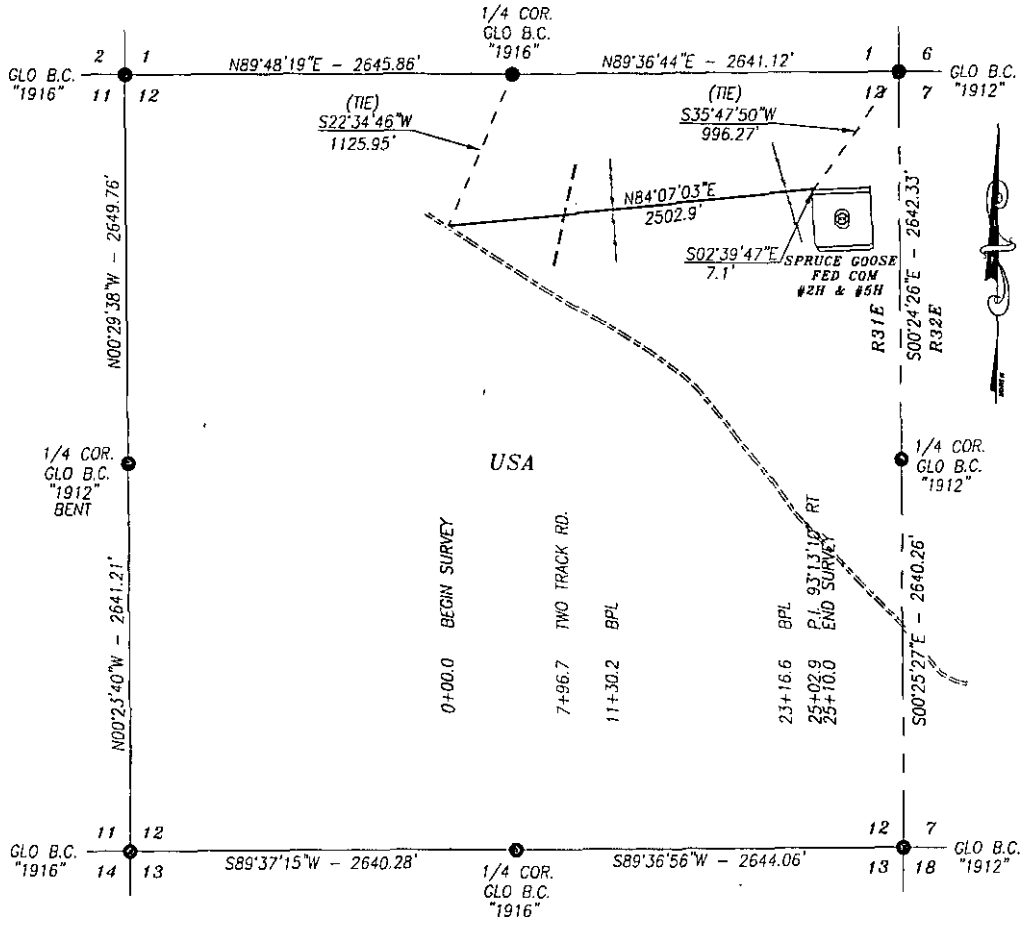
COG OPERATING, LLC

N

HARCROW SURVEYING, LLC.
2314 W. MAIN ST, ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com

ACCESS ROAD
COG OPERATING, LLC.

OLD OIL AND GAS ROAD TO BE UPGRADED TO SPRUCE GOOSE FED COM #2H & #5H IN
SECTION 12, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE AND 2510.0 FEET OR 152.12 RODS OR 0.475 MILES IN LENGTH CROSSING USA LAND IN SECTION 12, TOWNSHIP 19 SOUTH, RANGE 31 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 GRID 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 HARCROW NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR

Chad Harcrow
CHAD HARCROW N.M.P.S. NO. 17777

5/19/16
DATE

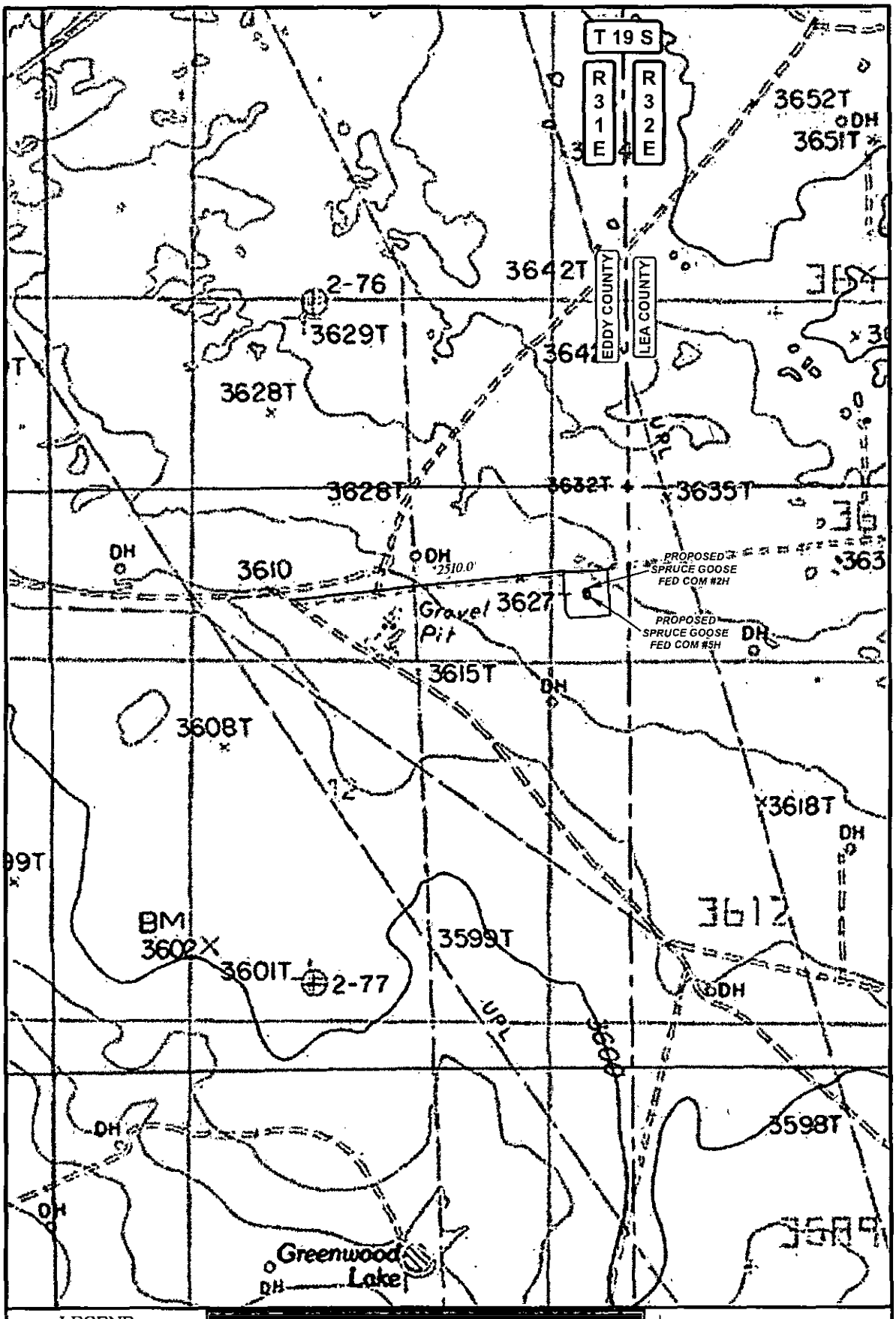
HARCROW SURVEYING, LLC
2314 W. MAIN ST, ARTESIA, N.M. 88210
PH: (575) 746-2158 FAX: (575) 746-2158
e.harcrow@harcrowsurveying.com

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

COG OPERATING, LLC

SURVEY OF A ROAD LOCATED IN SECTION 12, TOWNSHIP 19 SOUTH, RANGE 31 EAST, NMPM, EDDY COUNTY, NEW MEXICO

SURVEY DATE: MAY 9, 2016		
DRAFTING DATE: MAY 18, 2016		PAGE 1 OF 1
APPROVED BY: CH	DRAWN BY: VD	FILE: 16-385



LEGEND

- WELL
- WELLPAD
- ACCESS ROAD

SPRUCE GOOSE FED COM #2H & #5H ACCESS ROAD

SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-385	LEASE: SPRUCE GOOSE FED COM	

0 2,500 FEET

0 0.075 0.15 0.3 Miles

1 IN = 1,000 FT

ACCESS ROAD MAP | TOPO | 05/18/2016 | S.P.

CONCHO

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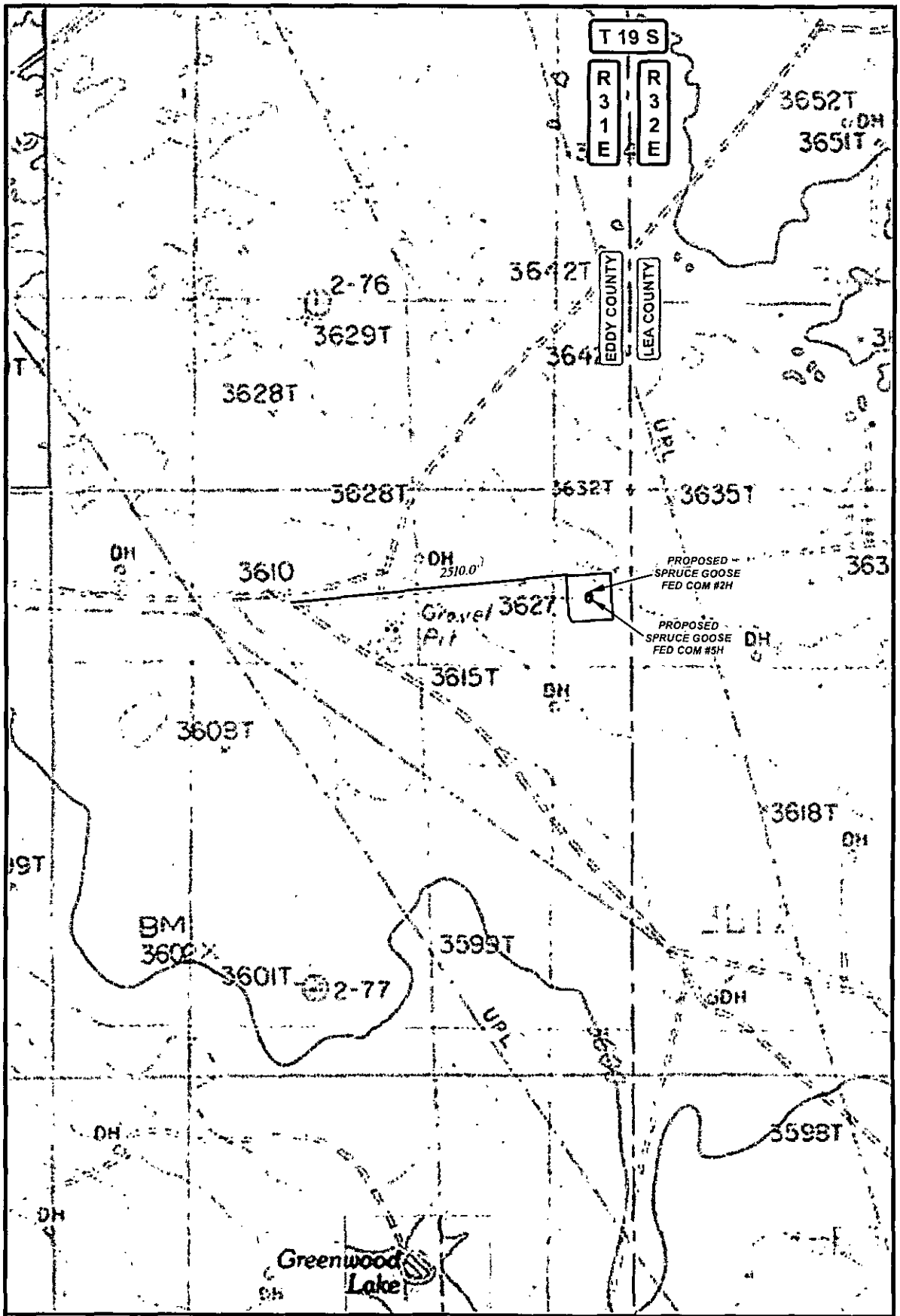

LEGEND

- WELL
- WELLPAD
- ACCESS ROAD
- PRIVATE
- STATE OF NM
- US BLM

SPRUCE GOOSE FED COM #2H & #5H ACCESS ROAD

SECTION: 12	TOWNSHIP: 19 S.	RANGE: 31 E.
STATE: NEW MEXICO	COUNTY: EDDY	SURVEY: N.M.P.M
W.O. # 16-385	LEASE: SPRUCE GOOSE FED COM	

0 2,500 FEET

0 0.075 0.15 0.3 Miles 1 IN = 1,000 FT

ACCESS ROAD MAP | LAND STATUS | 05/18/2016 | S.P.

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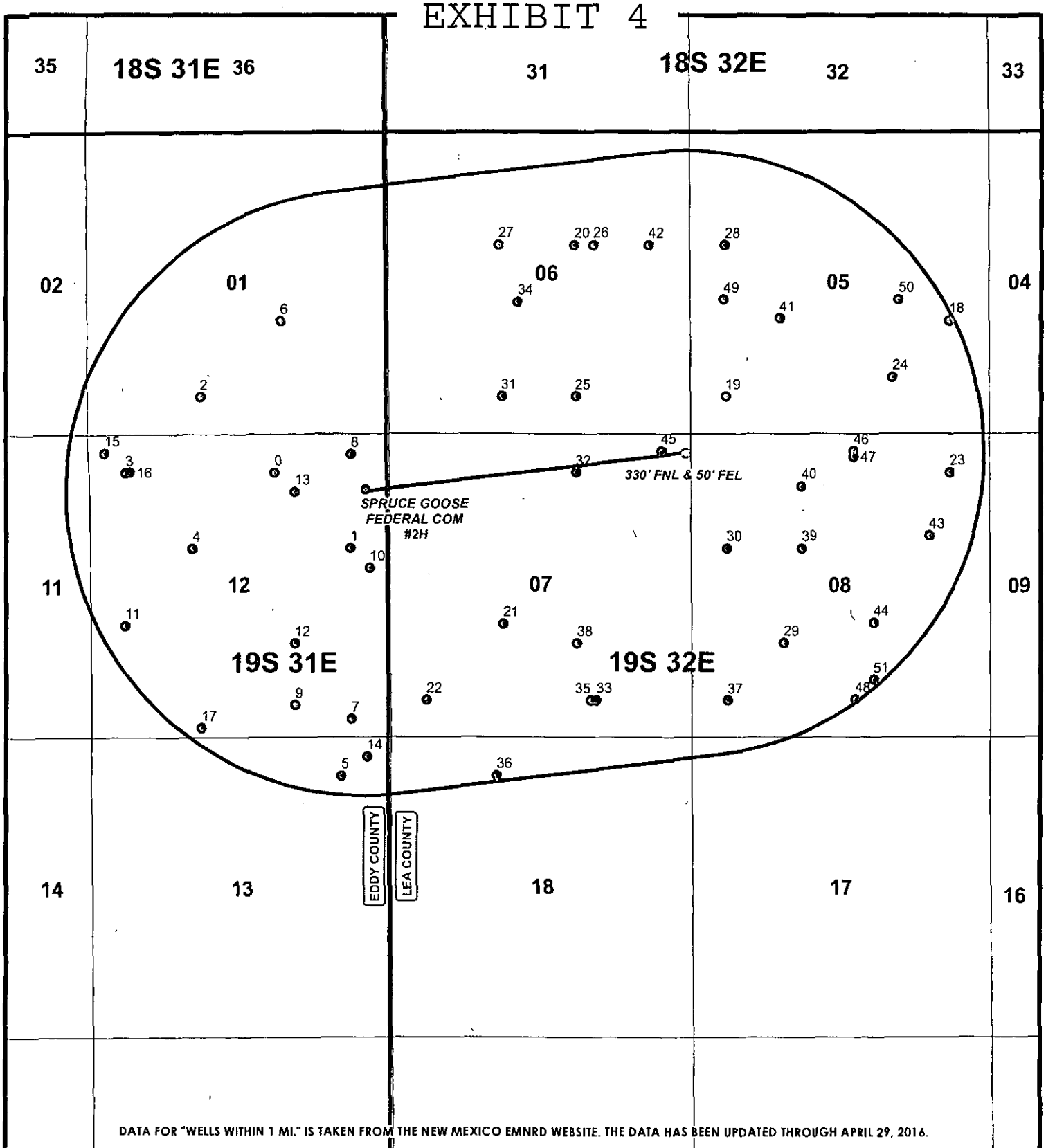
CONCHO

COG OPERATING, LLC

HARCROW SURVEYING, LLC.
2314 W. MAIN ST. ARTESIA, NM 88210
PH: (575) 746-2158 FAX: (575) 746-2158
c.harcrow@harcrowsurveying.com

EXHIBIT 4



DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH APRIL 29, 2016.

LEGEND

- WELL
- BOTTOMHOLE
- WELLS WITHIN 1 MI.
- 1 MI. BUFFER

SPRUCE GOOSE FEDERAL COM #2H			
SEC: 12	TWP: 19 S.	RGE: 31 E.	ELEVATION: 3626.2'
STATE: NEW MEXICO	COUNTY: EDDY	985' FNL & 390' FEL	
W.O. # 16-322	LEASE: SPRUCE GOOSE FED COM	SURVEY: N.M.P.M	

0 2,500 5,000 FEET

0 0.15 0.3 0.6 Miles

1 IN = 2,250 FT

1 MILE MAP | 05/16/2016 | A.F

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CONCHO

COG OPERATING, LLC

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SPRUCE GOOSE FEDERAL COM #2H

FID	Shape	Operator	Well Name	Latitude	Longitude	API	Section	Township	Range	FTG NS	NS CD	FTG EW	EW CD	MD Depth	Completion	County	Land Type	Plug Date
0	Point	CARPER DRILLING CO	CARPER QUILLIN 001	32.680498	-103.82078	3001505761	12	19.0S	31E	660	N	1980	E	0	Plugged	Eddy	F	1/2/1900
1	Point	PAN AMERICAN PETROLEUM CORP	GREENWOOD UT 007	32.676875	-103.816456	3001505762	12	19 0S	31E	1980	N	660	E	0	Plugged	Eddy	F	1/2/1900
2	Point	C W TRAINER	JOYCE COM 001	32.68412	-103 825037	3001510894	1	19 0S	31E	660	S	1980	W	0	Plugged	Eddy	F	1/2/1900
3	Point	C W TRAINER	JOYCE 001	32.680486	-103 829335	3001510900	12	19 0S	31E	660	N	660	W	0	Plugged	Eddy	F	1/2/1900
4	Point	BTA OIL PRODUCERS	LUSK 9209 JV-P 001	32.676863	-103 825534	3001527056	12	19 0S	31E	1980	N	1820	W	0	Plugged	Eddy	F	1/9/1996
5	Point	COG OPERATING LLC	TRAPPER 13 FEDERAL COM 002	32.665983	-103.817001	3001531568	13	19 0S	31E	660	N	840	E	12875	Active	Eddy	F	<Null>
6	Point	DEVON ENERGY PRODUCTION COMPANY, LP	KITTY HAWK FEDERAL 001	32.687755	-103.820385	3001532746	1	19 0S	31E	1980	S	1850	E	12270	Active	Eddy	F	<Null>
7	Point	COG OPERATING LLC	MALIBU FEDERAL 001	32.668714	-103.816429	3001534784	12	19 0S	31E	330	S	660	E	10875	Active	Eddy	F	<Null>
8	Point	COG OPERATING LLC	MALIBU FEDERAL COM 002	32.681384	-103 816383	3001535563	12	19 0S	31E	330	N	660	E	0	New (Not drilled or compl)	Eddy	F	<Null>
9	Point	APACHE CORP	APACHE FEDERAL 003C	32.669382	-103.81966	3001535754	12	19 0S	31E	580	S	1650	E	0	New (Not drilled or compl)	Eddy	F	<Null>
10	Point	COG OPERATING LLC	PIPER FEDERAL 001	32.675938	-103 815325	3001535788	12	19 0S	31E	2310	N	330	E	10224	Active	Eddy	F	<Null>
11	Point	COG OPERATING LLC	AIRBUS FEDERAL 001	32.673172	-103 829386	3001535887	12	19.0S	31E	1980	S	660	W	12700	Active	Eddy	F	<Null>
12	Point	COG OPERATING LLC	PIPER FEDERAL 003	32.672323	-103 819649	3001536005	12	19 0S	31E	1650	S	1650	E	10620	Active	Eddy	F	<Null>
13	Point	COG OPERATING LLC	PIPER FEDERAL 002	32.679581	-103.819622	3001536006	12	19 0S	31E	990	N	1650	E	0	New (Not drilled or compl)	Eddy	F	<Null>
14	Point	COG OPERATING LLC	LIBERATOR FEDERAL COM 001H	32.666906	-103.815517	3001537185	13	19.0S	31E	330	N	380	E	13680	New (Not drilled or compl)	Eddy	F	<Null>
15	Point	COG OPERATING LLC	AIRBUS 12 FEDERAL 002H	32.681431	-103 830507	3001539503	12	19 0S	31E	330	N	330	W	9054	New (Not drilled or compl)	Eddy	F	<Null>
16	Point	COG OPERATING LLC	POPTART 12 FEDERAL 004H	32.68052	-103 829098	3001539712	12	19 0S	31E	660	N	760	W	10390	New (Not drilled or compl)	Eddy	F	<Null>
17	Point	COG OPERATING LLC	AIRBUS 12 FEDERAL 003H	32.668278	-103 825049	3001542412	12	19 0S	31E	190	S	1980	W	9136	New (Not drilled or compl)	Eddy	F	<Null>
18	Point	T E BROWN	WATKINS 001	32.687667	-103.782018	3002500887	5	19.0S	32E	1980	S	660	E	4981	Plugged	Lea	F	1/2/1900
19	Point	CORAL OIL & GAS CO	PRICE FEDERAL 002	32.684069	-103.794878	3002500889	5	19 0S	32E	660	S	660	W	11437	Plugged	Lea	F	1/2/1900
20	Point	MACK ENERGY CORP	W H PECKHAM 001	32.691366	-103.803509	3002500890	6	19.0S	32E	1980	N	1980	E	4383	Plugged	Lea	P	8/4/1994
21	Point	PAN AMERICAN PETROLEUM CORP	W N PRICE USA 001	32.67322	-103.807733	3002500891	7	19.0S	32E	1980	S	2007	W	3000	Plugged	Lea	F	1/2/1900
22	Point	DEVON ENERGY PRODUCTION COMPANY, LP	HAWKEYE 7 FEDERAL 001	32.669607	-103 812118	3002500892	7	19 0S	32E	660	S	660	W	11840	Active	Lea	F	<Null>
23	Point	CULBERTSON & IRWIN	J S LEA 001	32.68041	-103.782004	3002500893	8	19.0S	32E	660	N	660	E	3151	Plugged	Lea	F	1/2/1900
24	Point	PIONEER ENTERPRISES INC	PRICE 5 FEDERAL 001	32.684953	-103.785247	3002520742	5	19.0S	32E	990	S	1650	E	11815	Plugged	Lea	F	1/2/1900
25	Point	DEVON ENERGY PRODUCTION COMPANY, LP	CONTINENTAL COM FEDERAL 001	32.684098	-103.8035	3002520912	6	19.0S	32E	660	S	1980	E	11370	Active	Lea	F	<Null>
26	Point	FINA OIL & CHEMICAL	CONTINENTAL A COM FE 001	32.691363	-103 802431	3002520913	6	19 0S	32E	1980	N	1650	E	11471	Plugged	Lea	F	1/2/1900
27	Point	TENNECO OIL CO	CONTINENTAL UNIT USA 001	32.691379	-103.80789	3002520914	6	19.0S	32E	1980	N	1980	W	11294	Plugged	Lea	F	1/2/1900
28	Point	RAY WESTALL	SB FEDERAL 001	32.691341	-103.794887	3002520915	5	19.0S	32E	1980	N	660	W	11440	Plugged	Lea	F	8/20/2004
29	Point	TENNECO OIL CO	TRIGG FEDERAL 001	32.672264	-103.791622	3002520916	8	19 0S	32E	1650	S	1650	W	12800	Plugged	Lea	F	1/2/1900
30	Point	R & O WELDING & CONSTR	LLANO A FEDERAL 001	32.676812	-103.794864	3002520918	8	19 0S	32E	1980	N	660	W	12452	Plugged	Lea	F	1/2/1900
31	Point	C & K PETROLEUM INC	GREENWOOD 6 FEDERAL 001	32.684113	-103.807757	3002521034	6	19.0S	32E	660	S	2012	W	12504	Plugged	Lea	F	1/2/1900
32	Point	DAMSON OIL CO	GREENWOOD PRE-GRAYBU 001	32.68047	-103 803493	3002521079	7	19 0S	32E	660	N	1980	E	0	Plugged	Lea	F	1/2/1900
33	Point	COQUINA OIL CORP	LLANO B FEDERAL 001	32.669573	-103.802392	3002521677	7	19.0S	32E	660	S	1650	E	2370	Plugged	Lea	F	1/2/1900
34	Point	MACK ENERGY CORP	LLANO FEDERAL 001	32.688645	-103.806802	3002525393	6	19.0S	32E	2310	S	2310	W	4393	Plugged	Lea	F	8/8/1994
35	Point	SHACKELFORD OIL CO	MITCHELL FEDERAL 001	32.669574	-103 802719	3002532610	7	19 0S	32E	660	S	1750	E	2912	Plugged	Lea	F	6/2/1998
36	Point	COG OPERATING LLC	CRAZY HORSE 18 FEDERAL 003	32.665964	-103 808121	3002535087	18	19.0S	32E	660	N	1880	W	12640	Active	Lea	F	<Null>
37	Point	COG OPERATING LLC	WBP FEDERAL 001	32 66955	-103.794849	3002535296	8	19 0S	32E	660	S	660	W	12710	Plugged	Lea	F	8/16/2015
38	Point	DEVON ENERGY PRODUCTION COMPANY, LP	HAWKEYE 7 FEDERAL 002	32.672298	-103 803476	3002535661	7	19.0S	32E	1650	S	1980	E	12580	Active	Lea	F	<Null>
39	Point	COG OPERATING LLC	LUSK 8 FEDERAL 001	32.676802	-103.790554	3002537256	8	19.0S	32E	1980	N	1980	W	0		Lea	F	<Null>
40	Point	COG OPERATING LLC	TBM FEDERAL COM 001	32.679771	-103.79056	3002537343	8	19 0S	32E	900	N	1980	W	12940	Active	Lea	F	<Null>
41	Point	COG OPERATING LLC	BONANZA FEDERAL 001	32.687802	-103.79175	3002537590	5	19.0S	32E	1980	S	1650	W	12960	Active	Lea	F	<Null>
42	Point	COG OPERATING LLC	HEIDI HO FEDERAL COM 001	32.691355	-103.799263	3002537734	6	19.0S	32E	1980	N	660	E	0		Lea	F	<Null>
43	Point	COG OPERATING LLC	CESSNA FEDERAL COM 001	32.67738	-103.78317	3002537854	8	19 0S	32E	1800	N	990	E	13110	Active	Lea	F	<Null>
44	Point	COG OPERATING LLC	CIRRUS FEDERAL COM 001	32.673206	-103.786403	3002538420	8	19.0S	32E	1980	S	1980	E	11810	Active	Lea	F	<Null>
45	Point	COG OPERATING LLC	SPRUCE GOOSE FEDERAL 001	32.68147	-103.798583	3002538445	7	19.0S	32E	330	N	430	E	10673	Active	Lea	F	<Null>
46	Point	COG OPERATING LLC	KING AIR FEDERAL 001H	32.681437	-103.78748	3002538897	8	19.0S	32E	330	N	2310	E	9349	Active	Lea	F	<Null>
47	Point	COG OPERATING LLC	KING AIR FEDERAL 002H	32.681162	-103.78748	3002538905	8	19.0S	32E	430	N	2310	E	9352	Active	Lea	F	<Null>
48	Point	COG OPERATING LLC	KING AIR FEDERAL 003	32.669572	-103.78748	3002539051	8	19 0S	32E	660	S	2310	E	0	Active	Lea	F	<Null>
49	Point	COG OPERATING LLC	PATTERSON B 52 FEDERAL 004H	32.688722	-103.794975	3002539289	5	19 0S	32E	2310	S	660	W	9313	Active	Lea	F	<Null>
50	Point	COG OPERATING LLC	PATTERSON B 52 FEDERAL 003H	32.688683	-103.784873	3002539638	5	19.0S	32E	2310	S	1500	E	11080	New (Not drilled or compl)	Lea	F	<Null>
51	Point	COG OPERATING LLC	CITATION X FEDERAL COM 001H	32.670485	-103.786402	3002539960	8	19 0S	32E	990	S	1980	E	12983	New (Not drilled or compl)	Lea	F	<Null>

COG Operating LLC, Spruce Goose Federal Com 2H

1. Geologic Formations

TVD of target	9300'	Pilot hole depth	N/A
MD at TD:	14,550'	Deepest expected fresh water:	225'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary Fill	Surface	Water	
Rustler	871	Water	
Top of Salt	1033	Salt	
Bottom of Salt	2708		
Yates	2741		
Queen	3553		
Delaware	4196	Oil/Gas	Losses
Brushy Canyon	5243	Oil/Gas	Losses
Bone Spring	6796	Oil/Gas	
1st BSS Sand	8118	Oil/Gas	
2nd BSS Sand	8901	Target Zone	
3rd BSS Sand	9671	Oil/Gas	

2. Casing Program

See COA

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	~~9700~~ 925	13.375"	54.5	J55	STC	2.46	1.623	3.36
12.25"	0	3100	9.625"	36	J55	LTC	1.77	1.14	4.19
8.75"	0	14550	5.5"	17	P110	LTC	1.645	2.42	2.12
				BLM Minimum Safety Factor			1.125	1.0	1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h
- BLM standard formulas where used on all SF calculations, except burst of 9-5/8" SF is assuming a gas gradient 0.1 psi/ft.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Is casing API approved? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification.	Y
Will the pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	

Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program

Csg	# sx	Density ppg	Yield ft3/sx	H2O gal/sx	500# Comp. Strength (hours)	Slurry Description
Sfc	470	13.5	1.75	9.2	12	Lead: Class C + 4% Gel + 1% CaCl2
	310	14.8	1.34	6.4	6	Tail: Class C + 2% CaCl2
Intrmd	550	12.9	1.87	9.8	12	Lead: 65:35 POZ 6% gel
	370	14.8	1.34	6.4	6	Tail: Hal Cem, neat C
Prod	890	11.0	3.2	19.7	40	Lead: NEOCEM TM 2 lbm/sk kol-seal
	1200	13.2	1.52	7.5	18	Tail: NEOCEM TM

Casing String	TOC	% Excess
Surface	0'	80% on OH volumes
Intermediate	0'	50% on OH volumes
Production	2600' (500' tie back)	20% on OH volumes EOL to KOP 45% on OH volumes KOP to 9-5/8" shoe

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	System Rated WP	Type	✓	Tested to:
12-1/4"	13-5/8"	2M	Annular	X	50% of working pressure
			Blind Ram		WP
			Pipe Ram		
			Double Ram		
			Other*		
8-3/4"	11"	3M	Annular	X	50% working pressure
			Blind Ram	X	WP
			Pipe Ram	X	
			Double Ram		
			Other*		

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

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

N	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
N	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Are anchors required by manufacturer?
N	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic & Description.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	Surf. shoe	FW Gel	8.6-8.8	28-34	N/C
Surf csg	Int shoe	Saturated Brine	10.0-10.2	28-34	N/C
Int shoe	TD	Cut Brine	8.6-9.1	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	Pason PVT

6. Logging and Testing Procedures

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

Additional logs planned		Interval
	Resistivity	
	Density	
	CBL	
	Mud log	
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	4400 psi @ 9300' TVD
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe:
No abnormal drilling conditions are expected to occur.

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

8. Other Facets of Operation

Is this a walking operation? No
Will be pre-setting casing? No
Anti-Collision: We will run consider running a gyro on the Spruce Goose Federal #1 and Greenwood #1, so we can steer around them. Anti-C report attached.

Attachments:

- Directional Plan
- BOP & Choke Schematics
- C102 and supporting maps
- Rig plat
- H2S schematic
- H2S contingency plan
- Interim reclamation plat

COG OPERATING, LLC

EDDY COUNTY, NM
DEEP BSS
SPRUCE GOOSE FEDERAL COM #2H

OWB

Plan: DWD Plan 1

Standard Planning Report

13 July, 2016

Database:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Company:	NEW MEXICO BASIN	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Project:	EDDY COUNTY, NM	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site:	DEEP BSS	**North Reference:**	Grid
Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

Project EDDY COUNTY, NM

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 DEEP BSS

Site Position:		**Northing:**	488,348.20 usft	**Latitude:**	32° 20' 28.000 N
From:	Map	**Easting:**	688,332.10 usft	**Longitude:**	103° 43' 24.732 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.33 °

Well SPRUCE GOOSE FEDERAL COM #2H

Well Position	**+N/-S**	122,943.7 usft	**Northing:**	611,291.90 usft	**Latitude:**	32° 40' 46.094 N
	+E/-W	-28,866.9 usft	**Easting:**	659,465.20 usft	**Longitude:**	103° 48' 54.235 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	3,498.7 usft	**Ground Level:**	3,626.0 usft

Wellbore OWB

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	7/12/2016	7.21	60.44	48,269

Design DWD Plan 1

Audit Notes:

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

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	83.24

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,235.6	4.71	2.47	1,235.3	9.7	0.4	2.00	2.00	0.00	2.47	
8,651.5	4.71	2.47	8,626.2	618.2	26.7	0.00	0.00	0.00	0.00	
9,381.3	87.78	89.86	9,100.0	656.9	485.6	12.00	11.38	11.98	87.58	Spruce Goose
14,550.2	87.78	89.86	9,300.2	669.5	5,650.6	0.00	0.00	0.00	0.00	Spruce Goose

Database:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Company:	NEW MEXICO BASIN	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Project:	EDDY COUNTY, NM	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site:	DEEP BSS	**North Reference:**	Grid
Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Spruce Goose Federal Com #2H - SHL									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	2.00	2.47	1,100.0	1.7	0.1	0.3	2.00	2.00	0.00
1,200.0	4.00	2.47	1,199.8	7.0	0.3	1.1	2.00	2.00	0.00
1,235.6	4.71	2.47	1,235.3	9.7	0.4	1.6	2.00	2.00	0.00
1,300.0	4.71	2.47	1,299.5	15.0	0.6	2.4	0.00	0.00	0.00
1,400.0	4.71	2.47	1,399.2	23.2	1.0	3.7	0.00	0.00	0.00
1,500.0	4.71	2.47	1,498.8	31.4	1.4	5.0	0.00	0.00	0.00
1,600.0	4.71	2.47	1,598.5	39.6	1.7	6.4	0.00	0.00	0.00
1,700.0	4.71	2.47	1,698.2	47.8	2.1	7.7	0.00	0.00	0.00
1,800.0	4.71	2.47	1,797.8	56.0	2.4	9.0	0.00	0.00	0.00
1,900.0	4.71	2.47	1,897.5	64.2	2.8	10.3	0.00	0.00	0.00
2,000.0	4.71	2.47	1,997.2	72.4	3.1	11.6	0.00	0.00	0.00
2,100.0	4.71	2.47	2,096.8	80.6	3.5	12.9	0.00	0.00	0.00
2,200.0	4.71	2.47	2,196.5	88.8	3.8	14.3	0.00	0.00	0.00
2,300.0	4.71	2.47	2,296.1	97.0	4.2	15.6	0.00	0.00	0.00
2,400.0	4.71	2.47	2,395.8	105.2	4.5	16.9	0.00	0.00	0.00
2,500.0	4.71	2.47	2,495.5	113.4	4.9	18.2	0.00	0.00	0.00
2,600.0	4.71	2.47	2,595.1	121.6	5.2	19.5	0.00	0.00	0.00
2,700.0	4.71	2.47	2,694.8	129.8	5.6	20.8	0.00	0.00	0.00
2,800.0	4.71	2.47	2,794.4	138.0	6.0	22.2	0.00	0.00	0.00
2,900.0	4.71	2.47	2,894.1	146.2	6.3	23.5	0.00	0.00	0.00
3,000.0	4.71	2.47	2,993.8	154.5	6.7	24.8	0.00	0.00	0.00
3,100.0	4.71	2.47	3,093.4	162.7	7.0	26.1	0.00	0.00	0.00
3,200.0	4.71	2.47	3,193.1	170.9	7.4	27.4	0.00	0.00	0.00
3,300.0	4.71	2.47	3,292.8	179.1	7.7	28.7	0.00	0.00	0.00
3,400.0	4.71	2.47	3,392.4	187.3	8.1	30.1	0.00	0.00	0.00
3,500.0	4.71	2.47	3,492.1	195.5	8.4	31.4	0.00	0.00	0.00
3,600.0	4.71	2.47	3,591.7	203.7	8.8	32.7	0.00	0.00	0.00
3,700.0	4.71	2.47	3,691.4	211.9	9.1	34.0	0.00	0.00	0.00
3,800.0	4.71	2.47	3,791.1	220.1	9.5	35.3	0.00	0.00	0.00
3,900.0	4.71	2.47	3,890.7	228.3	9.8	36.7	0.00	0.00	0.00
4,000.0	4.71	2.47	3,990.4	236.5	10.2	38.0	0.00	0.00	0.00
4,100.0	4.71	2.47	4,090.1	244.7	10.6	39.3	0.00	0.00	0.00
4,200.0	4.71	2.47	4,189.7	252.9	10.9	40.6	0.00	0.00	0.00
4,300.0	4.71	2.47	4,289.4	261.1	11.3	41.9	0.00	0.00	0.00
4,400.0	4.71	2.47	4,389.0	269.3	11.6	43.2	0.00	0.00	0.00
4,500.0	4.71	2.47	4,488.7	277.5	12.0	44.6	0.00	0.00	0.00
4,600.0	4.71	2.47	4,588.4	285.7	12.3	45.9	0.00	0.00	0.00
4,700.0	4.71	2.47	4,688.0	294.0	12.7	47.2	0.00	0.00	0.00
4,800.0	4.71	2.47	4,787.7	302.2	13.0	48.5	0.00	0.00	0.00
4,900.0	4.71	2.47	4,887.4	310.4	13.4	49.8	0.00	0.00	0.00
5,000.0	4.71	2.47	4,987.0	318.6	13.7	51.1	0.00	0.00	0.00
5,100.0	4.71	2.47	5,086.7	326.8	14.1	52.5	0.00	0.00	0.00

Database:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Company:	NEW MEXICO BASIN	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Project:	EDDY COUNTY, NM	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site:	DEEP BSS	**North Reference:**	Grid
Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

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)
5,200.0	4.71	2.47	5,186.3	335.0	14.4	53.8	0.00	0.00	0.00
5,300.0	4.71	2.47	5,286.0	343.2	14.8	55.1	0.00	0.00	0.00
5,400.0	4.71	2.47	5,385.7	351.4	15.2	56.4	0.00	0.00	0.00
5,500.0	4.71	2.47	5,485.3	359.6	15.5	57.7	0.00	0.00	0.00
5,600.0	4.71	2.47	5,585.0	367.8	15.9	59.0	0.00	0.00	0.00
5,700.0	4.71	2.47	5,684.7	376.0	16.2	60.4	0.00	0.00	0.00
5,800.0	4.71	2.47	5,784.3	384.2	16.6	61.7	0.00	0.00	0.00
5,900.0	4.71	2.47	5,884.0	392.4	16.9	63.0	0.00	0.00	0.00
6,000.0	4.71	2.47	5,983.6	400.6	17.3	64.3	0.00	0.00	0.00
6,100.0	4.71	2.47	6,083.3	408.8	17.6	65.6	0.00	0.00	0.00
6,200.0	4.71	2.47	6,183.0	417.0	18.0	66.9	0.00	0.00	0.00
6,300.0	4.71	2.47	6,282.6	425.2	18.3	68.3	0.00	0.00	0.00
6,400.0	4.71	2.47	6,382.3	433.4	18.7	69.6	0.00	0.00	0.00
6,500.0	4.71	2.47	6,481.9	441.7	19.0	70.9	0.00	0.00	0.00
6,600.0	4.71	2.47	6,581.6	449.9	19.4	72.2	0.00	0.00	0.00
6,700.0	4.71	2.47	6,681.3	458.1	19.8	73.5	0.00	0.00	0.00
6,800.0	4.71	2.47	6,780.9	466.3	20.1	74.9	0.00	0.00	0.00
6,900.0	4.71	2.47	6,880.6	474.5	20.5	76.2	0.00	0.00	0.00
7,000.0	4.71	2.47	6,980.3	482.7	20.8	77.5	0.00	0.00	0.00
7,100.0	4.71	2.47	7,079.9	490.9	21.2	78.8	0.00	0.00	0.00
7,200.0	4.71	2.47	7,179.6	499.1	21.5	80.1	0.00	0.00	0.00
7,300.0	4.71	2.47	7,279.2	507.3	21.9	81.4	0.00	0.00	0.00
7,400.0	4.71	2.47	7,378.9	515.5	22.2	82.8	0.00	0.00	0.00
7,500.0	4.71	2.47	7,478.6	523.7	22.6	84.1	0.00	0.00	0.00
7,600.0	4.71	2.47	7,578.2	531.9	22.9	85.4	0.00	0.00	0.00
7,700.0	4.71	2.47	7,677.9	540.1	23.3	86.7	0.00	0.00	0.00
7,800.0	4.71	2.47	7,777.6	548.3	23.6	88.0	0.00	0.00	0.00
7,900.0	4.71	2.47	7,877.2	556.5	24.0	89.3	0.00	0.00	0.00
8,000.0	4.71	2.47	7,976.9	564.7	24.4	90.7	0.00	0.00	0.00
8,100.0	4.71	2.47	8,076.5	572.9	24.7	92.0	0.00	0.00	0.00
8,200.0	4.71	2.47	8,176.2	581.2	25.1	93.3	0.00	0.00	0.00
8,300.0	4.71	2.47	8,275.9	589.4	25.4	94.6	0.00	0.00	0.00
8,400.0	4.71	2.47	8,375.5	597.6	25.8	95.9	0.00	0.00	0.00
8,500.0	4.71	2.47	8,475.2	605.8	26.1	97.2	0.00	0.00	0.00
8,600.0	4.71	2.47	8,574.9	614.0	26.5	98.6	0.00	0.00	0.00
8,651.5	4.71	2.47	8,626.2	618.2	26.7	99.2	0.00	0.00	0.00
8,700.0	7.64	52.16	8,674.4	622.2	29.3	102.3	12.00	6.03	102.42
8,800.0	18.61	75.89	8,771.7	630.2	50.1	123.9	12.00	10.97	23.72
8,900.0	30.35	81.96	8,862.6	637.6	90.7	165.2	12.00	11.75	6.07
9,000.0	42.24	84.84	8,943.0	644.2	149.4	224.2	12.00	11.88	2.88
9,100.0	54.16	86.63	9,009.6	649.6	223.6	298.6	12.00	11.93	1.79
9,200.0	66.11	87.95	9,059.3	653.6	310.1	384.9	12.00	11.95	1.32
9,300.0	78.06	89.05	9,090.0	656.1	405.1	479.5	12.00	11.96	1.09
9,381.3	87.78	89.86	9,100.0	656.9	485.6	559.5	12.00	11.96	1.00
Spruce Goose Federal Com #2H - LP									
9,400.0	87.78	89.86	9,100.7	656.9	504.3	578.1	0.00	0.00	0.00
9,500.0	87.78	89.86	9,104.6	657.2	604.2	677.4	0.00	0.00	0.00
9,600.0	87.78	89.86	9,108.5	657.4	704.2	776.7	0.00	0.00	0.00
9,700.0	87.78	89.86	9,112.3	657.6	804.1	875.9	0.00	0.00	0.00
9,800.0	87.78	89.86	9,116.2	657.9	904.0	975.2	0.00	0.00	0.00
9,900.0	87.78	89.86	9,120.1	658.1	1,003.9	1,074.4	0.00	0.00	0.00
10,000.0	87.78	89.86	9,124.0	658.4	1,103.9	1,173.7	0.00	0.00	0.00
10,100.0	87.78	89.86	9,127.8	658.6	1,203.8	1,272.9	0.00	0.00	0.00

Database:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Company:	NEW MEXICO BASIN	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Project:	EDDY COUNTY, NM	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site:	DEEP BSS	**North Reference:**	Grid
Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

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)
10,200.0	87.78	89.86	9,131.7	658.9	1,303.7	1,372.2	0.00	0.00	0.00
10,300.0	87.78	89.86	9,135.6	659.1	1,403.6	1,471.5	0.00	0.00	0.00
10,400.0	87.78	89.86	9,139.5	659.4	1,503.6	1,570.7	0.00	0.00	0.00
10,500.0	87.78	89.86	9,143.3	659.6	1,603.5	1,670.0	0.00	0.00	0.00
10,600.0	87.78	89.86	9,147.2	659.8	1,703.4	1,769.2	0.00	0.00	0.00
10,700.0	87.78	89.86	9,151.1	660.1	1,803.3	1,868.5	0.00	0.00	0.00
10,800.0	87.78	89.86	9,155.0	660.3	1,903.3	1,967.8	0.00	0.00	0.00
10,900.0	87.78	89.86	9,158.8	660.6	2,003.2	2,067.0	0.00	0.00	0.00
11,000.0	87.78	89.86	9,162.7	660.8	2,103.1	2,166.3	0.00	0.00	0.00
11,100.0	87.78	89.86	9,166.6	661.1	2,203.0	2,265.5	0.00	0.00	0.00
11,200.0	87.78	89.86	9,170.5	661.3	2,303.0	2,364.8	0.00	0.00	0.00
11,300.0	87.78	89.86	9,174.3	661.6	2,402.9	2,464.1	0.00	0.00	0.00
11,400.0	87.78	89.86	9,178.2	661.8	2,502.8	2,563.3	0.00	0.00	0.00
11,500.0	87.78	89.86	9,182.1	662.0	2,602.7	2,662.6	0.00	0.00	0.00
11,600.0	87.78	89.86	9,185.9	662.3	2,702.7	2,761.8	0.00	0.00	0.00
11,700.0	87.78	89.86	9,189.8	662.5	2,802.6	2,861.1	0.00	0.00	0.00
11,800.0	87.78	89.86	9,193.7	662.8	2,902.5	2,960.3	0.00	0.00	0.00
11,900.0	87.78	89.86	9,197.6	663.0	3,002.4	3,059.6	0.00	0.00	0.00
12,000.0	87.78	89.86	9,201.4	663.3	3,102.4	3,158.9	0.00	0.00	0.00
12,100.0	87.78	89.86	9,205.3	663.5	3,202.3	3,258.1	0.00	0.00	0.00
12,200.0	87.78	89.86	9,209.2	663.8	3,302.2	3,357.4	0.00	0.00	0.00
12,300.0	87.78	89.86	9,213.1	664.0	3,402.1	3,456.6	0.00	0.00	0.00
12,400.0	87.78	89.86	9,216.9	664.2	3,502.1	3,555.9	0.00	0.00	0.00
12,500.0	87.78	89.86	9,220.8	664.5	3,602.0	3,655.2	0.00	0.00	0.00
12,600.0	87.78	89.86	9,224.7	664.7	3,701.9	3,754.4	0.00	0.00	0.00
12,700.0	87.78	89.86	9,228.6	665.0	3,801.8	3,853.7	0.00	0.00	0.00
12,800.0	87.78	89.86	9,232.4	665.2	3,901.8	3,952.9	0.00	0.00	0.00
12,900.0	87.78	89.86	9,236.3	665.5	4,001.7	4,052.2	0.00	0.00	0.00
13,000.0	87.78	89.86	9,240.2	665.7	4,101.6	4,151.5	0.00	0.00	0.00
13,100.0	87.78	89.86	9,244.1	665.9	4,201.5	4,250.7	0.00	0.00	0.00
13,200.0	87.78	89.86	9,247.9	666.2	4,301.5	4,350.0	0.00	0.00	0.00
13,300.0	87.78	89.86	9,251.8	666.4	4,401.4	4,449.2	0.00	0.00	0.00
13,400.0	87.78	89.86	9,255.7	666.7	4,501.3	4,548.5	0.00	0.00	0.00
13,500.0	87.78	89.86	9,259.5	666.9	4,601.2	4,647.7	0.00	0.00	0.00
13,600.0	87.78	89.86	9,263.4	667.2	4,701.2	4,747.0	0.00	0.00	0.00
13,700.0	87.78	89.86	9,267.3	667.4	4,801.1	4,846.3	0.00	0.00	0.00
13,800.0	87.78	89.86	9,271.2	667.7	4,901.0	4,945.5	0.00	0.00	0.00
13,900.0	87.78	89.86	9,275.0	667.9	5,000.9	5,044.8	0.00	0.00	0.00
14,000.0	87.78	89.86	9,278.9	668.1	5,100.9	5,144.0	0.00	0.00	0.00
14,100.0	87.78	89.86	9,282.8	668.4	5,200.8	5,243.3	0.00	0.00	0.00
14,200.0	87.78	89.86	9,286.7	668.6	5,300.7	5,342.6	0.00	0.00	0.00
14,300.0	87.78	89.86	9,290.5	668.9	5,400.6	5,441.8	0.00	0.00	0.00
14,400.0	87.78	89.86	9,294.4	669.1	5,500.6	5,541.1	0.00	0.00	0.00
14,500.0	87.78	89.86	9,298.3	669.4	5,600.5	5,640.3	0.00	0.00	0.00
14,550.2	87.78	89.86	9,300.2	669.5	5,650.6	5,690.1	0.00	0.00	0.00
Spruce Goose Federal Com #2H - BHL									

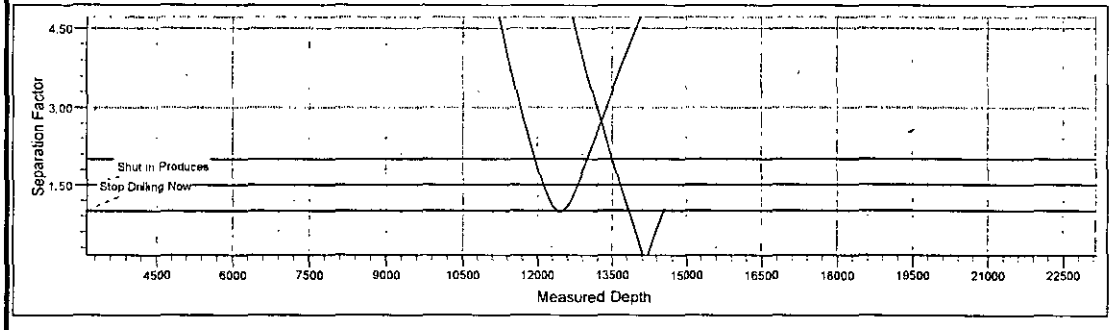
Database:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Company:	NEW MEXICO BASIN	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Project:	EDDY COUNTY, NM	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site:	DEEP BSS	**North Reference:**	Grid
Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OWB		
Design:	DWD Plan 1		

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
Spruce Goose Federal - plan hits target center - Point	0.00	0.00	0.0	0.0	0.0	611,291.90	659,465.20	32° 40' 46.094 N	103° 48' 54.235 W
Spruce Goose Federal - plan hits target center - Point	0.00	0.01	9,100.0	656.9	485.6	611,948.77	659,950.79	32° 40' 52.570 N	103° 48' 48.516 W
Spruce Goose Federal - plan misses target center by 0.2usft at 14550.2usft MD (9300.2 TVD, 669.5 N, 5650.6 E) - Rectangle (sides W100.0 H5,652.2 D30.0)	2.22	89.86	9,300.0	669.5	5,650.6	611,961.40	665,115.80	32° 40' 52.441 N	103° 47' 48.085 W

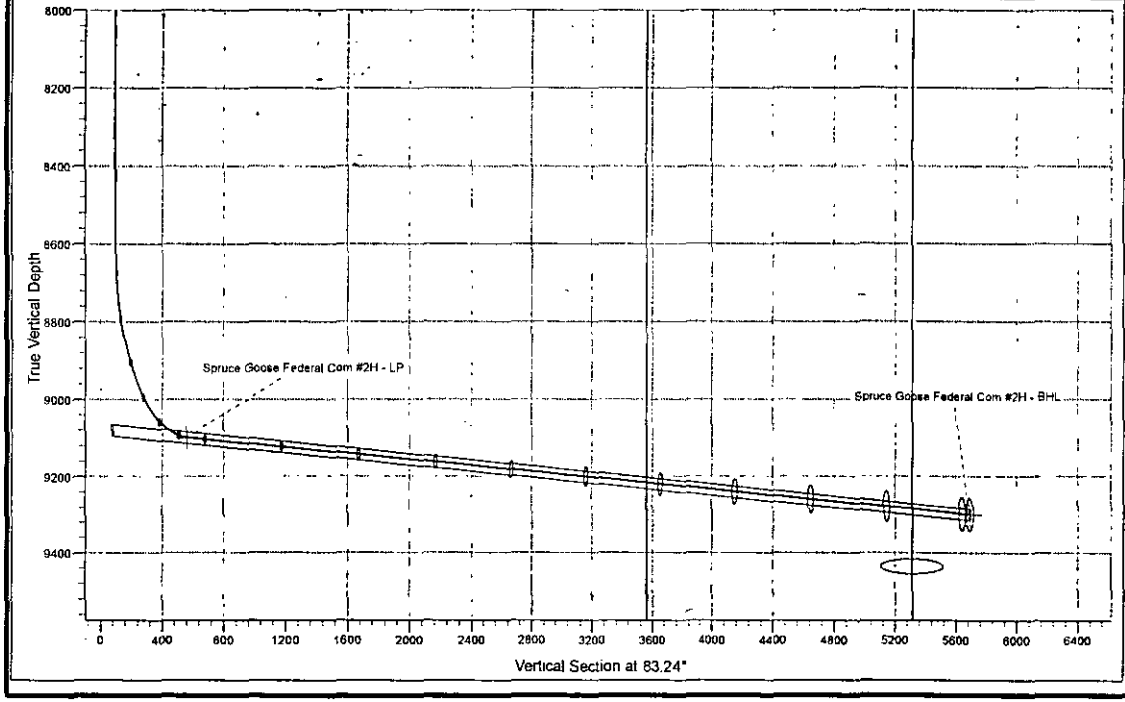
CONCHO

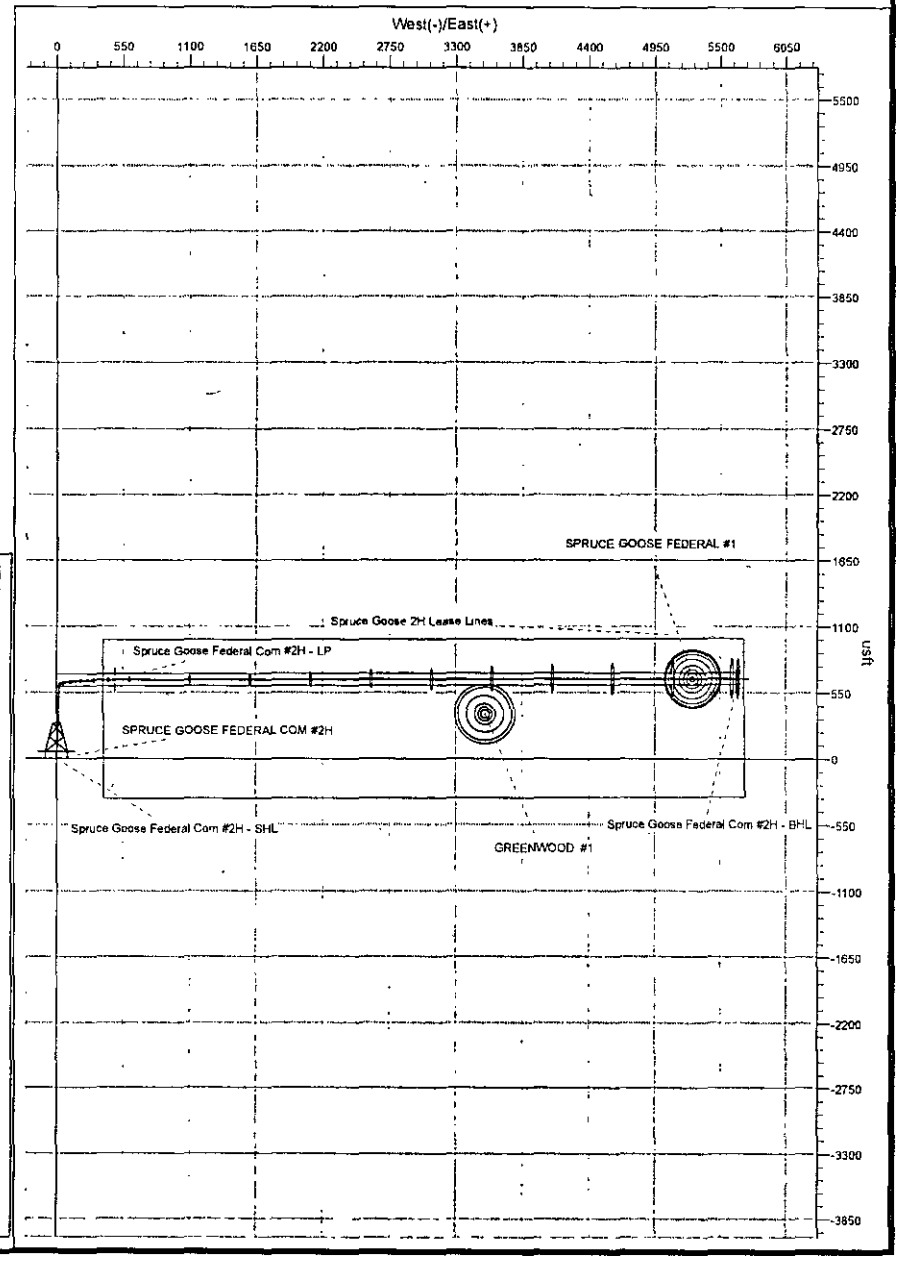
Project: EDDY COUNTY, NM
Site: DEEP BSS
Well: SPRUCE GOOSE FEDERAL COM #2H
Wellbore: OWB
Design: DWD Plan 1



LEGEND

GREENWOOD #1, OWB, ACTUAL WELLPATH V0
SPRUCE GOOSE FEDERAL #1, OWB, ACTUAL WELLPATH V0
DWD Plan 1





COG OPERATING, LLC

EDDY COUNTY, NM
DEEP BSS
SPRUCE GOOSE FEDERAL COM #2H

OWB
DWD Plan 1

Anticollision Report

13 July, 2016

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Reference DWD Plan 1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 usft	**Error Surface:**	Circular Conic
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 7/13/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	8,500.0	DWD Plan 1 (OWB)	VES GyroFlex	
8,500.0	14,550.2	DWD Plan 1 (OWB)	MWD	OWSG MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
DEEP BSS						
GREENWOOD #1 - OWB - ACTUAL WELLPATH	12,437.5	9,236.1	292.7	-8.5	0.972	Stop Drilling Now, CC, ES,
SPRUCE GOOSE FEDERAL #1 - OWB - ACTUAL WEL	14,170.0	9,296.2	0.2	-356.0	0.000	Stop Drilling Now, CC, ES,

Offset Design DEEP BSS - GREENWOOD #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 345-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	17.0	17.0	0.0	3.0	84.01	371.6	3,540.2	3,559.7				
100.0	100.0	117.0	117.0	0.1	3.2	84.01	371.6	3,540.2	3,559.7	3,556.4	3.24	1,099.003	
200.0	200.0	217.0	217.0	0.2	3.6	84.01	371.6	3,540.2	3,559.7	3,555.9	3.79	939.374	
300.0	300.0	317.0	317.0	0.4	4.1	84.01	371.6	3,540.2	3,559.7	3,555.2	4.50	791.332	
400.0	400.0	417.0	417.0	0.5	5.3	84.01	371.6	3,540.2	3,559.7	3,553.8	5.86	607.008	
500.0	500.0	517.0	517.0	0.7	6.9	84.01	371.6	3,540.2	3,559.7	3,552.0	7.63	466.733	
600.0	600.0	617.0	617.0	0.8	8.6	84.01	371.6	3,540.2	3,559.7	3,550.2	9.45	376.489	
700.0	700.0	717.0	717.0	1.0	10.3	84.01	371.6	3,540.2	3,559.7	3,548.3	11.32	314.514	
800.0	800.0	817.0	817.0	1.2	12.1	84.01	371.6	3,540.2	3,559.7	3,546.4	13.21	269.501	
900.0	900.0	917.0	917.0	1.3	13.8	84.01	371.6	3,540.2	3,559.7	3,544.5	15.16	234.795	
1,000.0	1,000.0	1,017.0	1,017.0	1.5	15.7	84.01	371.6	3,540.2	3,559.7	3,542.5	17.13	207.849	
1,100.0	1,100.0	1,117.0	1,117.0	1.6	17.5	81.57	371.6	3,540.2	3,559.4	3,540.3	19.10	186.343	
1,200.0	1,199.8	1,216.8	1,216.8	1.8	19.3	81.67	371.6	3,540.2	3,558.6	3,537.5	21.08	168.796	
1,235.6	1,235.3	1,252.3	1,252.3	1.8	19.9	81.72	371.6	3,540.2	3,558.2	3,536.5	21.79	163.317	
1,300.0	1,299.5	1,316.5	1,316.5	1.9	21.1	81.80	371.6	3,540.2	3,557.5	3,534.4	23.06	154.262	
1,400.0	1,399.2	1,416.2	1,416.2	2.1	22.9	81.93	371.6	3,540.2	3,556.3	3,531.3	25.04	142.018	
1,500.0	1,498.8	1,515.8	1,515.8	2.2	24.8	82.07	371.6	3,540.2	3,555.2	3,528.1	27.02	131.556	
1,600.0	1,598.5	1,615.5	1,615.5	2.4	26.6	82.20	371.6	3,540.2	3,554.0	3,525.0	29.01	122.516	
1,700.0	1,698.2	1,715.2	1,715.2	2.6	28.4	82.33	371.6	3,540.2	3,552.9	3,521.9	31.00	114.628	
1,800.0	1,797.8	1,814.8	1,814.8	2.7	30.3	82.46	371.6	3,540.2	3,551.8	3,518.9	32.98	107.685	
1,900.0	1,897.5	1,914.5	1,914.5	2.9	32.1	82.59	371.6	3,540.2	3,550.8	3,515.8	34.99	101.466	
2,000.0	1,997.2	2,014.2	2,014.2	3.0	34.1	82.72	371.6	3,540.2	3,549.7	3,512.6	37.14	95.587	
2,100.0	2,096.8	2,113.8	2,113.8	3.2	36.1	82.85	371.6	3,540.2	3,548.7	3,509.4	39.28	90.348	
2,200.0	2,196.5	2,213.5	2,213.5	3.3	38.3	82.98	371.6	3,540.2	3,547.7	3,506.0	41.62	85.249	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - GREENWOOD #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 345-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,300.0	2,296.1	2,313.2	2,313.1	3.5	40.6	83.11	371.6	3,540.2	3,546.7	3,502.6	44.05	80.509	
2,400.0	2,395.8	2,412.8	2,412.8	3.7	43.0	83.24	371.6	3,540.2	3,545.7	3,499.1	46.61	76.065	
2,500.0	2,495.5	2,512.5	2,512.5	3.8	45.4	83.38	371.6	3,540.2	3,544.7	3,495.5	49.18	72.083	
2,600.0	2,595.1	2,612.1	2,612.1	4.0	47.8	83.51	371.6	3,540.2	3,543.8	3,492.0	51.74	68.495	
2,700.0	2,694.8	2,711.9	2,711.8	4.1	50.1	83.64	371.6	3,540.2	3,542.9	3,488.6	54.23	65.336	
2,800.0	2,794.4	2,811.5	2,811.4	4.3	52.1	83.77	371.6	3,540.2	3,542.0	3,485.5	56.43	62.771	
2,900.0	2,894.1	2,911.2	2,911.1	4.4	54.0	83.90	371.6	3,540.2	3,541.1	3,482.7	58.40	60.633	
3,000.0	2,993.8	3,010.9	3,010.8	4.6	55.8	84.03	371.6	3,540.2	3,540.2	3,479.8	60.38	58.633	
3,100.0	3,093.4	3,110.5	3,110.4	4.7	57.7	84.17	371.6	3,540.2	3,539.4	3,476.9	62.50	56.634	
3,200.0	3,193.1	3,210.0	3,209.9	4.9	59.8	84.30	371.6	3,540.2	3,538.5	3,473.8	64.74	54.662	
3,300.0	3,292.8	3,309.9	3,309.8	5.1	61.7	84.43	371.6	3,540.2	3,537.7	3,470.9	66.79	52.971	
3,400.0	3,392.4	3,409.5	3,409.4	5.2	63.6	84.56	371.6	3,540.2	3,536.9	3,468.1	68.83	51.383	
3,500.0	3,492.1	3,509.2	3,509.1	5.4	65.4	84.69	371.6	3,540.2	3,536.2	3,465.4	70.77	49.968	
3,600.0	3,591.7	3,608.9	3,608.7	5.5	67.1	84.83	371.6	3,540.2	3,535.4	3,462.7	72.68	48.642	
3,700.0	3,691.4	3,708.5	3,708.4	5.7	68.9	84.96	371.6	3,540.2	3,534.7	3,460.1	74.60	47.384	
3,800.0	3,791.1	3,808.2	3,808.1	5.8	70.7	85.09	371.6	3,540.2	3,534.0	3,457.4	76.51	46.190	
3,900.0	3,890.7	3,907.9	3,907.7	6.0	72.4	85.22	371.6	3,540.2	3,533.3	3,454.8	78.42	45.054	
4,000.0	3,990.4	4,007.5	4,007.4	6.2	74.1	85.35	371.6	3,540.2	3,532.6	3,452.3	80.28	44.001	
4,100.0	4,090.1	4,107.2	4,107.1	6.3	75.8	85.49	371.6	3,540.2	3,531.9	3,449.8	82.14	42.997	
4,200.0	4,189.7	4,206.8	4,206.7	6.5	77.5	85.62	371.6	3,540.2	3,531.3	3,447.3	84.00	42.038	
4,300.0	4,289.4	4,306.5	4,306.4	6.6	79.2	85.75	371.6	3,540.2	3,530.7	3,444.8	85.86	41.120	
4,400.0	4,389.0	4,406.2	4,406.0	6.8	81.0	85.88	371.6	3,540.2	3,530.1	3,442.3	87.78	40.214	
4,500.0	4,488.7	4,505.8	4,505.7	6.9	82.8	86.02	371.6	3,540.2	3,529.5	3,439.7	89.77	39.316	
4,600.0	4,588.4	4,605.5	4,605.4	7.1	84.7	86.15	371.6	3,540.2	3,528.9	3,437.2	91.76	38.456	
4,700.0	4,688.0	4,705.2	4,705.0	7.3	86.5	86.28	371.6	3,540.2	3,528.4	3,434.6	93.76	37.634	
4,800.0	4,787.7	4,804.8	4,804.7	7.4	88.4	86.41	371.6	3,540.2	3,527.9	3,432.0	95.82	36.817	
4,900.0	4,887.4	4,904.5	4,904.4	7.6	90.4	86.55	371.6	3,540.2	3,527.3	3,429.3	98.00	35.993	
5,000.0	4,987.0	5,004.1	5,004.0	7.7	92.5	86.68	371.6	3,540.2	3,526.9	3,426.7	100.18	35.205	
5,100.0	5,086.7	5,103.8	5,103.7	7.9	94.5	86.81	371.6	3,540.2	3,526.4	3,424.0	102.36	34.451	
5,200.0	5,186.3	5,203.5	5,203.3	8.0	96.5	86.95	371.6	3,540.2	3,525.9	3,421.4	104.54	33.729	
5,300.0	5,286.0	5,303.1	5,303.0	8.2	98.5	87.08	371.6	3,540.2	3,525.5	3,418.8	106.72	33.036	
5,400.0	5,385.7	5,402.8	5,402.7	8.3	100.5	87.21	371.6	3,540.2	3,525.1	3,416.2	108.90	32.371	
5,500.0	5,485.3	5,502.5	5,502.3	8.5	102.6	87.34	371.6	3,540.2	3,524.7	3,413.6	111.07	31.733	
5,600.0	5,585.0	5,602.1	5,602.0	8.7	104.6	87.48	371.6	3,540.2	3,524.3	3,411.1	113.27	31.115	
5,700.0	5,684.7	5,701.8	5,701.7	8.8	106.7	87.61	371.6	3,540.2	3,524.0	3,408.5	115.52	30.506	
5,800.0	5,784.3	5,801.5	5,801.3	9.0	108.8	87.74	371.6	3,540.2	3,523.7	3,405.9	117.77	29.921	
5,900.0	5,884.0	5,901.1	5,901.0	9.1	110.9	87.88	371.6	3,540.2	3,523.3	3,403.3	120.02	29.357	
6,000.0	5,983.6	6,000.8	6,000.6	9.3	113.0	88.01	371.6	3,540.2	3,523.0	3,400.8	122.26	28.815	
6,100.0	6,083.3	6,100.5	6,100.3	9.4	115.0	88.14	371.6	3,540.2	3,522.8	3,398.3	124.48	28.301	
6,200.0	6,183.0	6,200.1	6,200.0	9.6	117.1	88.28	371.6	3,540.2	3,522.5	3,395.8	126.66	27.810	
6,300.0	6,282.6	6,299.8	6,299.6	9.8	119.1	88.41	371.6	3,540.2	3,522.3	3,393.4	128.85	27.337	
6,400.0	6,382.3	6,399.5	6,399.3	9.9	121.1	88.54	371.6	3,540.2	3,522.1	3,391.0	131.03	26.879	
6,500.0	6,481.9	6,499.1	6,498.9	10.1	123.1	88.67	371.6	3,540.2	3,521.9	3,388.6	133.22	26.436	
6,600.0	6,581.6	6,598.8	6,598.6	10.2	125.2	88.81	371.6	3,540.2	3,521.7	3,386.3	135.41	26.008	
6,700.0	6,681.3	6,698.4	6,698.3	10.4	127.2	88.94	371.6	3,540.2	3,521.5	3,383.9	137.59	25.594	
6,800.0	6,780.9	6,798.1	6,797.9	10.5	129.2	89.07	371.6	3,540.2	3,521.4	3,381.6	139.78	25.192	
6,900.0	6,880.6	6,897.8	6,897.6	10.7	131.3	89.21	371.6	3,540.2	3,521.2	3,379.3	141.97	24.803	
7,000.0	6,980.3	6,997.5	6,997.3	10.9	133.3	89.34	371.6	3,540.2	3,521.1	3,377.0	144.16	24.426	
7,100.0	7,079.9	7,097.1	7,096.9	11.0	135.3	89.47	371.6	3,540.2	3,521.1	3,374.7	146.34	24.060	
7,200.0	7,179.6	7,196.8	7,196.6	11.2	137.6	89.61	371.6	3,540.2	3,521.0	3,372.2	148.75	23.670	
7,300.0	7,279.2	7,296.5	7,296.2	11.3	140.0	89.74	371.6	3,540.2	3,520.9	3,369.6	151.30	23.271	
7,400.0	7,378.9	7,396.1	7,395.9	11.5	142.4	89.87	371.6	3,540.2	3,520.9	3,367.1	153.85	22.885	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - GREENWOOD #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 345-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,495.0	7,473.6	7,490.9	7,490.6	11.6	144.6	90.00	371.6	3,540.2	3,520.9	3,364.6	156.27	22.531	
7,500.0	7,478.6	7,495.8	7,495.6	11.7	144.7	90.01	371.6	3,540.2	3,520.9	3,364.5	156.40	22.512	
7,600.0	7,578.2	7,595.5	7,595.2	11.8	147.1	90.14	371.6	3,540.2	3,520.9	3,362.0	158.95	22.152	
7,700.0	7,677.9	7,695.1	7,694.9	12.0	149.5	90.27	371.6	3,540.2	3,520.9	3,359.4	161.50	21.802	
7,800.0	7,777.6	7,794.8	7,794.6	12.1	151.9	90.41	371.6	3,540.2	3,521.0	3,356.9	164.04	21.464	
7,900.0	7,877.2	7,894.5	7,894.2	12.3	154.3	90.54	371.6	3,540.2	3,521.1	3,354.5	166.61	21.134	
8,000.0	7,976.9	7,994.1	7,993.9	12.4	157.2	90.67	371.6	3,540.2	3,521.1	3,351.5	169.64	20.757	
8,100.0	8,076.5	8,093.8	8,093.5	12.6	160.1	90.81	371.6	3,540.2	3,521.3	3,348.6	172.66	20.394	
8,200.0	8,176.2	8,193.5	8,193.2	12.8	162.9	90.94	371.6	3,540.2	3,521.4	3,345.7	175.71	20.041	
8,300.0	8,275.9	8,293.2	8,292.9	12.9	166.2	91.07	371.6	3,540.2	3,521.5	3,342.4	179.12	19.660	
8,400.0	8,375.5	8,392.9	8,392.5	13.1	169.5	91.21	371.6	3,540.2	3,521.7	3,339.2	182.53	19.293	
8,500.0	8,475.2	8,492.5	8,492.2	13.1	172.7	91.34	371.6	3,540.2	3,521.9	3,336.0	185.85	18.950	
8,600.0	8,574.9	8,592.2	8,591.9	13.1	176.0	91.47	371.6	3,540.2	3,522.1	3,333.0	189.11	18.624	
8,651.5	8,626.2	8,643.5	8,643.2	13.1	177.6	91.54	371.6	3,540.2	3,522.2	3,331.4	190.79	18.461	
8,675.0	8,649.6	8,667.1	8,666.6	13.1	178.4	61.37	371.6	3,540.2	3,521.7	3,330.1	191.58	18.382	
8,700.0	8,674.4	8,691.9	8,691.4	13.2	179.3	42.17	371.6	3,540.2	3,519.8	3,327.4	192.45	18.290	
8,725.0	8,699.1	8,716.6	8,716.1	13.2	180.1	31.81	371.6	3,540.2	3,516.7	3,323.4	193.30	18.193	
8,750.0	8,723.6	8,741.1	8,740.6	13.2	181.0	25.76	371.6	3,540.2	3,512.3	3,318.2	194.16	18.090	
8,775.0	8,747.8	8,765.3	8,764.8	13.2	181.8	21.90	371.6	3,540.2	3,506.6	3,311.6	195.00	17.983	
8,800.0	8,771.7	8,789.2	8,788.7	13.2	182.6	19.29	371.6	3,540.2	3,499.7	3,303.8	195.84	17.870	
8,825.0	8,795.2	8,812.7	8,812.2	13.2	183.4	17.44	371.6	3,540.2	3,491.5	3,294.8	196.66	17.754	
8,850.0	8,818.2	8,835.7	8,835.2	13.2	184.2	16.09	371.6	3,540.2	3,482.1	3,284.6	197.47	17.633	
8,875.0	8,840.7	8,858.2	8,857.7	13.2	185.0	15.09	371.6	3,540.2	3,471.5	3,273.2	198.27	17.509	
8,900.0	8,862.6	8,880.1	8,879.6	13.3	185.8	14.35	371.6	3,540.2	3,459.7	3,260.7	199.05	17.381	
8,925.0	8,883.8	8,901.3	8,900.8	13.3	186.5	13.81	371.6	3,540.2	3,446.8	3,247.0	199.82	17.250	
8,950.0	8,904.3	8,921.8	8,921.3	13.4	187.2	13.43	371.6	3,540.2	3,432.8	3,232.2	200.57	17.115	
8,975.0	8,924.1	8,941.6	8,941.1	13.4	187.9	13.19	371.6	3,540.2	3,417.8	3,216.5	201.31	16.977	
9,000.0	8,943.0	8,960.5	8,960.0	13.5	188.5	13.07	371.6	3,540.2	3,401.7	3,199.7	202.04	16.837	
9,025.0	8,961.1	8,978.6	8,978.1	13.6	189.2	13.07	371.6	3,540.2	3,384.7	3,181.9	202.75	16.694	
9,050.0	8,978.3	8,995.7	8,995.3	13.7	189.8	13.18	371.6	3,540.2	3,366.7	3,163.3	203.45	16.548	
9,075.0	8,994.4	9,011.9	9,011.4	13.8	190.3	13.41	371.6	3,540.2	3,347.9	3,143.7	204.13	16.400	
9,100.0	9,009.6	9,027.1	9,026.6	14.0	190.8	13.76	371.6	3,540.2	3,328.2	3,123.4	204.81	16.250	
9,125.0	9,023.7	9,041.2	9,040.7	14.1	191.3	14.25	371.6	3,540.2	3,307.8	3,102.3	205.48	16.098	
9,150.0	9,036.7	9,054.2	9,053.7	14.3	191.8	14.92	371.6	3,540.2	3,286.6	3,080.5	206.13	15.944	
9,175.0	9,048.6	9,066.0	9,065.6	14.6	192.2	15.80	371.6	3,540.2	3,264.8	3,058.0	206.78	15.789	
9,200.0	9,059.3	9,076.8	9,076.3	14.9	192.6	16.95	371.6	3,540.2	3,242.4	3,035.0	207.42	15.632	
9,225.0	9,068.8	9,086.3	9,085.8	15.2	192.9	18.48	371.6	3,540.2	3,219.4	3,011.4	208.05	15.474	
9,250.0	9,077.1	9,094.6	9,094.1	15.5	193.2	20.53	371.6	3,540.2	3,196.0	2,987.4	208.67	15.316	
9,275.0	9,084.2	9,101.7	9,101.2	15.8	193.4	23.37	371.6	3,540.2	3,172.2	2,962.9	209.27	15.158	
9,300.0	9,090.0	9,107.5	9,107.0	16.2	193.6	27.48	371.6	3,540.2	3,148.0	2,938.2	209.87	15.000	
9,325.0	9,094.5	9,112.0	9,111.5	16.7	193.8	33.74	371.6	3,540.2	3,123.6	2,913.1	210.44	14.843	
9,350.0	9,097.8	9,115.2	9,114.8	17.1	193.9	44.02	371.6	3,540.2	3,098.9	2,887.9	210.99	14.687	
9,375.0	9,099.7	9,117.2	9,116.7	17.6	194.0	61.84	371.6	3,540.2	3,074.1	2,862.6	211.52	14.533	
9,381.3	9,100.0	9,117.5	9,117.0	17.7	194.0	67.99	371.6	3,540.2	3,067.9	2,856.2	211.65	14.495	
9,400.0	9,100.7	9,118.2	9,117.7	18.0	194.0	68.12	371.6	3,540.2	3,049.3	2,837.2	212.04	14.380	
9,500.0	9,104.6	9,122.1	9,121.6	20.1	194.1	68.77	371.6	3,540.2	2,949.8	2,735.5	214.27	13.767	
9,600.0	9,108.5	9,125.9	9,125.5	22.4	194.3	69.43	371.6	3,540.2	2,850.4	2,633.7	216.70	13.154	
9,700.0	9,112.3	9,129.8	9,129.3	24.9	194.4	70.10	371.6	3,540.2	2,751.0	2,531.7	219.27	12.546	
9,800.0	9,116.2	9,133.7	9,133.2	27.4	194.5	70.77	371.6	3,540.2	2,651.7	2,429.7	221.95	11.947	
9,900.0	9,120.1	9,137.6	9,137.1	30.0	194.7	71.45	371.6	3,540.2	2,552.4	2,327.7	224.70	11.359	
10,000.0	9,124.0	9,141.4	9,141.0	32.7	194.8	72.13	371.6	3,540.2	2,453.2	2,225.6	227.52	10.782	
10,100.0	9,127.8	9,145.3	9,144.8	35.5	194.9	72.82	371.6	3,540.2	2,354.0	2,123.6	230.39	10.218	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - GREENWOOD #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 345-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,200.0	9,131.7	9,149.2	9,148.7	38.2	195.1	73.52	371.6	3,540.2	2,254.9	2,021.6	233.28	9.666	
10,300.0	9,135.6	9,153.1	9,152.6	41.0	195.2	74.22	371.6	3,540.2	2,155.8	1,919.6	236.21	9.127	
10,400.0	9,139.5	9,156.9	9,156.5	43.8	195.3	74.92	371.6	3,540.2	2,056.9	1,817.7	239.17	8.600	
10,500.0	9,143.3	9,160.8	9,160.3	46.7	195.5	75.63	371.6	3,540.2	1,958.0	1,715.9	242.14	8.086	
10,600.0	9,147.2	9,164.7	9,164.2	49.5	195.6	76.34	371.6	3,540.2	1,859.3	1,614.1	245.13	7.585	
10,700.0	9,151.1	9,168.6	9,168.1	52.4	195.7	77.06	371.6	3,540.2	1,760.7	1,512.5	248.13	7.096	
10,800.0	9,155.0	9,172.4	9,172.0	55.3	195.9	77.78	371.6	3,540.2	1,662.2	1,411.1	251.14	6.619	
10,900.0	9,158.8	9,176.3	9,175.8	58.2	196.0	78.51	371.6	3,540.2	1,563.9	1,309.8	254.16	6.153	
11,000.0	9,162.7	9,180.2	9,179.7	61.1	196.1	79.24	371.6	3,540.2	1,465.9	1,208.7	257.19	5.700	
11,100.0	9,166.6	9,184.0	9,183.6	64.0	196.3	79.97	371.6	3,540.2	1,368.1	1,107.9	260.23	5.257	
11,200.0	9,170.5	9,187.9	9,187.5	66.9	196.4	80.71	371.6	3,540.2	1,270.7	1,007.4	263.27	4.827	
11,300.0	9,174.3	9,191.8	9,191.3	69.8	196.5	81.45	371.6	3,540.2	1,173.7	907.4	266.32	4.407	
11,400.0	9,178.2	9,195.7	9,195.2	72.7	196.7	82.19	371.6	3,540.2	1,077.2	807.8	269.37	3.999	
11,500.0	9,182.1	9,199.5	9,199.1	75.6	196.8	82.93	371.6	3,540.2	981.4	709.0	272.43	3.602	
11,600.0	9,185.9	9,203.4	9,202.9	78.6	196.9	83.68	371.6	3,540.2	886.5	611.0	275.49	3.218	
11,700.0	9,189.8	9,207.3	9,206.8	81.5	197.1	84.43	371.6	3,540.2	792.9	514.4	278.56	2.846	
11,800.0	9,193.7	9,211.2	9,210.7	84.4	197.2	85.18	371.6	3,540.2	701.0	419.4	281.62	2.489	
11,900.0	9,197.6	9,215.0	9,214.6	87.4	197.3	85.93	371.6	3,540.2	611.6	326.9	284.70	2.148	
12,000.0	9,201.4	9,230.0	9,229.3	90.3	197.9	88.80	371.6	3,540.2	526.2	238.0	288.15	1.826	Advise and Monitor
12,100.0	9,205.3	9,230.0	9,229.3	93.2	197.9	88.80	371.6	3,540.2	446.6	155.5	291.09	1.534	Advise and Monitor
12,200.0	9,209.2	9,230.0	9,229.3	96.2	197.9	88.80	371.6	3,540.2	376.8	82.8	294.04	1.282	Shut in Produces
12,300.0	9,213.1	9,230.8	9,230.1	99.1	197.9	88.96	371.6	3,540.2	323.3	26.3	297.00	1.089	Shut in Produces
12,400.0	9,216.9	9,234.7	9,233.9	102.1	198.0	89.72	371.6	3,540.2	295.1	-5.0	300.06	0.983	Stop Drilling Now
12,437.5	9,218.4	9,236.1	9,235.4	103.2	198.0	90.00	371.6	3,540.2	292.7	-8.5	301.20	0.972	Stop Drilling Now, CC, ES, SF
12,500.0	9,220.8	9,238.5	9,237.8	105.0	198.1	90.47	371.6	3,540.2	299.3	-3.8	303.11	0.987	Stop Drilling Now
12,600.0	9,224.7	9,242.4	9,241.7	108.0	198.2	91.23	371.6	3,540.2	334.8	28.6	306.17	1.093	Shut in Produces
12,700.0	9,228.6	9,246.3	9,245.6	110.9	198.3	91.99	371.6	3,540.2	393.1	83.8	309.23	1.271	Shut in Produces
12,800.0	9,232.4	9,250.2	9,249.4	113.9	198.4	92.74	371.6	3,540.2	465.7	153.5	312.29	1.491	Shut in Produces
12,900.0	9,236.3	9,254.0	9,253.3	116.8	198.5	93.50	371.6	3,540.2	547.1	231.7	315.35	1.735	Advise and Monitor
13,000.0	9,240.2	9,257.9	9,257.2	119.8	198.6	94.25	371.6	3,540.2	633.8	315.4	318.41	1.990	Advise and Monitor
13,100.0	9,244.1	9,261.8	9,261.1	122.7	198.7	95.01	371.6	3,540.2	723.9	402.4	321.48	2.252	
13,200.0	9,247.9	9,265.7	9,264.9	125.7	198.8	95.76	371.6	3,540.2	816.3	491.7	324.54	2.515	
13,300.0	9,251.8	9,269.5	9,268.8	128.7	198.9	96.51	371.6	3,540.2	910.2	582.6	327.60	2.778	
13,400.0	9,255.7	9,273.4	9,272.7	131.6	199.1	97.25	371.6	3,540.2	1,005.4	674.7	330.67	3.040	
13,500.0	9,259.5	9,277.3	9,276.5	134.6	199.2	98.00	371.6	3,540.2	1,101.4	767.6	333.74	3.300	
13,600.0	9,263.4	9,281.2	9,280.4	137.5	199.3	98.74	371.6	3,540.2	1,198.0	861.2	336.80	3.557	
13,700.0	9,267.3	9,285.0	9,284.3	140.5	199.4	99.48	371.6	3,540.2	1,295.1	955.2	339.87	3.811	
13,800.0	9,271.2	9,288.9	9,288.2	143.5	199.5	100.21	371.6	3,540.2	1,392.6	1,049.7	342.94	4.061	
13,900.0	9,275.0	9,292.8	9,292.0	146.4	199.6	100.95	371.6	3,540.2	1,490.5	1,144.5	346.01	4.308	
14,000.0	9,278.9	9,296.6	9,295.9	149.4	199.7	101.67	371.6	3,540.2	1,588.6	1,239.5	349.07	4.551	
14,100.0	9,282.8	9,300.5	9,299.8	152.3	199.8	102.40	371.6	3,540.2	1,686.9	1,334.7	352.14	4.790	
14,200.0	9,286.7	9,304.4	9,303.7	155.3	199.9	103.12	371.6	3,540.2	1,785.4	1,430.2	355.21	5.026	
14,300.0	9,290.5	9,308.3	9,307.5	158.3	200.0	103.84	371.6	3,540.2	1,884.0	1,525.7	358.28	5.258	
14,400.0	9,294.4	9,312.1	9,311.4	161.2	200.1	104.55	371.6	3,540.2	1,982.8	1,621.4	361.36	5.487	
14,500.0	9,298.3	9,316.0	9,315.3	164.2	200.2	105.26	371.6	3,540.2	2,081.7	1,717.3	364.43	5.712	
14,550.2	9,300.2	9,318.0	9,317.2	165.7	200.3	105.61	371.6	3,540.2	2,131.3	1,765.4	365.97	5.824	

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - SPRUCE GOOSE FEDERAL #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 235-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	10.0	10.0	0.0	3.0	82.77	668.4	5,270.7	5,312.9				
100.0	100.0	110.0	110.0	0.1	3.1	82.77	668.4	5,270.7	5,312.9	5,309.7	3.20	1,662.496	
200.0	200.0	210.0	210.0	0.2	3.5	82.77	668.4	5,270.7	5,312.9	5,309.2	3.68	1,443.833	
300.0	300.0	310.0	310.0	0.4	4.4	82.77	668.4	5,270.7	5,312.9	5,308.1	4.82	1,101.816	
400.0	400.0	410.0	410.0	0.5	5.9	82.77	668.4	5,270.7	5,312.9	5,306.5	6.43	825.670	
500.0	500.0	510.0	510.0	0.7	7.5	82.77	668.4	5,270.7	5,312.9	5,304.7	8.20	647.937	
600.0	600.0	610.0	610.0	0.8	9.2	82.77	668.4	5,270.7	5,312.9	5,302.9	10.04	529.294	
700.0	700.0	710.0	710.0	1.0	10.9	82.77	668.4	5,270.7	5,312.9	5,301.0	11.93	445.208	
800.0	800.0	810.0	810.0	1.2	12.8	82.77	668.4	5,270.7	5,312.9	5,299.0	13.91	381.866	
900.0	900.0	910.0	910.0	1.3	14.6	82.77	668.4	5,270.7	5,312.9	5,297.0	15.91	333.973	
1,000.0	1,000.0	1,010.0	1,010.0	1.5	16.5	82.77	668.4	5,270.7	5,312.9	5,295.0	17.96	295.890	
1,100.0	1,100.0	1,110.0	1,110.0	1.6	18.4	80.33	668.4	5,270.7	5,312.6	5,292.6	20.03	265.229	
1,200.0	1,199.8	1,209.8	1,209.8	1.8	20.3	80.40	668.4	5,270.7	5,311.7	5,289.6	22.11	240.236	
1,235.6	1,235.3	1,245.3	1,245.3	1.8	21.0	80.44	668.4	5,270.7	5,311.3	5,288.4	22.85	232.438	
1,300.0	1,299.5	1,309.5	1,309.5	1.9	22.2	80.49	668.4	5,270.7	5,310.4	5,286.2	24.19	219.503	
1,400.0	1,399.2	1,409.2	1,409.2	2.1	24.2	80.58	668.4	5,270.7	5,309.1	5,282.8	26.28	202.002	
1,500.0	1,498.8	1,508.9	1,508.8	2.2	26.1	80.67	668.4	5,270.7	5,307.7	5,279.3	28.37	187.062	
1,600.0	1,598.5	1,608.5	1,608.5	2.4	28.1	80.76	668.4	5,270.7	5,306.4	5,275.9	30.48	174.075	
1,700.0	1,698.2	1,708.2	1,708.2	2.6	30.1	80.84	668.4	5,270.7	5,305.1	5,272.4	32.64	162.517	
1,800.0	1,797.8	1,807.9	1,807.8	2.7	32.1	80.93	668.4	5,270.7	5,303.8	5,269.0	34.80	152.388	
1,900.0	1,897.5	1,907.5	1,907.5	2.9	34.1	81.02	668.4	5,270.7	5,302.5	5,265.5	36.99	143.337	
2,000.0	1,997.2	2,007.2	2,007.2	3.0	36.2	81.11	668.4	5,270.7	5,301.2	5,262.0	39.23	135.140	
2,100.0	2,096.8	2,106.9	2,106.8	3.2	38.3	81.19	668.4	5,270.7	5,299.9	5,258.5	41.46	127.824	
2,200.0	2,196.5	2,206.5	2,206.5	3.3	40.5	81.28	668.4	5,270.7	5,298.7	5,254.8	43.88	120.757	
2,300.0	2,296.1	2,306.2	2,306.1	3.5	43.0	81.37	668.4	5,270.7	5,297.4	5,250.9	46.48	113.978	
2,400.0	2,395.8	2,405.8	2,405.8	3.7	45.4	81.46	668.4	5,270.7	5,296.2	5,247.1	49.08	107.916	
2,500.0	2,495.5	2,505.5	2,505.5	3.8	48.1	81.54	668.4	5,270.7	5,295.0	5,243.0	51.94	101.951	
2,600.0	2,595.1	2,605.2	2,605.1	4.0	51.0	81.63	668.4	5,270.7	5,293.8	5,238.8	54.98	96.290	
2,700.0	2,694.8	2,704.9	2,704.8	4.1	53.6	81.72	668.4	5,270.7	5,292.6	5,234.8	57.77	91.614	
2,800.0	2,794.4	2,804.6	2,804.4	4.3	55.9	81.81	668.4	5,270.7	5,291.4	5,231.2	60.21	87.884	
2,900.0	2,894.1	2,904.2	2,904.1	4.4	58.1	81.89	668.4	5,270.7	5,290.2	5,227.7	62.57	84.555	
3,000.0	2,993.8	3,003.9	3,003.8	4.6	60.2	81.98	668.4	5,270.7	5,289.1	5,224.3	64.79	81.629	
3,100.0	3,093.4	3,103.6	3,103.4	4.7	62.1	82.07	668.4	5,270.7	5,287.9	5,221.0	66.90	79.040	
3,200.0	3,193.1	3,203.3	3,203.1	4.9	64.1	82.16	668.4	5,270.7	5,286.8	5,217.8	69.01	76.608	
3,300.0	3,292.8	3,302.9	3,302.8	5.1	66.1	82.25	668.4	5,270.7	5,285.7	5,214.6	71.12	74.321	
3,400.0	3,392.4	3,402.6	3,402.4	5.2	68.0	82.33	668.4	5,270.7	5,284.6	5,211.4	73.18	72.215	
3,500.0	3,492.1	3,502.3	3,502.1	5.4	69.9	82.42	668.4	5,270.7	5,283.5	5,208.2	75.26	70.204	
3,600.0	3,591.7	3,601.9	3,601.7	5.5	71.8	82.51	668.4	5,270.7	5,282.4	5,205.1	77.29	68.345	
3,700.0	3,691.4	3,701.6	3,701.4	5.7	73.6	82.60	668.4	5,270.7	5,281.3	5,202.0	79.32	66.581	
3,800.0	3,791.1	3,801.2	3,801.1	5.8	75.5	82.69	668.4	5,270.7	5,280.3	5,198.9	81.35	64.905	
3,900.0	3,890.7	3,900.9	3,900.7	6.0	77.4	82.77	668.4	5,270.7	5,279.2	5,195.8	83.41	63.293	
4,000.0	3,990.4	4,000.6	4,000.4	6.2	79.4	82.86	668.4	5,270.7	5,278.2	5,192.6	85.60	61.659	
4,100.0	4,090.1	4,100.2	4,100.1	6.3	81.5	82.95	668.4	5,270.7	5,277.2	5,189.4	87.80	60.107	
4,200.0	4,189.7	4,199.9	4,199.7	6.5	83.5	83.04	668.4	5,270.7	5,276.2	5,186.2	89.99	58.631	
4,300.0	4,289.4	4,299.6	4,299.4	6.6	85.6	83.13	668.4	5,270.7	5,275.2	5,183.0	92.18	57.225	
4,400.0	4,389.0	4,399.2	4,399.0	6.8	87.7	83.21	668.4	5,270.7	5,274.2	5,179.7	94.49	55.819	
4,500.0	4,488.7	4,498.9	4,498.7	6.9	90.1	83.30	668.4	5,270.7	5,273.2	5,176.2	97.01	54.360	
4,600.0	4,588.4	4,598.6	4,598.4	7.1	92.4	83.39	668.4	5,270.7	5,272.3	5,172.8	99.52	52.976	
4,700.0	4,688.0	4,698.2	4,698.0	7.3	94.8	83.48	668.4	5,270.7	5,271.3	5,169.3	102.04	51.659	
4,800.0	4,787.7	4,797.9	4,797.7	7.4	97.1	83.57	668.4	5,270.7	5,270.4	5,165.9	104.56	50.407	
4,900.0	4,887.4	4,897.6	4,897.4	7.6	99.7	83.66	668.4	5,270.7	5,269.5	5,162.3	107.23	49.143	
5,000.0	4,987.0	4,997.2	4,997.0	7.7	102.3	83.74	668.4	5,270.7	5,268.6	5,158.6	110.01	47.893	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - SPRUCE GOOSE FEDERAL #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 235-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	5,086.7	5,093.0	5,092.7	7.9	104.8	83.83	668.4	5,270.7	5,267.7	5,155.0	112.68	46.748	
5,200.0	5,186.3	5,196.6	5,196.3	8.0	106.9	83.92	668.4	5,270.7	5,266.8	5,151.9	114.96	45.816	
5,300.0	5,286.0	5,296.3	5,296.0	8.2	108.9	84.01	668.4	5,270.7	5,266.0	5,148.8	117.15	44.952	
5,400.0	5,385.7	5,396.0	5,395.7	8.3	110.9	84.10	668.4	5,270.7	5,265.1	5,145.8	119.27	44.144	
5,500.0	5,485.3	5,495.6	5,495.3	8.5	112.9	84.19	668.4	5,270.7	5,264.3	5,142.9	121.38	43.370	
5,600.0	5,585.0	5,595.3	5,595.0	8.7	115.0	84.28	668.4	5,270.7	5,263.4	5,139.8	123.64	42.571	
5,700.0	5,684.7	5,694.9	5,694.7	8.8	117.5	84.36	668.4	5,270.7	5,262.6	5,136.3	126.35	41.653	
5,800.0	5,784.3	5,794.6	5,794.3	9.0	120.1	84.45	668.4	5,270.7	5,261.8	5,132.8	129.05	40.773	
5,900.0	5,884.0	5,894.3	5,894.0	9.1	122.6	84.54	668.4	5,270.7	5,261.0	5,129.3	131.76	39.929	
6,000.0	5,983.6	5,993.9	5,993.6	9.3	125.2	84.63	668.4	5,270.7	5,260.2	5,125.8	134.47	39.119	
6,100.0	6,083.3	6,093.7	6,093.3	9.4	127.8	84.72	668.4	5,270.7	5,259.5	5,122.4	137.05	38.376	
6,200.0	6,183.0	6,193.3	6,193.0	9.6	129.6	84.81	668.4	5,270.7	5,258.7	5,119.5	139.24	37.767	
6,300.0	6,282.6	6,293.0	6,292.6	9.8	131.7	84.90	668.4	5,270.7	5,258.0	5,116.6	141.43	37.177	
6,400.0	6,382.3	6,392.6	6,392.3	9.9	133.7	84.99	668.4	5,270.7	5,257.3	5,113.6	143.62	36.605	
6,500.0	6,481.9	6,492.3	6,491.9	10.1	135.7	85.08	668.4	5,270.7	5,256.5	5,110.7	145.81	36.050	
6,600.0	6,581.6	6,592.0	6,591.6	10.2	137.8	85.16	668.4	5,270.7	5,255.8	5,107.8	148.00	35.512	
6,700.0	6,681.3	6,691.7	6,691.3	10.4	139.8	85.25	668.4	5,270.7	5,255.2	5,105.0	150.19	34.989	
6,800.0	6,780.9	6,791.4	6,790.9	10.5	141.8	85.34	668.4	5,270.7	5,254.5	5,102.1	152.38	34.482	
6,900.0	6,880.6	6,891.0	6,890.6	10.7	143.9	85.43	668.4	5,270.7	5,253.8	5,099.2	154.58	33.989	
7,000.0	6,980.3	6,990.7	6,990.3	10.9	146.0	85.52	668.4	5,270.7	5,253.2	5,096.3	156.90	33.482	
7,100.0	7,079.9	7,090.3	7,089.9	11.0	148.5	85.61	668.4	5,270.7	5,252.5	5,093.0	159.52	32.926	
7,200.0	7,179.6	7,190.0	7,189.6	11.2	151.0	85.70	668.4	5,270.7	5,251.9	5,089.8	162.15	32.389	
7,300.0	7,279.2	7,289.7	7,289.2	11.3	153.4	85.79	668.4	5,270.7	5,251.3	5,086.5	164.78	31.869	
7,400.0	7,378.9	7,389.4	7,388.9	11.5	155.9	85.88	668.4	5,270.7	5,250.7	5,083.3	167.41	31.364	
7,500.0	7,478.6	7,489.1	7,488.6	11.7	158.4	85.97	668.4	5,270.7	5,250.1	5,080.1	170.05	30.875	
7,600.0	7,578.2	7,588.7	7,588.2	11.8	160.9	86.05	668.4	5,270.7	5,249.5	5,076.9	172.68	30.401	
7,700.0	7,677.9	7,688.4	7,687.9	12.0	163.3	86.14	668.4	5,270.7	5,249.0	5,073.7	175.31	29.941	
7,800.0	7,777.6	7,788.1	7,787.6	12.1	165.9	86.23	668.4	5,270.7	5,248.4	5,070.4	178.06	29.476	
7,900.0	7,877.2	7,887.7	7,887.2	12.3	168.6	86.32	668.4	5,270.7	5,247.9	5,067.0	180.88	29.013	
8,000.0	7,976.9	7,987.4	7,986.9	12.4	171.3	86.41	668.4	5,270.7	5,247.4	5,063.7	183.70	28.565	
8,100.0	8,076.5	8,087.1	8,086.5	12.6	173.9	86.50	668.4	5,270.7	5,246.9	5,060.3	186.52	28.130	
8,200.0	8,176.2	8,186.7	8,186.2	12.8	176.6	86.59	668.4	5,270.7	5,246.4	5,057.0	189.34	27.708	
8,300.0	8,275.9	8,286.5	8,285.9	12.9	179.1	86.68	668.4	5,270.7	5,245.9	5,053.9	192.03	27.318	
8,400.0	8,375.5	8,386.1	8,385.5	13.1	181.6	86.77	668.4	5,270.7	5,245.4	5,050.7	194.67	26.945	
8,500.0	8,475.2	8,485.8	8,485.2	13.1	184.1	86.86	668.4	5,270.7	5,245.0	5,047.7	197.22	26.595	
8,600.0	8,574.9	8,585.5	8,584.9	13.1	186.5	86.95	668.4	5,270.7	5,244.5	5,044.8	199.69	26.263	
8,651.5	8,626.2	8,636.8	8,636.2	13.1	187.8	86.99	668.4	5,270.7	5,244.3	5,043.3	200.94	26.099	
8,675.0	8,649.6	8,660.2	8,659.6	13.1	188.3	56.80	668.4	5,270.7	5,243.6	5,042.1	201.50	26.022	
8,700.0	8,674.4	8,685.1	8,684.4	13.2	188.9	37.56	668.4	5,270.7	5,241.6	5,039.5	202.11	25.935	
8,725.0	8,699.1	8,709.8	8,709.1	13.2	189.5	27.17	668.4	5,270.7	5,238.3	5,035.6	202.71	25.842	
8,750.0	8,723.6	8,734.3	8,733.6	13.2	190.1	21.06	668.4	5,270.7	5,233.7	5,030.4	203.30	25.743	
8,775.0	8,747.8	8,758.5	8,757.8	13.2	190.7	17.13	668.4	5,270.7	5,227.9	5,024.0	203.90	25.640	
8,800.0	8,771.7	8,782.4	8,781.7	13.2	191.3	14.42	668.4	5,270.7	5,220.8	5,016.3	204.48	25.532	
8,825.0	8,795.2	8,805.9	8,805.2	13.2	191.8	12.46	668.4	5,270.7	5,212.4	5,007.3	205.06	25.419	
8,850.0	8,818.2	8,828.9	8,828.2	13.2	192.4	10.97	668.4	5,270.7	5,202.8	4,997.2	205.63	25.302	
8,875.0	8,840.7	8,851.3	8,850.7	13.2	192.9	9.82	668.4	5,270.7	5,192.0	4,985.8	206.19	25.181	
8,900.0	8,862.6	8,873.2	8,872.6	13.3	193.5	8.90	668.4	5,270.7	5,180.1	4,973.3	206.75	25.055	
8,925.0	8,883.8	8,894.5	8,893.8	13.3	194.0	8.16	668.4	5,270.7	5,167.0	4,959.7	207.27	24.929	
8,950.0	8,904.3	8,915.0	8,914.3	13.4	194.4	7.54	668.4	5,270.7	5,152.8	4,945.1	207.71	24.807	
8,975.0	8,924.1	8,934.8	8,934.1	13.4	194.7	7.03	668.4	5,270.7	5,137.6	4,929.4	208.15	24.681	
9,000.0	8,943.0	8,953.7	8,953.0	13.5	195.1	6.59	668.4	5,270.7	5,121.3	4,912.7	208.59	24.552	
9,025.0	8,961.1	8,971.8	8,971.1	13.6	195.5	6.22	668.4	5,270.7	5,104.1	4,895.1	209.03	24.418	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - SPRUCE GOOSE FEDERAL #1 - OWB - ACTUAL WELLPATH — Offset Site Error: 0.0 usft

Survey Program: 235-INC-ONLY — Offset Well Error: 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
9,050.0	8,978.3	8,988.9	8,988.3	13.7	195.8	5.90	668.4	5,270.7	5,086.0	4,876.5	209.47	24.280	
9,075.0	8,994.4	9,005.1	9,004.4	13.8	196.1	5.62	668.4	5,270.7	5,066.9	4,857.0	209.91	24.138	
9,100.0	9,009.6	9,020.3	9,019.6	14.0	196.4	5.38	668.4	5,270.7	5,047.1	4,836.7	210.36	23.993	
9,125.0	9,023.7	9,034.4	9,033.7	14.1	196.7	5.16	668.4	5,270.7	5,026.5	4,815.7	210.81	23.843	
9,150.0	9,036.7	9,047.4	9,046.7	14.3	196.9	4.97	668.4	5,270.7	5,005.2	4,793.9	211.27	23.690	
9,175.0	9,048.6	9,059.2	9,058.6	14.6	197.2	4.79	668.4	5,270.7	4,983.2	4,771.4	211.74	23.534	
9,200.0	9,059.3	9,070.0	9,069.3	14.9	197.4	4.63	668.4	5,270.7	4,960.6	4,748.4	212.22	23.375	
9,225.0	9,068.8	9,079.5	9,078.8	15.2	197.5	4.47	668.4	5,270.7	4,937.5	4,724.8	212.70	23.213	
9,250.0	9,077.1	9,087.8	9,087.1	15.5	197.7	4.31	668.4	5,270.7	4,913.9	4,700.7	213.20	23.049	
9,275.0	9,084.2	9,094.9	9,094.2	15.8	197.8	4.13	668.4	5,270.7	4,890.0	4,676.3	213.70	22.883	
9,300.0	9,090.0	9,100.7	9,100.0	16.2	198.0	3.91	668.4	5,270.7	4,865.7	4,651.5	214.20	22.716	
9,325.0	9,094.5	9,105.2	9,104.5	16.7	198.0	3.59	668.4	5,270.7	4,841.1	4,626.4	214.71	22.548	
9,350.0	9,097.8	9,108.4	9,107.8	17.1	198.1	2.99	668.4	5,270.7	4,816.3	4,601.1	215.21	22.379	
9,375.0	9,099.7	9,110.4	9,109.7	17.6	198.1	1.23	668.4	5,270.7	4,791.4	4,575.7	215.71	22.212	
9,381.3	9,100.0	9,110.7	9,110.0	17.7	198.1	0.05	668.4	5,270.7	4,785.1	4,569.3	215.84	22.170	
9,400.0	9,100.7	9,111.4	9,110.7	18.0	198.2	0.05	668.4	5,270.7	4,766.4	4,550.2	216.21	22.045	
9,500.0	9,104.6	9,115.3	9,114.6	20.1	198.2	0.05	668.4	5,270.7	4,666.5	4,448.1	218.38	21.368	
9,600.0	9,108.5	9,119.1	9,118.5	22.4	198.3	0.05	668.4	5,270.7	4,566.5	4,345.8	220.75	20.686	
9,700.0	9,112.3	9,123.0	9,122.3	24.9	198.4	0.05	668.4	5,270.7	4,466.6	4,243.4	223.27	20.006	
9,800.0	9,116.2	9,126.9	9,126.2	27.4	198.5	0.05	668.4	5,270.7	4,366.7	4,140.8	225.89	19.331	
9,900.0	9,120.1	9,130.8	9,130.1	30.0	198.5	0.06	668.4	5,270.7	4,266.8	4,038.2	228.58	18.666	
10,000.0	9,124.0	9,134.6	9,134.0	32.7	198.6	0.06	668.4	5,270.7	4,166.8	3,935.5	231.34	18.012	
10,100.0	9,127.8	9,138.5	9,137.8	35.5	198.7	0.06	668.4	5,270.7	4,066.9	3,832.8	234.15	17.369	
10,200.0	9,131.7	9,142.4	9,141.7	38.2	198.8	0.06	668.4	5,270.7	3,967.0	3,730.0	236.99	16.739	
10,300.0	9,135.6	9,146.3	9,145.6	41.0	198.8	0.06	668.4	5,270.7	3,867.1	3,627.2	239.86	16.122	
10,400.0	9,139.5	9,150.1	9,149.5	43.8	198.9	0.06	668.4	5,270.7	3,767.1	3,524.4	242.75	15.518	
10,500.0	9,143.3	9,154.0	9,153.3	46.7	199.0	0.07	668.4	5,270.7	3,667.2	3,421.6	245.67	14.928	
10,600.0	9,147.2	9,157.9	9,157.2	49.5	199.1	0.07	668.4	5,270.7	3,567.3	3,318.7	248.59	14.350	
10,700.0	9,151.1	9,161.8	9,161.1	52.4	199.1	0.07	668.4	5,270.7	3,467.4	3,215.8	251.54	13.785	
10,800.0	9,155.0	9,165.6	9,165.0	55.3	199.2	0.07	668.4	5,270.7	3,367.4	3,113.0	254.49	13.232	
10,900.0	9,158.8	9,169.5	9,168.8	58.2	199.3	0.07	668.4	5,270.7	3,267.5	3,010.1	257.45	12.692	
11,000.0	9,162.7	9,173.4	9,172.7	61.1	199.4	0.08	668.4	5,270.7	3,167.6	2,907.2	260.43	12.163	
11,100.0	9,166.6	9,177.3	9,176.6	64.0	199.4	0.08	668.4	5,270.7	3,067.7	2,804.3	263.40	11.646	
11,200.0	9,170.5	9,181.1	9,180.5	66.9	199.5	0.08	668.4	5,270.7	2,967.7	2,701.4	266.39	11.141	
11,300.0	9,174.3	9,185.0	9,184.3	69.8	199.6	0.08	668.4	5,270.7	2,867.8	2,598.4	269.38	10.646	
11,400.0	9,178.2	9,188.9	9,188.2	72.7	199.7	0.09	668.4	5,270.7	2,767.9	2,495.5	272.37	10.162	
11,500.0	9,182.1	9,192.7	9,192.1	75.6	199.7	0.09	668.4	5,270.7	2,668.0	2,392.6	275.37	9.689	
11,600.0	9,185.9	9,196.6	9,195.9	78.6	199.8	0.09	668.4	5,270.7	2,568.0	2,289.7	278.38	9.225	
11,700.0	9,189.8	9,200.5	9,199.8	81.5	199.9	0.10	668.4	5,270.7	2,468.1	2,186.7	281.38	8.771	
11,800.0	9,193.7	9,204.4	9,203.7	84.4	200.0	0.10	668.4	5,270.7	2,368.2	2,083.8	284.39	8.327	
11,900.0	9,197.6	9,208.2	9,207.6	87.4	200.0	0.11	668.4	5,270.7	2,268.3	1,980.9	287.40	7.892	
12,000.0	9,201.4	9,212.1	9,211.4	90.3	200.1	0.11	668.4	5,270.7	2,168.3	1,877.9	290.42	7.466	
12,100.0	9,205.3	9,216.0	9,215.3	93.2	200.2	0.12	668.4	5,270.7	2,068.4	1,775.0	293.43	7.049	
12,200.0	9,209.2	9,219.9	9,219.2	96.2	200.3	0.12	668.4	5,270.7	1,968.5	1,672.0	296.45	6.640	
12,300.0	9,213.1	9,223.7	9,223.1	99.1	200.3	0.13	668.4	5,270.7	1,868.6	1,569.1	299.47	6.240	
12,400.0	9,216.9	9,227.6	9,226.9	102.1	200.4	0.14	668.4	5,270.7	1,768.6	1,466.2	302.49	5.847	
12,500.0	9,220.8	9,231.5	9,230.8	105.0	200.5	0.14	668.4	5,270.7	1,668.7	1,363.2	305.52	5.462	
12,600.0	9,224.7	9,235.4	9,234.7	108.0	200.6	0.15	668.4	5,270.7	1,568.8	1,260.3	308.54	5.085	
12,700.0	9,228.6	9,239.2	9,238.6	110.9	200.6	0.16	668.4	5,270.7	1,468.9	1,157.3	311.57	4.714	
12,800.0	9,232.4	9,243.1	9,242.4	113.9	200.7	0.18	668.4	5,270.7	1,368.9	1,054.4	314.60	4.351	
12,900.0	9,236.3	9,247.0	9,246.3	116.8	200.8	0.19	668.4	5,270.7	1,269.0	951.4	317.63	3.995	
13,000.0	9,240.2	9,250.9	9,250.2	119.8	200.9	0.21	668.4	5,270.7	1,169.1	848.4	320.66	3.646	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Reference Site:	DEEP BSS	**MD Reference:**	WELL @ 3646.0usft (Original Well Elev)
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design DEEP BSS - SPRUCE GOOSE FEDERAL #1 - OWB - ACTUAL WELLPATH — **Offset Site Error:** 0.0 usft

Survey Program: 235-INC-ONLY — **Offset Well Error:** 3.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
13,100.0	9,244.1	9,254.7	9,254.1	122.7	200.9	0.22	668.4	5,270.7	1,069.2	745.5	323.69	3.303	
13,200.0	9,247.9	9,258.6	9,257.9	125.7	201.0	0.25	668.4	5,270.7	969.2	642.5	326.72	2.967	
13,300.0	9,251.8	9,262.5	9,261.8	128.7	201.1	0.28	668.4	5,270.7	869.3	539.6	329.75	2.636	
13,400.0	9,255.7	9,266.3	9,265.7	131.6	201.2	0.31	668.4	5,270.7	769.4	436.6	332.78	2.312	
13,500.0	9,259.5	9,270.2	9,269.5	134.6	201.2	0.36	668.4	5,270.7	669.5	333.7	335.82	1.994	Advise and Monitor
13,600.0	9,263.4	9,274.1	9,273.4	137.5	201.3	0.42	668.4	5,270.7	569.5	230.7	338.85	1.681	Advise and Monitor
13,700.0	9,267.3	9,278.0	9,277.3	140.5	201.4	0.51	668.4	5,270.7	469.6	127.7	341.89	1.374	Shut in Produces
13,800.0	9,271.2	9,281.8	9,281.2	143.5	201.5	0.65	668.4	5,270.7	369.7	24.8	344.92	1.072	Shut in Produces
13,900.0	9,275.0	9,285.7	9,285.0	146.4	201.5	0.89	668.4	5,270.7	269.8	-78.2	347.96	0.775	Stop Drilling Now
14,000.0	9,278.9	9,289.6	9,288.9	149.4	201.6	1.41	668.4	5,270.7	169.8	-181.1	350.99	0.484	Stop Drilling Now
14,100.0	9,282.8	9,293.5	9,292.8	152.3	201.7	3.43	668.4	5,270.7	69.9	-284.1	354.03	0.198	Stop Drilling Now
14,170.0	9,285.5	9,296.2	9,295.5	154.4	201.7	90.00	668.4	5,270.7	0.2	-356.0	356.16	0.000	Stop Drilling Now, CC, ES, SF
14,200.0	9,286.7	9,297.3	9,296.7	155.3	201.8	172.05	668.4	5,270.7	30.0	-327.1	357.07	0.084	Stop Drilling Now
14,300.0	9,290.5	9,301.2	9,300.5	158.3	201.8	178.15	668.4	5,270.7	129.9	-230.2	360.11	0.361	Stop Drilling Now
14,400.0	9,294.4	9,305.1	9,304.4	161.2	201.9	178.96	668.4	5,270.7	229.9	-133.3	363.14	0.633	Stop Drilling Now
14,500.0	9,298.3	9,309.0	9,308.3	164.2	202.0	179.27	668.4	5,270.7	329.8	-36.4	366.18	0.901	Stop Drilling Now
14,550.2	9,300.2	9,310.9	9,310.2	165.7	202.0	179.37	668.4	5,270.7	379.9	12.2	367.71	1.033	Shut in Produces

COG Operating LLC

Anticollision Report

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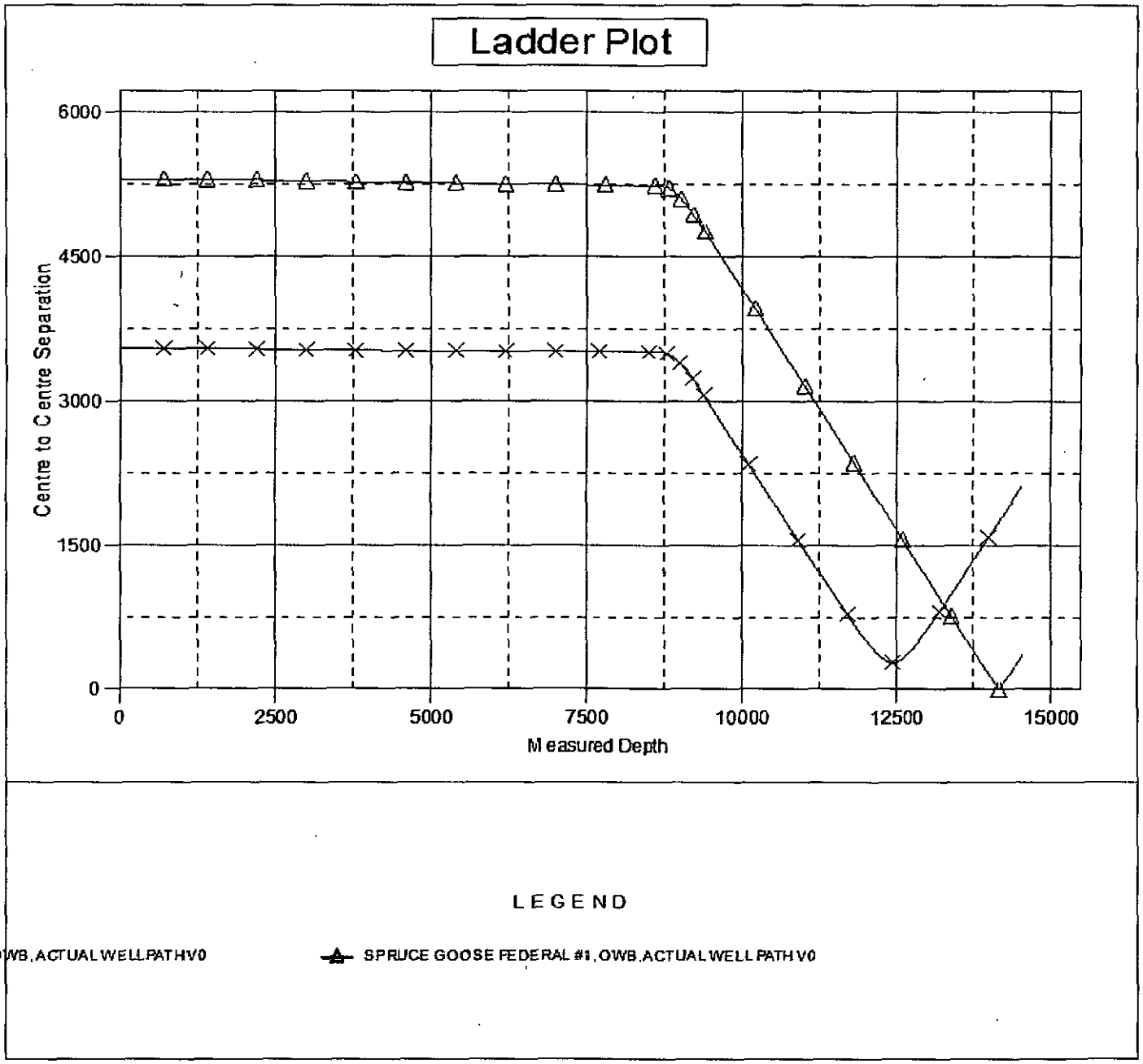
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 3646.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SPRUCE GOOSE FEDERAL COM #2H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.28°



COG Operating LLC

Anticollision Report

Company:	COG OPERATING, LLC	**Local Co-ordinate Reference:**	Well SPRUCE GOOSE FEDERAL COM #2H
Project:	EDDY COUNTY, NM	**TVD Reference:**	WELL @ 3646.0usft (Original Well Elev)
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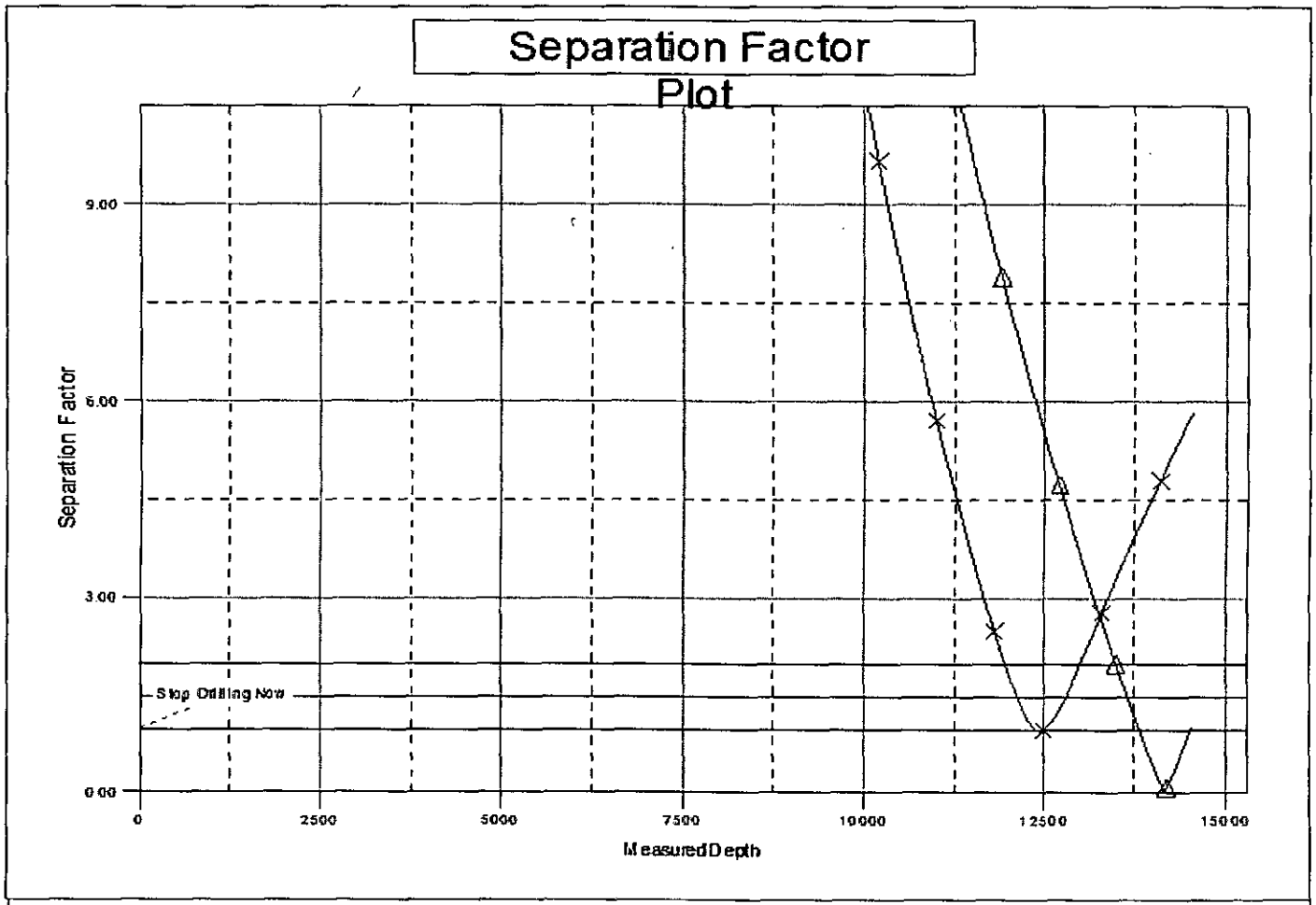
Reference Well:	SPRUCE GOOSE FEDERAL COM #2H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OWB	**Database:**	EDM_Users
Reference Design:	DWD Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 3646.0usft (Original Well Ele
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: SPRUCE GOOSE FEDERAL COM #2H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.28°



LEGEND

OWB, ACTUAL WELLPATH V0

SPRUCE GOOSE FEDERAL #1, OWB, ACTUAL WELLPATH V0

LLD ACREAGE REPORT

Admin State: NM

Geo State: NM

MTR: 23 0190S 0320E

Section: 007

Sur Type	Sur No	Lld Suff	NE NNSS EWWE	NW NNSS EWWE	SW NNSS EWWE	SE NNSS EWWE	Sur Note	Dup Flg	Sub Surf	Acreage
A			XXXX	X--X	X--X	XXXX				480.000
L	1		----	-X--	----	----				40.890
L	2		----	--X-	----	----				40.860
L	3		----	----	-X--	----				40.840
L	4		----	----	--X-	----				40.810

Section 007 Total: 643.400

MTR Total Exluding Survey Notes C/D/R and Sub Surf = Y 643.400

Grand Total Excluding Survey Notes C/D/R and Sub Surf = Y: 643.400

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 7 **Township:** 19S **Range:** 32E

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 12 **Township:** 19S **Range:** 31E

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Twp	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00073			LE		2	4	34	19S	32E	617502	3609301	575		
CP 00075			LE		2	4	34	19S	32E	617502	3609301	575		
CP 00563			LE	1	1	2	19	19S	32E	612118	3613376*	300		
CP 00639			LE		3	1	20	19S	32E	613029	3612880*	350	345	5
CP 00640			LE		2	2	19	19S	32E	612621	3613280*	260	102	158
CP 00812			LE		4	4	01	19S	32E	620623	3616973*	200		

Average Depth to Water: **223 feet**

Minimum Depth: **102 feet**

Maximum Depth: **345 feet**

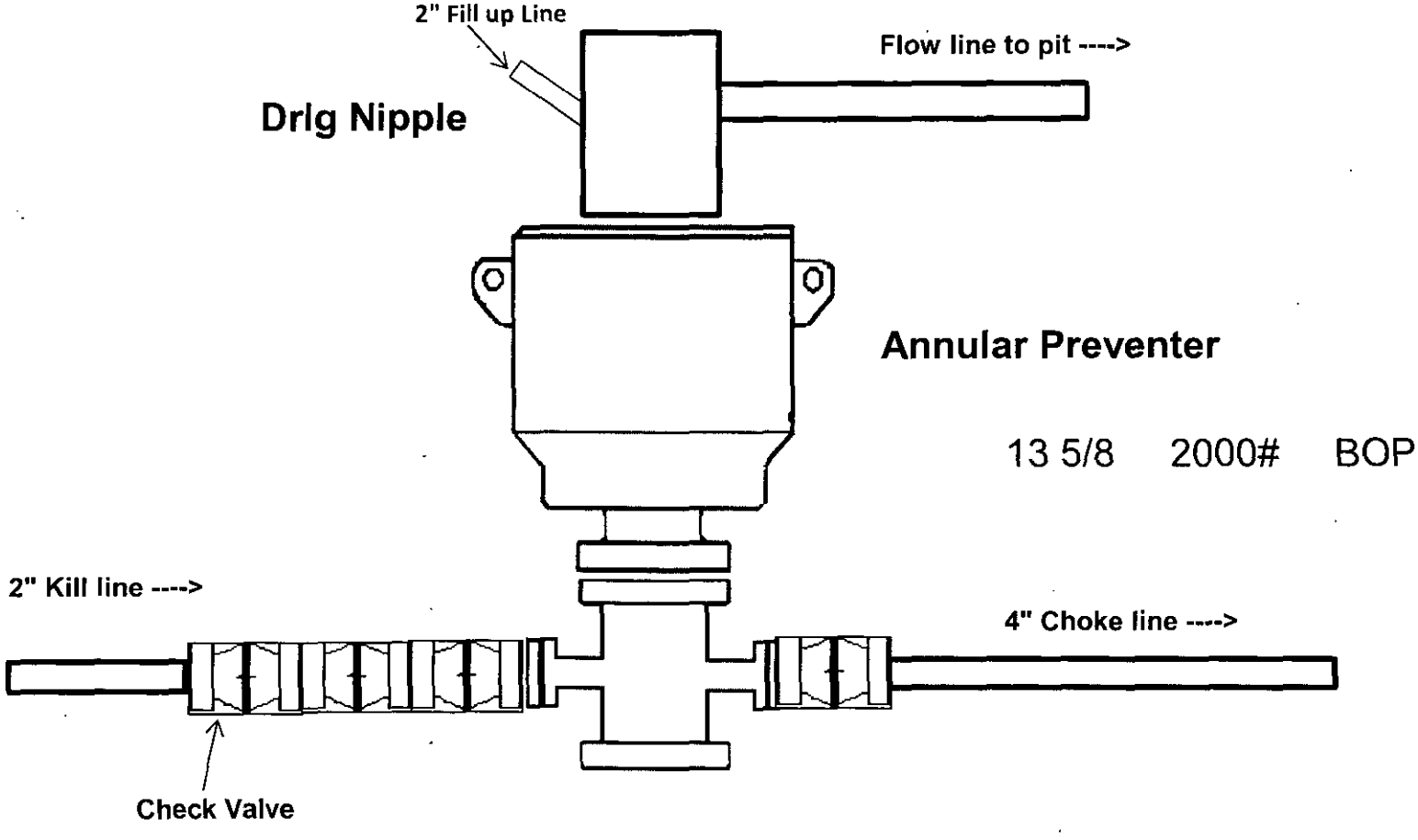
Record Count: 6

PLSS Search:

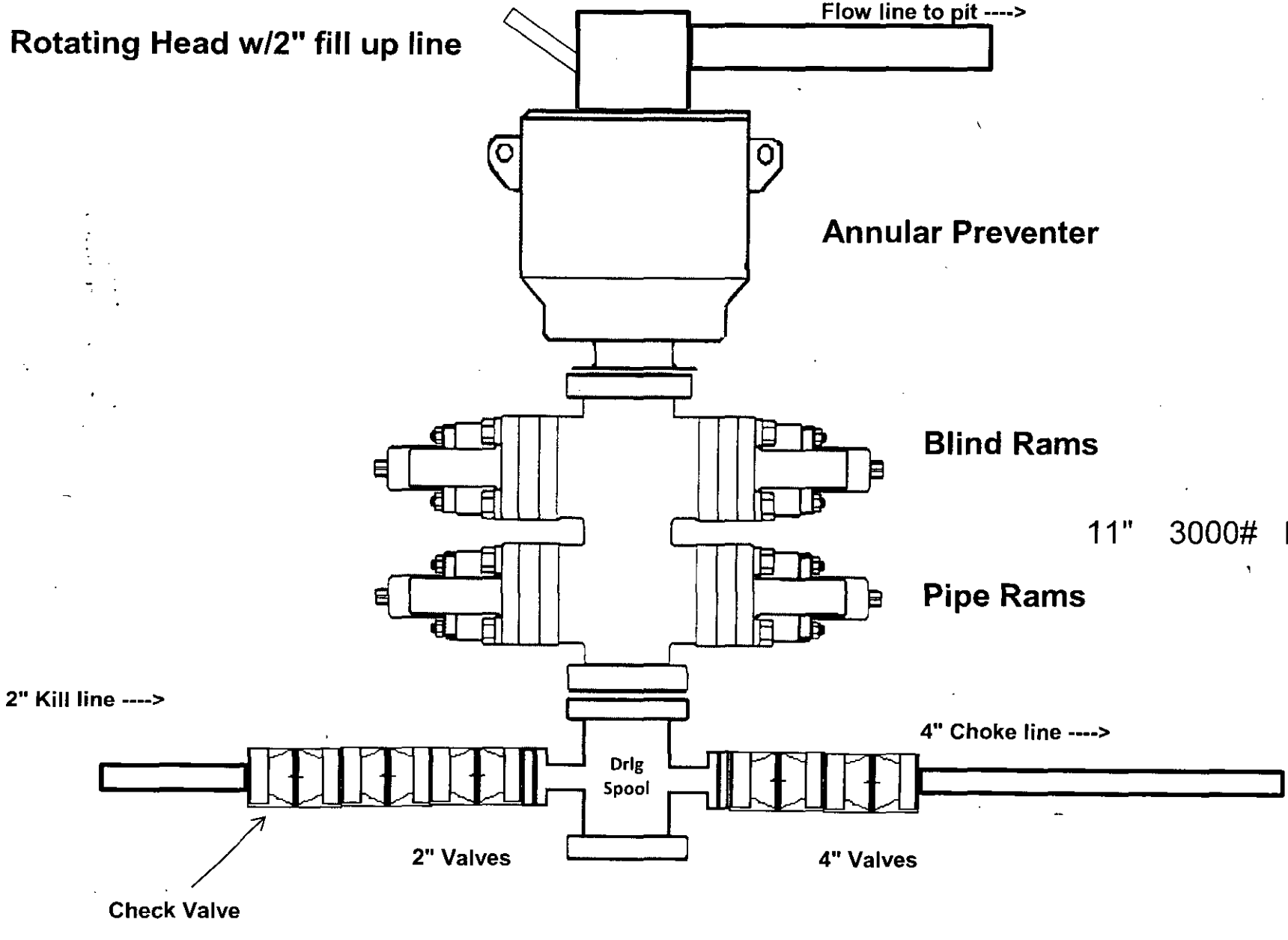
Township: 19S **Range:** 32E

***UTM location was derived from PLSS - see Help**

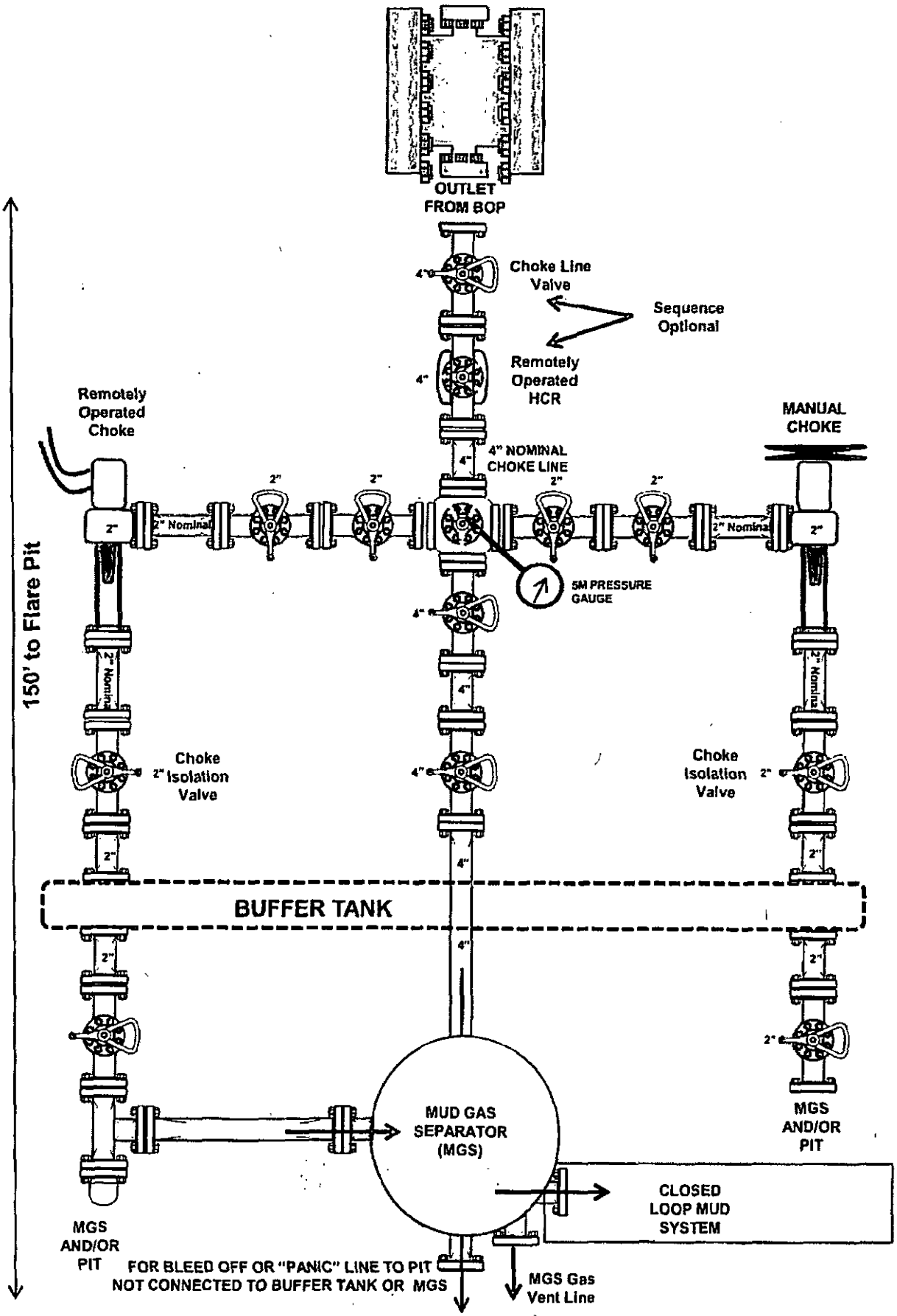
2,000 psi BOP Schematic



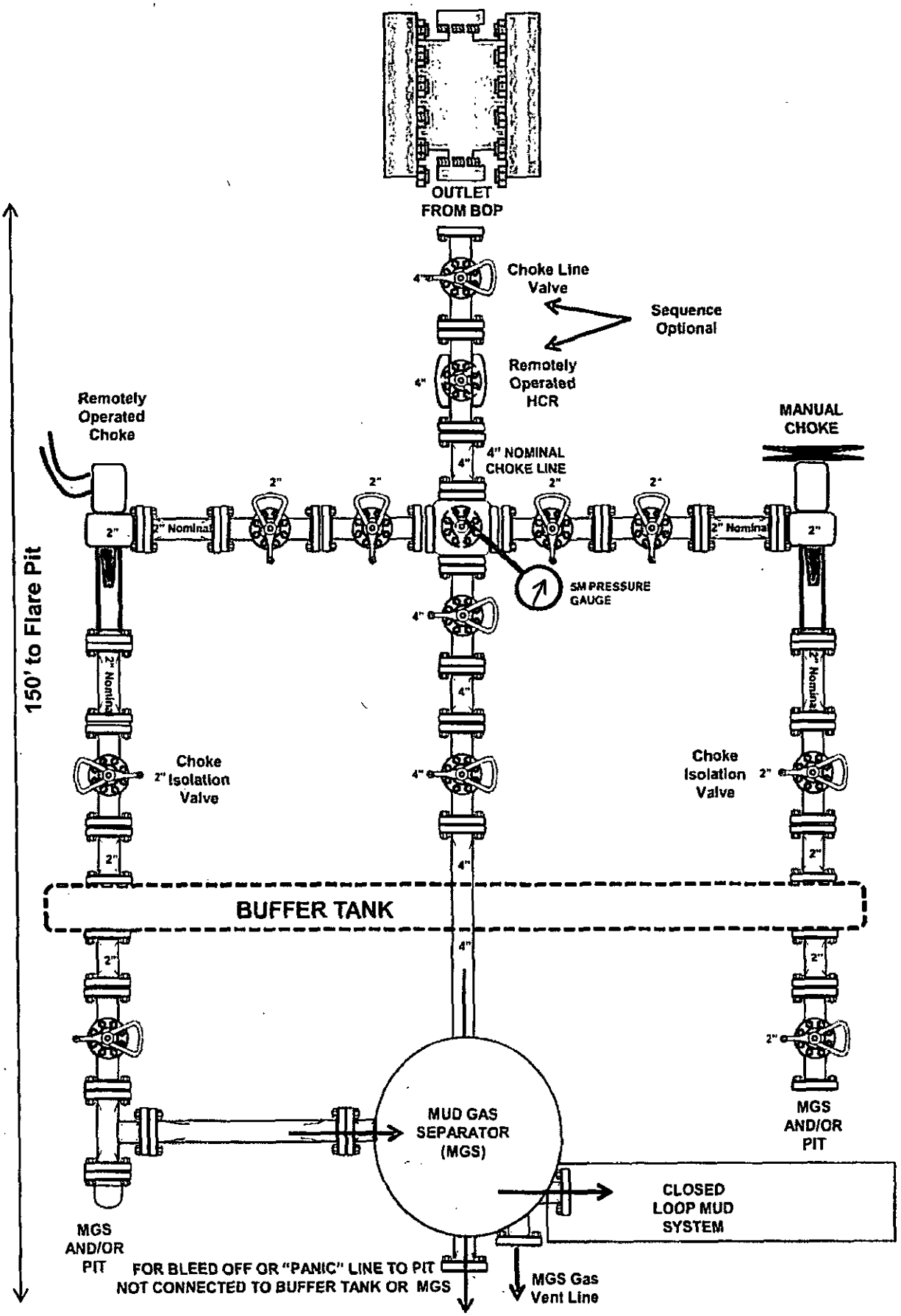
3,000 psi BOP Schematic



2M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



3M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 400' X 390' with cellar in center of pad

Flare Lines will be from both Choke Manifold & Separator to edge of location.

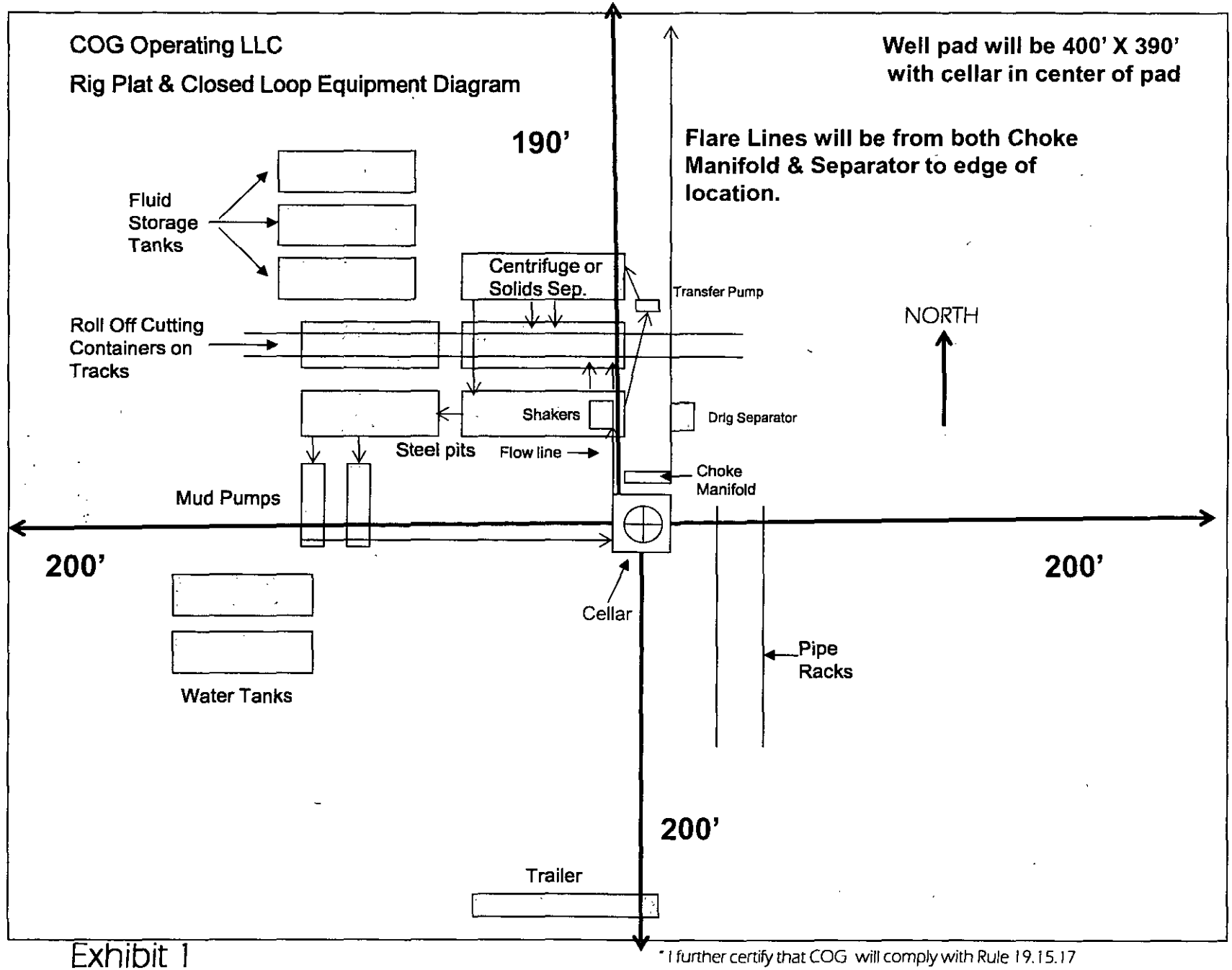
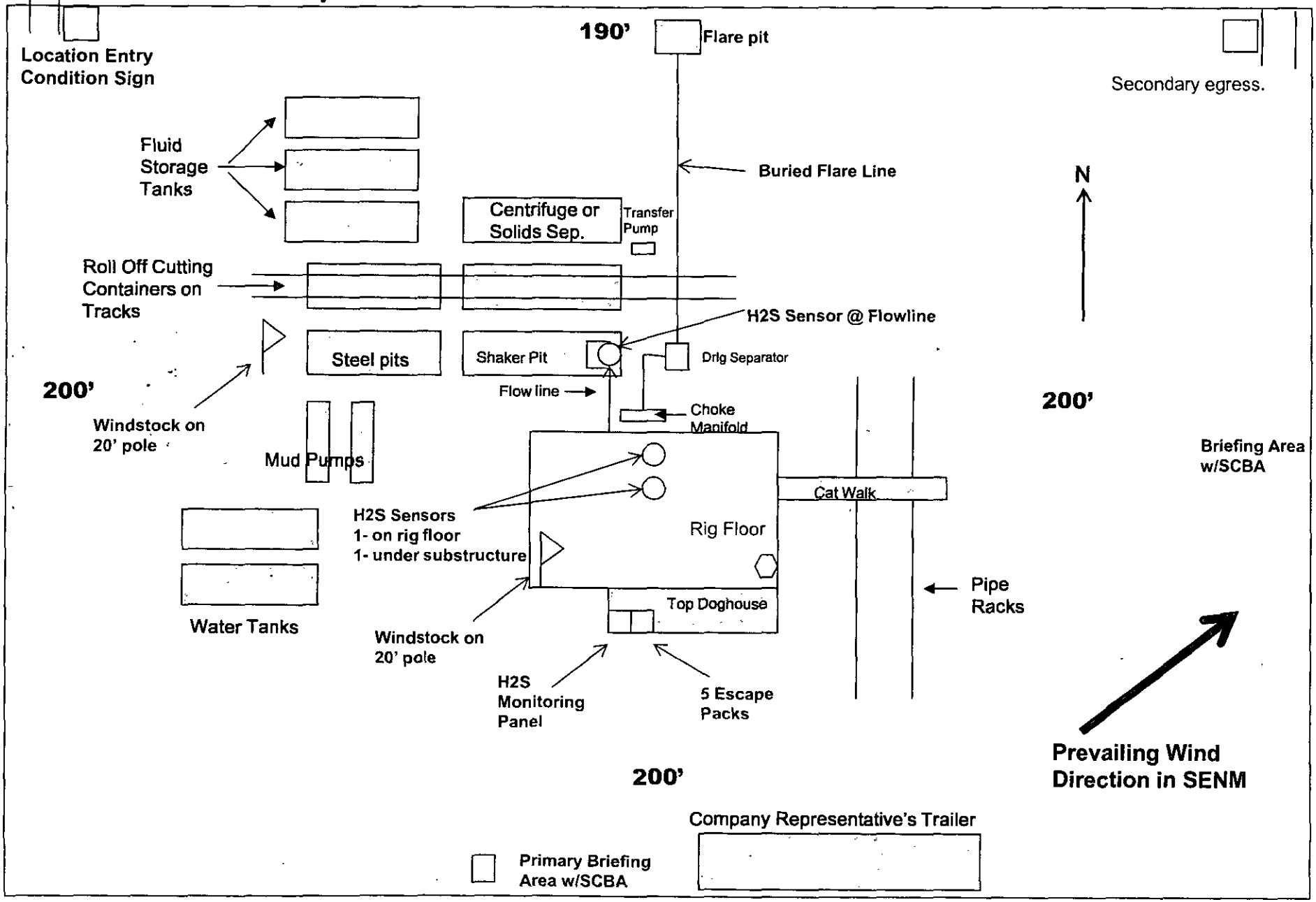


Exhibit 1

"I further certify that COG will comply with Rule 19.15.17 NMAC by using a Closed Loop System."

COG Operating LLC
H_2S Equipment Schematic
Terrain: Shinnery sand hills.

Well pad will be 400' x 390' with cellar in center of pad



COG OPERATING 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 H_2S 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 H_2S 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. If H2S greater than 100 ppm is encountered in the gas stream we will shut in and install H2S equipment.

a. Well Control Equipment:
   Flare line.
   Choke manifold with 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 OPERATING 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 OPERATING LLC FOREMAN AT MAIN OFFICE***

COG OPERATING 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
SETH WILD	432-683-7443	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

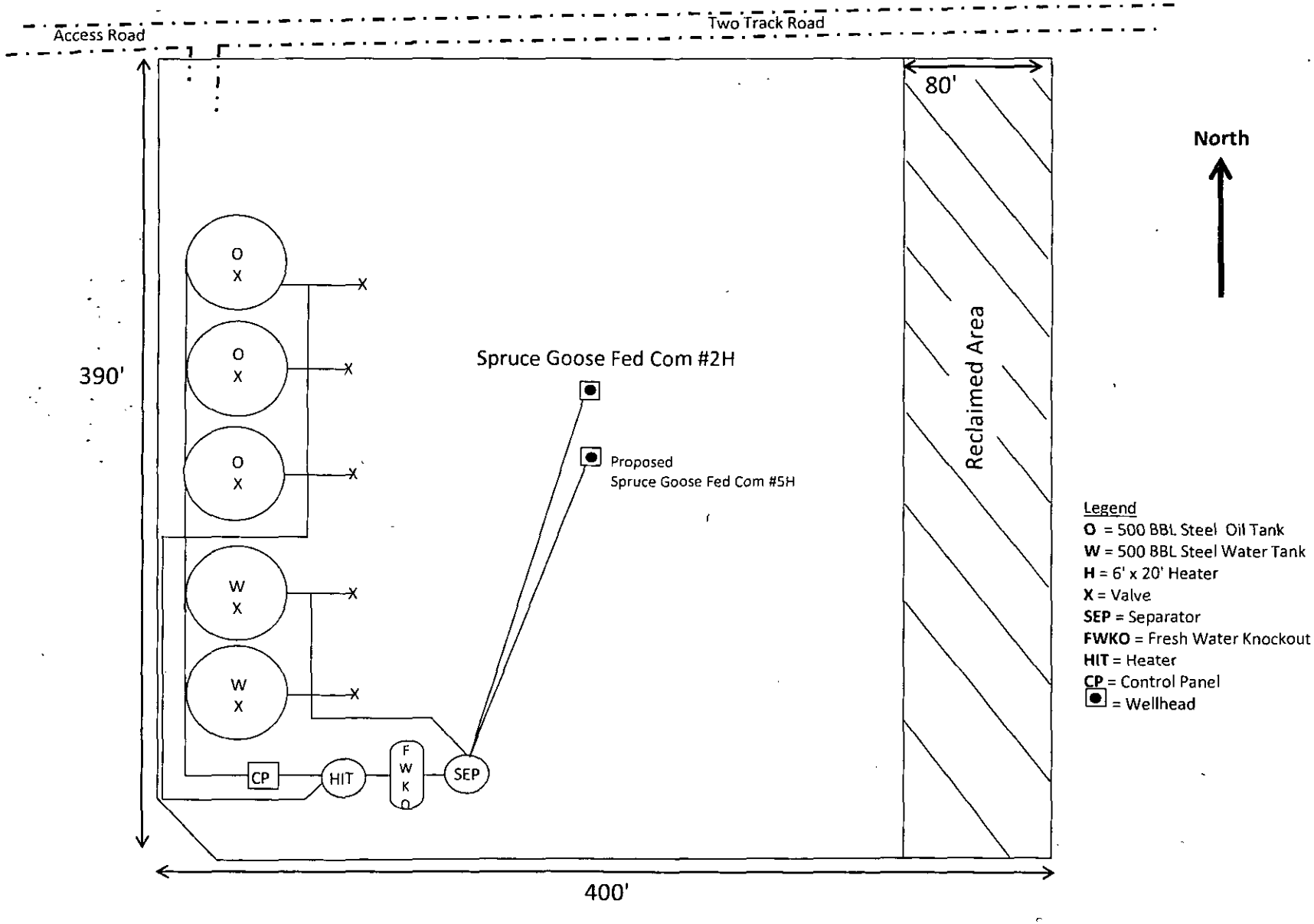
CONCHO

COG Operating LLC
2208 West Main
Artesia, NM 88210

Production Facility Layout

Spruce Goose Federal Com #2H
Section 12 - T19S - R31E

Exhibit 3



Surface Use & Operating Plan

Spruce Goose Federal Com #2H

- Surface Tenant: Richardson Cattle Co. P O Box 487, Carlsbad, NM 88221
- New Road: 2510'
- Flow Line: On well pad
- Facilities: Will be constructed on well pad – see Exhibit 3

- **Well Site Information**
  V Door: East
  Topsoil: East
  Interim Reclamation: East

Onsite: On-site was done by Don Peterson (BLM) and Erick Conklin (COG) on March 19th, 2015.

Notes: As per Nicholas Frankee on April 19th 2016, BLM wildlife biologist discovered a stick nest across the road from the SE corner of the original location. Since this was the only issue, it was agreed upon by both parties to move the SHL to 985' FNL and 390' FEL of Section 12. T19S. R32E.

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is attached with this application. It was staked by Harcrow Surveying, Artesia, NM.

B. All roads to the location are shown on the Location Verification Map Exhibit 2. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary. The road route to the well site is depicted in Exhibit #2. The road shown in Exhibit #2 will be used to access the well.

C. Directions to location: See 600 x 600 plat

D. Based on current road maintenance performed on other roads serving existing wells, we anticipate maintaining the lease roads leading to the proposed well pad at least once a year on dry conditions and twice a year in wetter conditions.

2. Proposed Access Road:

The Location Verification Map shows that 2510' of new access road was required for this location. If any road is required it will be constructed as follows:

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.

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

B. No turnouts are planned.

C. No cattleguard, culvert, gates, low water crossings or fence cuts are necessary.

D. Surfacing material 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 in Section 28, T18S, R31E. Candidate source will be caliche pit from Richardson Land and Cattle # (575) 885-6175.

3. Location of Existing Well:

The One-Mile Radius Map Exhibit 4 shows existing wells within a one-mile radius of the proposed wellbore.

4. Location of Existing and/or Proposed Facilities:

A. COG Operating LLC does not operate an oil production facility on this lease.

B. If the well is productive, contemplated facilities will be as follows:

1) A tank battery and facilities will be constructed as shown on Exhibit 3.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from the actual well site. If caliche does not exist or is not plentiful from the well site, caliche will be hauled from the nearest BLM approved caliche pit in Section 28, T18S, R31E. Candidate source will be caliche pit from Richardson Land and Cattle # (575) 885-6175.

4) Any additional construction materials were purchased from contractors.

5) It will be necessary to run electric power if this well is productive. Power will be provided by Xcel Energy and they will submit a separate plan and ROW for service to the well location.

6) If the well is productive, rehabilitation plans will include the following:

- The original topsoil from the well site will be returned to the location, and the site will be re-contoured as close as possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from the Lusk Frac Pond. Private source Mesquite Services 575-887-4847, Rio Tanks & Fast Line 575-887-6514 and Gregory Rock House 575-885-4195or if necessary commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #2. If a commercial fresh water source is nearby, fast line may be laid along existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials and Location "Turn-Over" Procedure:

Obtaining caliche: One 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 site. Amount will vary for each pad. If not available onsite, caliche will be hauled from the nearest BLM approved caliche pit in Section 28, T18S, R31E. Candidate source will be caliche pit from Richardson Land and Cattle # (575) 885-6175. The procedure below has been approved by BLM personnel:

A. Equipment that was needed to construct the proposed location was as follows: Two dozers to flip the site for caliche and to move topsoil, one blade to level the surface, one morograder to roll and compact this site, one backhoe to dig the cellar, one water truck to water location and dust abatement and two dump trucks to haul surface material. If caliche is not available onsite and have to haul caliche from a private pit, in addition to equipment mentioned above we will have 10 belly dumps and one front end loader.

B. The time line to complete construction was approximately 10 days.

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

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

E. Subsoil is removed and stockpiled within the surveyed well pad.

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

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

H. 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.

I. 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 the Well Site Layout or survey plat.

E. 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 in Section 28, T18S, R31E. Candidate source will be caliche pit from Richardson Land and Cattle # (575) 885-6175.

7. Methods of Handling Water Disposal:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

B. Drilling fluids will be contained in steel mud pits and taken to R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility. R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

D. It is anticipated that the disposal of produced water will be trucked to Ray Westall's water gathering system tie-in Section 31-18S-31E or to a third party commercial SWD.

E. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill-Lea Landfill LLC. Located at Mile Marker 64, Highway 62-180 East, P O Box 3247, Carlsbad, NM 88221. No toxic waste or hazardous chemicals will be produced by this operation.

F. Human waste and grey water will need to be properly contained and disposed of. Proper disposal and elimination of waste and grey water may include but are not limited to portable septic systems and/or portable waste gathering systems (i.e. portable toilets).

G. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Harcrow Surveying, is shown in the Elevation Plat. Dimensions of the pad and pits are shown on the Rig Layout. V door direction is East. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. The Rig Layout Closed-Loop exhibit shows the proposed orientation of closed loop system and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Interim Reclamation will take place within six months after the well has been completed. The pad will be downsized by reclaiming the areas not needed for production operations. The portions of the pad that are not needed for production operations will be re-contoured to its original state as much as possible. The caliche that is removed will be reused to either build another pad site or for road repairs within the lease. The stockpiled topsoil will then be spread out reclaimed area and reseeded with a BLM approved seed mixture. In the event that the well must be worked over or maintained, it may be necessary to drive, park, and/or operate machinery on reclaimed land. This area will be repaired or reclaimed after work is complete.

B. Final Reclamation: Upon plugging and abandoning the well all caliche for well pad and lease road will be removed and surface will be recountoured to reflect its surroundings as much as possible within six months. Caliche will be recycled for road repair or reused for another well pad within the lease. If any topsoil remains, it will be spread out and the area will be re-seeded with a BLM approved mixture and re-vegetated as per BLM orders. When required by BLM, the well pad site will be restored to match pre-construction grades.

11. Sedimentation and Erosion Control

Approximately 320' of straw waddles will be placed on the South side to reduce sediment impacts to fragile/sensitive soils.

12. Surface Ownership:

A. The surface is owned by 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 Richardson Cattle Co. P O Box 487, Carlsbad, NM 88221.

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

13. Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. If needed, a Cultural Resources Examination is being prepared by Boone Arch Services of NM, LLC., 2030 North Canal, Carlsbad, New Mexico, 88220, phone # 575-885-1352 and the results will be forwarded to your office in the near future. Otherwise, **COG will be participating in the Permian Basin MOA Program.**

14. Bond Coverage:

Bond Coverage is Statewide Bonds # NMB000740 and NMB000215

14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

Sheryl Baker
Drilling Superintendent
COG Operating LLC
2208 West Main Street
Artesia, NM 88210
Phone (575) 748-6940 (office)
(432) 934-1873 (cell)

Ray Peterson
Drilling Manager
COG Operating LLC
One Concho Center
600 W Illinois Ave
Midland, TX 79701
Phone (432) 685-4304 (office)
(432) 818-2254 (business)

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	NM104685
WELL NAME & NO.:	2H-Spruce Goose Federal Com
SURFACE HOLE FOOTAGE:	985'/N & 390'/E
BOTTOM HOLE FOOTAGE	330'/N & 50'/E
LOCATION:	Section 12, T. 19 S., R. 31 E., NMPM
COUNTY:	Eddy County, New Mexico

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.

- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.

- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

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. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

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

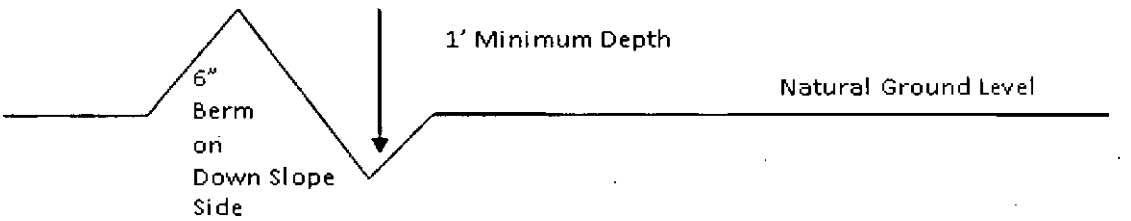
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattleguards

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

Fence Requirement

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

Public Access

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

Construction Steps

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

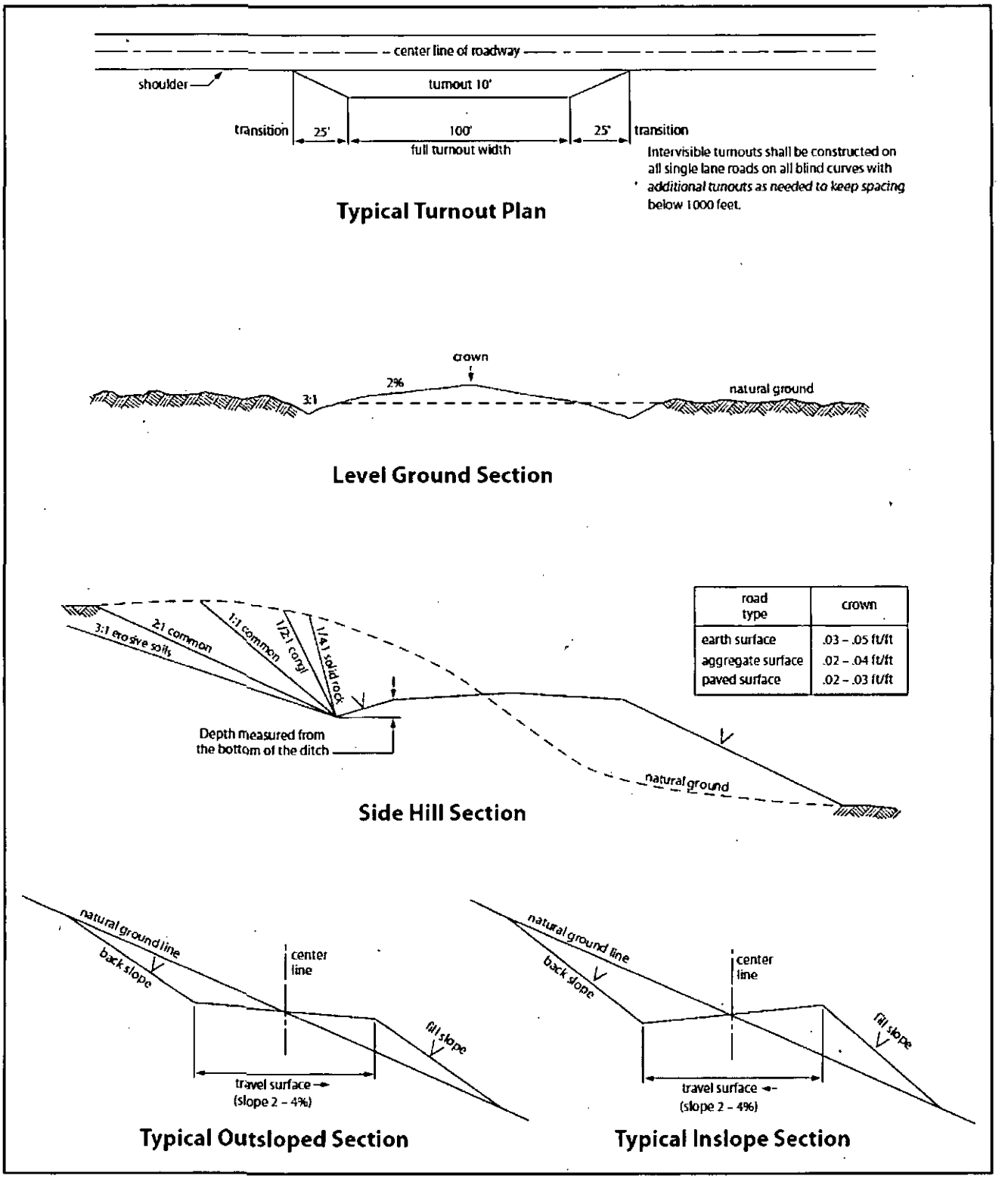


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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)

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

1. A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Yates** formation. **As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please 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.**

B. CASING

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

The initial wellhead installed on the well will remain on the well with spools used as needed.

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

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. 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. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

Risks:
Possibility of water flows in the San Andres, Salado and Artesia Group
Possibility of lost circulation in the Rustler, San Andres, Grayburg, Red Beds, and Artesia Group

1. The **13 3/8** inch surface casing shall be set at approximately **925** feet **(in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt)** and cemented to the surface.
    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job 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 is:
    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **5 1/2** inch production casing is:
    ☒ Cement should tie-back at least **500** feet into previous casing string. Operator shall provide method of verification.

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 53.

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

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8** inch 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 (8 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. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
    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.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

MHH 07212016

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.

No Open-top Tanks
Open-top Tanks are not authorized.

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures
Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

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

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).

The proposed road may be constructed 14 feet wide for the base material, and crowned, ditched and surfaced with mineral material. The disturbance width shall be less than 30 feet and the road shall be designed by a qualified engineer according to the 9113-Roads Manual (Release 9-390, dated October 21, 2011).

Habitat conversion shall be partly mitigated by restoring 0.6 acres of drill pad back to prairie after the drilling is complete and restoration of aging and unnecessary roads back to prairie. The Pecos District Conditions of Approval, including special requirements for drilling in Lesser Prairie-Chicken habitat and dune sagebrush lizard would apply to this project.

Lesser Prairie-Chicken

Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from permanent engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

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 for LPC Sand/Shinnery Sites

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

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). 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. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

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

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

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