

Carlsbad Field Office

OCD Artesia
OCT 16 2018

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
DISTRICT II-ARTESIA O.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other 1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		5. Lease Serial No. MN125007 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No. FAT GOBLIN FEDERAL COM 11H
2. Name of Operator COG OPERATING LLC		9. API Well No. 30-015-45340
3a. Address 600 West Illinois Ave Midland TX 79701	3b. Phone No. (include area code) (432)683-7443	10. Field and Pool, or Exploratory EMPIRE+GLORIETA-YESO, EAST 3172902A
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NENE / 300 FNL / 245 FEL / LAT 32.8554849 / LONG -104.0376478 At proposed prod. zone NENE / 330 FNL / 10 FEL / LAT 32.855409 / LONG -104.0027905		11. Sec., T, R, M, or Blk. and Survey or Area SEC 11 / T17S / R29E / NMP
14. Distance in miles and direction from nearest town or post office* 4.2 miles		12. County or Parish EDDY
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 10 feet	16. No. of acres in lease 160	17. Spacing Unit dedicated to this well 320
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 1 feet	19. Proposed Depth 4375 feet / 14000 feet	20. BLM/BIA Bond No. in file FED: NMB000215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3660 feet	22. Approximate date work will start* 01/18/2019	23. Estimated duration 25 days
24. Attachments		

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

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

25. Signature (Electronic Submission)	Name (Printed/Typed) Robyn Odom / Ph: (432)685-4385	Date 04/09/2018
Title Regulatory Analyst		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Christopher Walls / Ph: (575)234-2234	Date 10/05/2018
Title Petroleum Engineer		
Office CARLSBAD		

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

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

APPROVED WITH CONDITIONS

Approval Date: 10/05/2018

RWP 10-23-18.

INSTRUCTIONS

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

ITEM 1: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

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

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

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

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

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

NOTICES

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

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

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

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

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

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

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

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

Additional Operator Remarks

Location of Well

1. SHL: NENE / 300 FNL / 245 FEL / TWSP: 17S / RANGE: 29E / SECTION: 11 / LAT: 32.8554849 / LONG: -104.0376478 (TVD: 0 feet, MD: 0 feet)
PPP: NWNW / 300 FNL / 100 FWL / TWSP: 17S / RANGE: 29E / SECTION: 12 / LAT: 32.8554849 / LONG: -104.0376478 (TVD: 4300 feet, MD: 4300 feet)
BHL: NENE / 330 FNL / 10 FEL / TWSP: 17S / RANGE: 30E / SECTION: 7 / LAT: 32.855409 / LONG: -104.0027905 (TVD: 4375 feet, MD: 14000 feet)

BLM Point of Contact

Name: Katrina Ponder
Title: Geologist
Phone: 5752345969
Email: kponder@blm.gov

Review and Appeal Rights

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

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM125007
WELL NAME & NO.:	Fat Goblin Federal Com 11H
SURFACE HOLE FOOTAGE:	300'/N & 245'/E
BOTTOM HOLE FOOTAGE:	330'/N & 10'/E
LOCATION:	Section 11, T.17 S., R.29 E., NMPM
COUNTY:	Eddy County, New Mexico

Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
Variance	<input checked="" type="radio"/> None	<input type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input checked="" type="radio"/> Conventional	<input type="radio"/> Multibowl	
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP

A. Hydrogen Sulfide

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

B. CASING

1. The 13 3/8 inch surface casing shall be set at approximately 450 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of 8 hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength,

whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the 9 5/8 inch intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Option 2:

Operator has proposed a DV tool at a depth of 1350'. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

3. The minimum required fill of cement behind the 7 X 5 1/2 inch production casing is:

Operator has proposed DV tool at depth of 4000'

- a. First stage to DV tool: - Cement not required – using isolation packer system.
- b. Second stage above DV tool:
 - Cement as proposed. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. 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**. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**

D. 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.

Waste Minimization Plan (WMP)

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

MHH 10042018

GENERAL REQUIREMENTS

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

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

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

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

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

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

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the

plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. 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).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. 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.
- g. 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.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

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

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

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMNM125007
WELL NAME & NO.:	Fat Goblin Federal Com 11H
SURFACE HOLE FOOTAGE:	300'/N & 245'/E
BOTTOM HOLE FOOTAGE:	330'/N & 10'/E
LOCATION:	Section 11, T.17 S., R.29 E., NMPPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
 - Cave/Karst
 - Hydrology
- Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- Road Section Diagram**
- Production (Post Drilling)**
 - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

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)

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.

Cave/Karst Surface Mitigation

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

Construction:

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

No Blasting:

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

Pad Berming:

- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.

- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised. (Any access road crossing the berm cannot be lower than the berm height.)
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Tank Battery Liners and Berms:

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

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, situating valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Automatic Shut-off Systems:

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

Cave/Karst Subsurface Mitigation

The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:

Fresh water will be used as a circulating medium in zones where caves or karst features are expected. SEE ALSO: Drilling COAs for this well.

Directional Drilling:

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

Lost Circulation:

ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

Abandonment Cementing:

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

Pressure Testing:

The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

FLOWLINES (SURFACE):

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

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

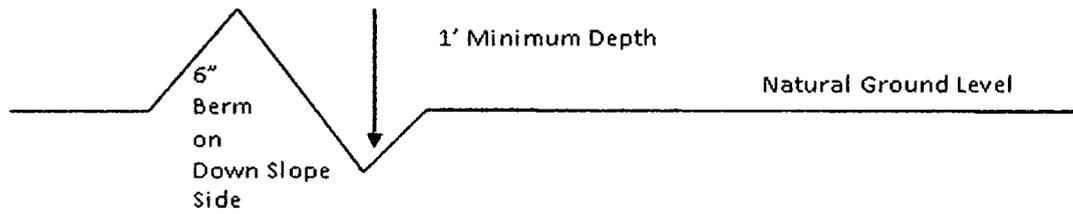
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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:

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Construction Steps

1. Salvage topsoil
2. Construct road

3. Redistribute topsoil
4. Revegetate slopes

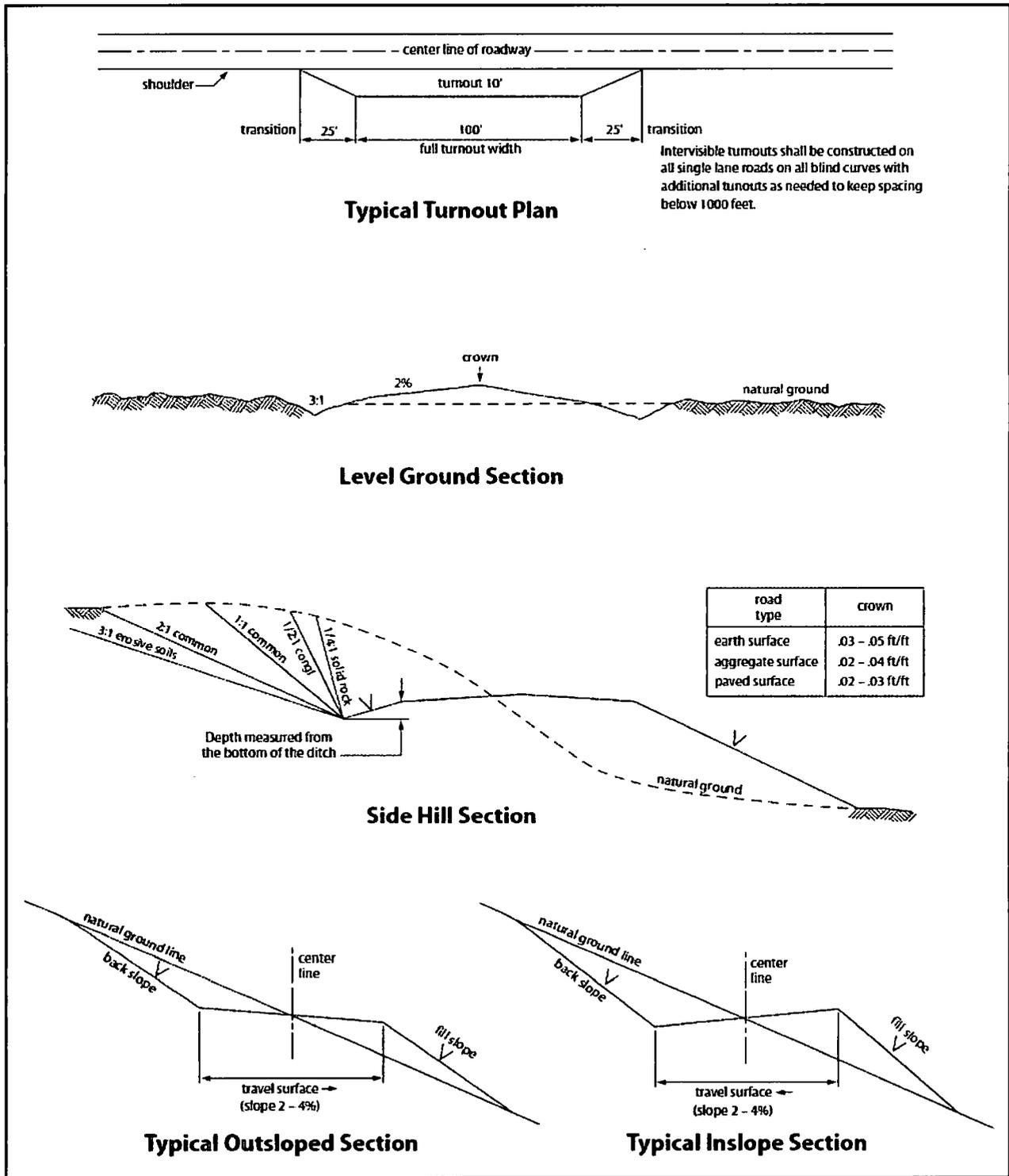


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Exclosure Netting (Open-top Tanks)

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

Chemical and Fuel Secondary Containment and Exclosure Screening

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures

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

Painting Requirement

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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 2, for Sandy Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

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



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

Operator Certification Data Report

10/05/2018

Operator Certification

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

NAME: Robyn Odom

Signed on: 04/09/2018

Title: Regulatory Analyst

Street Address: 600 W Illinois Ave

City: Midland

State: TX

Zip: 79701

Phone: (432)685-4385

Email address: rodom@concho.com

Field Representative

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:



APD ID: 10400028092

Submission Date: 04/09/2018

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

Section 1 - General

APD ID: 10400028092

Tie to previous NOS? 10400025648

Submission Date: 04/09/2018

BLM Office: CARLSBAD

User: Robyn Odom

Title: Regulatory Analyst

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMNM125007

Lease Acres: 160

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? NO

APD Operator: COG OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: COG OPERATING LLC

Operator Address: 600 West Illinois Ave

Zip: 79701

Operator PO Box:

Operator City: Midland

State: TX

Operator Phone: (432)683-7443

Operator Internet Address: RODOM@CONCHO.COM

Section 2 - Well Information

Well in Master Development Plan? NO

Mater Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: EMPIRE

Pool Name: GLORIETA-YESO, EAST

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

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Describe other minerals:

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

Type of Well Pad: MULTIPLE WELL

Multiple Well Pad Name: FAT Number: 1

Well Class: HORIZONTAL

GOBLIN FED COM

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 4.2 Miles

Distance to nearest well: 1 FT

Distance to lease line: 10 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Fat_Goblin_Federal_Com_11H_C102_20180327070500.pdf

Well work start Date: 01/18/2019

Duration: 25 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	300	FNL	245	FEL	17S	29E	11	Aliquot NENE	32.85548 49	- 104.0376 478	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 125007	366 0	0	0
KOP Leg #1	300	FNL	245	FEL	17S	29E	11	Aliquot NENE	32.85548 49	- 104.0376 478	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 125007	-340 0	400 0	400 0
PPP Leg #1	300	FNL	100	FWL	17S	29E	12	Aliquot NWN W	32.85548 49	- 104.0376 478	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 007752	-640 0	430 0	430 0



APD ID: 10400028092

Submission Date: 04/09/2018

Highlighted data
reflects the most
recent changes

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3660	0	0	ALLUVIUM	USEABLE WATER	No
2	RUSTLER	3239	421	421	ANHYDRITE	NONE	No
3	TOP SALT	3131	529	529	SALT	OTHER : Salt	No
4	TANSILL	2541	1119	1119	DOLOMITE	NONE	No
5	YATES	2436	1224	1224	SANDSTONE,DOLOMITE	NATURAL GAS,OIL	No
6	SEVEN RIVERS	2151	1509	1509	SANDSTONE,DOLOMITE	NATURAL GAS,OIL	No
7	QUEEN	1548	2112	2112	SANDSTONE	NATURAL GAS,OIL	No
8	GRAYBURG	1136	2524	2524	SANDSTONE,DOLOMITE	NATURAL GAS,OIL	No
9	SAN ANDRES	818	2842	2842	DOLOMITE,ANHYDRITE	NATURAL GAS,OIL	No
10	GLORIETA	-605	4265	4265	SANDSTONE,SILTSTONE	NATURAL GAS,OIL	No
11	PADDOCK	-681	4341	4341	DOLOMITE	NATURAL GAS,OIL	Yes
12	BLINEBRY	-1078	4738	4738	DOLOMITE	NATURAL GAS,OIL	No

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M

Rating Depth: 9500

Equipment: All required equipment per Federal and State regulations to be in place prior to drilling out the Surface casing.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP to the choke manifold. See attached for specs and hydrostatic test chart.

Testing Procedure: BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure of 2000 psi per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure of 2000 psi. If the system is upgraded all the components installed will be functional and tested. Pipe rams will be

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

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.

Choke Diagram Attachment:

2M_Choke_Schematic_20180320155419.pdf

BOP Diagram Attachment:

2M_ANNULAR_BOP_20180320155428.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	450	0	450			450	H-40	48	STC	4.91	2.91	DRY	18.99	DRY	18.99
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	1250	0	1250			1250	J-55	40	STC	4.62	1.58	DRY	11.31	DRY	11.31
3	PRODUCTION	8.75	7.0	NEW	API	N	0	4029	0	4029			4029	L-80	29	LTC	3.31	1.33	DRY	2.68	DRY	2.68
4	PRODUCTION	8.75	5.5	NEW	API	N	4029	4850	4029	4550			821	L-80	17	LTC	2.66	1.26	DRY	3.74	DRY	3.74
5	PRODUCTION	8.75	5.5	NEW	API	N	4850	15031	4550	4550			10181	L-80	17	LTC	2.66	1.26	DRY	7.68	DRY	7.68

Casing Attachments

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Attachement_20180404145412.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Attachement_20180404145457.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Attachement_20180404145536.pdf

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Attachement_20180404145622.pdf

Casing ID: 5 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Attachement_20180404145745.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	450	450	1.32	14.8	594	90	Class C	2% CaCl2+ 0.25 pps CF

INTERMEDIATE	Lead		0	1250	300	2.45	11.8	735	232	50:50:10 C:Poz:Gel	5%Salt+5pps LCM+0.25pps CF
INTERMEDIATE	Tail				200	1.32	14.8	264		Class C	2% CaCl2
PRODUCTION	Lead		0	4029	500	2.01	12.5	1005	207	35:65:6 C:Poz:Gel	5%Salt+5pps LCM+0.25pps CF

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Tail				400	1.37	14	548		50:50:2 C:Poz:Gel	5%salt+3pps LCM+0.6%SMS+1%FL- 25+1%Ba-58+0.125pps
PRODUCTION	Lead		4029	1503 1	0	0	0	0		Isolation Packers	See attached Production Cement Breakdown.

PRODUCTION	Lead		4029	1503 1	0	0	0	0		Isolation Packers	See attached Production Cement Breakdown
------------	------	--	------	-----------	---	---	---	---	--	-------------------	--

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	450	WATER-BASED MUD	8.6	8.8							
0	4029	SALT SATURATED	10	10.2							
4029	1503 1	WATER-BASED MUD	8.8	9.2							

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Section 6 - Test, Logging, Coring

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

Interval Perforating, Fracture stimulating, Flowback testing

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

CNL,MUDLOG

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 2002

Anticipated Surface Pressure: 1039.5

Anticipated Bottom Hole Temperature(F): 103

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

H2S_Plan_20180320161558.pdf

Fat_Goblin_Federal_Com_11H_H2S_Schematic_20180404150119.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Fat_Goblin_Federal_Com_11H_Plan_1_20180404150140.pdf

Fat_Goblin_Federal_Com_11H_Plan_1_AC_20180404150152.pdf

Other proposed operations facets description:

7" to be run from surface to kickoff point and changed over to 5 ½" with DV Tool and ECP at kickoff point. 5 ½" casing will be run from kickoff point to TD and isolation packers set throughout curve and lateral. 7" to be cemented from kickoff point to surface.

Other proposed operations facets attachment:

Fat_Goblin_Federal_Com_11H_Contingent_Multi_Stage_Cmt_Plan_20180409075419.pdf

Fat_Goblin_Federal_Com_11H_Production_Cement_Breakdown_20180409075429.pdf

Fat_Goblin_Federal_Com_11H_GCP_20180409075440.pdf

Closed_Loop_Schematic_20180409075726.pdf

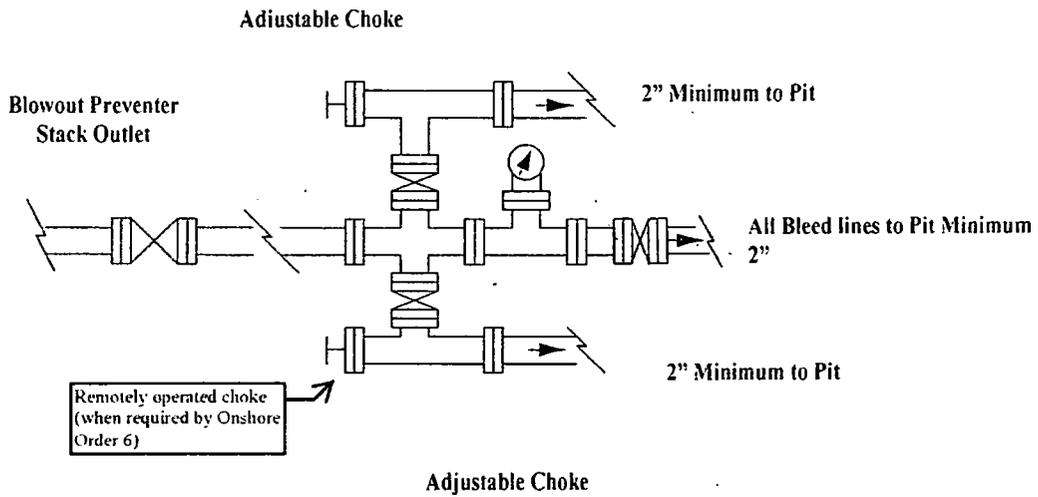
Other Variance attachment:

COG Operating LLC

Exhibit #9

Choke Schematic

Choke Manifold Requirement (2000 psi WP)

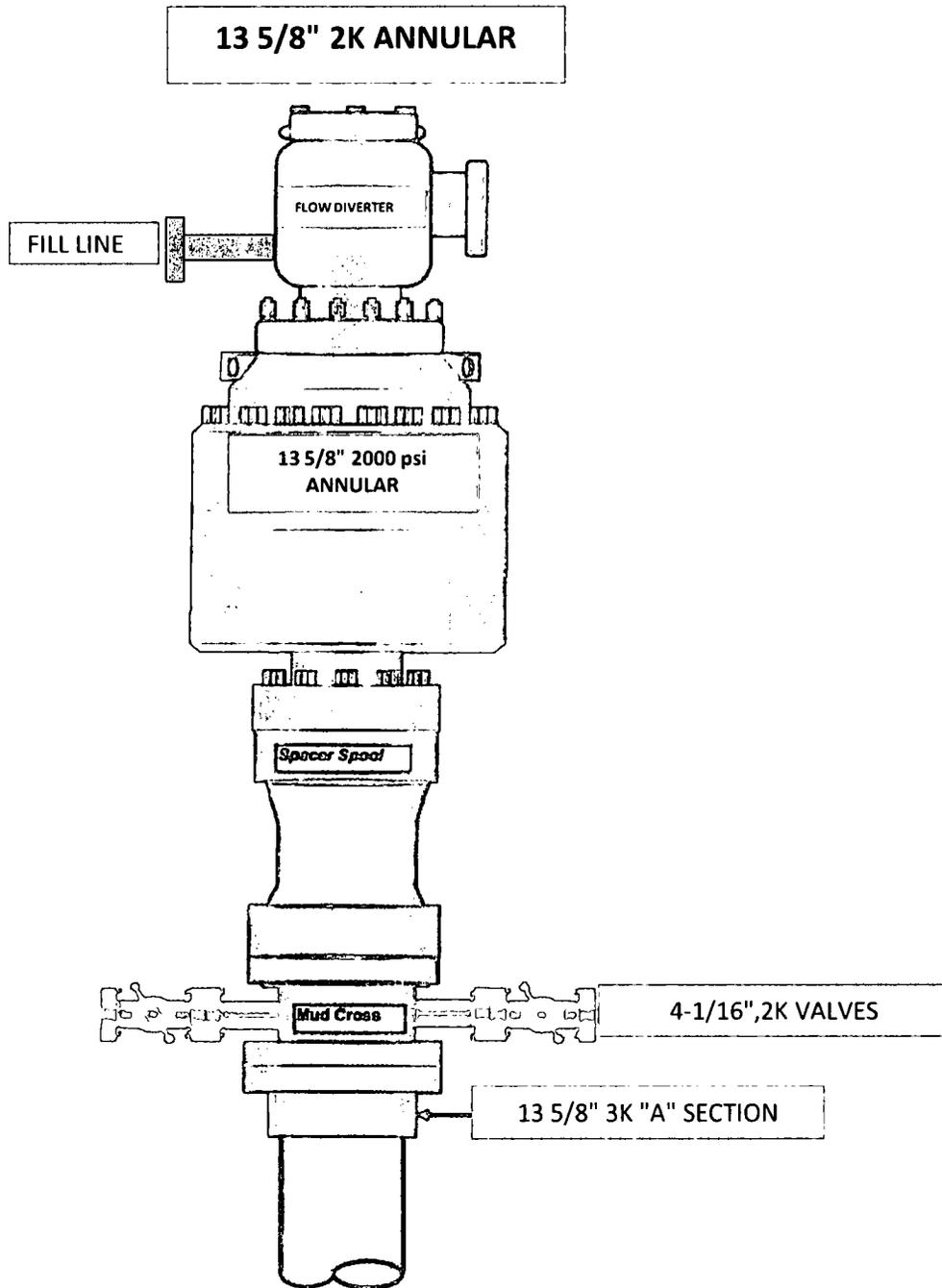


NOTES REGARDING THE BLOWOUT PREVENTERS

Master Drilling Plan Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

Exhibit #10



Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	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

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.

Casing design does meet and/or exceed BLM's minimum standards.

The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.

This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.

We will not be pre-setting casing.

All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	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

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.

Casing design does meet and/or exceed BLM's minimum standards.

The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.

This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.

We will not be pre-setting casing.

All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	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

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.

Casing design does meet and/or exceed BLM's minimum standards.

The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.

This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.

We will not be pre-setting casing.

All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	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

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.

Casing design does meet and/or exceed BLM's minimum standards.

The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.

This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.

We will not be pre-setting casing.

All completion intervals are planned to be fracture stimulated.

Casing Program

	Collapse SF	Burst SF	Tension SF
BLM Minimum Safety Factor	1.125	1	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

Assumed 9.0ppg MW equivalent pore pressure from 9 5/8" shoe to deepest TVD in wellbore.

BLM standard formulas were used on all SF calculations.

Casing design does meet and/or exceed BLM's minimum standards.

The pipe will be kept at a minimum 1/3 fluid fill to avoid approaching the collapse pressure rating of the casing.

This well is not located within the Capitan Reef.

This well is not located in the SOPA or in the R-111-P.

This well is not located in a high or critical Cave/Karst area.

This is not a walking operation.

We will not be pre-setting casing.

All completion intervals are planned to be fracture stimulated.

COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. 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:

1. The hazards and characteristics of hydrogen sulfide (H₂S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

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

1. The effects of H₂S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H₂S Drilling Operations Plan and 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. **The concentrations of H₂S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S 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 reasonable expected to contain H2S.

1. Well Control Equipment:

- A. Flare line.
- B. Choke manifold with minimum of one remotely operated choke.
- C. Closed Loop Blow Down Tank
- D. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- E. Auxiliary equipment may include if applicable: mud-gas separator, annular preventer & rotating head.

2. Protective equipment for essential personnel:

- A. SCBA (Self contained breathing apparatus) 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

3. H2S detection and monitoring equipment:

- A. Portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

4. Visual warning systems:

- A. Wind direction indicators as shown on well site diagram.
- B. Caution/Danger signs (Exhibit #7) 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.

5. Mud program:

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.
-

6. Metallurgy:

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

7. Communication:

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

8. Well testing:

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

EXHIBIT #7

WARNING

YOU ARE ENTERING AN H2S

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. CHECK WITH COG OPERATING FOREMAN AT

COG OPERATING LLC

1-432-683-7443

1-575-746-2010

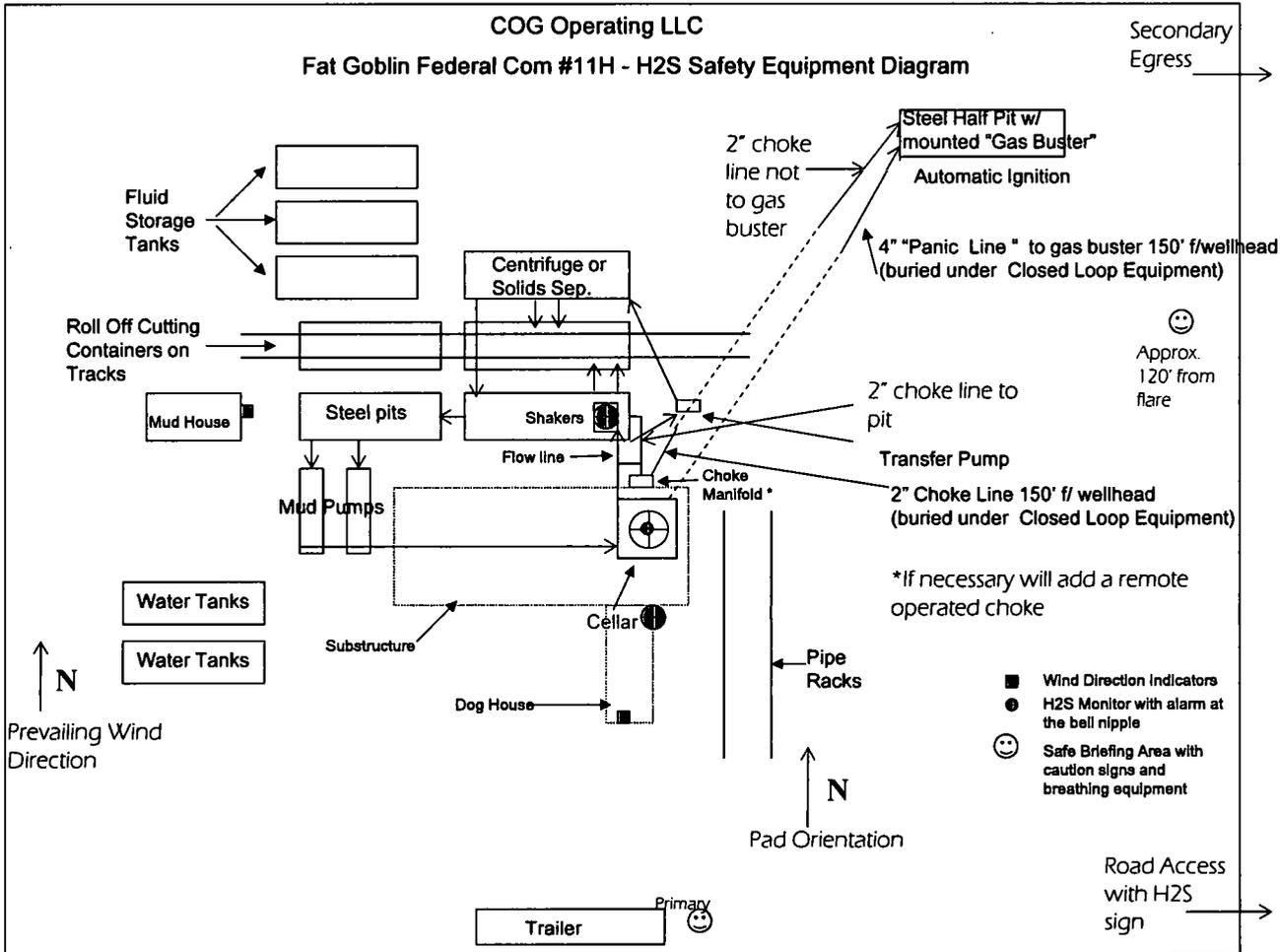
EDDY COUNTY EMERGENCY NUMBERS

ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

LEA COUNTY EMERGENCY NUMBERS

HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC
 Fat Goblin Federal Com #11H - H2S Safety Equipment Diagram



Secondary Egress →

Fluid Storage Tanks

Roll Off Cutting Containers on Tracks

Mud House

Steel pits

Shakers

Flow line

Mud Pumps

Water Tanks

Water Tanks

Substructure

Dog House

Cellar

Choke Manifold *

Pipe Racks

Pad Orientation

2" choke line to pit

Transfer Pump

2" Choke Line 150' f/ wellhead (buried under Closed Loop Equipment)

*If necessary will add a remote operated choke

Steel Half Pit w/ mounted "Gas Buster" Automatic Ignition

2" choke line not to gas buster

4" "Panic Line" to gas buster 150' f/wellhead (buried under Closed Loop Equipment)

☺
 Approx. 120' from flare

- Wind Direction Indicators
- H2S Monitor with alarm at the bell nipple
- ☺ Safe Briefing Area with caution signs and breathing equipment

↑ N
 Prevailing Wind Direction

Trailer ☺

Road Access with H2S sign →

COG OPERATING, LLC

Eddy County, NM (NAD83) NMEZ

Fat Goblin Federal COM #11H

SHL: 300' FNL, 245' FEL, Sec11, T-17S, R-29E, Unit A

PP: 330' FNL, 330' FWL, Sec12, T-17S, R-29E, Unit A

PBHL: 330' FNL, 10' FEL, Sec7, T-17S, R-29E, Unit A

Plan: Plan #1

Standard Planning Report

29 March, 2018

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well #11H
Company:	COG OPERATING, LLC	TVD Reference:	RKB @ 3690.00usft (Rig KB = 30')
Project:	Eddy County, NM (NAD83) NMEZ	MD Reference:	RKB @ 3690.00usft (Rig KB = 30')
Site:	Fat Goblin Federal COM	North Reference:	Grid
Well:	#11H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Eddy County, NM (NAD83) NMEZ		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Fat Goblin Federal COM				
Site Position:		Northing:	675,085.80 usft	Latitude:	32° 51' 19.745 N
From:	Map	Easting:	632,135.40 usft	Longitude:	104° 2' 15.532 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.16 °

Well	#11H					
Well Position	+N/-S	0.00 usft	Northing:	675,085.80 usft	Latitude:	32° 51' 19.745 N
	+E/-W	0.00 usft	Easting:	632,135.40 usft	Longitude:	104° 2' 15.532 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,660.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2015	03/29/18	(°) 7.13	(°) 60.55	(nT) 48,179.79019215

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	89.98	

Plan Survey Tool Program	Date	03/29/18			
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks	
(usft)	(usft)				
1	0.00	15,031.19	Plan #1 (OH)	MWD	
				MWD v3:standard declination	

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,029.13	0.00	0.00	4,029.13	0.00	0.00	0.00	0.00	0.00	0.00	
4,847.31	90.00	93.00	4,550.00	-27.26	520.16	11.00	11.00	0.00	93.00	
5,007.41	90.00	89.80	4,550.00	-31.17	680.19	2.00	0.00	-2.00	-90.00	
15,031.27	90.00	89.80	4,550.00	4.16	10,703.98	0.00	0.00	0.00	0.00	

Planning Report

Database: EDM 5000.14 Single User Db
 Company: COG OPERATING, LLC
 Project: Eddy County, NM (NAD83) NMEZ
 Site: Fat Goblin Federal COM
 Well: #11H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #11H
 TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
 MD Reference: RKB @ 3690.00usft (Rig KB = 30')
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL(FGFC#11H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
421.00	0.00	0.00	421.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
529.00	0.00	0.00	529.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salt									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,119.00	0.00	0.00	1,119.00	0.00	0.00	0.00	0.00	0.00	0.00
Tansill									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,224.00	0.00	0.00	1,224.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,509.00	0.00	0.00	1,509.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,112.00	0.00	0.00	2,112.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,524.00	0.00	0.00	2,524.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg									
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,842.00	0.00	0.00	2,842.00	0.00	0.00	0.00	0.00	0.00	0.00
San Andres									
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00

Planning Report

Database: EDM 5000.14 Single User Db
 Company: COG OPERATING, LLC
 Project: Eddy County, NM (NAD83) NMEZ
 Site: Fat Goblin Federal COM
 Well: #11H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #11H
 TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
 MD Reference: RKB @ 3690.00usft (Rig KB = 30')
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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)	
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,029.13	0.00	0.00	4,029.13	0.00	0.00	0.00	0.00	0.00	0.00	
KOP: 4029.13' MD, 4029.13' TVD										
4,050.00	2.30	93.00	4,049.99	-0.02	0.42	0.42	11.00	11.00	0.00	
4,100.00	7.80	93.00	4,099.78	-0.25	4.81	4.81	11.00	11.00	0.00	
4,150.00	13.30	93.00	4,148.92	-0.73	13.94	13.94	11.00	11.00	0.00	
4,200.00	18.80	93.00	4,196.95	-1.45	27.74	27.74	11.00	11.00	0.00	
4,250.00	24.30	93.00	4,243.44	-2.41	46.07	46.07	11.00	11.00	0.00	
4,273.91	26.93	93.00	4,265.00	-2.96	56.39	56.39	11.00	11.00	0.00	
Glorieta										
4,300.00	29.80	93.00	4,287.96	-3.60	68.76	68.76	11.00	11.00	0.00	
4,350.00	35.30	93.00	4,330.09	-5.01	95.61	95.61	11.00	11.00	0.00	
4,363.50	36.78	93.00	4,341.00	-5.43	103.54	103.54	11.00	11.00	0.00	
Paddock										
4,400.00	40.80	93.00	4,369.45	-6.62	126.38	126.37	11.00	11.00	0.00	
4,450.00	46.30	93.00	4,405.68	-8.43	160.76	160.76	11.00	11.00	0.00	
4,500.00	51.80	93.00	4,438.44	-10.40	198.46	198.45	11.00	11.00	0.00	
4,550.00	57.30	93.00	4,467.43	-12.53	239.11	239.11	11.00	11.00	0.00	
4,600.00	62.80	93.00	4,492.38	-14.80	282.36	282.35	11.00	11.00	0.00	
4,650.00	68.30	93.00	4,513.07	-17.18	327.79	327.79	11.00	11.00	0.00	
4,700.00	73.80	93.00	4,529.31	-19.65	375.00	374.99	11.00	11.00	0.00	
4,750.00	79.30	93.00	4,540.94	-22.20	423.54	423.53	11.00	11.00	0.00	
4,800.00	84.80	93.00	4,547.85	-24.79	472.97	472.97	11.00	11.00	0.00	
4,847.31	90.00	93.00	4,550.00	-27.26	520.16	520.14	11.00	11.00	0.00	
EOC: 4847.31' MD, 4550.00' TVD, 90.00° INC, 93.00° AZ, 520.14' VS										
4,900.00	90.00	91.95	4,550.00	-29.53	572.80	572.78	2.00	0.00	-2.00	
4,902.39	90.00	91.90	4,550.00	-29.61	575.18	575.17	2.00	0.00	-2.00	
PP:4902.39' MD, 90.00°INC, 4550.00' TVD - PP(FGFC#11H)										
5,007.41	90.00	89.80	4,550.00	-31.17	680.19	680.17	2.00	0.00	-2.00	
5,100.00	90.00	89.80	4,550.00	-30.84	772.78	772.76	0.00	0.00	0.00	
5,200.00	90.00	89.80	4,550.00	-30.49	872.78	872.76	0.00	0.00	0.00	
5,300.00	90.00	89.80	4,550.00	-30.14	972.77	972.76	0.00	0.00	0.00	
5,400.00	90.00	89.80	4,550.00	-29.78	1,072.77	1,072.76	0.00	0.00	0.00	
5,500.00	90.00	89.80	4,550.00	-29.43	1,172.77	1,172.76	0.00	0.00	0.00	
5,600.00	90.00	89.80	4,550.00	-29.08	1,272.77	1,272.76	0.00	0.00	0.00	
5,700.00	90.00	89.80	4,550.00	-28.73	1,372.77	1,372.76	0.00	0.00	0.00	
5,800.00	90.00	89.80	4,550.00	-28.38	1,472.77	1,472.76	0.00	0.00	0.00	
5,900.00	90.00	89.80	4,550.00	-28.02	1,572.77	1,572.76	0.00	0.00	0.00	
6,000.00	90.00	89.80	4,550.00	-27.67	1,672.77	1,672.76	0.00	0.00	0.00	
6,100.00	90.00	89.80	4,550.00	-27.32	1,772.77	1,772.76	0.00	0.00	0.00	
6,200.00	90.00	89.80	4,550.00	-26.97	1,872.77	1,872.76	0.00	0.00	0.00	
6,300.00	90.00	89.80	4,550.00	-26.61	1,972.77	1,972.76	0.00	0.00	0.00	
6,400.00	90.00	89.80	4,550.00	-26.26	2,072.77	2,072.76	0.00	0.00	0.00	
6,500.00	90.00	89.80	4,550.00	-25.91	2,172.77	2,172.76	0.00	0.00	0.00	
6,600.00	90.00	89.80	4,550.00	-25.56	2,272.77	2,272.76	0.00	0.00	0.00	
6,700.00	90.00	89.80	4,550.00	-25.20	2,372.77	2,372.76	0.00	0.00	0.00	
6,800.00	90.00	89.80	4,550.00	-24.85	2,472.77	2,472.76	0.00	0.00	0.00	
6,900.00	90.00	89.80	4,550.00	-24.50	2,572.76	2,572.76	0.00	0.00	0.00	
7,000.00	90.00	89.80	4,550.00	-24.15	2,672.76	2,672.75	0.00	0.00	0.00	

Planning Report

Database: EDM 5000.14 Single User Db
 Company: COG OPERATING, LLC
 Project: Eddy County, NM (NAD83) NMEZ
 Site: Fat Goblin Federal COM
 Well: #11H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #11H
 TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
 MD Reference: RKB @ 3690.00usft (Rig KB = 30')
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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)
7,100.00	90.00	89.80	4,550.00	-23.79	2,772.76	2,772.75	0.00	0.00	0.00
7,200.00	90.00	89.80	4,550.00	-23.44	2,872.76	2,872.75	0.00	0.00	0.00
7,300.00	90.00	89.80	4,550.00	-23.09	2,972.76	2,972.75	0.00	0.00	0.00
7,400.00	90.00	89.80	4,550.00	-22.74	3,072.76	3,072.75	0.00	0.00	0.00
7,500.00	90.00	89.80	4,550.00	-22.38	3,172.76	3,172.75	0.00	0.00	0.00
7,600.00	90.00	89.80	4,550.00	-22.03	3,272.76	3,272.75	0.00	0.00	0.00
7,700.00	90.00	89.80	4,550.00	-21.68	3,372.76	3,372.75	0.00	0.00	0.00
7,800.00	90.00	89.80	4,550.00	-21.33	3,472.76	3,472.75	0.00	0.00	0.00
7,900.00	90.00	89.80	4,550.00	-20.97	3,572.76	3,572.75	0.00	0.00	0.00
8,000.00	90.00	89.80	4,550.00	-20.62	3,672.76	3,672.75	0.00	0.00	0.00
8,100.00	90.00	89.80	4,550.00	-20.27	3,772.76	3,772.75	0.00	0.00	0.00
8,200.00	90.00	89.80	4,550.00	-19.92	3,872.76	3,872.75	0.00	0.00	0.00
8,300.00	90.00	89.80	4,550.00	-19.56	3,972.76	3,972.75	0.00	0.00	0.00
8,400.00	90.00	89.80	4,550.00	-19.21	4,072.76	4,072.75	0.00	0.00	0.00
8,500.00	90.00	89.80	4,550.00	-18.86	4,172.75	4,172.75	0.00	0.00	0.00
8,600.00	90.00	89.80	4,550.00	-18.51	4,272.75	4,272.75	0.00	0.00	0.00
8,700.00	90.00	89.80	4,550.00	-18.15	4,372.75	4,372.75	0.00	0.00	0.00
8,800.00	90.00	89.80	4,550.00	-17.80	4,472.75	4,472.75	0.00	0.00	0.00
8,900.00	90.00	89.80	4,550.00	-17.45	4,572.75	4,572.75	0.00	0.00	0.00
9,000.00	90.00	89.80	4,550.00	-17.10	4,672.75	4,672.74	0.00	0.00	0.00
9,100.00	90.00	89.80	4,550.00	-16.74	4,772.75	4,772.74	0.00	0.00	0.00
9,200.00	90.00	89.80	4,550.00	-16.39	4,872.75	4,872.74	0.00	0.00	0.00
9,300.00	90.00	89.80	4,550.00	-16.04	4,972.75	4,972.74	0.00	0.00	0.00
9,400.00	90.00	89.80	4,550.00	-15.69	5,072.75	5,072.74	0.00	0.00	0.00
9,500.00	90.00	89.80	4,550.00	-15.33	5,172.75	5,172.74	0.00	0.00	0.00
9,600.00	90.00	89.80	4,550.00	-14.98	5,272.75	5,272.74	0.00	0.00	0.00
9,700.00	90.00	89.80	4,550.00	-14.63	5,372.75	5,372.74	0.00	0.00	0.00
9,800.00	90.00	89.80	4,550.00	-14.28	5,472.75	5,472.74	0.00	0.00	0.00
9,900.00	90.00	89.80	4,550.00	-13.93	5,572.75	5,572.74	0.00	0.00	0.00
10,000.00	90.00	89.80	4,550.00	-13.57	5,672.75	5,672.74	0.00	0.00	0.00
10,100.00	90.00	89.80	4,550.00	-13.22	5,772.75	5,772.74	0.00	0.00	0.00
10,200.00	90.00	89.80	4,550.00	-12.87	5,872.74	5,872.74	0.00	0.00	0.00
10,300.00	90.00	89.80	4,550.00	-12.52	5,972.74	5,972.74	0.00	0.00	0.00
10,400.00	90.00	89.80	4,550.00	-12.16	6,072.74	6,072.74	0.00	0.00	0.00
10,500.00	90.00	89.80	4,550.00	-11.81	6,172.74	6,172.74	0.00	0.00	0.00
10,600.00	90.00	89.80	4,550.00	-11.46	6,272.74	6,272.74	0.00	0.00	0.00
10,700.00	90.00	89.80	4,550.00	-11.11	6,372.74	6,372.74	0.00	0.00	0.00
10,800.00	90.00	89.80	4,550.00	-10.75	6,472.74	6,472.74	0.00	0.00	0.00
10,900.00	90.00	89.80	4,550.00	-10.40	6,572.74	6,572.74	0.00	0.00	0.00
11,000.00	90.00	89.80	4,550.00	-10.05	6,672.74	6,672.74	0.00	0.00	0.00
11,100.00	90.00	89.80	4,550.00	-9.70	6,772.74	6,772.73	0.00	0.00	0.00
11,200.00	90.00	89.80	4,550.00	-9.34	6,872.74	6,872.73	0.00	0.00	0.00
11,300.00	90.00	89.80	4,550.00	-8.99	6,972.74	6,972.73	0.00	0.00	0.00
11,400.00	90.00	89.80	4,550.00	-8.64	7,072.74	7,072.73	0.00	0.00	0.00
11,500.00	90.00	89.80	4,550.00	-8.29	7,172.74	7,172.73	0.00	0.00	0.00
11,600.00	90.00	89.80	4,550.00	-7.93	7,272.74	7,272.73	0.00	0.00	0.00
11,700.00	90.00	89.80	4,550.00	-7.58	7,372.74	7,372.73	0.00	0.00	0.00
11,800.00	90.00	89.80	4,550.00	-7.23	7,472.73	7,472.73	0.00	0.00	0.00
11,900.00	90.00	89.80	4,550.00	-6.88	7,572.73	7,572.73	0.00	0.00	0.00
12,000.00	90.00	89.80	4,550.00	-6.52	7,672.73	7,672.73	0.00	0.00	0.00
12,100.00	90.00	89.80	4,550.00	-6.17	7,772.73	7,772.73	0.00	0.00	0.00
12,200.00	90.00	89.80	4,550.00	-5.82	7,872.73	7,872.73	0.00	0.00	0.00
12,300.00	90.00	89.80	4,550.00	-5.47	7,972.73	7,972.73	0.00	0.00	0.00
12,400.00	90.00	89.80	4,550.00	-5.11	8,072.73	8,072.73	0.00	0.00	0.00

Planning Report

Database: EDM 5000.14 Single User Db
 Company: COG OPERATING, LLC
 Project: Eddy County, NM (NAD83) NMEZ
 Site: Fat Goblin Federal COM
 Well: #11H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #11H
 TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
 MD Reference: RKB @ 3690.00usft (Rig KB = 30')
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,500.00	90.00	89.80	4,550.00	-4.76	8,172.73	8,172.73	0.00	0.00	0.00
12,600.00	90.00	89.80	4,550.00	-4.41	8,272.73	8,272.73	0.00	0.00	0.00
12,700.00	90.00	89.80	4,550.00	-4.06	8,372.73	8,372.73	0.00	0.00	0.00
12,800.00	90.00	89.80	4,550.00	-3.70	8,472.73	8,472.73	0.00	0.00	0.00
12,900.00	90.00	89.80	4,550.00	-3.35	8,572.73	8,572.73	0.00	0.00	0.00
13,000.00	90.00	89.80	4,550.00	-3.00	8,672.73	8,672.73	0.00	0.00	0.00
13,100.00	90.00	89.80	4,550.00	-2.65	8,772.73	8,772.72	0.00	0.00	0.00
13,200.00	90.00	89.80	4,550.00	-2.29	8,872.73	8,872.72	0.00	0.00	0.00
13,300.00	90.00	89.80	4,550.00	-1.94	8,972.73	8,972.72	0.00	0.00	0.00
13,400.00	90.00	89.80	4,550.00	-1.59	9,072.72	9,072.72	0.00	0.00	0.00
13,500.00	90.00	89.80	4,550.00	-1.24	9,172.72	9,172.72	0.00	0.00	0.00
13,600.00	90.00	89.80	4,550.00	-0.88	9,272.72	9,272.72	0.00	0.00	0.00
13,700.00	90.00	89.80	4,550.00	-0.53	9,372.72	9,372.72	0.00	0.00	0.00
13,800.00	90.00	89.80	4,550.00	-0.18	9,472.72	9,472.72	0.00	0.00	0.00
13,900.00	90.00	89.80	4,550.00	0.17	9,572.72	9,572.72	0.00	0.00	0.00
14,000.00	90.00	89.80	4,550.00	0.52	9,672.72	9,672.72	0.00	0.00	0.00
14,100.00	90.00	89.80	4,550.00	0.88	9,772.72	9,772.72	0.00	0.00	0.00
14,200.00	90.00	89.80	4,550.00	1.23	9,872.72	9,872.72	0.00	0.00	0.00
14,300.00	90.00	89.80	4,550.00	1.58	9,972.72	9,972.72	0.00	0.00	0.00
14,400.00	90.00	89.80	4,550.00	1.93	10,072.72	10,072.72	0.00	0.00	0.00
14,500.00	90.00	89.80	4,550.00	2.29	10,172.72	10,172.72	0.00	0.00	0.00
14,600.00	90.00	89.80	4,550.00	2.64	10,272.72	10,272.72	0.00	0.00	0.00
14,700.00	90.00	89.80	4,550.00	2.99	10,372.72	10,372.72	0.00	0.00	0.00
14,800.00	90.00	89.80	4,550.00	3.34	10,472.72	10,472.72	0.00	0.00	0.00
14,900.00	90.00	89.80	4,550.00	3.70	10,572.72	10,572.72	0.00	0.00	0.00
15,000.00	90.00	89.80	4,550.00	4.05	10,672.71	10,672.72	0.00	0.00	0.00
15,031.27	90.00	89.80	4,550.00	4.16	10,703.98	10,703.98	0.00	0.00	0.00

TD: 15031.27' MD, 4550.00' TVD - BHL(FGFC#11H)

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
SHL(FGFC#11H) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	675,085.80	632,135.40	32° 51' 19.745 N	104° 2' 15.532 W
PP(FGFC#11H) - plan hits target center - Point	0.00	0.00	4,550.00	-29.61	575.18	675,056.19	632,710.58	32° 51' 19.436 N	104° 2' 8.790 W
BHL(FGFC#11H) - plan hits target center - Point	0.00	0.00	4,550.00	4.16	10,703.98	675,089.95	642,839.39	32° 51' 19.472 N	104° 0' 10.046 W

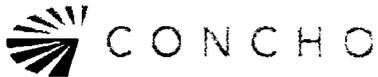
Planning Report

Database: EDM 5000.14 Single User Db
Company: COG OPERATING, LLC
Project: Eddy County, NM (NAD83) NMEZ
Site: Fat Goblin Federal COM
Well: #11H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #11H
TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
MD Reference: RKB @ 3690.00usft (Rig KB = 30')
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
421.00	421.00	Rustler				
529.00	529.00	Top of Salt				
1,119.00	1,119.00	Tansill				
1,224.00	1,224.00	Yates				
1,509.00	1,509.00	Seven Rivers				
2,112.00	2,112.00	Queen				
2,524.00	2,524.00	Grayburg				
2,842.00	2,842.00	San Andres				
4,273.91	4,265.00	Glorieta				
4,363.50	4,341.00	Paddock				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
4,029.13	4,029.13	0.00	0.00	KOP: 4029.13' MD, 4029.13' TVD	
4,847.31	4,550.00	-27.26	520.16	EOC: 4847.31' MD, 4550.00' TVD, 90.00° INC, 93.00° AZ, 520.14' VS	
4,902.39	4,550.00	-29.61	575.18	PP:4902.39' MD, 90.00°INC, 4550.00' TVD	
15,031.27	4,550.00	4.16	10,703.98	TD: 15031.27' MD, 4550.00' TVD	



WELL DETAILS: #11H

Ground Elevation:: 3660.00
 RKB Elevation: RKB @ 3690.00usft (Rig KB = 30')
 Rig Name: Rig KB = 30'



Azimuths to Grid North
 True North: -0.16°
 Magnetic North: 6.97°

PROJECT DETAILS: Eddy County, NM (NAD83) NMEZ
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone
 System Datum: Mean Sea Level
 Local North: Grid

Surface Hole Location
 Northing: 675085.80 Easting: 632135.40 Latitude: 32° 51' 19.745 N Longitude: 104° 2' 15.532 W

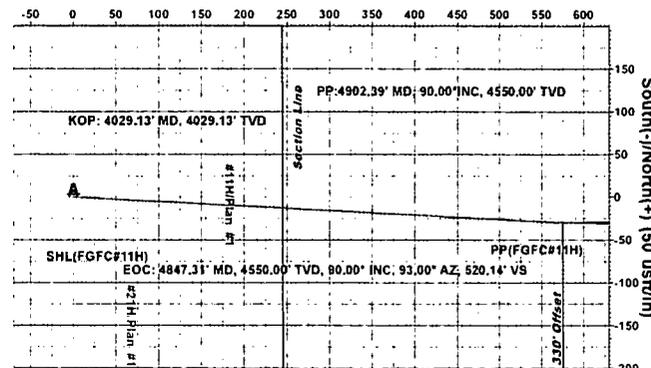
Magnetic Field
 Strength: 48179.8snT
 Dip Angle: 60.55°
 Date: 03/29/2018
 Model: IGRF2015

COG OPERATING, LLC
 Project: Eddy County, NM (NAD83) NMEZ
 Site: Fat Goblin Federal COM
 Well: #11H
 Wellbore: OH
 Plan: Plan #1 (#11H/OH)

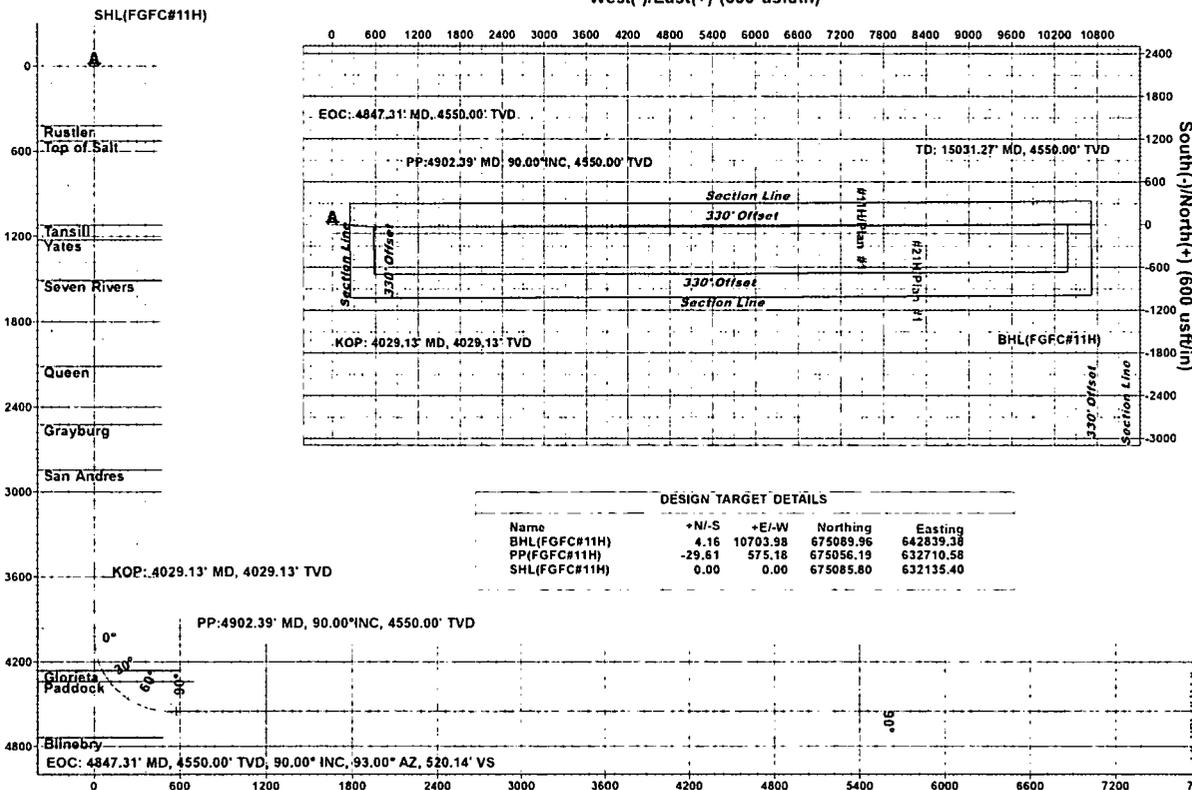
Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	4029.13	0.00	0.00	4029.13	0.00	0.00	0.00	0.00	0.00
3	4847.31	90.00	93.00	4550.00	-27.26	520.16	11.00	93.00	520.15
4	5007.41	90.00	89.80	4550.00	-31.17	680.19	2.00	-90.00	680.17
5	15031.27	90.00	89.80	4550.00	4.16	10703.98	0.00	0.00	10703.98

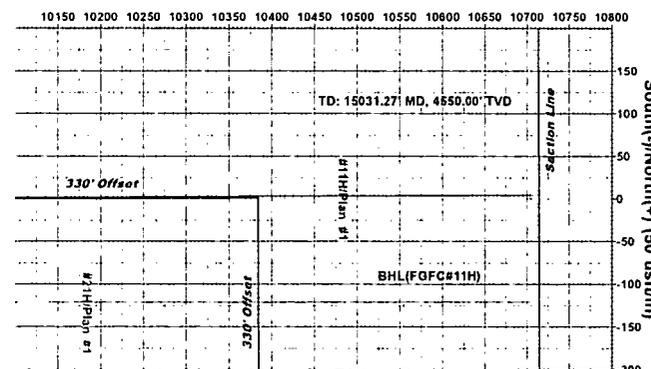
West(-)/East(+) (50 usft/in)



West(-)/East(+) (600 usft/in)



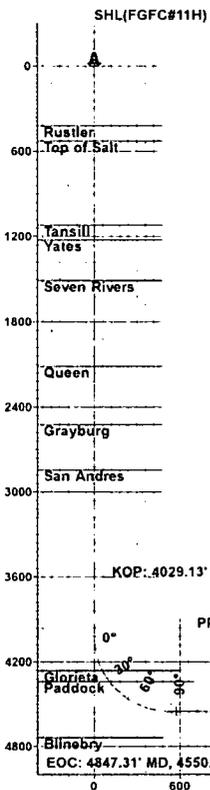
West(-)/East(+) (50 usft/in)



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting
BHL(FGFC#11H)	4.16	10703.98	675089.96	642839.38
PP(FGFC#11H)	-29.61	575.18	675056.19	632710.58
SHL(FGFC#11H)	0.00	0.00	675085.80	632135.40

Vertical Section at 89.98° (300 usft/in)



VON Directional
 2407 E. Murphy St. Bldg. E3 Odessa, TX 79761
 Phone: 432-232-8838

Plan: Plan #1 (#11H/OH)
 Created By: Gabriel Cruz Date: 9:33, March 29 2018

COG OPERATING, LLC

Eddy County, NM (NAD83) NMEZ

Fat Goblin Federal COM

#11H

OH

Plan #1

Anticollision Report

29 March, 2018

Anticollision Report

Company: COG OPERATING, LLC	Local Co-ordinate Reference: Well #11H
Project: Eddy County, NM (NAD83) NMEZ	TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
Reference Site: Fat Goblin Federal COM	MD Reference: RKB @ 3690.00usft (Rig KB = 30')
Site Error: 0.00 usft	North Reference: Grid
Reference Well: #11H	Survey Calculation Method: Minimum Curvature
Well Error: 0.00 usft	Output errors are at: 2.000 sigma
Reference Wellbore: OH	Database: EDM 5000.14 Single User Db
Reference Design: Plan #1	Offset TVD Reference: Offset Datum

Reference	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 9,999.98 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.000 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	03/29/18		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	15,031.19	Plan #1 (OH)	MWD	MWD v3:standard declination

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Fat Goblin Federal COM						
#21H - OH - Plan #1	4,114.23	4,112.85	124.71	106.53	6.859	CC, ES
#21H - OH - Plan #1	15,031.27	15,530.07	516.35	308.14	2.480	SF

Offset Design Fat Goblin Federal COM - #21H - OH - Plan #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis			Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		Minimum Separation (usft)	Separation Factor
0.00	0.00	1.00	-1.00	0.00	0.00	179.82	-124.90	0.40	124.90				
100.00	100.00	101.00	99.00	0.08	0.08	179.82	-124.90	0.40	124.90	124.74	.160	782.663	
200.00	200.00	201.00	199.00	0.30	0.31	179.82	-124.90	0.40	124.90	124.29	.609	205.052	
300.00	300.00	301.00	299.00	0.53	0.53	179.82	-124.90	0.40	124.90	123.84	1.059	117.981	
400.00	400.00	401.00	399.00	0.75	0.76	179.82	-124.90	0.40	124.90	123.39	1.508	82.815	
500.00	500.00	501.00	499.00	0.98	0.98	179.82	-124.90	0.40	124.90	122.94	1.958	63.799	
600.00	600.00	601.00	599.00	1.20	1.20	179.82	-124.90	0.40	124.90	122.49	2.407	51.885	
700.00	700.00	701.00	699.00	1.43	1.43	179.82	-124.90	0.40	124.90	122.04	2.857	43.721	
800.00	800.00	801.00	799.00	1.65	1.65	179.82	-124.90	0.40	124.90	121.59	3.306	37.776	
900.00	900.00	901.00	899.00	1.88	1.88	179.82	-124.90	0.40	124.90	121.14	3.756	33.255	
1,000.00	1,000.00	1,001.00	999.00	2.10	2.10	179.82	-124.90	0.40	124.90	120.70	4.205	29.700	
1,100.00	1,100.00	1,101.00	1,099.00	2.33	2.33	179.82	-124.90	0.40	124.90	120.25	4.655	26.832	
1,200.00	1,200.00	1,201.00	1,199.00	2.55	2.55	179.82	-124.90	0.40	124.90	119.80	5.104	24.469	
1,300.00	1,300.00	1,301.00	1,299.00	2.78	2.78	179.82	-124.90	0.40	124.90	119.35	5.554	22.489	
1,400.00	1,400.00	1,401.00	1,399.00	3.00	3.00	179.82	-124.90	0.40	124.90	118.90	6.004	20.805	
1,500.00	1,500.00	1,501.00	1,499.00	3.23	3.23	179.82	-124.90	0.40	124.90	118.45	6.453	19.355	
1,600.00	1,600.00	1,601.00	1,599.00	3.45	3.45	179.82	-124.90	0.40	124.90	118.00	6.903	18.095	
1,700.00	1,700.00	1,701.00	1,699.00	3.67	3.68	179.82	-124.90	0.40	124.90	117.55	7.352	16.988	
1,800.00	1,800.00	1,801.00	1,799.00	3.90	3.90	179.82	-124.90	0.40	124.90	117.10	7.802	16.010	
1,900.00	1,900.00	1,901.00	1,899.00	4.12	4.13	179.82	-124.90	0.40	124.90	116.65	8.251	15.137	
2,000.00	2,000.00	2,001.00	1,999.00	4.35	4.35	179.82	-124.90	0.40	124.90	116.20	8.701	14.355	
2,100.00	2,100.00	2,101.00	2,099.00	4.57	4.58	179.82	-124.90	0.40	124.90	115.75	9.150	13.650	
2,200.00	2,200.00	2,201.00	2,199.00	4.80	4.80	179.82	-124.90	0.40	124.90	115.30	9.600	13.011	
2,300.00	2,300.00	2,301.00	2,299.00	5.02	5.03	179.82	-124.90	0.40	124.90	114.85	10.049	12.429	
2,400.00	2,400.00	2,401.00	2,399.00	5.25	5.25	179.82	-124.90	0.40	124.90	114.40	10.499	11.897	

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

Anticollision Report

Company: COG OPERATING, LLC
 Project: Eddy County, NM (NAD83) NMEZ
 Reference Site: Fat Goblin Federal COM
 Site Error: 0.00 usft
 Reference Well: #11H
 Well Error: 0.00 usft
 Reference Wellbore: OH
 Reference Design: Plan #1

Local Co-ordinate Reference: Well #11H
 TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
 MD Reference: RKB @ 3690.00usft (Rig KB = 30')
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.000 sigma
 Database: EDM 5000.14 Single User Db
 Offset TVD Reference: Offset Datum

Offset Design Fat Goblin Federal COM - #21H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Tooface (')	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
2,500.00	2,500.00	2,501.00	2,499.00	5.47	5.48	179.82	-124.90	0.40	124.90	113.95	10.948	11.408		
2,600.00	2,600.00	2,601.00	2,599.00	5.70	5.70	179.82	-124.90	0.40	124.90	113.50	11.398	10.958		
2,700.00	2,700.00	2,701.00	2,699.00	5.92	5.92	179.82	-124.90	0.40	124.90	113.05	11.847	10.542		
2,800.00	2,800.00	2,801.00	2,799.00	6.15	6.15	179.82	-124.90	0.40	124.90	112.60	12.297	10.157		
2,900.00	2,900.00	2,901.00	2,899.00	6.37	6.37	179.82	-124.90	0.40	124.90	112.15	12.746	9.799		
3,000.00	3,000.00	3,001.00	2,999.00	6.60	6.60	179.82	-124.90	0.40	124.90	111.70	13.196	9.465		
3,100.00	3,100.00	3,101.00	3,099.00	6.82	6.82	179.82	-124.90	0.40	124.90	111.26	13.646	9.153		
3,200.00	3,200.00	3,201.00	3,199.00	7.05	7.05	179.82	-124.90	0.40	124.90	110.81	14.095	8.861		
3,300.00	3,300.00	3,301.00	3,299.00	7.27	7.27	179.82	-124.90	0.40	124.90	110.36	14.545	8.587		
3,400.00	3,400.00	3,401.00	3,399.00	7.50	7.50	179.82	-124.90	0.40	124.90	109.91	14.994	8.330		
3,500.00	3,500.00	3,501.00	3,499.00	7.72	7.72	179.82	-124.90	0.40	124.90	109.46	15.444	8.087		
3,600.00	3,600.00	3,601.00	3,599.00	7.95	7.95	179.82	-124.90	0.40	124.90	109.01	15.893	7.859		
3,700.00	3,700.00	3,701.00	3,699.00	8.17	8.17	179.82	-124.90	0.40	124.90	108.56	16.343	7.643		
3,800.00	3,800.00	3,801.00	3,799.00	8.40	8.40	179.82	-124.90	0.40	124.90	108.11	16.792	7.438		
3,900.00	3,900.00	3,901.00	3,899.00	8.62	8.62	179.82	-124.90	0.40	124.90	107.66	17.242	7.244		
4,000.00	4,000.00	4,001.00	3,999.00	8.84	8.85	179.82	-124.90	0.40	124.90	107.21	17.691	7.060		
4,029.13	4,029.13	4,028.13	4,028.13	8.91	8.91	179.82	-124.90	0.40	124.90	107.08	17.818	7.010		
4,050.00	4,049.99	4,048.99	4,048.99	8.95	8.95	87.01	-124.90	0.40	124.88	106.97	17.909	6.973		
4,100.00	4,099.78	4,101.22	4,098.78	9.05	9.07	89.03	-124.90	0.40	124.73	106.60	18.125	6.881		
4,114.23	4,113.85	4,112.85	4,112.85	9.08	9.10	90.00	-124.90	0.40	124.71	106.53	18.181	6.859 CC, ES		
4,150.00	4,148.92	4,147.92	4,147.92	9.16	9.18	93.14	-124.90	0.40	124.91	106.57	18.334	6.813		
4,200.00	4,196.95	4,204.05	4,195.95	9.27	9.30	98.99	-124.90	0.40	126.44	107.87	18.571	6.808		
4,250.00	4,243.44	4,242.44	4,242.44	9.39	9.39	105.98	-124.90	0.40	130.72	111.94	18.782	6.960		
4,300.00	4,287.96	4,286.96	4,286.96	9.55	9.49	113.31	-124.90	0.40	139.23	120.21	19.023	7.319		
4,350.00	4,330.09	4,329.09	4,329.09	9.74	9.58	120.17	-124.90	0.40	153.10	133.83	19.270	7.945		
4,400.00	4,369.45	4,368.45	4,368.45	9.98	9.67	125.98	-124.90	0.40	172.80	153.29	19.513	8.856		
4,450.00	4,405.68	4,404.68	4,404.68	10.30	9.75	130.48	-124.90	0.40	198.20	178.45	19.743	10.039		
4,500.00	4,438.44	4,437.44	4,437.44	10.70	9.83	133.57	-124.90	0.40	228.77	208.82	19.954	11.465		
4,550.00	4,467.43	4,466.43	4,466.43	11.21	9.89	135.21	-124.90	0.40	263.84	243.70	20.141	13.100		
4,600.00	4,492.38	4,491.38	4,491.38	11.82	9.95	135.32	-124.90	0.40	302.69	282.39	20.304	14.908		
4,650.00	4,513.07	4,512.07	4,512.07	12.54	10.00	133.62	-124.90	0.40	344.66	324.22	20.440	16.862		
4,700.00	4,529.31	4,528.31	4,528.31	13.37	10.03	129.52	-124.90	0.40	389.10	368.55	20.551	18.934		
4,750.00	4,540.94	4,538.52	4,538.52	14.28	10.15	134.54	-124.90	3.56	434.85	414.15	20.701	21.006		
4,800.00	4,547.85	4,712.47	4,708.71	15.27	10.42	148.48	-124.89	32.34	479.98	459.51	20.468	23.450		
4,847.31	4,550.00	5,319.12	5,049.24	16.26	16.41	168.83	-124.71	493.10	510.36	494.98	15.383	33.176		
4,900.00	4,550.00	5,401.13	5,050.00	17.41	18.09	169.25	-124.68	572.83	509.95	494.14	15.819	32.238		
4,998.41	4,550.00	5,502.74	5,050.00	19.66	20.34	169.43	-124.64	671.22	509.64	492.85	16.791	30.352		
5,007.41	4,550.00	5,506.26	5,050.00	19.87	20.42	169.43	-124.64	680.22	509.64	492.79	16.858	30.231		
5,100.00	4,550.00	5,601.15	5,050.00	22.09	22.63	169.40	-124.60	772.81	509.70	491.77	17.927	28.432		
5,200.00	4,550.00	5,701.15	5,050.00	24.56	25.05	169.37	-124.57	872.81	509.76	490.59	19.165	26.598		
5,300.00	4,550.00	5,801.15	5,050.00	27.08	27.53	169.33	-124.53	972.81	509.81	489.33	20.487	24.885		
5,400.00	4,550.00	5,901.15	5,050.00	29.65	30.07	169.30	-124.49	1,072.81	509.87	487.99	21.877	23.306		
5,500.00	4,550.00	6,001.15	5,050.00	32.25	32.63	169.26	-124.45	1,172.81	509.93	486.61	23.325	21.862		
5,600.00	4,550.00	6,101.15	5,050.00	34.88	35.23	169.23	-124.41	1,272.81	509.99	485.17	24.821	20.546		
5,700.00	4,550.00	6,201.15	5,050.00	37.52	37.85	169.19	-124.37	1,372.81	510.05	483.69	26.358	19.351		
5,800.00	4,550.00	6,301.15	5,050.00	40.18	40.49	169.16	-124.34	1,472.81	510.11	482.18	27.930	18.264		
5,900.00	4,550.00	6,401.15	5,050.00	42.85	43.15	169.12	-124.30	1,572.81	510.17	480.63	29.531	17.275		
6,000.00	4,550.00	6,501.15	5,050.00	45.53	45.82	169.09	-124.26	1,672.81	510.23	479.07	31.159	16.375		
6,100.00	4,550.00	6,601.15	5,050.00	48.23	48.49	169.05	-124.22	1,772.81	510.28	477.48	32.809	15.553		
6,200.00	4,550.00	6,701.15	5,050.00	50.92	51.18	169.02	-124.18	1,872.81	510.34	475.87	34.479	14.802		
6,300.00	4,550.00	6,801.15	5,050.00	53.63	53.87	168.98	-124.14	1,972.81	510.40	474.24	36.167	14.112		
6,400.00	4,550.00	6,901.15	5,050.00	56.34	56.58	168.95	-124.11	2,072.81	510.46	472.59	37.871	13.479		

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

Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy County, NM (NAD83) NMEZ
Reference Site: Fat Goblin Federal COM
Site Error: 0.00 usft
Reference Well: #11H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well #11H
TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
MD Reference: RKB @ 3690.00usft (Rig KB = 30')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.000 sigma
Database: EDM 5000.14 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Fat Goblin Federal COM - #21H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
6,500.00	4,550.00	7,001.15	5,050.00	59.05	59.28	168.91	-124.07	2,172.80	510.52	470.94	39.589	12.896		
6,600.00	4,550.00	7,101.16	5,050.00	61.77	61.99	168.88	-124.03	2,272.80	510.59	469.26	41.321	12.357		
6,700.00	4,550.00	7,201.16	5,050.00	64.50	64.71	168.85	-123.99	2,372.80	510.65	467.58	43.064	11.858		
6,800.00	4,550.00	7,301.16	5,050.00	67.22	67.43	168.81	-123.95	2,472.80	510.71	465.89	44.819	11.395		
6,900.00	4,550.00	7,401.16	5,050.00	69.95	70.15	168.78	-123.91	2,572.80	510.77	464.18	46.583	10.965		
7,000.00	4,550.00	7,501.16	5,050.00	72.68	72.87	168.74	-123.88	2,672.80	510.83	462.47	48.358	10.564		
7,100.00	4,550.00	7,601.16	5,050.00	75.41	75.60	168.71	-123.84	2,772.80	510.89	460.75	50.141	10.189		
7,200.00	4,550.00	7,701.16	5,050.00	78.15	78.33	168.67	-123.80	2,872.80	510.95	459.02	51.933	9.839		
7,300.00	4,550.00	7,801.16	5,050.00	80.89	81.06	168.64	-123.76	2,972.80	511.01	457.28	53.733	9.510		
7,400.00	4,550.00	7,901.16	5,050.00	83.62	83.80	168.60	-123.72	3,072.80	511.08	455.54	55.541	9.202		
7,500.00	4,550.00	8,001.16	5,050.00	86.36	86.53	168.57	-123.68	3,172.80	511.14	453.78	57.355	8.912		
7,600.00	4,550.00	8,101.16	5,050.00	89.11	89.27	168.53	-123.65	3,272.80	511.20	452.02	59.177	8.638		
7,700.00	4,550.00	8,201.16	5,050.00	91.85	92.01	168.50	-123.61	3,372.80	511.26	450.26	61.006	8.381		
7,800.00	4,550.00	8,301.16	5,050.00	94.59	94.75	168.47	-123.57	3,472.80	511.33	448.49	62.841	8.137		
7,900.00	4,550.00	8,401.16	5,050.00	97.33	97.49	168.43	-123.53	3,572.80	511.39	446.71	64.682	7.906		
8,000.00	4,550.00	8,501.16	5,050.00	100.08	100.23	168.40	-123.49	3,672.80	511.45	444.92	66.529	7.688		
8,100.00	4,550.00	8,601.16	5,050.00	102.83	102.98	168.36	-123.46	3,772.80	511.52	443.13	68.382	7.480		
8,200.00	4,550.00	8,701.16	5,050.00	105.57	105.72	168.33	-123.42	3,872.80	511.58	441.34	70.241	7.283		
8,300.00	4,550.00	8,801.16	5,050.00	108.32	108.47	168.29	-123.38	3,972.80	511.64	439.54	72.106	7.096		
8,400.00	4,550.00	8,901.16	5,050.00	111.07	111.21	168.26	-123.34	4,072.80	511.71	437.73	73.976	6.917		
8,500.00	4,550.00	9,001.16	5,050.00	113.82	113.96	168.22	-123.30	4,172.79	511.77	435.92	75.851	6.747		
8,600.00	4,550.00	9,101.17	5,050.00	116.57	116.71	168.19	-123.26	4,272.79	511.83	434.10	77.732	6.585		
8,700.00	4,550.00	9,201.17	5,050.00	119.32	119.45	168.16	-123.23	4,372.79	511.90	432.28	79.618	6.429		
8,800.00	4,550.00	9,301.17	5,050.00	122.07	122.20	168.12	-123.19	4,472.79	511.96	430.45	81.509	6.281		
8,900.00	4,550.00	9,401.17	5,050.00	124.82	124.95	168.09	-123.15	4,572.79	512.03	428.62	83.405	6.139		
9,000.00	4,550.00	9,501.17	5,050.00	127.57	127.70	168.05	-123.11	4,672.79	512.09	426.79	85.306	6.003		
9,100.00	4,550.00	9,601.17	5,050.00	130.32	130.45	168.02	-123.07	4,772.79	512.16	424.95	87.212	5.873		
9,200.00	4,550.00	9,701.17	5,050.00	133.07	133.20	167.98	-123.03	4,872.79	512.22	423.10	89.123	5.747		
9,300.00	4,550.00	9,801.17	5,050.00	135.82	135.95	167.95	-123.00	4,972.79	512.29	421.25	91.039	5.627		
9,400.00	4,550.00	9,901.17	5,050.00	138.57	138.70	167.91	-122.96	5,072.79	512.35	419.40	92.959	5.512		
9,500.00	4,550.00	10,001.17	5,050.00	141.33	141.46	167.88	-122.92	5,172.79	512.42	417.54	94.884	5.400		
9,600.00	4,550.00	10,101.17	5,050.00	144.08	144.21	167.85	-122.88	5,272.79	512.49	415.67	96.814	5.294		
9,700.00	4,550.00	10,201.17	5,050.00	146.83	146.96	167.81	-122.84	5,372.79	512.55	413.80	98.749	5.190		
9,800.00	4,550.00	10,301.17	5,050.00	149.59	149.71	167.78	-122.80	5,472.79	512.62	411.93	100.688	5.091		
9,900.00	4,550.00	10,401.17	5,050.00	152.34	152.47	167.74	-122.77	5,572.79	512.69	410.05	102.631	4.995		
10,000.00	4,550.00	10,501.17	5,050.00	155.10	155.22	167.71	-122.73	5,672.79	512.75	408.17	104.579	4.903		
10,100.00	4,550.00	10,601.17	5,050.00	157.85	157.97	167.67	-122.69	5,772.79	512.82	406.29	106.532	4.814		
10,200.00	4,550.00	10,701.17	5,050.00	160.60	160.73	167.64	-122.65	5,872.79	512.89	404.40	108.489	4.728		
10,300.00	4,550.00	10,801.17	5,050.00	163.36	163.48	167.61	-122.61	5,972.79	512.95	402.50	110.451	4.644		
10,400.00	4,550.00	10,901.17	5,050.00	166.11	166.24	167.57	-122.57	6,072.79	513.02	400.60	112.417	4.564		
10,500.00	4,550.00	11,001.17	5,050.00	168.87	168.99	167.54	-122.54	6,172.78	513.09	398.70	114.388	4.486		
10,600.00	4,550.00	11,101.18	5,050.00	171.62	171.75	167.50	-122.50	6,272.78	513.16	396.79	116.363	4.410		
10,700.00	4,550.00	11,201.18	5,050.00	174.38	174.50	167.47	-122.46	6,372.78	513.23	394.88	118.343	4.337		
10,800.00	4,550.00	11,301.18	5,050.00	177.14	177.26	167.43	-122.42	6,472.78	513.29	392.97	120.327	4.266		
10,900.00	4,550.00	11,401.18	5,050.00	179.89	180.01	167.40	-122.38	6,572.78	513.36	391.05	122.315	4.197		
11,000.00	4,550.00	11,501.18	5,050.00	182.65	182.77	167.37	-122.34	6,672.78	513.43	389.12	124.308	4.130		
11,100.00	4,550.00	11,601.18	5,050.00	185.40	185.52	167.33	-122.31	6,772.78	513.50	387.19	126.305	4.066		
11,200.00	4,550.00	11,701.18	5,050.00	188.16	188.28	167.30	-122.27	6,872.78	513.57	385.26	128.306	4.003		
11,300.00	4,550.00	11,801.18	5,050.00	190.92	191.03	167.26	-122.23	6,972.78	513.64	383.33	130.312	3.942		
11,400.00	4,550.00	11,901.18	5,050.00	193.67	193.79	167.23	-122.19	7,072.78	513.71	381.38	132.322	3.882		
11,500.00	4,550.00	12,001.18	5,050.00	196.43	196.55	167.20	-122.15	7,172.78	513.78	379.44	134.337	3.825		
11,600.00	4,550.00	12,101.18	5,050.00	199.19	199.30	167.16	-122.11	7,272.78	513.85	377.49	136.356	3.768		

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

Anticollision Report

Company: COG OPERATING, LLC
Project: Eddy County, NM (NAD83) NMEZ
Reference Site: Fat Goblin Federal COM
Site Error: 0.00 usft
Reference Well: #11H
Well Error: 0.00 usft
Reference Wellbore: OH
Reference Design: Plan #1

Local Co-ordinate Reference: Well #11H
TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
MD Reference: RKB @ 3690.00usft (Rig KB = 30')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.000 sigma
Database: EDM 5000.14 Single User Db
Offset TVD Reference: Offset Datum

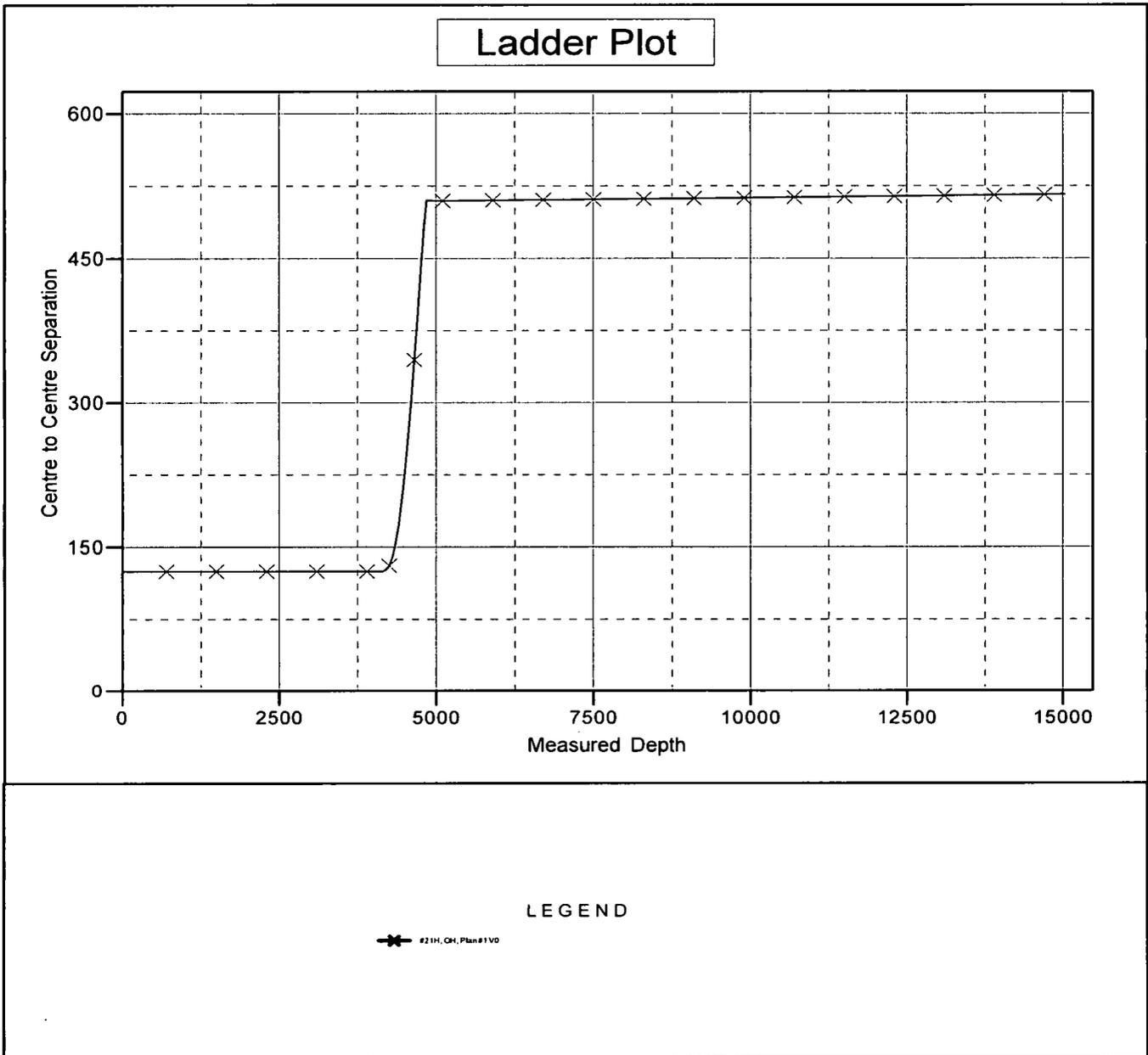
Offset Design Fat Goblin Federal COM - #21H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: O-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance			Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
11,700.00	4,550.00	12,201.18	5,050.00	201.94	202.06	167.13	-122.08	7,372.78	513.92	375.54	138.379	3.714		
11,800.00	4,550.00	12,301.18	5,050.00	204.70	204.82	167.09	-122.04	7,472.78	513.99	373.58	140.406	3.661		
11,900.00	4,550.00	12,401.18	5,050.00	207.46	207.57	167.06	-122.00	7,572.78	514.06	371.62	142.438	3.609		
12,000.00	4,550.00	12,501.18	5,050.00	210.21	210.33	167.02	-121.96	7,672.78	514.13	369.65	144.474	3.559		
12,100.00	4,550.00	12,601.18	5,050.00	212.97	213.09	166.99	-121.92	7,772.78	514.20	367.68	146.515	3.510		
12,200.00	4,550.00	12,701.18	5,050.00	215.73	215.84	166.96	-121.88	7,872.78	514.27	365.71	148.560	3.462		
12,300.00	4,550.00	12,801.18	5,050.00	218.48	218.60	166.92	-121.85	7,972.78	514.34	363.73	150.609	3.415		
12,400.00	4,550.00	12,901.18	5,050.00	221.24	221.36	166.89	-121.81	8,072.78	514.41	361.75	152.662	3.370		
12,500.00	4,550.00	13,001.18	5,050.00	224.00	224.12	166.85	-121.77	8,172.77	514.48	359.76	154.720	3.325		
12,600.00	4,550.00	13,101.19	5,050.00	226.76	226.87	166.82	-121.73	8,272.77	514.55	357.77	156.782	3.282		
12,700.00	4,550.00	13,201.19	5,050.00	229.51	229.63	166.79	-121.69	8,372.77	514.63	355.78	158.848	3.240		
12,800.00	4,550.00	13,301.19	5,050.00	232.27	232.39	166.75	-121.65	8,472.77	514.70	353.78	160.919	3.198		
12,900.00	4,550.00	13,401.19	5,050.00	235.03	235.15	166.72	-121.62	8,572.77	514.77	351.78	162.993	3.158		
13,000.00	4,550.00	13,501.19	5,050.00	237.79	237.90	166.68	-121.58	8,672.77	514.84	349.77	165.073	3.119		
13,100.00	4,550.00	13,601.19	5,050.00	240.55	240.66	166.65	-121.54	8,772.77	514.91	347.76	167.156	3.080		
13,200.00	4,550.00	13,701.19	5,050.00	243.30	243.42	166.62	-121.50	8,872.77	514.99	345.74	169.244	3.043		
13,300.00	4,550.00	13,801.19	5,050.00	246.06	246.18	166.58	-121.46	8,972.77	515.06	343.72	171.336	3.006		
13,400.00	4,550.00	13,901.19	5,050.00	248.82	248.94	166.55	-121.42	9,072.77	515.13	341.70	173.432	2.970		
13,500.00	4,550.00	14,001.19	5,050.00	251.58	251.69	166.51	-121.39	9,172.77	515.21	339.67	175.533	2.935		
13,600.00	4,550.00	14,101.19	5,050.00	254.34	254.45	166.48	-121.35	9,272.77	515.28	337.64	177.638	2.901		
13,700.00	4,550.00	14,201.19	5,050.00	257.09	257.21	166.45	-121.31	9,372.77	515.35	335.61	179.747	2.867		
13,800.00	4,550.00	14,301.19	5,050.00	259.85	259.97	166.41	-121.27	9,472.77	515.43	333.57	181.861	2.834		
13,900.00	4,550.00	14,401.19	5,050.00	262.61	262.73	166.38	-121.23	9,572.77	515.50	331.52	183.979	2.802		
14,000.00	4,550.00	14,501.19	5,050.00	265.37	265.48	166.34	-121.20	9,672.77	515.57	329.47	186.101	2.770		
14,100.00	4,550.00	14,601.19	5,050.00	268.13	268.24	166.31	-121.16	9,772.77	515.65	327.42	188.227	2.740		
14,200.00	4,550.00	14,701.19	5,050.00	270.88	271.00	166.28	-121.12	9,872.77	515.72	325.37	190.358	2.709		
14,300.00	4,550.00	14,801.19	5,050.00	273.64	273.76	166.24	-121.08	9,972.77	515.80	323.30	192.493	2.680		
14,400.00	4,550.00	14,901.19	5,050.00	276.40	276.52	166.21	-121.04	10,072.77	515.87	321.24	194.632	2.650		
14,500.00	4,550.00	15,001.19	5,050.00	279.16	279.28	166.17	-121.00	10,172.77	515.95	319.17	196.776	2.622		
14,600.00	4,550.00	15,101.19	5,050.00	281.92	282.04	166.14	-120.97	10,272.76	516.02	317.10	198.924	2.594		
14,700.00	4,550.00	15,201.20	5,050.00	284.68	284.79	166.11	-120.93	10,372.76	516.10	315.02	201.076	2.567		
14,800.00	4,550.00	15,301.20	5,050.00	287.44	287.55	166.07	-120.89	10,472.76	516.17	312.94	203.232	2.540		
14,900.00	4,550.00	15,401.20	5,050.00	290.19	290.31	166.04	-120.85	10,572.76	516.25	310.86	205.393	2.513		
15,000.00	4,550.00	15,501.20	5,050.00	292.95	293.07	166.01	-120.81	10,672.76	516.32	308.77	207.558	2.488		
15,031.27	4,550.00	15,530.07	5,050.00	293.82	293.87	166.00	-120.80	10,704.03	516.35	308.14	208.213	2.480 SF		

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

Anticollision Report

Company: COG OPERATING, LLC	Local Co-ordinate Reference: Well #11H
Project: Eddy County, NM (NAD83) NMEZ	TVD Reference: RKB @ 3690.00usft (Rig KB = 30')
Reference Site: Fat Goblin Federal COM	MD Reference: RKB @ 3690.00usft (Rig KB = 30')
Site Error: 0.00 usft	North Reference: Grid
Reference Well: #11H	Survey Calculation Method: Minimum Curvature
Well Error: 0.00 usft	Output errors are at 2.000 sigma
Reference Wellbore OH	Database: EDM 5000.14 Single User Db
Reference Design: Plan #1	Offset TVD Reference: Offset Datum

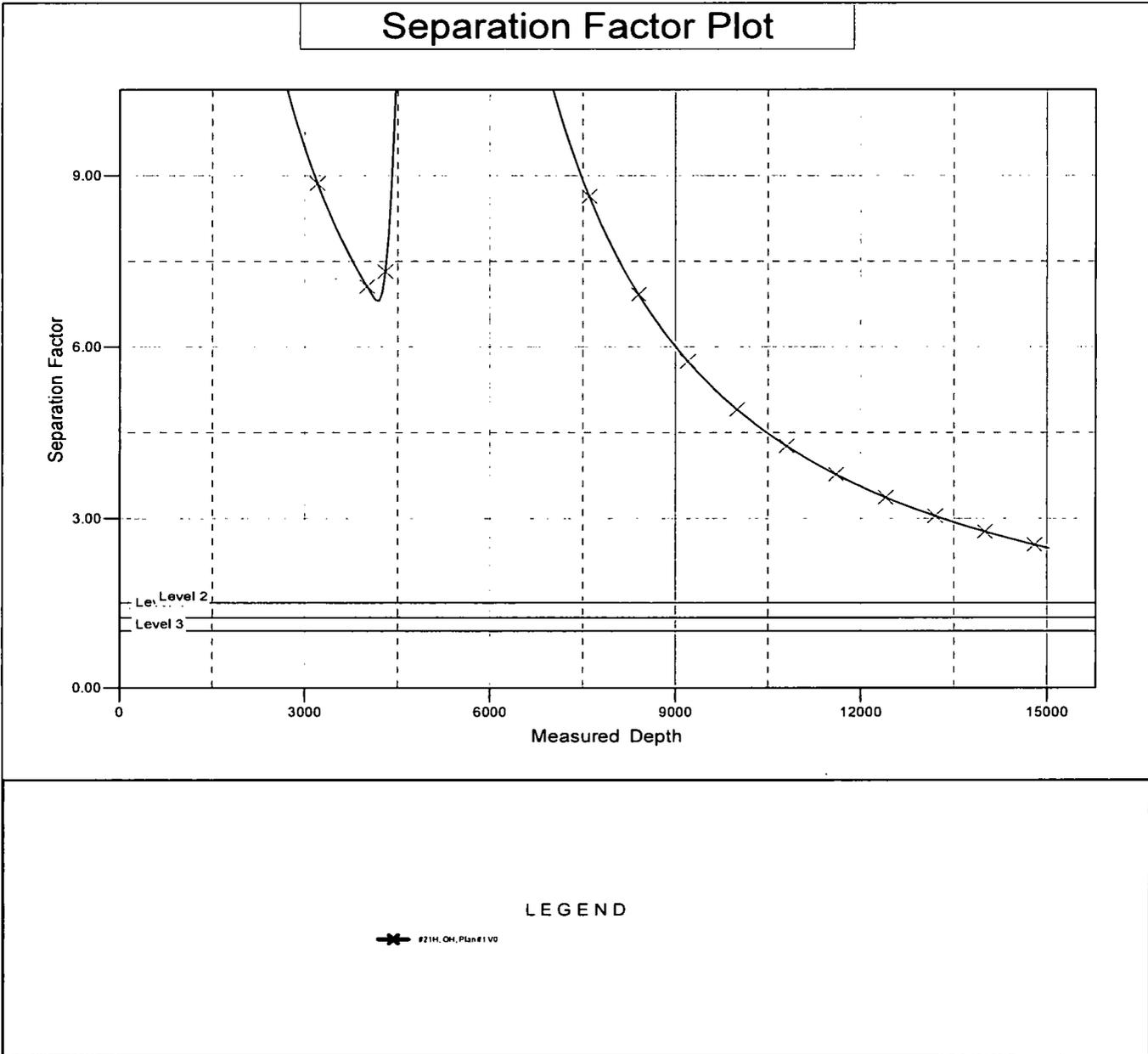
Reference Depths are relative to RKB @ 3690.00usft (Rig KB = 30')	Coordinates are relative to: #11H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.16°



Anticollision Report

Company: COG OPERATING, LLC Project: Eddy County, NM (NAD83) NMEZ Reference Site: Fat Goblin Federal COM Site Error: 0.00 usft Reference Well: #11H Well Error: 0.00 usft Reference Wellbore: OH Reference Design: Plan #1	Local Co-ordinate Reference: Well #11H TVD Reference: RKB @ 3690.00usft (Rig KB = 30') MD Reference: RKB @ 3690.00usft (Rig KB = 30') North Reference: Grid Survey Calculation Method: Minimum Curvature Output errors are at 2.000 sigma Database: EDM 5000.14 Single User Db Offset TVD Reference: Offset Datum	
---	--	--

Reference Depths are relative to RKB @ 3690.00usft (Rig KB = 30')	Coordinates are relative to: #11H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is 104° 20' 0.000 W	Grid Convergence at Surface is: 0.16°



Fat Goblin Federal Com #11H

Contingent Multi-Stage Cement Discussion:

COG does not anticipate losing circulation or encountering water flows while drilling this well. If these situations arise, COG requests approval in this APD to set DV tools where necessary immediately without having to shut down the rig and wait for sundry approval.

Lost Circulation or Water flow Contingent DV Tool Cement Plans are as follows:

1. If lost circulation occurs while drilling the 12 ¼" intermediate hole, it may become necessary to set a DV tool in the 9 5/8" casing. The DV tool depth will be based on hole conditions and cement volumes will be adjusted proportionally. If the DV Tool is needed, it will be set a minimum of 50 feet below the previous casing and a minimum of 200 feet above the current shoe.
2. If water flows in the San Andres are encountered, it may become necessary to set a DV tool in the 7" casing. These water flows normally occur in areas where produced water disposal is happening. This dense cement is used to combat water flows. This cement recipe also has a right angle set time and is mixed a little under saturated so the water flow will be absorbed by cement. The DV tool depth will be based on hole conditions and cement volumes will be adjusted proportionally. If the DV tool is needed, it will be set a minimum of 50 feet below the previous casing and a minimum of 200 feet above the current shoe.

Casing	Bottom MD of Segment	Lead or Tail	Cement Type	Additives	Quantity (Sks)	Yield (cu.ft./sk)	Density (lbs./gal)
Inter. Multi-Stage	+/- 1350'	1 st Lead	50:50:10 C: Poz:Gel	5% Salt + 5 pps LCM + 0.25 pps CF	150	2.45	11.8
		1 st Tail	Class C	2% Cacl2	200	1.32	14.8
		2 nd Lead	50:50:10 C: Poz:Gel	5% Salt + 5 pps LCM + 0.25 pps CF	200	2.45	11.8
Prod. Multi-Stage	+/- 4000'	1 st Lead	35:65:6 C:Poz Gel	5% salt+5 pps LCM+0.2% SMS + 1% FL-25+1% BA-58+0.3% FL-52A+ 0.125 pps CF	200	2.01	12.5
		1 st Tail	Class C	0.3% R-3 + 1.5% CD-32	1350	1.37	14
		2 nd Lead	35:65:6 C:Poz Gel	5% salt + 5 pp LCM + 0.2% SMS + 1% FL-25+ 1% BA-58 + 0.3% FL-52A + 0.125 pps CF	650	2.01	12.5
		2 nd Tail	50:50:2 C: PozGel	5% salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.125 pps CF	150	0.99	16.8

Production Cement Breakdown

Well: Fat Goblin Federal Com #11H

Hole Volumes						
Hole	Hole Section (Length)	Casing	Capacity (ft ³ /Lin.ft)	Cu.Ft	Total Cu.Ft	% Excess
Prod	0-1250 (1250)	7"	0.1585	198.1	198.1	0
Prod	1250-4029 (2782)	7"	0.1503	440	440	207

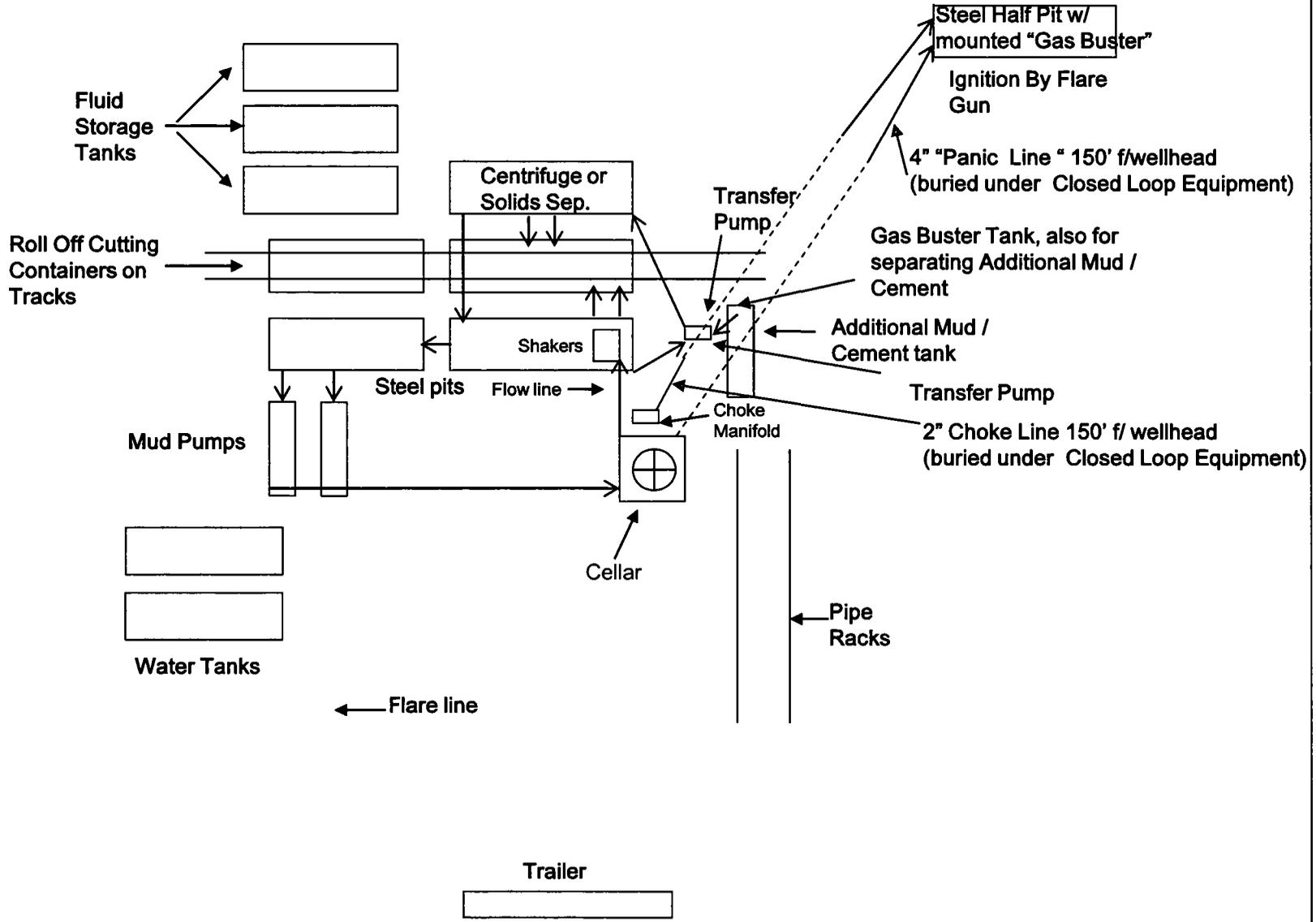
Cement Volumes					
Blend	Cement Sacks	Yield	Weight	Volume	Total Volume
35:65:6	500	2.01	12.5	1005	1553
50:50:02	400	1.37	14	548	

% Excess Calculation			
Total Volume	1553		1354.9
Cu.Ft	-198.1		/440
	1354.9		207%excess

7" to be run from surface to kickoff point and changed over to 5 ½" with DV Tool and ECP at kickoff point. 5 ½" casing will be run from kickoff point to td and isolation packers set throughout curve and lateral. 7" to be cemented from kickoff point to surface.

COG Operating LLC

Closed Loop Equipment Diagram

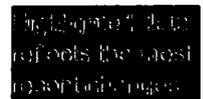




APD ID: 10400028092

Submission Date: 04/09/2018

Operator Name: COG OPERATING LLC



Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Fat_Goblin_Federal_Com_11H_Vicinity_Plat_20180322072354.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Fat_Goblin_Federal_Com_11H_1mileRadius_Map_20180327134345.pdf

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: If the well is productive, contemplated facilities will be as follows: Two (2) proposed flowlines, will follow an archaeologically approved route to the Fat Goblin Federal Com 11H located in Section 11 in T17S R29E. The flowlines will be SDR 7 3" poly line laid on the surface and will be approximately 645 feet in length. Normal working pressure of the flowlines will be below 70 psi and carry a mixture of produced oil, water, and gas. Flowlines will follow existing well-traveled or proposed roads. The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

Production Facilities map:

Fat_Goblin_Federal_Com_11H_Flowlines_Map_20180327071113.pdf

Fat_Goblin_Federal_Com_11H_Battery_Schematic_20180327071325.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, SURFACE CASING
Describe type:

Water source type: GW WELL

Source latitude:

Source longitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: COMMERCIAL

Water source transport method: PIPELINE,TRUCKING

Source transportation land ownership: COMMERCIAL

Water source volume (barrels): 8000

Source volume (acre-feet): 1.0311447

Source volume (gal): 336000

Water source and transportation map:

Loco_Hills_Water_Disposal_Co_Water_Supply_20180322072529.pdf

Caswell_Ranch_Water_Supply_20180322072538.pdf

Water source comments: The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. Water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Vicinity Map. A fresh water source is nearby and fast line may be laid along existing road ROW's and fresh water pumped to the well. Water will originate from private wells location described on the attached "Loco Hills Water Disposal Co" map attached to this APD. James R. Maloney, 575-677-2118. A secondary water source will be from 1 and/or all of the 3 private wells location depicted on the attached "Caswell Ranch Water Supply" Map. No water well will be drilled on the location.

New water well? NO

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

New water well casing?

Used casing source:

Drilling method:

Drill material:

Grout material:

Grout depth:

Casing length (ft.):

Casing top depth (ft.):

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Surfacing material will consist of native caliche. Caliche will be obtained from the actual well site if available. Secondary candidate source will be NMSLO Caliche Pit located in S2/SW4 of Sec 32, T16S, R30E. A third candidate source will be Caswell Ranch owned Caliche Pit located in NESE of Sec 9, T17S, R32E.

Construction Materials source location attachment:

Construction_Turn_Over_Procedure_20180322072712.pdf

NMSLO_Caliche_Pit_20180322072720.pdf

Caswell_Ranch_Caliche_Pit_20180322072727.pdf

Section 7 - Methods for Handling Waste

Waste type: PRODUCED WATER

Waste content description: Produced Water

Amount of waste: 100 barrels

Waste disposal frequency : Daily

Safe containment description: Steel Tanks

Safe containmant attachment:

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

Disposal type description:

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Disposal location description: NMOCD approved commercial disposal facility. R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

Waste type: GARBAGE

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

Amount of waste: 100 pounds

Waste disposal frequency : Weekly

Safe containment description: Trash Bin

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Garbage and trash to be collected in trash bin and hauled to Lea Landfill LLC. Located at mile marker 64, Highway 62-180 East, PO Box 3247, Carlsbad, NM 88221. No toxic waste or hazardous chemicals will be produced by this operation.

Waste type: SEWAGE

Waste content description: Human waste and grey water

Amount of waste: 100 gallons

Waste disposal frequency : Weekly

Safe containment description: Portable septic system and/or portable waste gathering system.

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Hauled to NMOCD approved waste disposal facility.

Waste type: DRILLING

Waste content description: Drill cuttings and drilling fluids

Amount of waste: 100 barrels

Waste disposal frequency : Daily

Safe containment description: Closed Loop System

Safe containmant attachment:

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

Disposal type description:

Disposal location description: R360's disposal site located at 4507 West Carlsbad Highway, Hobbs, NM 88240.

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.)

Reserve pit width (ft.)

Reserve pit depth (ft.)

Reserve pit volume (cu. yd.)

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

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Description of cuttings location: Closed Loop Mud System: Roll-off Style Mud Box.

Cuttings area length (ft.)

Cuttings area width (ft.)

Cuttings area depth (ft.)

Cuttings area volume (cu. yd.)

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Fat_Goblin_Federal_Com_11H_Well_Site_Plat_20180322073102.pdf

Fat_Goblin_Federal_Com_11H_Interim_Reclamation_Plat_20180322073110.pdf

Comments:

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: FAT GOBLIN FED COM

Multiple Well Pad Number: 1

Recontouring attachment:

Drainage/Erosion control construction: No sedimentation or erosion control will be necessary on this location as it is generally flat with little to no slope or cut and fill.

Drainage/Erosion control reclamation: No sedimentation or erosion control will be necessary on this location as it is generally flat with little to no slope or cut and fill.

Well pad proposed disturbance (acres): 4.55	Well pad interim reclamation (acres): 1.35	Well pad long term disturbance (acres): 3.27
Road proposed disturbance (acres): 0	Road interim reclamation (acres): 0	Road long term disturbance (acres): 0
Powerline proposed disturbance (acres): 0	Powerline interim reclamation (acres): 0	Powerline long term disturbance (acres): 0
Pipeline proposed disturbance (acres): 0.44	Pipeline interim reclamation (acres): 0	Pipeline long term disturbance (acres): 0.44
Other proposed disturbance (acres): 0	Other interim reclamation (acres): 0	Other long term disturbance (acres): 0
Total proposed disturbance: 4.99	Total interim reclamation: 1.35	Total long term disturbance: 3.71

Disturbance Comments:

Reconstruction method: After well is 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.

Topsoil redistribution: The stockpiled topsoil will be spread out on reclaimed area and reseeded with a BLM approved seed mixture.

Soil treatment: Approved EPA and BLM requirements and policies for weed control methods will be followed.

Existing Vegetation at the well pad: Grassland area with sandy topsoil. Vegetation is moderately sparse with Native prairie grasses, some mesquite and shinnery oak.

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Grassland area with sandy topsoil. Vegetation is moderately sparse with Native prairie grasses, some mesquite and shinnery oak.

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Grassland area with sandy topsoil. Vegetation is moderately sparse with Native prairie grasses, some mesquite and shinnery oak.

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: Grassland area with sandy topsoil. Vegetation is moderately sparse with Native prairie grasses, some mesquite and shinnery oak.

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

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

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Weed treatment plan description: Approved EPA and BLM requirements and policies for weed control methods will be followed.

Weed treatment plan attachment:

Monitoring plan description: 80% coverage by 2nd growing season of native species with less than 5% invasive species.

Monitoring plan attachment:

Success standards: 80% coverage by 2nd growing season of native species with less than 5% invasive species.

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Operator Name: COG OPERATING LLC

Well Name: FAT GOBLIN FEDERAL COM

Well Number: 11H

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

SUPO Additional Information: 1. It will be necessary to run electric power if this well is productive. Power will be provided by CVE. There will be no necessary electric line construction for this well. CVE operates an existing primary line parallel to the well pad; therefor no poles will be set off the well pad disturbance. There is no permanent or live water in the immediate area. 2. There are no dwellings within 2 miles of this location. 3. A Cultural Resources Examination and Treatment Plan is being preformed by SWCA. Phone # 512.476.0891 and the results will be forwarded to your office in the near future.

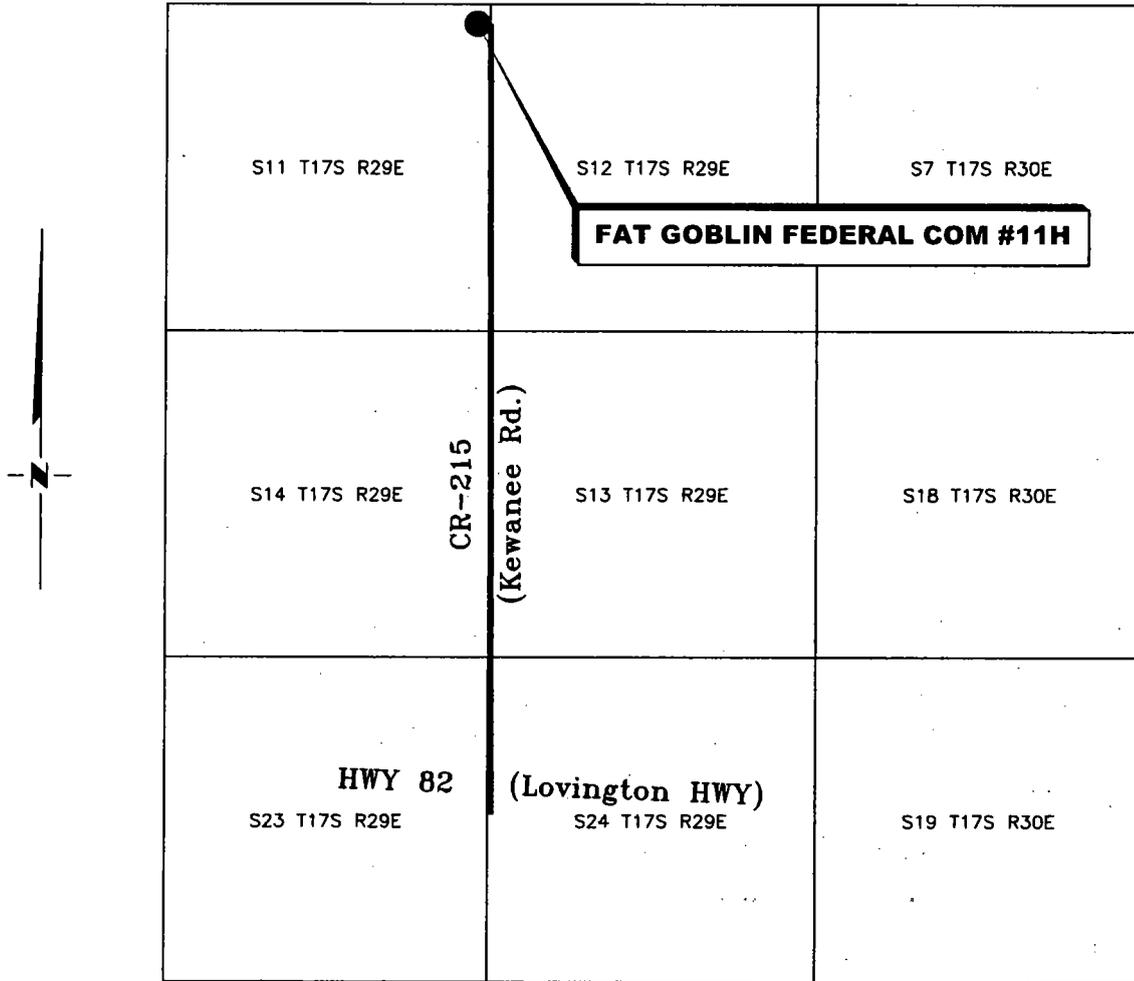
Use a previously conducted onsite? YES

Previous Onsite information: Previous Onsite performed on 02/01/18 by Tim Baker(COG), Jeff Robertson(BLM), Bryan Chaves(RRC).

Other SUPO Attachment

VICINITY MAP

NOT TO SCALE



*SECTION 11, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
 LEASE: Fat Goblin Federal Com
 WELL NO.: 11H

LOCATION: 300' FNL & 245' FEL
 ELEVATION: 3660'

Copyright 2017 - All Rights Reserved

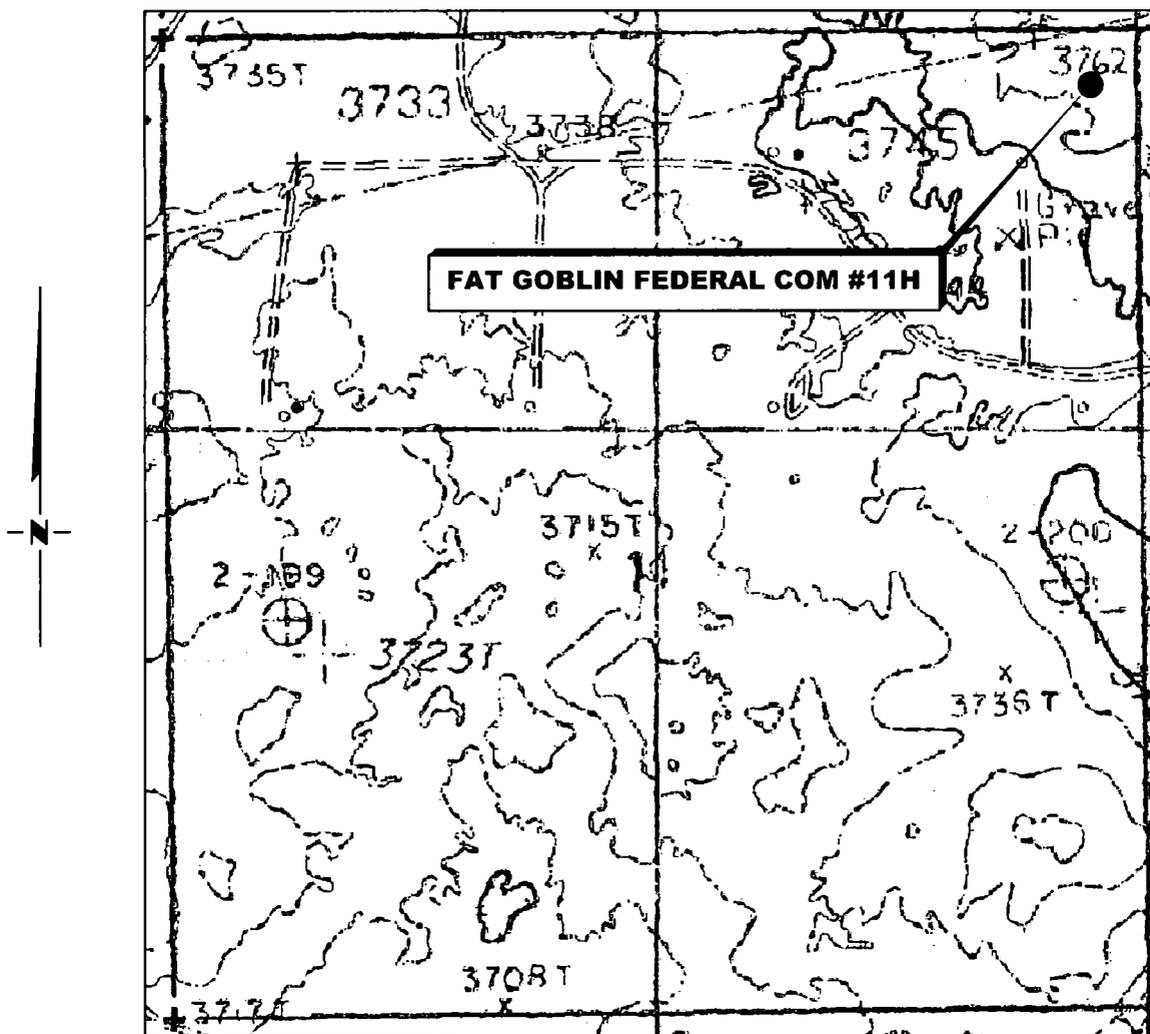
NO.	REVISION	DATE
JOB NO.: LS1712804		
DWG. NO.: 1712804VM		

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: N / A
DATE: 12-14-2017
SURVEYED BY: BC/AS
DRAWN BY: AiAC
APPROVED BY: RMH
SHEET: 1 OF 1

LOCATION VERIFICATION MAP



*SECTION 11, TWP. 17 SOUTH, RGE. 29 EAST,
N. M. P. M., EDDY COUNTY, NEW MEXICO*

OPERATOR: COG Operating, LLC
 LEASE: Fat Goblin Federal Com
 WELL NO.: 11H
 ELEVATION: 3660'

LOCATION: 300' FNL & 245' FEL
 CONTOUR INTERVAL: 10'
 USGS TOPO. SOURCE MAP:
Loco Hills, NM (P. E. 1985)

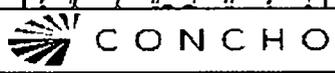
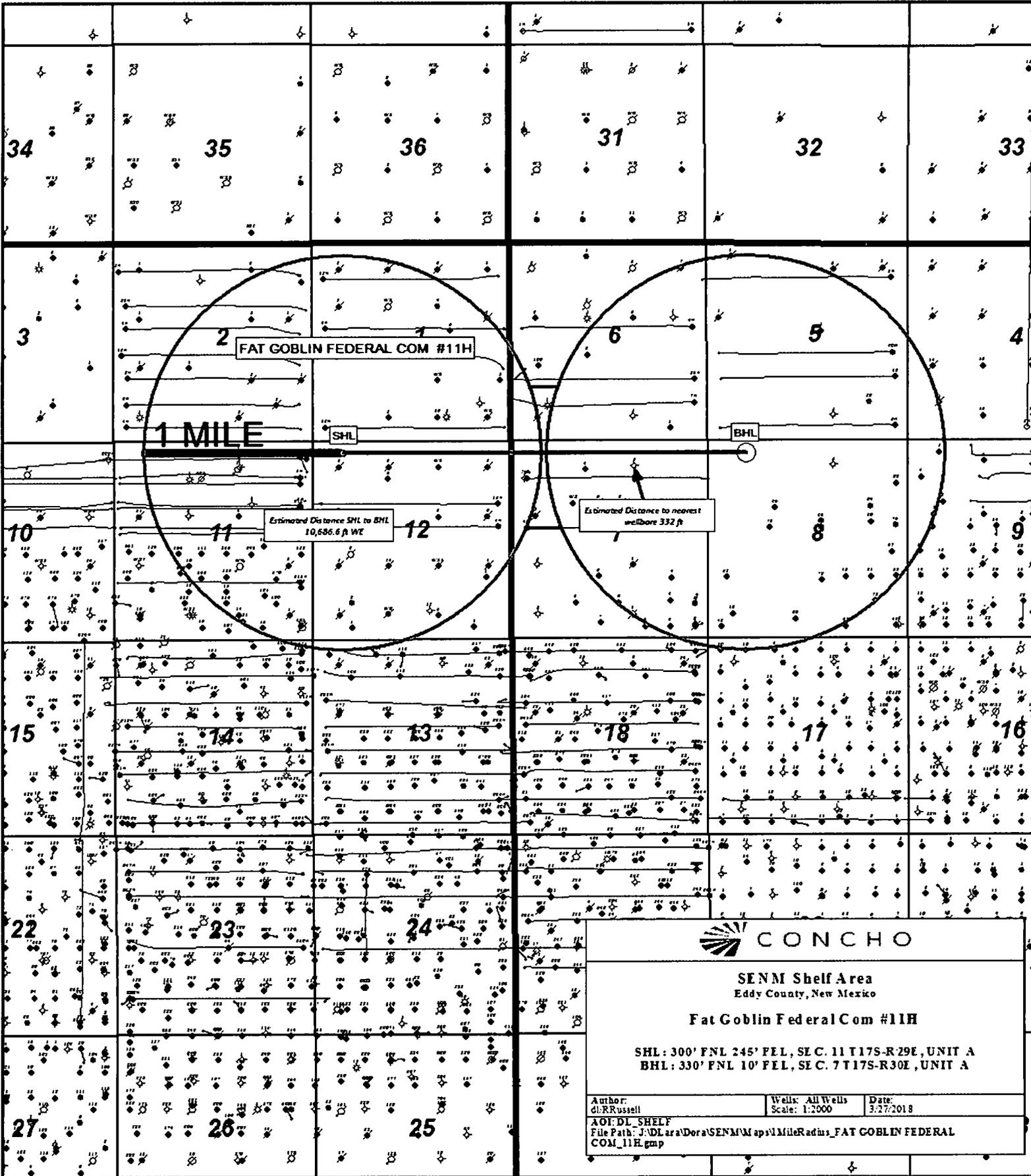
Copyright 2017 - All Rights Reserved

NO.	REVISION	DATE
JOB NO.: LS1712804		
DWG. NO.: 1712804LVM		

RRC

308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 1000'
 DATE: 12-14-2017
 SURVEYED BY: BC/AS
 DRAWN BY: AiAC
 APPROVED BY: RMH
 SHEET: 1 OF 1



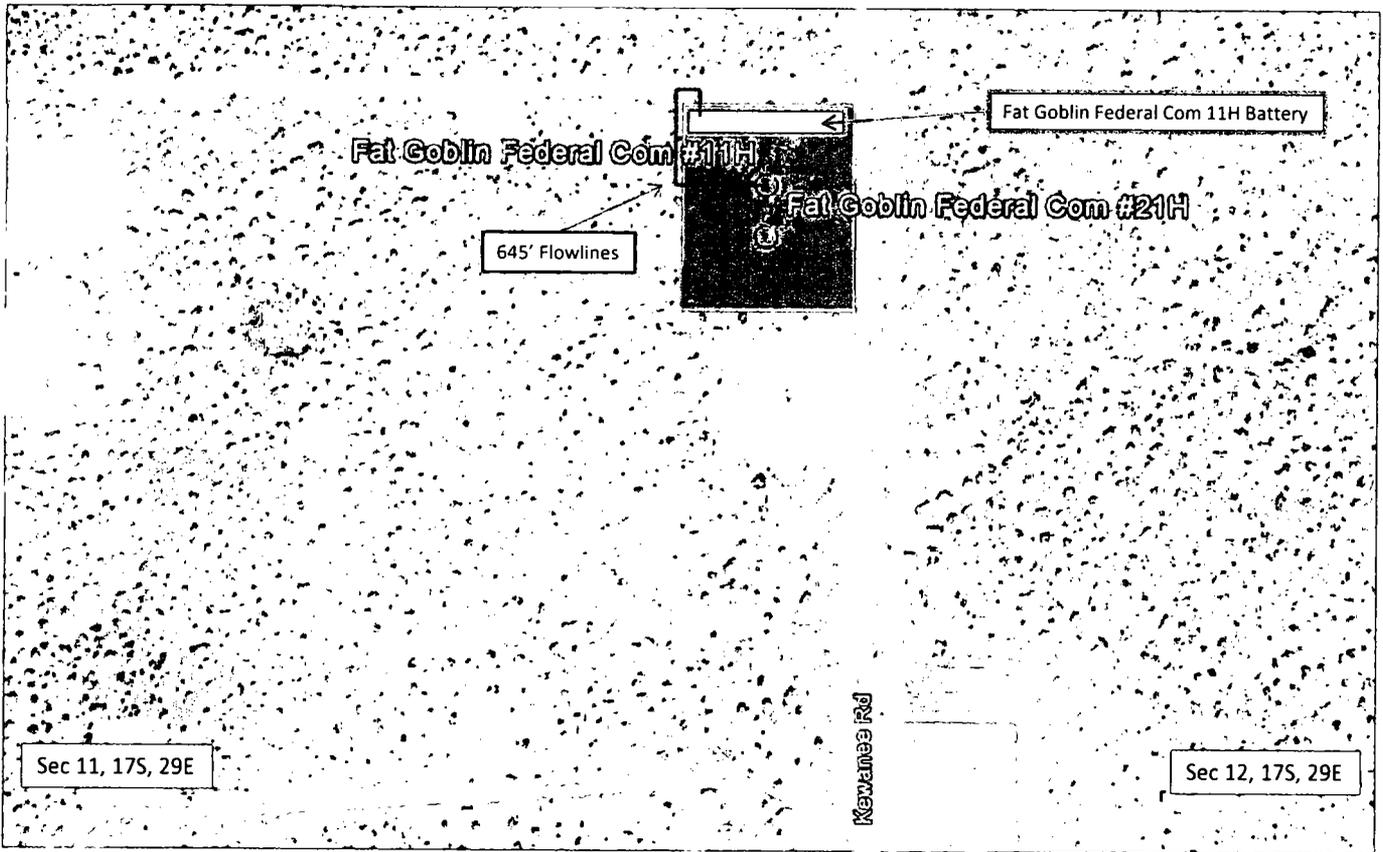
SENM Shelf Area
Eddy County, New Mexico

Fat Goblin Federal Com #11H

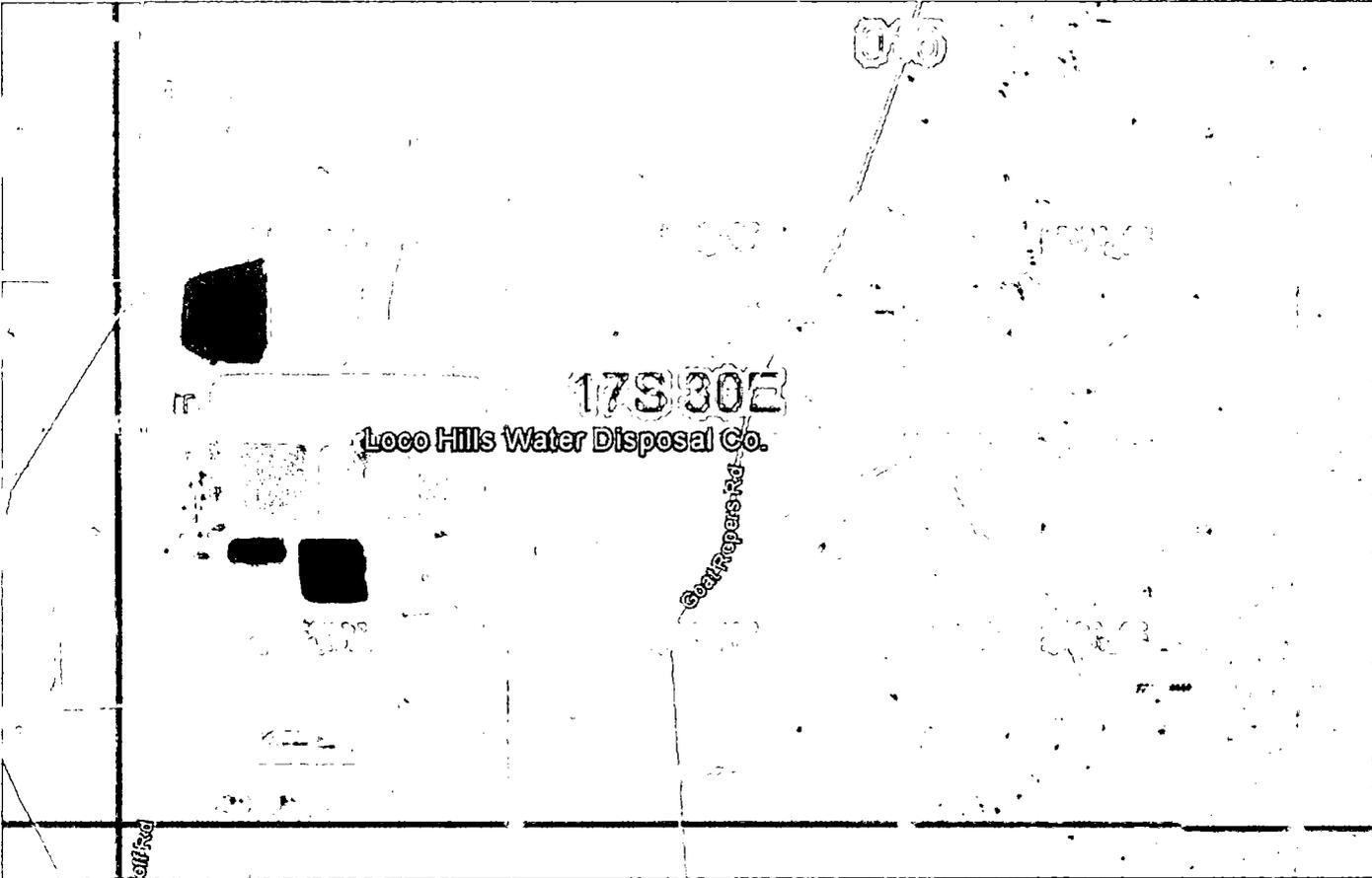
SHL: 300' FNL 245' FEL, SEC. 11 T 17S-R 29E, UNIT A
BHL: 330' FNL 10' FEL, SEC. 7 T 17S-R 30E, UNIT A

Author: dl:RRussell	Wells: All Wells Scale: 1:2000	Date: 3/27/2018
AOF: DL_SHELF File Path: J:\DL\ara\Dora\SENM\Map\1MileRadius_FAT GOBLIN FEDERAL COM_11H.gmp		

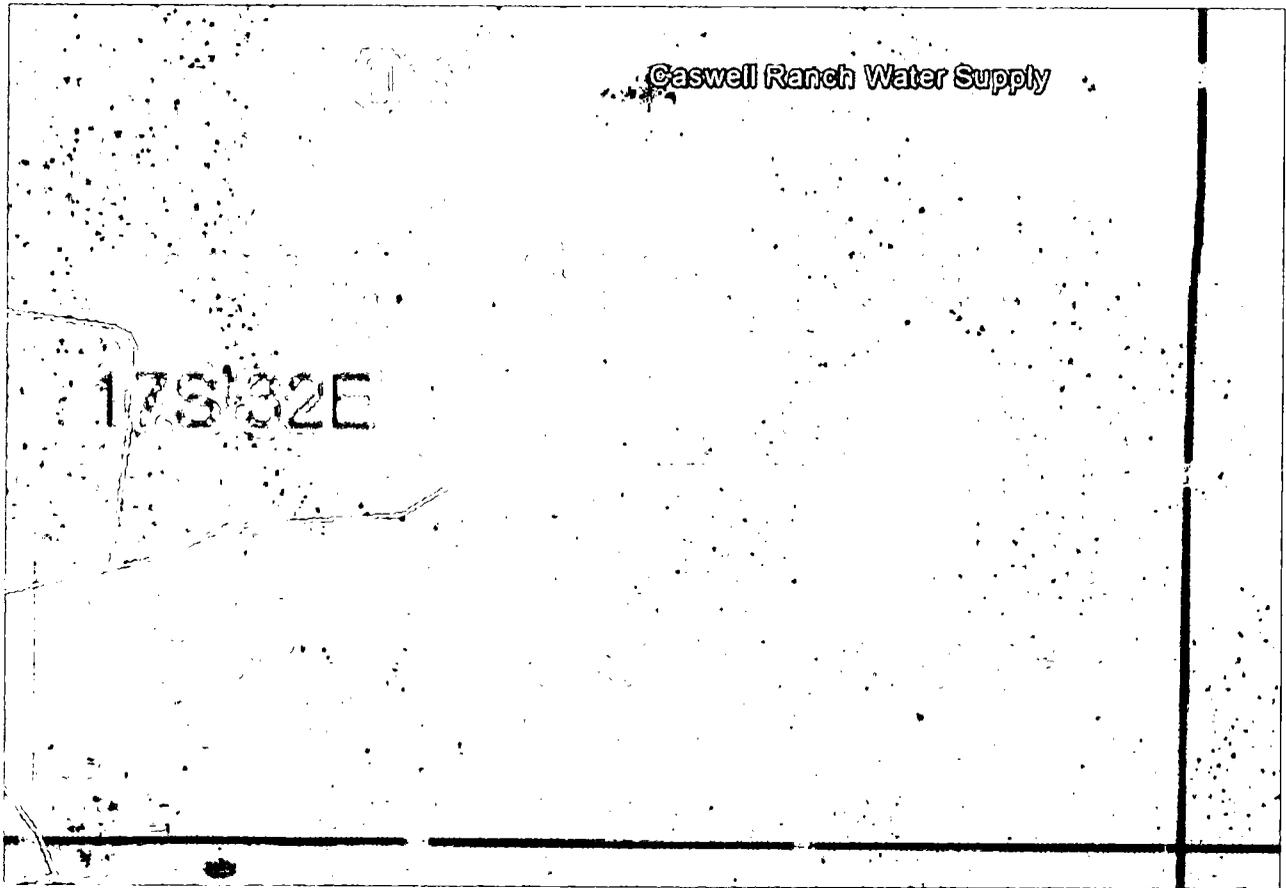
Fat Goblin Federal Com #11H Flowlines Map



Loco Hills Water Disposal Co. Water Well Map



Caswell Ranch Water Supply Map



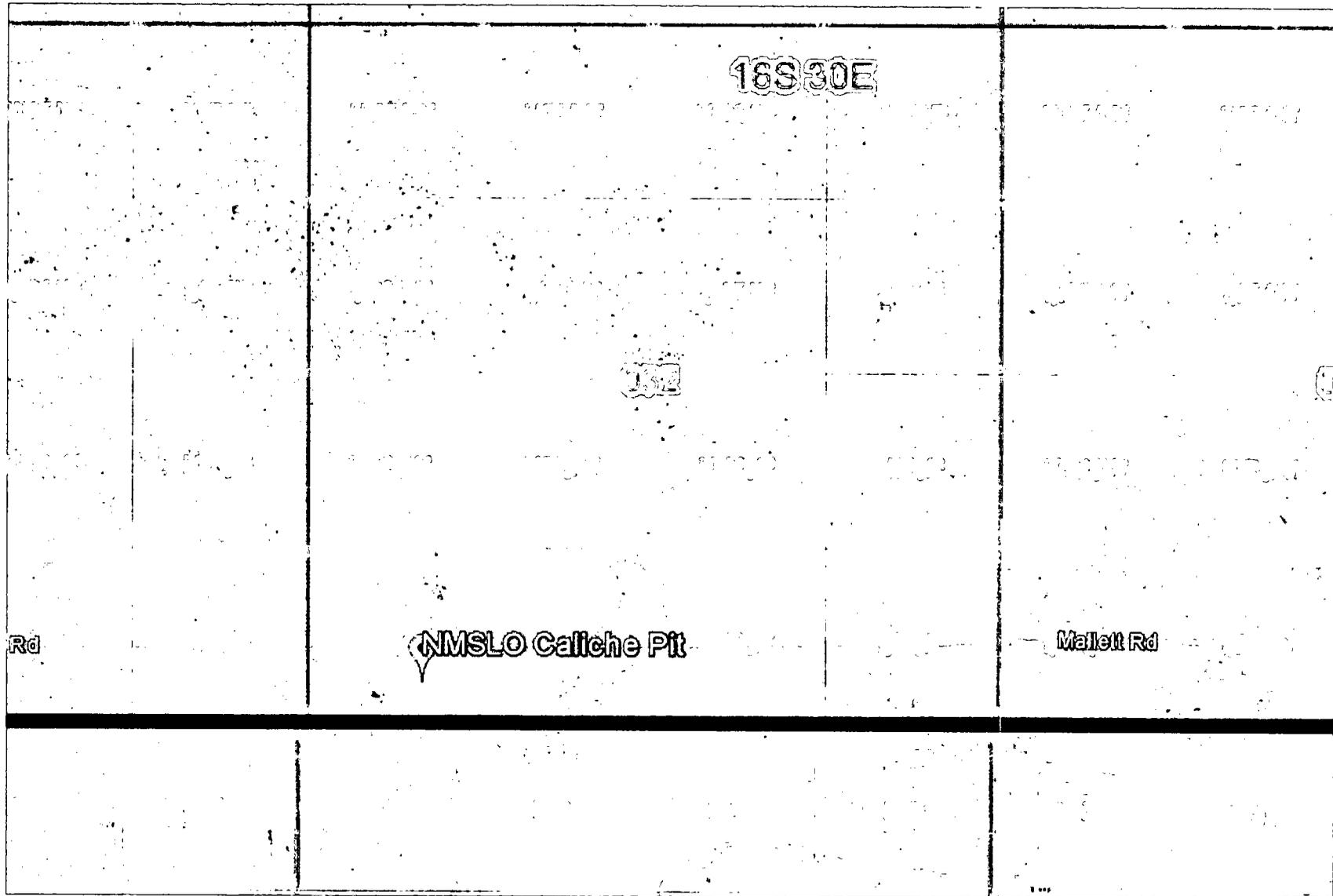
WELL SITE AND ROAD CONSTRUCTION

1. Source of Construction Materials and Location “Turn-Over” Procedure:

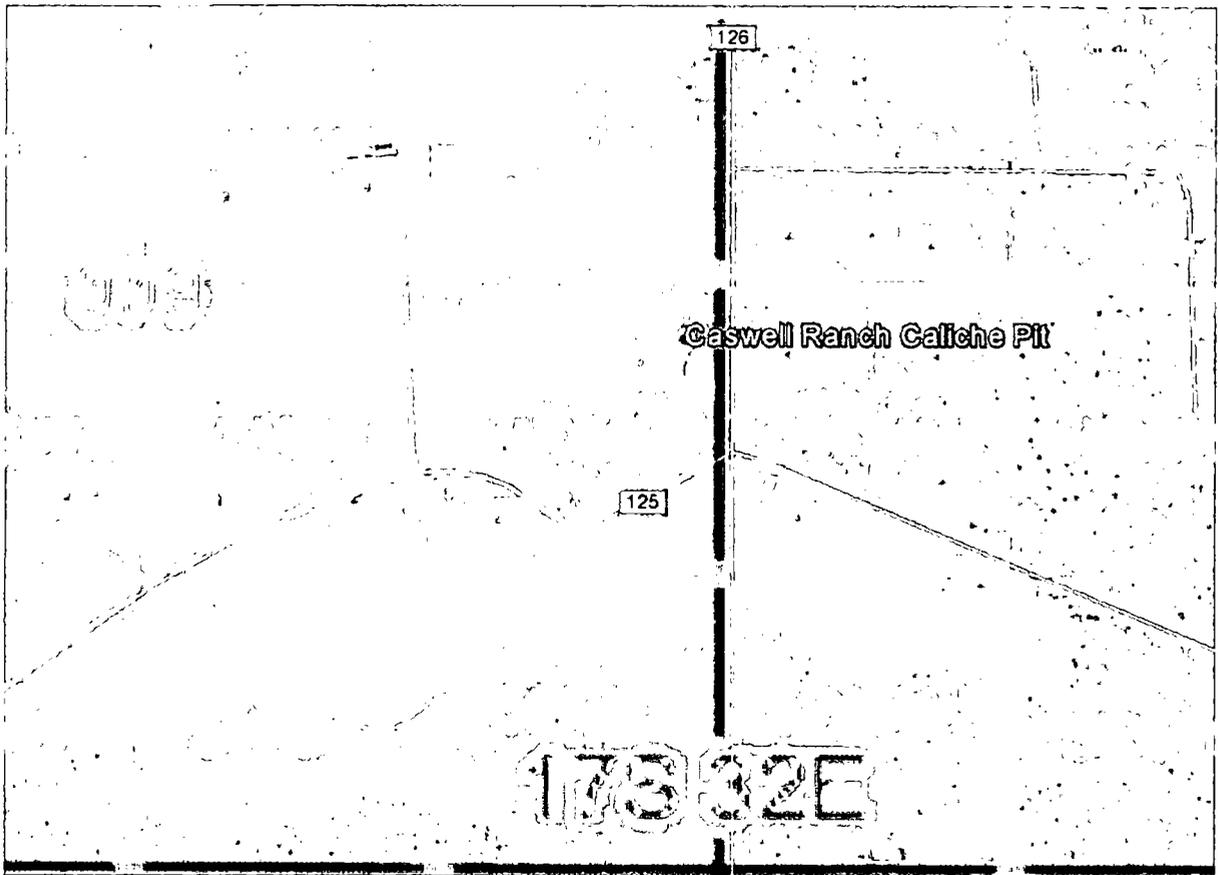
Obtaining caliche: The primary way of obtaining caliche to build locations and roads will be by “turning over” the location. This means, caliche will be obtained from the actual well sight. A caliche permit will be obtained from BLM prior to pushing up any caliche. 2400 cu. Yards is max amount of caliche needed for pad and roads. Amount will vary for each pad. The procedure below has been approved by BLM personnel:

- A. The top 6 inches of topsoil is pushed off and stockpiled along the side of the location.**
- B. An approximate 120’ X 120’ area is used within the proposed well site to remove caliche.**
- C. Subsoil is removed and piled alongside the 120’ by 120’ area within the pad site.**
- D. When caliche is found, material will be stock piled within the pad site to build the location and road.**
- E. Then subsoil is pushed back in the hole and caliche is spread accordingly across entire location and road.**
- F. Once well is drilled, the stock piled top soil will be used for interim reclamation and spread along areas where caliche is picked up and the location size is reduced. Neither caliche nor subsoil will be stock piled outside of the well pad. Topsoil will be stockpiled along the edge of the pad as depicted in attached plat.**
 - In the event that no caliche is found onsite, caliche will be hauled in from a BLM approved caliche pit.

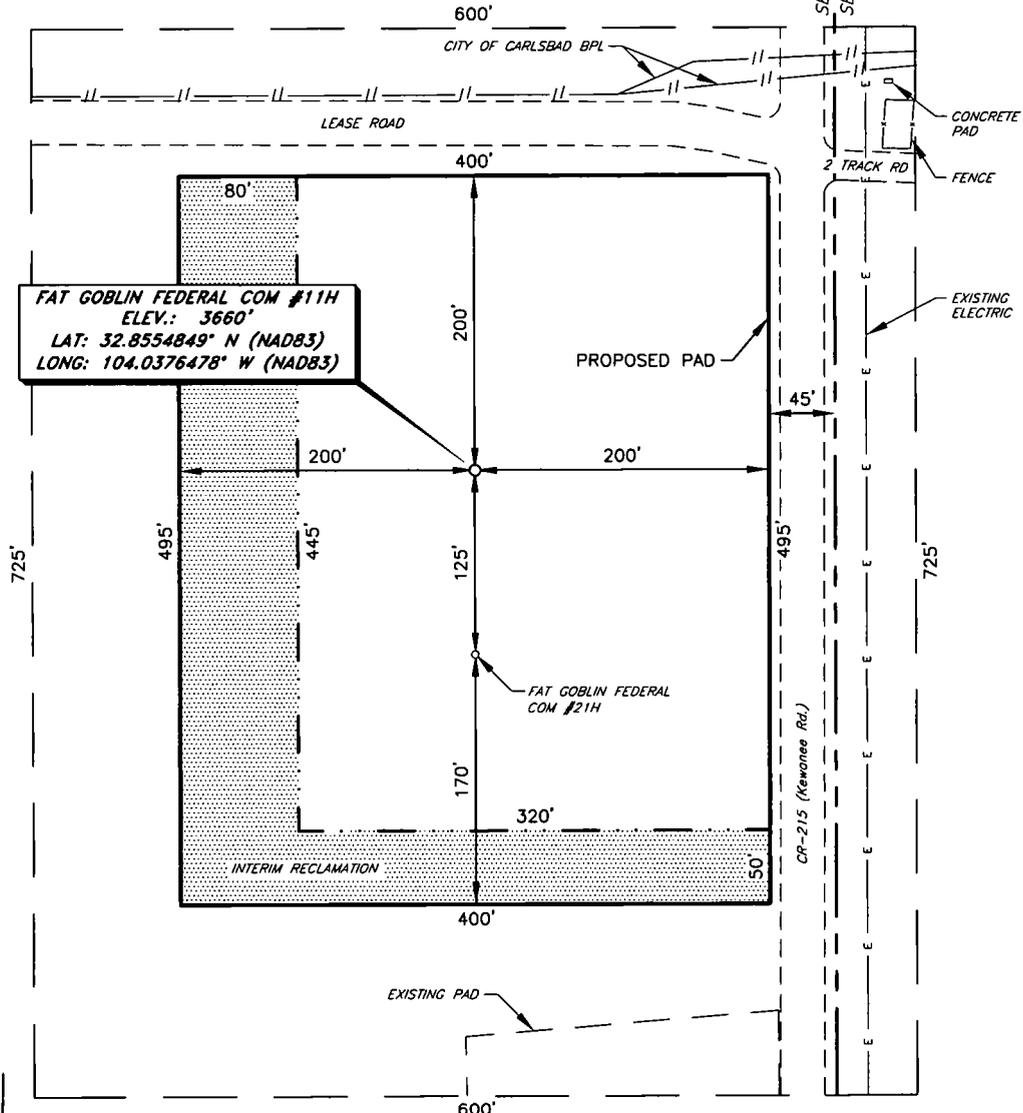
NMSLO Caliche Pit



Caswell Ranch Caliche Pit Map



**COG OPERATING, LLC
 FAT GOBLIN FEDERAL COM #11H
 (300' FNL & 245' FEL)
 SECTION 11, T17S, R29E
 N. M. P. M., EDDY COUNTY, NEW MEXICO**



FAT GOBLIN FEDERAL COM #11H
 ELEV.: 3660'
 LAT: 32.8554849° N (NAD83)
 LONG: 104.0376478° W (NAD83)

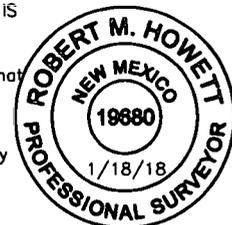
DIRECTIONS TO LOCATION

From the intersection of U. S. Hwy. 82 (Lovington Hwy) and CR-215 (Kewanee Rd.), Go North on CR-215 approx. 2.4 miles to proposed location on the left.

THIS IS NOT A BOUNDARY SURVEY, APPARENT PROPERTY CORNERS AND PROPERTY LINES ARE SHOWN FOR INFORMATION ONLY, BOUNDARY DATA IS SHOWN FROM A PREVIOUS SURVEY REFERENCED HEREON.

I, R. M. Howett, a N. M. Professional Surveyor, hereby certify that I prepared this unclassified survey of a well location from an actual survey made on the ground under my direct supervision, said survey and plat meet the Min. Stds. for Land Surveying in the State of N. M. and are true and correct to the best of my knowledge and belief.

Robert M. Howett
 Robert M. Howett NM PS 19680



SCALE: 1" = 100'
 0 50' 100'

BEARINGS ARE GRID NAD 83
 NM EAST
 DISTANCES ARE HORIZ. GROUND.

Copyright 2017 - All Rights Reserved

NO.	REVISION	DATE
JOB NO.: LS1712804		
DWG. NO.: 1712804REC		



83 308 W. BROADWAY ST., HOBBS, NM 88240 (575) 964-8200

SCALE: 1" = 100'
DATE: 12-14-2017
SURVEYED BY: BC/AS
DRAWN BY: AiAC
APPROVED BY: RMH
SHEET : 1 OF 1



Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Assigned injection well API number?

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Injection well name:

Injection well API number:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB000215

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: