

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-9720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
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HOBBS OCD

JUN 13 2016

LIVED

State of New Mexico

Energy Minerals and Natural Resources

Oil Conservation Division

1220 South St. Francis Dr.

Santa Fe, NM 87505

Form C-101  
Revised July 18, 2013

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

Operator Name and Address COG Operating LLC 2208 West Main Street Artesia, NM 88210		OGRID Number 229137 API Number 30-025-43310
Property Code 315718	Property Name Warbler State Com	Well No 4H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
P	16	21S	33E		120'	South	530'	East	Lea

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet from	N/S Line	Feet From	E/W Line	County
P	28	21S	33E		50'	South	330'	East	Lea

9. Pool Information

WC-025 G-06 S213326D: Bone Spring	Pool Name WC-025 G-06 S213304D: Bone Spring	Pool Code 97929
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Additional Well Information

11 Work Type New Well	12 Well Type Oil	13 Cable Rotary	14 Lease Type State	15 Ground Level Elevation 3758'
16 Multiple N	17 Proposed Depth 21076	18 Formation Bone Spring	19 Contractor	20 Spud Date 5/13/2016
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surface	17.5	13.375	54.5	1775	1125	
Intemd	12.25	9.625	40	5500	1900	
Production	8.75	5.5	17	21076	1850	5000

Casing/Cement Program: Additional Comments

Drill 17-1/2" hole to ~1775' w/ fresh water spud mud. Run 13-3/8" 54.5# J55 STC casing to TD and cement to surface in one stage. Drill 12-1/4" hole to ~5500' with saturated brine water. Run 9-5/8" 40# J55 & 40# L80 BTC casing to TD with a DV tool placed ~ 100' above the Reef. Plan to circulate cement on both stages. Drill 8-3/4" vertical hole, curve & lateral to 21,076' with cut brine. Run 5-1/2" 17# P110 LTC casing to TD and cement to 5000' in one stage.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	Cameron

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

I further certify that I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒, if applicable.

Signature:

Printed name: Mayte Reyes

Title: Regulatory Analyst

E-mail Address: mreyes1@concho.com

Date: 5/13/2016

Phone: 575-748-6945

OIL CONSERVATION DIVISION

Approved By:

Title:

Approved Date: 06/20/16

Expiration Date: 06/20/18

Conditions of Approval Attached

## Warbler State Com 4H

### Casing and Cement

<u>String</u>	<u>Hole Size</u>	<u>Csg OD</u>	<u>PPF</u>	<u>Depth</u>	<u>Sx Cement</u>	<u>TOC</u>
Surface	17-1/2"	13-3/8"	54.5#	1,775'	1125	0'
Intermediate	12-1/4"	9-5/8"	40#	5,500'	1900	0'
Production	8-3/4"	5-1/2"	17#	21,076'	1850	5000'

### Well Plan

Drill 17-1/2" hole to ~1775' w/ fresh water spud mud. Run 13-3/8" 54.5# J55 STC casing to TD and cement to surface in one stage.

Drill 12-1/4" hole to ~5500' with saturated brine water. Run 9-5/8" 40# J55 & 40# L80 BTC casing to TD with a DV tool placed ~ 100' above the Reef. Plan to circulate cement on both stages.

Drill 8-3/4" vertical hole, curve & lateral to 21,073' with cut brine. Run 5-1/2" 17# P110 LTC casing to TD and cement to 5000' in one stage.

### Well Control

After setting 13-3/8" casing and installing 3000 psi casing head, NU 13-5/8" Cameron BOP. Test annular and casing to 1000 psi and other BOP equipment to 2000 psi.

After setting 9-5/8" casing and installing 5000 psi casing spool, NU 13-5/8" Cameron BOP. Test annular to 1500 psi and other BOP equipment to 3000 psi.





COG OPERATING LLC Pre-Drill Geological Prognosis  
2nd Bone Spring Sand Single Lateral w/o Pilot Hole  
BONE SPRING

2BS No PH

Warbler State Com #4H  
Enter API#

Rig: Scandril Freedom

Target Zone: 2nd Bone Spring Sand

Regular section	FNL	FSL	FEL	FWL	Unit
S-T-R (SHL)	16-21S-33E	120	530		P
S-T-R (BHL)	28-21S-33E	50	330		P

GL:	3758	actual
KB:	3784	actual

PROPOSED WELL				REFERENCE WELL	
COG OPERATING LLC				COG OPERATING LLC	
Warbler State Com #4H				Boone 16 State Com #1H	
16-21S-33E				location 16-21S-33E	
Lea Co., NM				Lea Co., NM	
KB:	3784	Est. MD: 21100	APE type: Deep BSS No-PH	KB: 3773	

Formations	TVD	Subsea	Iso to Tgt	Lith	Hazards/Misc	TVD	Subsea	Iso
Rustler	1749	2035		Mixed lithologies		1744	2029	96
TOS	1849	1935		Salt		1840	1933	1818
BOS (Castile)	3666	118		Anhydrite		3658	115	87
Yates	3754	30		Limestone		3745	28	173
7 Rivers	3814	-30		Silt, Sand & Carb		3809	-36	109
Reef	3936	-152		Silt, Sand & Carb		3918	-145	1506
Base of Reef (BLCN)	5437	-1653		Silt, Sand & Carb		5424	-1651	233
CYCN	5664	-1880		Silt, Sand & Carb		5657	-1884	1404
BYCN	7182	-3398		Silt, Sand & Carb		7061	-3288	1653
Bone Sprg (BSGL)	8738	-4954		Limestone		8714	-4941	214
U Avalon Sh	8956	-5172	1973	Silt, Shale & Carb		8928	-5155	343
L Avalon Sh	9286	-5502	1843	Silt, Shale & Carb		9271	-5498	684
FBSG sand	8952	-5168	1977	Fine Sand & Carb		9955	-6182	528
☆ SBSG sand	10493	-6709	436	Fine Sand & Carb		10483	-6710	1048
TBSG sand	11549	-7765		Fine Sand & Carb		11531	-7758	
EOC target	10929	-7145						
EOL target	11042	-7258						

Est. incl. 89.37

Comments

MWD GR in lateral, mid-point targets: 10,990' at 3,300' vertical section and 11,033' at 6,100' vertical section

Wireline Evaluation

CH Logs Only

Coring and Testing

Mudlogging

Log out from intermediate casing to TD with a 2-man unit keeping 1 set of 20' samples & capturing 1' drill time.

Land (obligations and deadlines)

Version/Geologist

v1 Allison Stumpf

DATE: 5/11/2016

S:\Delaware Basin Team\Electronic Well Files\OPERATED\WARBLER ST COM 4H\APE-DRLG