

OCD Artesia

FORM APPROVED  
OMB No. 1004-0137  
Expires July 31, 2010

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMLC617058
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator CHESAPEAKE OPER. AGENT FOR BOPCO ATTN: LINDA GOOD		7. If Unit or CA Agreement, Name and No. NMNM071016X
3a. Address P.O. BOX 18496 OKLAHOMA CITY, OK 73154-0496	3b. Phone No. (include area code) 405-935-4275	8. Lease Name and Well No. PLU BIG SINKS 35 24 30 USA 1H [39/52]
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface 150' FNL & 1980' FWL, NENW At proposed prod. zone 100' FSL & 1980' FWL, SESW		9. API Well No. 36-015-40155
14. Distance in miles and direction from nearest town or post office* APPROXIMATELY 10 MILES NE OF MALAGA, NEW MEXICO		10. Field and Pool, or Exploratory WILDCAT; 6-06 5243026 m. B.S. [97798]
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any) SHL 150' FROM NORTH LEASE LINE		11. Sec., T. R. M. or Blk. and Survey or Area 35-24N-30E
16. No. of acres in lease 1730.310 ACRES		12. County or Parish EDDY
17. Spacing Unit dedicated to this well 161.45 ACRES		13. State NM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A		20. BLM/BIA Bond No. on file ESB000159
19. Proposed Depth 14,010' MD / 9253' TVD		21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3343' GL
22. Approximate date work will start* 05/25/2012		23. Estimated duration 40 DAYS

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- |   |   |
|---|---|
| 1. Well plat certified by a registered surveyor   | 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 required by the BLM.             |

25. Signature <i>Linda Good</i>	Name (Printed/Typed) Linda Good	Date 2/15/2012
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Title

Regulatory Analyst III

Approved by (Signature) <i>/s/ Don Peterson</i>	Name (Printed/Typed)	Date APR 4 2012
---	----------------------	--------------------

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

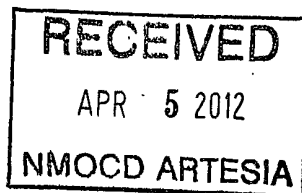
APPROVAL FOR TWO YEARS

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

(Continued on page 2)

\*(Instructions on page 2)

Carlsbad Controlled Water Basin  
NSL Approval Required



Approval Subject to General Requirements  
& Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

ONSHORE ORDER NO. 1  
Chesapeake Agent for BOPCO  
PLU Big Sinks 35-24-30 USA 1H  
Section 35-24S-30E  
Eddy County, NM

CONFIDENTIAL – TIGHT HOLE  
OPERATOR CERTIFICATION

Lease No. NMNM61705B

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 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 a false statement.

Executed this 25<sup>th</sup> day of JANUARY, 2012

Name:

Toby Reid  
Toby Reid – Field Representative

Address: 1616 W. Bender, Hobbs, NM 88241

Telephone: 575-725-8497

E-mail: toby\_reid@chk.com

# RECEIVED

APR 5 2012

Form C-102  
Revised August 1, 2011

DISTRICT I  
1025 H. Froyen Dr., Hobbs, NM 88240  
Phone (505) 303-0101 Fax: (505) 303-0720

DISTRICT VI  
811 S. First St., Artesia, NM 88210  
Phone (505) 748-1280 Fax: (505) 748-0720

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone (505) 334-0170 Fax: (505) 331-0170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone (505) 476-5400 Fax: (505) 476-3402

State of New Mexico  
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Submit one copy to appropriate District Office

## WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number <b>30-015-40155</b>	Pool Code <b>97798</b>	Pool Name <b>WILDCAT G-06</b>	<b>S243026M-B.S.</b>
Property Code <b>39152</b>	Property Name <b>PLU BIG SINKS 35 24 30 USA</b>		Well Number <b>1H</b>
GRID No. <b>147179</b>	Operator Name <b>CHESAPEAKE OPERATING CO.</b>		Elevation <b>3343'</b>

### Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	35	24 S	30 E		150	NORTH	1980	WEST	EDDY

### Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	35	24 S	30 E		100	SOUTH	1980	WEST	EDDY
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						
161.45									

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

<p>1980'</p> <p>3342.9'</p> <p>3340.7'</p> <p>3344.5'</p> <p>3350.3'</p> <p>150'</p> <p>PENETRATION POINT 330' FNL &amp; 1980' FWL</p> <p>Project Area</p> <p>Producing Area</p> <p>5024.7'</p> <p>1980'</p> <p>B.H.</p>	<p><b>SURFACE LOCATION</b></p> <p>Lat - N 32.181219745° Long - W 103.853879337° NMSPC - E 429992.982 (NAD-83) Lat - N 32.181096148° Long - W 103.853395838° NMSPC - E 429934.403 (NAD-83) E 648485.671 (NAD-27)</p>	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Bryan Arrant</i> 02/03/2012 Signature Date Printed Name Bryan Arrant Email Address bryan.arrant@chk.com</p>
	<p><b>PROPOSED BOTTOM HOLE LOCATION</b></p> <p>Lat - N 32.167408368° Long - W 103.853714869° NMSPC - E 689743.485 (NAD-83) Lat - N 32.167284632° Long - W 103.853231975° NMSPC - E 648558.787 (NAD-27)</p>	<p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.</p> <p><i>GARY L. JONES</i> Date Surveyed 02/03/2012 Signature &amp; Seal of Professional Surveyor Certificate No. Gary L. Jones 7977 BASIN SURVEYS 25833</p>

Terminus

EXHIBIT A-1

Eddy, NM

DRILLING PLAN  
PAGE: 1

OHSORE OIL & GAS ODER NO. 1  
Approval of Operations on Onshore  
Federal and Indian Oil and Gas Leases

All lease and/or unit operations are to be conducted in such a manner that full compliance is made with the applicable laws, regulations (CFR 43, Part 3160) and the approved Application for Permit to Drill. The operator is considered fully responsible for the actions of his subcontractors. A copy of the approved APD must be on location during construction, drilling and completion operations.

Approval of this application 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.

**1. FORMATION TOPS**

The estimated tops of important geologic markers are as follows:

FORMATION	SUB-SEA	KBTVD	MD
Rustler	2009	1367	
Top of Salt	1762	1614	
Base of Salt	-354	3730	
Lamar	-576	3952	
Bell Canyon	-596	3972	
Cherry Canyon	-1516	4892	
Brushy Canyon	-2722	6098	
Bone Spring	-4444	7820	
Lateral TD	-5877	9253	14010

**2. ESTIMATED DEPTH OF WATER, OIL, GAS & OTHER MINERAL BEARING FORMATIONS**

The estimated depths at which the top and bottom of the anticipated water, oil, gas, or other mineral bearing formations are expected to be encountered are as follows:

Substance	Formation	Depth
Water	Rustler	1367
Oil/Gas	Brushy Canyon	4892
Oil/Gas	Bone Spring	7820

All shows of fresh water and minerals will be reported and protected.

Eddy, NM

DRILLING PLAN  
PAGE: 2

### 3. BOP EQUIPMENT

Will have a 5000 psi rig stack (see proposed schematic) for drill out below surface casing. Stack will be tested as specified below. Surface casing and Intermediate Casing shoes will be tested to 10.5 ppg equivalent after drilling out 10' of new formation.

Chesapeake Operating Inc.'s minimum specifications for pressure control equipment are as follows:

#### I. BOP, Annular, Choke Manifold Pressure Test - See Exhibit F-1 and F-2

##### A. Equipment

1. The equipment to be tested includes all of the following that is installed on the well:
  - (a) Ram-type and annular preventers
  - (b) Choke manifolds and valves
  - (c) Kill lines and valves
  - (d) Upper and lower kelly cock valves, inside BOP's and safety valves

##### B. Frequency

1. All tests shall be performed with clear water
  - (a) when installed
  - (b) before drilling out each casing string
  - (c) at any time that there is a repair requiring a pressure seal to be broken in the assembly
  - (d) at least once every 30 days while drilling

##### C. Frequency

1. In some drilling operations, the pressures to be used for low and high pressure testing of preventers and casing may be different from those given below due to governmental regulations or approved local practices.
2. If an individual component does not test at the low pressure, do not test to the high pressure and then drop back down to the low pressure.
3. All valves located downstream of a valve being tested must be placed in the open position.
4. All equipment will be tested with an initial "low pressure" test at 250 psi.
5. The subsequent "high pressure" test will be conducted at the rated working pressure of the equipment for all equipment except the annular preventer.
6. The "high pressure" test for the annular preventer will be conducted at 70% of the rated working pressure.
7. A record of all pressures will be made on a pressure-recording chart.

#### II. Accumulator Performance Test

##### A. Scope

1. The purpose of this test is to check the capabilities of the Bop control systems and to detect deficiencies in the hydraulic oil volume and recharge time.

##### B. Test Frequency

1. The accumulator is to be tested each time the BO's are tested, or any time a major repair is performed.

Eddy, NM

DRILLING PLAN  
PAGE. 3

C. Minimum Requirements

1. The accumulator should be of sufficient volume to supply 1.5 times the volume to close and hold all BOP equipment in sequence, without recharging and the pump turned off, and have remaining pressures of 200 psi above the precharge pressure.
2. Minimum precharge pressures for the various accumulator systems per manufacturers recommended specifications are as follows:

System Operating Pressure	Precharge Pressure
1500 psi	750 psi
2000 psi	1000 psi
3000 psi	1000 psi

3. Closing times for the annular preventer should be less than 20 seconds and for the ram-type preventers less than 10 seconds.
4. System recharge time should not exceed 10 minutes.

D. Test Procedure

1. Shut accumulator pumps off and record accumulator pressure.
2. In sequence, close the annular and one set of properly sized pipe rams, and open the HCR valve
3. Record time to close or open each element and the remaining accumulator pressure after each operation.
4. Record the remaining accumulator pressure at the end of the test sequence. Per the previous requirement, this pressure should not be less than the following pressures.

System Operating Pressure	Remaining Pressure After Test
1500 psi	950 psi
2000 psi	1200 psi
3000 psi	1200 psi

5. Turn the accumulator pumps on and record the recharge time. This time should not exceed 10 minutes.
6. Open annular and ram-type preventers. Close HCR valve.
7. Place all 4-way control valves in full open or full closed position. Do not leave in neutral position.

3. CASING PROGRAM

- a. The proposed casing program will be as follows:

Purpose	From	To	Hole Size	Csg Size	Weight	Grade	Thread	Condition
Surface	0'	1,475'	17-1/2"	13-3/8"	48 #	H-40	STC	New
Shallow Intermediate	0'	3,850'	11"	8-5/8"	32 #	J-55	LTC	New
Production	0'	14,010'	7-7/8"	5-1/2"	20.0 #	L-80	LTC	New

- b. Casing design subject to revision based on geologic conditions encountered.

Eddy, NM

DRILLING PLAN  
PAGE 4

c. Casing Safety Factors

Casing String	Min SF Burst	Min SF Collapse	Min SF Tension
Surface	1.38	1.07	1.99
Shallow Intermediate	1.5	1.52	2.04
Production	1.23	1.57	1.62

Min SF is the smallest of a group of safety factors that include the following considerations:

	Surf	Int	Prod
<b>Burst Design</b>			
Pressure Test- Surface, Int, Prod Csg P external: Water P internal: Test psi + next section heaviest mud in csg	X	X	X
Displace to Gas- Surf Csg P external: Water P internal: Dry Gas from Next Csg Point	X		
Frac at Shoe, Gas to Surf- Int Csg P external: Water P internal: Dry Gas, 15 ppg Frac Gradient		X	
Stimulation (Frac) Pressures- Prod Csg P external: Water P internal: Max inj pressure w/ heaviest injected fluid			X
Tubing leak- Prod Csg P external: Water P internal: Leak just below surf, 8.7 ppg packer fluid			X
<b>Collapse Design</b>			
Full Evacuation P external: Water gradient in cement, mud above TOC P internal: none	X	X	X
Cementing- Surf, Int, Prod Csg P external: Wet cement P internal: water	X	X	X
<b>Tension Design</b>			
100k lb overpull	X	X	X

DRILLING PLAN

Eddy, NM

PAGE: 5

5. CEMENTING PROGRAM

Slurry	Type	Top	Btm	Wt	Yld	%Exc	Sx
<u>Surface</u>				(ppg)	(sx/cu ft)	Open Hole	
Single Slurry	C + 4% Gel	0'	1,475'	13.5	1.73	200	1752
<u>Shallow Int</u>							
Lead	TXI + 5% Salt	0'	3,350'	12	1.99	200	1066
Tail	50C/50Poz +5% Salt	3,350'	3,850'	14.2	1.37	200	290
<u>Production</u>							
1st Stage lead	35/65Poz H +8% Gel	4,800'	8,500'	12.4	2.11	75	532
1st Stage Tail	50/50Poz H +2% Gel	8,500'	14,010'	14.5	1.27	75	1324
	35/65Poz C +6% Gel						
2nd Stage Lead	+ 5% Salt	3,350'	4,550'	12.4	2.19	200	207
2nd Stage Tail	C	4,550'	4,800'	14.8	1.33	200	98

1. Final cement volumes will be determined by caliper.
2. Surface casing shall have at least one centralizer installed on each of the bottom three joints starting with the shoe joint.
3. The production casing will be cemented in two stages with the DV tool place at: 4,800'
4. Production casing will have one centralizer on every other joint from TD to KOP (horizontal type) and from KOP to intermediate casing (bowspring type).

Pilot Hole Plugging Plan.  
No pilot Hole



Eddy, NM

DRILLING PLAN  
PAGE. 6

## 6. MUD PROGRAM

From	To	Type	Weight	F. Vis	Filtrate
0'	1,475'	Spud Mud	8.4 - 8.7	32 - 34	NC - NC
1,475'	3,850'	Brine	9.5 - 10.1	28 - 29	NC - NC
3,850'	8,712'	Cut Brine	8.3 - 8.8	28 - 29	NC - NC
8,712'	9,455'	Cut Brine	8.3 - 8.8	28 - 29	NC - NC
9,455'	14,010'	Cut Brine	8.3 - 8.8	28 - 29	NC - NC

A closed system will be utilized consisting of above ground steel tanks. All wastes accumulated during drilling operations will be contained in a portable trash cage and removed from location and.

All fluids and cuttings will be disposed of in accordance with New Mexico Oil Conservation Division rules and regulations.

A mud test shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

## 7. TESTING, LOGGING, AND CORING See COP

The anticipated type and amount of testing, logging, and coring are as follows:

- Drill stem tests are not planned.
- The logging program will be as follows:

TYPE	Logs	Interval	Timing	Vendor
Mud Log	2 man Mudlog	Int Cas to TD	Int Csg Drill out	Suttles
OH	Triple Combo	Curve to Int Csg	After Curve	TBD
OH	GR/Neutron	Int Cas to Surf	After Curve	TBD
LWD	MWD Gamma	Curve and Lateral	While Drilling	Ryan

- Core samples are not planned.
- A Directional Survey will be run.

## 8. ABNORMAL PRESSURES AND HYDROGEN SULFIDE

- No abnormal pressures or temperatures are expected. Estimated BHP is: 4300 psi
- Hydrogen sulfide gas is not anticipated.

# Permian District

Poker Lake

PLU Big Sinks 35-24-30 USA 1H

Well #1

Wellbore #1

Plan: Plat

## Standard Planning Report

01 February, 2012

EXHIBIT 6

# Chesapeake Operating

## Planning Report

**Database:** Drilling Database  
**Company:** Permian District  
**Project:** Poker Lake  
**Site:** PLU Big Sinks 35-24-30 USA 1H  
**Well:** Well #1  
**Wellbore:** Wellbore #1  
**Design:** Plat

**Local Co-ordinate Reference:** Well Well #1  
**TVD Reference:** WELL @ 0.0usft (Original Well Elev)  
**MD Reference:** WELL @ 0.0usft (Original Well Elev)  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature

<b>Project</b>	Poker Lake, Eddy County, NM		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Ground Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

**Site** PLU Big Sinks 35-24-30 USA 1H

**Site Position:** Northing: 429,993.00 usft Latitude: 32.181220  
**From:** Map Easting: 689,670.00 usft Longitude: -103.853880  
**Position Uncertainty:** 0.0 usft Slot Radius: 13.200 in Grid Convergence: 0.26 °

**Well** Well #1  
**Well Position** +N/-S 0.0 usft Northing: 429,993.00 usft Latitude: 32.181220  
 +E/-W 0.0 usft Easting: 689,670.00 usft Longitude: -103.853880  
**Position Uncertainty** 0.0 usft Wellhead Elevation: Ground Level: 0.0 usft

**Wellbore** Wellbore #1  
**Magnetics** Model Name Sample Date Declination Dip Angle Field Strength  
 (°) (°) (nT)  
 IGRF200510 12/14/2011 7.64 60.11 48,550

**Design** Plat

**Audit Notes:**

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

**Vertical Section:** Depth From (TVD) +N/-S +E/-W Direction  
 (usft) (usft) (°)  
 0.0 0.0 0.0 179.17

### Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
8,712.0	0.00	0.00	8,712.0	0.0	0.0	0.00	0.00	0.00	0.00	
9,455.3	89.20	179.17	9,189.4	-470.7	6.8	12.00	12.00	0.00	179.17	
14,009.5	89.20	179.17	9,253.0	-5,024.0	73.0	0.00	0.00	0.00	0.00	BS 35-24-30 USA 1

# Chesapeake Operating

## Planning Report

Database: Drilling Database  
 Company: Permian District  
 Project: Poker Lake  
 Site: PLU Big Sinks 35-24-30 USA 1H  
 Well: Well #1  
 Wellbore: Wellbore #1  
 Design: Plat

Local Co-ordinate Reference: Well Well #1  
 TVD Reference: WELL @ 0.0usft (Original Well Elev)  
 MD Reference: WELL @ 0.0usft (Original Well Elev)  
 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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00

# Chesapeake Operating

## Planning Report

**Database:** Drilling Database  
**Company:** Permian District  
**Project:** Poker Lake  
**Site:** PLU Big Sinks 35-24-30 USA 1H  
**Well:** Well #1  
**Wellbore:** Wellbore #1  
**Design:** Plat

**Local Co-ordinate Reference:** Well Well #1  
**TVD Reference:** WELL @ 0.0usft (Original Well Elev)  
**MD Reference:** WELL @ 0.0usft (Original Well Elev)  
**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)	Doglog Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,712.0	0.00	0.00	8,712.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	10.56	179.17	8,799.5	-8.1	0.1	8.1	12.00	12.00	0.00
8,900.0	22.56	179.17	8,895.2	-36.5	0.5	36.5	12.00	12.00	0.00
9,000.0	34.56	179.17	8,982.9	-84.3	1.2	84.3	12.00	12.00	0.00
9,100.0	46.56	179.17	9,058.7	-149.2	2.2	149.2	12.00	12.00	0.00
9,200.0	58.56	179.17	9,119.4	-228.4	3.3	228.4	12.00	12.00	0.00
9,300.0	70.56	179.17	9,162.2	-310.5	4.6	318.6	12.00	12.00	0.00
9,400.0	82.56	179.17	9,185.4	-415.6	6.0	415.6	12.00	12.00	0.00
9,455.3	89.20	179.17	9,189.4	-470.7	6.8	470.8	12.00	12.00	0.00
9,500.0	89.20	179.17	9,190.0	-515.4	7.5	515.5	0.00	0.00	0.00
9,600.0	89.20	179.17	9,191.4	-615.4	8.9	615.5	0.00	0.00	0.00
9,700.0	89.20	179.17	9,192.8	-715.4	10.4	715.4	0.00	0.00	0.00
9,800.0	89.20	179.17	9,194.2	-815.3	11.8	815.4	0.00	0.00	0.00
9,900.0	89.20	179.17	9,195.6	-915.3	13.3	915.4	0.00	0.00	0.00
10,000.0	89.20	179.17	9,197.0	-1,015.3	14.8	1,015.4	0.00	0.00	0.00
10,100.0	89.20	179.17	9,198.4	-1,115.3	16.2	1,115.4	0.00	0.00	0.00
10,200.0	89.20	179.17	9,199.8	-1,215.3	17.7	1,215.4	0.00	0.00	0.00
10,300.0	89.20	179.17	9,201.2	-1,315.2	19.1	1,315.4	0.00	0.00	0.00
10,400.0	89.20	179.17	9,202.6	-1,415.2	20.6	1,415.4	0.00	0.00	0.00
10,500.0	89.20	179.17	9,204.0	-1,515.2	22.0	1,515.4	0.00	0.00	0.00

# Chesapeake Operating

## Planning Report

**Database:** Drilling Database  
**Company:** Permian District  
**Project:** Poker Lake  
**Site:** PLU Big Sinks 35-24-30 USA 1H  
**Well:** Well #1  
**Wellbore:** Wellbore #1  
**Design:** Plal

**Local Co-ordinate Reference:** Well Well #1  
**TVD Reference:** WELL @ 0.0usft (Original Well Elev)  
**MD Reference:** WELL @ 0.0usft (Original Well Elev)  
**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)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
10,600.0	89.20	179.17	9,205.4	-1,615.2	23.5	1,615.4	0.00	0.00	0.00
10,700.0	89.20	179.17	9,206.8	-1,715.2	24.9	1,715.3	0.00	0.00	0.00
10,800.0	89.20	179.17	9,208.2	-1,815.1	26.4	1,815.3	0.00	0.00	0.00
10,900.0	89.20	179.17	9,209.6	-1,915.1	27.8	1,915.3	0.00	0.00	0.00
11,000.0	89.20	179.17	9,211.0	-2,015.1	29.3	2,015.3	0.00	0.00	0.00
11,100.0	89.20	179.17	9,212.4	-2,115.1	30.7	2,115.3	0.00	0.00	0.00
11,200.0	89.20	179.17	9,213.8	-2,215.1	32.2	2,215.3	0.00	0.00	0.00
11,300.0	89.20	179.17	9,215.2	-2,315.0	33.6	2,315.3	0.00	0.00	0.00
11,400.0	89.20	179.17	9,216.6	-2,415.0	35.1	2,415.3	0.00	0.00	0.00
11,500.0	89.20	179.17	9,218.0	-2,515.0	36.5	2,515.3	0.00	0.00	0.00
11,600.0	89.20	179.17	9,219.4	-2,615.0	38.0	2,615.3	0.00	0.00	0.00
11,700.0	89.20	179.17	9,220.8	-2,715.0	39.4	2,715.3	0.00	0.00	0.00
11,800.0	89.20	179.17	9,222.2	-2,814.9	40.9	2,815.2	0.00	0.00	0.00
11,900.0	89.20	179.17	9,223.5	-2,914.9	42.4	2,915.2	0.00	0.00	0.00
12,000.0	89.20	179.17	9,224.9	-3,014.9	43.8	3,015.2	0.00	0.00	0.00
12,100.0	89.20	179.17	9,226.3	-3,114.9	45.3	3,115.2	0.00	0.00	0.00
12,200.0	89.20	179.17	9,227.7	-3,214.9	46.7	3,215.2	0.00	0.00	0.00
12,300.0	89.20	179.17	9,229.1	-3,314.8	48.2	3,315.2	0.00	0.00	0.00
12,400.0	89.20	179.17	9,230.5	-3,414.8	49.6	3,415.2	0.00	0.00	0.00
12,500.0	89.20	179.17	9,231.9	-3,514.8	51.1	3,515.2	0.00	0.00	0.00
12,600.0	89.20	179.17	9,233.3	-3,614.8	52.5	3,615.2	0.00	0.00	0.00
12,700.0	89.20	179.17	9,234.7	-3,714.8	54.0	3,715.2	0.00	0.00	0.00
12,800.0	89.20	179.17	9,236.1	-3,814.7	55.4	3,815.1	0.00	0.00	0.00
12,900.0	89.20	179.17	9,237.5	-3,914.7	56.9	3,915.1	0.00	0.00	0.00
13,000.0	89.20	179.17	9,238.9	-4,014.7	58.3	4,015.1	0.00	0.00	0.00
13,100.0	89.20	179.17	9,240.3	-4,114.7	59.8	4,115.1	0.00	0.00	0.00
13,200.0	89.20	179.17	9,241.7	-4,214.7	61.2	4,215.1	0.00	0.00	0.00
13,300.0	89.20	179.17	9,243.1	-4,314.6	62.7	4,315.1	0.00	0.00	0.00
13,400.0	89.20	179.17	9,244.5	-4,414.6	64.1	4,415.1	0.00	0.00	0.00
13,500.0	89.20	179.17	9,245.9	-4,514.6	65.6	4,515.1	0.00	0.00	0.00
13,600.0	89.20	179.17	9,247.3	-4,614.6	67.1	4,615.1	0.00	0.00	0.00
13,700.0	89.20	179.17	9,248.7	-4,714.6	68.5	4,715.1	0.00	0.00	0.00
13,800.0	89.20	179.17	9,250.1	-4,814.5	70.0	4,815.0	0.00	0.00	0.00
13,900.0	89.20	179.17	9,251.5	-4,914.5	71.4	4,915.0	0.00	0.00	0.00
14,000.0	89.20	179.17	9,252.9	-5,014.5	72.9	5,015.0	0.00	0.00	0.00
14,009.5	89.20	179.17	9,253.0	-5,024.0	73.0	5,024.5	0.00	0.00	0.00

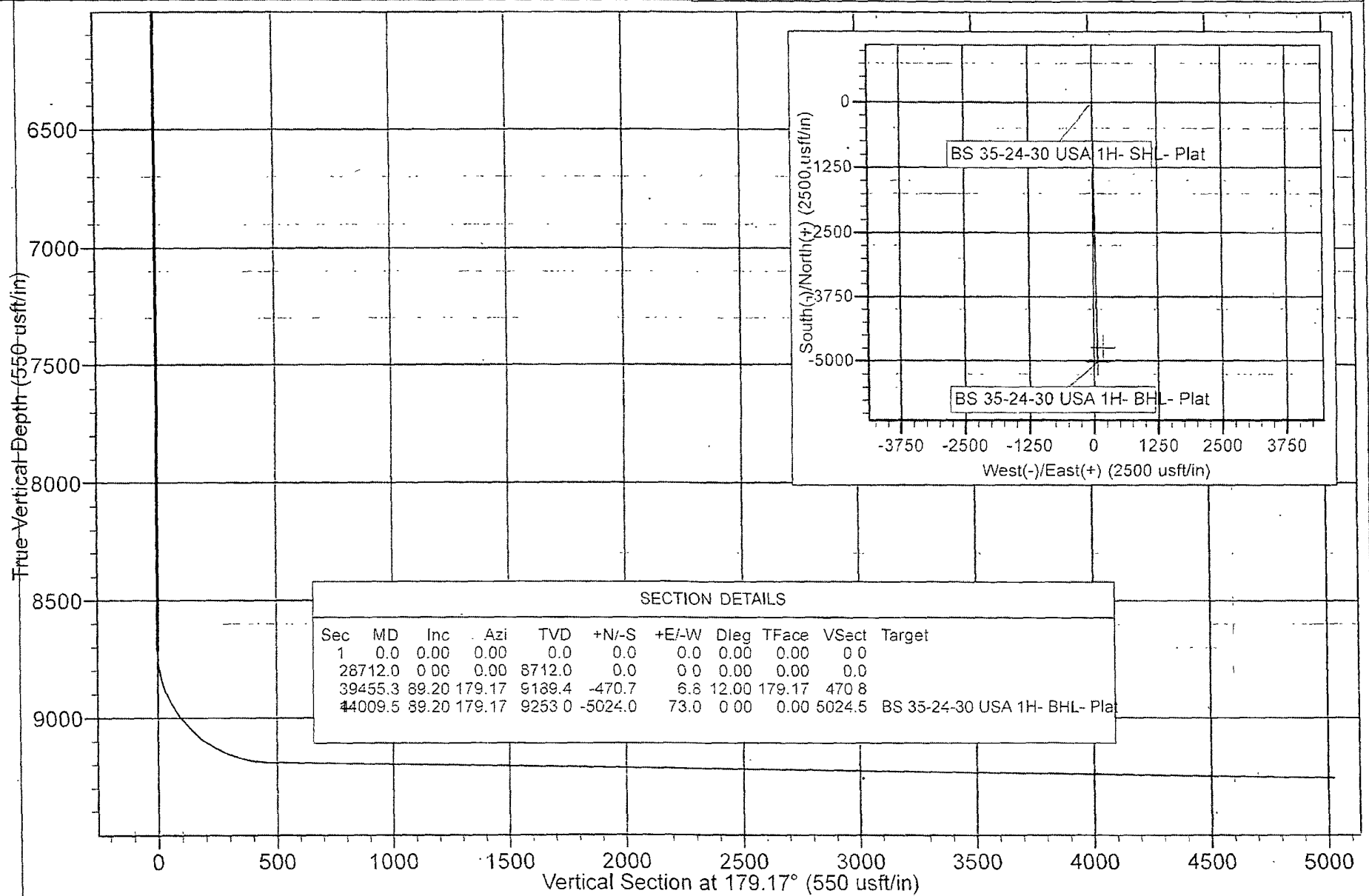
### Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BS 35-24-30 USA 1H - plan misses target center by 193.9usft at 9097.4usft MD (9056.9 TVD, -147.3 N, 2.1 E) - Point	0.00	0.00	9,183.0	0.0	0.0	429,993.00	689,670.00	32.181220	-103.853880
BS 35-24-30 USA 1H - plan hits target center - Point	0.00	0.00	9,253.0	-5,024.0	73.0	424,969.00	689,743.00	32.167409	-103.853717

Project: Poker Lake  
 Site: PLU Big Sinks 35-24-30 USA 1H  
 Well: Well #1  
 Wellbore: Wellbore #1  
 Design: Plat

# PROJECT DETAILS: Poker Lake

Geodetic System: US State Plane 1983  
 Datum: North American Datum 1983  
 Ellipsoid: GRS 1980  
 Zone: New Mexico Eastern Zone

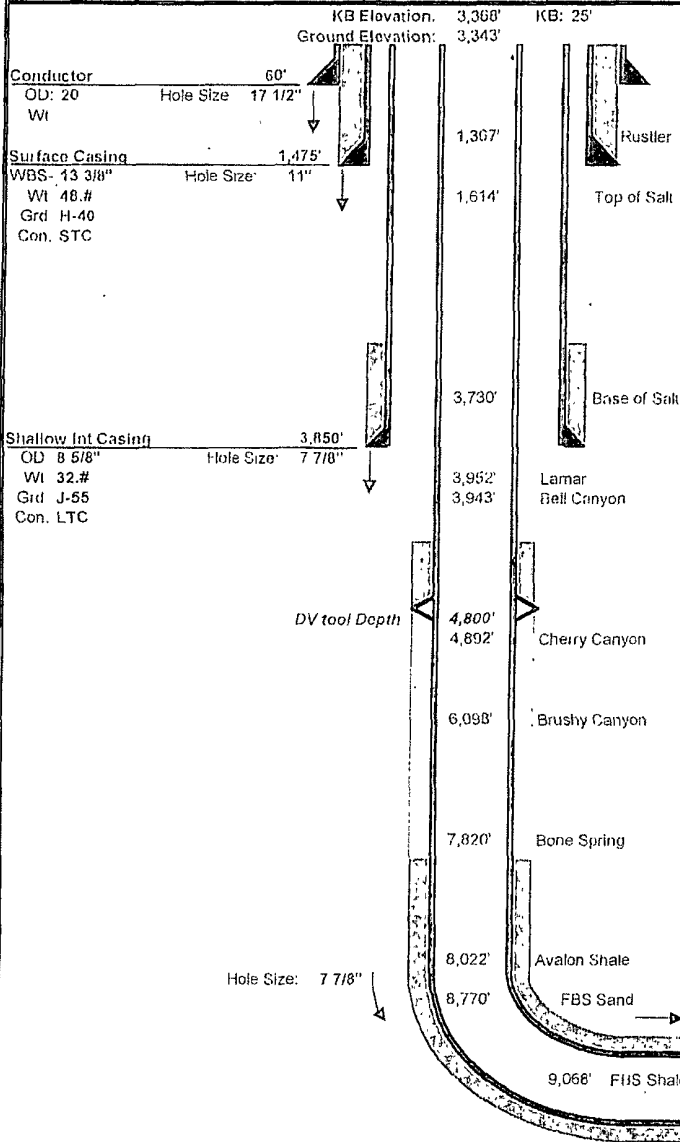




Drilling Engineer: Chris Gray  
Superintendent: Daniel Gipson  
Geologist: Chris Persellin

Well Name: PLU Big Sinks 35-25-30 USA 1H  
Target: First Bone Spring Shale  
County, State: Eddy, NM  
Surface Location: 150' FNL 1980' FWL, Section 35, Township 24S, Range 30 E  
BH Location: 100' FSL 1980' FWL, Section 35, Township 24S, Range 30 E  
SHL Latitude: 32 181220 SHL North: 429993  
SHL Longitude: -103.853979 SHL East: 689670  
BHL Latitude: 32.16740837 BHL North: 424989  
BHL Longitude: -103.8537149 BHL East: 689743  
Coordinates: NAD 83 Coordinates: NMSPCE

Drilling Rig: Patterson G2  
Directional-Surface: Ryan  
Directional-Curve: Ryan  
Directional-Lateral: Ryan  
Drilling Mud: Nova  
Cement: Schlumberger  
Wellhead: Sunbelt  
Property Number: 643079  
AFE Number: 161568



Wellhead Equipment	
A Section	13-3/8" x 13-5/8" 5K SOW (Multibow)
B Section	N/A (Multibow)
C Section	11" 5K X 7-1/16" 10K w/10k gate valve
D Section	N/A
Required BOP Stack	13-5/8" 5K- Double, Annular, Rot Head w/rot valve

Mud				
Depth	Type	Weight	F. Vis	FL
0' - 1,475'	Spud Mud	8.4 - 8.7	32 - 34	NC - NC
1,475' - 3,850'	Brine	9.5 - 10.1	28 - 29	NC - NC
3,850' - 8,712'	Cut Brine	8.3 - 8.8	28 - 29	NC - NC
8,712' - 9,455'	Cut Brine	8.3 - 8.8	28 - 29	NC - NC
9,455' - 14,010'	Cut Brine	8.3 - 8.8	28 - 29	NC - NC

Cement							
Slurry	Top	Btm	Wt	Yld	%Exc	Bbl	Sx
Surface							
Single Slurry	0'	1,475'	13.5	1.73	200	540	1752
Shallow Int							
Lead	0'	3,350'	12.0	1.99	200	378	1066
Tail	3,350'	3,850'	14.2	1.37	200	71	290
Production							
1st Lead	4,800'	8,500'	12.4	2.11	75	200	532
1st Tail	8,500'	14,010'	14.5	1.27	75	300	1324
2nd Lead	3,350'	4,550'	12.4	2.19	200	81	207
2nd Tail	4,550'	4,800'	14.8	1.33	200	73	98

Type	Logs	Interval	Vendor
Mud Log	2 man Mudlog	Int Cas to TD	Suttles
OH	Triple Combo	Curve to Int Csq	TBD
OH	CR/Neutron	Int Cas to Surf	TBD
LWD	MWD Gamma	Curve and Lateral	Ryan

Directional Plan					
Target Line:	9183° @ 0° VS w/89.2 deg inclination				
Target Window:	20' above, 20' below, 50' left, 50' right				
	MD	INC	AZM	TVD	VS
KOP	8,712'	0.00	0.00	8,712'	0'
EOB	9,455'	89.20	179.17	9,189'	471'
TD	14,010'	89.20	179.17	9,253'	5,025'
Hardlines:	Lateral- 330' from parallel lease lines				
	Vertical- Actual Lease Lines				
Notes:	Please note SHL and BHL distance from lease lines				



# Chesapeake Minimum BOPE Requirements

Wellname: PLU Big Sinks 35-25-30 USA 1H

Operation: Intermediate and Production Hole Sections

## BLOWOUT PREVENTOR SCHEMATIC

CHESAPEAKE OPERATING INC

Permian District-Minimum Requirements

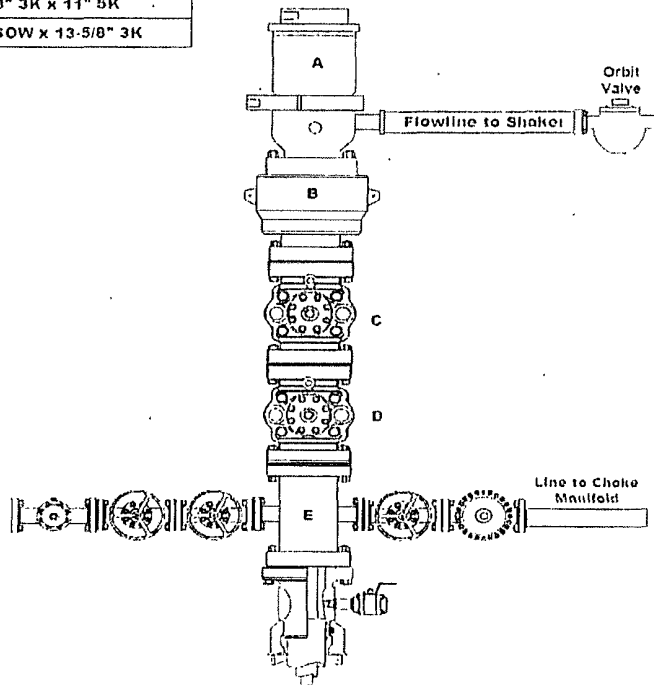
FIELD : Avalon

OPERATION: Intermediate and Production Hole Sections

SIZE	PRESSURE	DESCRIPTION
A	500	Rotating Head
B	13 5/8"	5,000 Annular
C	13 5/8"	5,000 Pipe Ram
D	13 5/8"	5,000 Blind Ram
E	13 5/8"	5,000 Mud Cross
F		
DSA	As required for each hole size	
C-Sec		
B-Sec	13-5/8" 3K x 11" 5K	
A-Sec	13-3/8" SOW x 13-5/8" 3K	

### Test Notes:

- Pressure test to rating of BOP or wellhead every 21 days
- Function test on trips
- H2S service trim required



### Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	5,000	Check Valve
2"	5,000	Gate Valve
2"	5,000	Gate Valve

### Choke Line

SIZE	PRESSURE	DESCRIPTION
3"	5,000	Gate Valve
3"	5,000	HCR Valve
3"	5,000	Steel Line Only

EXHIBIT F-1

## Chesapeake Minimum BOPE Requirements

Wellname: PLU Big Sinks 35-25-30 USA 1H

Operation: Intermediate and Production Hole Sections

### CHOKE MANIFOLD SCHEMATIC

CHESAPEAKE OPERATING INC

Permian District

Avalon Minimum Requirements

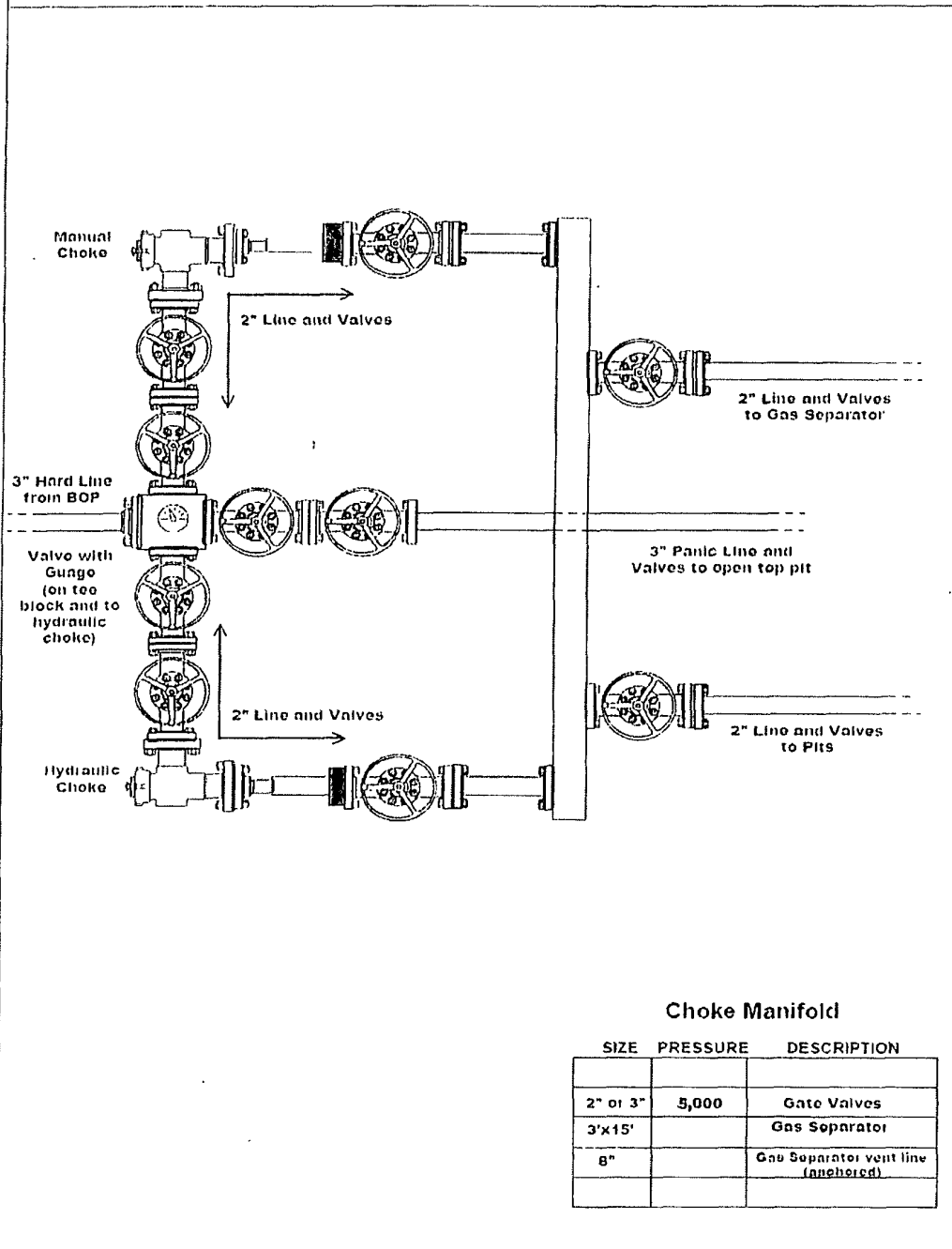
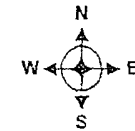


EXHIBIT F2

Patterson RIG 62



Lease Road

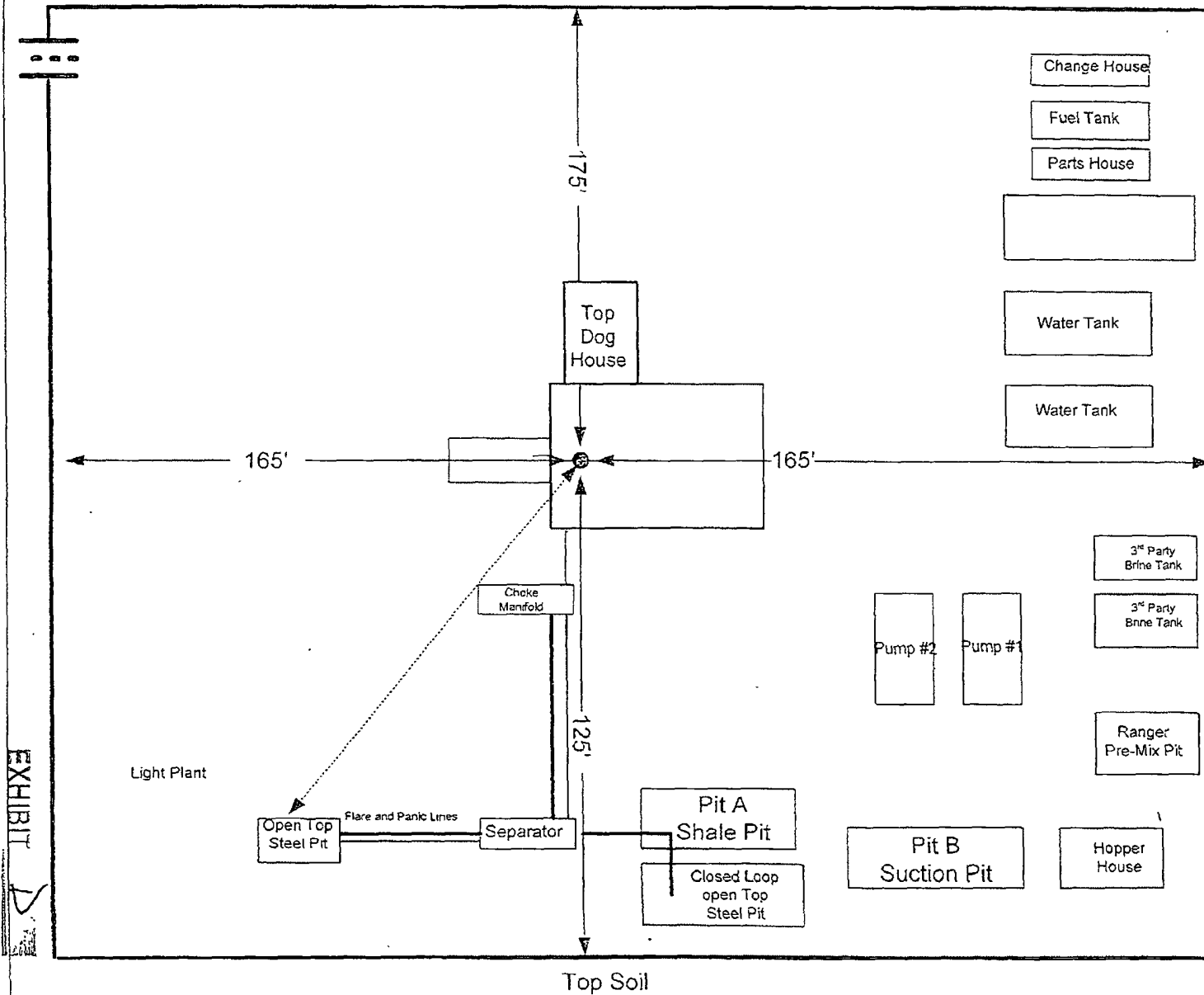


EXHIBIT D



## PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CHESAPEAKE OPERATING INC
LEASE NO.:	NMLC061705B
WELL NAME & NO.:	1H PLU BIG SINKS 35-24-30 USA
SURFACE HOLE FOOTAGE:	150' FNL & 1980' FEL
BOTTOM HOLE FOOTAGE:	100' FSL & 1980' FEL
LOCATION:	Section 35, T.24 S., R.30 E., NMPM
COUNTY:	Eddy County, New Mexico

### TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
  - Lesser Prairie-Chicken Timing Stipulations
  - Ground-level Abandoned Well Marker
  - Commercial Well Determination
- ☐ **Construction**
  - Notification
  - Topsoil
  - Closed Loop System
  - Federal Mineral Material Pits
  - Well Pads
  - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
  - Medium Cave/Karst
  - Logging requirements
  - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
  - Well Structures & Facilities
  - Pipelines
  - Electric Lines
- ☒ **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.

### **Commercial Well Determination**

A commercial well determination will need to be submitted, after production has been established for at least six months.

## **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) 234-6235 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

### **B. TOPSOIL**

The operator shall stockpile the topsoil in a low profile manner in order to prevent wind/water erosion of the topsoil. The topsoil to be stripped is approximately 4 inches in depth. The topsoil will be used for interim and final reclamation.

### **C. CLOSED LOOP SYSTEM**

Tanks are required for drilling operations: No Pits.

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

### **D. FEDERAL MINERAL MATERIALS PIT**

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

### **E. WELL PAD SURFACING**

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

### **F. ON LEASE ACCESS ROADS**

#### **Road Width**

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty (20) feet.



### Surfacing

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

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

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

### Crowning

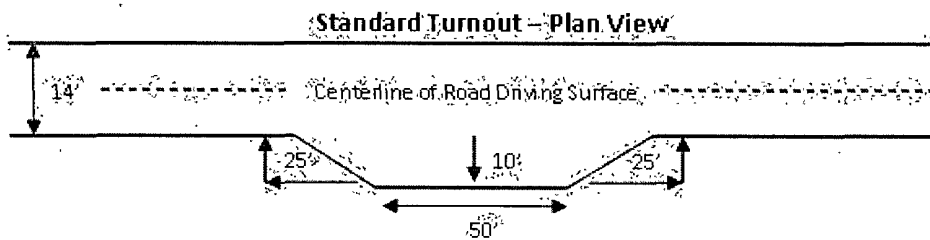
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

### Ditching

Ditching shall be required on both sides of the road.

### Turnouts

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

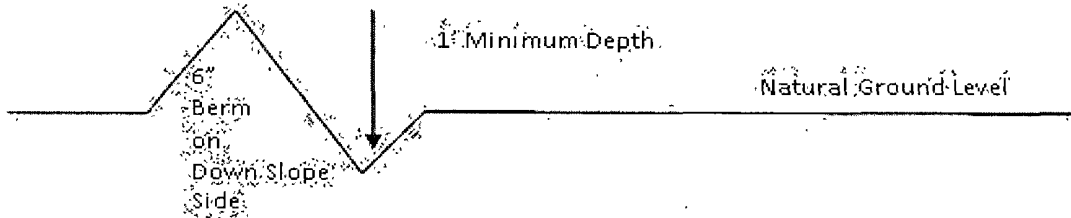


### Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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:

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

#### **Culvert Installations**

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

#### **Cattleguards**

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

A gate shall be constructed and fastened securely to H-braces.

#### **Fence Requirement**

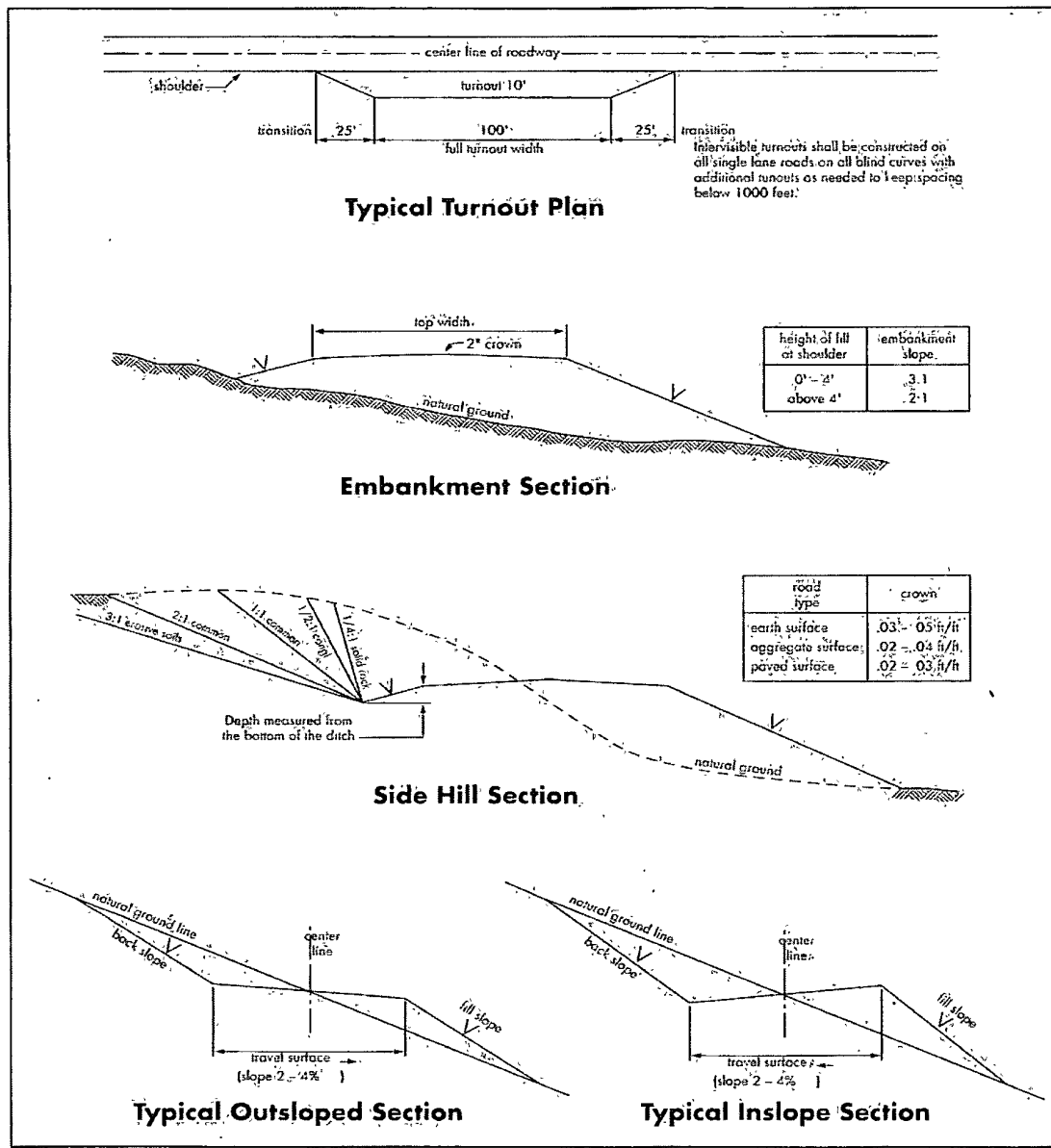
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

#### **Public Access**

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

**Figure 1 – Cross Sections and Plans For Typical Road Sections**



## VII. DRILLING

### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

- a. Spudding well
- b. Setting and/or Cementing of all casing strings
- c. BOPE tests

☒ **Eddy County**

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

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. 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.
4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

### B. CASING

**Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#).**

**Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).**

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

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.**

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

**Medium cave/karst potential.**

**Possible water flows in the Castile, Salado, Delaware and Bone Springs Groups**

**Possible lost circulation in the Delaware and Bone Spring formations**

1. The **13-3/8** inch surface casing shall be set at **approximately 1475 feet (below the Magenta Dolomite member of 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 is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
  - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:
  - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

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

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
  - a. First stage to DV tool, cement shall:
    - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve circulation on the next stage.
  - b. Second stage above DV tool, cement shall:
    - ☒ Cement should tie-back at least **500** feet into previous casing string. Operator shall provide method of verification.
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

#### **C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi. **Operator installing a 5M and testing as a 3M.**
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
- b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. The results of the test shall be reported to the appropriate BLM office.
- d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

#### **D. DRILL STEM TEST**

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

#### **E. WASTE MATERIAL AND FLUIDS**

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

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

**CRW 040412**

## **VIII. PRODUCTION (POST DRILLING)**

### **A. WELL STRUCTURES & FACILITIES**

#### **Placement of Production Facilities**

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

#### **Containment Structures**

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

#### **Painting Requirement**

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color  
Shale Green, Munsell Soil Color Chart # 5Y 4/2

### **B. PIPELINES**

A copy of the COAs and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless



the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.
6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.
7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:
- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
  - Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
  - The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)
8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.
9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( x ) seed mixture 2/LPC

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

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

### **Temporary Freshwater Pipelines (Fracturing Operations) CONDITIONS OF APPROVAL**

Maintain a copy of your temporary permit and your approved route diagram on location. BLM personnel may request to see a copy of your permit during construction to ensure compliance with all conditions of approval.

Holder agrees to comply with the following conditions of approval to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.

2. Standard Conditions of Approval:

- Temporary pipelines must be removed within 30-45 days from this route unless granted in writing by the authorized officer.
  - Temporary pipelines flowing from the frac pond to the target well(s) will be laid along existing roadways unless an exception has been granted by the authorized officer.
  - Pipe will be hand-carried and hand-laid along any cross country portion of the approved route.
  - Areas impacted (disturbed greater than vegetation compaction) by your project may require full reclamation.
  - Pipelines will be empty before disassembly. Flow water back to the pond whenever possible.
  - Do not restrict traffic on existing roads. Place ramps where needed.
  - Pipe will be placed not more than 2 feet off the edge of existing lease roads, 2-track roads, or buried pipeline corridors.
  - All pumps will be placed on existing disturbance (pads, roads, etc.).
4. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer.

**C. ELECTRIC LINES (not applied for in APD)**

## **IX. INTERIM RECLAMATION**

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

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

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

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

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

## **X. FINAL ABANDONMENT & RECLAMATION**

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

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

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

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

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

## Seed Mixture for LPC Sand/Shinnery 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>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

\*Pounds of pure live seed:

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