Carlsbad Controlled Water Basin

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 08 2015
RECEIVED

ATS-15-887

Form 3160-3
(March 2012)

Witness Surface & Intermediate Casing

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. ~~NM118305~~ NM118705

6. If Indian, Allotee or Tribe Name

1a. Type of work: [X] DRILL [ ] REENTER

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

1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [XX] Single Zone [ ] Multiple Zone

8. Lease Name and Well No.
FOREHAND RANCH 35 Fed. 1H

2. Name of Operator
CAZA OPERATING, LLC.

9. API Well No.
30-015- 43490

3a. Address 200 NORTH LORAINE SUITE 1550 MIDLAND, TEXAS 79701

3b. Phone No. *(include area code)*
432-682-7424

10. Field and Pool, or Exploratory
FOREHAND RANCH-WOLFCAMP SW.

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 330' FSL & 1980' FWL SECTION 35 T23S-R27E
At proposed prod. zone BHL 660' FNL & 1980' FWL SEC. 35 T23S-R27E

11. Sec., T. R. M. or Blk. and Survey or Area
SECTION 35 T23S-R27E

14. Distance in miles and direction from nearest town or post office*
Approximately 5 miles West Southwest of Loving New Mexico

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)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
330'	320	160 Acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	**20. BLM/BIA Bond No. on file**
NA	TVD-10,900' MD-14,945'	NMB-000471
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3152' GL	WHEN APPROVED	45 days to drill

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.
2. A Drilling Plan.
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).
4. Bond to cover the operations unless covered by an existing bond on file (s Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
Joe T. Janica	Joe T. Janica	07/16/15

Title: Permit Eng.

Approved by *(Signature)* /S/ STEPHEN J. CAFFEY	Name *(Printed/Typed)*	Date NOV 30 2015
Title FOR FIELD MANAGER	Office BLM-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)

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

*(Instructions on page 2)

12/7/2015

OPERATOR CERTIFICATION

I hereby certify that I or someone under my direct supervision have inspected the drill site and the access route proposed herein; and that I am familiar with the conditions that currently that 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.

OPERATORS REPRESENTATIVES:

BEFORE CONSTRUCTION	DURING & AFTER CONSTRUCTION
TIERRA EXPLORATION, INC.	CAZA OPERATING, LLC.
JOE T. JANICA	TONY SAM
P. O. BOX 2188	200 NORTH LORAINE SUITE 1550
HOBBS, NEW MEXICO 88241	MIDLAND, TEXAS 79702
OFFICE PHONE 575-391-8503	OFFICE PHONE 432-682 -7424
JOE JANICA CELL 575-390-1598	CELL: PHONE 432-556-6703

Name: Joe T. Janica Joe T Janica

Title: Permit Eng. DATE 07/16/15

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 43490	96409	FOREHAND RANCH - WOLFCAMP SW.

Property Code	Property Name	Well Number
315695	FOREHAND RANCH 35 FEDERAL	1H

OGRID No.	Operator Name	Elevation
249099	CAZA OPERATING, LLC	3152'

Surface Location

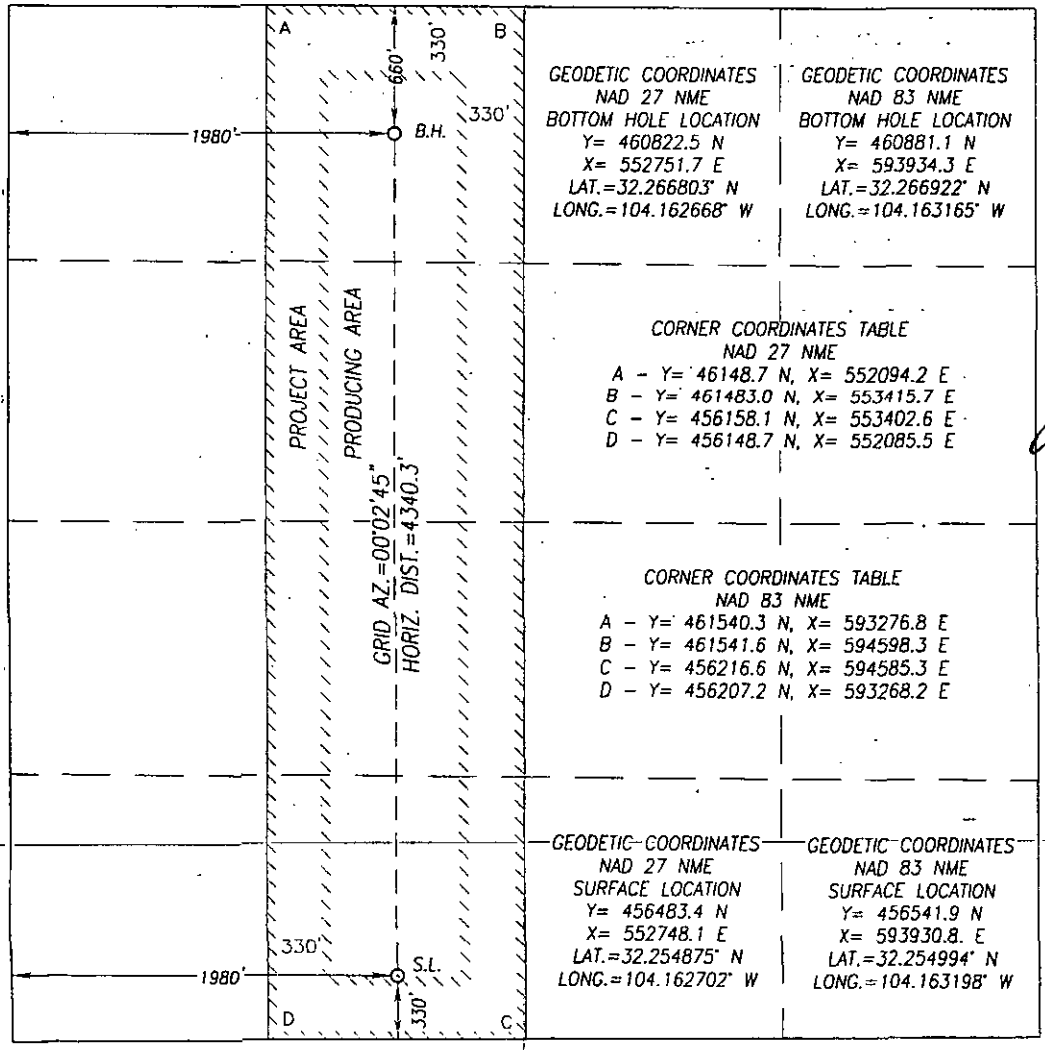
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	35	23-S	27-E		330	SOUTH	1980	WEST	EDDY

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
C	35	23-S	27-E		660	NORTH	1980	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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



GEODETIC COORDINATES
NAD 27 NME
BOTTOM HOLE LOCATION
Y= 460822.5 N
X= 552751.7 E
LAT.=32.266803° N
LONG.=104.162668° W

GEODETIC COORDINATES
NAD 83 NME
BOTTOM HOLE LOCATION
Y= 460881.1 N
X= 593934.3 E
LAT.=32.266922° N
LONG.=104.163165° W

CORNER COORDINATES TABLE
NAD 27 NME
A - Y= 461148.7 N, X= 552094.2 E
B - Y= 461483.0 N, X= 553415.7 E
C - Y= 456158.1 N, X= 553402.6 E
D - Y= 456148.7 N, X= 552085.5 E

CORNER COORDINATES TABLE
NAD 83 NME
A - Y= 461540.3 N, X= 593276.8 E
B - Y= 461541.6 N, X= 594598.3 E
C - Y= 456216.6 N, X= 594585.3 E
D - Y= 456207.2 N, X= 593268.2 E

GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y= 456483.4 N
X= 552748.1 E
LAT.=32.254875° N
LONG.=104.162702° W

GEODETIC COORDINATES
NAD 83 NME
SURFACE LOCATION
Y= 456541.9 N
X= 593930.8 E
LAT.=32.254994° N
LONG.=104.163198° W

OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature: Joe T Janica Date: 07/16/15

Printed Name: Joe T. Janica

E-mail Address: joejanica@valornet.com

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

JANUARY 29, 2015

Date of Survey

Signature & Seal of Professional Surveyor:

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR 2/16/15

Certificate Number	Gary O. Eidson	12641
	Ronald J. Eidson	3239

LSL JWSC W.O.: 15.11.0085

EXHIBIT "A"

NOTE:
1) SEE "TOPOGRAPHIC AND ACCESS ROAD MAP".

DIRECTIONS TO FOREHAND RANCH 35 FEDERAL #1H:

FROM THE INTERSECTION OF U.S. 285 AND CO. RD. 716 (HIGBY HOLE) GO SOUTH APPROX. 0.42 MILES TURN RIGHT AND GO WEST ON CO. RD. 763 APPROX. 3.0 MILES TURN LEFT ON LEASE ROAD AND GO SOUTHWEST APPROX. 0.65 MILES FOLLOW ROAD SURVEY STAKES WEST FOR 1789' TO THIS LOCATION.

100 0 100 200 Feet

Scale: 1"=100'

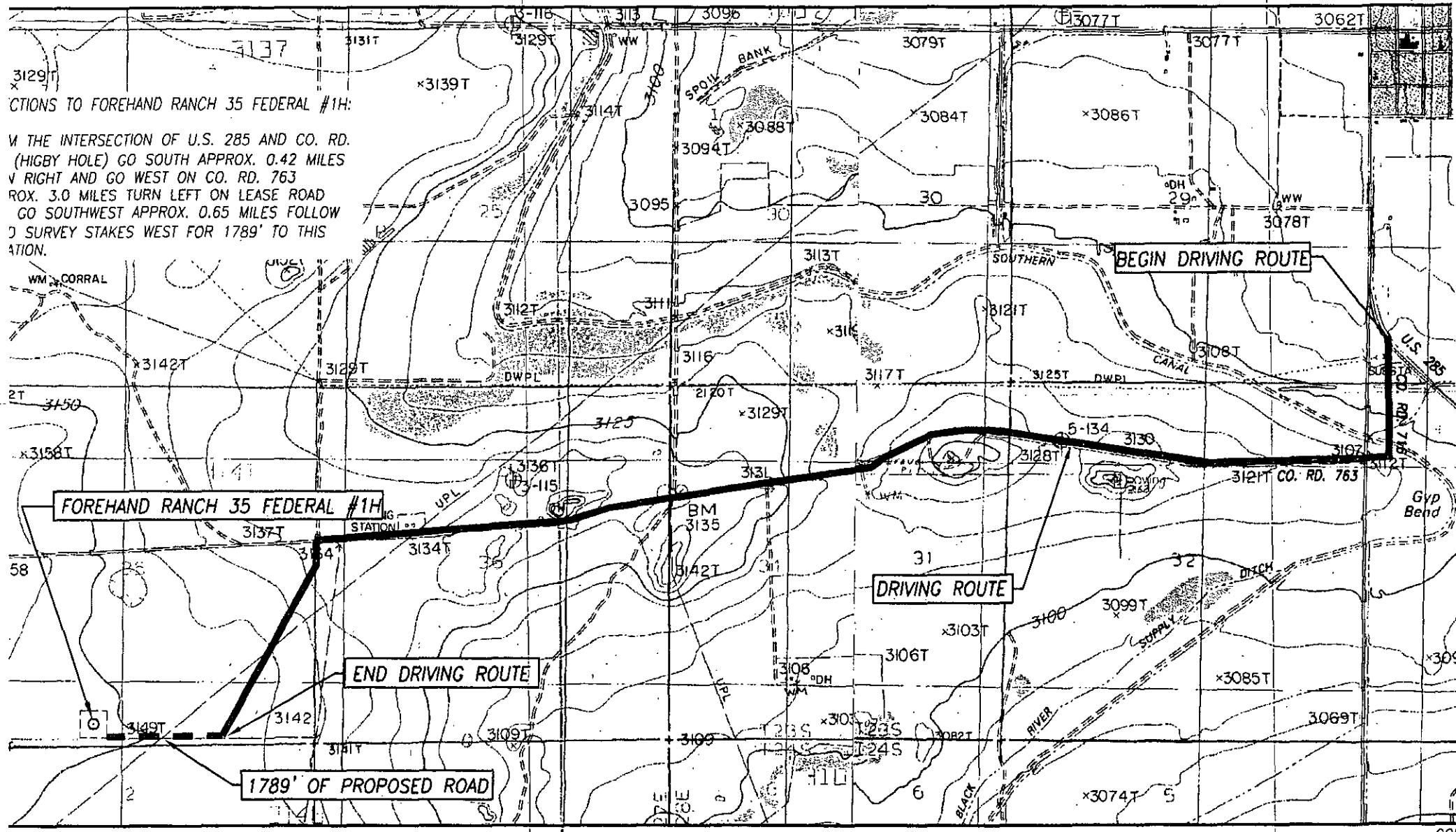
CAZA OPERATING, LLC

FOREHAND RANCH 35 FEDERAL #1H WELL
LOCATED 330 FEET FROM THE SOUTH LINE
AND 1980 FEET FROM THE WEST LINE OF SECTION 35,
TOWNSHIP 23 SOUTH, RANGE 27 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Survey Date: 1/28/15	CAD Date: 2/12/15	Drawn By: LSL
W.O. No.: 15110085	Rev: .	Rel. W.O.:	Sheet 1 of 1

TOPOGRAPHICAL AND ACCESS ROAD MAP

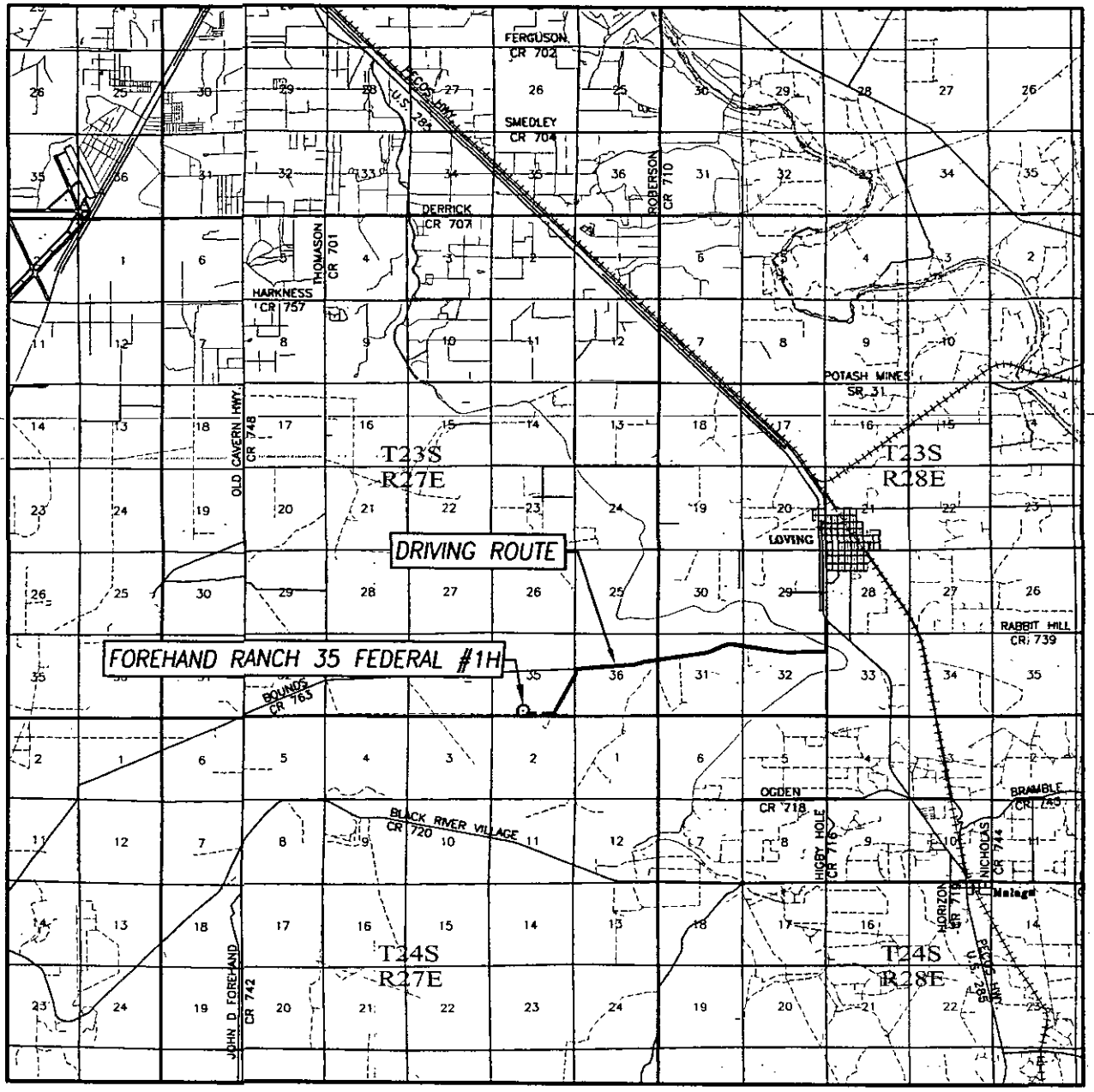


23-S RGE. 27-E
STATE NEW MEXICO
30' FSL & 1980' FWL
3152'
AZA OPERATING, LLC
ND RANCH 35 FEDERAL
APHIC MAP
SURVEY N.M.P.M.

SCALE: 1" = 2000'

PROVIDING SURVEYING SERV
SINCE 1946
JOHN WEST SURVEYING
412 N. DAL PASO HOBBS, N.M.
(575) 393-3117 www.jwsc
TBPLS# 10021000

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHIC AND ACCESS ROAD MAP

SEC. 35 TWP. 23-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 330' FSL & 1980' FWL

ELEVATION 3152'

OPERATOR CAZA OPERATING, LLC

LEASE FOREHAND RANCH 35 FEDERAL

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

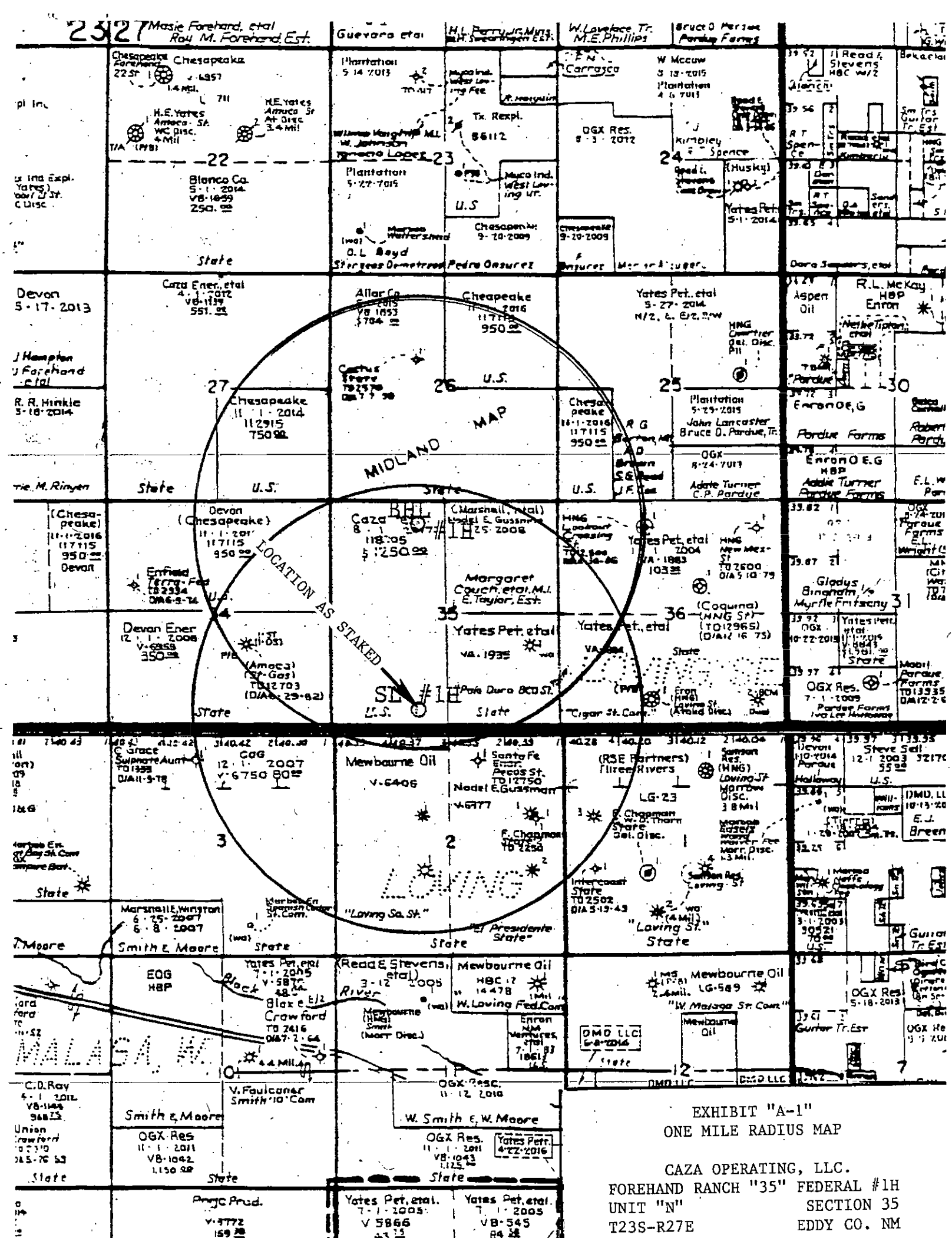


EXHIBIT "A-1"
ONE MILE RADIUS MAP

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35
T23S-R27E EDDY CO. NM

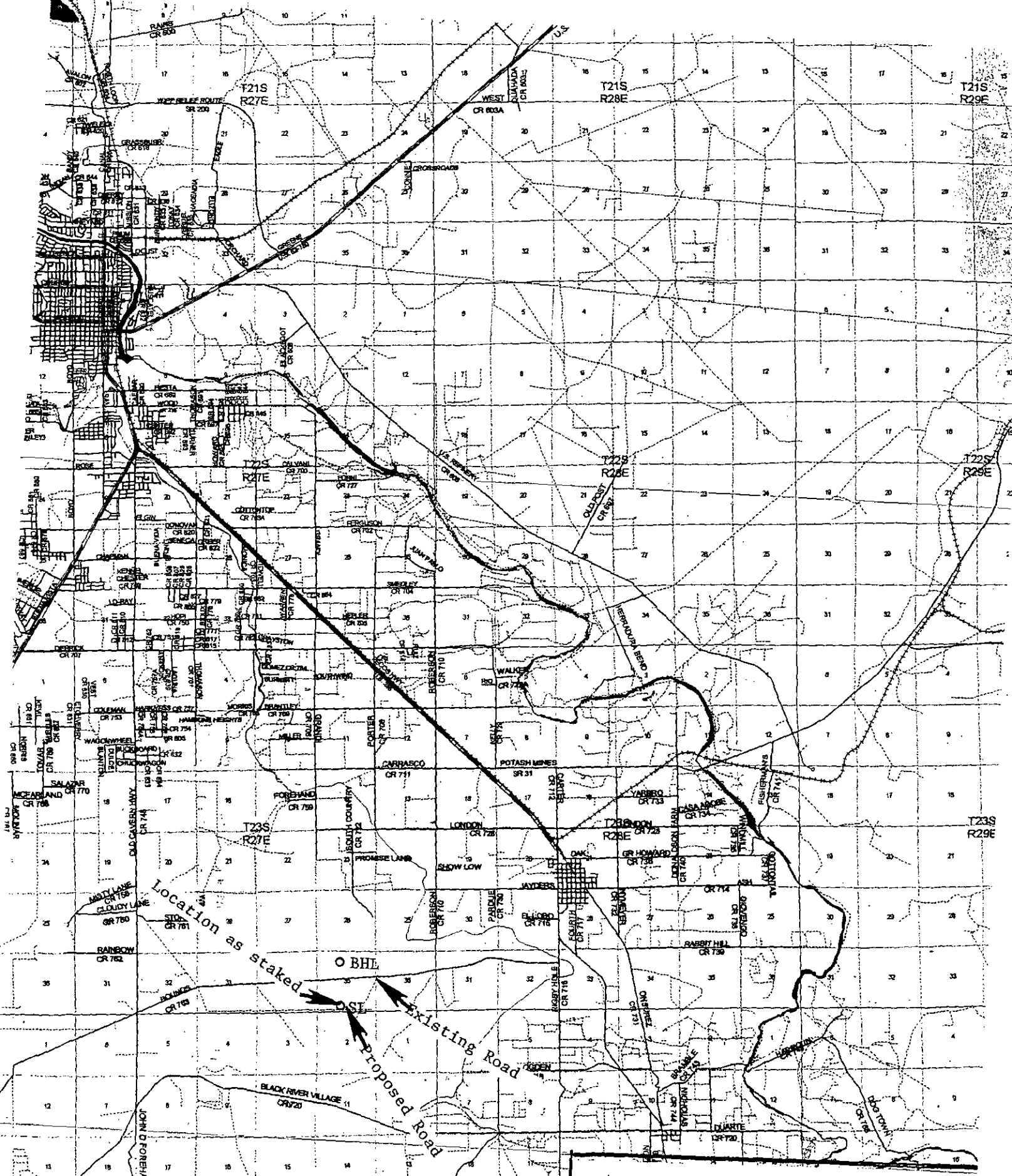


EXHIBIT "B-1"
LOCATION & ACCESS ROAD MAP

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35

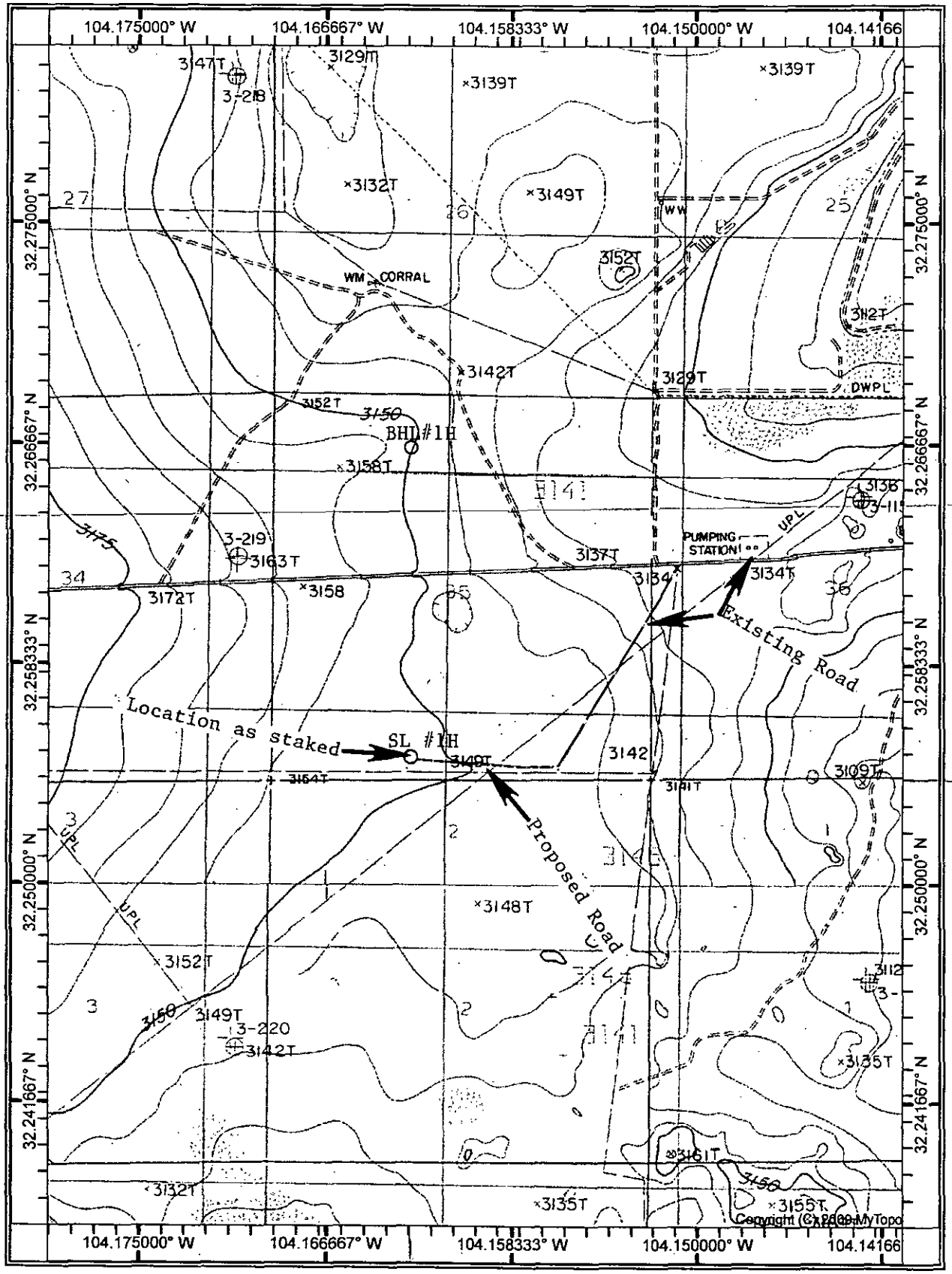
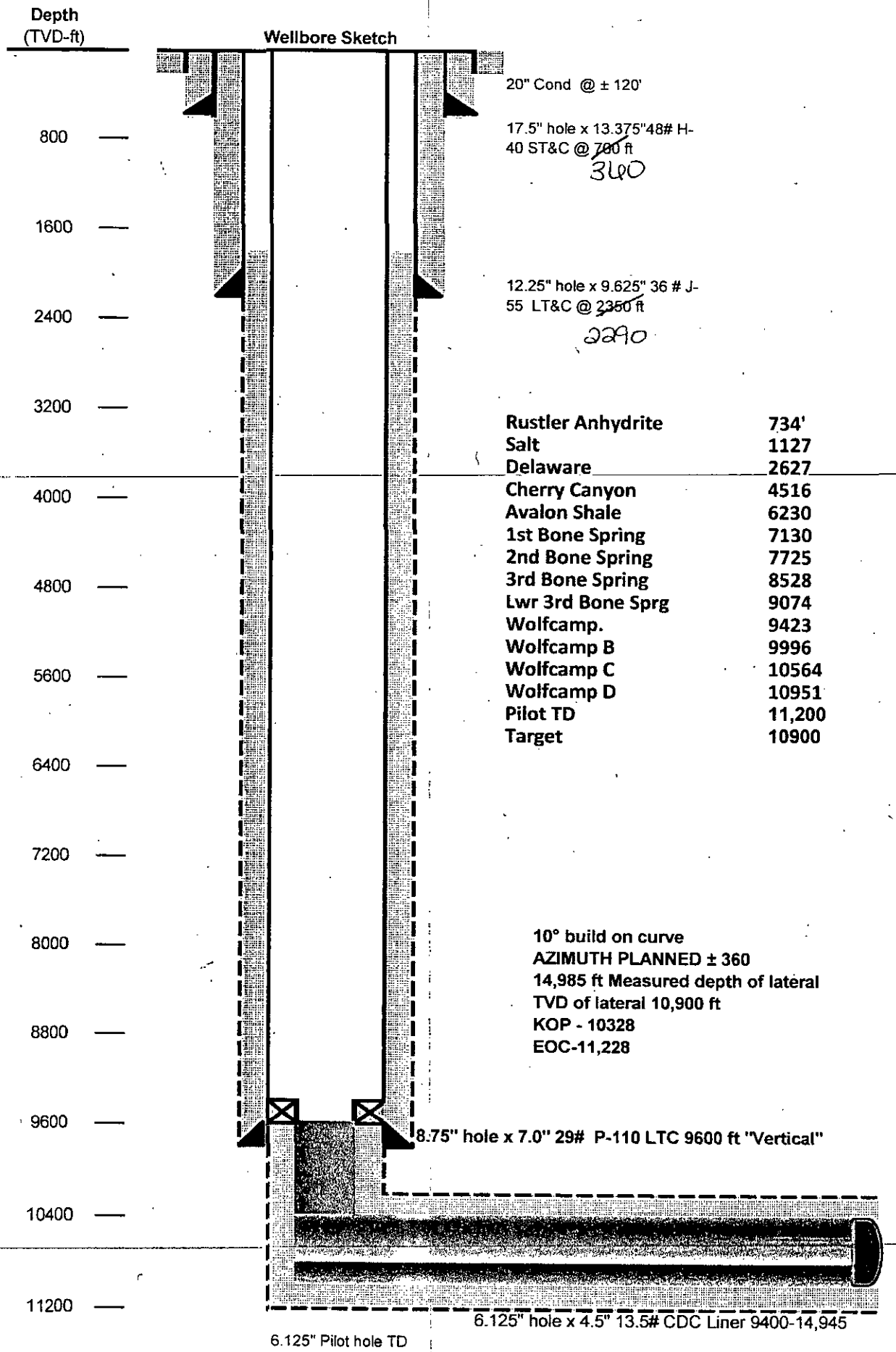


EXHIBIT "C"
TOPOGRAPHIC MAP SHOWING
ROADS & DIRECTIONS TO

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35
T23S-R27E EDDY CO. NM

Location: SE/SW Section 35_T23S_R27E_Eddy County, New Mexico

Caza Oil&Gas, Inc.



Application to Drill
Caza Operating, LLC
Forehand 35 Fed #1H
Sec (35), T23S, F27E, Eddy County, New Mexico

1. Elevation above Sea Level: **3143' GL. See Exhibit "A" Plats**

2. Location: SHL = 330 FSL & 1980 FWL, Section 35, T23S, R27E, Eddy County, New Mexico
   BHL = 660 FNL & 1980 FWL, Section 35, T23S, R27E, Eddy County, New Mexico
   See Exhibit "A" Project Area Plats

3. Elevation above Sea Level: **3152' GL. See Exhibit "A" Plats**

4. Geological Name of Surface Formation: **Quaternary Aeolian Deposits**

5. Drilling tools & Associated Equipment: **Conventional rotary/top drive drilling rig using drilling fluid as a circulating medium for the removal of solids from the bore hole. Rig has not been selected.**

6. Proposed Drilling Depth: **Pilot hole @ 11,200 ft. Lateral MD: 14943 ft TVD 10,900 ft. See Exhibit "B" for Directional Summary.**

7. Estimated Formation Tops:

Rustler Anhydrite	**734'**	**3rd Bone Spring**	**8528'**
Salt	**1127'**	**Wolfcamp**	**9423'**
Delaware	**2627'**	**Wolfcamp B**	**9996'**
Cherry Canyon	**3419'**	**Wolfcamp C**	**10564'**
Brushy Canyon	**4516'**	**Wolfcamp D**	**10951**
Avalon Shale	**6230'**	**Target Lwr Wlfcmp**	**10900'**
1st Bone Spring	**7130'**	**Pilot TD**	**11,100'**
2nd Bone Springs	**7725**		

8. Possible Mineral Formations:

Bell Canyon	**Oil/Gas/Water**	**Bone Spring Avalon**	**Oil/Gas/Water**
Cherry Canyon	**Oil/Gas/Water**	**Bone Spring Sands**	**Oil/Gas/Water**
Brushy Canyon	**Oil/Gas/Water**	**Wolfcamp Shale**	**Oil/Gas/ Water**

9. Casing Program: **See Exhibit "C" Casing Design**

Hole Size	Interval	Csg OD	Wgt	Thread	Collar	Grade	Condition
24"	0-120'	20"	NA	NA	NA	NA	NEW
17.5"	0-~~700~~ 3100'	13.375"	48#	8rd	STC	H-40	NEW
12.25"	0-~~2350~~ 2990'	9.625"	36#	8rd	LTC	J-55	New
8.75"	0-9600'	7.0"	29#	8rd	LTC	P-110	New
6.125"	9600-14945' 9400'	4.5"	13.5#	BTC	CDC	P-110	New

See COA

See Attached Casing Program for Burst, Collapse, Body Yield & Joint strength Safety Factors.

Application to Drill
Caza Operating, LLC
Forehand 35 Fed #1H
Sec (35), T23S, F27E, Eddy County, New Mexico

10. Casing Cement & Depths: **See Exhibit "D" cement program for details.**

20"	Conductor	Set 120' conductor pipe and cement to surface with redi mix or circulate if mud up required.
13.375"	Surface Csg	Drill 17.5" hole to ~~700~~ 360 ft. Run & set ~~700~~ 360 ft of 13.375" 48# H-40 STC casing. Cement w/ 428 sks "C" lite mixed 13.5 ppg w/ 4% gel+2% CaCl2 w/ Yield 1.75 cu ft /sk. Tailed w/ 200 sks "C" mixed 14.8 ppg w/ 2% CaCl2 w/ yield 1.33 cu ft /sk. Cement calc circulated to surface with 100% excess. **WOC 24 hrs.**
9.625	Intermediate Csg	Drill 12.25" hole to ~~2350~~ 2290 ft. Run & set ~~2350~~ 2290 ft of 9.625" 36# J-55 LTC casing. Cement casing w/ 498 sks "C" Lite 65:35:4 poz/gel w/ 5% NaCL Mixed 12.5 ppg w/ yield 2.09 cu ft/sk. Tailed w/ 200 sks "C" mixed 14.8 ppg w/ 1% CaCl2 w/ 1.33 cu ft / sk yield. Cement calc to circulate to surface with 100% excess. **WOC 24 hrs**
7.0"	Production Intermediate	Drill 8.75" hole to MD of 9600 ft. Set 9600' 7.0 " 29# LTC Casing. Cement casing w/ 359 sks "H" 65:35 Poz mixed 12.6 ppg w/ yield of 1.89 cu ft / sk. Tailed w/1056 sks sks "H" mixed 50/50 poz w/ 2% gel 14.2 ppg w/ yield 1.27 cu ft /sk. Cement top calculated 1700 ft / surface using 50% excess. **WOC 24 hrs**
4.5"	Production Liner	Drill 6.125" hole to MD of 14,945 ft. Top of liner estimated at 9,400 ft. Run 4.5" 13.5# CDC Csg. Cement casing w/ 338 sks "H" mixed 15.6 ppg w/ 1.18 cu ft /sk yield. TOC 9400 ft w/ 35% excess in open hole.

See COA

See COA

Application to Drill
Caza Operating, LLC
Forehand 35 Fed #1H
Sec (35), T23S, F27E, Eddy County, New Mexico

11. Pressure Control Equipment: **Exhibit "E"** shows a 1500 services 5000 psi working pressure Blow out preventer consisting of an annular bag type preventer, top blind ram & bottom pipe ram. This BOP will be installed & tested on the 13.375" surface casing head using a third party tester. Test will be performed per BLM regulations. The BOP will be operated once per 24 hour period and documented on the report. Blind rams will be operated on trips and documented. A full opening ball valve and inside back pressure valve with proper drill pipe threads will be readily available on the drill floor. Manual valve wrench will be available in a conspicuous location near the floor. Upper Kelly cock valve will be used on the Kelly or an upper valve will be used in the case of a top drive. A hydraulic BOP closing unit with large enough capacity to close and seal all members without recharge will be connected to Blow out preventers. A minimum 3" 5000 psi choke manifold per Federal Onshore order 2 will be included in the well control system. A hydraulic choke and HCR valve will be on site below the surface casing. A remote operated system will be available on the floor so that the driller can shut in the well from the drill floor. We do not anticipate abnormal pressure in the drilling of this well. BOPE sizes will be determined after rig selection. Minimum BOP size is 11" 5000 psi prior to 7" set and 7.0625" 5000 psi below 7" casing setting depth.

12. Proposed Mud Circulating System: "CLOSED SYSTEM PLANNED FOR THIS WELL" **See Exhibit "F"-Mud program summary for more details.**

Depth	Mud Wgt	Viscosity	API FL CC's	Type Mud System
120-700	8.6-8.9	29-34	NC	Fresh water spud mud with high vis sweeps.
700-2350'	9.8-10.1	29-30	NC	Brine water w/ high vis sweeps for hole cleaning.
2350-9600'	8.5-9.6	28-35	NC-10.0	Fresh water w/ high vis sweeps. Fluid loss control using cut brine for pressure control in Wolfcamp interval.
9600'-11,200 Pilot	9.6	28-35	< 10.0 cc's	Polymer for inhibition and calcium carbonate for pressure control
10328KOP-14,945	9.6	28-35	<10.0 cc's	Fresh water w/ high vis Sweeps. Fluid loss control using polymer and pressure control using barite or calcium carbonate. Lubricant will be used in lateral for sliding and friction reduction.

3600'
2290'

Sufficient mud materials will be kept on location at all times to control lost circulation, unexpected kicks. In order to run DST's, logs, cores and casing the viscosity, water loss and other mud properties may have to be altered.

13. Testing, Logging & Coring:
    A. Mud Logging Program; 2 man unit from Top of Bell Canyon to Total depth.
    B. Electric logging program; GR, CNL/LDT, DLL, Sonic planned @ pilot hole depth of 11,100' to 2350'. GR/N to from 2350' to near surface.
    C. No DST's are planned. Rotary side wall cores may be taken at selected points in the well bore depending on the logs.

14. **Potential Hazards:**
    No abnormal pressures or temperatures are expected. In accordance with onshore order # 6, Caza Operating does not anticipate that there will be H2S encountered but for public and company safety a H2S plan will be followed in the drilling and completion of this well. Adequate flare lines coming off the mud/gas separator will be installed and in service while drilling below the 9.625" casing shoe. **See Exhibit "G"-H2S plan.**

    Estimated BHP = 4480 psi. Estimated BHT = 160°F

15. **Roads & Location Construction:**
    Roads & Location construction will begin upon approval of the APD submittal. Conditions of approval will be reviewed and followed. Drilling time is expected to be 35-50 days. If production liner is run another 30-40 days will be added to the on location time for completion & battery construction.

16. **Other Facets of Operation:**
    A. P&A cement to plug from Pilot hole TD to KOP will be "H" 1.0 cu ft / sk yield 16.4 ppg. Volume used will depend on log caliper.
    B. An Open hole oriented Whipstock may be used at KOP for initial side track and curve.
    C. Stage tools may be used in the 7" casing string depending on seepage and problems. Cement top planned @ 1500 ft from surface. Volumes will be determined by the open hole logs.
    D. Cuttings will be hauled to a qualified disposal facility.
    E. BLM personnel will be notified of all casing, cement and BOP testing jobs in sufficient time for witnessing.
    F. All rig personnel will be qualified in H2S safety, well control and general rig safety.

17. **Completion Plan**
    A. Run CBL, GR & CCL in Vertical portion of 7" Casing
    B. 7" Casing and 4.5" liner to be tested to 8500 psi.

Application to Drill
Caza Operating, LLC
Forehand 35 Fed #1H
Sec (35), T23S, F27E, Eddy County, New Mexico

C. Toe prep stage to be accomplished using Coil Tubing. Sleeve shift Job done In the presence of 15% HCL acid double inhibited.
D. Stimulation planned=Coil Tubing assist Sleeve / Water Frac completion Using ± 170,000 bbls fresh well water ± 40 sleeves.

Frac Additives Estimated

a. Gelling Agent "If needed" for sweeping
    i. Guar Gum
    ii. Petroleum Distillates
    iii. Surfactants
b. Gel Breakers
    i. Sodium Persulfate
    ii. Sodium perborate tetrahydrate
c. Biocides
    i. 2,2-dibromo-3-nitrilopropionamide
    ii. Polyethlyene-Glycol
    iii. Gluteraraldehyde
d. Scale Inhibitors
    i. Acrylic Polymer
    ii. Sodium Salt of Phosphate Ester
e. Surfactants & Foamers
    i. Ethylene/propylene oxide polymer
    ii. Amine Sulfonate
    iii. 2-Ethylhexanol
    iv. Alcohols, C11-14-iso,C13-rich ethoxylates
f. Iron Control Agents
    i. Citric Acid Anhydrous
    ii. Acetic acid
g. Bulk Acid
    i. 15% Baume Hydrochloric Acid
h. Acid Corrosion Inhibitors
    i. Methanol
    ii. Alcohol ethoxylate surfactants
    iii. Modified thiourea polymer
    iv. N-olefins
    v. Prop-2-yn1-ol
i. PH Buffer
    i. Acetic Acid
    ii. Ammonium acetate
j. Resin Activator
    i. Alcohols, C12-14-secondary,ethoxylated
    ii. Methanol
    iii. Polyethylene glycol
k. Proppant (30/50 sieve) ± 6,500,000 lbs white
    i. Crystalline silca: Quartz (SiO2)

Application to Drill
Caza Operating, LLC
Forehand 35 Fed #1H
Sec (35), T23S, F27E, Eddy County, New Mexico

l. Proppant (100 mesh) ± 500,000 lbs white
   i. Crystalline silca: Quartz (SiO2)

m. Friction Reducer
   i. Mineral oil/light hydro treated petroleum Distillate
   ii. Ammonium Chloride

Well name: **Forehand Ranch 35 Federal #1H**

Operator: **Caza Operating, LLC**

String type: **Conductor**

Location: **SE/SW Sec 35, T23S, R27E, Eddy County, New Mexico**

Design parameters:			Minimum design factors:		Environment:		
Collapse			**Collapse:**		H2S considered?	No	
Mud weight:	9.50	ppg	DF	1.125	Surface temperature:	75.00	°F
Design is based on evacuated pipe.					Bottom hole temp:	76	°F
					Temperature gradient:	0.70	°F/100ft
					Minimum sect length:	1,500	ft
			Burst:				
			DF	1.00	Cement top:	Surface	
Burst							
Max anticipated surface pressure:	44.82	psi					
Internal gradient:	0.12	psi/ft	**Tension:**		Non-directional string.		
Calculated BHP	59.22	psi	8 Rd STC:	1.80	(J)		
			8 Rd LTC:	1.80	(J)		
No backup mud specified.			Buttress:	1.60	(J)		
			Premium:	1.50	(J)		
			Body yield:	1.50	(B)		

Tension is based on buoyed weight.
Neutral pt: 103.04 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	120	20	94.00	H-40	ST&C	120	120	18.999	239.4

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	59	520	8.781	59	1530	25.84	10	581	59.98 J

Prepared by: **Tony Sam**
Phone: (432) 682 7424
FAX: (432) 682 7425
Date: June 10,2015
Midland, Texas

Remarks:
Collapse is based on a vertical depth of 120 ft, a mud weight of 9.5 ppg The casing is considered to be evacuated for collapse purposes.
Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.

Well name: **Forehand Ranch 35 Federal #1**

Operator: **Caza Operating, LLC**

String type: **Surface Casing**

Location: **SE/SW Sec 35, T23S, R27E, Eddy County, New Mexico**

Design parameters:

Collapse

Mud weight: 8.70 ppg

Design is based on evacuated pipe.

Minimum design factors:

Collapse: DF 1.125

Burst: DF 1.10

Environment:

H2S considered?	No	
Surface temperature:	75.00	°F
Bottom hole temp:	80	°F
Temperature gradient:	0.75	°F/100ft
Minimum sect length:	120	ft
Minimum Drift:	12.250	in
Cement top:	Surface	

Burst

Max anticipated surface pressure: 352.36 psi

Internal gradient: 0.12 psi/ft

Calculated BHP 436.35 psi

No backup mud specified.

Tension:

8 Rd STC:	1.80	(J)
8 Rd LTC:	1.80	(J)
Buttress:	1.60	(J)
Premium:	1.50	(J)
Body yield:	1.50	(B)

Non-directional string.

Tension is based on buoyed wgt.

Neutral pt: 610.78 ft

Re subsequent strings:

Next setting depth:	2,350	ft
Next mud weight:	10.000	ppg
Next setting BHP:	1,221	psi
Fracture mud wt:	12.000	ppg
Fracture depth:	700	ft
Injection pressure	436	psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	700	13.375	48.00	H-40	ST&C	700	700	12.59	617.2

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	316	740	2.339	436	1730	3.96	29	322	10.98 J

Prepared by: **Tony Sam**

Phone: (432) 682 7424 Date: June 10,2015

FAX: (432) 682 7425 Midland, Texas

Remarks:

Collapse is based on a vertical depth of 700 ft, a mud weight of 8.7 ppg The casing is considered to be evacuated for collapse purposes.

Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Engineering responsibility for use of this design will be that of the purchaser.

Well name: **Forehand Ranch 35 Federal #1H**

Operator: **Caza Operating, LLC**

String type: **Intermediate Casing**

Location: **SE/SW Sec 35, T23S, R27E, Eddy County, New Mexico**

Design parameters:

Collapse

Mud weight: 9.50 ppg

Design is based on evacuated pipe.

Minimum design factors:

Collapse:

DF 1.125

Burst:

DF 1.10

Environment:

H2S considered?	No	
Surface temperature:	75.00	°F
Bottom hole temp:	93	°F
Temperature gradient:	0.75	°F/100ft
Minimum sect length:	500	ft
Minimum Drift:	8.750	in
Cement top:	Surface	

Burst

Max anticipated surface pressure: 1,182.94 psi

Internal gradient: 0.12 psi/ft

Calculated BHP 1,464.94 psi

No backup mud specified.

Tension:

8 Rd STC:	1.80	(J)
8 Rd LTC:	1.80	(J)
Buttress:	1.60	(J)
Premium:	1.50	(J)
Body yield:	1.50	(B)

Non-directional string.

Tension is based on buoyed weight.

Neutral poin 2,019.65 ft

Re subsequent strings:

Next setting depth:	**9,600**	ft
Next mud weight:	9.600	ppg
Next setting BHP:	4,788	psi
Fracture mud wt:	12.000	ppg
Fracture depth:	2,350	ft
Injection pressure	1,465	psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	2350	9.625	36.00	J-55	LT&C	2350	2350	8.796	1020.1

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	1160	2020	1.742	1465	3520	2.40	73	453	6.23 J

Prepared by: Tony Sam

Phone: (432) 682 7424

FAX: (432) 682 7425

Date: June 10,2015

Midland, Texas

Remarks:

Collapse is based on a vertical depth of 2350 ft, a mud weight of 9.5 ppg The casing is considered to be evacuated for collapse purposes.

Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Well name: **Forehand Ranch 35 Federal # 1H**

Operator: **Caza Operating, LLC**

String type: **Production Intermediate**

Location: **SE/SW Sec 35, T23S, R27E, Eddy County, New Mexico**

Design parameters:

Collapse

Mud weight: 9.50 ppg

Design is based on evacuated pipe.

Minimum design factors:

Collapse: DF 1.125

Burst: DF 1.10

Environment:

H2S considered?	No	
Surface temperature:	75.00	°F
Bottom hole temp:	147	°F
Temperature gradient:	0.75	°F/100ft
Minimum sect length:	1,500	ft
Cement top:	1,900	ft

Burst

Max anticipated surface pressure: 8,884.21 psi

Internal gradient: 0.12 psi/ft

Calculated BHP 10,036.19 psi

No backup mud specified.

Tension:

8 Rd STC:	1.80	(J)
8 Rd LTC:	1.80	(J)
Buttress:	1.60	(J)
Premium:	1.50	(J)
Body yield:	1.50	(B)

Non-directional string.

Tension is based on buoyed weight.

Neutral pt: 8,219.47 ft

Re subsequent strings:

Next setting depth:	10,900 ft TVD
Next mud weight:	18.000 ppg
Next setting BHP:	10,192 psi
Fracture mud wt:	30.000 ppg
Fracture depth:	10,900 ft
Injection pressure	16,987 psi

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	9600	7	29.00	P-110	LT&C	9600	9600	6.059	2002.3

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	4738	8530	1.801	10036	11220	1.12	238	797	3.34 J

Prepared by: **Tony Sam**

Phone: (432) 682 7424

FAX: (432) 682 7425

Date: June 10,2015

Midland, Texas

Remarks:

Collapse is based on a vertical depth of 9600 ft, a mud weight of 9.5 ppg The casing is considered to be evacuated for collapse purposes.

Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Production Liner/Frac

SE/SW Sec 35, T23S, R27E, Eddy County, New Mexico

parameters:			Minimum design factors:		Environment:		
			Collapse:		H2S considered?	No	
ght:	18.00	ppg	DF	1.125	Surface temperature:	75.00	°F
uid density:	3.000	ppg			Bottom hole temperature:	157	°F
					Temperature gradient:	0.75	°F/100ft
					Minimum section length:	1,500	ft
			Burst:		Minimum Drift:	3.790	in
ressure:	250	psi	DF	1.10	Cement top:	9,400	ft
cipated surface							
	8,884.20	psi			Liner top:	9,400	ft
radient:	0.12	psi/ft	Tension:		Directional well information:		
d BHP	10,192.20	psi	8 Rd STC:	1.80 (J)	Kick-off point	10328	ft
			8 Rd LTC:	1.80 (J)	Departure at shoe:	4290	ft
backup:	4.00	ppg	Buttress:	1.60 (J)	Maximum dogleg:	10	°/100ft
			Premium:	1.50 (J)	Inclination at shoe:	90.01	°
			Body yield:	1.50 (B)			

Tension is based on buoyed weight.
Neutral pt: 10,504.39 ft

Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
5545	4.5	13.50	P-110	Buttress	10900	14945	3.795	464.7

Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
8743	10680	1.221	8059	12410	1.54	15	422	28.37 B

Prepared by: Tony Sam
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Date: June 16,2015
Midland, Texas

ier string, the top is rounded to the nearest 100 ft.Collapse is based on a vertical depth of 10900 ft, a mud weight of 18 ppg An internal f .156 psi/ft was used for collapse from TD to 0 ft. Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

ngth is not adjusted for tension.
strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a tensile load dded to the axial load.

Engineering responsibility for use of this design will be that of the purchaser.

Exhibit "D"

Forehand 35 Fed #1H "Cement Program"
SE/SW_Section 35, T23S, R27E, Eddy County, New Mexico. API # 30 015
Wolfcamp Test

1. **Surface hole depth = 700 ft. TOC @surface** w/ 100% W/O
   Surface hole = 17.5 inch
   Surface casing = 13.375" 54.5# J-55 STC
   Float Collar 1 jts up.
   Hardware needed = 12 spring centralizers_(6) first 6 jts_6 every 6th jt to surface
   1 Guide shoe "PDC Drillable"
   1 Insert float valve (1 jt Up)
   1 thread lock compound
   1 collar stop

   Engineering Data "Surface":
   700 ft 17.5 inch hole x 13.375" csg = .6946 cuft/ft X 700 X 2.0 excess = 972 cu ft
   44 ft 13.375" 54.5 # casing volume= .8679 X 44 ft = 38 cu ft
   Total Cement volume required = 1010 cu ft.
   Lead slurry Coverage (336-surf) = 744 cu ft "C" w/ 4% Gel, 2% CaCl2, 13.5 ppg yield 1.74 cu ft/sk = **(428 sks)_Compressive strength documented @ + 500 psi in 12 hrs.**
   Tail Slurry Coverage (500-336) = 266 cu ft Class "C" w/ 2% CaCl2 14.8 ppg yield 1.33 cu ft / sk = **(200 sks)**

2. **Intermediate hole depth=2350 ft. TOC @ Surface** w/ 100% W/O open hole
   Intermediate hole = 12.25 inch
   Intermediate Casing = 9.625" 40# J-55 LTC
   Float Collar 1 jts up.
   Hardware needed = 12 spring cent space equally every 4 jts to 450 ft
   1 Guide Shoe
   1 float collar (1 jt up)
   4 thread lock compound
   Casing Packer
   Stage tool

Engineering Data "Intermediate":
1650 ft 12.25 inch open hole x 9.625 csg = .3132 cuft/ft X 1850 X 2.0 excess = 1034 cu ft
700 ft 9.625 x 13.375" casing =.3626 cu ft/ft X 700 = 254 cu ft
44 ft 9.625"40 # casing volume= .4257 X 44 ft = 19 cu ft
Total Cement volume required = 1305 cu ft.

Lead Slurry Coverage (1959-Surface) = 1041 cu ft 35:65 poz "C" w/ 5% salt & 6% gel 12.4 ppg yield 2.09 cu ft/sk = **(498 sks)**

Tail Slurry coverage(2350-1959) = 264 cu ft Class "C" w/ 1% CaCl2 14.8 ppg yield 1.32 cu ft / sk = **(200 sks)**

3. **Production Intermediate Hole depth= 9600 ft.** "Vertical". **TOC @ 1700 ft** w/ 75% W/O in open hole. **(Wash out adjusted post log run)**
Production Hole = 8.75inch to 9600.
7" seat = 9600 MD. TOC calculated to 1700 ft w/ 75% Washout open hole.
BHST = 150° F

Production Inter Casing = 7-0 inch 29 # P-110 CDC HTQ
Hardware Needed = 24 spring Centralizers
12 Rigid Centralizers for Curve. (1 every other jt)
Float Collar (1 jt up)
Float Shoe

Engineering Data "Production":
650 ft 9-5/8" 40# X 7-0" Csg= 650' X .1585 cu ft / ft = **103 cu ft.**
7250 ft 8.75 inch open hole x 7-0" 29# casing = 7250 X .1503 x 1.75 excess = **1907 cu ft**
44 ft 7-0" 29 # casing volume= .2085 X 44 ft = **9 cu ft**
Total Cement volume required = 2019 cu ft.

Lead Slurry (4500-1700')= 678 cu ft 65/35 Poz/"H"mixed @12.6 ppg w/yield 1.89 cu ft/sk 1 lb/sk KOL seal = **(359 sks) (4+ hrs pump time)**

Tail Slurry (9600-4500) 5100' = 1341 cu ft "H" 50/50 poz w/ 2% gel + 1 pps pheno seal mixed 14.2 ppg w/ yield of 1.27 cu ft/sk w/ fluid loss control + Defoamer = **1056 sks (4+ hrs pump time)**

4. **Production Liner Hole depth= 14,945 ft. TOC & Top of Liner @ 9400 ft** + 35%
   Production Hole = 6.125 inch to 14,945 ft. MD
   Production Hole Casing = 4.5 inch 13.5# P-110 CDC HTQ
   Hardware Needed = 40 Rigid standoff centralizers for lateral
   Landing Collar (2 jts up)
   Float Collar (1 jt up)
   Float Shoe
   TOC calculated to 9400 ft w/ 35% Washout in open hole.

   Engineering Data "Production":
   5345 ft 6.125 inch open hole x 4.5" casing = 5345 X .0942 cu ft X 1.35 excess = **680 cu ft**
   200 ft 7" 29# csg X 4.5" Liner= .0981 x 1100' = **20 Cu ft**
   80 ft 4.5"13.5 # casing volume= .0838 X 40 ft = **7 cu ft**
   Total Cement volume required = 707 cu ft.

   Slurry 14,945 - 9400 ft = 707 cu ft Class "H" Acid Soluble w/ Fluid loss control+ Defoamer mixed 15.0 ppg w/ yield 2.59 cu ft / sk = **(273 sks) w/ 6 hr minimum pump time for versa flex liner hanger**

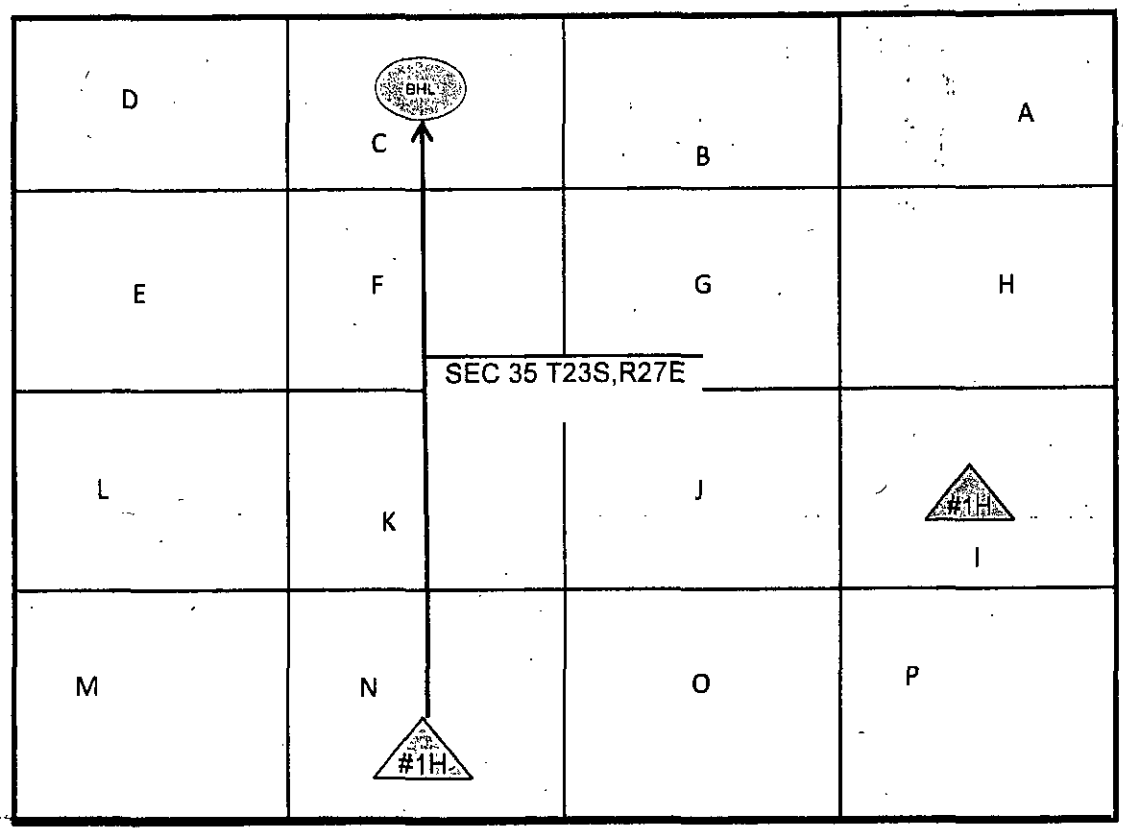
5. **Open hole plug (11,200 ft to 10,000 ft) 6.125" open hole w/ 25% Wash out.**
   Engineering Data "Open Hole Plug"
   1200 ft 6.125 inch open hole = 1200' x .2046 x 1.25 = 307 cu ft.

   Slurry = 16.4 ppg "H" w/ retarder and fluid yield 1.0 cuft / sack. Pump time figured @ 4.0 hrs 165°F. Temp to be adjusted post log run. **307 Sacks**

Forehand 35 Fed #1H _ Wolfcamp Horizontal

SL = SE/SW Sec 35, T-23-S, R-27-E, Eddy County, New Mexico

BHL = SE/NW Sec 35, T-23-S, R-27-E, Eddy County, New Mexico



Well Name	Surface Location	Depth and Strata	Current Prod Zone	Plan Bottom Hole Location	
35 State #1H	*330 FSL & 1980 FWL*	TD = 14,844 Wolfcamp	Not Drilled	660 FNL & 1980 FWL	Caza Operating,LLC
CO State Com #1	1980 FSL & 660 FEL	TD = 12,820 Morrow	Wolfcamp	2310 FSL & 660 FWL	Yates Wolfcamp vertical Produce

LONG'S METHOD OF SURVEY COMPUTATION

OBLIQUE CIRCULAR ARC INTERPOLATION

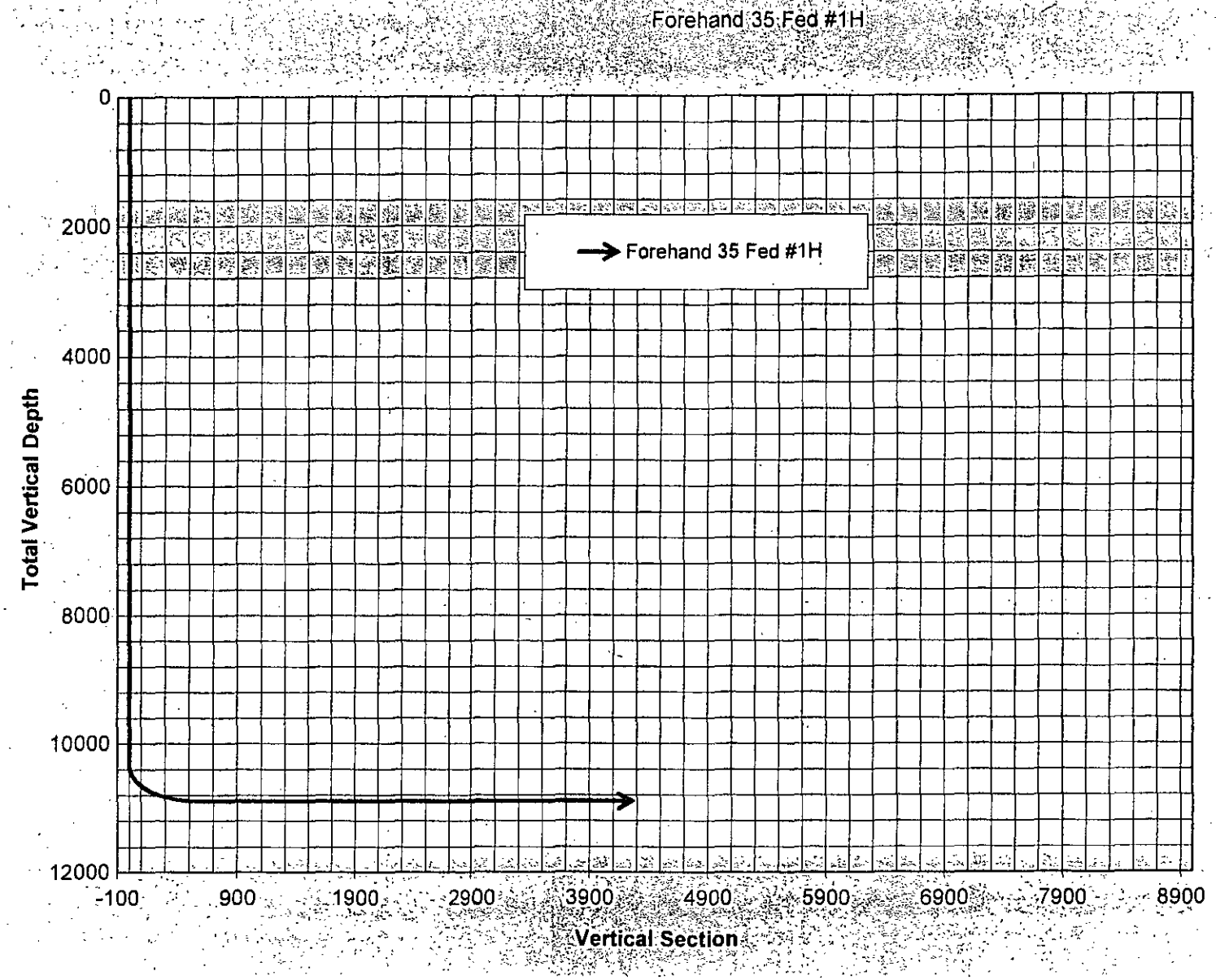
6000	MD OF INTERPOLATION DEPTH,(feet)
#N/A	TVD COORDINATE OF THE DEPTH (feet)
#N/A	N/S COORDINATE OF DEPTH (feet)
#N/A	E/W COORDINATE OF DEPTH (feet)

DISTANCE TABLE

STATION A	STATION B
400.00	600.00
300.00	400.00
100.00	300.00
3 D DISTANCE BETWEEN STATION A AND STATION B: 300.00	ft
Calculator =	

TABLE OF SURVEY STATIONS

STA #	ΔMD ft	INCL deg	AZIM deg	MD ft	TVD ft	N+/S- ft	E+/W- ft	DLS deg/100FT
1	TIE POINT =>	0	0	10328.00	10328.00	0.00	0.00	-
2	100	10	0	10428.00	10427.49	8.70	0.00	10.00
3	100	20	0	10528.00	10523.96	34.55	0.00	10.00
4	100	30	0	10628.00	10614.48	76.76	0.00	10.00
5	100	40	0	10728.00	10696.29	134.05	0.00	10.00
6	100	50	0	10828.00	10766.91	204.67	0.00	10.00
7	100	60	0	10928.00	10824.20	286.48	0.00	10.00
8	100	70	0	11028.00	10866.40	376.99	0.00	10.00
9	100	80	0	11128.00	10892.25	473.46	0.00	10.00
10	100	90	0	11228.00	10900.96	572.96	0.00	10.00
11	100	90	0	11328.00	10900.96	672.96	0.00	0.00
12	100	90	0	11428.00	10900.96	772.96	0.00	0.00
13	100	90	0	11528.00	10900.96	872.96	0.00	0.00
14	100	90	0	11628.00	10900.96	972.96	0.00	0.00
15	100	90	0	11728.00	10900.96	1072.96	0.00	0.00
16	100	90	0	11828.00	10900.96	1172.96	0.00	0.00
17	100	90	0	11928.00	10900.96	1272.96	0.00	0.00
18	100	90	0	12028.00	10900.96	1372.96	0.00	0.00
19	100	90	0	12128.00	10900.96	1472.96	0.00	0.00
20	100	90	0	12228.00	10900.96	1572.96	0.00	0.00
21	100	90	0	12328.00	10900.96	1672.96	0.00	0.00
22	100	90	0	12428.00	10900.96	1772.96	0.00	0.00
23	100	90	0	12528.00	10900.96	1872.96	0.00	0.00
24	100	90	0	12628.00	10900.96	1972.96	0.00	0.00
25	100	90	0	12728.00	10900.96	2072.96	0.00	0.00
26	100	90	0	12828.00	10900.96	2172.96	0.00	0.00
27	100	90	0	12928.00	10900.96	2272.96	0.00	0.00
28	100	90	0	13028.00	10900.96	2372.96	0.00	0.00
29	100	90	0	13128.00	10900.96	2472.96	0.00	0.00
30	100	90	0	13228.00	10900.96	2572.96	0.00	0.00
31	100	90	0	13328.00	10900.96	2672.96	0.00	0.00
32	100	90	0	13428.00	10900.96	2772.96	0.00	0.00
33	100	90	0	13528.00	10900.96	2872.96	0.00	0.00
34	100	90	0	13628.00	10900.96	2972.96	0.00	0.00
35	100	90	0	13728.00	10900.96	3072.96	0.00	0.00
36	100	90	0	13828.00	10900.96	3172.96	0.00	0.00
37	100	90	0	13928.00	10900.96	3272.96	0.00	0.00
38	100	90	0	14028.00	10900.96	3372.96	0.00	0.00
39	100	90	0	14128.00	10900.96	3472.96	0.00	0.00
40	100	90	0	14228.00	10900.96	3572.96	0.00	0.00
41	100	90	0	14328.00	10900.96	3672.96	0.00	0.00
42	100	90	0	14428.00	10900.96	3772.96	0.00	0.00
43	100	90	0	14528.00	10900.96	3872.96	0.00	0.00
44	100	90	0	14628.00	10900.96	3972.96	0.00	0.00
45	100	90	0	14728.00	10900.96	4072.96	0.00	0.00
46	100	90	0	14828.00	10900.96	4172.96	0.00	0.00


Forehand 35 Fed #1H
Forehand 35 Fed #1H
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2000
4000
6000
8000
10000
12000
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-100
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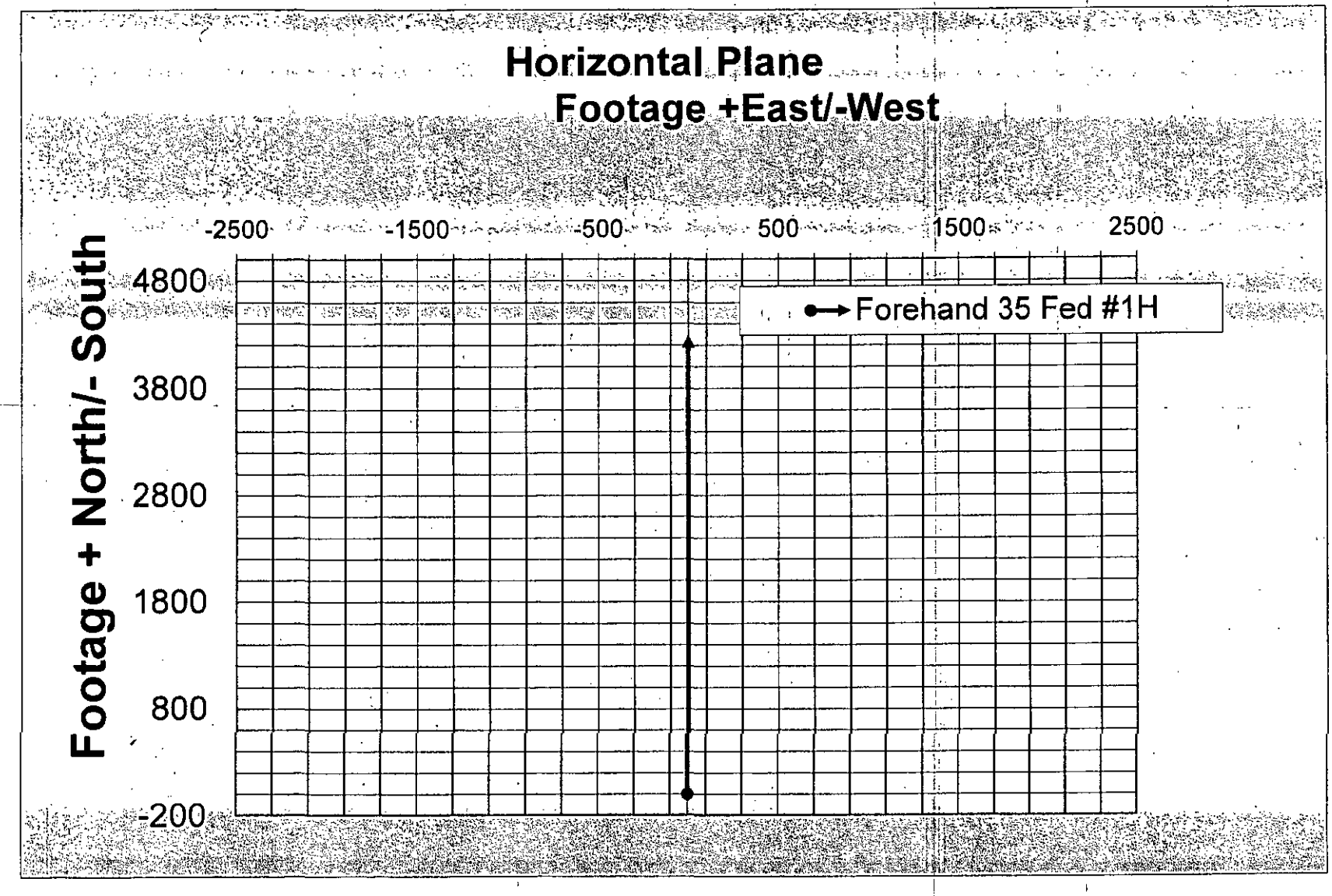
3900
4900
5900
6900
7900
8900
Vertical Section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Footage +East/-West
-2500
-1500
-500
500
1500
2500
Footage + North/- South
4800
3800
2800
1800
800
-200
Forehand 35 Fed #1H

5000 PSI BOP Schematic
Forehand Ranch 35 Fed #1H

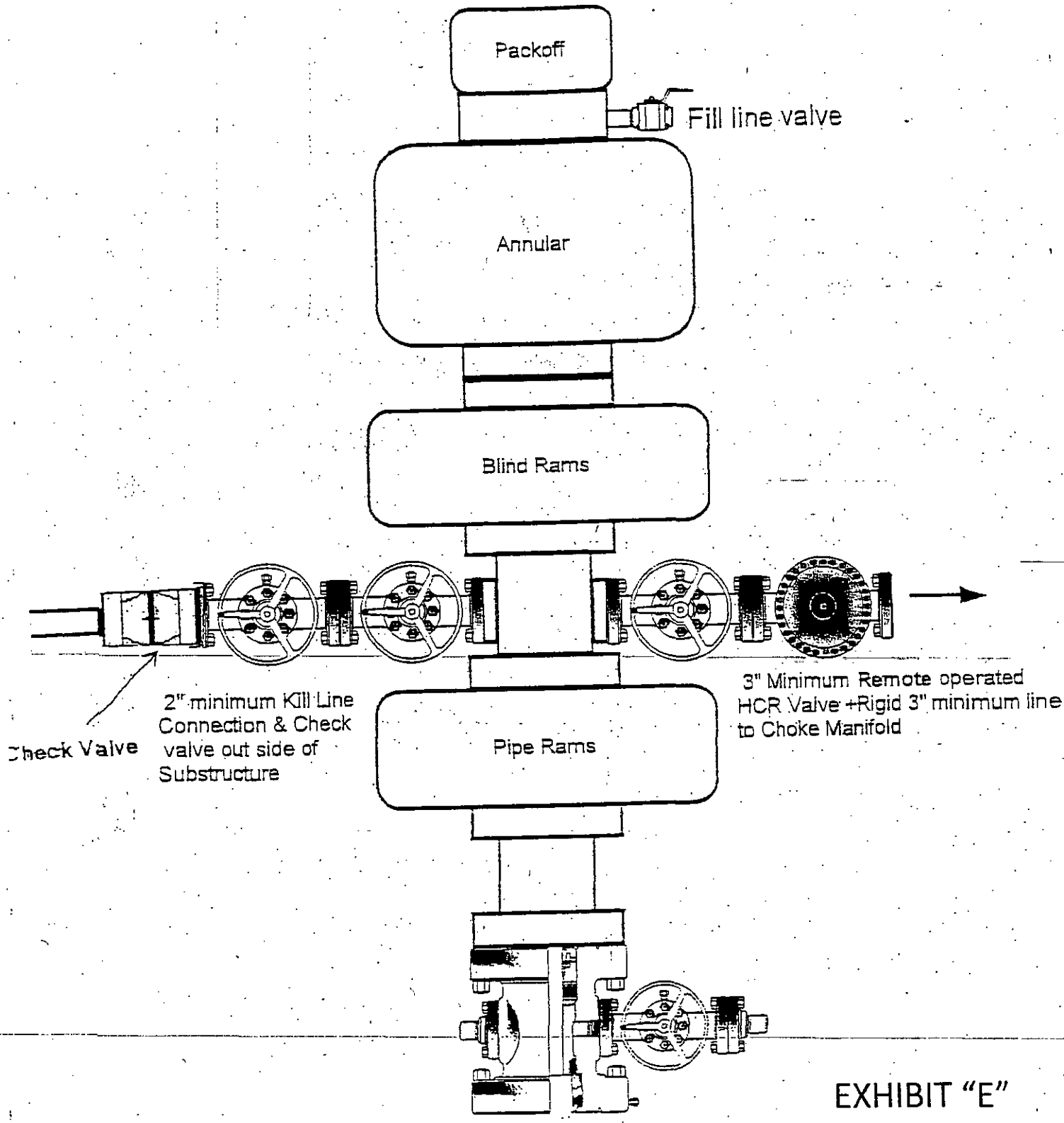


EXHIBIT "E"

Forehand Ranch 35 Fed # 1H

5000 psi Choke manifold

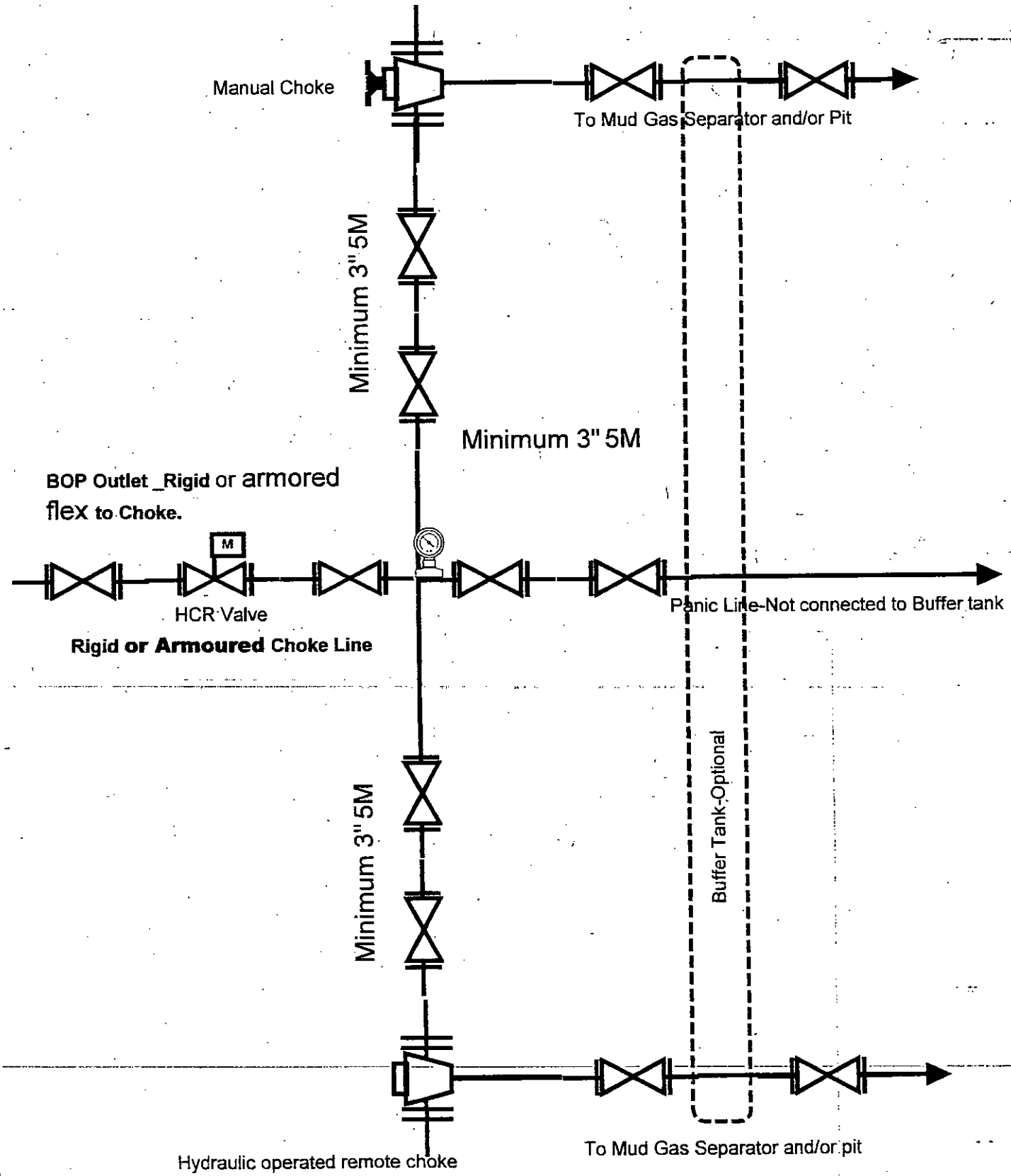
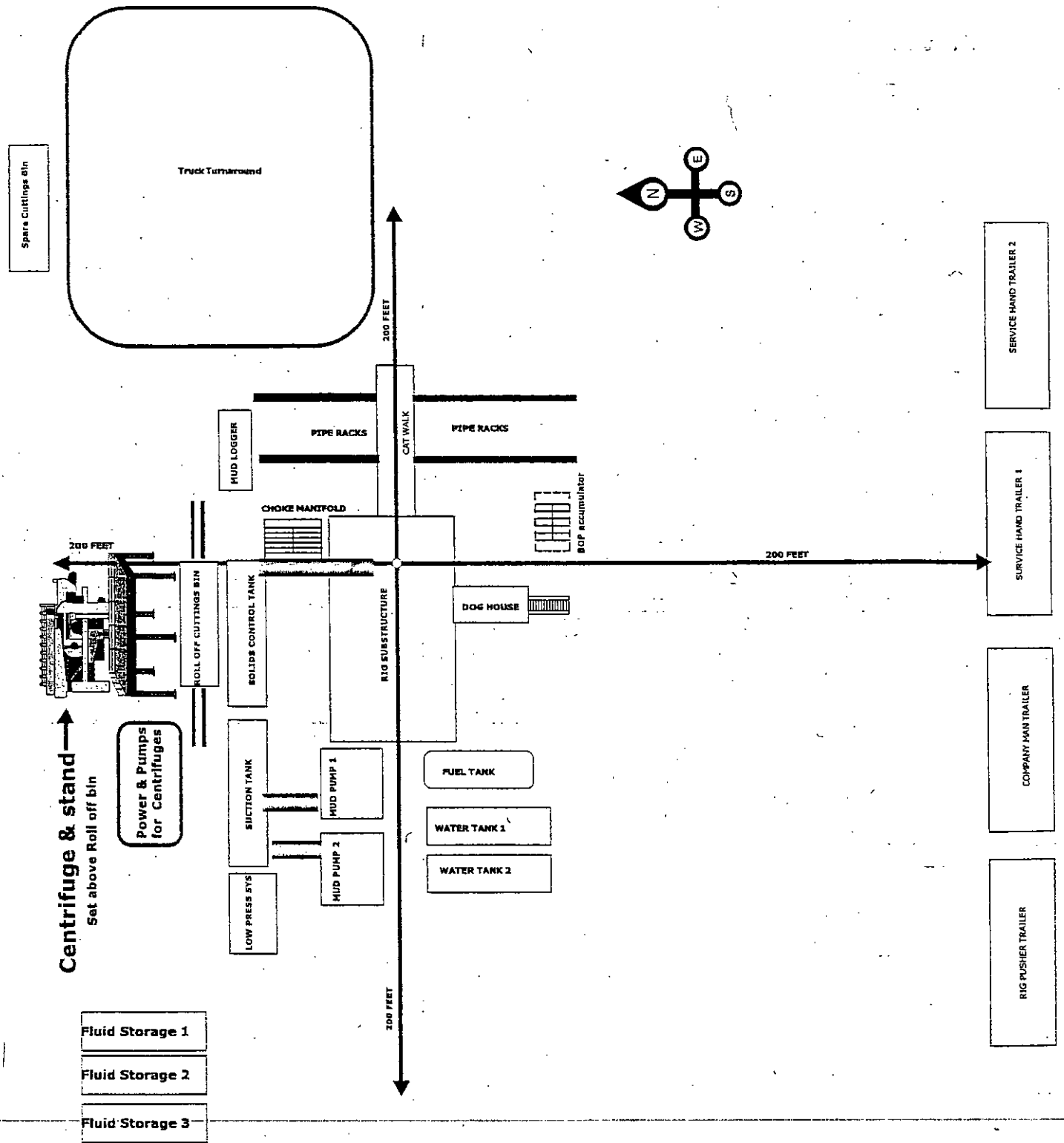


EXHIBIT "E-1"

CLOSED LOOP OIL WELL

FOREHAND RANCH "22" STATE #7H



Note: The Rig and Closed System Company for this well have not been selected thus the set up shown is simply generic.

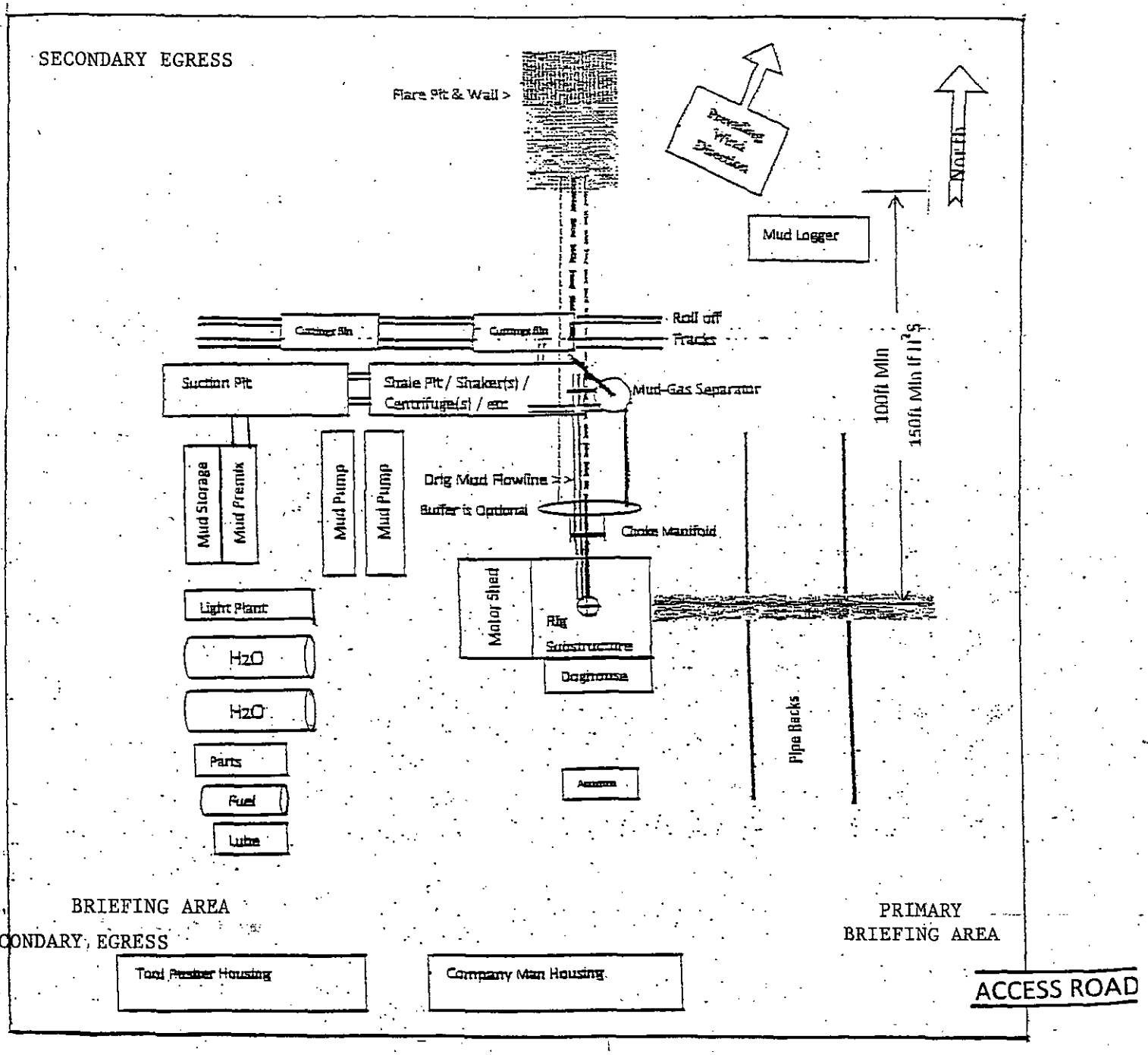
Caza Petroleum

Operations and Maintenance Plan

Closed Loop equipment will be inspected and monitored closely on a daily basis by each drilling rig Tour and by those hired specifically to operate the equipment. Any leak or release detected will be repaired immediately and the proper NMOCD official will be notified within the 48 hr requirement. A large release will require Caza Operating, LLC representatives to contact NMOCD immediately at the Hobbs office 575 393 6161 as stated by NMOCD rule 116.

Closure Plan

During and after drilling operations, liquids (which apply), all drill cuttings and drilling fluids will be hauled and disposed of at the R-360 disposal (permit number NM-01-0006) located about 30 miles East of Carlsbad, New Mexico. An alternate approved disposal site has been selected "Sundance" Parabo NM-01-0003 which is 5 miles East of Eunice,NM. The Second site would only be used in the event of problems with R-360 disposal.

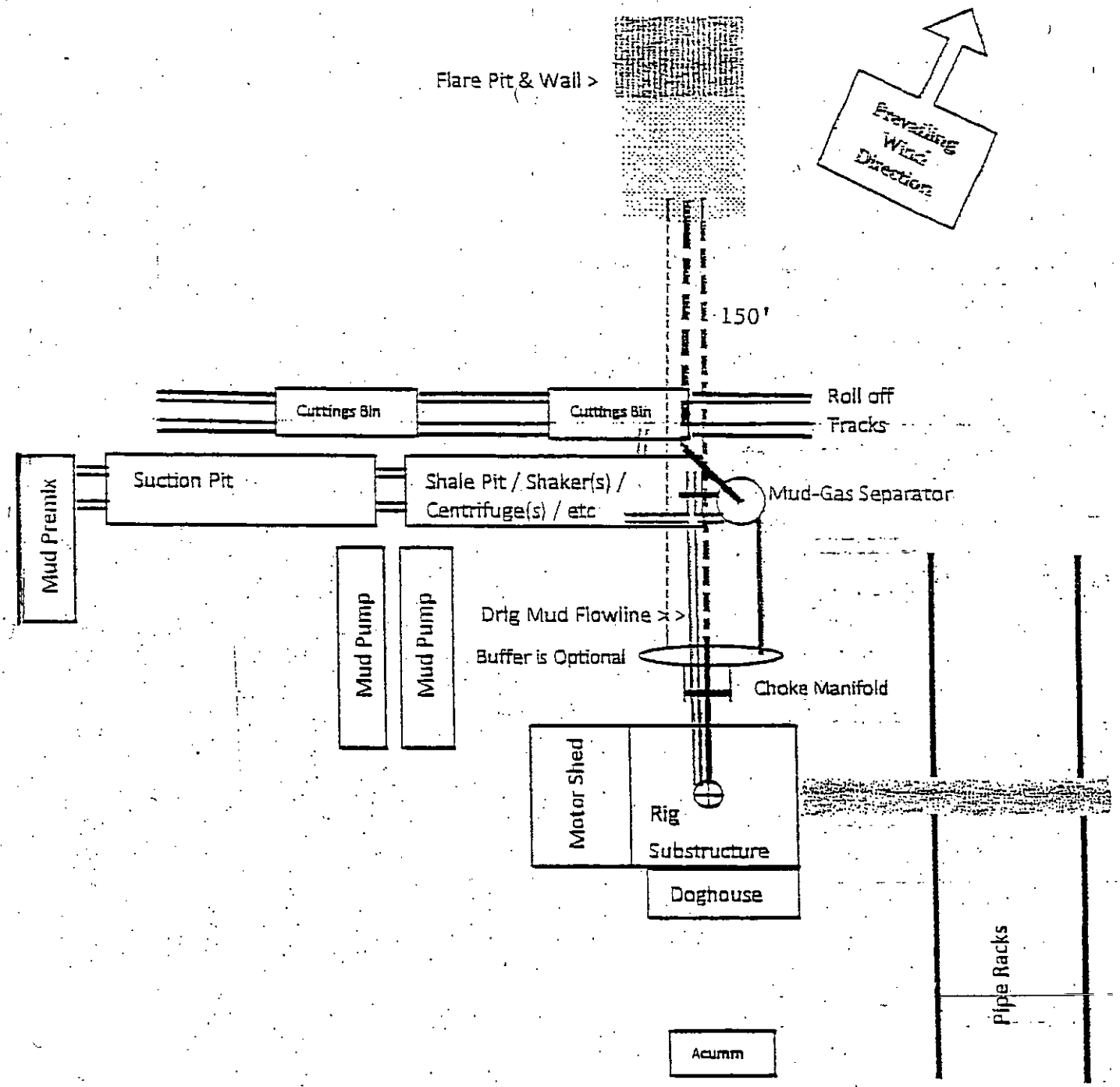


Generic Drill Site Layout

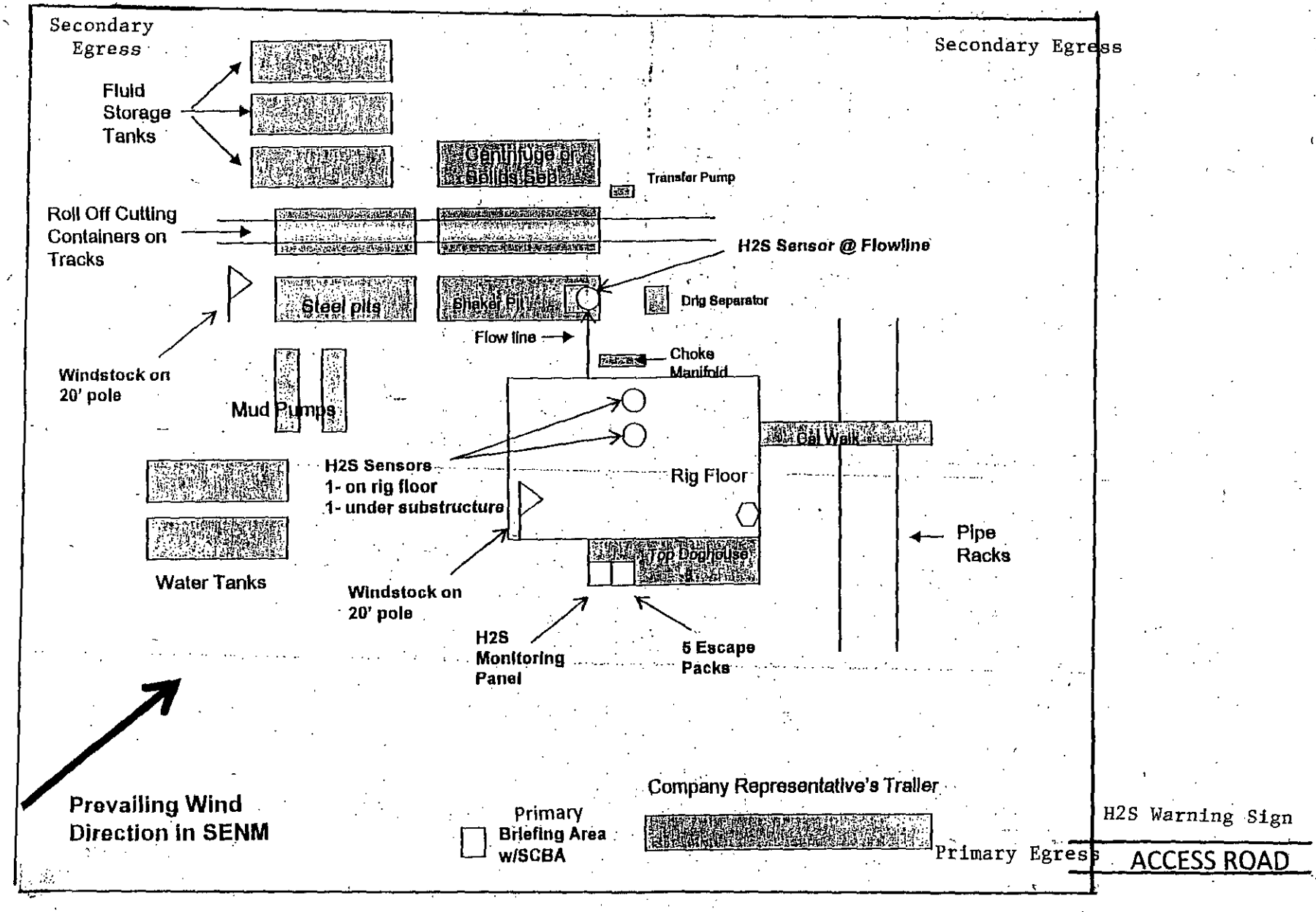
Preplanning reasonable spacing accommodations for a useable "Closed Loop" drillsite layout is challenging. Particular site specific conflicts need to be resolved. This generic APD plat was prepared to demonstrate several necessary elements. The plat should include: a north arrow, prevailing wind direction, spacing access for truck removal of cutting bins, flare pit location, and piping provision to vent all combustible gas to the flare pit. Include the choke manifold and mud-gas separator location and their connection routing.

EXHIBIT "D-1"
RIG LAYOUT PLAT

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35


Flare Pit & Wall >
Prevailing Wind Direction
150'
Cuttings Bin
Cuttings Bin
Roll off
Fracks
Mud Premix
Suction Pit
Shale Pit / Shaker(s) / Centrifuge(s) / etc
Mud-Gas Separator
Mud Pump
Mud Pump
Drlg Mud Flowline >>
Buffer is Optional
Choke Manifold
Motor Shed
Rig
Substructure
Doghouse
Pipe Racks
Acumm

H_2S Equipment Schematic



Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

This well and its anticipated facility are not expected to have Hydrogen Sulfide releases. However, there may be Hydrogen Sulfide production in the nearby area. There are no occupied dwellings in the area but a contingency plan has been orchestrated. Caza Operating, LLC will have a Company Representative living on location throughout the drilling and completion of this well. If Hydrogen Sulfide is detected or suspected, monitoring equipment will be available for monitoring and/or testing. An un-man H2S safety trailer and monitoring equipment will also be station on location during the drilling operation below the Surface Casing depth of ± 700 ft. to total drilling depth of ± 14,945 ft.

Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

EMERGENCY CALL LIST: (Start and continue until ONE of these people have been contacted)

	OFFICE	MOBILE	HOME
Caza Operating,LLC.	432 682-7424		
Tony Sam	432 682-7424 e 1007	432 556 6708	432 689 0709

EMERGENCY RESPONSE NUMBERS:

State Police:	Eddy County		575 885-3137
State Police:	Lea County		575 392 5588
Sheriff	Eddy County		575 746 9888
Sheriff	Lea County		575 396 3611
Emergency Medical Ser	Eddy County		911 or 575 746 2701
(Ambulance)	Lea County	Eunice	911 or 575 394 3258
Emergency Response	Eddy County SERC		575 476 9620
	Lea County		
Artesia Police Dept			575 746 5001
Artesia Fire Dept			575 746 5001
Carlsbad Police Dept			575 885 2111
Carlsbad Fire Dept			575 885 3125
Loco Hills Police Dept			575 677 2349
Jal Police Dept			575 395 2501
Jal Fire Dept			575 395 2221

Caza Operating, LLC
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For Drilling/Workover/Facility

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Carlsbad ambulance		575 885 3125
Air Ambulance		575 234 1113
Angel Med Flight		888 781 6981
Eunice Police Dept		575 394 0112
Eunice Fire Dept		575 394 3258
Eunice Ambulance		575 394 3258
Carlsbad Police Dept		575 885 2774
Otis Fire Dept		575 236 6113
Loving Fire Dept		575 745 3600
NMOCD	District 1 (Lea, Roosevelt, Curry)	575 393 6161
	District 2 (Eddy Chavez)	575 748 1283
BLM Carlsbad		575 234 5972
BLM Hobbs		575 393 3612
Midland Safety	Lea/Eddy County	432 520 3838
		888 262 4964
American Safety	Lea/Eddy County	575 746 1096
		575 393 3093
Baker Pressure pmp'g	Artesia	575 746 3140
	Hobbs	800 530 4485
		575 392 5556
	Midland	800 694 6601
		432 685 8900
Halliburton	Artesia	800 844 8451
	Hobbs	800 844 8451
	Midland	800 844 8451
Schlumberger pmp'd Ser	Hobbs	800 548 9196
		575 393 6186
	Artersia	575 748 1391
	Midland	432 683 1887
Wild Well Control	Midland	281 784 4700
		281 443 4873
Boots & Coots		800 256 9688
		281 931 8884

Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

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Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

General H2S Emergency Actions:

1. All personnel will immediately evacuate to an up-wind and if possible up-hill "safe area"
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (Self Contained Breathing Apparatus)
3. Always use the "buddy system"
4. Isolate the well/problem if possible
5. Account for all personnel
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the Company personnel as soon as possible if not at the location. (use the enclosed call list as instructed
8. **Have Location GPS Coordinates posted for Emergency flight evacuations**

At this point the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of the emergency response agencies and nearby residents.

EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

1. All personnel will wear the self-contained breathing apparatus.
2. Remove all personnel to the "safe area". (always use the buddy system).
3. Contact company personnel if not on location.
4. Set in motion the steps to protect and or remove the general public to an upwind "safe area". Maintain strict security & safety procedures while dealing with the source.
5. No entry to any unauthorized personnel.
6. Notify the appropriate agencies: City Police-City Street (s)
   State Police- State Rd
   County Sheriff – County Rd.
7. Call the BLM & NMOCD

Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

PROTECTION OF THE GENERAL PUBLIC (ROE):

- 100 ppm at any public area (any place not associated with this site)
- 500 ppm at any public road (any road which the general public may travel)
- 100 ppm radius of ¼ mile in New Mexico will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H2S could be present in concentrations greater than 100 ppm in the gas mixture

CALCULATIONS FOR THE 100 PPM (ROE) "Pasquill-Gifford equation"

X = [(1.589) (mole fraction) (Q- volume in std cu ft)] to the power of (0.6258)

CALCULATION FOR THE 500 PPM ROE:

X = [(.4546) (mole fraction) (Q- volume in std cu ft)] to the power of (0.6258)

Example:

If a well/facility has been determined to have 150 / 500 ppm H2S in the gas mixture and the well/facility is producing at a gas rate of 100 MCFPD then:

150 ppm X= [(1.589) (.00015) (100,000 cfd)] to the power of (.6258)
X= 7 ft

500 ppm X= [(.4546) (.0005) (100,000 cfd)] to the power of (.6258)
X = 3.3 ft.

(These calculations will be forwarded to the appropriate District NMOCD office when Applicable)

PUBLIC EVACUATION PLAN:

- 1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.
- A trained person in H2S safety, shall monitor with detection equipment the H2S concentration, wind and area exposure (ROE). This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. **(All monitoring equipment shall be UL approved, for use in class 1 groups A,B,C & D, Division 1, hazardous locations. All monitor will have a minimum capability of measuring H2S, oxygen, and flammable values).**

- Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.
- The company supervising personnel shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the affected area(s) is safe to enter.

PROCEDURE FOR IGNITING AN UNCONTROLABLE CONDITION:

- 1. Human life and/or property are in danger
- 2. There is no hope of bringing the situation under control with the prevailing conditions at the site.

INSTRUCTION FOR IGNITION:

- 1. Two people are required. They must be equipped with positive pressure, "self contained breathing apparatus" and a "D" ring style full body, OSHA approved safety harness. Nonflammable rope will be attached.

- 2. One of the people will be qualified safety person who will test the atmosphere for H2S, Oxygen & LFL. The other person will be the company supervisor; he is responsible for igniting the well.

- 3. Ignite up wind from a distance no closer than necessary. Make sure that where you ignite from has the maximum escape avenue available. A 25 mm flare gun shall be used, with a ± 500 ft. range to ignite the gas.

- 4. Prior to ignition, make a final check for combustible gases.

- 5. Following ignition, continue with the emergency actions & procedures as before.

Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

A. All personnel shall receive proper H2S training in accordance with Onshore Order III.C.3.a.

B. Briefing Area: two perpendicular areas will be designated by signs and readily accessible.

C. Required Emergency Equipment:

- Well control equipment
  a. Flare line 100' from wellhead to be ignited by flare gun or automatic striker.
  b. Choke manifold with a remotely operated choke.
  c. Mud/gas separator

- Protective equipment for essential personnel.

  Breathing apparatus:
  a. Rescue Packs (SCBA) — 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
  b. Work/Escape packs —4 packs shall be stored on the rig floor th sufficient air hose not to restrict work activity.
  c. Emergency Escape Packs —4 packs shall be stored in the doghouse for emergency evacuation.

  Auxiliary Rescue Equipment:
  a. Stretcher
  b. Two OSHA full body harness
  c. 100 ft 5/8 inch OSHA approved rope
  d. 1-20# class ABC fire extinguisher

- H2S detection and monitoring equipment:
  The stationary detector with three sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible @ 14 ppm. Calibrate a minimum of every 30 days or as needed. The sensors will be placed in the following places: Rig floor / Bell nipple / End of flow line or where well bore fluid is being discharged.
  (Gas sample tubes will be stored in the safety trailer)

- Visual warning systems.
  a. One color code condition sign will be placed at the entrance to the site reflecting the possible conditions at the site.
  b. A colored condition flag will be on display, reflecting the current condition at the site at the time.
  c. Two wind socks will be placed in strategic locations, visible from all angles.

- Mud program: **Only utilized if H2S has been detected**
  The mud program has been designed to minimize the volume of H2S circulated to surface. The operator will have the necessary mud products to minimize hazards while drilling in H2S bearing zones.

- Metallurgy: **Only utilized if H2S has been detected**
  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.

- Communication: **Only utilized if H2S has been detected**
  Communication will be via two way radio in emergency and company vehicles. Cell phones and land lines where available.

USING SELF CONTAINED BREATHING AIR EQUIPMENT (SCBA):

- (SCBA) SHOULD BE WORN WHEN ANY OF THE FOLLOWING ARE PERFORMED: **Only utilized if H2S has been detected**
  - Working near the top or on top of a tank
  - Disconnecting any line where H2S can reasonably be expected
  - Sampling air in the area to determine if toxic concentrations of H2S exist.
  - Working in areas where over 10 ppm on H2S has been detected.
  - At any time there is a doubt as the level of H2S in the area.

- All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.

- Facial hair and standard eyeglasses are not allowed with SCBA.

- Contact lenses are never allowed with SCBA.

- Air quality shall be continuously be checked during the entire operation.

- After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected

- All SCBA shall be inspected monthly.

Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

RESCUE AND FIRST AID FOR VICTIMS OF HYDROGEN SULFIDE (H2S) POISONING:

- Do not panic
- Remain Calm & think
- Get on the breathing apparatus
- Remove the victim to the safe breathing area as quickly as possible. Up wind an uphill from source or cross wind to achieve upwind.
- Notify emergency response personnel.
- Provide artificial respiration and or CPR, as necessary
- Remove all contaminated clothing to avoid further exposure.
- A minimum of two personnel on location shall be trained in CPR and First Aid.

Caza Operating, LLC
Forehand Ranch 35 Fed # 1H
Hydrogen Sulfide Contingency Plan
For Drilling/Workover/Facility

330 FSL & 1980 FEL, SEC 35, T23S, R27E, Eddy County, New Mexico

Hyrogen Sulfide (H2S) Toxic Effects

H2S is extremely toxic. The acceptable ceiling for eight hours of exposure is 10 ppm, which is .001% by volume. H2S is approximately 20% heavier than air (Sp. Gr= 1.19)(Air = 1) and H2S is colorless. It forms an explosive mixture with air between 4.3% and 46%. By volume hydrogen sulfide is almost as toxic as hydrogen cyanide and 5-6 times more toxic than carbon monoxide.

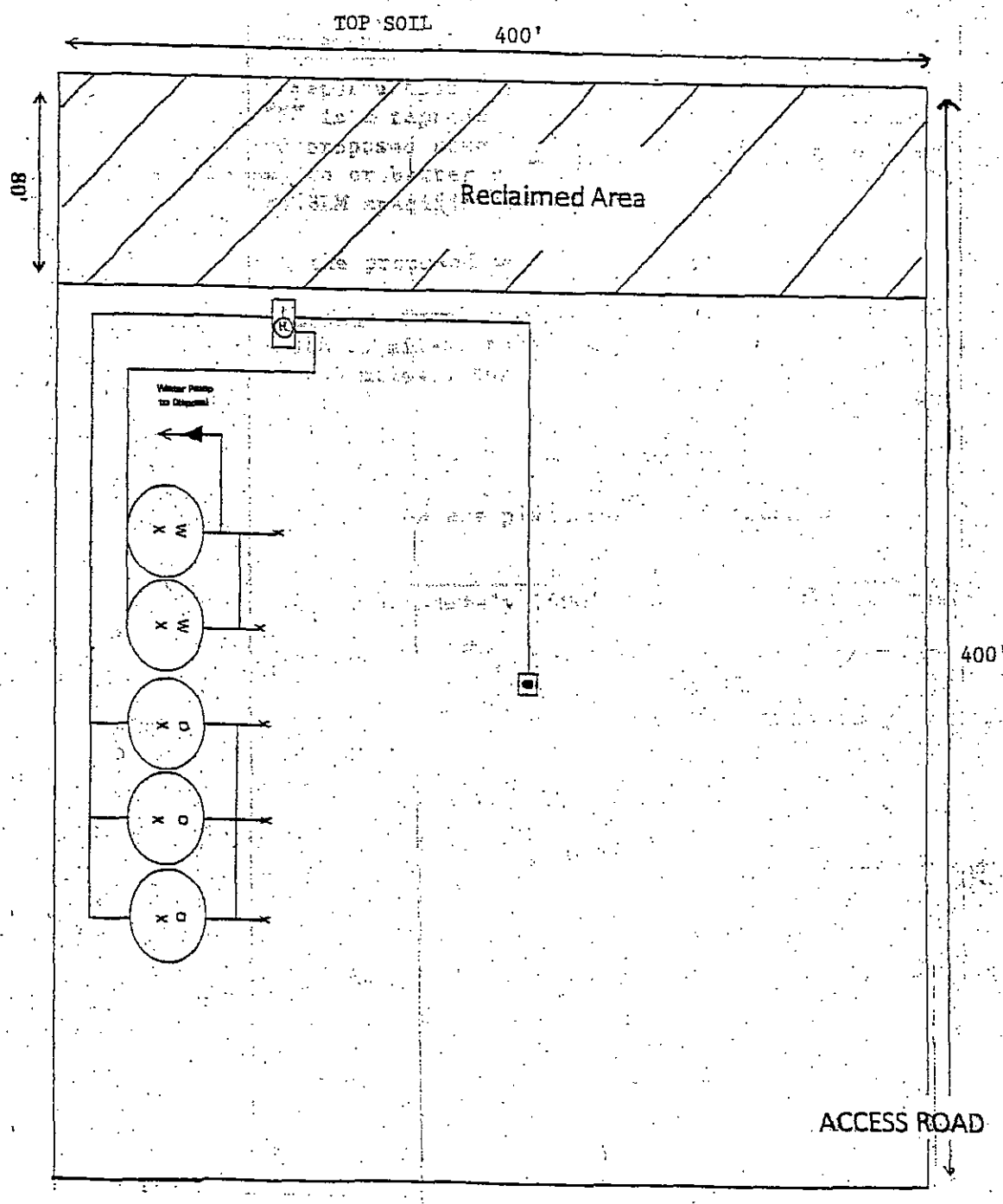
Various Gases

COMMON NAME	CHEMICAL ABBREV.	SPECIFIC GRVTY.	THRESHOLD LIMITS	HAZARDOUS LIMITS	LETHAL CONCENTRATIONS
Hydrogen Sulfide	H2S	1.19	10ppm 15 ppm	100 ppm/hr	600 ppm
Hydrogen Cyanide	HCN	0.94	10 ppm	150 ppm/hr	300 ppm
Sulfur Dioxide	SO2	2.21	2 ppm	N/A	1000 ppm
Chlorine	CL2	2.45	1 ppm	4 ppm/hr	1000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/hr	1000 ppm
Carbon Dioxide	CO2	1.52	5000 ppm	5%	10%
Methane	CH4	0.55	90,000	Combustible@ 5%	N/A

Threshold Limit: Concentrations at which it is believed that all workers may be repeatedly exposed, day after day without adverse effects.
Hazardous Limit: Concentrations that may cause death.
Lethal Concentrations: Concentrations that will cause death with short term exposure.
Threshold Limit- 10 ppm: NIOSH guide to chemical hazards.

PHYSICAL EFFECTS OF HYDROGEN SULFIDE:

CONCENTRATION		PHYSICAL EFFECTS
.001%	10 PPM	Obvious and unpleasant odor. Safe for 8 hr exposure
.005%	50 ppm	Can cause some flu like symptoms and can cause pneumonia
.01%	100 ppm	Kills the sense of smell in 3-15 minutes. May irritate the eyes and throat.
.02%	200 ppm	Kills the sense of smell rapidly. Severly irritates the eyes and throat. Severe flu like symptoms after 4 or more ours. May cause lung damage and or death.
.06%	600 ppm	Loss of consciousness quickly, death will result if not rescued promptly.



RECLAMATION PLAT

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35
T23S-R27E EDDY CO. NM

SURFACE USE PLAN

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35
T23S-R27E EDDY CO. NM

1. EXISTING AND PROPOSED ROADS:

A. Exhibit "B" is a reporduction of a County General Hi-way map showing existing roads. Exhibit "C" is a reproduction of a USGS topographic map showing existing roads and and proposed roads. All existing roads will be maintained in a condition equal to or better than current conditions. All new roads will be constructed to BLM specifications.

B. Exhibit "A" shows the proposed well site as staked.

C. Directions to location: From Loving New Mexico take U. S. Hi-way 285 South 1mile continue South .5 miles, turn Right (West) go 3 miles, turn Left (South) follow lease road .55 miles , turn Right (West) go .3 miles to location.

D. No pipelines or power lines are planned at this time.

2. PLANNED ACCESS ROADS: Approximately 1800' of new road will be constructed.

A. The access roads will be crowned and sitched to a 14' wide travel surface, within a 30' R-O-W.

B. Gradient of all roads will be less than 5%.

C. Turn-outs will be constructed where necessary.

D. If require new access roads will be surface with a minimum of 4-6" of caliche. this material will be obtained from a local source.

E. Center line for new roads will be flagged, road construction will be done as field conditions require.

F. Culverts will be placed in the access road as drainage conditions require. Roads will be constructed to use low water crossings for drainage as required by the topographic conditions.

3. LOCATION OF EXISTING WELLS WITHIN A ONE MILE RADIUS: EXHIBIT "A-1"

A. Water wells - None known

B. Disposal wells - None known

C. Drilling wells - None known

D. Producing wells - As shown on EXHIBIT "A-1"

E. Abandoned wells - As shown on EXHIBIT "A-1"

4. If on completion this well is a success the operator will complete it as a producer. The operator will construct production facilities and tank battery on location. If power lines will be required to produce this well they may be constructed along existing R-O-W's as shown on Exhibit "C".

5. LOCATION AND TYPE OF WATER SUPPLY:

Water will be purchased locally from a commercial source and transported by transport or piped to location by flexible flowlines laid on top of the ground.

6. SOURCE OF CONSTRUCTION MATERIAL:

If possible construction material will be obtained from the leveling of the drill site. If additional material will will be require it will be obtained from a local source and transported over access roads shown on Exhibit "C".

7. METHODS OF HANDLING WASTE MATERIAL:

A. In case this well is drilled using a closed mud system the cuttings will be collected in containers and disposed of in a state approved disposal site. Drilling fluids likewise will be contained in tanks and disposed of in state approved disposal sites.

B. All trash, junk and other waste material will be contained in trash cages or trash bins to prevent scattering. When job is complete all contents will be taken from location and disposed of in a state approved disposal site.

C. Salts and other mud material remaining after completion of the well will be collected by the supplier and be removed from the location.

D. Waste water from living quaters will be directed into an onsite sewage treatment unit and when well is completed residue will be removed and disposed of in a state approved disposal site. Porto-johns will be on location for rig crews, completion crews and other contract personnel, this equipment will be properly maintained during drilling and completion. When all operations are complete the residue will be removed and disposed of in a state approved disposal site and the equipment removed by supplier.

E. Any fluids produced during the completion phasewill be seperated and the oil sold and water will be disposed of in an apporved disposal site.

8. ANCILLARY FACILITIES:

A. No camps, airstrips, or staging areas will be constructed on location.

SURFACE USE PLAN

CAZA OPERATING, LLC.
FOREHAND RANCH "35" FEDERAL #1H
UNIT "N" SECTION 35
T23S-R27E EDDY CO. NM

9. WELL SITE LAYOUT:

A. Exhibit "D" shows a generic well site for a well drilled using a closed mud system.

10. PLANS FOR RESTORATION OF SURFACE:

Rehabilition of the surface will start after the well has been completed, if the well is completed as a producer production facilities will be consturcted on the location. What area is not required for the operation of this project will be reclaimed and restored as near as possible to the original grade and vegetation.

If in case this well is unsuccessful and is a dry hole the drilling pad and the access roads will be reclaimed according to specifications provided by The Bureau of Land Management. Caliche or other road material will be removed for the possible use in another location or deposited in an approved reclaimatic site.

Drill cuttings and mud used to drill this well will be removed and disposed of at an approved disposal site. All trash and any other debree will be collected disposed of as the above.

11. ADDITIONAL INFORMATION:

The surface is relatively flat with a slight dit to the East toward the Pecos River. Vegetation consists of native grasse. The surface is used primaraly for grazing of livestock, and for oil and gas production. An Archaeological survey has been done and the results will be filed with the Carlsbad Field Office.

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	CAZA OPERATING, LLC.
LEASE NO.:	NMNM118705
WELL NAME & NO.:	1H – Forehand Ranch 35 Fed
SURFACE HOLE FOOTAGE:	330'/S & 1980'/W
BOTTOM HOLE FOOTAGE	660'/N & 1980'/W
LOCATION:	Section 35, T 23 S., R 27 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Communitization Agreement

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

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

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

G. ON LEASE ACCESS ROADS

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

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

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

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

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

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

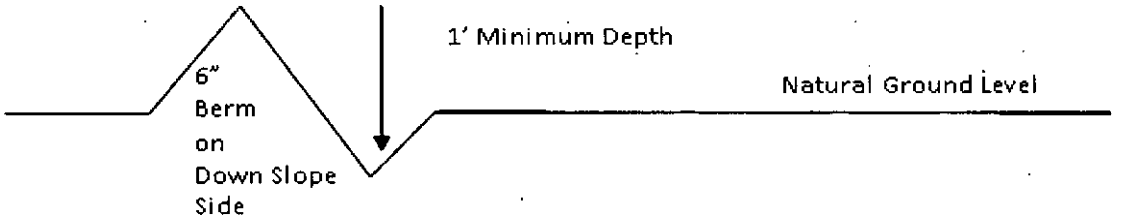
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattleguards

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

Fence Requirement

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

Public Access

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

Construction Steps

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

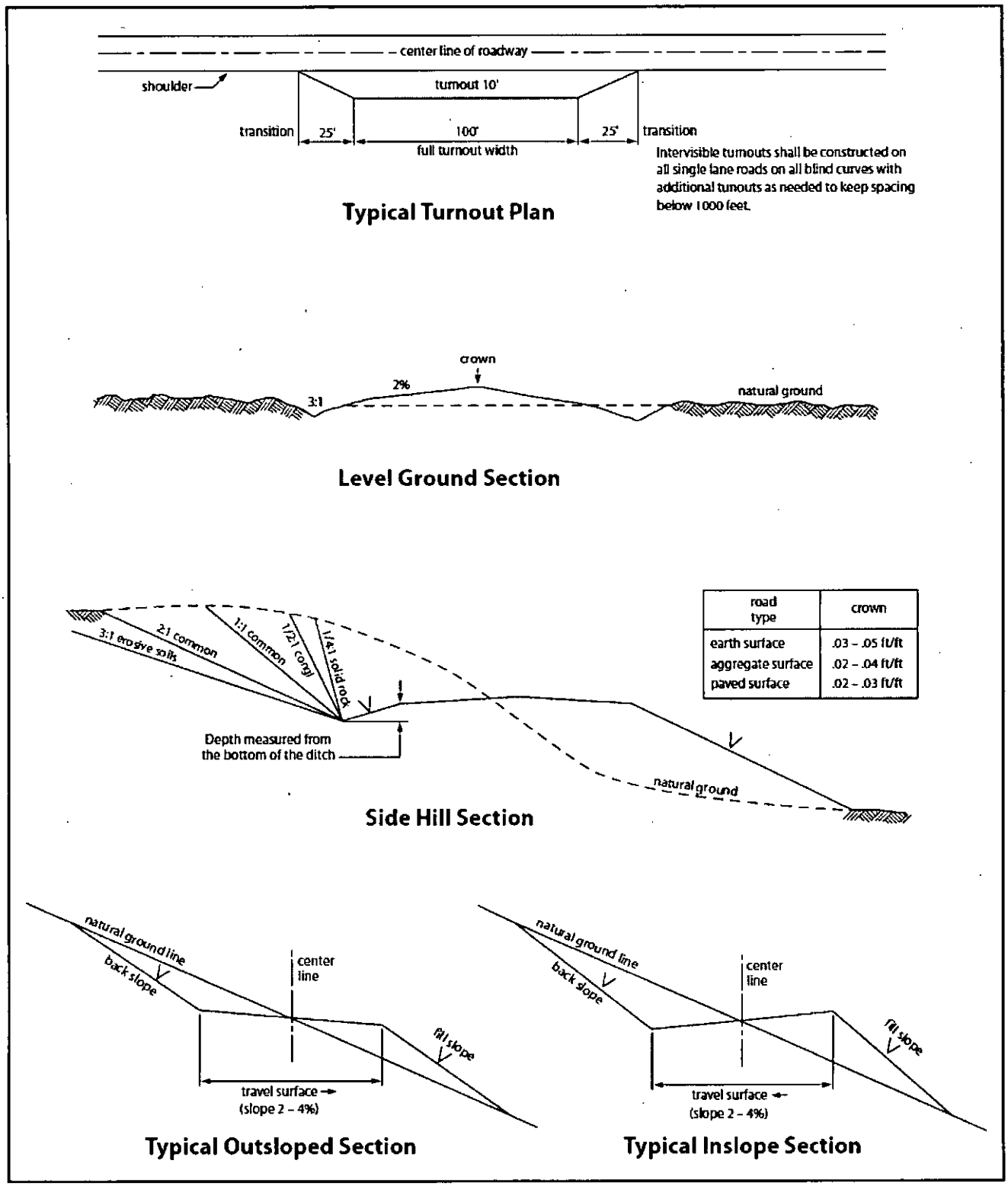


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (505) 361-2822

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

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

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

B. CASING

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

volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

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

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

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

Medium Cave/Karst
Possible water flows in the Salado and Castile.
Possible lost circulation in the Delaware.
Abnormal pressure may be encountered within the 3rd Bone Spring Sandstone and Wolfcamp formation.

1. The **13-3/8** inch surface casing shall be set at approximately **360** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is: **(Ensure casing is set in the Base of the Castile or the Lamar Limestone at approximately 2290')**

   ☒ 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.**

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

Medium Cave/Karst: If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

Centralizers required through the curve and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7** inch production casing is:

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 0% - Additional cement may be required.**

Formation below the 7" shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe and the mud weight for the bottom of the hole. Report results to BLM office.

The pilot hole plugging procedure is approved as written. Note plug tops on subsequent drilling report.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:

   ☒ Cement should tie-back to the top of the liner. Operator shall provide method of verification.

5. 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 **5000 (5M)** psi. **5M 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.**

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 test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

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

    e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test**

will be submitted to the appropriate BLM office.

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. 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.

Proposed mud weight may not be adequate for drilling through Wolfcamp.

E. DRILL STEM TEST

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

F. WASTE MATERIAL AND FLUIDS

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

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

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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.

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).

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).

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).

Seed Mixture 1 for Loamy Sites

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

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

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

Species	lb/acre
Plains lovegrass (Eragrostis intermedia)	0.5
Sand dropseed (Sporobolus cryptandrus)	1.0
Sideoats grama (Bouteloua curtipendula)	5.0
Plains bristlegrass (Setaria macrostachya)	2.0

*Pounds of pure live seed:

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