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NMOC CARLSBAD FIELD OFFICE

13-733

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

ARCOS 4/26/13

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. ARCO 34 FEDERAL 3H <31324>	
2. Name of Operator CHI OPERATING, INC.		9. API Well No. 30-015-42387	
3a. Address P. O. BOX 1799 MIDLAND, TEXAS 79702		3b. Phone No. (include area code) 432-685-5001 (JOHN QUALLS)	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 330 FSL & 330 FWL At proposed prod. zone 330 FNL & 330 FWL		10. Field and Pool, or Exploratory OLD MILLMAN RANCH BONE SPRING <48035>	
14. Distance in miles and direction from nearest town or post office* 10 MILES NORTHEAST OF CARLSBAD, NM		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) 330'	16. No. of acres in lease 640	17. Spacing Unit dedicated to this well 160	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 430' Winchester 5H BHL: 4650' 330'	19. Proposed Depth TVD: 7310' MD: 11,733'	20. BLM/BIA Bond No. on file NM-1616	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3305' GL	22. Approximate date work will start* ASAP	23. Estimated duration 40 DAYS	

24. Attachments

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

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> 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). | <ul style="list-style-type: none"> 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). 5. Operator certification 6. Such other site specific information and/or plans as may be required by the BLM. |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

25. Signature	Name (Printed/Typed) BARRY W. HUNT	Date 7/23/13
Title PERMIT AGENT FOR CHI OPERATING, INC.		
Approved by (Signature)	Name (Printed/Typed)	Date SEP 12 2013
Title FIELD MANAGER		
Office CARLSBAD FIELD OFFICE		

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

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

(Continued on page 2)

Witness Surface &
Intermediate Casing

*(Instructions on page 2)
Capitan Controlled Water Basin
Must be in compliance with NMOC
Rule 5.9 prior to transporting/selling
product.

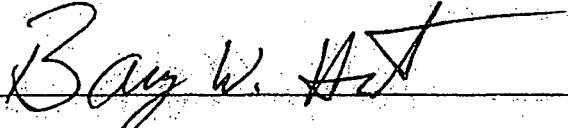
SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct, and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or CHI Operating, Inc. am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 23rd day of July 2013.

Signed: _____



Printed Name: Barry Hunt

Position: Agent for CHI Operating, Inc.

Address: 1403 Springs Farm Place, Carlsbad, NM 88220

Telephone: (575) 361-4078

E-mail: specialtpermitting@gmail.com

DISTRICT I
 1625 N. French Dr., Hobbs, NM 88240
 Phone (505) 803-8181 Fax (505) 333-0720

DISTRICT II
 811 S. First St., Artesia, NM 88210
 Phone (505) 748-1825 Fax (505) 748-9720

DISTRICT III
 1000 Rio Brazos Rd., Asteo, NM 87410
 Phone (505) 334-6175 Fax (505) 334-0170

DISTRICT IV
 1220 S. St. Francis Dr., Santa Fe, NM 87505
 Phone (505) 478-3460 Fax (505) 478-3428

State of New Mexico
 Energy, Minerals and Natural Resources Department

Form C-102
 Revised August 1, 2011

Submit one copy to appropriate
 District Office

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

AMENDED REPORT

API Number 30-015-42387	Pool Code 48035	Pool Name Old Millman Ranch; Bone Spring (Assoc.)
Property Code 313264	Property Name ARCO 34 FEDERAL	Well Number 3H
OGRID No. 04378	Operator Name CHI OPERATING, INC.	Elevation 3305'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	34	19 S	28 E		330	SOUTH	330	WEST	EDDY

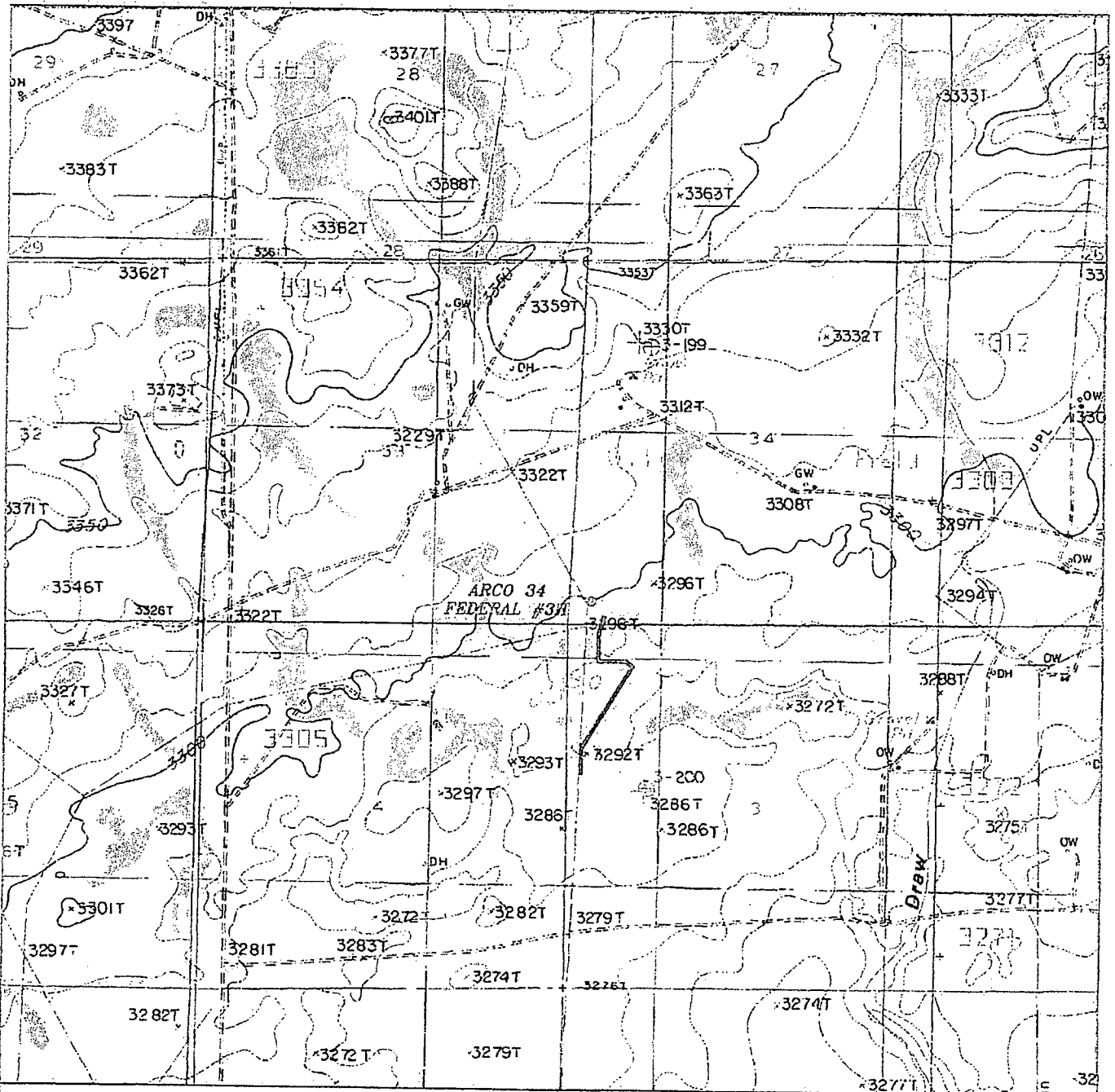
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	34	19 S	28 E		330	NORTH	330	WEST	EDDY

Dedicated Acres 160	Joint or Infill	Consolidation Code	Order No.
-------------------------------	-----------------	--------------------	-----------

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

<p>PROPOSED BOTTOM HOLE LOCATION Lat - N 32°37'24.79" Long - W 104°10'18.40" NMSPC- N 590616.9 E 591076.1 (NAD-83)</p> <p>SURFACE LOCATION Lat - N 32°36'39.14" Long - W 104°10'20.99" NMSPC- N 586003.3 E 590861.0 (NAD-83)</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>John W. Qualls</i> Signature Date John W. Qualls Printed Name John W. Qualls Small Address</p>
	<p>SURVEYOR CERTIFICATION</p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.</p> <p>Date Surveyed: SEP 10 2010 Signature & Seal of Professional Surveyor Certificate No. Gary L. Jones 7977 BASIN SURVEYS 28655</p>



ARCO 34 FEDERAL #3H
 Located 330' FSL and 330' FWL
 Section 34, Township 19 South, Range 28 East,
 N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786
 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (575) 393-7316 - Office
 (575) 592-2206 - Fax
 basinsurveys.com

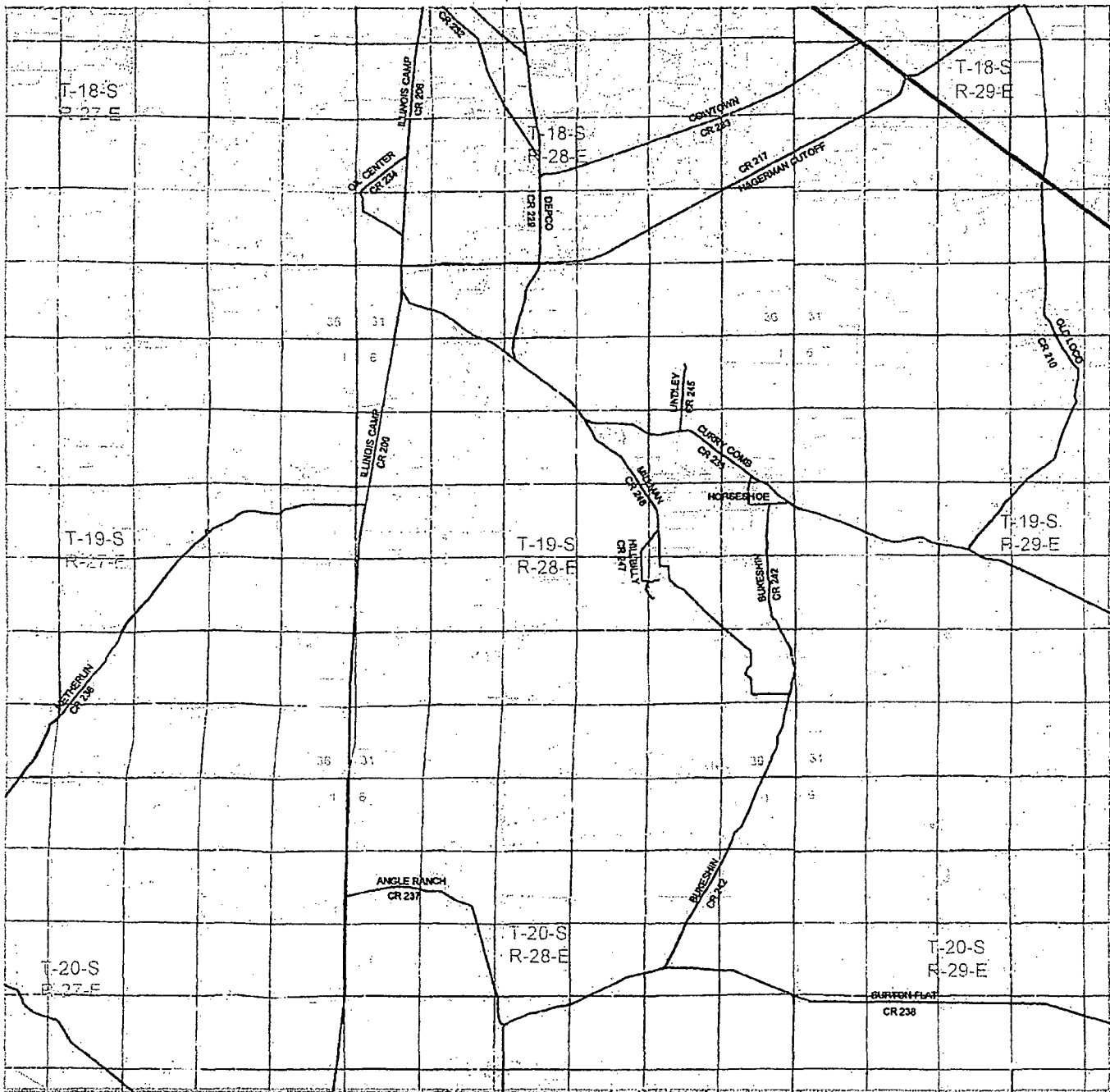
W.O. Number: JMS 28655

Survey Date: 05-09-2013

Scale: 1" = 3000'

Date: 05-15-2013

CHI
 OPERATING,
 INC.



ARCO 34 FEDERAL #3H

Located 330' FSL and 330' FWL
 Section 34, Township 19 South, Range 28 East,
 N.M.P.M., Eddy County, New Mexico.



*focused on excellence
 in the oilfield*

P.O. Box 1785
 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (575) 393-7316 - Office
 (575) 392-2205 - Fax
 basinsurveys.com

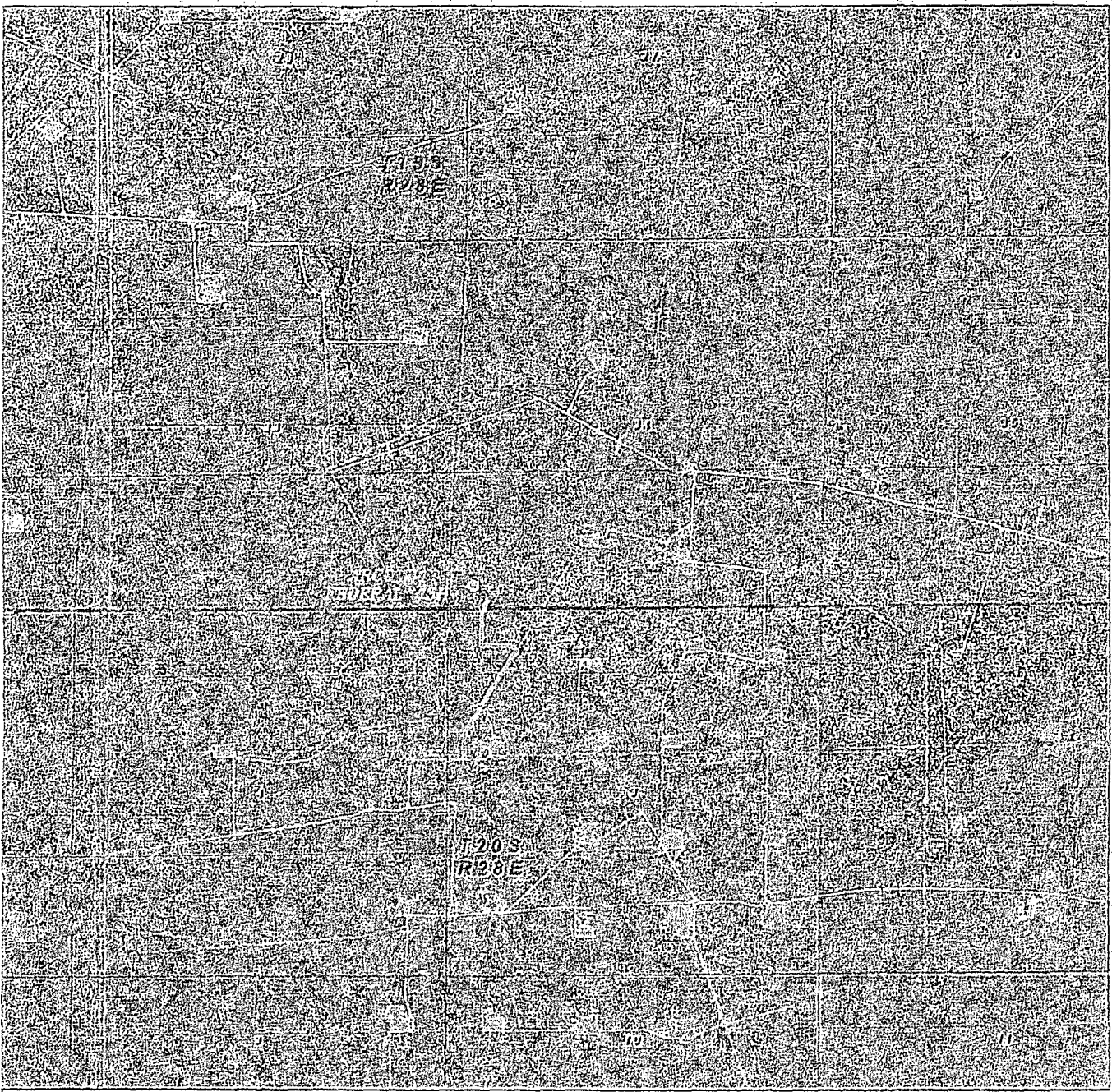
W.O. Number: JMS 29655

Survey Date: 05-09-2013

Scale: 1" = 2 Miles

Date: 05-15-2013

**CHI
 OPERATING,
 INC.**



ARCO 34 FEDERAL #3H

Located 330' FSL and 330' FWL

Section 34, Township 19 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.



P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 395-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: JMS 28655

Scale: 1" = 2000'

YELLOW TINT - USA LAND
BLUE TINT - STATE LAND
NATURAL COLOR - FEE LAND

**CHI
OPERATING,
INC.**

Exhibit A

Access

1.5" = 1 mile

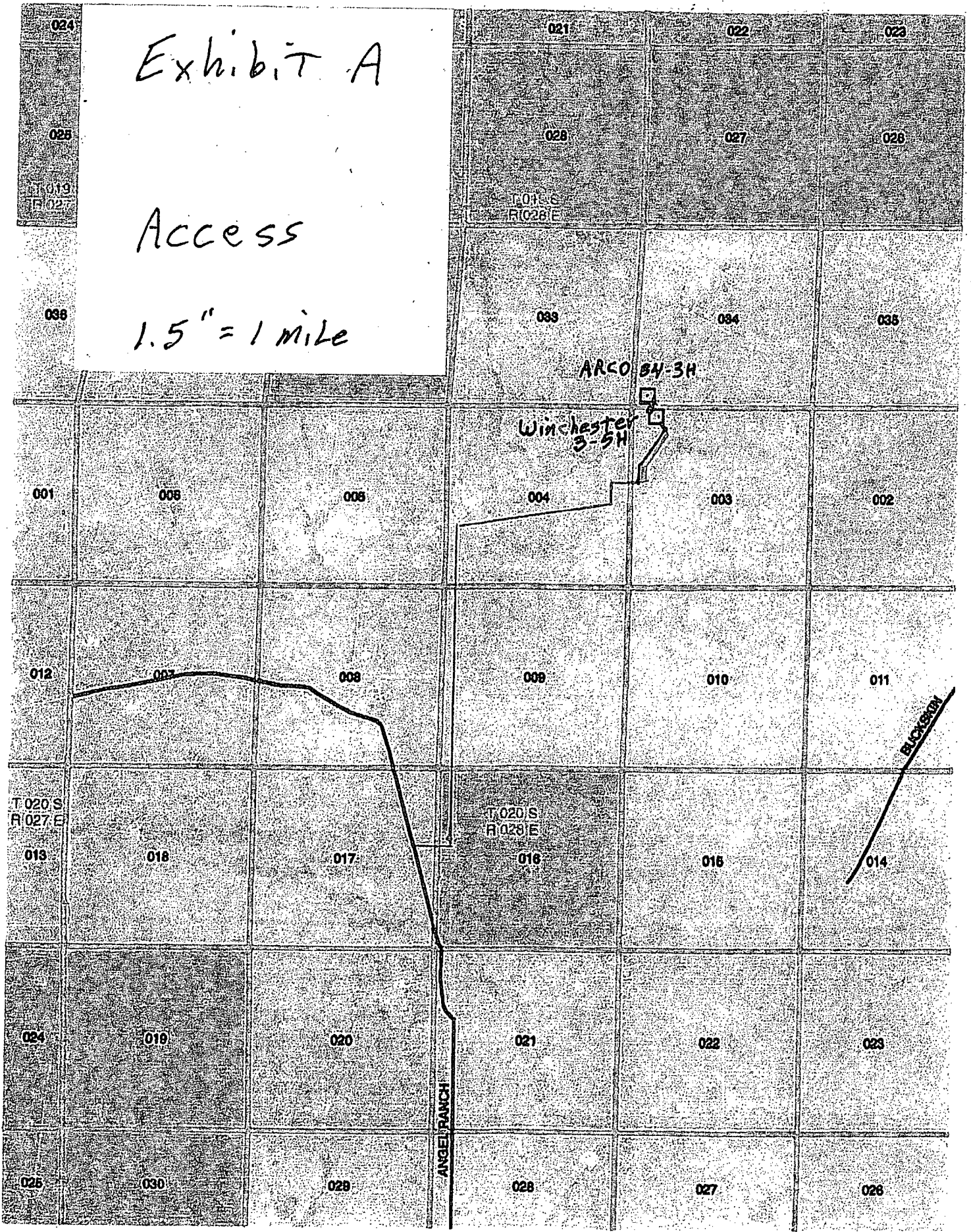
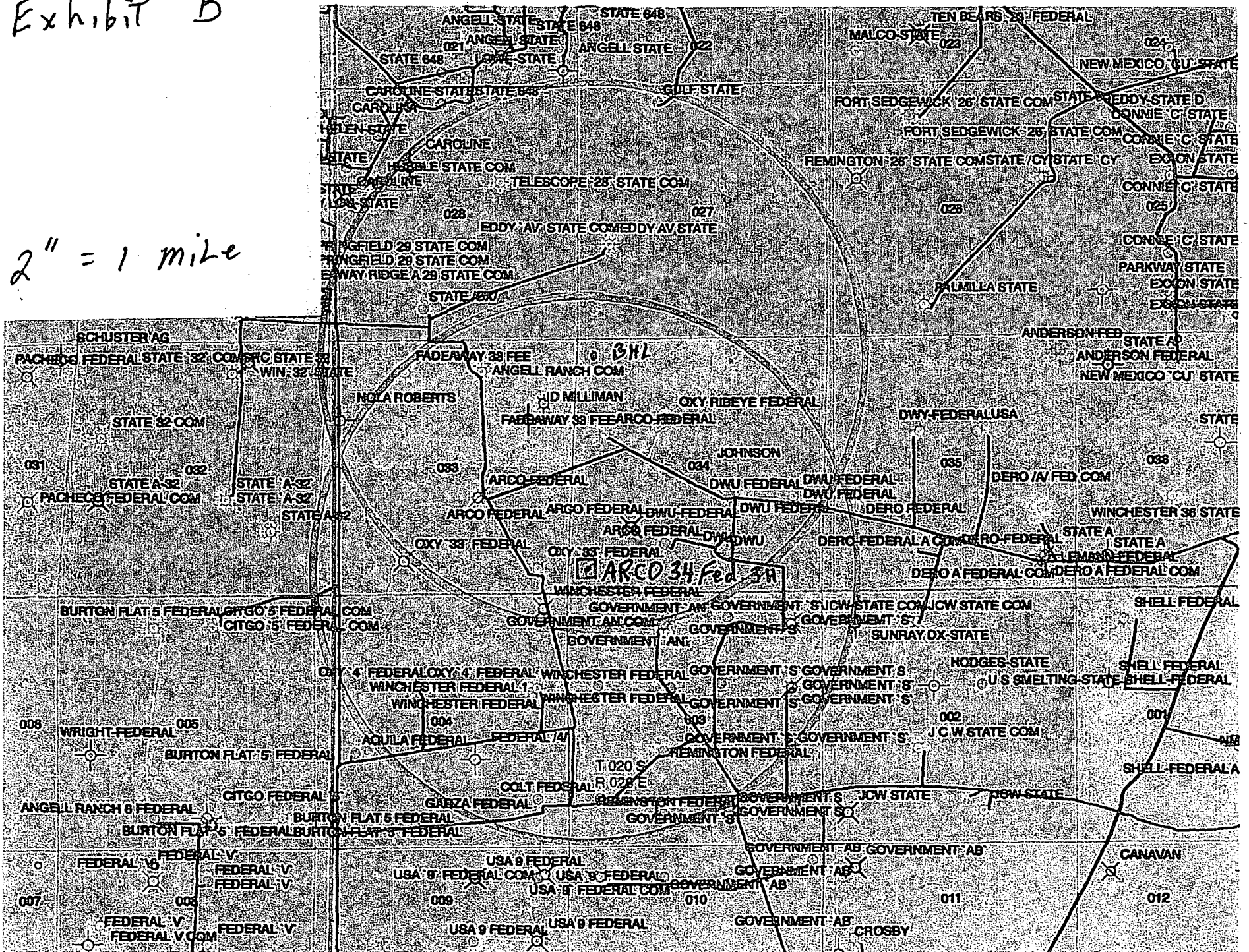


Exhibit B

2" = 1 mile



Application to Drill
Chi Operating, Inc.
ARCO 34 Federal 3H
330' FSL & 330' FWL (SHL)
330' FNL & 330' FWL (BHL)
Sec 34-T19S-R28E
Eddy County, New Mexico

1. **The estimated tops of geological markers are as follows:**

Rustler	150'
Top Salt	750'
Base Salt	950'
*Yates	1243'
Seven Rivers	1375'
Queen	1867'
*Delaware	2944'
*Bone Spring	4612'
TVD	7310'

2. **Estimated depths of anticipated fresh water, oil, or gas:**

Water: Fresh water is anticipated at 65' and will be protected by setting surface casing at ^{35'}450' and cementing to surface.

Hydrocarbons: Oil and gas are anticipated in the above (*) formations. These zones will be protected by casing as necessary.

3. **Pressure control equipment:**

A 5000psi working pressure BOP tested as a 3M, consisting of, one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head as needed. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

BOP unit will be hydraulically operated. BOP will be ~~applied up and~~ operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling from the base of the surface pipe through the running of production casing, the well will be equipped with a 5000psi BOP tested to a 3M system. The testing will be done by an independent service company.

Chi Operating, Inc. proposes to drill a vertical wellbore to 6787' & kick off to horizontal @ 7310' TVD. The well will be drilled to 11733' MD (7310' TVD). See attached directional plan.

4. Proposed casing and cementing program:

See COA

A. Casing Program: ALL NEW CASING

Hole Size	Casing	Wt/Ft.	Grade	Depth	Jt Type
17 1/2"	13 3/8" (new)	54.5#	J55	0'- ³⁵⁰ 450'	ST&C
12 1/4"	9 5/8" (new)	36#	J55	0'-3100'	LT&C
8 3/4"	7" (new)	26#	P110	0'- ^{7487 M} 7310' TVD	LT&C
6 1/8"	4 1/2" (new)	11.6#	P110	0'- ⁷¹⁸⁷ 7010' -11733' MD	LT&C

300' tie back per John Qualls 9/10/11

Minimum casing design factors: Collapse 1.125, Burst 1.0, Tensile strength 1.8

*Subject to availability of casing

B. Cementing Program:

Surface ^{13 3/8} 410sx Premium Plus + 3% Salt + 25 CaCl2 (wt 14.8, yld 1.34). 100% excess.
TOC Surface

Intermediate ^{9 5/8} Lead: 550sx EconoCem + 3% Salt + 2% CaCl2 + 3 lbm/sk Gilsonite (wt 11.7, yld 2.06). 51% excess.
Tail: 225sx Premium Plus + 1% CaCl2 (wt 14.8, yld 1.34). 51% excess.
TOC Surface

Production ^{7"} Lead: 535sx EconoCem + 3% Salt + 5 lbm/sk Gilsonite (wt 13.0, yld 1.71). 30% excess.
Tail: 995sx Halcem (wt 14.8, yld 1.34). 25% excess.
TOC Surface

Lateral ^{4 1/2"} No cement needed. Open hole completion assembly.

Fresh water zones will be protected by setting 13 3/8" casing at ³⁵⁰450' and cementing to surface.
Hydrocarbon zones will be protected by setting 9 5/8" casing at 3100' and cementing to surface, and by setting 7" casing at ~~7310'~~ ^{7487 M}.

See COA

5. Mud Program:

Interval	Type System	Weight	Viscosity	Fluid Loss
0'- ³⁵⁰ 450'	FW	8.5-8.9	32-36	NA
450'-3100'	Brine Water	9.8-10.0	28-30	NA
3100'- TD	Cut Brine w/Polymer	8.9-9.1	28-36	15

The necessary mud products for weight addition and fluid loss control will be on location at all times. Electronic pit monitoring equipment will be utilized with a Pason system. Electronic mud monitoring and mud logging will be utilized below the 9 5/8" casing.

6. Evaluation Program:

Samples: 10' samples from surface casing to TD
Logging: GR/N & Gyro from KOP-100' (6787') to surface. GR from 7310' to TD.
No coring is planned

7. Downhole Conditions:

Zones of H2S	None Present but if encountered the operator will comply with the provisions of Onshore Order No. 6.
Zones of abnormal pressure:	None anticipated
Zones of lost circulation:	Anticipated in surface and intermediate holes. Equipment and material will be available on location in the event of lost circulation.
Maximum bottom hole temperature:	120 degrees F
Maximum bottom hole pressure:	3216 psi.

8. Anticipated Starting Date:

Chi Operating, Inc. intends to drill this well as soon as possible after receiving approval with approximately 40 days involved in drilling operations and an additional 10 days involved in completions operations on the project.



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Drilling Services

Proposal



ARCO 34 FEDERAL #3H

EDDY COUNTY, NEW MEXICO

WELL FILE: PLAN 1

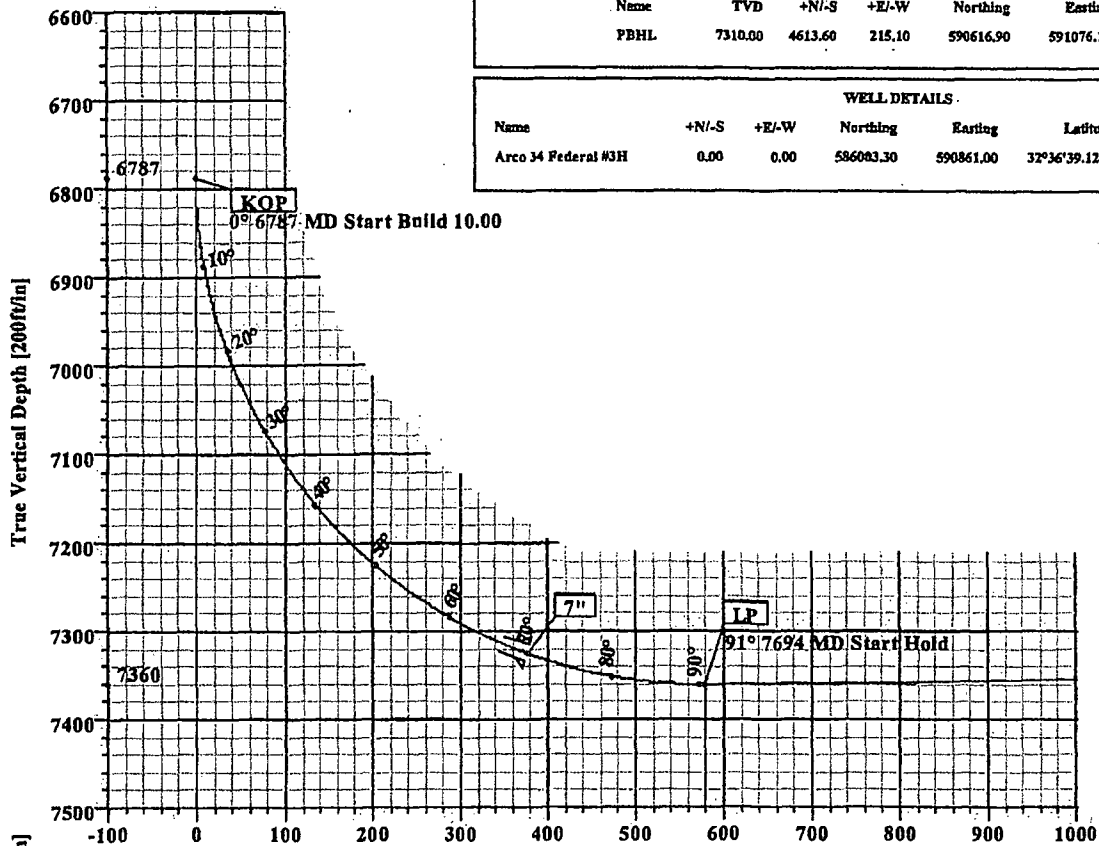
JULY 1, 2013

Weatherford International, Ltd.
P.O. Box 61028
Midland, TX 79711 USA
+1.432.561.8892 Main
+1.432.561.8895 Fax
www.weatherford.com

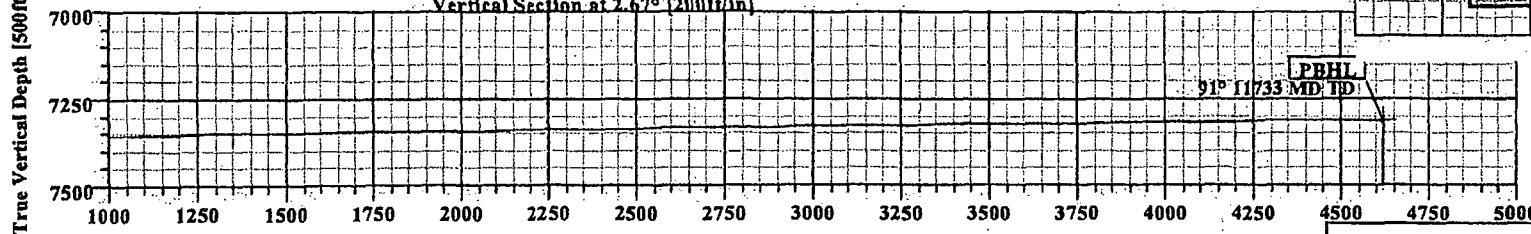


**Arco 34 Federal #3H
Eddy Co, NM**

KB ELEV: 3332
GL ELEV: 3305



Vertical Section at 2.67° [200ft/in]

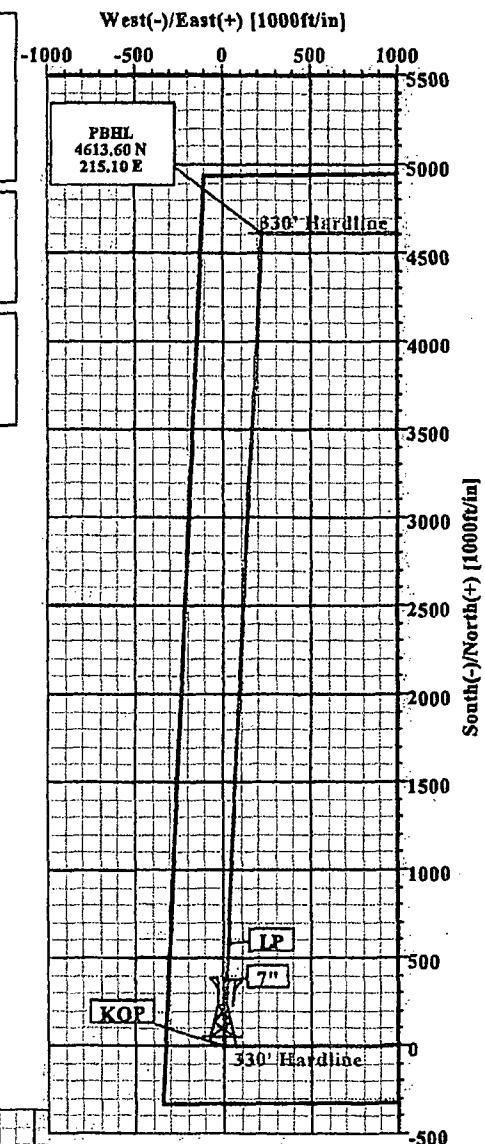


Vertical Section at 2.67° [500ft/in]

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	
2	6787.09	0.00	2.67	6787.09	0.00	0.00	0.00	2.67	0.00	
3	7694.18	90.71	2.67	7360.00	579.42	27.01	10.00	2.67	580.05	
4	11733.05	90.71	2.67	7310.00	4613.60	215.10	0.00	0.00	4618.41	PBHL

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	7310.00	4613.60	215.10	590616.90	591076.10	Point

WELL DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
Arco 34 Federal #3H	0.00	0.00	586003.30	590861.00	32°36'39.126N	104°10'21.009W	N/A





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Wft Plan Report X Y's.



Company: Chi Energy	Date: 7/1/2013	Time: 10:39:12	Page: 1
Field: Eddy Co., NM (Nad 83)	Co-ordinate(NE) Reference: Well: Arco 34 Federal #3H, Grid North		
Site: Arco 34 Federal #3H	Vertical (TVD) Reference: SITE 3332.0		
Well: Arco 34 Federal #3H	Section (VS) Reference: Well (0.00N,0.00E,2.67Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Plan: Plan #1	Date Composed: 7/1/2013	Version: 1
Principal: Yes	Tied-to: From Surface	

Site: Arco 34 Federal #3H

Site Position:	Northing: 586003.30 ft	Latitude: 32 36 39.126 N
From: Map	Easting: 590861.00 ft	Longitude: 104 10 21.009 W
Position Uncertainty: 0.00 ft		North Reference: Grid
Ground Level: 3305.00 ft		Grid Convergence: 0.09 deg

Well: Arco 34 Federal #3H	Slot Name:	
Well Position: +N-S 0.00 ft	Northing: 586003.30 ft	Latitude: 32 36 39.126 N
+E-W 0.00 ft	Easting: 590861.00 ft	Longitude: 104 10 21.009 W
Position Uncertainty: 0.00 ft		

Wellpath: 1	Drilled From: Surface	Tie-on Depth: 0.00 ft	
Current Datum: SITE	Height: 3332.00 ft	Above System Datum: Mean Sea Level	
Magnetic Data: 9/1/2013		Declination: 7.62 deg	
Field Strength: 48587 nT		Mag Dip Angle: 60.39 deg	
Vertical Section: Depth From (TVD)	+N-S	+E-W	Direction
ft	ft	ft	deg
0.00	0.00	0.00	2.67

Plan Section Information

MD	Incl	Azim	TVD	+N/S	+E/W	DLS	Build	Turn	TFO	Target
ft	deg	deg	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	deg	
0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6787.09	0.00	2.67	6787.09	0.00	0.00	0.00	0.00	0.00	2.67	
7694.18	90.71	2.67	7360.00	579.42	27.01	10.00	10.00	0.00	2.67	
11733.05	90.71	2.67	7310.00	4613.60	215.10	0.00	0.00	0.00	0.00	PBHL

Survey

MD	Incl	Azim	TVD	N/S	E/W	VS	DLS	MapN	MapE	Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	ft	
6700.00	0.00	2.67	6700.00	0.00	0.00	0.00	0.00	586003.30	590861.00	
6787.09	0.00	2.67	6787.09	0.00	0.00	0.00	0.00	586003.30	590861.00	KOP
6800.00	1.29	2.67	6800.00	0.15	0.01	0.15	10.00	586003.45	590861.01	
6900.00	11.29	2.67	6899.27	11.08	0.52	11.09	10.00	586014.38	590861.52	
7000.00	21.29	2.67	6995.13	39.06	1.82	39.11	10.00	586042.36	590862.82	
7100.00	31.29	2.67	7084.68	83.25	3.88	83.34	10.00	586086.55	590864.88	
7200.00	41.29	2.67	7165.18	142.30	6.63	142.46	10.00	586145.60	590867.63	
7300.00	51.29	2.67	7234.19	214.42	10.00	214.65	10.00	586217.72	590871.00	
7400.00	61.29	2.67	7289.61	297.41	13.87	297.73	10.00	586300.71	590874.87	
7487.09	70.00	2.67	7325.49	376.59	17.58	376.99	10.00	586379.89	590878.56	7"
7500.00	71.29	2.67	7329.77	388.75	18.12	389.17	10.00	586392.05	590879.12	
7600.00	81.29	2.67	7353.44	485.68	22.64	486.20	10.00	586488.98	590883.64	
7694.18	90.71	2.67	7380.00	579.42	27.01	580.05	10.00	586582.72	590888.01	LP
7700.00	90.71	2.67	7359.93	585.23	27.29	585.87	0.00	586588.53	590888.29	
7800.00	90.71	2.67	7358.69	685.12	31.94	685.86	0.00	586688.42	590892.94	
7900.00	90.71	2.67	7357.46	785.00	36.60	785.85	0.00	586788.30	590897.60	
8000.00	90.71	2.67	7356.22	884.88	41.26	885.84	0.00	586888.18	590902.26	
8100.00	90.71	2.67	7354.98	984.77	45.91	985.84	0.00	586988.07	590906.91	
8200.00	90.71	2.67	7353.74	1084.65	50.57	1085.83	0.00	587087.95	590911.57	
8300.00	90.71	2.67	7352.50	1184.53	55.23	1185.82	0.00	587187.83	590916.23	
8400.00	90.71	2.67	7351.27	1284.42	59.88	1285.81	0.00	587287.72	590920.88	
8500.00	90.71	2.67	7350.03	1384.30	64.54	1385.81	0.00	587387.60	590925.54	
8600.00	90.71	2.67	7348.79	1484.19	69.20	1485.80	0.00	587487.49	590930.20	



Weatherford

Wft Plan Report X Y's.



Company: Chl Energy	Date: 7/1/2013	Time: 10:39:12	Page: 2
Field: Eddy Co., NM (Nad 83)	Co-ordinate(NE) Reference: Well: Arco 34 Federal #3H, Grid North		
Site: Arco 34 Federal #3H	Vertical (TVD) Reference: SITE 3332.0		
Well: Arco 34 Federal #3H	Section (VS) Reference: Well (0.00N,0.00E,2.67Az)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature		
			Db: Sybase

Survey

MD ft	Incl deg	Azlm deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Comment
8700.00	90.71	2.67	7347.55	1584.07	73.85	1585.79	0.00	587587.37	590934.85	
8800.00	90.71	2.67	7346.31	1683.95	78.51	1685.78	0.00	587687.25	590939.51	
8900.00	90.71	2.67	7345.08	1783.84	83.17	1785.78	0.00	587787.14	590944.17	
9000.00	90.71	2.67	7343.84	1883.72	87.82	1885.77	0.00	587887.02	590948.82	
9100.00	90.71	2.67	7342.60	1983.61	92.48	1985.76	0.00	587986.91	590953.48	
9200.00	90.71	2.67	7341.36	2083.49	97.14	2085.75	0.00	588086.79	590958.14	
9300.00	90.71	2.67	7340.12	2183.37	101.80	2185.74	0.00	588186.67	590962.80	
9400.00	90.71	2.67	7338.88	2283.26	106.45	2285.74	0.00	588286.56	590967.45	
9500.00	90.71	2.67	7337.65	2383.14	111.11	2385.73	0.00	588386.44	590972.11	
9600.00	90.71	2.67	7336.41	2483.02	115.77	2485.72	0.00	588486.32	590976.77	
9700.00	90.71	2.67	7335.17	2582.91	120.42	2585.71	0.00	588586.21	590981.42	
9800.00	90.71	2.67	7333.93	2682.79	125.08	2685.71	0.00	588686.09	590986.08	
9900.00	90.71	2.67	7332.69	2782.68	129.74	2785.70	0.00	588785.98	590990.74	
10000.00	90.71	2.67	7331.46	2882.56	134.39	2885.69	0.00	588885.86	590995.39	
10100.00	90.71	2.67	7330.22	2982.44	139.05	2985.68	0.00	588985.74	591000.05	
10200.00	90.71	2.67	7328.98	3082.33	143.71	3085.68	0.00	589085.63	591004.71	
10300.00	90.71	2.67	7327.74	3182.21	148.36	3185.67	0.00	589185.51	591009.36	
10400.00	90.71	2.67	7326.50	3282.10	153.02	3285.66	0.00	589285.40	591014.02	
10500.00	90.71	2.67	7325.27	3381.98	157.68	3385.65	0.00	589385.28	591018.68	
10600.00	90.71	2.67	7324.03	3481.86	162.33	3485.64	0.00	589485.16	591023.33	
10700.00	90.71	2.67	7322.79	3581.75	166.99	3585.64	0.00	589585.05	591027.99	
10800.00	90.71	2.67	7321.55	3681.63	171.65	3685.63	0.00	589684.93	591032.65	
10900.00	90.71	2.67	7320.31	3781.51	176.31	3785.62	0.00	589784.81	591037.31	
11000.00	90.71	2.67	7319.08	3881.40	180.96	3885.61	0.00	589884.70	591041.96	
11100.00	90.71	2.67	7317.84	3981.28	185.62	3985.61	0.00	589984.58	591046.62	
11200.00	90.71	2.67	7316.60	4081.17	190.28	4085.60	0.00	590084.47	591051.28	
11300.00	90.71	2.67	7315.36	4181.05	194.93	4185.59	0.00	590184.35	591055.93	
11400.00	90.71	2.67	7314.12	4280.93	199.59	4285.58	0.00	590284.23	591060.59	
11500.00	90.71	2.67	7312.89	4380.82	204.25	4385.58	0.00	590384.12	591065.25	
11600.00	90.71	2.67	7311.65	4480.70	208.90	4485.57	0.00	590484.00	591069.90	
11700.00	90.71	2.67	7310.41	4580.58	213.56	4585.56	0.00	590583.88	591074.56	
11733.05	90.71	2.67	7310.00	4613.60	215.10	4618.61	0.00	590616.90	591076.10	PBHL

Targets

Name	Description Dip	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	Latitude Deg Min Sec	Longitude Deg Min Sec
PBHL			7310.00	4613.60	215.10	590616.90	591076.10	32 37 24.776 N	104 10 18.412 W

Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
7487.09	7325.49	0.000	0.000	7"

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction



Weatherford

Wit Plan Report X Y's.



Weatherford

Company: Chl Energy	Date: 7/1/2013	Time: 10:39:12	Page: 3
Field: Eddy Co., NM (Nad 83)	Co-ordinate(NE) Reference: Well: Arco 34 Federal #3H, Grid North		
Site: Arco 34 Federal #3H	Vertical (TVD) Reference: SITE 3332.0		
Well: Arco 34 Federal #3H	Section (VS) Reference: Well (0.00N,0.00E,2.67Azi)		
Wellpath: 1	Survey Calculation Method: Minimum Curvature		Db: Sybase

Annotation

MD ft	TVD ft	
6787.09	6787.09	KOP
7694.18	7360.00	LP
11733.05	7310.00	PEHL



Weatherford

Weatherford Drilling Services

GeoDec v5.03

Report Date: July 01, 2013
 Job Number: _____
 Customer: Chi Energy
 Well Name: Arco 34 Federal #3H
 API Number: _____
 Rig Name: _____
 Location: Eddy Co., NM (Nad 27)
 Block: _____
 Engineer: RWJ

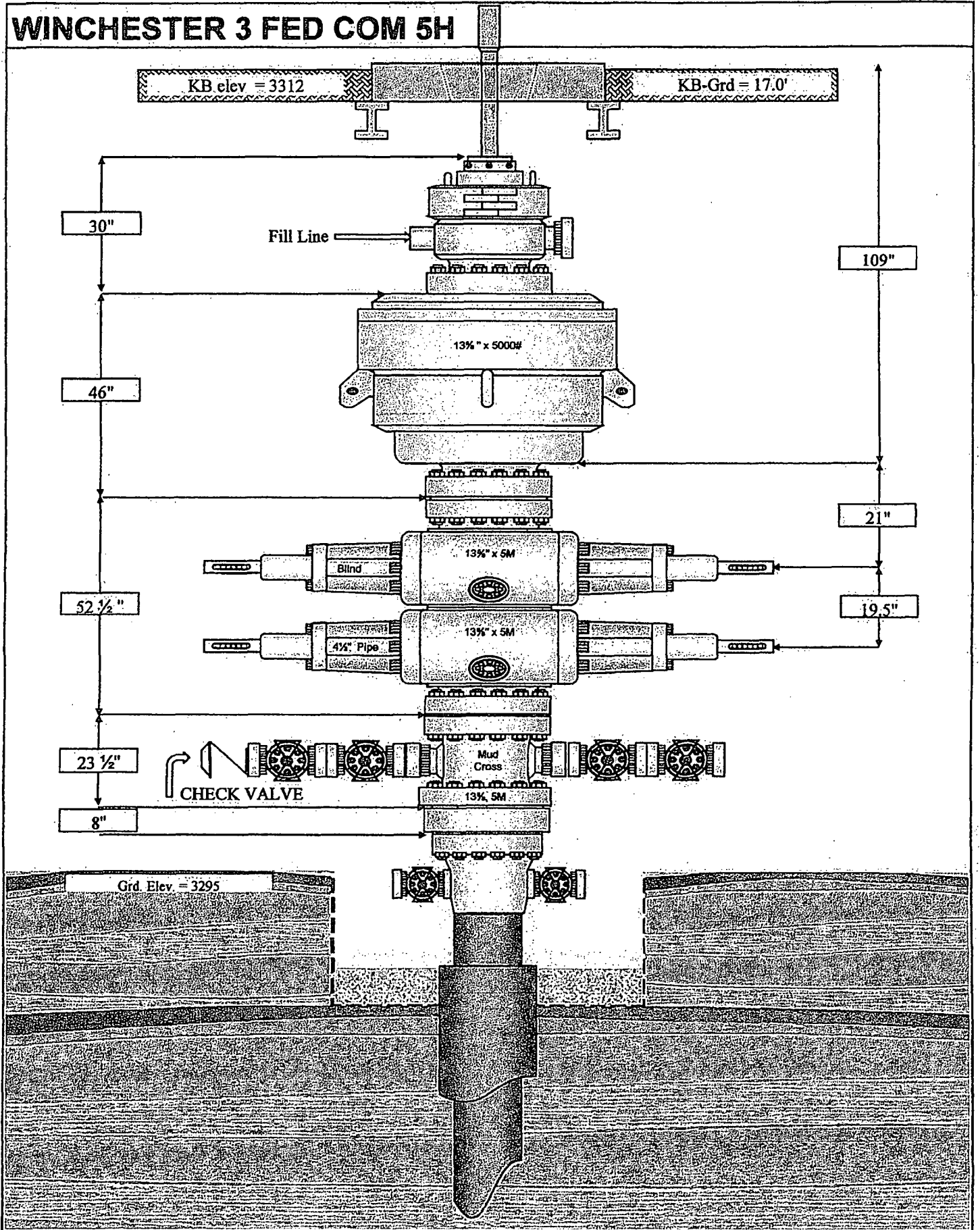
US State Plane 1983	Geodetic Latitude / Longitude
System: New Mexico Eastern Zone	System: Latitude / Longitude
Projection: Transverse Mercator/Gauss Kruger	Projection: Geodetic Latitude and Longitude
Datum: North American Datum 1983	Datum: North American Datum 1983
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
North/South 586003.300 USFT	Latitude 32.6108715 DEG
East/West 590861.000 USFT	Longitude -104.1724986 DEG
Grid Convergence: .09°	
Total Correction: +7.65°	

Geodetic Location WGS84 Elevation = 0.0 Meters
 Latitude = 32.61087° N 32° 36 min 39.138 sec
 Longitude = 104.17250° W 104° 10 min 20.995 sec

Magnetic Declination =	7.74°	[True North Offset]	
Local Gravity =	.9988 g	Checksum =	6698
Local Field Strength =	48569 nT	Magnetic Vector X =	23791 nT
Magnetic Dip =	60.37°	Magnetic Vector Y =	3233 nT
Magnetic Model =	bggm2013	Magnetic Vector Z =	42220 nT
Spud Date =	Sep 01, 2013	Magnetic Vector H =	24010 nT

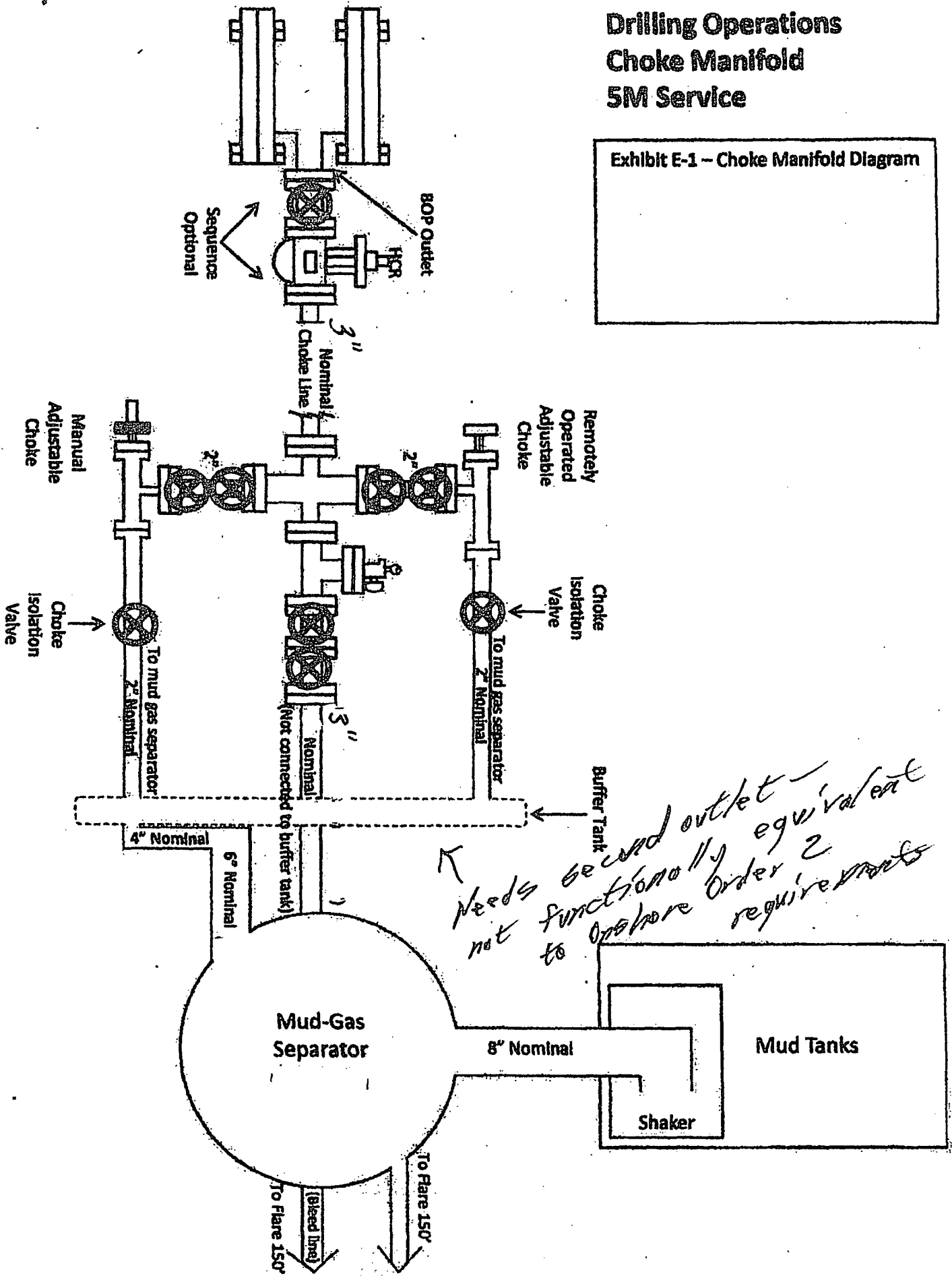
Signed: _____ Date: _____

WINCHESTER 3 FED COM 5H



Drilling Operations Choke Manifold 5M Service

Exhibit E-1 - Choke Manifold Diagram



Plat for Closed Loop System

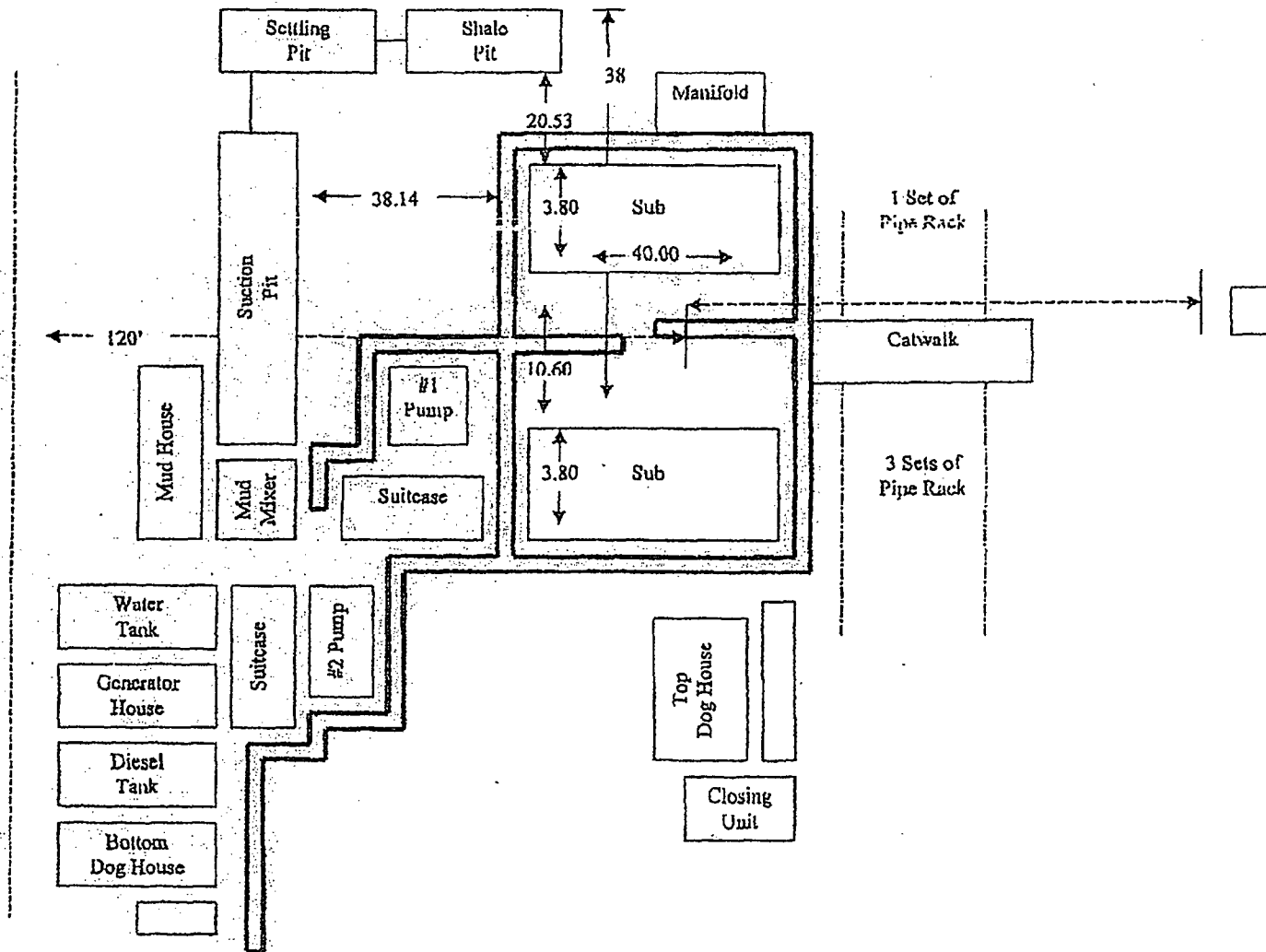


EXHIBIT D

**Rig Plat Only
ARCO 34 FEDERAL 3H
V-DOOR EAST**

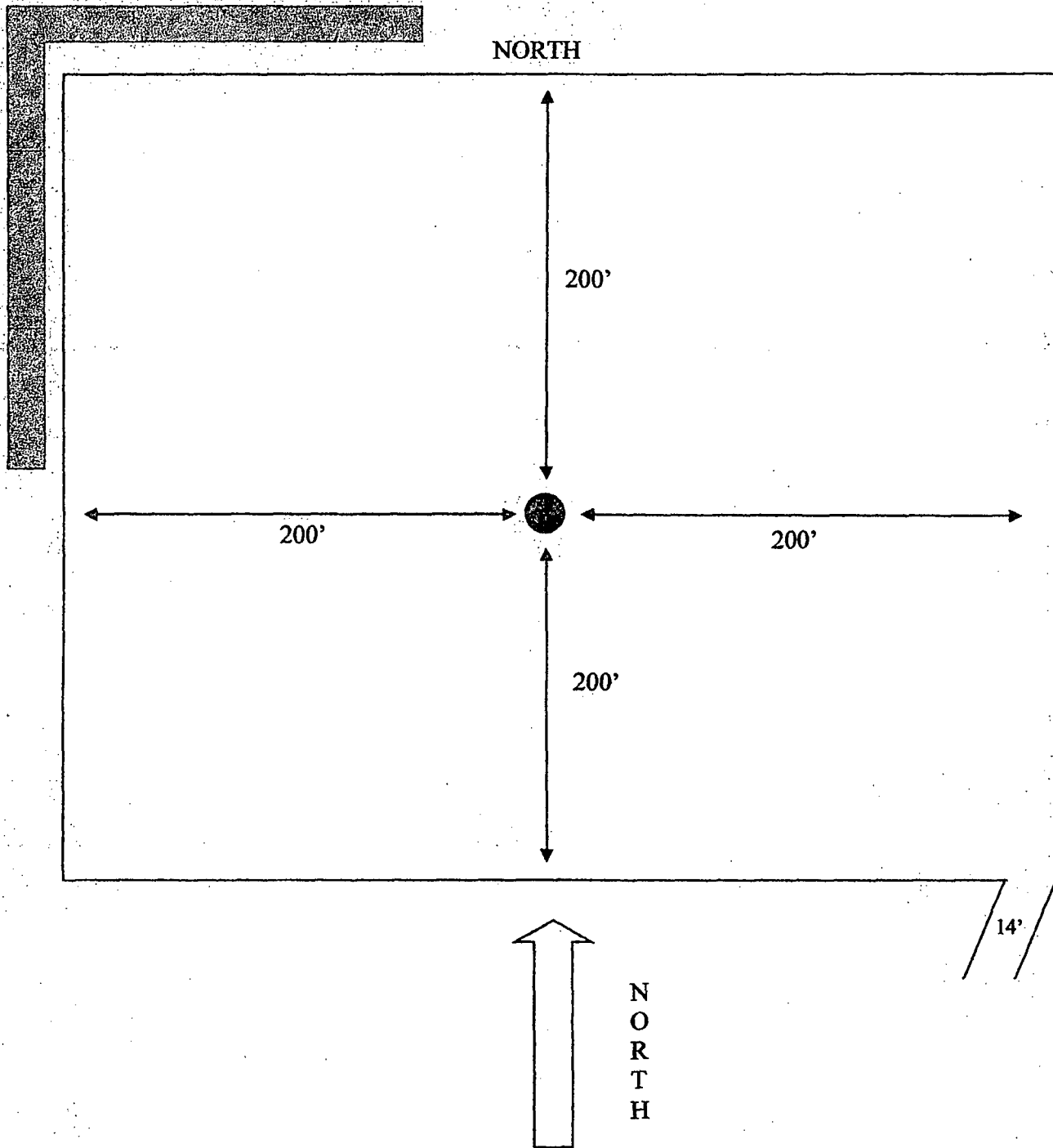
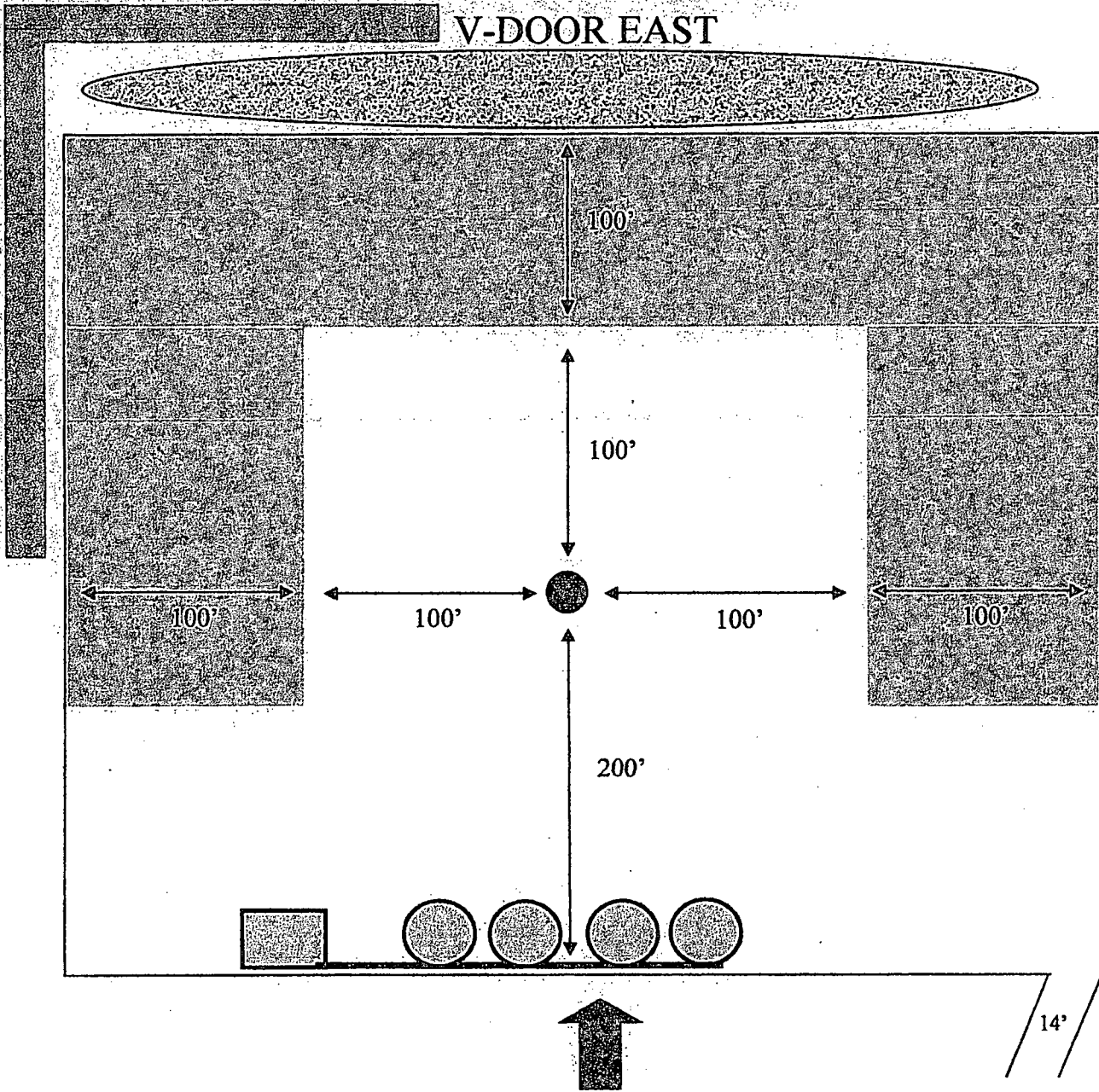


EXHIBIT C

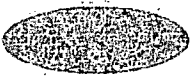
**Interim Reclamation & Production Facilities
ARCO 34 FEDERAL 3H**

V-DOOR EAST



LEGEND

Well Bore



Topsoil



Interim Reclamation



Production Facilities



Berm



NORTH

SURFACE USE PLAN

CHI OPERATING, INC. ARCO 34 FEDERAL 3H

Surface Hole: 330 FSL & 330 FWL, Section 34, T. 19 S., R. 28 E.
Bottom Hole: 330 FNL & 330 FWL, Section 34, T. 19 S., R. 28 E.
Eddy County, New Mexico

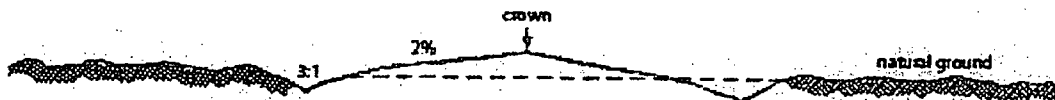
This plan is submitted with form 3160-3, Application for Permit to Drill, covering the above described well. The purpose of this plan is to describe the location of the proposed well, the proposed construction activities and operations plan, the magnitude of the surface disturbance involved and the procedures to be followed in rehabilitating the surface after completion of the operations, so that a complete appraisal can be made of the environmental effect associated with the operations.

1. EXISTING ROADS:

- A. DIRECTIONS: From Carlsbad, NM, go north on Illinois Camp Road for 8.5 miles, turn east on Angell Ranch Road for 2.25 miles, turn east on Lease Road for 1/4 mile. Turn north on lease road for 1.3 miles. Turn east northeast for 1.1 miles to the beginning point of new access road at existing pipeline road to be upgraded. All existing roads are either paved or a caliche lease road.
- B. See attached plats and maps provided by Basin Surveys.
- C. The access route from Angel Ranch Road (County Road) to the well location is depicted on EXHIBIT A. The route highlighted in red will be the access, which will require a ROW due to all of road system not being within the same lease. A road ROW has been filed with BLM Realty section.
- D. Existing roads on the access route will be improved and maintained to the standard set forth in Section 2 of this Surface Use Plan of Operations.

2. NEW OR RECONSTRUCTED ACCESS ROADS:

- A. The new road will run from the southeast corner of the well pad and run south to the Winchester 3 Fed Com 5H well. The line length will be 272.6 ft. If ARCO well is built before the Winchester well, would involve an additional 800.4 ft. around the proposed Winchester well and then 118.2 ft. to the Navajo pipeline road to be upgraded, of 1773 ft., to the east/west lease road for a total of 2964.2 ft. of road to the ARCO well, if built before the Winchester well.
- B. The maximum width of the driving surface will be 14 feet. The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1 foot deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.



Level Ground Section

- C. Surface material will be native caliche. The average grade of the entire road will be approximately 3%.
- D. Fence Cuts: No
- E. Cattle guards: No

- F. Turnouts: No
- G. Culverts: No
- H. Cuts and Fills: Not significant
- I. Approximately 6 inches of topsoil (root zone) will be stripped from the proposed access road prior to any further construction activity. The topsoil that was stripped will be spread along the edge of the road and within the ditch. The topsoil will be seeded with the proper seed mix designated by the BLM.
- J. The access road will be constructed and maintained as necessary to prevent soil erosion and accommodate all-weather traffic. The road will be crowned and ditched with water turnouts installed as necessary to provide for proper drainage along the access road route.
- K. The access road and associated drainage structures will be constructed and maintained in accordance with road guidelines contained in the joint BLM/USFS publication: Surface Operating Standards for Oil and Gas Exploration and Development, The Gold Book, Fourth Edition and/or BLM Manual Section 9113 concerning road construction standards on projects subject to federal jurisdiction.

3. LOCATION OF EXISTING WELLS:

See attached map (**EXHIBIT B**) showing all wells within a one-mile radius.

4. LOCATION OF EXISTING AND/OR PROPOSED FACILITIES:

- A. In the event the well is found productive the company will place production facilities on the South portion of the well pad (See **EXHIBIT C** for production facility plat).
- B. All permanent (on site six months or longer) aboveground structures constructed or installed on location and not subject to safety requirements will be painted to BLM specifications.
- C. Containment berms will be constructed completely around any production facilities designed to hold fluids. The containment berms will be constructed or compacted subsoil, be sufficiently impervious, hold 1 ½ times the capacity of the largest tank and away from cut or fill areas.

5. LOCATION AND TYPE OF WATER SUPPLY:

The well will be drilled using a combination of water mud systems as outlined in the Drilling Program. The water will be obtained from commercial water stations in the area and hauled to the location by transport truck using the existing and proposed roads shown in the attached survey plats. If a commercial water well is nearby, a temporary, surface poly line, will be laid along existing roads or other ROW easements and the water pumped to the well. No water well will be drilled on the location.

6. SOURCE OF CONSTRUCTION MATERIALS:

Any construction material that may be required for surfacing of the drill pad and access road will be from a contractor having a permitted source of materials within the general area. No construction materials will be removed from Federal lands without prior approval from the appropriate surface management agency. All roads will be constructed of 6" rolled and compacted caliche.

7. METHODS OF HANDLING WASTE DISPOSAL:

- A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.

- B. Drilling fluids will be contained in steel mud pits.
- C. Water produced from the well during completion will be held temporarily in steel tanks and then taken to an NMOCD approved commercial disposal facility.
- D. Oil produced during operations will be stored in tanks until sold.
- E. Portable, self-contained chemical toilets will be provided for human waste disposal. Upon completion of operations, or as required, the toilet holding tanks will be pumped and the contents thereof disposed of in an approved sewage disposal facility. All state and local laws and regulations pertaining to disposal of human and solid waste will be complied with. This equipment will be properly maintained during the drilling and completion operations and will be removed when all operations are complete.
- F. All trash, junk, and other waste materials will be contained in trash cages or bins to prevent scattering and will be removed and deposited in an approved sanitary landfill. Immediately after drilling all debris and other waste materials on and around the well location, not contained in the trash cage will be cleaned up and removed from the location. No potentially adverse materials or substances will be left on the location.

8. ANCILLARY FACILITIES:

No campsite, airstrip, or other facilities will be built as a result of the operation of this well. No staging areas are needed.

9. WELL SITE LAYOUT:

- A. Exhibit D shows the dimensions of the proposed well pad.
- B. The proposed well pad size will be 400' x 400'. (See EXHIBIT D).
There will be no reserve pit due to the well being drilled utilizing a closed loop mud system. The closed loop system will meet the NMOCD requirements 19.15.17.
- C. The Basin Survey's plat, Form C-102 and Exhibit D, shows the direction of the pad at a V-Door East.
- D. A 600' x 600' area has been staked and flagged.
- E. All equipment and vehicles will be confined to the approved disturbed areas of this APD (i.e., access road, well pad, and topsoil storage areas)

10. PLANS FOR SURFACE RECLAMATION:

- A. After concluding the drilling and/or completion operations, if the well is found non-commercial, all the equipment will be removed, the surface material, caliche, will be removed from the well pad and road and transported to the original caliche pit or used for other roads. The original stock piled top soil will be returned to the pad and contoured, as close as possible, to the original topography. The access road will have the caliche removed and the road ripped, barricaded and seeded as directed by the BLM.
- B. If the well is a producer, the portions of the pad not essential to production facilities or space required for workover operations, will be reclaimed and seeded as per BLM requirements for interim reclamation. (SEE EXHIBIT C FOR INTERIM RECLAMATION PLAT FOR THIS WELL)
- C. Reclamation Performance Standards
The following reclamation performance standards will be met:

Final Reclamation – Includes disturbed areas where the original landform and a natural vegetative community will be restored and it is anticipated the site will not be redisturbed for future development.

- The original landform will be restored for all disturbed areas including well pads, production facilities, roads, pipelines, and utility corridors.
- A self-sustaining, vigorous, diverse, native (or otherwise approved) plant community will be established on the site, with a density sufficient to control erosion and invasion by non-native plants and to re-establish wildlife habitat or forage production. At a minimum, the established plant community will consist of species included in the seed mix and/or desirable species occurring in the surrounding natural vegetation.
- Erosion features are equal to or less than surrounding area and erosion control is sufficient so that water naturally infiltrates into the soil and gullyng, headcutting, slumping, and deep or excessive rills (greater than 3 inches) are not observed.
- The site will be free of State- or county-listed noxious weeds, oil field debris and equipment, and contaminated soil. Invasive and non-native weeds are controlled.

Seeding:

- Seedbed Preparation. Initial seedbed preparation will consist of recontouring to the appropriate interim or final reclamation standard. All compacted areas to be seeded will be ripped to a minimum depth of 18 inches with a minimum furrow spacing of 2 feet, followed by recontouring the surface and then evenly spreading the stockpiled topsoil. Prior to seeding, the seedbed will be scarified to a depth of no less than 4 – 6 inches. If the site is to be broadcast seeded, the surface will be left rough enough to trap seed and snow, control erosion, and increase water infiltration.
- If broadcast seeding is to be used and is delayed, final seedbed preparation will consist of contour cultivating to a depth of 4 to 6 inches within 24 hours prior to seeding, dozer tracking, or other imprinting in order to break the soil crust and create seed germination micro-sites.
- Seed Application. Seeding will be conducted no more than two weeks following completion of final seedbed preparation. A certified weed-free seed mix designed by the BLM to meet reclamation standards will be used.
- If the site is harrowed or dragged, seed will be covered by no more than 0.25 inch of soil.

11. SURFACE OWNERSHIP:

- A. The surface is owned by the Bureau of Land Management. The surface is multiple use with the primary uses of the region for the grazing of livestock and the production of oil and gas.

12. OTHER INFORMATION:

- A. The area surrounding the well site is in a gentle sloped, shallow sandy gypsum loam, rolling hills type area. The vegetation consists of Mesquite, Yucca, with three-awns and some dropseed species.
- B. There is no permanent or live water in the immediate area.
- C. There are no dwellings within 2 miles of this location.
- D. A Class III Cultural Resources Examination has been completed and the results will be forwarded to the BLM office.

13. BOND COVERAGE:

Bond Coverage is Nationwide; Bond Number NM-1616.

OPERATORS REPRESENTATIVE:

The CHI Operating, Inc. representatives responsible for ensuring compliance of the surface use plan are listed below:

Surface:

Barry W. Hunt – Permit Agent
1403 Spring Farm Place
Carlsbad, NM 88220
(575) 885-1417 (Home)
(575) 361-4078 (Cell)

Drilling & Production:

John Qualls – CHI Operating, Inc.
P.O. Box 1799
Midland, Tx. 79702
(432) 685-5001 (Office)
(432) 557-8774 (Cell)

ON-SITE PERFORMED ON 5/09/13 RESULTED IN PROPOSED LOCATION BEING MOVED (FLIPPED TO THE BHL) DUE TO EXCESSIVE CUT AND FILL AND A DRAINAGE AREA. IT WAS AGREED TO TURN THE LOCATION TO A V-DOOR EAST. IT WAS FURTHER AGREED TO PLACE THE BATTERY ON THE SOUTH SIDE OF THE PAD, TOP SOIL TO THE NORTH AND INTERIM RECLAMATION WOULD BE THE NORTH, WEST AND EAST PORTION OF THE PAD.

PRESENT AT ON-SITE:

**BARRY HUNT – PERMIT AGENT FOR CHI OPERATING, INC.
AMANDA LYNCH – BLM
BECKIE HILL - BOONE ARCHAEOLOGICAL SERVICES
BASIN SURVEYS**

(432) 685-5001

Fax (432) 687-2662

Chi Operating, Inc.

P. O. BOX 1799
MIDLAND, TEXAS 79702

August 27, 2012

Re: Authorization to Permit for Drilling and Right Of Way

To Whom it may concern,

Chi Operating, Inc. hereby authorizes Mr. Barry Hunt to serve as an agent for the purpose of permitting and obtaining Federal authority.

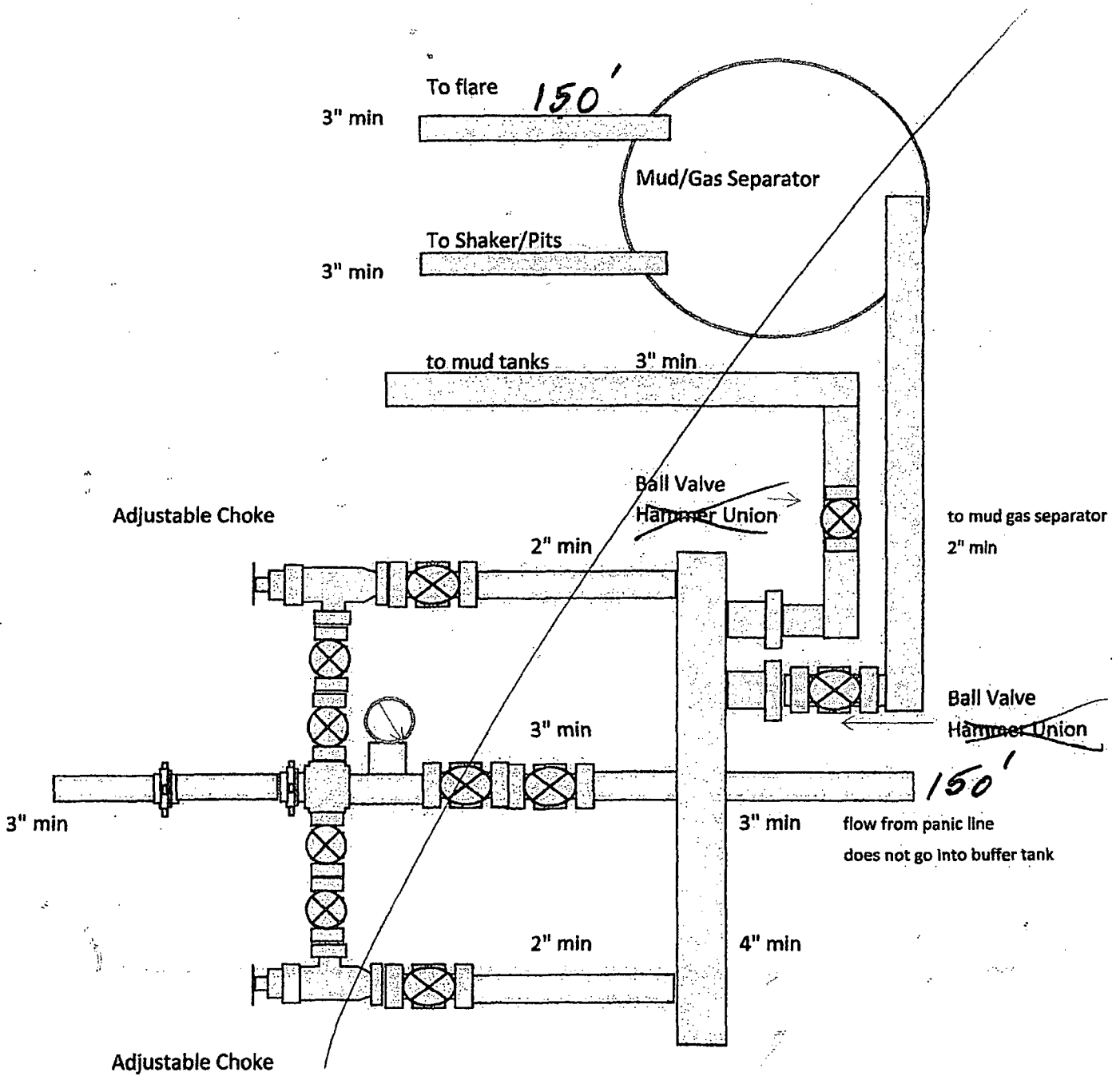
Gary Womack

Chi Energy, Inc.

432-634-8958 (C)

432-685-5001 (O)

5 M manifold



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Chi Operating, Inc.
LEASE NO.:	NMNM-0428657
WELL NAME & NO.:	Arco 34 Federal 3H
SURFACE HOLE FOOTAGE:	0330' FSL & 0330' FWL
BOTTOM HOLE FOOTAGE:	0330' FNL & 0330' FWL
LOCATION:	Section 34, T. 19 S., R 28 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

- General Provisions**
- Permit Expiration**
- Archaeology, Paleontology, and Historical Sites**
- Noxious Weeds**
- Special Requirements**
- Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- Road Section Diagram**
- Drilling**
 - Cement Requirements
 - High Cave/Karst
 - Logging Requirements
 - Waste Material and Fluids
- Production (Post Drilling)**
 - Well Structures & Facilities
- Interim Reclamation**
- Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. 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

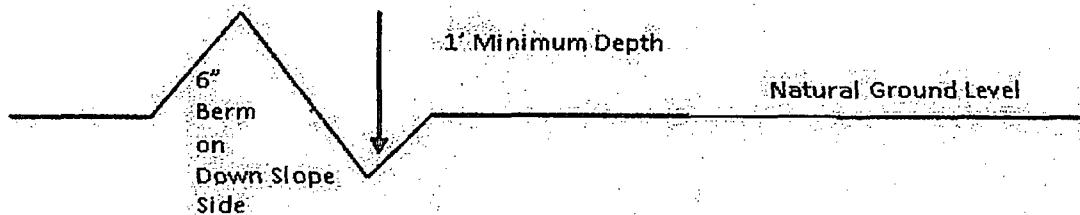
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Culvert Installations

Appropriately sized culverts shall be installed at deep waterway channel flow crossings through the road.

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

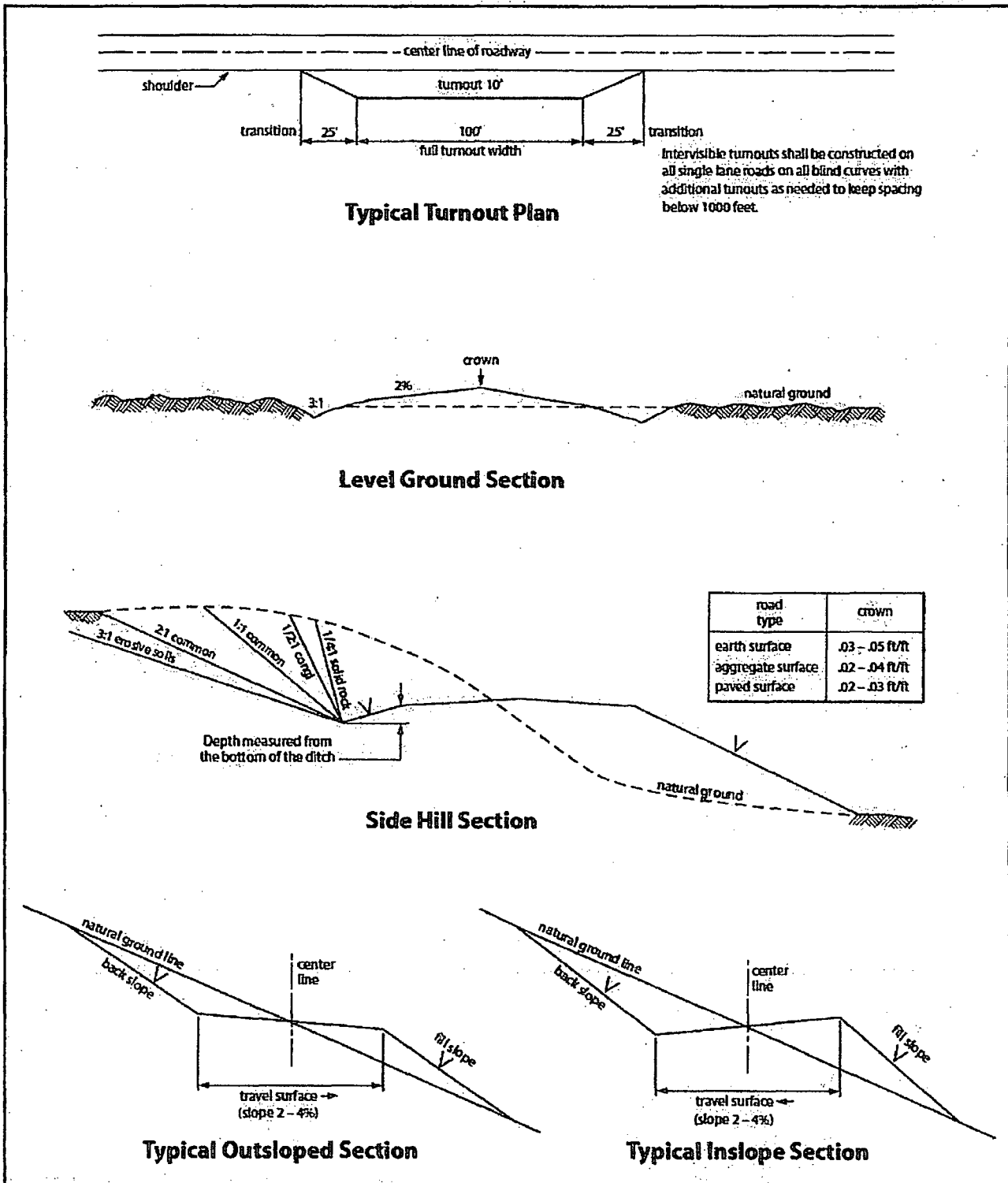


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VI. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

Eddy County

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

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works 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. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

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

Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.

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

High Cave/Karst

Possibility of lost circulation in the Grayburg, San Andres, Capitan Reef (if encountered), Delaware, and Bone Spring.

1. The 13-3/8 inch surface casing shall be set at approximately 350 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:
 - 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.**

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 to surface. If cement does not circulate, contact the appropriate BLM office.

4. Cement not required on the 4-1/2" casing. Packer system being used.

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 **3000 (3M) psi (Installing 5M testing to 3,000 psi)**.

a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.

3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. The 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.
- d. The results of the test shall be reported to the appropriate BLM office.
- e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

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

E. WASTE MATERIAL AND FLUIDS

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

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

JAM 090913

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Exclosure Netting (Open-top Tanks)

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

Chemical and Fuel Secondary Containment and Exclosure Screening

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the

largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

X. FINAL ABANDONMENT & RECLAMATION

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

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

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by

drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

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

Seed Mixture 2, for Sandy Sites

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

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

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

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

*Pounds of pure live seed:

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



United States Department of the Interior
Bureau of Land Management
Carlsbad Field Office



Refer To: 3160-3

ORIGINAL

To: AFM, Lands & Minerals, CFO

From: Geologist, CFO

Subject: Geologic Review of Application for Permit to Drill

Operator: Chi Operating, Inc.

Well Name and Number: Arco 34 Federal 3H

Location: SHL: T19S, R28E, Sec. 34; 330' FSL & 330' FWL (Unit M)
BHL: T19S, R28E, Sec. 34; 330' FNL & 330' FWL (Unit D)

County: Eddy State: NM

Lease No.: NMNM-0428657 Date Received: 29 July 2013

1. Surface Elevation: 3305' GR Surface Geology: Quaternary Alluvium

2. Geologic Marker Tops (from reports on surrounding wells):

Well:	Citgo 5 Federal Com 1 3001523241 T20S R28E Sec 5 660 FNL, 2130 FEL GR 3329	OXY 33 Federal 1 3001528970 T19S R28E Sec 33 510 FSL, 660 FEL GR 3306	OXY 4 Federal 1 3001528986 T20S R28E Sec 4 1980 FNL, 2130 FWL GR 3298	Arco Federal 1 3001521731 T19S R28E Sec 33 1980 FSL, 1980 FEL GR 3320	Arco 34 Federal 3H PROPOSED WELL T19S R28E Sec 34 330 FSL 330 FWL GR 3305
Geologic Marker	Depth*	Depth*	Depth*	Depth*	Estimated Depth†
Rustler		Near Surface	Near Surface	115	Near Surface
Top of Salt	375	345	336	340	340
Bottom of Salt	610	670	685		
Tansill	740	753	770	702	
Yates	806	869	880	816	805
Seven Rivers	1258	1350	1384	1355	
Queen	1737	1811	1831	1740	
San Andres	2136	2370	2506	2270	2395
Bone Springs	3877	4245	4370	3991	4035
1 st Bone Spring	6002	6100	6130	5990	
2 nd Bone Spring	7079	6935	7160	7026	7000
3 rd Bone Spring	8219	8284	8303	8261	8225

*Depths primarily from IHS database.

†Determined from IHS contouring.

3. Fresh Water Information: According to well data from the New Mexico Office of the State Engineer's Water Rights Reporting System, there are fourteen wells within a six-mile radius of the proposed well, with depths ranging from 22 to 350 feet.

Deepest Expected Fresh Water: above 260 feet.

Does Surface Casing cover all anticipated usable fresh water zones? Yes; however operator's proposed set point may be in salt residuum. Set surface casing in a competent bed below cave depth at an approximate depth of 350 feet. If salt is encountered set the casing 25 feet above the salt.

Controlled Water Basin:

Capitan Carlsbad Roswell Lea

4. Geologic Hazards?

H₂S Karst Abnormal Pressures Other

Remarks: There exists the possibility of lost circulation in the Grayburg, San Andres, Capitan Reef (if encountered), Delaware and Bone Spring.

The location of the proposed well is within a high potential for the occurrence of karst type features down to a depth of 350 feet.

5. Other Mineral Deposits: Stringers of salt may be present in the Salado otherwise the salt deposit has been eroded or in residuum.

6. Potash:

Secretary's Oil-Potash Area R-111-P Area Not Applicable

7. Other References:

H₂S GIS Data.

IHS Enerdeq® Well Data

New Mexico Office of the State Engineer::New Mexico Water Rights Reporting System, 31 August 2013,
<<http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html>>.

USGS Water Well Data.

8. No known active mining claims are located in this vicinity.

Geologist : James Rutley Date: 31 August 2013

Carlsbad Field Office NEPA Checklist

Monday, August 05, 2013

EA	NEPA #: DOI-BLM-NM-P020-2013-1547-EA	Project Type: OIL WELL AND ROAD	Revd Date:
Reference Number:	NM13232A	Project Name: 5H-WINCHESTER 3 FEDERAL COM	Routing Started: 07/31/2013
Project Lead:	LYNCH, AMANDA	Applicant: CHI OPERATING INC	Review Due:

Status: **COMPLETE**

NEPA Coordinator Initial Review

NEPA Coordinator Final Review

Resource/Activity	Not Present	Not Impacted	** May be Impacted	Reviewer	COAs/Stips Req	Sign Off Date
Wastes, Hazardous or Solid*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Public Health and Safety	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Environmental Justice*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
General Topography/Surface Geology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Prime or Unique Farmlands*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Lands/Realty, ROW	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Access/Transportation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Vegetation/Forestry	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Livestock Grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Invasive, Non-Native Species*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Air Quality*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Floodplains*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Water Quality Surface/Ground*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Watershed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Mineral Materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Potash	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Federally Proposed, Threatened or Endangered Species*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Brooks, Cassandra	<input type="checkbox"/>	08/05/2013
USFWS Concurrence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Wetlands/Riparian Zones*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Special Status Species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Wildlife Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Cave/Karst Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
ACEC's*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Wild/Scenic Rivers*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Wilderness*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Outdoor Recreation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Visual Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Native American Religious Concerns*	Unk	Unk	Unk	Boeke, Bruce	<input type="checkbox"/>	08/02/2013
Cultural Resources*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Paleontology	Unk	Unk	Unk	13-795		

* "Critical Element" --- must be addressed in all NEPA documents

** "Affected Element" --- must be addressed in the attached EA

*1 May affect T&E, Not likely to be Adversely Affected

*2 May affect T&E, likely to be Adversely Affected

Reason for Delay:

United States Department of the Interior
Bureau of Land Management
Pecos District, Carlsbad Field Office

DOI-BLM-NM-P020-2013-1547-EA
Chi Operating, Inc.
Lease No. NMNM 428657 & NMNM 13232A
Arco 34 Federal 3H
Winchester 3 Federal Com 5H

CHAPTER 1. INTRODUCTION

1.1. Background

Chi Operating, Inc. (Chi) has applied for a permit to drill two horizontal oil wells on two dual well pads on Federal surface approximately 10 miles northeast of Carlsbad, NM. In the application, Chi is also applying to construct new access road and install a production facility. The surface location for the proposed well is as follows:

Arco 34 Federal 3H:

Surface Hole Location: 330' FSL & 330' FWL, Section 34, T. 19 S., R. 28 E.

Bottom Hole Location: 330' FNL & 330' FWL, Section 34, T. 19 S., R. 28 E.

Winchester 3 Federal Com 5H:

Surface Hole Location: 330' FNL & 660' FWL, Section 3, T. 20 S., R. 28 E.

Bottom Hole Location: 330' FSL & 990' FWL, Section 3, T. 20 S., R. 28 E.

Preparing Office:

Pecos District, Carlsbad Field Office
620 East Greene Street
Carlsbad, NM 88220

1.2. Purpose and Need for Action

The purpose for the action is to provide the applicant with reasonable access to extract fluid minerals from a federal oil and gas lease.

The need for the action is established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reasonable access to develop a federal oil and gas lease.

1.3. Decision to be Made

The BLM will decide whether or not to approve the application(s) for permit to drill, and if so, under what terms and conditions.

1.4. Conformance with Applicable Land Use Plan(s)

The 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment and the 2008 Special Status Species Approved Resource Management Plan Amendment have been reviewed, and it has been determined that the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5.

Name of Plan: 1997 Carlsbad Approved Resource Management Plan Amendment

Date Approved: October 1997

Decision: [Page 4] "Approximately 3,907,700 acres (95 percent of the oil and gas mineral estate) will be open to leasing and development under the BLM's standard terms and conditions, the Surface Use and Occupancy Requirements (Appendix 1), the Roswell District Conditions of Approval (Appendix 2), and the Practices for Oil and Gas Drilling and Operations in Cave and Karst Areas (Appendix 3)." The proposed well lies within the 95 percent of oil and gas mineral estate open to development and complies with the Surface Use and Occupancy Requirements.

1.5. Scoping, Public Involvement, and Issues

The Carlsbad Field Office (CFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located in the lobby of the CFO as well as on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html).

The CFO uses Geographic Information Systems (GIS) in order to identify resources that may be affected by the proposed action. A map of the project area is prepared to display the resources in the area and to identify potential issues.

The proposed action was circulated among CFO resource specialists in order to identify any issues associated with the project. The issues that were raised include:

- How would Air Quality be impacted?
- How would Climate Change be impacted?
- How would grazing be impacted?
- How would soils be impacted?
- How would vegetation be impacted?
- How would wildlife be impacted?
- How would noxious weeds be impacted?
- How would cultural resources be impacted?

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Proposed Action

Chi proposes to drill a four horizontal oil well from two dual wells pads on federal surface. The well pad surface will need to be extended. In order to drill the proposed well with a closed loop system, a 500 x 250 foot surfaced well pad would be needed. Chi would take about 30 days to drill the well. After the well is drilled and completed, the well location would be downsized to a maximum 325 x 250 foot surfaced pad. All areas not needed for production would be reclaimed. It is likely that the wells would be drilled within four years.

Arco 34 Federal 3H

Interim Reclamation & Production Facilities
 ARCO 34 FEDERAL 3H
 V-DOOR EAST

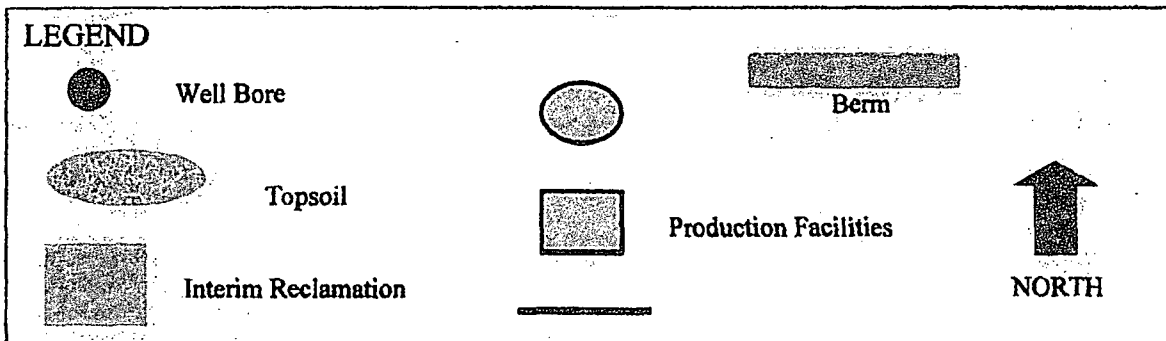
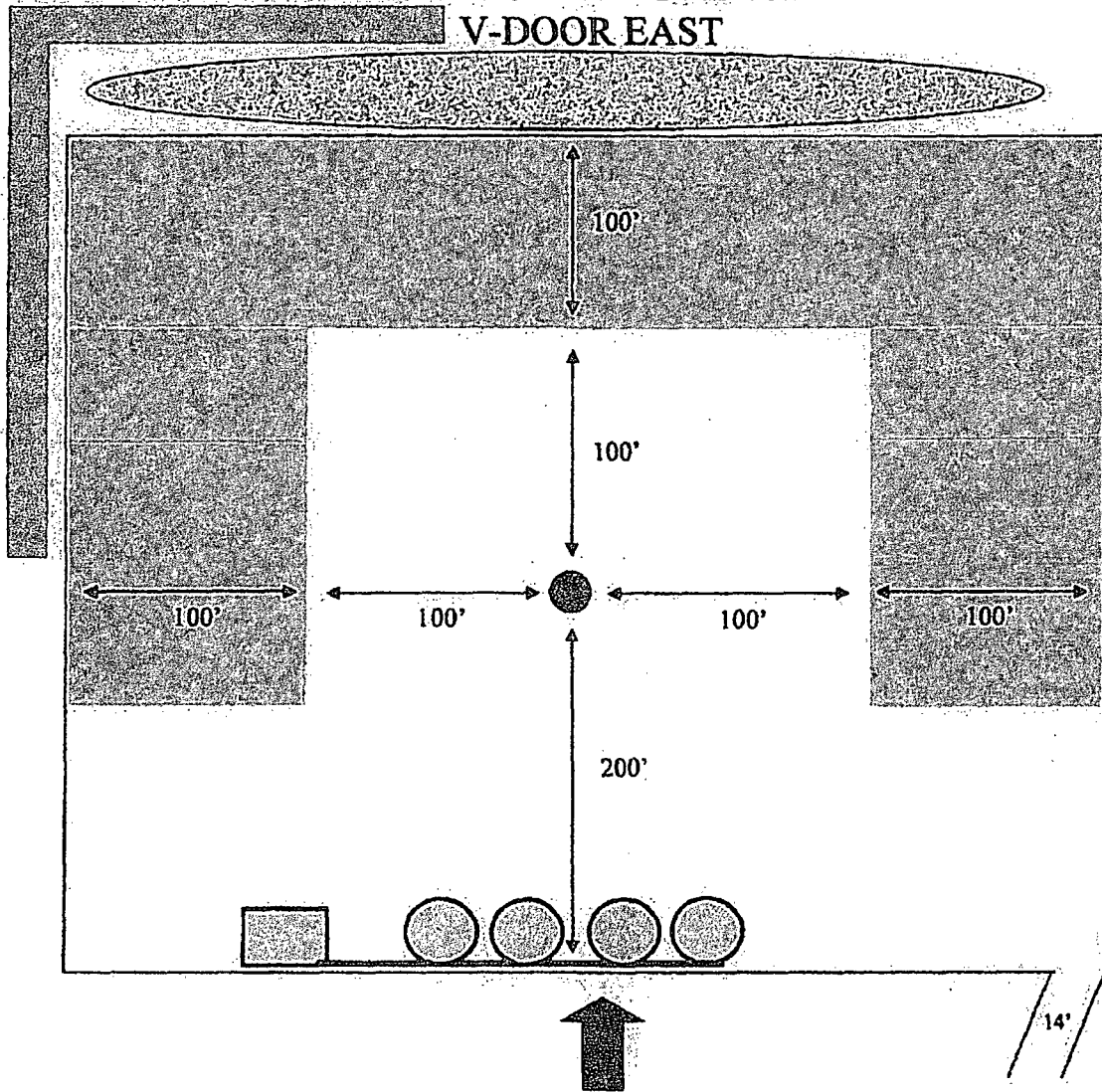


Figure 1.
Proposed Tank Battery:
 In the event the well is found to be productive a tank battery will be constructed on the south edge of the pad (Figure 1).

NEW MEXICO.

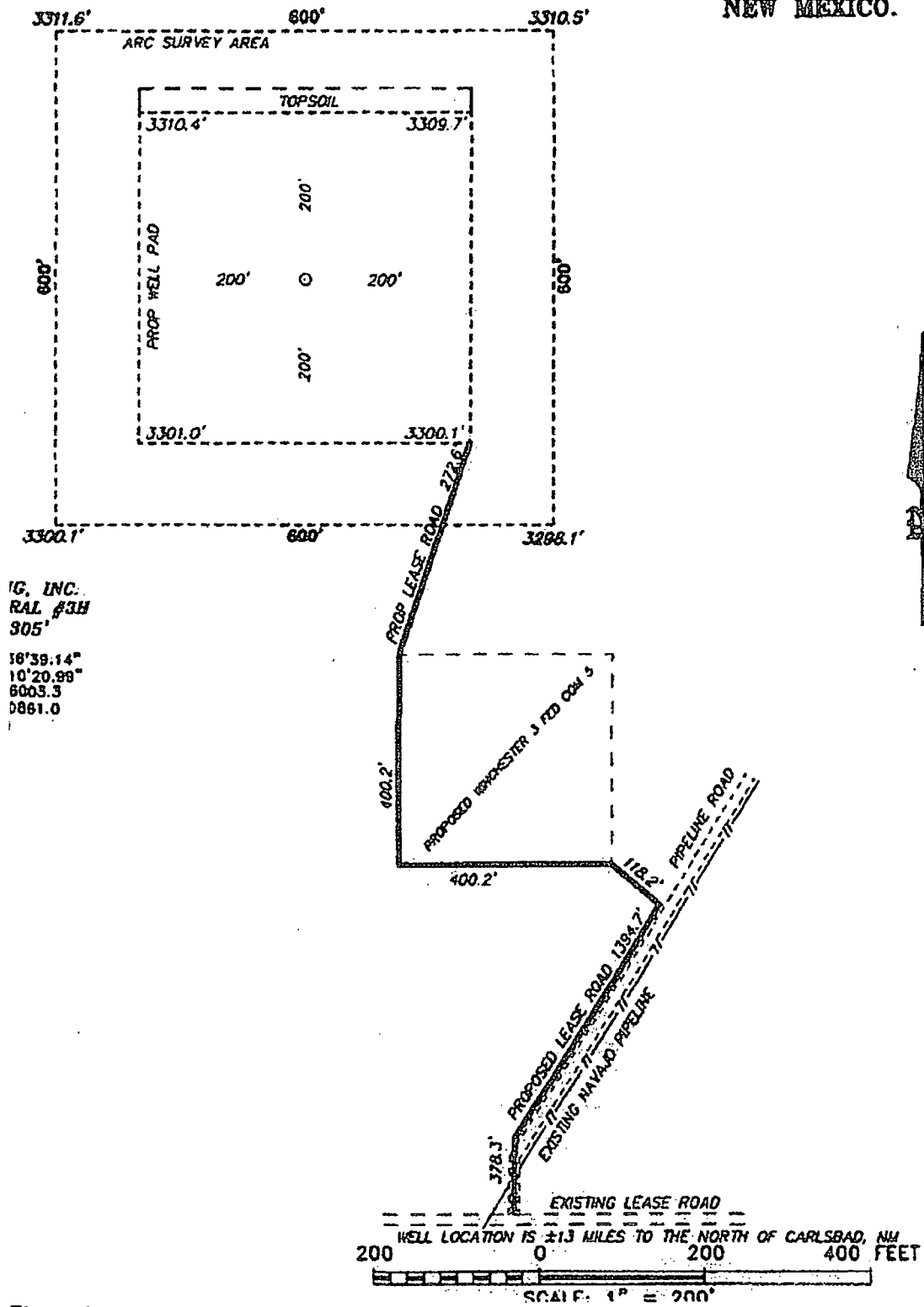


Figure 2.
Proposed Access Road:

The road will exit the pad on the southeast and travel southwest for approximately 277 feet, then south for 400 feet, then east for 400 feet, then southeast for 118 feet, then southwest for 1,394 feet, then south for 378 feet to an existing lease road (Figure 2).

Winchester 3 Federal Com 5H

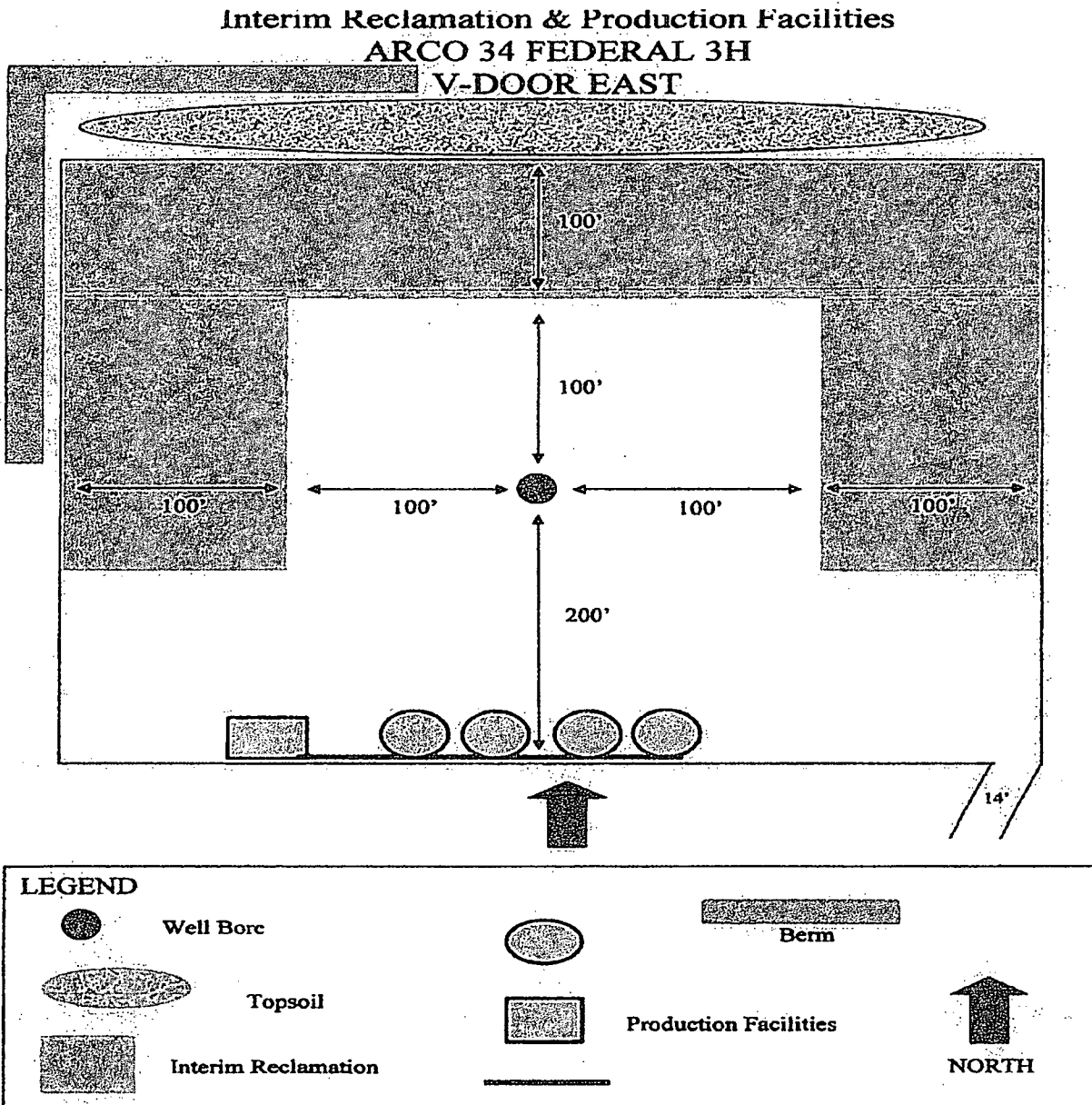


Figure 3.

Proposed Tank Battery:

In the event the well is found to be productive a tank battery will be constructed on the south edge of the pad (Figure 3).

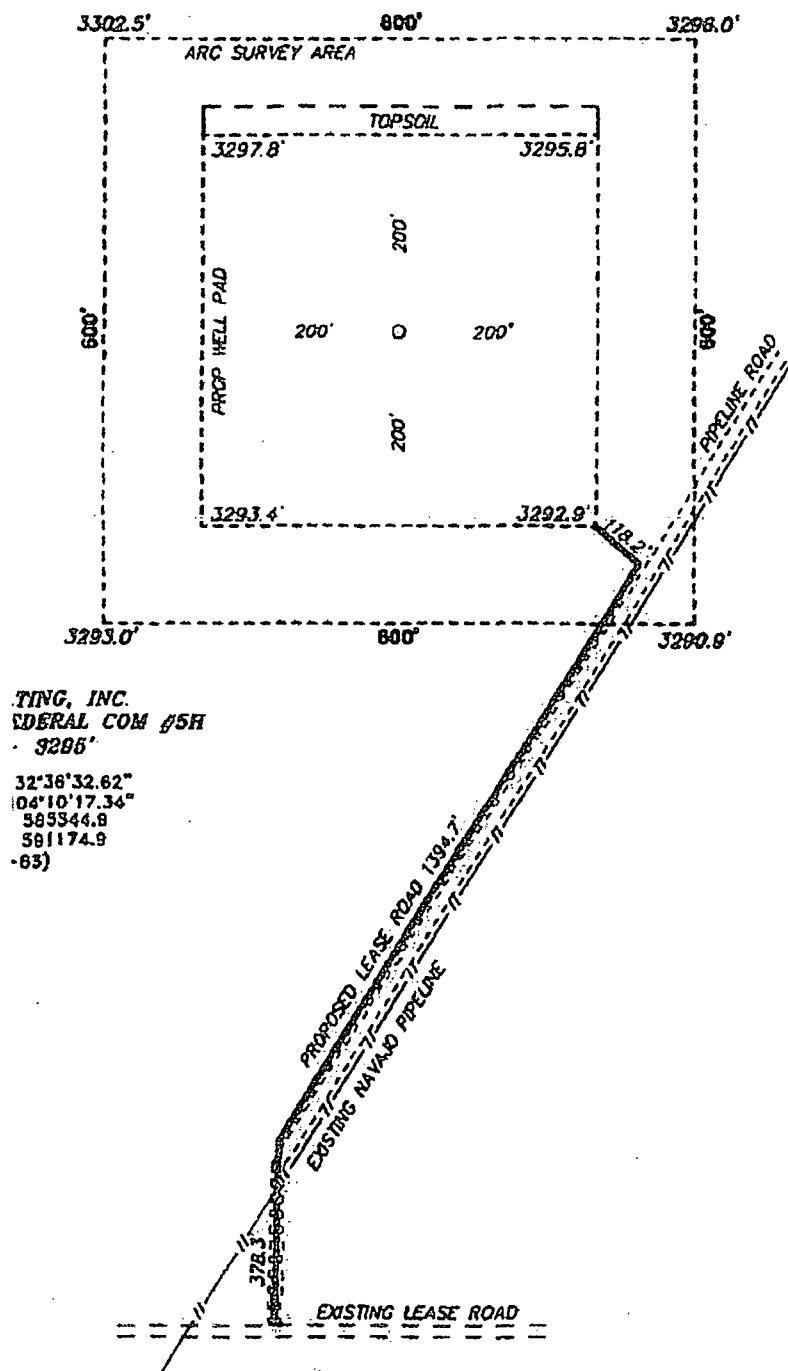


Figure 4.
Proposed Access Road:
 The road will exit the pad on the southeast for 118 feet, then southwest for 1,394 feet, then south for 378 feet to an existing lease road (Figure 4).

Total Surface Disturbance:
 New surface disturbance for the proposed well pad and road would be about 8.71 acres.

Mitigation Measures: The Pecos District Conditions of Approval.

2.2. No Action

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.3. Alternatives Considered but Eliminated from Detailed Analysis

Field investigation of all areas of proposed surface disturbance for the Proposed Action were inspected to ensure that potential impacts to natural and cultural resources would be minimized through the implementation of mitigation measures. These measures are described for all resources potentially impacted in Chapter 3 of this EA. Therefore, no additional alternative other than those listed above have been considered for this project.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Projects requiring approval from the BLM such as Applications for Permit to Drill can be denied when the BLM determines that adverse effects to resources (direct or indirect) cannot be mitigated to reach a Finding of No Significant Impact (FONSI). Under the No Action Alternative, the proposed project would not be drilled, built or constructed and there would be no new impacts to natural or cultural resources from oil and gas production. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of environmental effects of the analyzed alternatives.

During the analysis process, the interdisciplinary team considered several resources and supplemental authorities. The interdisciplinary team determined that the resources discussed below would be affected by the proposed action.

3.1 Air Resources

3.1.1. Affected Environment

The two components of air resources are air quality and climate. Much of the information referenced in this section is incorporated from the Air Resources Technical Report for Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Resources Technical Report). This document summarizes the technical information related to air resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

Air Quality

The Air Resources Technical Report lists the National Ambient Air Quality Standards (USDI, BLM 2013, pp.4-5), describes the types of data used for description of the existing conditions (USDI BLM, 2011, p. 5-6) and how the pollutants are related to the activities involved in oil and gas development (USDI BLM, 2011, pp.6-14). Monitored values of criteria pollutants in the Carlsbad Field Office (CFO) are described below.

Criteria Pollutants

EPA's Green Book web page (EPA, 2012) reports that the Permian Basin is in attainment for all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act. The CFO recently contracted with Applied Enviro Solutions (AES) to provide an emissions inventory for the field office area, including

Chaves, Eddy and Lea Counties (AES, 2011). This information is more recent than that available from EPA's most recent emissions inventory and is specific to the field office area.

Table 1 shows monitored design values for ozone for the recent past in the CFO. Design values are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. Monitored design values for the other criteria pollutants are shown in **Error! Reference source not found.** There is no monitoring conducted for lead and carbon monoxide (CO) in southeastern New Mexico; however, concentrations of these pollutants are expected to be low in rural areas and are therefore not monitored. The New Mexico Environment Department discontinued monitoring for SO₂ in Eddy County due to very low monitored concentrations. Monitoring data for PM₁₀ and PM_{2.5} in southeastern New Mexico are not available due to incomplete data collection.

Table 1. Ozone Monitored Design Values for the Carlsbad Field Office Area (ppm)

Site	2006-2008	2007-2009	2008-2010	2009-2011	NAAQS
Hobbs (Lea County)	0.068	0.063	0.059	0.061	0.075
Carlsbad-Artesia (Eddy County)	0.069	0.066	0.067	0.069	0.075

Source: AES, 2011
EPA, 2013

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (USDI BLM 2013, pp. 11-13). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP impacts by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of the 2005 NATA shows that cancer, neurological, and respiratory risks in Chaves, Eddy and Lea Counties are generally lower than statewide and national levels (EPA, 2013).

Table 2. 2011 Design Concentrations of Criteria pollutants in Lea and Eddy counties (EPA, 2012)

Pollutant	Design Value	Averaging period	NAAQS	NMAAQs
O ₃	0.069 ppm (Lea County)	8-hour	0.075 ppm ¹	
	0.061 ppm (Eddy County)			
NO ₂	6 ppb (Lea County)	Annual	53 ppb	50 ppb
	3 ppb (Eddy County)			
NO ₂	42 ppb	1-hour	100 ppb ²	

¹ Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
² 98th percentile, averaged over 3 years

Climate

The planning area is located in a semiarid climate regime typified by dry windy conditions, limited rainfall, hot summers and mild winters. Summertime maximum temperatures are generally in the 90s (all temperatures are in Fahrenheit degrees) with occasional temperatures over 110. Winter minimum temperatures are generally in between 20s and 30s with extremes remaining above zero degrees. Precipitation is mainly in the form of summer thunderstorms associated with the Southwest Monsoon though occasional Pacific storms drop south into New Mexico during the winter. Table 2 shows climate normal 1981-2010 for Carlsbad.

Table 2. Climate Normals for Carlsbad, 1981-2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	42.6	47.2	54.0	62.4	71.5	79.3	81.2	79.9	73.2	62.9	51.5	42.8
Average Maximum Temperature (°F)	57.5	62.7	70.2	78.5	86.9	94.4	94.6	93.1	87.0	78.1	67.1	57.5
Average Minimum Temperature (°F)	27.6	31.7	37.9	46.2	56.0	64.3	67.7	66.6	59.4	47.7	35.8	28.0
Average Precipitation (inches)	0.47	0.54	0.51	0.64	1.17	1.53	2.01	1.83	2.11	1.16	0.81	0.63

Source: NOAA, 2011

The Air Resources Technical Report summarizes information about greenhouse gas emissions from oil and gas development and their effects on national and global climate conditions. While it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change.

3.1.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Methodology and assumptions for calculating air pollutant and greenhouse gas (GHG) emissions are described in the Air Resources Technical Document (USDI BLM, 2013). This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one well. If more than one well is being proposed, the emissions and percentage of area emissions listed below need to be multiplied by the number of wells. The calculators give an approximation of criteria pollutant, HAP, and GHG emissions to be compared to regional and national levels (USDI BLM, 2013). Also incorporated into this document are the sections describing the assumptions that the CFO used in developing the inputs for the calculator (USDI BLM, 2013, pp.27-29).

Air Quality

Criteria Pollutants

Table 3 shows estimated emissions for criteria pollutants for a variety of activities including construction, maintenance and operations. Because the calculators are not able to estimate ozone emissions, volatile organic compounds (VOCs), a precursor to ozone, are estimated instead. Based on past development, emissions have been calculated for a maximum, minimum, and average development scenario. With the exception of operations, these emissions would be temporary and short lived.

Table 3. Criteria Pollutant Emissions Estimated for the Proposed Action Activities (tons)

		Construction	Well (Re)Completion	Well Workover	Annual Operations	Annual Road Maintenance	Reclamation
PM ₁₀	Max	2.64	0.27	0.03	1.45	0.00	0.02
	Min	0.10	0.00	0.00	0.02	0.00	0.01
	Avg	0.49	0.04	0.01	0.03	0.00	0.01
PM _{2.5}	Max	0.74	0.00	0.01	0.21	0.00	0.00
	Min	0.14	0.00	0.00	0.02	0.00	0.00
	Avg	0.30	0.00	0.01	0.02	0.00	0.00
NO _x ^a	Max	9.46	11.67	0.22	1.14	0.00	0.00
	Min	1.96	0.00	0.04	0.46	0.00	0.00
	Avg	3.77	0.16	0.13	0.47	0.00	0.00
SO ₂	Max	0.20	3.05	0.00	0.00	0.00	0.00
	Min	0.04	0.00	0.00	0.00	0.00	0.00
	Avg	0.08	0.04	0.00	0.00	0.00	0.00
CO	Max	2.61	0.08	0.08	1.35	0.00	0.00
	Min	0.50	0.00	0.01	0.92	0.00	0.00
	Avg	1.05	0.04	0.05	0.92	0.00	0.00

VOC	Max	0.74	0.04	0.02	50.02	0.00	0.00
	Min	0.14	0.00	0.00	3.50	0.00	0.00
	Avg	0.30	0.01	0.01	4.13	0.00	0.00
^a Nitrogen oxides							

Table 5 compares emissions from annual operations with total human-caused emissions for Chaves, Eddy and Lea Counties in 2007.

Table 4. Emissions from Annual Operations Compared with Area Emissions for 2007 (tons)

		Annual Operations	Area Emissions ^a	Project Emissions as a % of Area Emissions
PM ₁₀	Max	1.45	78,855	0.00184
	Min	0.02	78,855	0.00003
	Avg	0.03	78,855	0.00004
PM _{2.5}	Max	0.21	10,673	0.00197
	Min	0.02	10,673	0.00019
	Avg	0.02	10,673	0.00019
NO _x	Max	1.14	44,749	0.00255
	Min	0.46	44,749	0.00103
	Avg	0.47	44,749	0.00105
SO ₂	Max	0.00	61,956	0.00000
	Min	0.00	61,956	0.00000
	Avg	0.00	61,956	0.00000
CO	Max	1.35	60,898	0.00222
	Min	0.92	60,898	0.00151
	Avg	0.92	60,898	0.00151
VOC	Max	50.02	15,898	0.31463
	Min	3.50	15,898	0.02202
	Avg	4.13	15,898	0.02598

^a AES, 2011

Hazardous Air Pollutants (HAPs)

The formulas used for calculating HAPs in the calculators are very imprecise. For many processes it is assumed that emission of HAPs will be equivalent to 10% of VOC emissions. Therefore the HAP emissions reported here should be considered a very gross estimate and likely an overestimate. The calculator estimates that a minimum of 0.22 tons/year, an average of 0.31 tons/year, and a maximum of 5.63 tons/year of HAPs would be emitted during the construction, and first year of operation of a typical gas well in the Permian Basin. The emissions are a combination of HAP constituents existing in natural gas and released during the completion and operation process. Most gas vented during the completion process is flared, which substantially reduces the quantity of HAPs released.

Greenhouse Gases (GHGs)

Information about GHGs and their effects on national and global climate is presented in the Air Resources Technical Report (USDI BLM, 2013, pp. 22-23). Analysis of the impacts of the proposed action on GHG emissions are reported below. Only the GHG emissions associated with exploration and production of oil and gas will be evaluated because the environmental impacts of GHG emissions from oil and gas consumption, such as refining and emissions from consumer-vehicles, are not effects of the proposed action as defined by the Council on Environmental Quality because they do not occur at the same time and place as the action. Thus, GHG emissions from consumption of oil and gas do not constitute a direct effect that is analyzed under NEPA. Nor is consumption an indirect effect of oil and gas production because production is not a proximate cause of GHG emissions resulting from consumption. However, emissions from consumption and other activities are accounted for in the cumulative effects analysis.

The two primary GHGs associated with the oil and gas industry are carbon dioxide (CO₂) and methane (CH₄). Because CH₄ has a global warming potential 23 times greater than the warming potential of CO₂, the EPA's Office of Transportation and Air Quality (OTAQ) uses the CO₂ equivalent (CO_{2e}) which takes the difference in warming potential into account for reporting the national inventory for GHG emissions. The EPA is also moving towards using the CO_{2e} metric to characterize the benefits of its voluntary programs to be consistent with international practice and to allow for ease in comparison of emissions from different GHGs. Emissions will generally be expressed in metric tons of CO_{2e} in this document.

Estimated emissions from the calculator based on a maximum, minimum, and average development scenario are presented in Table 5.

Table 5. Estimated GHG Emissions

		Construction	Well (Re)Completion	Well Workover	Annual Operations	Annual Road Maintenance	Reclamation
CO ₂	Max	1052.10	411.0	17.8	278.2	0.09	0.54
	Min	213.20	0.2	3.5	62.1	0.09	0.40
	Avg	421.30	10.1	10.6	65.0	0.09	0.42
CH ₄	Max	0.01	0.0	0.0	37.6	0.00	0.00
	Min	0.00	0.0	0.0	0.4	0.00	0.00
	Avg	0.00	0.0	0.0	1.0	0.00	0.00
N ₂ O ^a	Max	0.01	0.0	0.0	0.0	0.00	0.00
	Min	0.00	0.0	0.0	0.0	0.00	0.00
	Avg	0.00	0.0	0.0	0.0	0.00	0.00
CO _{2e}	Max	1055.90	411.1	17.9	1068.7	0.09	0.55
	Min	214.00	0.2	3.5	70.6	0.09	0.40
	Avg	422.80	10.1	10.7	86.0	0.09	0.43
CO _{2e} metric tons	Max	958.10	373.0	16.2	969.8	0.08	0.5
	Min	194.20	0.2	3.2	64.1	0.08	0.36
	Avg	383.70	9.2	9.7	78.0	0.08	0.39

^a Nitrous oxide

Cumulative Impacts

The CFO manages federal hydrocarbon resources in Eddy, Lea, and part of Chavez County. There are approximately 23,500 wells in these counties. About 16,060 of the wells in these counties are federal wells. Data from 2000 to 2010 indicate on average approximately 418 wells are drilled in these counties on federal mineral lands annually in the CFO.

The following analysis of cumulative impacts of the proposed action on air quality will be limited to the Permian Basin area of New Mexico. The cumulative impacts of GHG emissions and their relationship to climate change are evaluated at the national and global levels in the Air Resource Technical Report (USDI BLM, 2013).

Activities that contribute to levels of air pollutant and GHG emissions in the Permian Basin include fossil fuel industries, vehicle travel, industrial construction, potash mining, and others. A complete inventory of criteria pollutant emissions can be found in a report titled "Southeast New Mexico Inventory of Air Pollutant Emissions and Cumulative Air Impact Analysis 2007" (AES 2011). The Air Resources Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present and reasonably foreseeable impacts to air resources (USDI BLM, 2013). It includes a summary of emissions on the national and regional scale by industry source. Sources that are considered to have notable contributions to air quality impacts and GHG emissions include electrical generating units, fossil fuel production (nationally and regionally), and transportation.

The emissions calculator estimated that there could be very small direct increases in several criteria pollutants, HAPs, and GHGs as a result of the proposed action. Altogether, the emissions resulting from the proposed action could result in a 0.003% increase of criteria and HAP emissions in Eddy, Lea, and Chavez Counties and a 0.001% increase in GHG emissions in New Mexico (Eddy, Lea, and Chavez County GHG emissions are not currently available).

Air Quality

The very small increase in emissions that could result from approval of the proposed action would not result in Eddy, Lea, or Chavez County exceeding the NAAQS for any criteria pollutants. The applicable regulatory threshold for HAPs is the oil and gas industry National Emissions Standards for Hazardous Air Pollutants, which are currently under review by the EPA. The emissions from the proposed well are not expected to impact the 8-hour average ozone concentrations, or any other criteria pollutants in the Permian Basin.

Climate Change

The Air Resources Technical Report discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions. It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands. However, the small incremental increase in GHGs from this project will not have a measurable impact on climate.

Mitigation Measures

None.

3.2. Range

3.2.1. Proposed Action

The proposed action is within the Burton South allotment, #77014. This allotment is a yearlong cow-calf deferred rotation operation. Range improvement projects such as windmills, water delivery systems (pipelines, storage tanks, and water troughs), earthen reservoirs, fences, and brush control projects are located within the allotment, but not within the vicinity of this project. In general, an average rating of the range land within this area is six acres/AUM (Animal Unit Months). In order to support one cow, for one year, about 72 acres is needed. This equals about nine cows per section.

Direct and Indirect Effects

The loss of 8.71 acres of vegetation will not affect the Animal Unit Months (AUMs) which are authorized for livestock use in this area. There are occasional livestock injuries or deaths due to accidents such as collisions with vehicles, falling into excavations and ingesting plastic or other materials present at the work site. If further development occurs, the resulting loss of vegetation could reduce the AUMs authorized for livestock use in this area.

Impacts to the ranching operation are reduced by the following standard practices such as utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production, and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

None

3.3. Soils

3.3.1. Proposed Action

The area of the proposed action is mapped as PA-Pajarito loamy fine sand, 0-3% slopes. These are sandy soils and are described below:

Sandy

Typically, these soils are deep, well-drained to excessively drained, non-calcareous to weakly calcareous sands. They are found on undulating plains and low hills in the "sand country" east of the Pecos River. Permeability is moderate to very rapid, water-holding capacity is low to moderate, and little runoff occurs. These soils are susceptible to wind erosion and careful management is needed to maintain a cover of desirable forage plants and to control erosion. Reestablishing native plant cover could take 3-5 years due to unpredictable rainfall and high temperatures.

Low stability soils, such as the sandy and deep sands found on this area, typically contain only large filamentous cyanobacteria. Cyanobacteria, while present in some locations, are not significant. While they occur in the top 4 mm of the soil, this type of soil crust is important in binding loose soil particles together to stabilize the soil surface and reduce erosion. The cyanobacteria also function in the nutrient cycle by fixing atmospheric nitrogen, contributing to soil organic matter, and maintaining soil moisture. Cyanobacteria are mobile, and can often move up through disturbed sediments to reach light levels necessary for photosynthesis. Horizontally, they occur in nutrient-poor areas between plant clumps. Because they lack a waxy epidermis, they tend to leak nutrients into the surrounding soil. Vascular plants such as grasses and forbs can then utilize these nutrients.

Direct and Indirect Effects

There is a potential for wind and water erosion due to the erosive nature of these soils once the cover is lost. There is always the potential for soil contamination due to spills or leaks. Soil contamination from spills or leaks can result in decreased soil fertility, less vegetative cover, and increased soil erosion.

Impacts to soil resources are reduced by the following standard practices which include: utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

None

3.4. Vegetation

3.4.1. Proposed Action

Sandy

Vegetation within this project area is dominated by warm season, short and midgrasses such as black grama, bush muhly, various dropseeds, and three-awns. Bluestems, bristlegrass, lovegrasses, and hooded windmillgrass make up some of the less common grasses. Shrubs include mesquite, shinnery oak, sand sagebrush, broom snakeweed, and yucca. A large variety of forbs occur and production fluctuates greatly from year to year, and season to season. Common forbs include bladderpod, dove weed, globemallow, annual buckwheat, and sunflower.

Direct and Indirect Effects

Approximately 8.71 acres of vegetation will be removed when the well pad and road are constructed. This impact will last as long as the well is productive. However, interim reclamation, conducted within 6

months of the well being completed will reduce this area. When the well is plugged and abandoned, the rest of the pad will be reclaimed and potentially re-vegetate in 3-5 years, depending on timely rainfall. By using the proper seed mix (Seed Mixture 2/Sandy Soil), good seed bed preparation, and proper seeding techniques, this impact will be short term, two or three growing seasons.

Very little vegetation will be removed when the flow line is installed. Typical surface pipeline installation practices do not require blading or clearing the right-of-way corridor. Disturbance to vegetation would include compression of the vegetation caused by construction vehicles traveling along the right-of-way corridor. Vegetation should quickly return to the disturbed area without requiring the application of a seed mixture.

Impacts to vegetation are reduced by the following standard practices which include: utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

Interim reclamation will be conducted on all disturbed areas not needed for active support of production operations, and if caliche is used as a surfacing material it will be removed at time of reclamation to enhance re-establishment of vegetation. Existing disturbance will be included in the right-of-way width, construction vehicles will be restricted to existing disturbance, and no blading is permitted along the proposed route.

3.5. Visual Resource Management

3.5.1. Proposed Action

The Visual Resource Management (VRM) program identifies visual values, establishes objectives in the RMP for managing those values, and provides a means to evaluate proposed projects to ensure that visual management objectives are met.

This proposed project occurs within a Visual Resource Management Class IV zone. The objective of VRM Class IV is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic landscape elements of color, form, line and texture.

Direct and Indirect Effects

This project will cause some short term and long-term visual impacts to the natural landscape. Short term impacts occur during construction operations and prior to interim reclamation. These include the presence of construction equipment vehicle traffic. However, interim reclamation, conducted within 6 months after construction will reduce this area by about 1/3 by recontouring and revegetating.

Long term impacts are visible to the casual observer through the life of the well. These include the visual evidence of storage tanks, piping, pump jacks, pads and roads which cause visible contrast to form, line, color, and texture. Removal of vegetation due to road and drill pad construction exposes bare soil lighter in color and smoother in texture than the surrounding vegetation. The surfacing of these areas with caliche materials causes further contrasts. Those contrasts will be visible to visitors in the area.

After final abandonment and reclamation, the pad, road and associated infrastructure will be removed, reclaimed, recontoured and revegetated, thereby eliminating visual impacts.

Short and long term impacts are minimized by best management practices such as color selection, reducing cut and fill, screening facilities with natural features and vegetation, interim reclamation and contouring roads along natural changes in elevation.

Mitigation Measures and Residual Effects

Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color Shale Green, Munsell Soil Color No. 5Y 4/2"

3.6. Wildlife (Other than Threatened, Endangered, and Sensitive)

3.6.1. Proposed Action

This project occurs in a transition zone from Chihuahuan Desert habitat type to the west and to a sand shinnery habitat type to the east and is primarily dominated by mesquite scrublands intermixed with various grasses. This mesquite scrubland community extends across the southern Great Plains, occupying portions of north and west Texas, western Oklahoma, and southeast New Mexico. Portions of Eddy and Lea counties consist of mesquite scrublands to a lesser degree. The characteristic feature of the mesquite scrubland community is co-dominance by various species of grasses and cacti.

Various bird, mammal, reptile and invertebrate species inhabit this ecosystem in southeast New Mexico. Herbivorous mammals include mule deer, pronghorn, and numerous rodent species. Carnivores include coyote, bobcat, badger, striped skunk, and swift fox. Two upland game bird species, scaled quail and mourning dove, are prevalent throughout southeast New Mexico. Many species of songbirds nest commonly, with a much larger number that use the habitat during migration or for non-nesting activities. Common avian predators include northern harrier, Swainson's hawk, red-tailed hawk, kestrel, burrowing owl, and Chihuahuan raven. Numerous snake and lizard species also inhabit this ecosystem.

Direct and Indirect Effects

Impacts of the proposed action to wildlife in the localized area may include: possible mortality, habitat degradation and fragmentation, avoidance of habitat during construction and drilling activities and the potential loss of burrows and nests.

Standard mitigation measures and elements of the proposed action minimize these impacts to wildlife. These include: the NTL-RDO 93-1 (modification of open-vent exhaust stacks to prevent perching and entry from birds and bats), nets on open top production tanks, interim reclamation, closed loop systems, exhaust mufflers, berming collection facilities, minimizing cut and fill, road placement, and avoidance of wildlife waters, stick nests, drainages, playas and dunal features. These practices reduce mortality to wildlife and allow habitat to be available in the immediate surrounding area thus reducing stressors on wildlife populations at a localized level. Impacts to local wildlife populations are therefore expected to be minimal.

Mitigation Measures:

3.7. Noxious Weeds and Invasive Plants

3.7.1. Proposed Action

There are four plant species within the CFO that are identified in the New Mexico Noxious Weed List Noxious Weed Management Act of 1998. These species are African rue, Malta starthistle, Russian olive, and salt cedar. African rue and Malta starthistle populations have been identified throughout the Carlsbad Field Office and mainly occur along the shoulders of highway, state and county roads, lease roads and well pads (especially abandoned well pads). The CFO has an active noxious weed monitoring and

treatment program, and partners with county, state and federal agencies and industry to treat infested areas with chemical and monitor the counties for new infestations.

Direct and Indirect Effects

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. The construction of the proposed action may contribute to the establishment and spread of African rue and Malta starthistle. The main mechanism for seed dispersion would be by equipment and vehicles that were previously used and/or driven across noxious weed infested areas. Noxious weed seed could be carried to and from the project area by construction equipment and transport vehicles.

Mitigation Measures

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.

3.8. Cultural and Historical Resources

3.8.1. Proposed Action

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 12,000 – 8,000 B.C.), Archaic (ca. 8,000 B.C. – A.D. 950), Ceramic (ca. A.D. 600 – 1540), Protohistoric and Spanish Colonial (ca. A.D. 1400 – 821), and Mexican and American Historical (ca. A.D. 1822 to early 20th century). Sites representing any or all of these periods are known to occur within the region. A more complete discussion can be found in *Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico; An Overview of Cultural Resources in the Roswell District, Bureau of Land Management* published in 1989 by the U.S. Department of Interior, Bureau of Land Management.

Native American Religious Concerns

The BLM conducts Native American consultation regarding Traditional Cultural Places (TCP) and Sacred Sites during land-use planning and its associated environmental impact review. In addition, during the oil & gas lease sale process, Native American consultation is conducted to identify TCPs and sacred sites whose management, preservation, or use would be incompatible with oil and gas or other land-use authorizations. With regard to Traditional Cultural Properties, the BLM has very little knowledge of tribal sacred or traditional use sites, and these sites may not be apparent to archaeologists performing surveys in advance of drilling. However, to date no TCPs or sacred sites have been identified in the vicinity of the current project area.

Direct and Indirect Effects

Cultural resources on public lands, including archaeological sites and historic properties, are protected by federal law and regulations (Section 106 of the National Historic Preservation Act and the National Environmental Policy Act). Class III cultural surveys will be conducted of the area of effect for realty or oil and gas projects proposed on these lands prior to the approval of any ground disturbing activities to identify any resources eligible for listing on the National Register of Historic Places. Cultural resource inventories minimize impacts to cultural sites and artifacts by avoiding these resources prior to construction of the proposed project. If unanticipated or previously unknown cultural resources are discovered at any time during construction, all construction activities shall halt and the BLM authorized officer will be immediately notified. Work shall not resume until a Notice to Proceed is issued by the BLM.

A Class III cultural resource inventory was conducted of the area of effect, no historic properties were identified within the area of potential effect.

Mitigation Measures

None

3.9. Cumulative Effects

Cumulative impacts are the combined effect of past projects, specific planned projects, and other reasonably foreseeable future actions within the project study area to which oil and gas exploration and development may add incremental impacts. This includes all actions, not just oil and gas actions that may occur in the area including foreseeable non-federal actions.

The combination of all land use practices across a landscape has the potential to change the visual character, disrupt natural water flow and infiltration, disturb cultural sites, cause minor increases in greenhouse gas emissions, fragment wildlife habitat and contaminate groundwater. However, the likelihood of these impacts occurring is minimized through standard mitigation measures, special Conditions of Approval and ongoing monitoring studies.

All resources are expected to sustain some level of cumulative impacts over time; however these impacts fluctuate with the gradual abandonment and reclamation of wells. As new wells are being drilled, there are others being abandoned and reclaimed. As the oil field plays out, the cumulative impacts will lessen as more areas are reclaimed and less is developed.

CHAPTER 4. SUPPORTING INFORMATION

4.1. List of Preparers

Prepared by: Amanda L. Lynch, Natural Resource Specialist BLM-CFO

Date: 07/30/2013

The following individuals aided in the preparation of this document:

Bruce Boeke, Archaeologist, BLM-CFO
Cassandra Brooks, Wildlife Biologist, BLM-CFO
Steve Daly, Soil Conservationist, BLM-CFO

4.2. References

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**DECISION RECORD (DR)
AND
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
Pecos District, Carlsbad Field Office**

**DOI-BLM-NM-P020-2013-1547-EA
Chi Operating, Inc.
Lease No. NMNM 428657 & NMNM 13232A
Arco 34 Federal 3H
Winchester 3 Federal Com 5H**

Purpose and Need for Action

Chi Operating, Inc. (Chi) has applied for a permit to drill two horizontal oil wells on two dual well pads on Federal surface approximately 10 miles northeast of Carlsbad, NM. In the application, Chi is also applying to construct new access road and install a production facility. The surface location for the proposed well is as follows:

Arco 34 Federal 3H:

**Surface Hole Location: 330' FSL & 330' FWL, Section 34, T. 19 S., R. 28 E.
Bottom Hole Location: 330' FNL & 330' FWL, Section 34, T. 19 S., R. 28 E.**

Winchester 3 Federal Com 5H:

**Surface Hole Location: 330' FNL & 660' FWL, Section 3, T. 20 S., R. 28 E.
Bottom Hole Location: 330' FSL & 990' FWL, Section 3, T. 20 S., R. 28 E.**

Mitigation Measures: The Pecos District Conditions of Approval including special requirements for electric lines, and surface pipelines.

Recommendation and Rationale:

Our analysis has shown with proper mitigation the proposed action would have minimal environmental impacts. The proposed action is consistent with the 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment. Therefore, it is recommended that this application be approved.

Prepared by:



Amanda L. Lynch, Natural Resource Specialist



Date

Finding of No Significant Impact/Decision Record:

I have reviewed this environmental assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action with the mitigation measures described above will not have any significant impacts on the human environment, no significant impacts to minority or low-income populations or communities have been identified for the proposed action and that an EIS is not required. I have determined that the proposed project is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures as described above.

James Stovall, Field Manager
Carlsbad Field Office, BLM

Date

Carlsbad Field Office NEPA Checklist

Monday, August 05, 2013

EA NEPA #:	DOI-BLM-NM-P020-2013-1547-EA	Project Type:	OIL WELL AND ROAD	Revd Date:
Reference Number:	NM428657	Project Name:	3H-ARCO 34 FEDERAL	Routing Started: 07/31/2013
Project Lead:	LYNCH, AMANDA	Applicant:	CHI OPERATING INC	Review Due:

Status: COMPLETE
 NEPA Coordinator Initial Review
 NEPA Coordinator Final Review

Resource/Activity	Not Present	Not Impacted	**May be Impacted	Reviewer	COAs/Stips Req	Sign Off Date
Wastes, Hazardous or Solid*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Public Health and Safety	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Environmental Justice*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
General Topography/Surface Geology	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Prime or Unique Farmlands*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Lands/Realty, ROW	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Access/Transportation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Vegetation/Forestry	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Livestock Grazing	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Invasive, Non-Native Species*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Air Quality*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Floodplains*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Water Quality Surface/Ground*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
Watershed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Mineral Materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Potash	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Federally Proposed, Threatened or Endangered Species*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Brooks, Cassandra	<input type="checkbox"/>	08/05/2013
USFWS Concurrence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Wetlands/Riparian Zones*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Special Status Species	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Wildlife Habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Cave/Karst Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
ACEC's*	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Wild/Scenic Rivers*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lynch, Amanda	<input type="checkbox"/>	07/31/2013
Wilderness*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Outdoor Recreation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Visual Resources	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Native American Religious Concerns*	Unk	Unk	Unk	Britt, Susan	<input type="checkbox"/>	08/02/2013
Cultural Resources*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Paleontology	Unk	Unk	Unk	13-794		

* "Critical Element" --- must be addressed in all NEPA documents
 ** "Affected Element" --- must be addressed in the attached EA
 Reason for Delay:

*1 May affect T&E, Not likely to be Adversely Affected
 *2 May affect T&E, likely to be Adversely Affected

United States Department of the Interior
Bureau of Land Management
Pecos District, Carlsbad Field Office

DOI-BLM-NM-P020-2013-1547-EA
Chi Operating, Inc.
Lease No. NMNM 428657 & NMNM 13232A
Arco 34 Federal 3H
Winchester 3 Federal Com 5H

CHAPTER 1. INTRODUCTION

1.1. Background

Chi Operating, Inc. (Chi) has applied for a permit to drill two horizontal oil wells on two dual well pads on Federal surface approximately 10 miles northeast of Carlsbad, NM. In the application, Chi is also applying to construct new access road and install a production facility. The surface location for the proposed well is as follows:

Arco 34 Federal 3H:

Surface Hole Location: 330' FSL & 330' FWL, Section 34, T. 19 S., R. 28 E.

Bottom Hole Location: 330' FNL & 330' FWL, Section 34, T. 19 S., R. 28 E.

Winchester 3 Federal Com 5H:

Surface Hole Location: 330' FNL & 660' FWL, Section 3, T. 20 S., R. 28 E.

Bottom Hole Location: 330' FSL & 990' FWL, Section 3, T. 20 S., R. 28 E.

Preparing Office:

Pecos District, Carlsbad Field Office
620 East Greene Street
Carlsbad, NM 88220

1.2. Purpose and Need for Action

The purpose for the action is to provide the applicant with reasonable access to extract fluid minerals from a federal oil and gas lease.

The need for the action is established by BLM's responsibility under the Mineral Leasing Act of 1920 as amended, the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976, the National Materials and Minerals Policy, Research and Development Act of 1980 and the Federal Onshore Oil and Gas Leasing Reform Act of 1987 to allow reasonable access to develop a federal oil and gas lease.

1.3. Decision to be Made

The BLM will decide whether or not to approve the application(s) for permit to drill, and if so, under what terms and conditions.

1.4. Conformance with Applicable Land Use Plan(s)

The 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment and the 2008 Special Status Species Approved Resource Management Plan Amendment have been reviewed; and it has been determined that the proposed action conforms with the land use plan terms and conditions as required by 43 CFR 1610.5.

Name of Plan: 1997 Carlsbad Approved Resource Management Plan Amendment

Date Approved: October 1997

Decision: [Page 4] "Approximately 3,907,700 acres (95 percent of the oil and gas mineral estate) will be open to leasing and development under the BLM's standard terms and conditions, the Surface Use and Occupancy Requirements (Appendix 1), the Roswell District Conditions of Approval (Appendix 2), and the Practices for Oil and Gas Drilling and Operations in Cave and Karst Areas (Appendix 3)." The proposed well lies within the 95 percent of oil and gas mineral estate open to development and complies with the Surface Use and Occupancy Requirements.

1.5. Scoping, Public Involvement, and Issues

The Carlsbad Field Office (CFO) publishes a NEPA log for public inspection. This log contains a list of proposed and approved actions in the field office. The log is located in the lobby of the CFO as well as on the BLM New Mexico website (http://www.blm.gov/nm/st/en/prog/planning/nepa_logs.html).

The CFO uses Geographic Information Systems (GIS) in order to identify resources that may be affected by the proposed action. A map of the project area is prepared to display the resources in the area and to identify potential issues.

The proposed action was circulated among CFO resource specialists in order to identify any issues associated with the project. The issues that were raised include:

- How would Air Quality be impacted?
- How would Climate Change be impacted?
- How would grazing be impacted?
- How would soils be impacted?
- How would vegetation be impacted?
- How would wildlife be impacted?
- How would noxious weeds be impacted?
- How would cultural resources be impacted?

CHAPTER 2. PROPOSED ACTION AND ALTERNATIVE(S)

2.1. Proposed Action

Chi proposes to drill a four horizontal oil well from two dual wells pads on federal surface. The well pad surface will need to be extended. In order to drill the proposed well with a closed loop system, a 500 x 250 foot surfaced well pad would be needed. Chi would take about 30 days to drill the well. After the well is drilled and completed, the well location would be downsized to a maximum 325 x 250 foot surfaced pad. All areas not needed for production would be reclaimed. It is likely that the wells would be drilled within four years.

Arco 34 Federal 3H

Interim Reclamation & Production Facilities
 ARCO 34 FEDERAL 3H

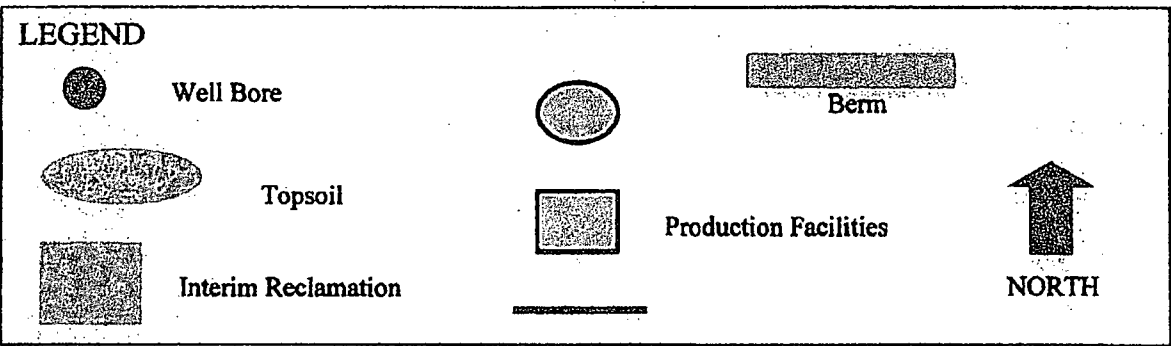
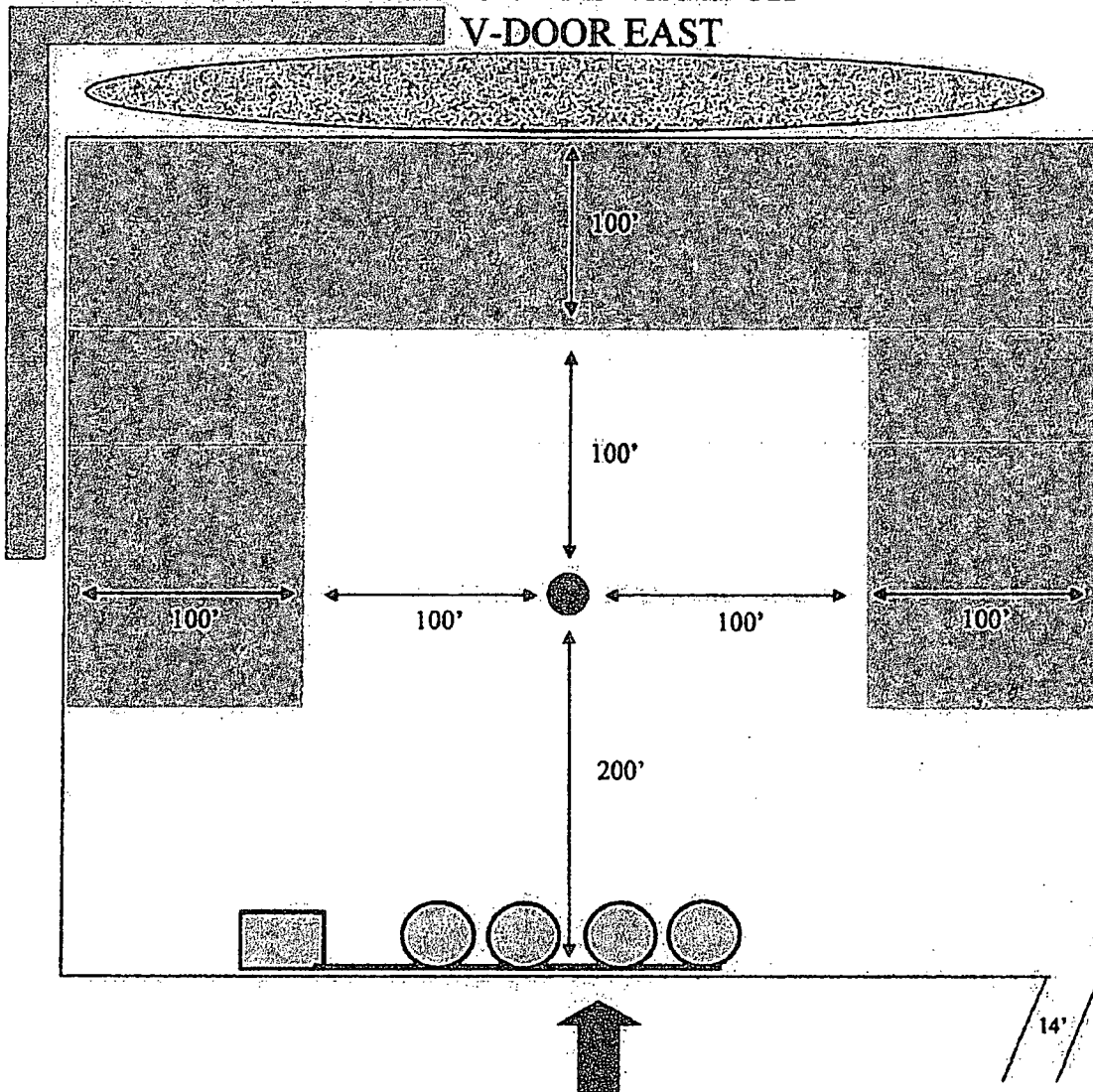


Figure 1.
Proposed Tank Battery:
 In the event the well is found to be productive a tank battery will be constructed on the south edge of the pad (Figure 1).

NEW MEXICO.

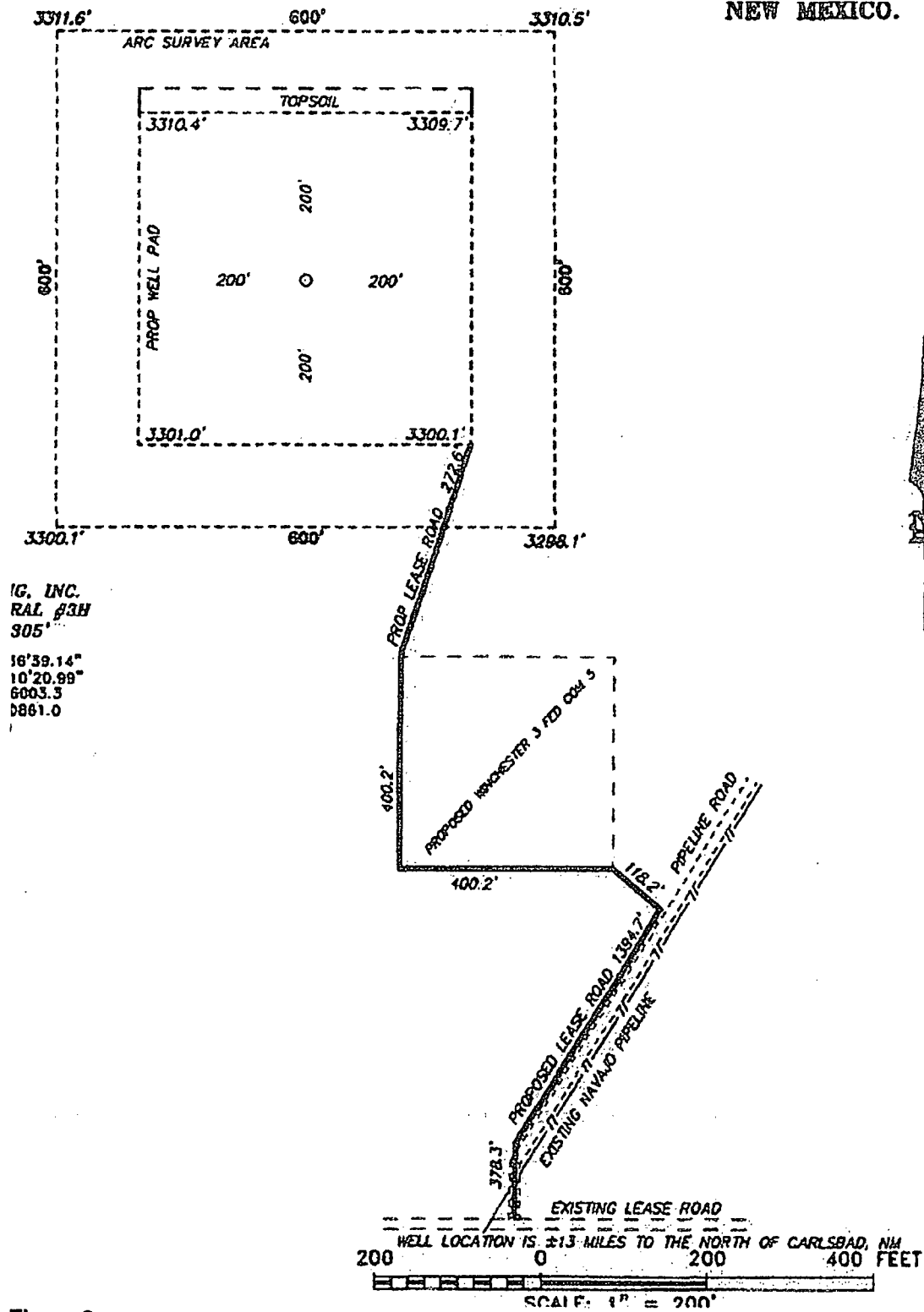


Figure 2.
Proposed Access Road:

The road will exit the pad on the southeast and travel southwest for approximately 277 feet, then south for 400 feet, then east for 400 feet, then southeast for 118 feet, then southwest for 1,394 feet, then south for 378 feet to an existing lease road (Figure 2).

Winchester 3 Federal Com 5H

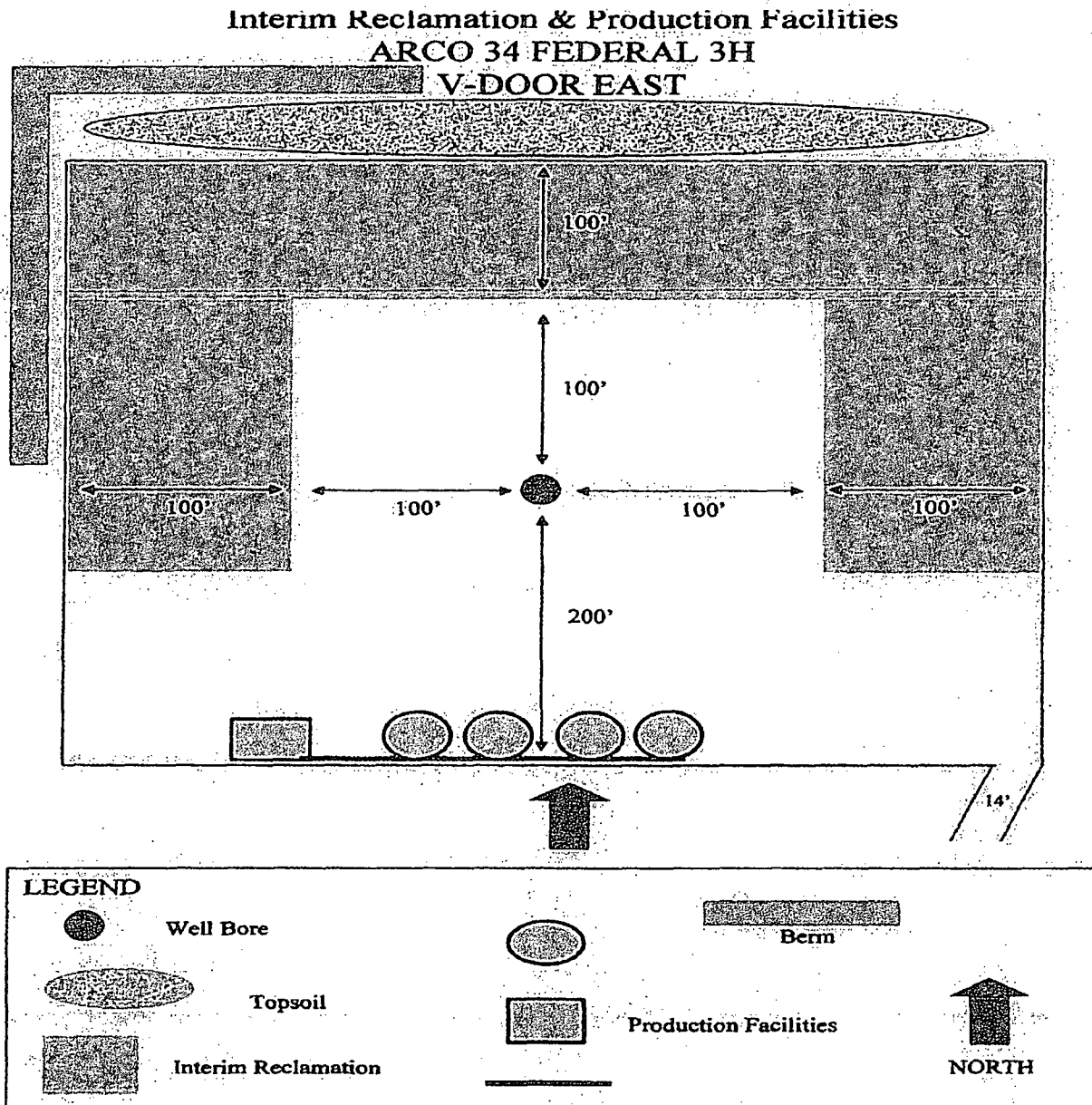


Figure 3.

Proposed Tank Battery:

In the event the well is found to be productive a tank battery will be constructed on the south edge of the pad (Figure 3).

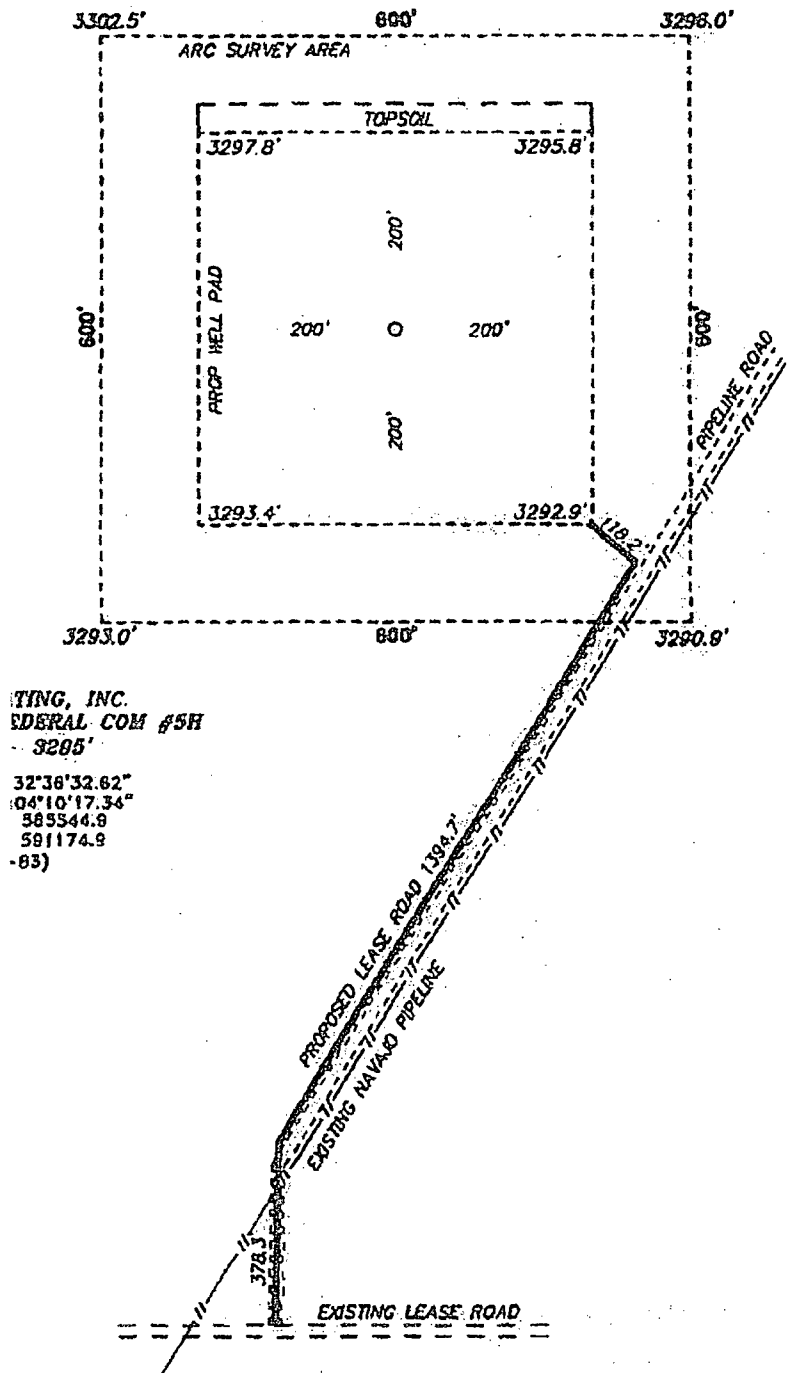


Figure 4.

Proposed Access Road:

The road will exit the pad on the southeast for 118 feet, then southwest for 1,394 feet, then south for 378 feet to an existing lease road (Figure 4).

Total Surface Disturbance:

New surface disturbance for the proposed well pad and road would be about 8.71 acres.

Mitigation Measures: The Pecos District Conditions of Approval.

2.2. No Action

The BLM NEPA Handbook (H-1790-1) states that for Environmental Assessments (EAs) on externally initiated proposed actions, the No Action Alternative generally means that the proposed activity will not take place. This option is provided in 43 CFR 3162.3-1 (h) (2). This alternative would deny the approval of the proposed application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

2.3. Alternatives Considered but Eliminated from Detailed Analysis

Field investigation of all areas of proposed surface disturbance for the Proposed Action were inspected to ensure that potential impacts to natural and cultural resources would be minimized through the implementation of mitigation measures. These measures are described for all resources potentially impacted in Chapter 3 of this EA. Therefore, no additional alternative other than those listed above have been considered for this project.

CHAPTER 3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Projects requiring approval from the BLM such as Applications for Permit to Drill can be denied when the BLM determines that adverse effects to resources (direct or indirect) cannot be mitigated to reach a Finding of No Significant Impact (FONSI). Under the No Action Alternative, the proposed project would not be drilled, built or constructed and there would be no new impacts to natural or cultural resources from oil and gas production. The No Action Alternative would result in the continuation of the current land and resource uses in the project area and is used as the baseline for comparison of environmental effects of the analyzed alternatives.

During the analysis process, the interdisciplinary team considered several resources and supplemental authorities. The interdisciplinary team determined that the resources discussed below would be affected by the proposed action.

3.1 Air Resources

3.1.1. Affected Environment

The two components of air resources are air quality and climate. Much of the information referenced in this section is incorporated from the Air Resources Technical Report for Oil and Gas Development in New Mexico, Kansas, Oklahoma, and Texas (herein referred to as Air Resources Technical Report). This document summarizes the technical information related to air resources and climate change associated with oil and gas development and the methodology and assumptions used for analysis.

Air Quality

The Air Resources Technical Report lists the National Ambient Air Quality Standards (USDI, BLM 2013, pp.4-5), describes the types of data used for description of the existing conditions (USDI BLM, 2011, p. 5-6) and how the pollutants are related to the activities involved in oil and gas development (USDI BLM, 2011, pp.6-14). Monitored values of criteria pollutants in the Carlsbad Field Office (CFO) are described below.

Criteria Pollutants

EPA's Green Book web page (EPA, 2012) reports that the Permian Basin is in attainment for all National Ambient Air Quality Standards (NAAQS) as defined by the Clean Air Act. The CFO recently contracted with Applied Enviro Solutions (AES) to provide an emissions inventory for the field office area, including

Chaves, Eddy and Lea Counties (AES, 2011). This information is more recent than that available from EPA's most recent emissions inventory and is specific to the field office area.

Table 1 shows monitored design values for ozone for the recent past in the CFO. Design values are the concentrations of air pollution at a specific monitoring site that can be compared to the NAAQS. Monitored design values for the other criteria pollutants are shown in **Error! Reference source not found.** There is no monitoring conducted for lead and carbon monoxide (CO) in southeastern New Mexico; however, concentrations of these pollutants are expected to be low in rural areas and are therefore not monitored. The New Mexico Environment Department discontinued monitoring for SO₂ in Eddy County due to very low monitored concentrations. Monitoring data for PM₁₀ and PM_{2.5} in southeastern New Mexico are not available due to incomplete data collection.

Table 1. Ozone Monitored Design Values for the Carlsbad Field Office Area (ppm)

Site	2006-2008	2007-2009	2008-2010	2009-2011	NAAQS
Hobbs (Lea County)	0.068	0.063	0.059	0.061	0.075
Carlsbad-Artesia (Eddy County)	0.069	0.066	0.067	0.069	0.075

Source: AES, 2011
EPA, 2013

Hazardous Air Pollutants

The Air Resources Technical Report discusses the relevance of hazardous air pollutants (HAPs) to oil and gas development and the particular HAPs that are regulated in relation to these activities (USDI BLM 2013, pp. 11-13). The EPA conducts a periodic National Air Toxics Assessment (NATA) that quantifies HAP impacts by county in the U.S. The purpose of the NATA is to identify areas where HAP emissions result in high health risks and further emissions reduction strategies are necessary. A review of the results of the 2005 NATA shows that cancer, neurological, and respiratory risks in Chaves, Eddy and Lea Counties are generally lower than statewide and national levels (EPA, 2013).

Table 2. 2011 Design Concentrations of Criteria pollutants in Lea and Eddy counties (EPA, 2012)

Pollutant	Design Value	Averaging period	NAAQS	NMAAQS
O ₃	0.069 ppm (Lea County)	8-hour	0.075 ppm ¹	
	0.061 ppm (Eddy County)			
NO ₂	6 ppb (Lea County)	Annual	53 ppb	50 ppb
	3 ppb (Eddy County)			
NO ₂	42 ppb	1-hour	100 ppb ²	

¹ Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
² 98th percentile, averaged over 3 years

Climate

The planning area is located in a semiarid climate regime typified by dry windy conditions, limited rainfall, hot summers and mild winters. Summertime maximum temperatures are generally in the 90s (all temperatures are in Fahrenheit degrees) with occasional temperatures over 110. Winter minimum temperatures are generally in between 20s and 30s with extremes remaining above zero degrees. Precipitation is mainly in the form of summer thunderstorms associated with the Southwest Monsoon though occasional Pacific storms drop south into New Mexico during the winter. Table 2 shows climate normal 1981-2010 for Carlsbad.

Table 2. Climate Normals for Carlsbad, 1981-2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°F)	42.6	47.2	54.0	62.4	71.5	79.3	81.2	79.9	73.2	62.9	51.5	42.8
Average Maximum Temperature (°F)	57.5	62.7	70.2	78.5	86.9	94.4	94.6	93.1	87.0	78.1	67.1	57.5
Average Minimum Temperature (°F)	27.6	31.7	37.9	46.2	56.0	64.3	67.7	66.6	59.4	47.7	35.8	28.0
Average Precipitation (inches)	0.47	0.54	0.51	0.64	1.17	1.53	2.01	1.83	2.11	1.16	0.81	0.63

Source: NOAA, 2011

The Air Resources Technical Report summarizes information about greenhouse gas emissions from oil and gas development and their effects on national and global climate conditions. While it is difficult to determine the spatial and temporal variability and change of climatic conditions; what is known is that increasing concentrations of GHGs are likely to accelerate the rate of climate change.

3.1.2. Impacts from the Proposed Action

Direct and Indirect Impacts

Methodology and assumptions for calculating air pollutant and greenhouse gas (GHG) emissions are described in the Air Resources Technical Document (USDI BLM, 2013). This document incorporates the sections discussing the modification of calculators developed by the BLM to address emissions for one well. If more than one well is being proposed, the emissions and percentage of area emissions listed below need to be multiplied by the number of wells. The calculators give an approximation of criteria pollutant, HAP, and GHG emissions to be compared to regional and national levels (USDI BLM, 2013). Also incorporated into this document are the sections describing the assumptions that the CFO used in developing the inputs for the calculator (USDI BLM, 2013, pp.27-29).

Air Quality

Criteria Pollutants

Table 3 shows estimated emissions for criteria pollutants for a variety of activities including construction, maintenance and operations. Because the calculators are not able to estimate ozone emissions, volatile organic compounds (VOCs), a precursor to ozone, are estimated instead. Based on past development, emissions have been calculated for a maximum, minimum, and average development scenario. With the exception of operations, these emissions would be temporary and short lived.

Table 3. Criteria Pollutant Emissions Estimated for the Proposed Action Activities (tons)

		Construction	Well (Re)Completion	Well Workover	Annual Operations	Annual Road Maintenance	Reclamation
		PM ₁₀	Max	2.64	0.27	0.03	1.45
	Min	0.10	0.00	0.00	0.02	0.00	0.01
	Avg	0.49	0.04	0.01	0.03	0.00	0.01
PM _{2.5}	Max	0.74	0.00	0.01	0.21	0.00	0.00
	Min	0.14	0.00	0.00	0.02	0.00	0.00
	Avg	0.30	0.00	0.01	0.02	0.00	0.00
NO _x ^a	Max	9.46	11.67	0.22	1.14	0.00	0.00
	Min	1.96	0.00	0.04	0.46	0.00	0.00
	Avg	3.77	0.16	0.13	0.47	0.00	0.00
SO ₂	Max	0.20	3.05	0.00	0.00	0.00	0.00
	Min	0.04	0.00	0.00	0.00	0.00	0.00
	Avg	0.08	0.04	0.00	0.00	0.00	0.00
CO	Max	2.61	0.08	0.08	1.35	0.00	0.00
	Min	0.50	0.00	0.01	0.92	0.00	0.00
	Avg	1.05	0.04	0.05	0.92	0.00	0.00

VOC	Max	0.74	0.04	0.02	50.02	0.00	0.00
	Min	0.14	0.00	0.00	3.50	0.00	0.00
	Avg	0.30	0.01	0.01	4.13	0.00	0.00

^a Nitrogen oxides

Table 5 compares emissions from annual operations with total human-caused emissions for Chaves, Eddy and Lea Counties in 2007.

Table 4. Emissions from Annual Operations Compared with Area Emissions for 2007 (tons)

		Annual Operations	Area Emissions ^a	Project Emissions as a % of Area Emissions
PM ₁₀	Max	1.45	78,855	0.00184
	Min	0.02	78,855	0.00003
	Avg	0.03	78,855	0.00004
PM _{2.5}	Max	0.21	10,673	0.00197
	Min	0.02	10,673	0.00019
	Avg	0.02	10,673	0.00019
NO _x	Max	1.14	44,749	0.00255
	Min	0.46	44,749	0.00103
	Avg	0.47	44,749	0.00105
SO ₂	Max	0.00	61,956	0.00000
	Min	0.00	61,956	0.00000
	Avg	0.00	61,956	0.00000
CO	Max	1.35	60,898	0.00222
	Min	0.92	60,898	0.00151
	Avg	0.92	60,898	0.00151
VOC	Max	50.02	15,898	0.31463
	Min	3.50	15,898	0.02202
	Avg	4.13	15,898	0.02598

^a AES, 2011

Hazardous Air Pollutants (HAPs)

The formulas used for calculating HAPs in the calculators are very imprecise. For many processes it is assumed that emission of HAPs will be equivalent to 10% of VOC emissions. Therefore the HAP emissions reported here should be considered a very gross estimate and likely an overestimate. The calculator estimates that a minimum of 0.22 tons/year, an average of 0.31 tons/year, and a maximum of 5.63 tons/year of HAPs would be emitted during the construction, and first year of operation of a typical gas well in the Permian Basin. The emissions are a combination of HAP constituents existing in natural gas and released during the completion and operation process. Most gas vented during the completion process is flared, which substantially reduces the quantity of HAPs released.

Greenhouse Gases (GHGs)

Information about GHGs and their effects on national and global climate is presented in the Air Resources Technical Report (USD I BLM, 2013, pp. 22-23). Analysis of the impacts of the proposed action on GHG emissions are reported below. Only the GHG emissions associated with exploration and production of oil and gas will be evaluated because the environmental impacts of GHG emissions from oil and gas consumption, such as refining and emissions from consumer vehicles, are not effects of the proposed action as defined by the Council on Environmental Quality because they do not occur at the same time and place as the action. Thus, GHG emissions from consumption of oil and gas do not constitute a direct effect that is analyzed under NEPA. Nor is consumption an indirect effect of oil and gas production because production is not a proximate cause of GHG emissions resulting from consumption. However, emissions from consumption and other activities are accounted for in the cumulative effects analysis.

The two primary GHGs associated with the oil and gas industry are carbon dioxide (CO₂) and methane (CH₄). Because CH₄ has a global warming potential 23 times greater than the warming potential of CO₂, the EPA's Office of Transportation and Air Quality (OTAQ) uses the CO₂ equivalent (CO_{2e}) which takes the difference in warming potential into account for reporting the national inventory for GHG emissions. The EPA is also moving towards using the CO_{2e} metric to characterize the benefits of its voluntary programs to be consistent with international practice and to allow for ease in comparison of emissions from different GHGs. Emissions will generally be expressed in metric tons of CO_{2e} in this document.

Estimated emissions from the calculator based on a maximum, minimum, and average development scenario are presented in Table 5.

Table 5. Estimated GHG Emissions

		Construction	Well (Re)Completion	Well Workover	Annual Operations	Annual Road Maintenance	Reclamation
CO ₂	Max	1052.10	411.0	17.8	278.2	0.09	0.54
	Min	213.20	0.2	3.5	62.1	0.09	0.40
	Avg	421.30	10.1	10.6	65.0	0.09	0.42
CH ₄	Max	0.01	0.0	0.0	37.6	0.00	0.00
	Min	0.00	0.0	0.0	0.4	0.00	0.00
	Avg	0.00	0.0	0.0	1.0	0.00	0.00
N ₂ O ^a	Max	0.01	0.0	0.0	0.0	0.00	0.00
	Min	0.00	0.0	0.0	0.0	0.00	0.00
	Avg	0.00	0.0	0.0	0.0	0.00	0.00
CO _{2e}	Max	1055.90	411.1	17.9	1068.7	0.09	0.55
	Min	214.00	0.2	3.5	70.6	0.09	0.40
	Avg	422.80	10.1	10.7	86.0	0.09	0.43
CO _{2e} metric tons	Max	958.10	373.0	16.2	969.8	0.08	0.5
	Min	194.20	0.2	3.2	64.1	0.08	0.36
	Avg	383.70	9.2	9.7	78.0	0.08	0.39

^a Nitrous oxide

Cumulative Impacts

The CFO manages federal hydrocarbon resources in Eddy, Lea, and part of Chavez County. There are approximately 23,500 wells in these counties. About 16,060 of the wells in these counties are federal wells. Data from 2000 to 2010 indicate on average approximately 418 wells are drilled in these counties on federal mineral lands annually in the CFO.

The following analysis of cumulative impacts of the proposed action on air quality will be limited to the Permian Basin area of New Mexico. The cumulative impacts of GHG emissions and their relationship to climate change are evaluated at the national and global levels in the Air Resource Technical Report (USDI BLM, 2013).

Activities that contribute to levels of air pollutant and GHG emissions in the Permian Basin include fossil fuel industries, vehicle travel, industrial construction, potash mining, and others. A complete inventory of criteria pollutant emissions can be found in a report titled "Southeast New Mexico Inventory of Air Pollutant Emissions and Cumulative Air Impact Analysis 2007" (AES 2011). The Air Resources Technical Report includes a description of the varied sources of national and regional emissions that are incorporated here to represent the past, present and reasonably foreseeable impacts to air resources (USDI BLM, 2013). It includes a summary of emissions on the national and regional scale by industry source. Sources that are considered to have notable contributions to air quality impacts and GHG emissions include electrical generating units, fossil fuel production (nationally and regionally), and transportation.

The emissions calculator estimated that there could be very small direct increases in several criteria pollutants, HAPs, and GHGs as a result of the proposed action. Altogether, the emissions resulting from the proposed action could result in a 0.003% increase of criteria and HAP emissions in Eddy, Lea, and Chavez Counties and a 0.001% increase in GHG emissions in New Mexico (Eddy, Lea, and Chaves County GHG emissions are not currently available).

Air Quality

The very small increase in emissions that could result from approval of the proposed action would not result in Eddy, Lea, or Chavez County exceeding the NAAQS for any criteria pollutants. The applicable regulatory threshold for HAPs is the oil and gas industry National Emissions Standards for Hazardous Air Pollutants, which are currently under review by the EPA. The emissions from the proposed well are not expected to impact the 8-hour average ozone concentrations, or any other criteria pollutants in the Permian Basin.

Climate Change

The Air Resources Technical Report discusses the relationship of past, present, and future predicted emissions to climate change and the limitations in predicting local and regional impacts related to emissions. It is currently not feasible to know with certainty the net impacts from particular emissions associated with activities on public lands. However, the small incremental increase in GHGs from this project will not have a measurable impact on climate.

Mitigation Measures

None.

3.2. Range

3.2.1. Proposed Action

The proposed action is within the Burton South allotment, #77014. This allotment is a yearlong cow-calf deferred rotation operation. Range improvement projects such as windmills, water delivery systems (pipelines, storage tanks, and water troughs), earthen reservoirs, fences, and brush control projects are located within the allotment, but not within the vicinity of this project. In general, an average rating of the range land within this area is six acres/AUM (Animal Unit Months). In order to support one cow, for one year, about 72 acres is needed. This equals about nine cows per section.

Direct and Indirect Effects

The loss of 8.71 acres of vegetation will not affect the Animal Unit Months (AUMs) which are authorized for livestock use in this area. There are occasional livestock injuries or deaths due to accidents such as collisions with vehicles, falling into excavations and ingesting plastic or other materials present at the work site. If further development occurs, the resulting loss of vegetation could reduce the AUMs authorized for livestock use in this area.

Impacts to the ranching operation are reduced by the following standard practices such as utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production, and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

None

3.3. Soils

3.3.1. Proposed Action

The area of the proposed action is mapped as PA-Pajarito loamy fine sand, 0-3% slopes. These are sandy soils and are described below:

Sandy

Typically, these soils are deep, well-drained to excessively drained, non-calcareous to weakly calcareous sands. They are found on undulating plains and low hills in the "sand country" east of the Pecos River. Permeability is moderate to very rapid, water-holding capacity is low to moderate, and little runoff occurs. These soils are susceptible to wind erosion and careful management is needed to maintain a cover of desirable forage plants and to control erosion. Reestablishing native plant cover could take 3-5 years due to unpredictable rainfall and high temperatures.

Low stability soils, such as the sandy and deep sands found on this area, typically contain only large filamentous cyanobacteria. Cyanobacteria, while present in some locations, are not significant. While they occur in the top 4 mm of the soil, this type of soil crust is important in binding loose soil particles together to stabilize the soil surface and reduce erosion. The cyanobacteria also function in the nutrient cycle by fixing atmospheric nitrogen, contributing to soil organic matter, and maintaining soil moisture. Cyanobacteria are mobile, and can often move up through disturbed sediments to reach light levels necessary for photosynthesis. Horizontally, they occur in nutrient-poor areas between plant clumps. Because they lack a waxy epidermis, they tend to leak nutrients into the surrounding soil. Vascular plants such as grasses and forbs can then utilize these nutrients.

Direct and Indirect Effects

There is a potential for wind and water erosion due to the erosive nature of these soils once the cover is lost. There is always the potential for soil contamination due to spills or leaks. Soil contamination from spills or leaks can result in decreased soil fertility, less vegetative cover, and increased soil erosion.

Impacts to soil resources are reduced by the following standard practices which include: utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

None

3.4. Vegetation

3.4.1. Proposed Action

Sandy

Vegetation within this project area is dominated by warm season, short and midgrasses such as black grama, bush muhly, various dropseeds, and three-awns. Bluestems, bristlegrass, lovegrasses, and hooded windmillgrass make up some of the less common grasses. Shrubs include mesquite, shinnery oak, sand sagebrush, broom snakeweed, and yucca. A large variety of forbs occur and production fluctuates greatly from year to year, and season to season. Common forbs include bladderpod, dove weed, globemallow, annual buckwheat, and sunflower.

Direct and Indirect Effects

Approximately 8.71 acres of vegetation will be removed when the well pad and road are constructed. This impact will last as long as the well is productive. However, interim reclamation, conducted within 6

months of the well being completed will reduce this area. When the well is plugged and abandoned, the rest of the pad will be reclaimed and potentially re-vegetate in 3-5 years, depending on timely rainfall. By using the proper seed mix (Seed Mixture 2/Sandy Soil), good seed bed preparation, and proper seeding techniques, this impact will be short term, two or three growing seasons.

Very little vegetation will be removed when the flow line is installed. Typical surface pipeline installation practices do not require blading or clearing the right-of-way corridor. Disturbance to vegetation would include compression of the vegetation caused by construction vehicles traveling along the right-of-way corridor. Vegetation should quickly return to the disturbed area without requiring the application of a seed mixture.

Impacts to vegetation are reduced by the following standard practices which include: utilizing existing surface disturbance, minimizing the well pad and access road total surface disturbance, utilizing steel tanks instead of reserve pits, minimizing vehicular use, placing parking and staging areas on caliche surfaced areas, reclaiming the areas not necessary for production and quickly establishing vegetation on the reclaimed areas.

Mitigation Measures

Interim reclamation will be conducted on all disturbed areas not needed for active support of production operations, and if caliche is used as a surfacing material it will be removed at time of reclamation to enhance re-establishment of vegetation. Existing disturbance will be included in the right-of-way width, construction vehicles will be restricted to existing disturbance, and no blading is permitted along the proposed route.

3.5. Visual Resource Management

3.5.1. Proposed Action

The Visual Resource Management (VRM) program identifies visual values, establishes objectives in the RMP for managing those values, and provides a means to evaluate proposed projects to ensure that visual management objectives are met.

This proposed project occurs within a Visual Resource Management Class IV zone. The objective of VRM Class IV is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic landscape elements of color, form, line and texture.

Direct and Indirect Effects

This project will cause some short term and long-term visual impacts to the natural landscape. Short term impacts occur during construction operations and prior to interim reclamation. These include the presence of construction equipment vehicle traffic. However, interim reclamation, conducted within 6 months after construction will reduce this area by about 1/3 by recontouring and revegetating.

Long term impacts are visible to the casual observer through the life of the well. These include the visual evidence of storage tanks, piping, pump jacks, pads and roads which cause visible contrast to form, line, color, and texture. Removal of vegetation due to road and drill pad construction exposes bare soil lighter in color and smoother in texture than the surrounding vegetation. The surfacing of these areas with caliche materials causes further contrasts. Those contrasts will be visible to visitors in the area.

After final abandonment and reclamation, the pad, road and associated infrastructure will be removed, reclaimed, recontoured and revegetated, thereby eliminating visual impacts.

Short and long term impacts are minimized by best management practices such as color selection, reducing cut and fill, screening facilities with natural features and vegetation, interim reclamation and contouring roads along natural changes in elevation.

Mitigation Measures and Residual Effects

Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color Shale Green, Munsell Soil Color No. 5Y 4/2"

3.6. Wildlife (Other than Threatened, Endangered, and Sensitive)

3.6.1. Proposed Action

This project occurs in a transition zone from Chihuahuan Desert habitat type to the west and to a sand shinnery habitat type to the east and is primarily dominated by mesquite scrublands intermixed with various grasses. This mesquite scrubland community extends across the southern Great Plains, occupying portions of north and west Texas, western Oklahoma, and southeast New Mexico. Portions of Eddy and Lea counties consist of mesquite scrublands to a lesser degree. The characteristic feature of the mesquite scrubland community is co-dominance by various species of grasses and cacti.

Various bird, mammal, reptile and invertebrate species inhabit this ecosystem in southeast New Mexico. Herbivorous mammals include mule deer, pronghorn, and numerous rodent species. Carnivores include coyote, bobcat, badger, striped skunk, and swift fox. Two upland game bird species, scaled quail and mourning dove, are prevalent throughout southeast New Mexico. Many species of songbirds nest commonly, with a much larger number that use the habitat during migration or for non-nesting activities. Common avian predators include northern harrier, Swainson's hawk, red-tailed hawk, kestrel, burrowing owl, and Chihuahuan raven. Numerous snake and lizard species also inhabit this ecosystem.

Direct and Indirect Effects

Impacts of the proposed action to wildlife in the localized area may include: possible mortality, habitat degradation and fragmentation, avoidance of habitat during construction and drilling activities and the potential loss of burrows and nests.

Standard mitigation measures and elements of the proposed action minimize these impacts to wildlife. These include: the NTL-RDO 93-1 (modification of open-vent exhaust stacks to prevent perching and entry from birds and bats), nets on open top production tanks, interim reclamation, closed loop systems, exhaust mufflers, berming collection facilities, minimizing cut and fill, road placement, and avoidance of wildlife waters, stick nests, drainages, playas and dunal features. These practices reduce mortality to wildlife and allow habitat to be available in the immediate surrounding area thus reducing stressors on wildlife populations at a localized level. Impacts to local wildlife populations are therefore expected to be minimal.

Mitigation Measures:

3.7. Noxious Weeds and Invasive Plants

3.7.1. Proposed Action

There are four plant species within the CFO that are identified in the New Mexico Noxious Weed List Noxious Weed Management Act of 1998. These species are African rue, Malta starthistle, Russian olive, and salt cedar. African rue and Malta starthistle populations have been identified throughout the Carlsbad Field Office and mainly occur along the shoulders of highway, state and county roads, lease roads and well pads (especially abandoned well pads). The CFO has an active noxious weed monitoring and

treatment program, and partners with county, state and federal agencies and industry to treat infested areas with chemical and monitor the counties for new infestations.

Direct and Indirect Effects

Any surface disturbance can increase the possibility of establishment of new populations of invasive, non-native species. The construction of the proposed action may contribute to the establishment and spread of African rue and Malta starthistle. The main mechanism for seed dispersion would be by equipment and vehicles that were previously used and/or driven across noxious weed infested areas. Noxious weed seed could be carried to and from the project area by construction equipment and transport vehicles.

Mitigation Measures

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.

3.8. Cultural and Historical Resources

3.8.1. Proposed Action

The project falls within the Southeastern New Mexico Archaeological Region. This region contains the following cultural/temporal periods: Paleoindian (ca. 12,000 – 8,000 B.C.), Archaic (ca. 8,000 B.C. – A.D. 950), Ceramic (ca. A.D. 600 – 1540), Protohistoric and Spanish Colonial (ca. A.D. 1400 – 821), and Mexican and American Historical (ca. A.D. 1822 to early 20th century). Sites representing any or all of these periods are known to occur within the region. A more complete discussion can be found in *Living on the Land: 11,000 Years of Human Adaptation in Southeastern New Mexico; An Overview of Cultural Resources in the Roswell District, Bureau of Land Management* published in 1989 by the U.S. Department of Interior, Bureau of Land Management.

Native American Religious Concerns

The BLM conducts Native American consultation regarding Traditional Cultural Places (TCP) and Sacred Sites during land-use planning and its associated environmental impact review. In addition, during the oil & gas lease sale process, Native American consultation is conducted to identify TCPs and sacred sites whose management, preservation, or use would be incompatible with oil and gas or other land-use authorizations. With regard to Traditional Cultural Properties, the BLM has very little knowledge of tribal sacred or traditional use sites, and these sites may not be apparent to archaeologists performing surveys in advance of drilling. However, to date no TCPs or sacred sites have been identified in the vicinity of the current project area.

Direct and Indirect Effects

Cultural resources on public lands, including archaeological sites and historic properties, are protected by federal law and regulations (Section 106 of the National Historic Preservation Act and the National Environmental Policy Act). Class III cultural surveys will be conducted of the area of effect for realty or oil and gas projects proposed on these lands prior to the approval of any ground disturbing activities to identify any resources eligible for listing on the National Register of Historic Places. Cultural resource inventories minimize impacts to cultural sites and artifacts by avoiding these resources prior to construction of the proposed project. If unanticipated or previously unknown cultural resources are discovered at any time during construction, all construction activities shall halt and the BLM authorized officer will be immediately notified. Work shall not resume until a Notice to Proceed is issued by the BLM.

A Class III cultural resource inventory was conducted of the area of effect, no historic properties were identified within the area of potential effect.

Mitigation Measures

None

3.9. Cumulative Effects

Cumulative impacts are the combined effect of past projects, specific planned projects, and other reasonably foreseeable future actions within the project study area to which oil and gas exploration and development may add incremental impacts. This includes all actions, not just oil and gas actions that may occur in the area including foreseeable non-federal actions.

The combination of all land use practices across a landscape has the potential to change the visual character, disrupt natural water flow and infiltration, disturb cultural sites, cause minor increases in greenhouse gas emissions, fragment wildlife habitat and contaminate groundwater. However, the likelihood of these impacts occurring is minimized through standard mitigation measures, special Conditions of Approval and ongoing monitoring studies.

All resources are expected to sustain some level of cumulative impacts over time; however these impacts fluctuate with the gradual abandonment and reclamation of wells. As new wells are being drilled, there are others being abandoned and reclaimed. As the oil field plays out, the cumulative impacts will lessen as more areas are reclaimed and less is developed.

CHAPTER 4. SUPPORTING INFORMATION

4.1. List of Preparers

Prepared by: Amanda L. Lynch, Natural Resource Specialist BLM-CFO

Date: 07/30/2013

The following individuals aided in the preparation of this document:

Bruce Boeke, Archaeologist, BLM-CFO
Cassandra Brooks, Wildlife Biologist, BLM-CFO
Steve Daly, Soil Conservationist, BLM-CFO

4.2. References

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**DECISION RECORD (DR)
AND
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
Pecos District, Carlsbad Field Office**

**DOI-BLM-NM-P020-2013-1547-EA
Chi Operating, Inc.
Lease No. NMNM 428657 & NMNM 13232A
Arco 34 Federal 3H
Winchester 3 Federal Com 5H**

Purpose and Need for Action

Chi Operating, Inc. (Chi) has applied for a permit to drill two horizontal oil wells on two dual well pads on Federal surface approximately 10 miles northeast of Carlsbad, NM. In the application, Chi is also applying to construct new access road and install a production facility. The surface location for the proposed well is as follows:

Arco 34 Federal 3H:

Surface Hole Location: 330' FSL & 330' FWL, Section 34, T. 19 S., R. 28 E.

Bottom Hole Location: 330' FNL & 330' FWL, Section 34, T. 19 S., R. 28 E.

Winchester 3 Federal Com 5H:

Surface Hole Location: 330' FNL & 660' FWL, Section 3, T. 20 S., R. 28 E.

Bottom Hole Location: 330' FSL & 990' FWL, Section 3, T. 20 S., R. 28 E.

Mitigation Measures: The Pecos District Conditions of Approval including special requirements for electric lines, and surface pipelines.

Recommendation and Rationale:

Our analysis has shown with proper mitigation the proposed action would have minimal environmental impacts. The proposed action is consistent with the 1988 Carlsbad Resource Management Plan, as amended by the 1997 Carlsbad Approved Resource Management Plan Amendment. Therefore, it is recommended that this application be approved.

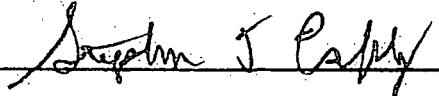
Prepared by:


Amanda L. Lynch, Natural Resource Specialist

8.5.13
Date

Finding of No Significant Impact/Decision Record:

I have reviewed this environmental assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action with the mitigation measures described above will not have any significant impacts on the human environment, no significant impacts to minority or low-income populations or communities have been identified for the proposed action and that an EIS is not required. I have determined that the proposed project is in conformance with the approved land use plan. It is my decision to implement the project with the mitigation measures as described above.


James Stovall, Field Manager

Carlsbad Field Office, BLM

9/12/13
Date

OFFICIAL FILE COPY



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220-6292



In reply refer to:

3162.3-1 (P0220)
NM0428657
ATS-13-733

8/27/2013

Your Reference:

3H-Arco 34 Federal, Lease NM0428657
0330/S. & 0330/W., sec. 34, T. 19 S., R. 28 E., Eddy County, NM

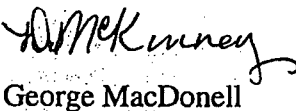
CHI Operating Inc.
Attn: Barry Hunt
1403 Springs Farm Place
Carlsbad, NM 88220


Gentlemen:

This office has received all information as requested on August 13, 2013 for the referenced well and it has been determined that your Application for Permit to Drill is now complete. In compliance with 43 CFR 3162.3-1(h), Section 366 of the Energy Policy Act of 2005, and Onshore Order No. 1, the intent of this office is to process your application and take action within 30 days if all regulatory requirements have been met.

If you have any questions, please contact Debbie McKinney at (575) 234-5931.

Sincerely,



 George MacDonell
(Acting) Assistant Field Manager of Minerals

866

13-733 8/6

13-733

Major in tracking
No acreage in tracking

QL ONSITE:
Scheduled _____

ad Date Performed 5.9.13
Initial & Return to LIE

IN CHECK LIST

	INITIALS	DATE
Geologist:	ad	7.31.13
Surface Prot:		
Solids:		
(If Potash)		
WIPP:		

ENGINEERING QUICK LOOK

No Comment

See Comment for 10 day

Initial: MMW Date: 8/5/13

13-733

Initial _____ Date _____

ENGINEERING QL

Deficiencies Received

Deficiencies Not Received

8/21/13

rcvd 8-13



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220-6292



In reply refer to:
3162.4 (P0220)
NM0428657
ATS-13-733

8/6/2013

Your Reference:

3H-Arco 34 Federal, Lease NM0428657
0330/S. & 0330/W., sec. 34, T. 19 S., R. 28 E., Eddy County, NM

CHI Operating Inc
Attn: Barry Hunt
1403 Springs Farm Place
Carlsbad, NM 88220

Gentlemen:

Your Application for Permit to Drill (APD), for the referenced well, was received on July 29, 2013. The APD has been reviewed pursuant to part III.B.2 of Oil and Gas Onshore Order No.1 and is found to be:

- Complete
- Incomplete in the following area(s)
- | | |
|--------------------------------------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> Form 3160-3 | <input type="checkbox"/> Bonding |
| <input type="checkbox"/> Survey Plat | <input type="checkbox"/> Operator Certification Statement |
| <input checked="" type="checkbox"/> Drilling Plan (BOPE, Casing Program, etc.) | <input type="checkbox"/> Onsite Not Performed |
| <input type="checkbox"/> Surface Use Plan | <input type="checkbox"/> Original Signature |
| <input type="checkbox"/> Other | |

To complete the APD, the following is required: Deficiencies: 1. BOP test paragraph requires clarification. Two statements indicate that every BOP part will be tested to 3000 psi, last sentence has a different test for annular. Is BOPE test done by independent tester? 2. Is the 4.5" casing being set as a liner or is a crossover from the 7" used? If a liner, overlap required. If a crossover, depth of DV tool. 3. Verify mud weights-bottom hole mud is lighter than the fresh water mud. 4. Choke manifold does not meet Onshore Order 2 requirements for several items. Also diagram implies a flex hose - no variance submitted, no documentation submitted. 5. Box 18 well goes within 330' of a deep gas well along the horizontal.

Please submit an original and three (3) copies of each of the above noted deficiencies within 45 days. Per Onshore Order Number 1.III.E.2.a., failure to timely submit the requested information may result in the APD being returned. If you would like to know whether the Archaeological Survey Report has been filed with the BLM, call the cultural staff at (575) 234-5972. You will be notified if additional information is needed during the processing of your APD.

If you have any questions, please contact Kurt Simmons at (575) 234-5983.

Sincerely,

George MacDonell
(Acting) Assistant Field Manager of Minerals

**BUREAU OF LAND MANAGEMENT
CASE RECORDATION
(LIVE) SERIAL REGISTER PAGE**

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01 02-25-1920;041STAT0437;30USC226

Total Acres
640.000

Serial Number
NMNM-- 0 428657

Case Type 311111: O&G LSE NONCOMP PUB LAND

Commodity 459: OIL & GAS L

Case Disposition: AUTHORIZED Case File Juris:

Serial Number: NMNM-- 0 428657

Name & Address			Int Rel	%Interest
ABRAXAS OPERATING LLC	18803 MEISNER DR	SAN ANTONIO TX 782584240	OPERATING RIGHTS	0.000000000
ASHER RESOURCES	100 SANDAU RD STE 300	SAN ANTONIO TX 782163635	OPERATING RIGHTS	0.000000000
BRYAN J MANLY	4303 BENDWOOD	DALLAS TX 75287	OPERATING RIGHTS	0.000000000
CHI ENERGY INC	PO BOX 1799	MIDLAND TX 79702	OPERATING RIGHTS	0.000000000
DEVON ENERGY PROD CO LP	333 W SHERIDAN AVE	OKLAHOMA CITY OK 731025010	OPERATING RIGHTS	0.000000000
ENDURO OPERATING LLC	777 MAIN ST STE 800	FORT WORTH TX 761025350	OPERATING RIGHTS	0.000000000
HANAGAN OIL PROP INC	PO BOX 430	ROSWELL NM 882020430	OPERATING RIGHTS	0.000000000
JETTA X2 LP	777 TAYLOR ST #PI D	FORT WORTH TX 76102	OPERATING RIGHTS	0.000000000
MARBOB ENERGY CORP	PO BOX 227	ARTESIA NM 882110227	OPERATING RIGHTS	0.000000000
OXY USA INC	PO BOX 50250	MIDLAND TX 79710	OPERATING RIGHTS	0.000000000
OXY USA WTP LP	6 DESTA DR #6000	MIDLAND TX 797055505	OPERATING RIGHTS	0.000000000
PITCH ENERGY CORP	PO BOX 304	ARTESIA NM 882110304	OPERATING RIGHTS	0.000000000
STRATA PRODUCTION CO	PO BOX 1030	ROSWELL NM 882021030	OPERATING RIGHTS	0.000000000
ZPZ DELAWARE I LLC	2000 POST OAK BLVD STE 100	HOUSTON TX 770564497	OPERATING RIGHTS	0.000000000
ZPZ DELAWARE I LLC	2000 POST OAK BLVD STE 100	HOUSTON TX 770564497	LESSEE	100.000000000

Serial Number: NMNM-- 0 428657

Mer Twp Rng	Sec	Type	Nr Suff	Subdivision	District/Resource Area	County	Mgmt Agency
23 0190S 0280E 033		ALIQ		S2;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGM
23 0190S 0280E 034		ALIQ		W2;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGM

Serial Number: NMNM 0428657

Relinquished/Withdrawn Lands

23 0200S 0280E 722	FF	1	SENE,W2NE,E2NW,SESW,REJ;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGM
23 0200S 0280E 722	FF	2	NWSE,SESE,REJ;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGM
23 0200S 0280E 723	FF		SWSW,NWSE,REJ;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGM
23 0200S 0280E 724	FF		SWNW,REJ;	CARLSBAD FIELD OFFICE	EDDY	BUREAU OF LAND MGM

Serial Number: NMNM-- 0 428657

Act Date	Code	Action	Action Remarks	Pending Office
07/21/1963	387	CASE ESTABLISHED		
07/22/1963	888	DRAWING HELD		
08/19/1963	237	LEASE ISSUED		
08/21/1963	126	APLN REJ/DEN IN PART		
09/01/1963	496	FUND CODE	05;145003	
09/01/1963	530	RLTY RATE - 12 1/2%		
09/01/1963	868	EFFECTIVE DATE		
04/30/1973	510	KMA CLASSIFIED		
08/09/1973	315	RENTAL RATE DET/ADJ	\$2.00;	
09/24/1973	235	EXTENDED	THRU 08/31/75;	
10/17/1973	650	HELD BY PROD - ACTUAL		
11/20/1973	102	NOTICE SENT-PROD STATUS		
01/06/1978	932	TRF OPER RGTS FILED		
11/27/1981	932	TRF OPER RGTS FILED		

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**BUREAU OF LAND MANAGEMENT
CASE RECORDATION
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04/28/1982	932	TRF OPER RGTS FILED	
03/12/1983	933	TRF OPER RGTS APPROVED	EFF 02/01/78;
03/12/1983	933	TRF OPER RGTS APPROVED	EFF 03/01/82;
03/12/1983	933	TRF OPER RGTS APPROVED	EFF 09/01/81;
05/27/1983	932	TRF OPER RGTS FILED	
06/17/1983	932	TRF OPER RGTS FILED	
06/21/1983	933	TRF OPER RGTS APPROVED	EFF 06/01/83;
07/05/1983	933	TRF OPER RGTS APPROVED	EFF 08/12/81;
01/26/1984	932	TRF OPER RGTS FILED	
01/11/1985	932	TRF OPER RGTS FILED	
09/13/1985	817	MERGER RECOGNIZED	ATL RICHFIELD PA/DE
01/07/1986	933	TRF OPER RGTS APPROVED	EFF 02/01/84;
01/07/1986	933	TRF OPER RGTS APPROVED	EFF 02/01/85;
01/17/1986	963	CASE MICROFILMED	CNUM 106,420 DS
03/10/1987	932	TRF OPER RGTS FILED	
07/07/1987	933	TRF OPER RGTS APPROVED	EFF 04/01/87;
12/07/1987	932	TRF OPER RGTS FILED	
03/08/1988	933	TRF OPER RGTS APPROVED	EFF 01/01/88;
03/08/1988	974	AUTOMATED RECORD VERIF	SSP
05/26/1988	940	NAME CHANGE RECOGNIZED	CITIES SVC/OXY USA
06/14/1988	932	TRF OPER RGTS FILED	
06/23/1988	933	TRF OPER RGTS APPROVED	EFF 07/01/88;
06/23/1988	974	AUTOMATED RECORD VERIF	GLC/BTM
10/23/1989	932	TRF OPER RGTS FILED	TEXACO/ROBERT BOLING
11/17/1989	933	TRF OPER RGTS APPROVED	EFF 11/01/89;
11/17/1989	974	AUTOMATED RECORD VERIF	GLC/MT
05/25/1990	932	TRF OPER RGTS FILED	BLANKENSTEIN/HANAGAN
05/25/1990	932	TRF OPER RGTS FILED	CASTLE J B/HANAGAN
05/25/1990	932	TRF OPER RGTS FILED	COMBS D C/HANAGAN
05/25/1990	932	TRF OPER RGTS FILED	ELLWADE CORP/HANAGAN
05/25/1990	932	TRF OPER RGTS FILED	HAMILTON L E/HANAGAN
07/18/1990	932	TRF OPER RGTS FILED	E W HOUY/HANAGAN OIL
07/18/1990	932	TRF OPER RGTS FILED	H BRACE/HANAGAN OIL
07/18/1990	932	TRF OPER RGTS FILED	J JOHNSON/HANAGAN OIL
07/18/1990	932	TRF OPER RGTS FILED	J MEYER/HANAGAN OIL
07/18/1990	932	TRF OPER RGTS FILED	J R HUTCHENS/HANAGAN
07/18/1990	932	TRF OPER RGTS FILED	R F HAYNSWORTH/HANAGA
07/18/1990	932	TRF OPER RGTS FILED	R HYDEN/HANAGAN OIL
07/18/1990	932	TRF OPER RGTS FILED	RE DUGGER/HANAGAN OIL
07/18/1990	932	TRF OPER RGTS FILED	S J TALLEY/HANAGAN
07/18/1990	932	TRF OPER RGTS FILED	W P CURTIS/HANAGAN
07/23/1990	933	TRF OPER RGTS APPROVED	(1) EFF 06/01/90;
07/23/1990	933	TRF OPER RGTS APPROVED	(2) EFF 06/01/90;
07/23/1990	933	TRF OPER RGTS APPROVED	(3) EFF 06/01/90;
07/23/1990	933	TRF OPER RGTS APPROVED	(4) EFF 06/01/90;

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07/23/1990	933	TRF OPER RGTS APPROVED	(5) EFF 06/01/90;
07/23/1990	974	AUTOMATED RECORD VERIF	TF/ML
08/23/1990	933	TRF OPER RGTS APPROVED	(1) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(10) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(2) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(3) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(4) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(5) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(6) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(7) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(8) EFF 08/01/90;
08/23/1990	933	TRF OPER RGTS APPROVED	(9) EFF 08/01/90;
08/23/1990	974	AUTOMATED RECORD VERIF	TF/MT
04/09/1991	940	NAME CHANGE RECOGNIZED	TEXACO PROD/EXPL&PROD
05/15/1991	932	TRF OPER RGTS FILED	HANAGAN OIL/STRATA
06/03/1991	909	BOND ACCEPTED	EFF 06/03/91; MT0741
07/31/1991	933	TRF OPER RGTS APPROVED	EFF 11/01/91;
07/31/1991	974	AUTOMATED RECORD VERIF	RAO/KRP
06/01/1992	932	TRF OPER RGTS FILED	AMERICAN/ASHER RES
08/14/1992	932	TRF OPER RGTS FILED	HONDO O&G/DEVON ENE
08/25/1992	933	TRF OPER RGTS APPROVED	EFF 07/01/92;
08/25/1992	974	AUTOMATED RECORD VERIF	ST/JS
09/10/1992	817	MERGER RECOGNIZED	AMCOG/AUSTRAL OIL CO
09/10/1992	817	MERGER RECOGNIZED	AMKAN/AUSTRAL OIL CO
09/10/1992	817	MERGER RECOGNIZED	KEC/AUSTRAL OIL CO
09/10/1992	817	MERGER RECOGNIZED	TES/AUSTRAL OIL CO
09/10/1992	817	MERGER RECOGNIZED	TOC/AUSTRAL OIL CO
09/10/1992	974	AUTOMATED RECORD VERIF	BTM/MV
11/20/1992	933	TRF OPER RGTS APPROVED	EFF 09/01/92;
11/20/1992	974	AUTOMATED RECORD VERIF	JLV/JS
06/30/1993	932	TRF OPER RGTS FILED	DEVON ENE/DEVON CORP
09/17/1993	933	TRF OPER RGTS APPROVED	EFF 07/01/93;
09/17/1993	974	AUTOMATED RECORD VERIF	BTM/KRP
05/24/1994	140	ASGN FILED	KEDCO/K&E PETRO
05/24/1994	932	TRF OPER RGTS FILED	KEDCO/K&E PETRO
08/08/1994	269	ASGN DENIED	KEDCO/K&E PETRO
08/08/1994	558	TRF OPER RGTS RET UNAPPV	KEDCO/K&E PETRO
08/09/1994	974	AUTOMATED RECORD VERIF	SSP
01/29/1996	932	TRF OPER RGTS FILED	PENROC/OXY USA
03/20/1996	932	TRF OPER RGTS FILED	STRATA/OXY USA INC
03/25/1996	933	TRF OPER RGTS APPROVED	EFF 02/01/96;
03/25/1996	974	AUTOMATED RECORD VERIF	JLV
04/10/1996	575	APD FILED	
05/06/1996	576	APD APPROVED	1-OXY 33 FED
06/11/1996	933	TRF OPER RGTS APPROVED	EFF 04/01/96;

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06/11/1996	974	AUTOMATED RECORD VERIF	ANN
08/15/1996	932	TRF OPER RGTS FILED	OXY USA/J M BRYAN
10/29/1996	933	TRF OPER RGTS APPROVED	EFF 09/01/96;
10/29/1996	974	AUTOMATED RECORD VERIF	JLV
02/03/1997	932	TRF OPER RGTS FILED	OXY USA/ARCO
03/12/1997	933	TRF OPER RGTS APPROVED	EFF 03/01/97;
03/12/1997	974	AUTOMATED RECORD VERIF	JLV
01/06/1998	933	TRF OPER RGTS APPROVED	EFF 12/01/98;
01/06/1998	974	AUTOMATED RECORD VERIF	JLV
09/14/1998	932	TRF OPER RGTS FILED	PIONEER/CHI ENE
10/27/1998	933	TRF OPER RGTS APPROVED	EFF 10/01/98;
10/27/1998	974	AUTOMATED RECORD VERIF	MV/MV
11/23/1998	932	TRF OPER RGTS FILED	WAGNER/SAMSON
04/14/1999	932	TRF OPER RGTS FILED	ARCO/MARBOB ETAL
04/15/1999	451	DEFAULT DETERMINED	MMS;ROYALTY
05/20/1999	933	TRF OPER RGTS APPROVED	EFF 05/01/99;
05/20/1999	974	AUTOMATED RECORD VERIF	JLV
05/24/1999	453	DEFAULT CORRECTED	MMS;ROYALTY
06/16/1999	974	AUTOMATED RECORD VERIF	RAYO
11/22/2000	817	MERGER RECOGNIZED	DEVONENE/DEVONENEPROD
03/12/2001	932	TRF OPER RGTS FILED	OXY/OXY USA WTP
04/25/2001	933	TRF OPER RGTS APPROVED	EFF 04/01/01;
04/25/2001	974	AUTOMATED RECORD VERIF	JLV
12/11/2001	140	ASGN FILED	ATLANTIC RICHFIELD;1
12/11/2001	932	TRF OPER RGTS FILED	ATLANTIC RICHFIELD;1
04/02/2002	139	ASGN APPROVED	EFF 01/01/02;
04/02/2002	933	TRF OPER RGTS APPROVED	EFF 01/01/02;
04/02/2002	974	AUTOMATED RECORD VERIF	MV
06/21/2002	940	NAME CHANGE RECOGNIZED	AMOCO/BP AMERICA PROD
08/23/2005	932	TRF OPER RGTS FILED	DEVON ENER/JETTA X2;1
09/15/2005	933	TRF OPER RGTS APPROVED	EFF 09/01/05;
09/15/2005	974	AUTOMATED RECORD VERIF	JLV
04/15/2010	932	TRF OPER RGTS FILED	ABRAXAS O/CHI ENER;1
05/07/2010	932	TRF OPER RGTS FILED	ST MARY L/ABRAXAS O;1
06/07/2010	933	TRF OPER RGTS APPROVED	EFF 05/01/10;
06/07/2010	974	AUTOMATED RECORD VERIF	RAYO/RAYO
06/22/2010	933	TRF OPER RGTS APPROVED	EFF 06/01/10;
06/22/2010	974	AUTOMATED RECORD VERIF	LBO
02/03/2011	932	TRF OPER RGTS FILED	SAMSON RE/ENDURO OP;1
03/24/2011	140	ASGN FILED	BP AMERIC/ZPZ DELAW;1
04/13/2011	933	TRF OPER RGTS APPROVED	EFF 03/01/11;
04/13/2011	974	AUTOMATED RECORD VERIF	LBO
05/10/2011	932	TRF OPER RGTS FILED	BP AMERIC/ZPZ DELAW;1
05/12/2011	139	ASGN APPROVED	EFF: 04/01/2011;
05/12/2011	974	AUTOMATED RECORD VERIF	MJD

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07/26/2011	933	TRF OPER RGTS APPROVED	EFF: 06/01/2011;
07/26/2011	974	AUTOMATED RECORD VERIF	MJD

Line Nr Remarks

Serial Number: NMNM-- 0 428657

0002	04/02/2002 LESSEE BONDED
0003	WY2924/NW
0004	06/09/2010 - BONDED LESSEE - PER ABSS
0005	BP AMERICA PROD CO - WY2924 NW
0006	BONDED OPERATOR CHI ENERGY INC NM1616 S/W;
0007	05/12/2011 - OPERATOR BONDED - NM1616 S/W

29

28

27

26

SS 2

32

052054
D/C

NM27829
50'

NM19264
50'

NM19898
33'

NM77740
30'

NM27106
50'

NM29450
50'

NM19332
50'

NM18704
50'

NM21098
50'

NM05476

NM30745
50'

NM19117
50'

NM82192
30'

LC039468
D/C

NM0428657
Lsg OB

NM40583
50'

NM18706
50'

NM047336
176 Lsg

NM1092190
21.06 Lsg

202928
/C

NM40903
50'

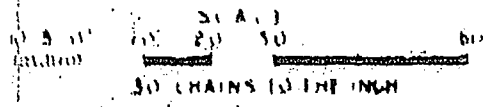
NM93403

NM0256131
106 Lsg

NM18705
50'

NM19098
50'

BH



WARNING

This plat is the Bureau's Record only as a graphic display of records hereon do not reflect adjustments effected by lateral movement. Refer to the cadastral survey.

**United States Department of the Interior
Bureau of Land Management
CARLSBAD FIELD OFFICE
620 E. GREENE
CARLSBAD, NM 88220 -6292
Phone: (575) 234-5972**

Receipt

No: 2839841

Transaction #: 2925428	
Date of Transaction: 07/25/2013	
CUSTOMER:	
CHI OPERATING INC PO BOX 1799 MIDLAND, TX 79702-1799 US	

LINE #	QTY	DESCRIPTION	REMARKS	UNIT PRICE	TOTAL
1	1.00	OIL & GAS / APPLICATION FOR PERMIT TO DRILL (APD) / APD FEE	ARCO 34 FEDERAL 3H	6500.00	6500.00
TOTAL:					\$6,500.00

PAYMENT INFORMATION			
1	AMOUNT:	6500.00	POSTMARKED: N/A
	TYPE:	CHECK	RECEIVED: 07/25/2013
	CHECK NO:	5069	
	NAME:	CHI OPERATING INC PO BOX 1799 MIDLAND TX 79702-1799 US	

REMARKS

This receipt was generated by the automated BLM Collections and Billing System and is a paper representation of a portion of the official electronic record contained therein.

RECEIVED
APD POSTED
2013 JUL 29 AM 7:36
BUREAU OF LAND MGMT
CARLSBAD FIELD OFFICE

UNITED STATES DEPT OF INTERIOR

BUREAU OF LAND MANAGEMENT

BOND ABSTRACT

BOND NO: NM1616
 DOCUMENT ID: LOC #413
 CASE TYPE: 310434 O&G BOND ALL LANDS

DISPOSITION: ACCEPTED

NAME AND ADDRESS OF BOND PARTIES

B89000152 BONDED PRINCIPAL
 CHI OPERATING INC
 PO BOX 1799
 MIDLAND TX 79702

NAME AND ADDRESS OF SURETY PARTIES

SERIAL NUMBER(s):

NMNM 042804, NMNM 084702, NMNM 0400877

BOND AREA: STATEWIDE STATES COVERED: NM
 TYPE OF LAND: FEDERAL-ALL RIGHTS BOND AMOUNT: \$25,000
 TYPE: PERSONAL

BONDED ACTIVITY/PURPOSE COMMODITY(IES)
 GENERAL LSE/DRILLING OIL & GAS L

ACTION CODE	ACTION DATE	ACTION TAKEN	ACTION REMARKS	PENDING
468	06/23/1989	BOND FILED		NM94364
469	06/27/1989	BOND ACCEPTED	EFF 06/23/1989	
974	06/27/1989	AUTOMATED RECORD VERIF	GLC/MT	
113	01/29/1991	ADDTL INFO RECD	REPLACEMENT LOC	
974	02/26/1991	AUTOMATED RECORD VERIF	GLC/GC	
247	12/10/1991	FUTURE ACTION SUSPENSE	NEW BOND DUE 11/24/92	
478	03/26/1993	RIDER FILED		NM94364
479	05/24/1993	RIDER ACCEPTED	/1/	
974	05/24/1993	AUTOMATED RECORD VERIF	CM/JLV	
478	08/25/1993	RIDER FILED		NM94364
479	11/30/1993	RIDER ACCEPTED	/2/	
974	11/30/1993	AUTOMATED RECORD VERIF	CM/KRP	

GENERAL REMARKS

LINE # REMARK

001 ORIGINAL LETTER OF CREDIT SECURING THIS BOND,
 002 #C-1837, REPLACED BY LOC #-93096 - 2/26/91 GLC
 003 05/24/1993 - /1/ BANK AMENDED TO READ TEXAS COMMERC
 BANK NATIONAL ASSOCIATION, AND LOC #93096 CHANGE
 TO I-435747.
 11/30/1993 - /2/BANK AMENDED TO READ TEXAS NATL BAN

APD Tracking #:

Well-Site Evaluation Field Form

Operator Name: chi Well Name: Arco 34 Ed. 10 3H
 SHL: Section 34 T. 19 S. R. 28 E. Footage 300 FW & 330 FNL
 Well Type: Horizontal Vertical Oil Gas Other _____ NOS/APD Received? NOS APD
 Surface Management Agency (SMA): BLM FEE STATE Other _____ SMA Contacted? Yes No
 Operator Representative/ Contact Name: Barry Hunt Phone 575 361 4078
 BLM Onsite Representatives Lynch Date 5/9/13

Description & Topography: (cut & fill, etc.) cut N & fill S
will to N small musquet dunes
large cut to NW contacted company to flip
 Soils: (reseeding strips, etc.) will spot flip of company agrees.

Cave Area: high

Hydrogeology: (playas, floodplain, drainages, erosive soils, plant indicators, etc.) drainage SW
SW drainage

Wildlife: (habitat, LPC, SDL, etc.) Ø

Range Improvements: (fences, etc.) fence to east & north

Well Infrastructure

V-Door Direction: SW Topsoil: South East

Pad Size: 375 X 340

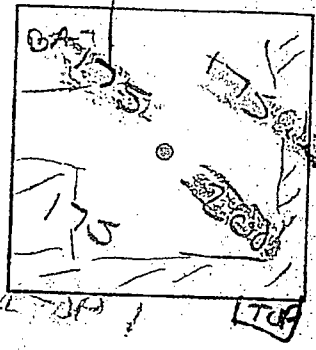
Road Route: s to existing pad

Prod. Facility Placement: NW

Interim Rec: E, W, S

Other: _____

Evaluation: (Moved?) _____



5-8

Existing Pad

APD Tracking # :

Well-Site Evaluation Field Form

Operator Name: CHI Well Name: Area 34 Fed #4 (Flip)
 SHL: Section 34, T. 19 S. R. 80 E. Footage 330 FE. & 330 SI
 Well Type: Horizontal Vertical Oil Gas Other _____ NOS/APD Received? NOS APD
 Surface Management Agency (SMA): BLM FEE STATE Other _____ SMA Contacted? Yes No
 Operator Representative/ Contact Name: Benny Hunt Phone 361 408
 BLM Onsite Representatives Lynch Date 5/8/13

Description & Topography: (cut & fill, etc.) rolling mesquite dunes
3-5 ft

Soils: (reseeding strips, etc.) sandy

Cave Area: high

Hydrogeology: (playas, floodplain, drainages, erosive soils, plant indicators, etc.) to S

Wildlife: (habitat, LPC, SDL, etc.) Ø

Range Improvements: (fences, etc.) Ø

Well Infrastructure

V-Door Direction: E Topsoil: N

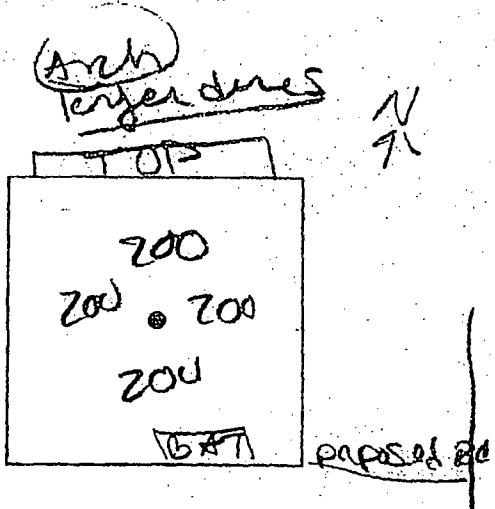
Pad Size: 200 x 200

Road Route: east to pipeline

Prod. Facility Placement: S

Interim Rec: NEW

Other: _____



Evaluation: (Moved?) _____

9-12 waiting slip to hear if company will

pipeline

Notice of Staking

(Not to be used in place of Application for Permit to Drill Form 3160-3)

Submit original and one copy

1. Oil Well <input checked="" type="checkbox"/> Gas Well _____ Other (Specify) _____	
2. Name, Address, and Telephone Number of Operator CHI Energy, Inc. P.O. Box 1799 Midland, TX. 79702	
3. Name and Telephone Number of Contact Person Gary Womack (432) 634-8958 / John Qualls (432) 685-5001	
4. Surface Location of Well. Attach: (a) Sketch showing road entry onto pad, pad dimensions, and reserve pit (b) Topographical or other acceptable map (e.g., a USGS 7-1/2" Quadrangle) showing location, access road, and lease boundaries SHL: 330 FWL + 330 FWL	
5. Lease Number NM- 428657	11. Section, Township, Range, Meridian; or Block and Survey; or Area Sec. 34, T. 19S, R. 28E
6. If Indian, Allottee or Tribe Name	12. County, Parish or Borough Eddy
7. Unit Agreement Name	13. State NM
8. Well Name and Number Arco 34 Fed 3H	14. Name and Depth of Formation Objective(s) Bone Spring
9. American Petroleum Institute Well Number (if available)	15. Estimated Well Depth MD: 12751' TVD: 8285'
10. Field Name or Wildcat	16. For directional or horizontal wells, anticipated bottom hole location 330 FSL + 330 FWL
17. Additional Information (as appropriate; include surface owner's name, address, and, if known, telephone number)	

18. Signed Barry W. [Signature] Title Permit Agent Date 4/25/13

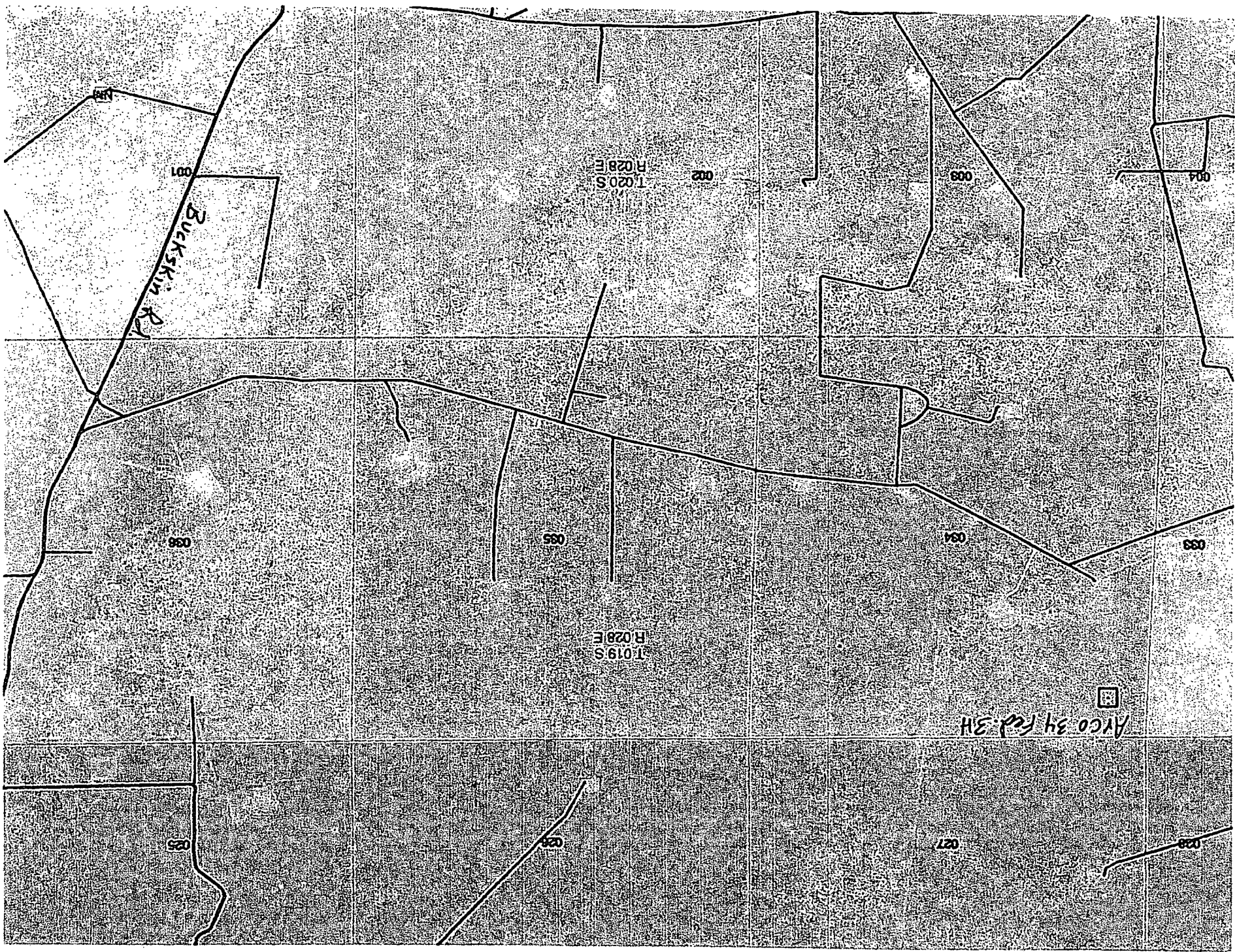
Note: When the Bureau of Land Management or Forest Service, as appropriate, receives this Notice, the agency will schedule the date of the onsite inspection. You must stake the location and flag the access road before the onsite inspection. Operators should consider the following before the onsite inspection and incorporate these considerations into the Notice of Staking Option: as appropriate:

- (a) H₂S Potential
- (b) Cultural Resc
- (c) Federal Right

ONSITE: Scheduled _____

ad Date Performed 5-9-13
Initial & Return to LIE

NWNW
SWSW
BLM
N Pot
H
N



Engineer Worksheet

Carlsbad Field Office

620 E. Greene St.
Carlsbad, NM 88220-6292

Tracking Number:	<u>ATS-13-733</u>	County:	<u>Eddy</u>		
Company:	<u>CHI Operating Inc</u>	Well Name and Number:	<u>3H-Arco 34 Federal</u>		
Surface Hole Location:	<u>0330'/S. & 0330'/W., SEC.34, 19, 28</u>	Bottom Hole Location:	<u>0330'/N. & 0330'/W., SEC.34, 19, 28</u>		
Lease Number:	<u>NM0428657</u>	Prod Status:	<u>PROD</u>	Effective:	<u>10/17/1973</u>
Bond:	<u>STATEWIDE</u>	Bond #:	<u>NM1616</u>	Potash:	<u>NO</u>
NOS Received:	<u>04/26/2013</u>	APD Received:	<u>07/29/2013</u>	10-Day LTR Sent:	<u>08/06/2013</u>
Acreage:	<u>160</u>	Orthodox:	<u>No</u>	COM Agr Required:	<u>NO</u>

Deficiencies Noted:

- Form 3160-3 Survey Plat Drilling Plan Surface Use Plan Bonding Original Signature Operator Cert Statement
 Other Deficiencies:

Adjudication Comments: Deficiencies: 1. BOP test paragraph requires clarification. Two statements indicate that every BOP part will be tested to 3000 psi, last sentence has a different test for annular. Is BOPE test done by independent tester? 2. Is the 4.5" casing being set as a liner or is a crossover from the 7" used? If a liner, overlap required. If a crossover, depth of DV tool. 3. Verify mud weights-bottom hole mud is lighter than the fresh water mud. 4. Choke manifold does not meet Onshore Order 2 requirements for several items. Also diagram implies a flex hose - no variance submitted, no documentation submitted. 5. Box 18 well goes within 330' of a deep gas well along the horizontal.

GEO Report Completed 09/02/2013 Rutley, James

Technical Checklist

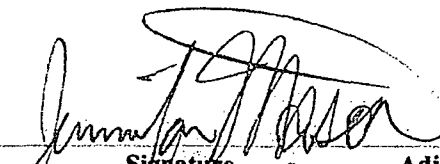
Plat: no Elevation: _____
Proposed Depth: TVD: _____ MD: _____ Targeted Formation: Bone Spring
Anticipated Water-Oil Gas, Etc: Expected fresh water above 260 ft/ Oil-Gas Yates, 7-Rivers, Queen, Delaware, and Bone Spring.
Casing/Cement Program: See COA for depth changes/ Okay
Bottom Hole Mud Weight: 0.0 BHP: _____ MASP: _____ Horizontal Directional Re-entry
Well Control Prog (BOP, ETC): 5M BOP System tested to 3,000 psi Mud Program: See COA
Test-Log-Core Programs: GR/N & Gyro. No coring is planned.
H2S or Other Hazards: H2S no. High Cave/Karst. Possibility of lost circulation in the Grayburg, San Andres, Capitan Reef (if encountered), Delaware, and Bone Spring.

Water Basin: _____
Casings to Witness: Surface Intermediate Production CIT Required Other Witness

Comments:

JENNIFER MASON
Engineer Name

09/09/2013
Date


Signature
Entered in
ADMS

Adjudication Date

Adjudicator Initials

DRILLING PLAN APD DEFICIENCY REVIEW CHECKLIST

ATS #: 13-733

Operator : Chi Operating, Inc.

Well Name and Number : Arco 34 Federal 3H

Location : SHL 0330FSL 0330FEL M / BHL 0330FNL 0330FWL D 34-19S-28E

Lease Number : NM 0428657

W job

YES NO

- Estimated Tops of All Geologic Formations
- Estimated Depths / Thickness of : Water Hydrocarbons Other Minerals
- If Identified Above, Plan for Protection
- Pressure Control : BOP/BOPE Schematic BOP/BOPE Testing Procedures
 Manifold Schematic from Manifold to Closed Loop System
 Flex Line Specs/Schematic
- Proposed Casing Program : Size Grade Weight Joint Setting Depth
 NA Split String Segments New / Used Hole Safety Factors
- Cement Details : Additives Yield ? DV Tool Depth TOC Excess Cement
 NA Pilot Hole Cement
- Type and Characteristics of Mud System
- Air Drilling Description
- Testing, Coring, and Logging Procedures
- Expected Bottom Hole Pressure and Temperature
- Abnormal Conditions : NA Pressure NA Temperature Lost Circulation
- If H₂S is Present, Plan to be Attached Including Emergency Numbers
- If Well is Directional / Horizontal, is Survey Information Present
- NA If Unit Well, is Well Included in Current Unit POD

Remarks and Other Needed Information

- 1 Deficiencies: 1. BOP test paragraph requires clarification. Two statements indicate that
- 2 every BOP part will be tested to 3000 psi, last sentence has a different test for annular.
- 3 Is BOPE test done by independent tester? 2. Is the 4.5" casing being set as a liner or is a
- 4 crossover from the 7" used? If a liner, overlap required. If a crossover, depth of DV tool.
- 5 3. Verify mud weights-bottom hole mud is lighter than the fresh water mud. 4. Choke
- 6 manifold does not meet Onshore Order 2 requirements for several items. Also diagram
- 7 implies a flex hose - no variance submitted, no documentation submitted.
- 8 5. Box 18 well goes within 330' of a deep gas well along the horizontal.
- 9 _____

*Def. Rec.
8/13/13 CRW
Route to
Geo*

Signature : s/s Wesley W. Ingram

Date : 8/5/2013

APD Received : 7/29/2013

High Cave Karst: two casing strings, both to circulate cement to surface.

13 3/8 surface csg in a		17 1/2 inch hole.		Design Factors				SURFACE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	54.50	J 55	ST&C	26.95	6.98	1.7	350	19,075	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500				Tail Cmt	does	circ to sfc.	Totals:	350	19,075
Comparison of Proposed to Minimum Required Cement Volumes									
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	410	549	297	85	8.90	928	2M	1.56

9 5/8 casing inside the		13 3/8		Design Factors				INTERMEDIATE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	36.00	J 55	LT&C	4.06	1.25	1.02	3,100	111,600	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,111				Totals:			3,100	111,600	
The cement volume(s) are intended to achieve a top of				0	ft from surface or a			350	overlap.
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	775	1435	1007	42	10.00	1851	2M	0.81

Tail cmt proposed for the csg below could overlap the previous csg shoe.

7 casing inside the		9 5/8		Design Factors				PRODUCTION		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight		
"A"	26.00	P 110	LT&C	3.64	1.94	2.83	6,787	176,462		
"B"	26.00	P 110	LT&C	5.39	1.59	2.83	700	18,200		
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500				Totals:			7,487	194,662		
B Segment Design Factors would be:				49.54	1.79		if it were a vertical wellbore.			
No Pilot Hole Planned				MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
				7487	7325	7325	6787	70	10	7487
The cement volume(s) are intended to achieve a top of				0	ft from surface or a			3100	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg	
8 3/4	0.1503	1530	2248	1186	90	9.10	1898	2M	0.55	

Casing program depths do not match curve to lateral proposal.

4 1/2 Liner w/top @ 7187		Design Factors				LINER				
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight		
"A"	11.60	P 110	LT&C	3.41	1.89	3.04	507	5,881		
"B"	11.60	P 110	LT&C	5.95	2.15	3.04	4,039	46,852		
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,619				Totals:			4,546	52,734		
A Segment Design Factors would be:				5.29	2.15		if it were a vertical wellbore.			
No Pilot Hole Planned				MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
				11733	7360	7360	6787	91	10	7694
				Liner top	7187		ft from surface or a			
							300	overlap.		
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg	
6 1/8	0.0942	0	0	435		9.20			0.56	

No cement needed. Open hole completion system.



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220-6292



In reply refer to:
4100 (P0220)
ATS-13-733

8/1/2013

Justin Wilson
P.O. Box 2323
Carlsbad, NM 88221

Dear Permittee:

The Bureau of Land Management is in the process of granting an Application for Permit to Drill (APD) for a gas and/or oil well within your grazing allotment. Construction activity associated with the development of this APD may disturb livestock operations in the immediate area. The location of the APD is shown on the enclosed map.

Also, subsequent to the development of the oil/gas well(s), several rights-of-way may be issued for pipelines, roads, and distribution lines in the near future within your grazing allotment. Activity associated with the construction of facilities associated with these rights-of-way may also disturb livestock operations within your grazing allotment.

Construction of the facilities authorized by the APD and associated ROW for pipelines, roads, and distribution lines may begin in the near future. If you have any questions or concerns regarding these actions, please contact our adjudication staff at 575-234-5972, and reference this number: ATS-13-733.

Sincerely,

for George MacDonell
(Acting) Assistant Field Manager of Minerals



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Carlsbad Field Office
620 E. Greene St.
Carlsbad, NM 88220-6292



In reply refer to:
4100 (P0220)
ATS-13-733

8/1/2013

Winston Ballard
1819-2 N. Canal
Carlsbad, NM 88220

Dear Permittee:

The Bureau of Land Management is in the process of granting an Application for Permit to Drill (APD) for a gas and/or oil well within your grazing allotment. Construction activity associated with the development of this APD may disturb livestock operations in the immediate area. The location of the APD is shown on the enclosed map.

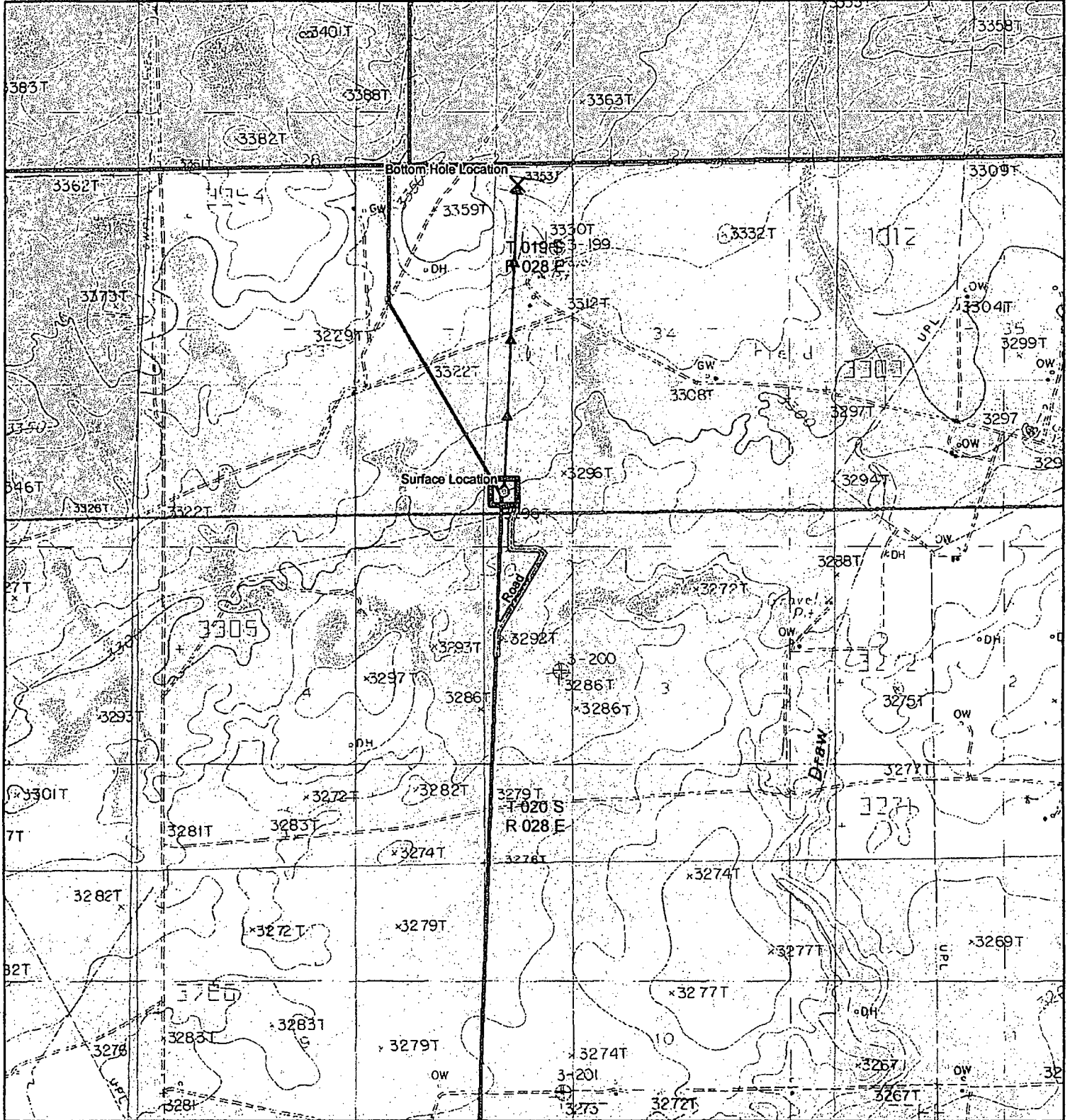
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Sincerely,

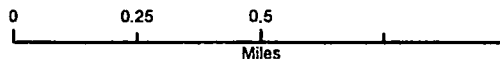
Kristi Davis

for George MacDonell
(Acting) Assistant Field Manager of Minerals



Proposed APD

1:24,000



- Pending APD
- Bottom Location
- Direction
- Flowline
- Frac Pond
- Pipeline
- Powerline
- Road
- Well Pad
- NM Townships
- Allotment Boundary
- Frac Pond
- Road
- Well Pad
- NM Surface Ownership
- BLM
- Bureau of Reclamation
- Dept. of Energy
- Forest Service
- National Park Service
- Private
- State

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate use with other data, or for purposes not intended by BLM. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification. Map created 9/20/2012

3152.4

CHECKLIST FOR APPLICATION FOR PERMIT TO DRILL (APD)

SEC. 34-T19S-R28E
3H-ARCO 34 FEDERAL
SH: 0330/S. & 0330/W.
BH: 0330/N. & 0330/W.

NM428657
CHI OPERATING INC
ATS-13-733

Well/Leasing Number/ATS- 13-733

Verify Dates

- Notice of Staking Received Date: 4/26 30 Day NOS posting ends: 5/26/13
- Pull Abstract, Print operator bond abstract, Make Map, Scan to E-folder.
- NOS entered in ATS & AFMSS. Create Label, Make hard copy file folder, move from E-copy to 09 NOS folder.
- NOS copy posted in NOS book of BLM front reception area. Copy of NOS to Surface Specialist with QL sticker.

APD received date: 7/29 (Circle one) HC or EC 30 Day APD posting ends:

- \$6500 APD application fee received
- Check drawer for NOS.
- Distribution stamps on front page of all APDs
- APD Date stamped on back of APD (form 3160.3)
- Put NOS date received on front of APD under heading.
- Copy of APD front page posted in APD book in BLM reception area

Verify Location with Wall Maps:

Well Location (7 1/2 Minute Map) - Find 1/4-1/4
SHL Aliq: SUNDA Lot #:
BHL Aliq: NUNDA Lot #:

GFO District Map: Use to determine surface owner (or surface management entity)

- BLM
- Fee Private Surface Owner Agreement received Yes No
- State
- Split Estate stamped on front of GFO copy, I & E copy, and OCD copy
- Bureau of Reclamation (Contact is Gary L. Davis, P.E. at (505) 462-3641)
- BOR letter sent via e-mail to Gary Davis GDavis@uc.usbr.gov APD copy mailed date:

Potash Map Not Potash (or) Potash Type R111 Secretary's

- APD distribution pages stamped with potash type
- In WIPP area? WIPP email sent date: (Export to APD-FY Folder. Enter remark in AFMSS)
- Copy of APD front page via e-mail to both: melvin.balderama@wipp.ws and Susan.McCausti@wipp.ws Fax: (575) 234-6003.
- WIPP noted on front page of APD: EMAIL RESPONSE FROM WIPP MUST BE ATTACHED TO I&E APD COPY

Cave/Karst Map Critical High Medium Low

Plan of Development - Wildlife

- POD Form not needed
- POD Form needed. Zone:

Lease Abstract:

- Search in LR2000, verify, and print 2 copies of Lease Abstract. Attach one copy to GFO copy, one to I & E copy.
- Acres in Lease match box 16?
- Is operator a lessee or have operating rights? Yes No
- Production Status: Held by Production Effective Date: 10/17/13
- Check - is Lease current? (not expired?)
- Check MTPs, Panel maps to verify lease numbers. Print map and highlight lease area. Keep with GFO copy.
- Surface Hole Location (SHL): Lease #: NM428657
- Bottom Hole Location (BHL): Lease #: (If BHL Lease # different, copy MTP for file)

Adjudication:

NW 116

(See bond list) Bond Type: Individual Statewide Nationwide

- Print Bond Abstract
- Acreage dedicated to well shown on APD front page & on Plat page. Match?
- APD is: New Re-submittal Re-entry: (Check out old file folder from file room, route to Permitting Staff)
- APD (Form 3160-3) front page filled out completely. Signed by Operator (or representative)
- Survey Plat (Form C-102) filled out completely. Signed by operator Signed & Stamped by Surveyor
- Plat header, Drawing, APD front page legal description and footages all match and all match maps
- Maps (The three maps below may be combined but the Topography Map is necessary without exception!)
 - Location (topography map of area around section, physical features/description)
 - Vicinity (shows several T & R)
 - Area (1-mile radius)
- Drilling Plan Master Drilling Plan? (Make copy for CFO, Operator, I&E, if no drilling plan included in APD)
- Rig Layout, shown in feet EOP & Choke diagram H2S Plan with emergency contacts & phone #
- Surface Use Plan Final Certification page on separate page and signed by Operator (or representative)
- Directions to well site given
- Plat for roads, pipelines, electric lines, etc. (These may be shown on maps)

Computer Programs:

- ATS (APD Tracking System)** Complete tabs: Adjudication, Quicklook's, Engineer. Date entered: 7/29
- Hyperlinked to Electronic Folder
- Electronic Folder:** COA form copied to file - well data entered
- Move electronic NOS file to electronic APD
- AFMSS:** Date well information entered: 7/29 (Fill in Well header & Adjudication Screens)

Plan Photocopy & Post:

- CFO copy of APD scanned after adjudication
- Exported or saved to E Folder from E-copy (electronic) folder? (FY09 APD Pending Folder)
- Copy Plat page. Rec'd date, Log # & well type on front of Plat Copy. Plat Copy sent to GIS Dept
- APD front page copy posted in Reception Area at front of APD Posting binder

Create File Folders & Labels:

- Make file folder/labels for folder tab
- Attach labels to file, jacket, Pink (Adjud.), Blue (Tracking), & Green or Yellow (Sign Out) pages for file folder & jacket.
- Make manila folder for routing, pencil in well name & # and operator name on tab. Place into brown folder.

Deliver to Specialist:

- Attach QL - On Site sticky note
- Potash Specialist** (if applicable) Date QL On-site to Potash: Decision:
- Surface Specialist** Date QL on-site to Surface Specialist: 7/29
- Engineer QL & Geo Report request (I&E copy of APD)** sent to Date: 7/29

Review done by:

 Date: 7/29/13

Well-Site Evaluation Field Form

Operator Name: chi Well Name Arco 34 Ed NO 3H
 SHL: Section 34 T. 19 S. R. 28 E. Footage 300 FW & 320 FW
 Well Type: Horizontal Vertical Oil Gas Other _____ NOS/APD Received? NOS APD
 Surface Management Agency (SMA): BLM FEE STATE Other _____ SMA Contacted? es No
 Operator Representative/ Contact Name: Barry Hunt Phone 575 361 4078
 BLM Onsite Representatives Lynch Date 5/9/13

Description & Topography: (cut & fill, etc.) cut N & fill S

will to N small mesquite dunes

low cut to NW contacted company to flip
will spot flip to company agrmt.

Soils: (reseeding strips, etc.) brnly

Cave Area: high

Hydrogeology: (playas, floodplain, drainages, erosive soils, plant indicators, etc.) drainage SW
SW drainage

Wildlife: (habitat, LPC, SDL, etc.) Ø

Range Improvements: (fences, etc.) fence to East & North

Well Infrastructure

V-Door Direction: SW Topsoil: south east

Pad Size: 375 X 390

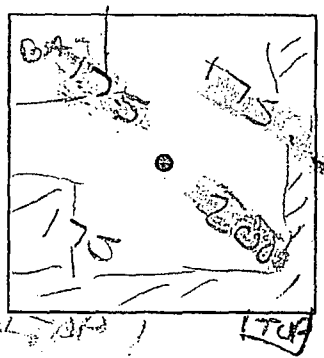
Road Route: s to existing pad

Prod. Facility Placement: new

Interim Rec: E, W, S

Other: _____

Evaluation: (Moved?) _____



*

5-8

existing pad

X00J

KWT

QUALITY CONTROL CHECKLIST

WELL NAME : 3H-ARLO 34 Fed

ATS- 13-733

APD Received: 7/29 NOS Received: 4/26 Post Date Ends: 5/26/13

- Well name and legal description, is same on front page, plat, COA, EA, and file folder?
- Grazing Letter attached or No Allot (noted on front page of APD)
- Field Notes
- NOS Yes (Note rec'd date on APD front page) No ("No NOS" on APD front page)
- Front Page of APD legal description checked?
- In Potash area Yes No Potash Letter Potash Memo
- Potash Memo: Approved Denied Deferred
- Cave/Karst High Med Low
- H2S Plan included in APD Yes or No
- Geo Report H2S plan needed or No?
- Split Estate stamped on CFO and I & E copy if private surface with Federal Minerals
- Sundry Notice: Engineering or SPS Initials on CFO Copy? Signature card attached
- Original (C-102) Plat Information Correct
- Signatures: APD front page Plat page Surface Use Plan Certification page
- Dedicated Acres on Plat and Front Page are same.
- Land Ownership: BLM BOR State Fee PSOA attached?
- Are all Maps, Plats, Drilling & Surface Use Plan Correct?
- Is Rig Layout correct
- Are BOP, BOPE, Choke Diagrams, and Closed Loop diagrams enclosed and correct?
- COA (Stips) Are copies attached to Original APD, Operator, I&E, OCD?
- EA: (or CX) Legal description & Lease Number correct? Signature of NRS.
- Is Plan of Development for Wildlife required? Yes NA
- Onsite date correct in in ATS and AFMSS?
- Letters: 10 Day 7 Day 30-Day _____
- Is APD okay to sign?
- APD Complete Date: 8/13/13
- Lease Abstract, Is lease current?
- Engineering Worksheet.
- Stamps Regular NMSO for Potash
- Engineering changes and stamps on all copies (except "witness" is on CFO & Engineering only).
- Sent for Signature box in tracking Date: 9/10/13