RM

ATS-10-175
EA-10-253

RECEIVED
FEB -5 2010
NMOCD ARTESIA

OCD-ARTESIA

Form 3160-3
(August 2007)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No.	SHL:LS#NMNM104676 BHL:NMNM121110
6. If Indian, Allotee or Tribe Name	N/A
7 If Unit or CA Agreement, Name and No.	N/A
8. Lease Name and Well No.	CARBON VALLEY 31 FED COM #1H
9 API Well No.	30-015-37603
10 Field and Pool, or Exploratory	DOG CANYON; WOLFCAMP ✓
11. Sec., T. R. M. or Blk.and Survey or Area	SEC. 31, T16S, R28E
12 County or Parish	EDDY
13 State	NM

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

2 Name of Operator: MURCHISON OIL & GAS, INC.

3a. Address: 1100 MIRA VISTA BLVD. PLANO, TX. 75093-4698

3b. Phone No. *(include area code)*: 972-931-0700

4. Location of Well *(Report location clearly and in accordance with any State requirements *)*

At surface: 1980' FSL & 200' FEL, UNIT I UNORTHODOX LOCATION

At proposed prod. zone: BHL: 1980' FSL & 330' FWL, UNIT L

14 Distance in miles and direction from nearest town or post office*: APPROXIMATELY 11 MILES NE OF ARTESIA, NEW MEXICO

15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any)	200' AT SURFACE 511' AT TOP WOLFCAMP	16 No. of acres in lease: 80	17 Spacing Unit dedicated to this well: 160
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft	N/A	19. Proposed Depth: 11088' MD 6506' TVD PILOT 6600' TVD	20. BLM/BIA Bond No. on file: NM2163
21 Elevations (Show whether DF, KDB, RT, GL, etc.): 3558' GL		22. Approximate date work will start*: 03/01/2010	23. Estimated duration: 30-35 DAYS

24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office)
4. Bond to cover the operations unless covered by an existing bond on file (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: A Arnold Nall	Name *(Printed/Typed)*: A. ARNOLD NALL	Date: 12/22/2009
Title: VP OPERATIONS		
Approved by *(Signature)*: /s/ Don Peterson	Name *(Printed/Typed)*: /s/ Don Peterson	Date: FEB 03 2010
Title: FIELD MANAGER	Office: CARLSBAD FIELD OFFICE	

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2) Well becomes orthodox at approximately 6400' M.D. *(Instructions on page 2)

Subject to like approval by state due to potential commingle behind pipe.

Roswell Controlled Water Basin

NSL

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

State of New Mexico
Energy, Minerals and Natural Resources Department

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240

DISTRICT II
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
30-015-37603	17970	DOG CANYON; WOLFCAMP

Property Code	Property Name	Well Number
37485	CARBON VALLEY 31 FEDERAL COM	1H

OGRID No.	Operator Name	Elevation
153623	MURCHISON OIL & GAS, INC.	3558'

Surface Location

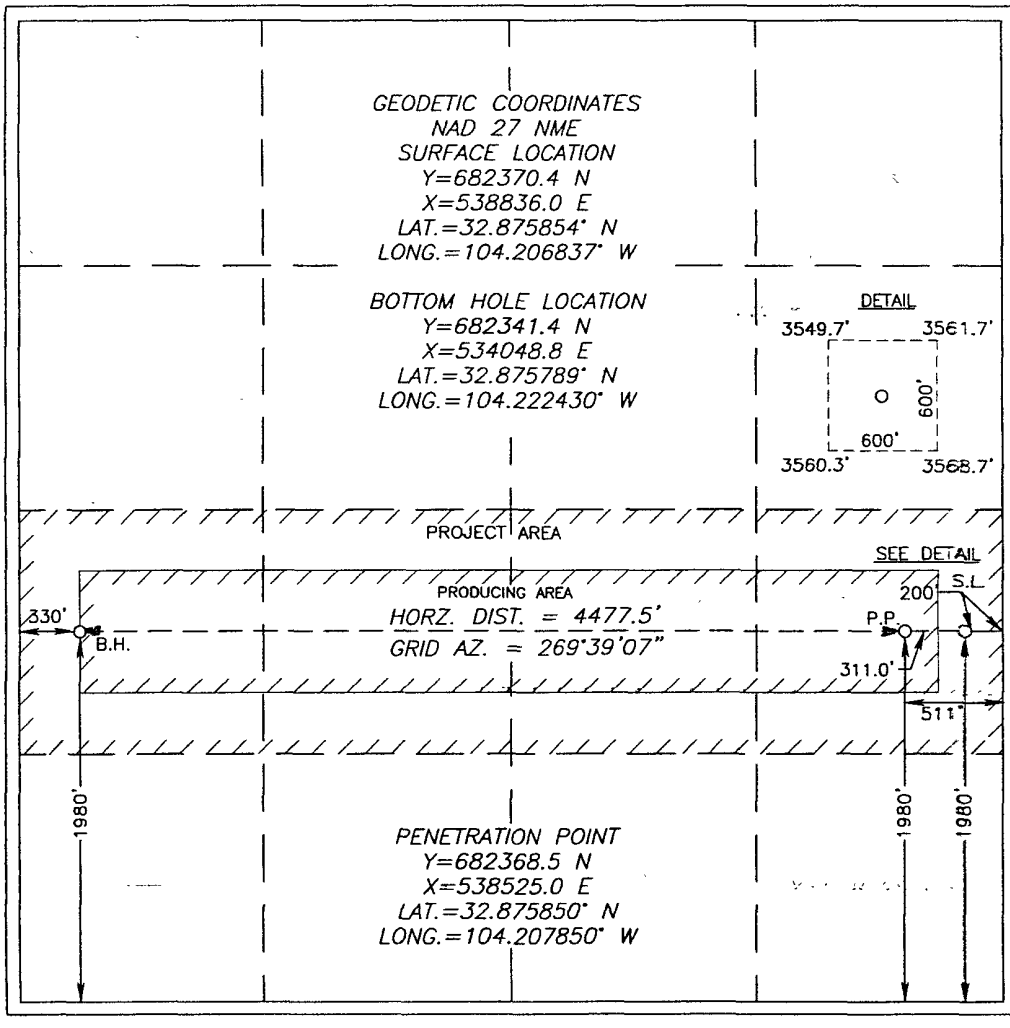
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	31	16-S	28-E		1980	SOUTH	200	EAST	EDDY

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
L	31	16-S	28-E		1980	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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



OPERATOR CERTIFICATION

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

A. Arnold Nall 12/28/09
Signature Date

A. Arnold Nall
Printed Name

SURVEYOR CERTIFICATION

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

DECEMBER 4, 2009
Date Surveyed LA REV:12/23/09

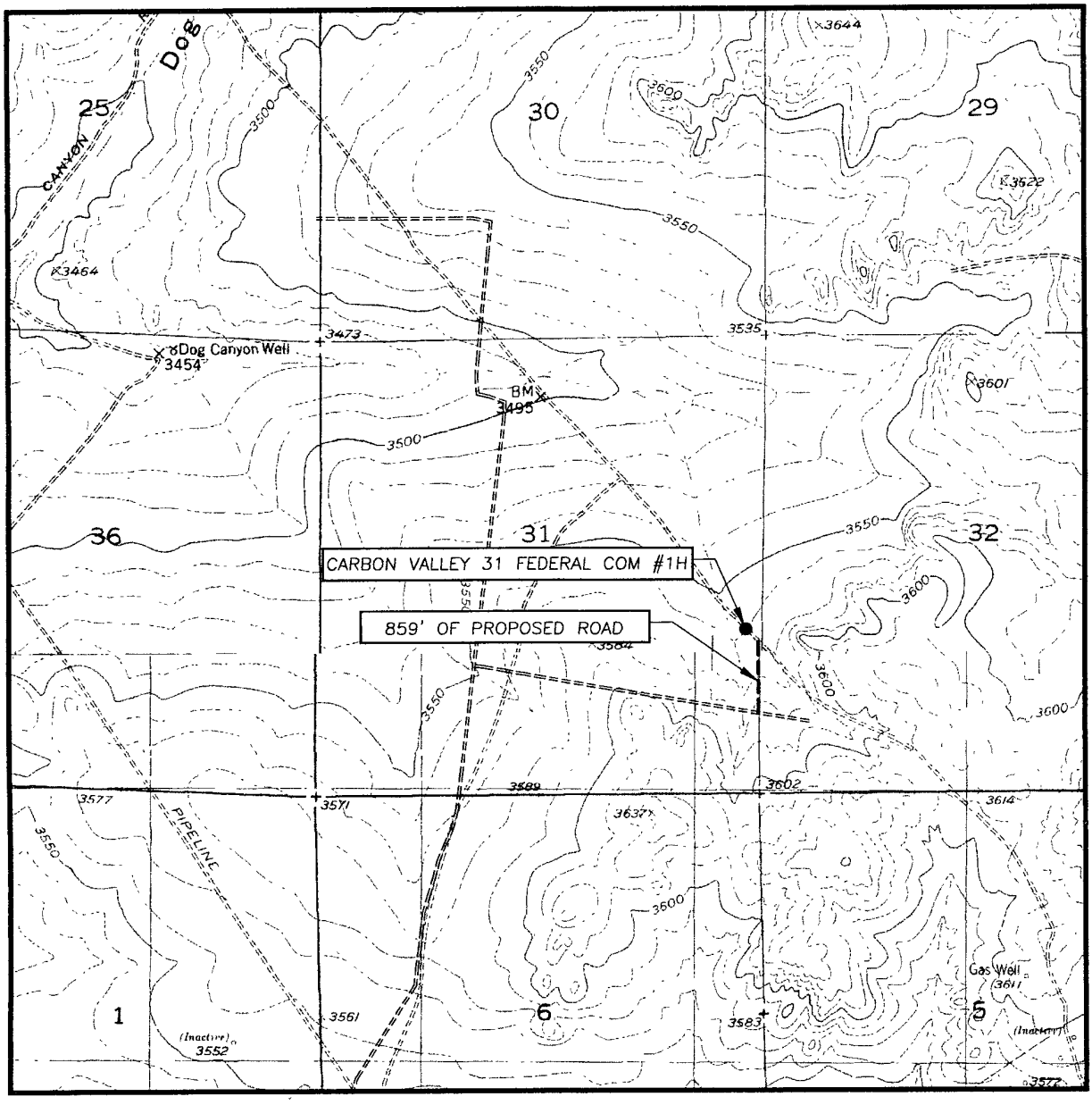
Signature & Seal of Professional Surveyor

Ronald J. Eidson 12-23-09
09111148

Certificate No. GARY EIDSON 12641
RONALD J. EIDSON 3239

EXHIBIT D

LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
DIAMOND MOUND, N.M. – 10'
RED LAKE, N.M. – 10'

SEC. 31 TWP. 16-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1980' FSL & 200' FEL

ELEVATION 3558'

OPERATOR MURCHISON OIL & GAS, INC.

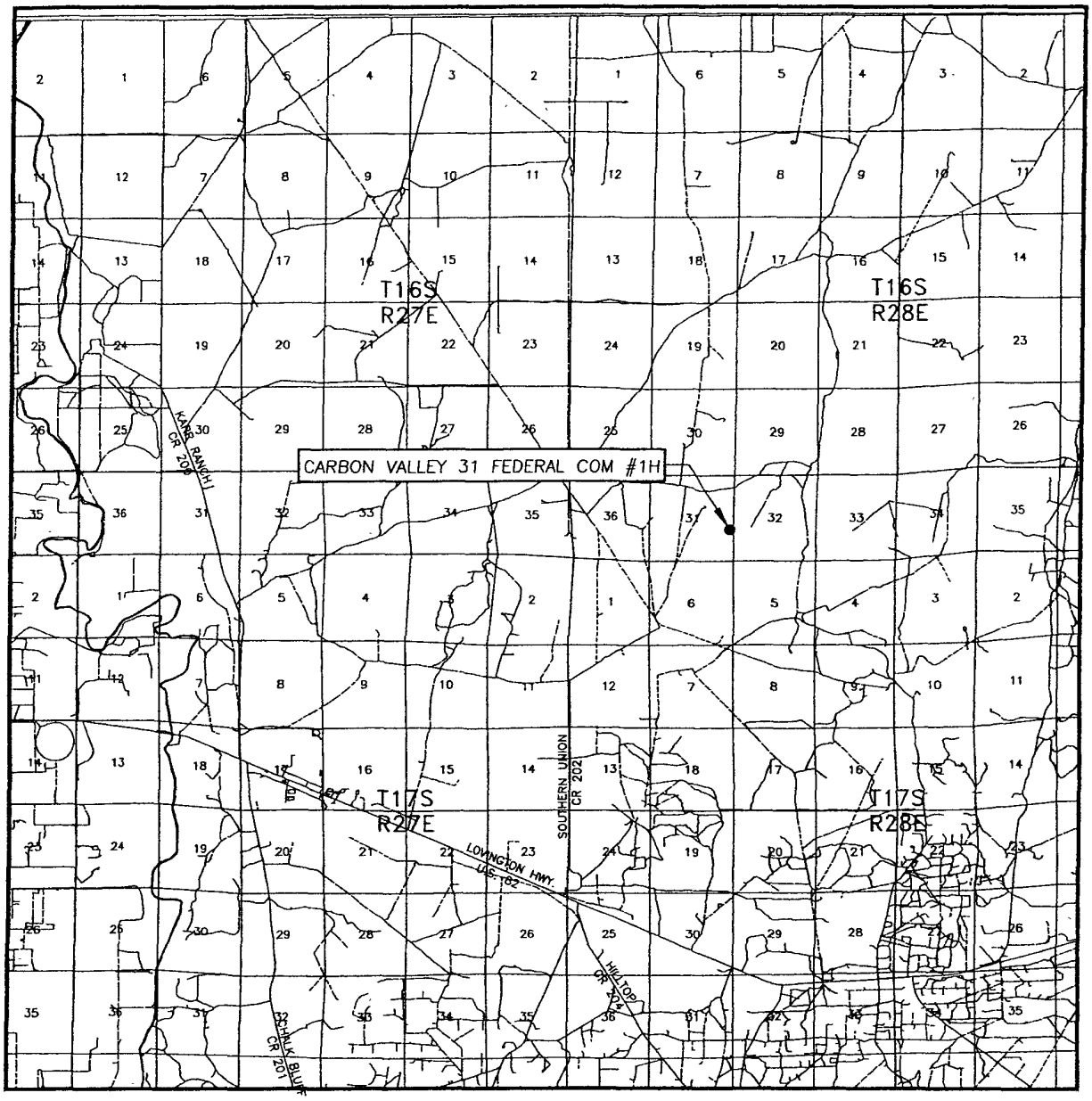
LEASE CARBON VALLEY 31 FED. COM

U.S.G.S. TOPOGRAPHIC MAP
DIAMOND MOUND, N.M.

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

EXHIBIT B

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 31 TWP. 18-S RGE. 28-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 1980' FSL & 200' FEL

ELEVATION 3558'

OPERATOR MURCHISON OIL & GAS, INC.

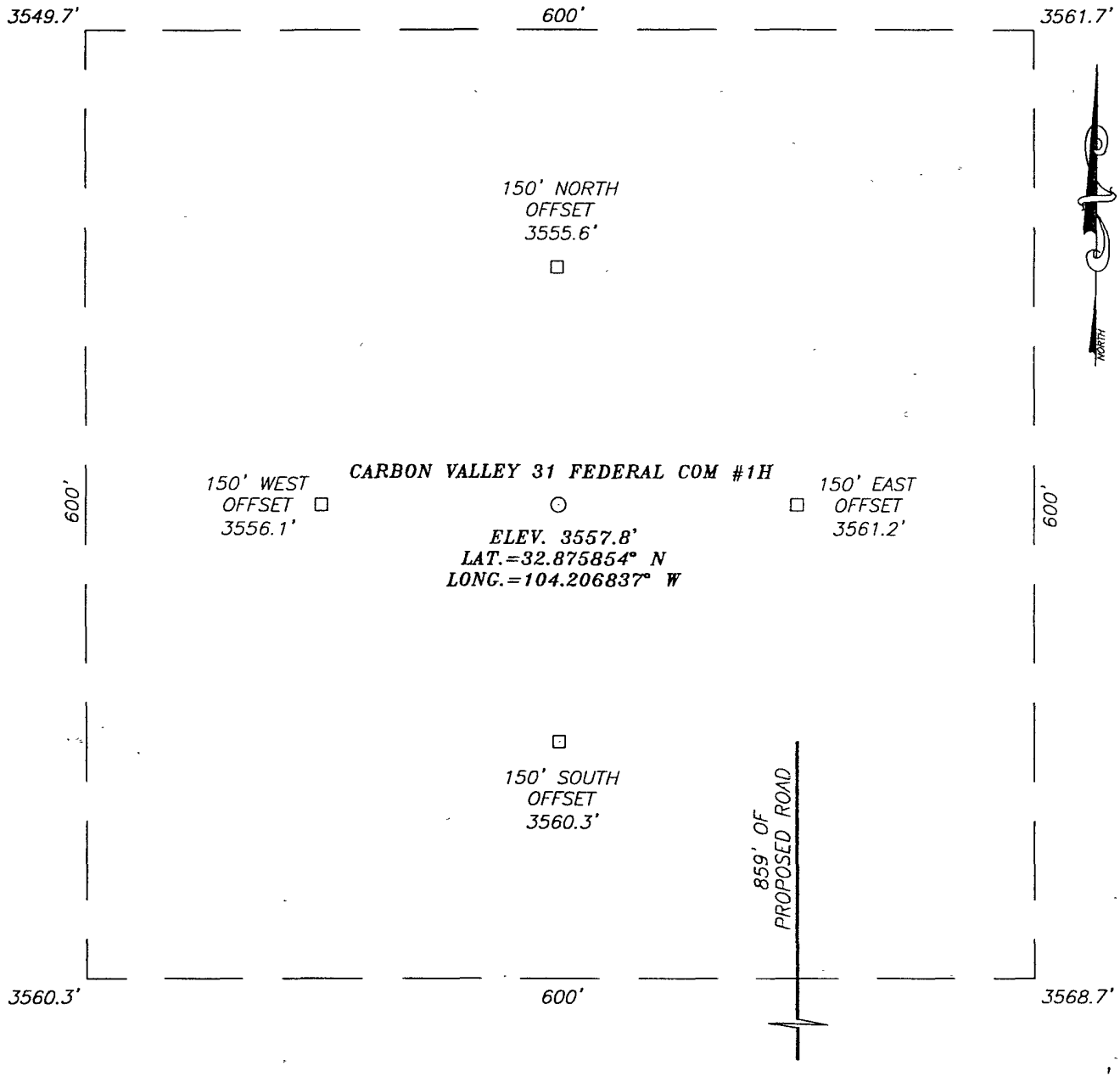
LEASE CARBON VALLEY 31 FED. COM

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

EXHIBIT E-1

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND CO. RD. #202 (SOUTHERN UNION), GO NORTH ON CO. RD. #202 APPROX. 2.6 MILES; TURN LEFT AND GO NORTHWEST APPROX. 2.4 MILES. TURN LEFT AND GO NORTH APPROX. 0.1 MILE TO A "Y" INTERSECTION. VEER RIGHT AND GO NORTHWEST APPROX. 1.0 MILE. TURN RIGHT AND GO SOUTHEAST APPROX. 0.6 MILES TO A PROPOSED ROAD SURVEY. FOLLOW ROAD SURVEY 859 FEET NORTH TO THIS LOCATION.

100 0 100 200 Feet

Scale: 1"=100'

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

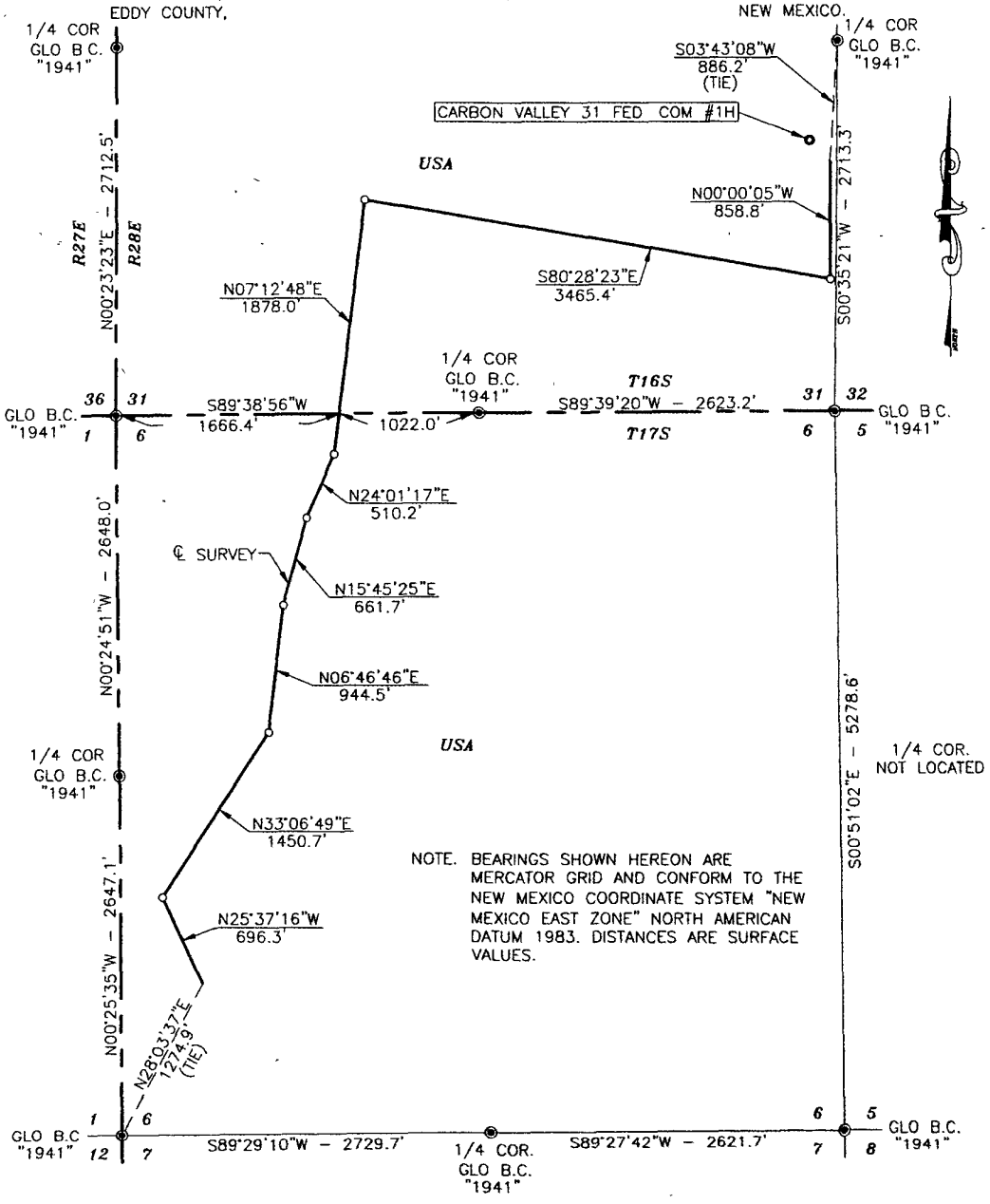
MURCHISON OIL & GAS, INC.

CARBON VALLEY 31 FEDERAL COM #1H WELL
LOCATED 1980 FEET FROM THE SOUTH LINE
AND 200 FEET FROM THE EAST LINE OF SECTION 31,
TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 12/4/09	Sheet 1 of 1 Sheets		
W.O. Number: 09.11.1148	Dr By: LA		Rev 1: 12/23/09
Date: 12/7/09		09111148	Scale: 1"=100'

EXHIBIT E-2

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



NOTE. BEARINGS SHOWN HEREON ARE MERCATOR GRID AND CONFORM TO THE NEW MEXICO COORDINATE SYSTEM "NEW MEXICO EAST ZONE" NORTH AMERICAN DATUM 1983. DISTANCES ARE SURFACE VALUES.

DESCRIPTION

A STRIP OF LAND 50.0 FEET WIDE AND 10465.6 FEET OR 1.982 MILES IN LENGTH CROSSING USA LAND IN SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST & SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO AND BEING 25.0 FEET LEFT AND 25.0 FEET RIGHT OF THE ABOVE PLATTED CENTERLINE SURVEY.

I HEREBY CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO

REGISTERED PROFESSIONAL SURVEYOR 3239

12-22-09

RONALD J EIDSON N.M. P.S. No. 3239

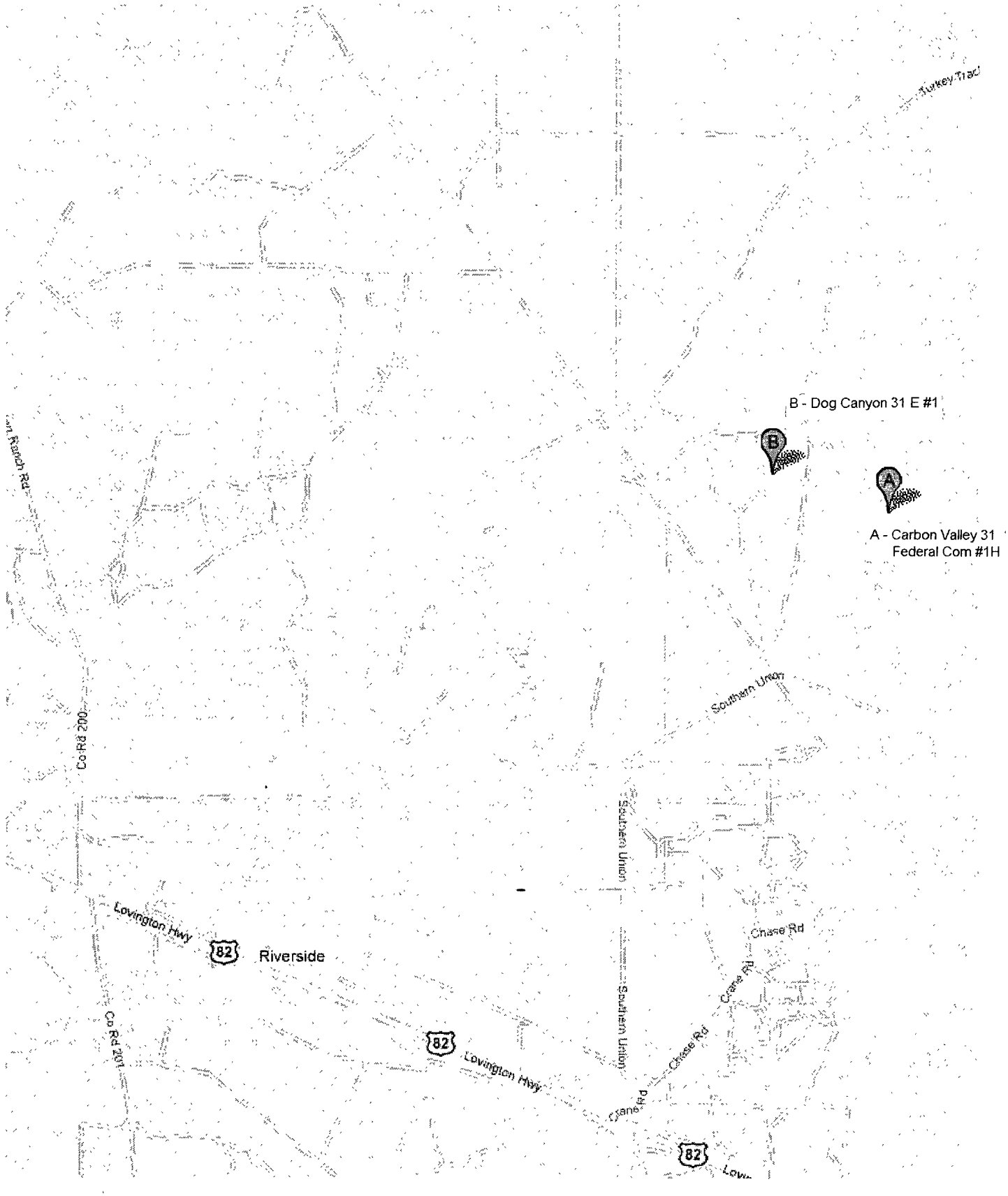
PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

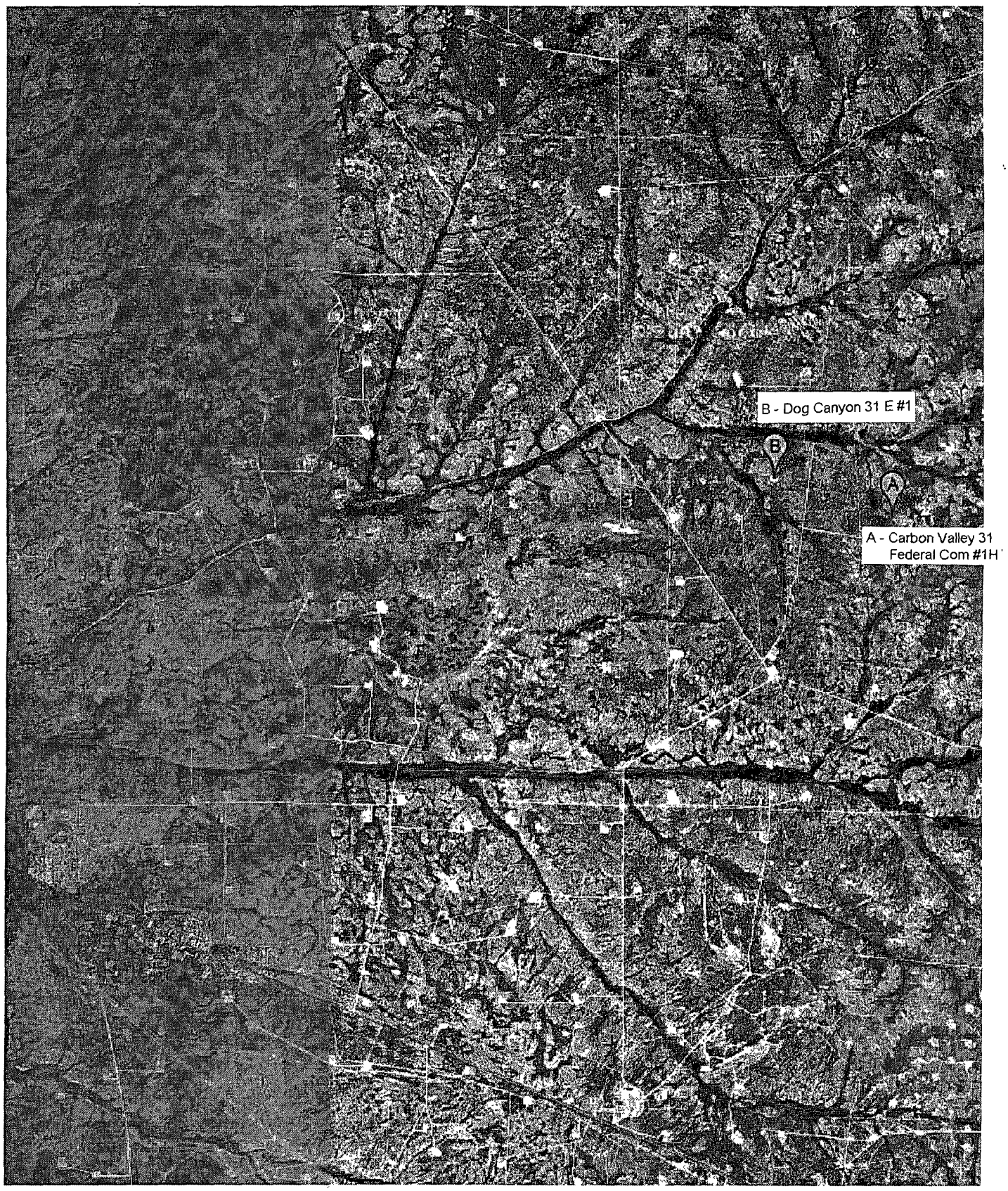
1000 0 1000 2000 FEET
Scale: 1"=1000'

MURCHISON OIL & GAS, INC.

SURVEY OF AN ACCESS ROAD LOCATED IN SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST & SECTION 6, TOWNSHIP 17 SOUTH, RANGE 28 EAST, NMPM, EDDY COUNTY, NEW MEXICO

Survey Date: 12/4/09	Sheet 1 of 1 Sheets	
W.O. Number: 09111148	Drawn By: LA	REV:12/22/09
Date: 12/17/09	09111148_ROAD	


B - Dog Canyon 31 E #1
A - Carbon Valley 31 Federal Com #1H
Turkey Track
Co Rd 200
Southern Union
Lovington Hwy
82
Riverside
Co Rd 201
Chase Rd
Crane Rd
Map data ©2009 Google -



ATTACHMENT TO FORM 3160-3
Murchison Oil & Gas, Inc.
Carbon Valley 31 Fed Com #1-H
SL: 1980' FSL & 200' FEL, UNIT I
BHL: 1980' FSL & 330' FWL, UNIT L
Sec 31, T16S, R28E
Eddy County, New Mexico

1. Proration Unit Spacing: 160 acres

2. Ground Elevation: 3558' Est. RKB 3576'

3. ESTIMATED TOPS OF IMPORTANT GEOLOGIC MARKERS

	DEPTH (RKB)	SUBSURFACE
Yates	337'	+3239'
Queen	1037'	+2539'
Premier	1675'	+1901'
San Andres	1855'	+1721'
Glorietta	3295'	+281'
Yeso	3389'	+187'
Tubb	4603'	-1027'
Abo	5323'	-1747'
Wolfcamp	6476'	-2900'
*Pilot Hole – True Vertical Depth	6650'	-3074'

PROPOSED DEPTHS: TVD 6506' and MD 11088'

4. ESTIMATED DEPTHS OF ANTICIPATED FRESH WATER, OIL, OR GAS

Fresh Water	285' – 305'	Dewey Lake
Fresh Water	375' – 400'	Yates Sandstone
Fresh Water	525' – 545'	Seven Rivers Carbonate
Fresh Water	700' – 710'	Bowers Sand (Seven Rivers)
Oil/Gas	1855'	San Andres
Oil/Gas	3295'	Glorietta
Oil/Gas	4603'	Tubb
Oil/Gas	5323'	Abo
Oil/Gas	6476'	Wolfcamp

5. CASING AND CEMENTING PROGRAM

Casing Size	Hole Size	From To	Weight	Grade	Joint	Conditions
9-5/8"	12-1/4"	0' - 1300'	36.0#	J-55	ST&C	New
7"	8-3/4"	0' – 5850'	26.0#	HCP-110	LT&C	New
4-1/2"	6-1/8"	5750' – 11088'	11.6#	HCP-110	BT&C	New

Casing Size	Burst Rating, psi	Safety Factor	Collapse Rating, psi	Safety Factor	Tension Rating, 1000 lbs.	Safety Factor
9-5/8"	3520	1.25	2020	3.30	394	8.40
7"	9950	3.10	7800	2.54	693	4.60
4-1/2"	10690	3.20	8650	2.60	367	30+

Equivalent or adequate grades and weights of casing may be substituted at time casing is run, depending on availability.

6. CASING DEPTH AND CEMENTING PROGRAM: See COA

9.625" Surface Casing - Cementing Program
Cement lead with 200 sacks of Interfill Class C + additives with yield = 2.45 cu.ft./sack, tail with 175 sacks Premium Plus + additives with yield = 1.34 cu.ft./sack; sufficient volume of cement will be pumped to ensure cement is circulated to surface.

7" Intermediate Casing and Fiberglass Tubing - Cementing Program
Cement lead with 325 sacks of Interfill Class H + additives with yield = 2.77 cu.ft./sack, tail with 300 sacks Super Class H + additives with yield = 1.61 cu.ft./sack; sufficient volume of cement will be pumped to ensure cement is circulated to surface. Will cement below 7" casing via 2-7/8" fiberglass tubing stinger to adequately plug back vertical pilot hole after logging and prior to drilling curve/horizontal section of well. May perform a 2-stage job utilizing DV tool if determined to be necessary to circulate cement to surface.

See COA

4.5" Production Casing - Cementing Program
Plan to utilize 4-1/2" 11.6# HCP-110 BTC Peak completion liner system from RSB packer @ 5750' to TD of 11088' MD. No cement required.

1300' – 11088' 11" 3000# ram type preventers with one set blind rams and one set pipe rams and a 3000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 5500'. See attached Sketch of BOP Equipment.

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.

After setting the 9 5/8" casing, the blowout preventers and related control equipment shall be pressure tested to 3000 psi and 1500 psi respectively. Any equipment failing to test satisfactorily shall be repaired or replaced. Results of the BOP test will be recorded in the Driller's Log.

The BOP's will be maintained ready for use until drilling operations are completed. Pipe and blind rams shall be activated each trip. Annular preventer shall be functionally operated at least weekly.

BOP drills will be conducted as necessary to assure that equipment is operational and each crew is properly trained to carry out emergency duties.

Accumulator shall maintain a pressure capacity reserve at all times to provide for the close-open-close sequence of the blind and pipe rams of the hydraulic preventers.

7. MUD PROGRAM

0 – 1300'	Fresh water / native mud. Wt. 8.4 to 8.6 ppg, vis 28-34 sec, Lime for pH control. Paper for seepage. Lost circulation may be encountered.
1300' – 6200'	Cut brine. Wt. 8.4 – 8.8 ppg, vis 28-29 sec, No control water loss, lime for pH control.
6200' – 11088'	Mud up with XCD Polymer mud system. Wt. 9.0 – 9.5 ppg, Vis 32-40 sec, WL 8-10 cc.

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run open-hole logs and casing, the viscosity and water loss may have to be adjusted to meet these needs.

Mud system monitoring equipment with derrick floor indicators and visual / audio alarms shall be installed and operative prior to drilling into the Wolfcamp formation. This equipment will remain in use until the production casing is run and cemented. Monitoring equipment shall consist of the following:

A recording pit level indicator.
A pit volume totalizer.
A flowline sensor.

9. TESTING, LOGGING AND CORING PROGRAM See COA

   A. Testing program: None planned.

   B. Mud logging program. Two man unit from 1300' to TD.

   C. Electric logging program: CNL/LDT/CAL/GR, MSFL/HALS/GR.

   D. Coring program: None planned.

10. No abnormal temperatures or pressures are anticipated. Low levels of H2S have been monitored in producing wells in the area, so H2S may be present while drilling the well. An H2S Plan is attached to the Drilling Program. Anticipated Bottom Hole Pressure is 2700 PSI (maximum), and anticipated static Bottom Hole Temperature is 125 degrees Fahrenheit.

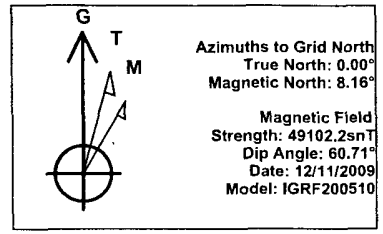
11. Anticipated starting date is March 1, 2010. It should take approximately 30–35 days to drill the well and another 10-15 days to complete.

12. A statement accepting responsibility for operations is attached.

13. The Multi-Point Surface Use & Operation Plan is attached.

14. If the Bureau of Land Management needs additional information to evaluate this application, please advise.

Murchison Oil & Gas



Azimuths to Grid North
True North: 0.00°
Magnetic North: 8.16°

Magnetic Field
Strength: 49102.2snT
Dip Angle: 60.71°
Date: 12/11/2009
Model: IGRF200510

PATHFINDER

WELL DETAILS #1H

Ground Elevation : 3558.00
RKB Elevation: WELL @ 3576.00ft (Original Well Elev)
Rig Name: Original Well Elev

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	682370.400	538836.000	32° 52' 33.084 N	104° 20' 29.333 W	

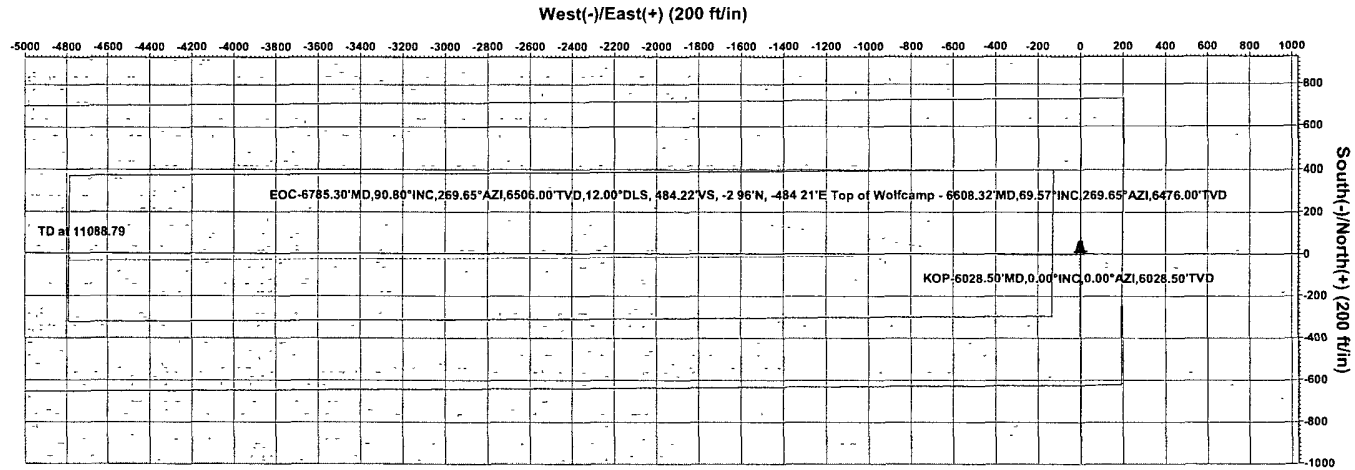
SECTION DETAILS

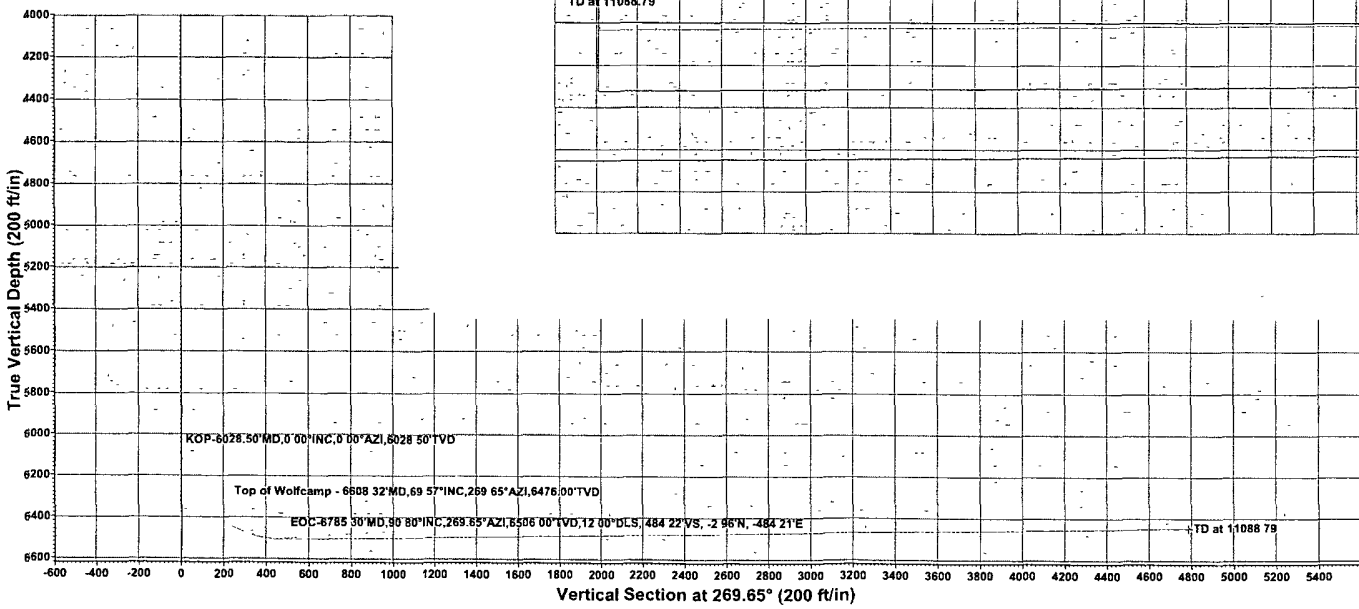
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	6028.50	0.00	0.00	6028.50	0.00	0.00	0.00	0.00	0.00	
3	6785.30	90.80	269.65	6506.00	-2.96	-484.21	12.00	269.65	484.21	
4	11088.79	90.80	269.65	6445.91	-29.24	-4787.20	0.00	0.00	4787.29	PBHL(31#1H)

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL(31#1H)	6446.70	-29.00	-4787.20	682341.400	534048.800	Point

Project: Eddy County
Site: Carbon Valley 31 Federal Com
Well: #1H
Wellbore: OH
Plan: Plan #1 (#1H/OH)





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

Plan: Plan #1 (#1H/OH)
Created By: Nate Bingham Date 12:02, December 22 2009
Checked _____ Date _____

Murchison Oil & Gas

Eddy County
Carbon Valley 31 Federal Com
#1H
OH

Plan: Plan #1

Pathfinder X & Y Planning Report

22 December, 2009

PATHFINDER

Pathfinder Energy Services

Pathfinder X & Y Planning Report

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Project Eddy County

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Carbon Valley 31 Federal Com

Site Position:		**Northing:**	682,370.400 ft	**Latitude:**	32° 52' 33.084 N
From:	Map	**Easting:**	538,836.000 ft	**Longitude:**	104° 20' 29.333 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.00 °

Well #1H

Well Position	**+N/-S**	0.00 ft	**Northing:**	682,370.400 ft	**Latitude:**	32° 52' 33.084 N
	+E/-W	0.00 ft	**Easting:**	538,836.000 ft	**Longitude:**	104° 20' 29.333 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,558.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/11/2009	8.16	60.71	49,102

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	269.65

Survey Tool Program **Date** 12/22/2009

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	11,088.79	Plan #1 (OH)	MWD	MWD - Standard

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-3,576.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
100.00	0.00	0.00	100.00	-3,476.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
200.00	0.00	0.00	200.00	-3,376.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
300.00	0 00	0.00	300.00	-3,276.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
400.00	0.00	0.00	400.00	-3,176.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
500.00	0.00	0.00	500.00	-3,076.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
600.00	0.00	0.00	600.00	-2,976.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
700.00	0.00	0.00	700.00	-2,876.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
800.00	0.00	0.00	800.00	-2,776.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
900.00	0.00	0.00	900.00	-2,676.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,000.00	0.00	0.00	1,000.00	-2,576.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,100.00	0.00	0.00	1,100.00	-2,476.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,200.00	0.00	0.00	1,200.00	-2,376.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,300.00	0.00	0.00	1,300.00	-2,276.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,400.00	0.00	0.00	1,400.00	-2,176.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,500.00	0.00	0.00	1,500.00	-2,076.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,600.00	0.00	0.00	1,600.00	-1,976.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,700.00	0.00	0.00	1,700.00	-1,876.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,800.00	0.00	0.00	1,800.00	-1,776.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
1,900.00	0.00	0.00	1,900.00	-1,676.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,000.00	0.00	0.00	2,000.00	-1,576.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,100.00	0.00	0.00	2,100.00	-1,476.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,200.00	0.00	0.00	2,200.00	-1,376.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,300.00	0.00	0.00	2,300.00	-1,276.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,400.00	0.00	0.00	2,400.00	-1,176.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,500.00	0.00	0.00	2,500.00	-1,076.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,600.00	0.00	0.00	2,600.00	-976.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,700.00	0.00	0.00	2,700.00	-876.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,800.00	0.00	0.00	2,800.00	-776.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
2,900.00	0.00	0.00	2,900.00	-676.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,000.00	0.00	0.00	3,000.00	-576.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,100.00	0 00	0.00	3,100.00	-476.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,200.00	0.00	0.00	3,200.00	-376.00	0.00	0.00	0.00	0 00	682,370.40	538,836.00
3,300.00	0.00	0.00	3,300.00	-276.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,400.00	0.00	0.00	3,400.00	-176.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,500.00	0.00	0.00	3,500.00	-76.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,600.00	0.00	0.00	3,600.00	24.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,700.00	0.00	0.00	3,700.00	124.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,800.00	0.00	0.00	3,800.00	224.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
3,900.00	0.00	0.00	3,900.00	324.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,000.00	0.00	0.00	4,000.00	424.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,100.00	0.00	0.00	4,100.00	524.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,200.00	0.00	0.00	4,200.00	624.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,300.00	0.00	0.00	4,300.00	724.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,400.00	0.00	0.00	4,400.00	824.00	0.00	0 00	0.00	0.00	682,370.40	538,836.00
4,500.00	0.00	0.00	4,500.00	924.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,600.00	0.00	0.00	4,600.00	1,024.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,700.00	0.00	0.00	4,700.00	1,124.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,800.00	0.00	0.00	4,800.00	1,224.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
4,900.00	0.00	0.00	4,900.00	1,324.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,000.00	0.00	0.00	5,000.00	1,424.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,100.00	0.00	0.00	5,100.00	1,524.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,200.00	0.00	0.00	5,200.00	1,624.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,300.00	0.00	0.00	5,300.00	1,724.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
5,400.00	0.00	0.00	5,400.00	1,824.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,500.00	0.00	0.00	5,500.00	1,924.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,600.00	0.00	0.00	5,600.00	2,024.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,700.00	0.00	0.00	5,700.00	2,124.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,800.00	0.00	0.00	5,800.00	2,224.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
5,900.00	0.00	0.00	5,900.00	2,324.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
6,000.00	0.00	0.00	6,000.00	2,424.00	0.00	0.00	0.00	0.00	682,370.40	538,836.00
6,028.50	0.00	0.00	6,028.50	2,452.50	0.00	0.00	0.00	0.00	682,370.40	538,836.00
KOP-6028.50'MD,0.00°INC,0.00°AZI,6028.50'TVD										
6,050.00	2.58	269.65	6,049.99	2,473.99	0.00	-0.48	0.48	12.00	682,370.40	538,835.52
6,075.00	5.58	269.65	6,074.93	2,498.93	-0.01	-2.26	2.26	12.00	682,370.39	538,833.74
6,100.00	8.58	269.65	6,099.73	2,523.73	-0.03	-5.34	5.34	12.00	682,370.37	538,830.66
6,125.00	11.58	269.65	6,124.34	2,548.34	-0.06	-9.72	9.72	12.00	682,370.34	538,826.28
6,150.00	14.58	269.65	6,148.69	2,572.69	-0.09	-15.37	15.37	12.00	682,370.31	538,820.63
6,175.00	17.58	269.65	6,172.71	2,596.71	-0.14	-22.30	22.30	12.00	682,370.26	538,813.70
6,200.00	20.58	269.65	6,196.34	2,620.34	-0.19	-30.47	30.47	12.00	682,370.21	538,805.53
6,225.00	23.58	269.65	6,219.50	2,643.50	-0.24	-39.86	39.86	12.00	682,370.16	538,796.14
6,250.00	26.58	269.65	6,242.14	2,666.14	-0.31	-50.45	50.45	12.00	682,370.09	538,785.55
6,275.00	29.57	269.65	6,264.20	2,688.20	-0.38	-62.22	62.22	12.00	682,370.02	538,773.78
6,300.00	32.57	269.65	6,285.61	2,709.61	-0.46	-75.12	75.12	12.00	682,369.94	538,760.88
6,325.00	35.57	269.65	6,306.31	2,730.31	-0.54	-89.12	89.13	12.00	682,369.86	538,746.88
6,350.00	38.57	269.65	6,326.26	2,750.26	-0.64	-104.19	104.20	12.00	682,369.76	538,731.81
6,375.00	41.57	269.65	6,345.39	2,769.39	-0.73	-120.29	120.29	12.00	682,369.67	538,715.71
6,400.00	44.57	269.65	6,363.65	2,787.65	-0.84	-137.36	137.36	12.00	682,369.56	538,698.64
6,425.00	47.57	269.65	6,380.99	2,804.99	-0.95	-155.36	155.36	12.00	682,369.45	538,680.64
6,450.00	50.57	269.65	6,397.36	2,821.36	-1.06	-174.25	174.25	12.00	682,369.34	538,661.75
6,475.00	53.57	269.65	6,412.73	2,836.73	-1.18	-193.96	193.97	12.00	682,369.22	538,642.04

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
6,500.00	56.57	269.65	6,427.04	2,851.04	-1.31	-214.46	214.46	12.00	682,369.09	538,621.54
6,525.00	59.57	269.65	6,440.26	2,864.26	-1.44	-235.67	235.67	12.00	682,368.96	538,600.33
6,550.00	62.57	269.65	6,452.36	2,876.36	-1.57	-257.55	257.55	12.00	682,368.83	538,578.45
6,575.00	65.57	269.65	6,463.29	2,887.29	-1.71	-280.03	280.03	12.00	682,368.69	538,555.97
6,600.00	68.57	269.65	6,473.03	2,897.03	-1.85	-303.05	303.05	12.00	682,368.55	538,532.95
6,608.32	69.57	269.65	6,476.00	2,900.00	-1.90	-310.82	310.83	12.00	682,368.50	538,525.18
Top of Wolfcamp - 6608.32'MD,69.57°INC,269.65°AZI,6476.00'TVD										
6,625.00	71.57	269.65	6,481.55	2,905.55	-1.99	-326.55	326.55	12.00	682,368.41	538,509.45
6,650.00	74.57	269.65	6,488.83	2,912.83	-2.14	-350.46	350.47	12.00	682,368.26	538,485.54
6,675.00	77.57	269.65	6,494.85	2,918.85	-2.29	-374.72	374.73	12.00	682,368.11	538,461.28
6,700.00	80.57	269.65	6,499.59	2,923.59	-2.44	-399.27	399.27	12.00	682,367.96	538,436.73
6,725.00	83.57	269.65	6,503.04	2,927.04	-2.59	-424.02	424.03	12.00	682,367.81	538,411.98
6,750.00	86.57	269.65	6,505.19	2,929.19	-2.74	-448.93	448.94	12.00	682,367.66	538,387.07
6,775.00	89.56	269.65	6,506.03	2,930.03	-2.89	-473.91	473.92	12.00	682,367.51	538,362.09
6,785.30	90.80	269.65	6,506.00	2,930.00	-2.96	-484.21	484.21	12.00	682,367.44	538,351.79
EOC-6785.30'MD,90.80°INC,269.65°AZI,6506.00'TVD,12.00°DLS, 484.22'VS, -2.96'N, -484.21'E										
6,800.00	90.80	269.65	6,505.79	2,929.79	-3.05	-498.91	498.92	0.00	682,367.35	538,337.09
6,900.00	90.80	269.65	6,504.40	2,928.40	-3.66	-598.90	598.91	0.00	682,366.74	538,237.10
7,000.00	90.80	269.65	6,503.00	2,927.00	-4.27	-698.88	698.90	0.00	682,366.13	538,137.12
7,100.00	90.80	269.65	6,501.61	2,925.61	-4.88	-798.87	798.89	0.00	682,365.52	538,037.13
7,200.00	90.80	269.65	6,500.21	2,924.21	-5.49	-898.86	898.88	0.00	682,364.91	537,937.14
7,300.00	90.80	269.65	6,498.81	2,922.81	-6.10	-998.85	998.87	0.00	682,364.30	537,837.15
7,400.00	90.80	269.65	6,497.42	2,921.42	-6.71	-1,098.84	1,098.86	0.00	682,363.69	537,737.16
7,500.00	90.80	269.65	6,496.02	2,920.02	-7.32	-1,198.83	1,198.85	0.00	682,363.08	537,637.17
7,600.00	90.80	269.65	6,494.62	2,918.62	-7.93	-1,298.81	1,298.84	0.00	682,362.47	537,537.19
7,700.00	90.80	269.65	6,493.23	2,917.23	-8.54	-1,398.80	1,398.83	0.00	682,361.86	537,437.20
7,800.00	90.80	269.65	6,491.83	2,915.83	-9.16	-1,498.79	1,498.82	0.00	682,361.24	537,337.21

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,900.00	90.80	269.65	6,490.44	2,914.44	-9.77	-1,598.78	1,598.81	0.00	682,360.63	537,237.22
8,000.00	90.80	269.65	6,489.04	2,913.04	-10.38	-1,698.77	1,698.80	0.00	682,360.02	537,137.23
8,100.00	90.80	269.65	6,487.64	2,911.64	-10.99	-1,798.76	1,798.79	0.00	682,359.41	537,037.24
8,200.00	90.80	269.65	6,486.25	2,910.25	-11.60	-1,898.74	1,898.78	0.00	682,358.80	536,937.26
8,300.00	90.80	269.65	6,484.85	2,908.85	-12.21	-1,998.73	1,998.77	0.00	682,358.19	536,837.27
8,400.00	90.80	269.65	6,483.46	2,907.46	-12.82	-2,098.72	2,098.76	0.00	682,357.58	536,737.28
8,500.00	90.80	269.65	6,482.06	2,906.06	-13.43	-2,198.71	2,198.75	0.00	682,356.97	536,637.29
8,600.00	90.80	269.65	6,480.66	2,904.66	-14.04	-2,298.70	2,298.74	0.00	682,356.36	536,537.30
8,700.00	90.80	269.65	6,479.27	2,903.27	-14.65	-2,398.69	2,398.73	0.00	682,355.75	536,437.31
8,800.00	90.80	269.65	6,477.87	2,901.87	-15.26	-2,498.67	2,498.72	0.00	682,355.14	536,337.33
8,900.00	90.80	269.65	6,476.47	2,900.47	-15.87	-2,598.66	2,598.71	0.00	682,354.53	536,237.34
9,000.00	90.80	269.65	6,475.08	2,899.08	-16.49	-2,698.65	2,698 70	0.00	682,353.91	536,137.35
9,100.00	90.80	269.65	6,473.68	2,897.68	-17.10	-2,798.64	2,798.69	0.00	682,353.30	536,037.36
9,200.00	90.80	269.65	6,472.29	2,896.29	-17.71	-2,898.63	2,898.68	0.00	682,352.69	535,937.37
9,300.00	90.80	269.65	6,470.89	2,894.89	-18.32	-2,998.62	2,998.67	0.00	682,352.08	535,837.38
9,400.00	90.80	269.65	6,469.49	2,893.49	-18.93	-3,098.61	3,098.66	0.00	682,351.47	535,737.39
9,500.00	90.80	269.65	6,468.10	2,892.10	-19.54	-3,198.59	3,198.65	0.00	682,350.86	535,637.41
9,600.00	90.80	269.65	6,466.70	2,890.70	-20.15	-3,298.58	3,298.64	0.00	682,350.25	535,537.42
9,700.00	90.80	269.65	6,465.30	2,889.30	-20.76	-3,398.57	3,398.63	0.00	682,349.64	535,437.43
9,800.00	90.80	269.65	6,463.91	2,887.91	-21.37	-3,498.56	3,498.62	0.00	682,349.03	535,337.44
9,900.00	90.80	269.65	6,462.51	2,886.51	-21.98	-3,598.55	3,598.61	0.00	682,348.42	535,237.45
10,000.00	90.80	269.65	6,461.12	2,885.12	-22.59	-3,698.54	3,698.60	0.00	682,347.81	535,137.46
10,100.00	90.80	269.65	6,459 72	2,883.72	-23.20	-3,798.52	3,798.59	0.00	682,347.20	535,037.48
10,200.00	90.80	269.65	6,458.32	2,882.32	-23.81	-3,898.51	3,898.59	0.00	682,346.59	534,937.49
10,300.00	90.80	269.65	6,456.93	2,880.93	-24.43	-3,998.50	3,998.58	0.00	682,345.97	534,837.50
10,400.00	90.80	269.65	6,455.53	2,879.53	-25.04	-4,098.49	4,098.57	0.00	682,345.36	534,737.51
10,500.00	90.80	269.65	6,454.13	2,878.13	-25.65	-4,198.48	4,198.56	0.00	682,344.75	534,637.52

Pathfinder Energy Services

Pathfinder X & Y Planning Report

Company:	Murchison Oil & Gas	**Local Co-ordinate Reference:**	Well #1H
Project:	Eddy County	**TVD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Site:	Carbon Valley 31 Federal Com	**MD Reference:**	WELL @ 3576.00ft (Original Well Elev)
Well:	#1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	Midland Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
10,600.00	90.80	269.65	6,452.74	2,876.74	-26.26	-4,298.47	4,298.55	0.00	682,344.14	534,537.53
10,700.00	90.80	269.65	6,451.34	2,875.34	-26.87	-4,398.45	4,398.54	0.00	682,343.53	534,437.55
10,800.00	90.80	269.65	6,449.95	2,873.95	-27.48	-4,498.44	4,498.53	0.00	682,342.92	534,337.56
10,900.00	90.80	269.65	6,448.55	2,872.55	-28.09	-4,598.43	4,598.52	0.00	682,342.31	534,237.57
11,000.00	90.80	269.65	6,447.15	2,871.15	-28.70	-4,698.42	4,698 51	0.00	682,341.70	534,137.58
11,088.79	90.80	269.65	6,445.91	2,869.91	-29.24	-4,787.20	4,787.29	0 00	682,341.16	534,048.80

TD at 11088.79

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL(31#1H) - plan hits target - Point	0.00	360.00	6,446.70	-29.00	-4,787.20	682,341.400	534,048.800	32° 52' 32.789 N	104° 21' 25.469 W

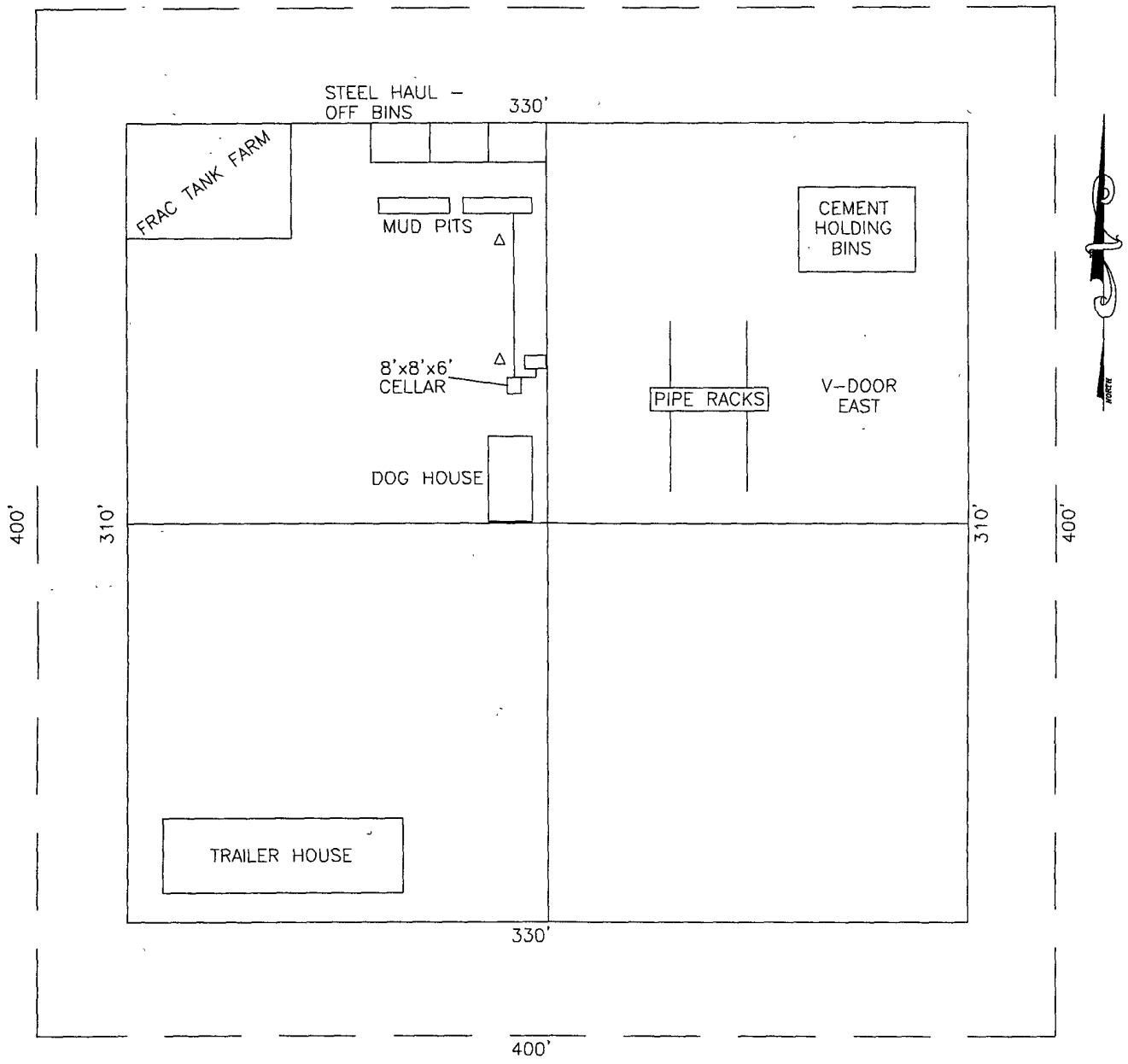
Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
6,028.50	6,028.50	0.00	0.00	KOP-6028.50'MD,0.00°INC,0.00°AZI,6028.50'TVD
6,608.32	6,476.00	-1.90	-310.82	Top of Wolfcamp - 6608.32'MD,69.57°INC,269.65°AZI,6476.00'TVD
6,785.30	6,506.00	-2.96	-484.21	EOC-6785.30'MD,90.80°INC,269.65°AZI,6506.00'TVD,12.00°DLS, 484
11,088.79	6,445.91	-29.24	-4,787.20	TD at 11088.79

Checked By: _____ Approved By: _____ Date: _____

EXHIBIT F

SECTION 31, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



MURCHISON OIL & GAS, INC.
CARBON VALLEY 31 FEDERAL COM #1H
ELEV. 3557.8'

GEODETIC COORDINATES
NAD 27 NME
Y=682370.4 N
X=538836.0 E
LAT.=32.875854° N
LONG.=104.206837° W

60 0 60 120 Feet
Scale: 1"=60'

PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

MURCHISON OIL & GAS, INC.

CARBON VALLEY 31 FEDERAL COM #1H WELL
LOCATED 1980 FEET FROM THE SOUTH LINE
AND 200 FEET FROM THE EAST LINE OF SECTION 31,
TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

Survey Date: 12/4/09	Sheet 1 of 1 Sheets		
W.O. Number: 09.11.1148	Dr By: LA		Rev 1:N/A
Date: 12/18/09	09111148_road		Scale: 1"=100'

EXHIBIT G

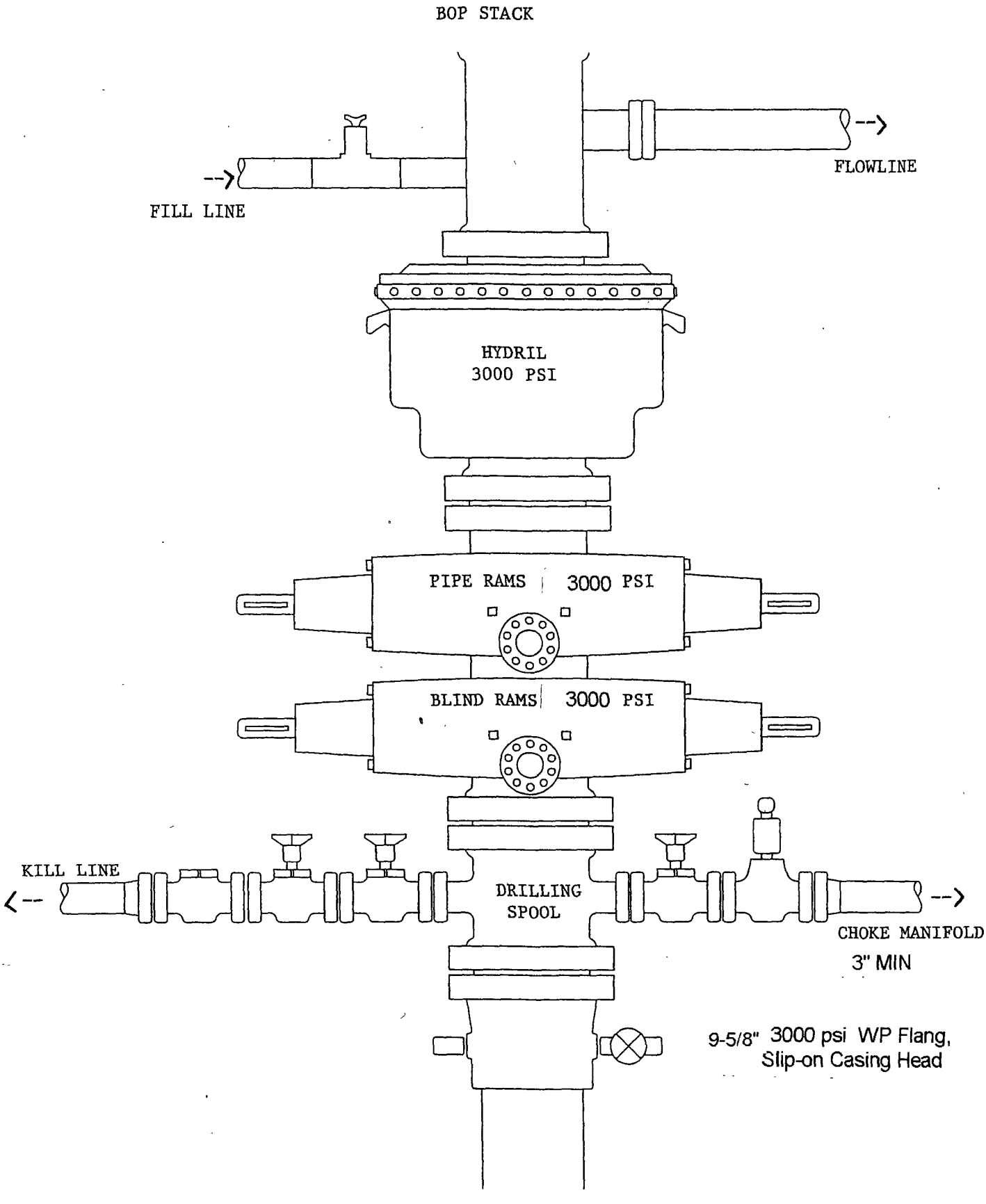
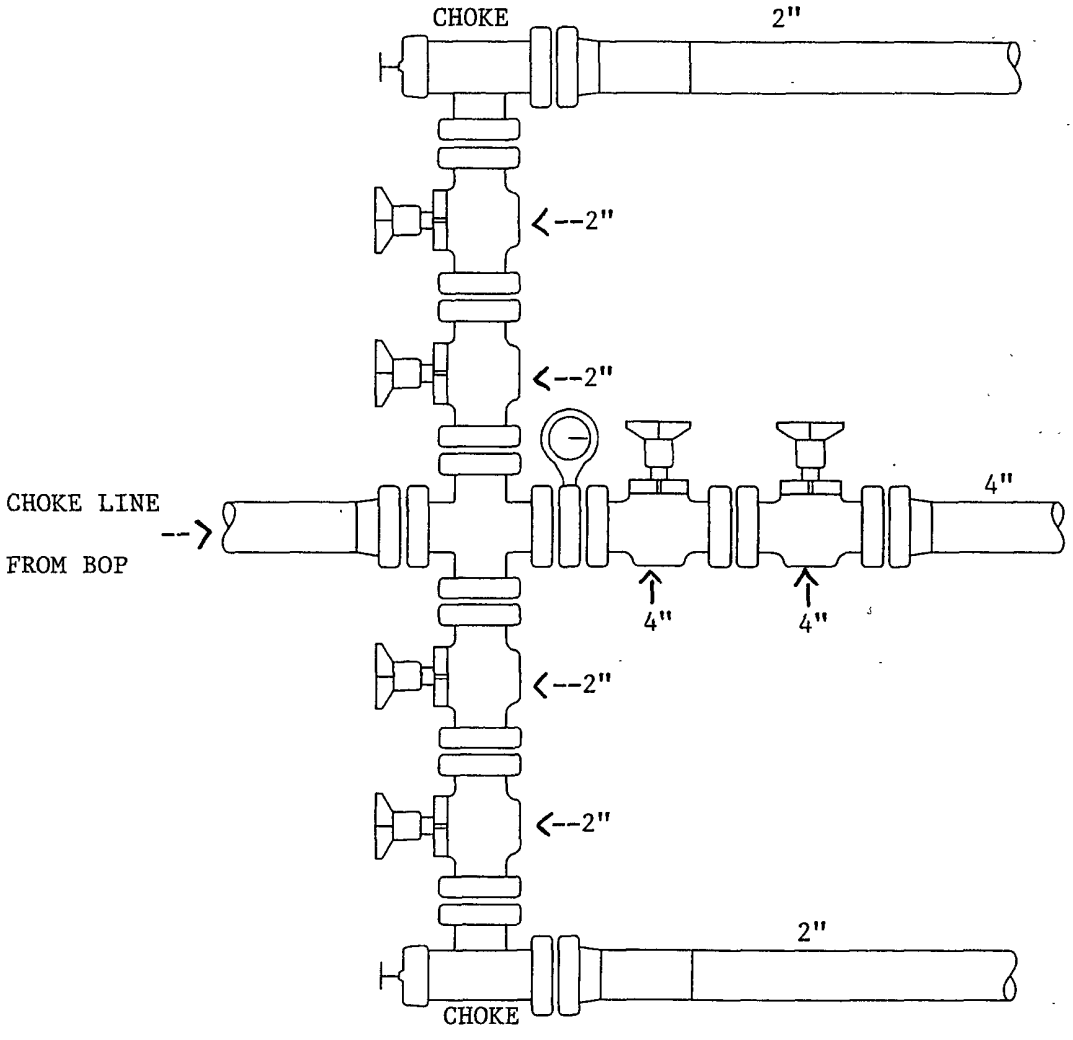

BOP STACK
FILL LINE
FLOWLINE
HYDRIL
3000 PSI
PIPE RAMS
3000 PSI
BLIND RAMS
3000 PSI
KILL LINE
DRILLING
SPOOL
CHOKE MANIFOLD
3" MIN
9-5/8" 3000 psi WP Flang,
Slip-on Casing Head

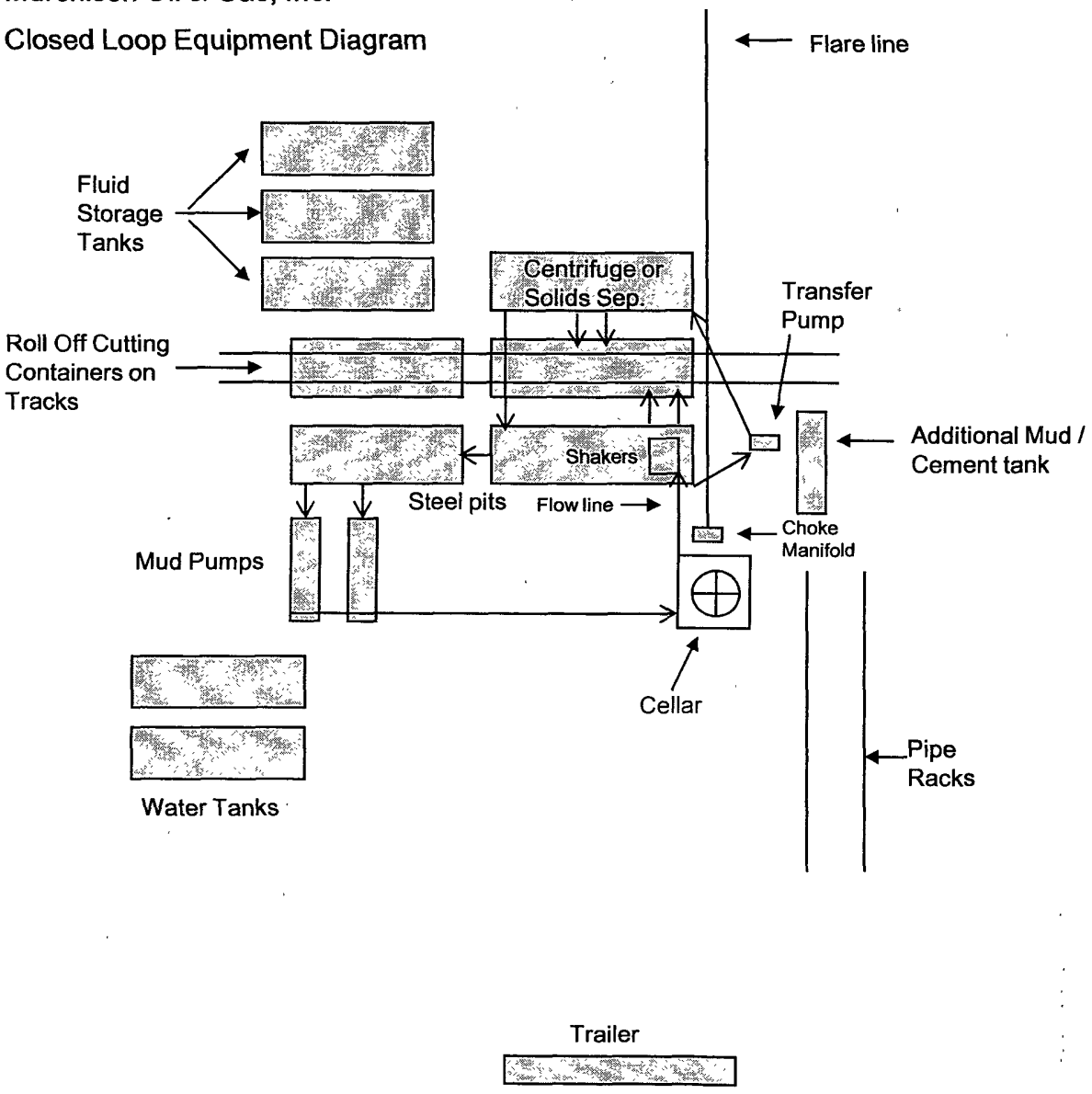
EXHIBIT H

CHOKE MANIFOLD



Murchison Oil & Gas, Inc.

Closed Loop Equipment Diagram



N

MURCHISON OIL & GAS, INC.

HYDROGEN SULFIDE (H2S) CONTINGENCY PLAN FOR DRILLING/COMPLETING/WORKOVER/FACILITY WITH THE EXCEPTION OF H2S IN EXCESS OF 100 PPM

MURCHISON OIL & GAS, INC.
NEW DRILL WELL
CARBON VALLEY 31 FED COM #1-H
SL: 1980' FSL & 200' FEL, UNIT I
BHL: 1980' FSL & 330' FWL, UNIT L
SEC 31, T16S, R28E
EDDY COUNTY, NEW MEXICO

This well/facility is not expected to have H2S, but the following is submitted as requested.

TABLE OF CONTENTS

GENERAL H2S EMERGENCY ACTIONS

In the event of any evidence of H2S emergency, the following plan will be initiated:

1. All personnel will immediately evacuate to an upwind and if possible uphill "safe area".
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (self-contained breathing apparatus).
3. Always use the "buddy system."
4. Isolate the well/problem if possible.
5. Account for all personnel.
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the company representative as soon as possible if not at the location (use the enclosed call list as instructed).

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

EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

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

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harm's way, he will immediately notify public safety personnel.

EMERGENCY CALL LIST

	Office	Cell	Home
Arnold Nall	972-931-0700	214-415-3010	972-596-8504
Tommy Folsom	575-628-3932	575-706-0667	575-885-3474
Randy Ford	432-682-0440	432-599-2222	432-684-4334

EMERGENCY RESPONSE NUMBERS
Eddy County, New Mexico

State Police	**888-442-6677**
Eddy County Sheriff - Carlsbad	**575-396-3611**
Eddy County Emergency Management - Carlsbad	**575-887-7551**
State Emergency Response Center (SERC)	**575-476-9620**
Artesia Police / Fire / Ambulance Department	**575-746-5000**
New Mexico Oil Conservation Division - Artesia	**575-748-1283**
Callaway Safety Equipment, Inc.	**575-392-2973**

PROTECTION OF THE GENERAL (ROE) RADIUS OF EXPOSURE

In the event greater than 100 ppm H2S is present, the ROE calculations will be done to determine if the following conditions exist and whether the Plan must be activated:

* 100 ppm at any public area (any place not associated with this site)

* 500 ppm at any public road (any road which the general public may travel).

* 100 ppm radius of 3000' will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H2S could be present in concentrations greater than 100 ppm in the gas mixture.

Calculation for the 100 ppm ROE: (H2S concentrations in decimal form)

ROE = [(1.589)(H2S concentration)(Q)] (^0.6258) 10,000 ppm + = .01
1,000 ppm + = .001
Calculation for the 500 ppm ROE: 100 ppm + = .0001
10 ppm + = .00001

ROE = [(0.4546)(H2S concentration)(Q)] (^0.6258)

EXAMPLE: If a well/facility has been determined to have 650 ppm H2S in the gas mixture and the well/facility is producing at a gas rate of 200 MCFD then:

ROE for 100 ppm ROE=[(1.589)(.00065)(200,000)] ^0.6258
ROE=28.1'
ROE for 500 ppm ROE=[(.4546)(.00065)(200,000)] ^0.6258
ROE=12.8'

These calculations will be forwarded to the appropriate NMOCD district office when applicable.

PUBLIC EVACUATION PLAN

When the supervisor has determined that the general public will be involved, the following plan will be implemented.

1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.
2. A trained person in H2S safety shall monitor with detection equipment the H2S concentration, wind and area of exposure. This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. All monitoring equipment shall be UL approved for use in Class I Groups A, B, C & D, Division I hazardous locations. All monitors will have a minimum capability of measuring H2S, oxygen, and flammable values.
3. Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.
4. The company representative shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the affected area is safe to enter.

PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

The decision to ignite a well should be a last resort with one, if not both, of the following conditions:

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

Instructions for Igniting the Well:

1. Two people are required. They must be equipped with positive pressure, self-contained breathing apparatus and "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.
2. One of the people will be a qualified safety person who will test the atmosphere for H2S, oxygen and LFL. The other person will be the designated company representative.
3. Ignite upwind from a distance no closer than necessary. Make sure that the ignition site has the maximum escape avenue available. A 25mm flare gun with a range of approximately +/- 500 feet shall be used to ignite the gas.
4. Before igniting, check for the presence of combustible gases.
5. After igniting, continue emergency actions and procedures as before.

REQUIRED EMERGENCY EQUIPMENT

1. **Breathing Apparatus**
   - Rescue Packs (SCBA) – 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.
   - Work / Escape Packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.
   - Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.

2. **Signage and Flagging**
   - One Color Code Condition Sign will be placed at the entrance to the site reflecting the possible conditions at the site.
   - A Colored Condition flag will be on display reflecting the condition at the site at that time.

3. **Briefing Area**
   - Two perpendicular areas will be designated by signs and readily accessible.

4. **Windsocks**
   - Two windsocks will be placed in strategic locations, visible from all angles.

5. **H2S Detectors and Alarms**
   - The stationary detector with three (3) sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible alarm @ 15 ppm. Calibrate a minimum of every 30 days or as needed. The three sensors will be placed in the following places: (Gas sample tubes will be stored in the safety trailer):
     - Rig Floor
     - Bell Nipple
     - End of flow line or where well bore fluid is being discharged

6. **Auxiliary Rescue Equipment**
   - Stretcher
   - Two OSHA full body harnesses
   - 100' of 5/8" OSHA approved rope
   - One 20 lb. Class ABC fire extinguisher
   - Communication via cell phones on location and vehicles on location

USING SELF-CONTAINED BREATHING AIR EQUIPMENT (SCBA)

1. SCBA should be worn when any of the following are performed:
   - Working near the top or on top of a tank
   - Disconnecting any line where H2S can reasonably be expected.
   - Sampling air in the area to determine if toxic concentrations of H2S exist.
   - Working in areas where over 10 ppm of H2S has been detected.
   - At any time there is a doubt of the level of H2S in the area.
2. All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.
3. Facial hair and standard eyeglasses are not allowed with SCBA.
4. Contact lenses are never allowed with SCBA.
5. When breaking out any line where H2S can reasonably be expected.
6. After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected.
7. All SCBA shall be inspected monthly.

RESCUE & FIRST AID FOR VICTIMS OF H2S POISONING

- Do not panic.
- Remain calm and think.
- Put on the breathing apparatus.
- Remove the victim to the safe breathing area as quickly as possible, upwind and uphill from source or crosswind to achieve upwind.
- Notify emergency response personnel.
- Provide artificial respiration and/or CPR as necessary.
- Remove all contaminated clothing to avoid further exposure.
- A minimum of two (2) personnel on location shall be trained in CPR and First Aid.

TOXIC EFFECTS OF H2S POISONING

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity-1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic that Carbon Monoxide. Occupational exposure limits for Hydrogen sulfide and other gasses are compared below in Table 1. Toxicity table for H2S and physical effects are shown in Table II.

Table 1

Permissible Exposure Limits of Various Gasses

Common Name	Symbol	Sp. Gravity	TLV	STEL	IDLH
Hydrogen Cyanide	HCN	.94	4.7 ppm	C	
Hydrogen Sulfide	H2S	1.192	10 ppm	15 ppm	100 ppm
Sulfide Dioxide	SO2	2.21	2 ppm	5 ppm	
Chlorine	CL	2.45	.5 ppm	1 ppm	
Carbon Monoxide	CO	.97	25 ppm	200 ppm	
Carbon Dioxide	CO2	1.52	5000 ppm	30,000 ppm	
Methane	CH4	.55	4.7% LEL	14% UEL	

Definitions

A. TLV – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighted average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Governmental Hygienists and regulated by OSHA.

B. STEL – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for H2S is 19 PPM.

C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H2S is 100 PPM.

D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed to based on an TWA.

TABLE II

Toxicity Table of H2S

Percent %	PPM	Physical Effects
.0001	1	Can smell less than 1 ppm.
.001	10	TLV for 8 hours of exposure
.0015	15	STEL for 15 minutes of exposure
.01	100	Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins in a few minutes.
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.

PHYSICAL PROPERTIES OF H2S

The properties of all gases are usually described in the context of seven major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY (IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

COLOR – TRANSPARENT
Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence, a fact that makes the gas extremely dangerous to be around.

ODOR – ROTTEN EGGS
Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs." For this reason it earned its common name "sour gas." However, H2S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192
Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H2S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

EXPLOSIVE LIMITS – 4.3% TO 46%
Mixed with the right proportion of air or oxygen, H2S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

FLAMMABILITY
Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO2), another hazardous gas that irritates the eyes and lungs.

SOLUBILITY – 4 TO 1 RATIO WITH WATER
Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H2S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H2S may release the gas into the air.

BOILING POINT – (-76 degrees Fahrenheit)
Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

SURFACE USE AND OPERATIONS PLAN FOR DRILLING, COMPLETION, AND PRODUCING

Murchison Oil & Gas, Inc.
Carbon Valley 31 Fed Com #1-H
SL: 1980' FSL & 200' FEL, UNIT I
BHL: 1980' FSL & 330' FWL, UNIT L
Sec 31, T16S, R28E
Eddy County, New Mexico

LOCATED

Approximately 11 miles NE of Artesia, New Mexico.

OIL & GAS LEASE

SHL: LS# NM NM 104676
BHL: LS# NM NM 12110

BOND COVERAGE

NM 2163

POOL

Dog Canyon; Wolfcamp

OIL & GAS RECORD LESSEE

Lessee: Murchison Oil & Gas, Inc., 1100 Mira Vista Blvd., Plano, TX 75093
Operating Rights: Murchison Oil & Gas, Inc., 1100 Mira Vista Blvd., Plano, TX 75093

SURFACE OWNER

Bureau of Land Management

MINERAL OWNER

Bureau of Land Management

GRAZING TENANT

Bogle Ltd Co. LLC, P.O. Box 460, Dexter, NM 88230 (575) 433-3500

EXHIBITS

A.	Well Location & Acreage Dedication Map
B.	Area Road Map
C-1 & C-2	Vicinity Oil & Gas Map
D.	Topographic & Location Verification Map
E-1---E-2	Proposed Lease Road and Pad Layout Map
F.	Drilling Rig Layout
G.	BOPE Schematic
H.	Choke Manifold Schematic

This well will be drilled to a BHL of approximately 6446' TVD, and approximately 11088' MD.

EXISTING ROADS

Exhibit A is a portion of a section map showing the location of the proposed well as staked.

Exhibit B is a map showing existing roads in the vicinity of the proposed well site.

Directions to well location: From the junction of Hwy. 82 and Southern Union (CR 202), go North approx. 2.6 miles; turn left and go Northwest approx. 2.4 miles. Turn left and go North approx. 0.1 miles to a "Y" intersection; veer right and go Northwest approx. 1.0 mile. Turn right and go Southeast approx. 0.6 miles to road. Follow road North to location.

ACCESS ROADS

Length and Width

Proposed access road is approximately 9606.8' of existing road and 858.8' of new road (approx. 1.982 miles) long and 50' wide (Exhibit E-1 thru E-2). Murchison Oil & Gas, Inc. has agreements with the surface owners for right-of-way up to proposed lease road and for the additional lease road to proposed well.

Surface Material

Six inches of caliche and water, compacted and graded.

Maximum Grade

Less than three percent

Turnouts

None needed

Drainage Design

N/A

Culverts

None needed

Gates and Cattle Guards

None required

LOCATION OF EXISTING WELLS

The locations of existing wells in Section 31 are shown on Exhibit C-1 and C-2.

LOCATION OF EXISTING AND/OR PROPOSED FACILITIES

Necessary production facilities for this well will be located on the well pad.

LOCATION AND TYPE OF WATER SUPPLY

It is planned to drill the proposed well with a cut-brine water system or with produced water. The water will be obtained from either a private water well owner or a commercial source and will either be piped to location from a nearby water well or will be hauled to location by truck over existing and proposed lease roads as shown on Exhibit E.

SOURCE OF CONSTRUCTION MATERIALS

Caliche required for the construction of the location pad and access road will be obtained from caliche on the location or from the nearest BLM-approved pit.

METHODS OF HANDLING WASTE DISPOSAL

All drilling fluid will be circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) will be circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid will be continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll-off containers will be lined and de-watered with fluids re-circulated into system.

Additional tank will be used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained by solids control personnel and/or rig crews on location.

Cuttings will be hauled to one of the following, depending on which rig is available to drill well:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

ANCILLARY FACILITIES

None required.

WELL SITE LAYOUT

Exhibit F shows the relative location and dimensions of the well pad, mud pits, cuttings containers and trash pit, and the location of major rig components. Operator requests V-door be positioned to the East, and the steel pits located to the North.

The ground surface at the drilling location is essentially flat.

A Closed-Loop System will be used.

The pad area has been staked and flagged.

PLANS FOR RESTORATION OF THE SURFACE

After finishing drilling and/or completion operations, all equipment and other material not needed for further operations will be removed. The location will be cleared of all trash and junk to leave the site in an as aesthetically pleasing condition as possible.

Any unguarded pits containing fluids will be fenced until they are filled.

If the proposed well is non productive, all rehabilitation and/or vegetation requirements of the Bureau of Land Management and the United States Geological Survey will be complied with and will be accomplished as expeditiously as possible.

OTHER INFORMATION

Topography

The land surface at the well site is small, rolling hills.

Soil

Loamy soil shallow to caliche and raw Gypsum.

Flora and Fauna

The vegetation consists of creosote, mesquite, yucca, prickly pear, Mormon tea, cane cholla, pencil cholla, horse crippler and various grasses. Faunal species include pronghorn antelope, mule deer, coyote, badger, rabbits, and various snakes, small mammals, birds and reptiles.

Ponds and Streams

There are no rivers, lakes, ponds, or streams in the area.

Residences and Other Structures

There are no residences within one mile of the proposed well site.

Archaeological, Historical, and Cultural sites

An Archaeological Survey has been sent to the BLM Office.

Land Use

Grazing

OPERATOR'S REPRESENTATIVES

Arnold Nall
1100 Mira Vista Blvd.
Plano, TX 75093-4698
Office Phone: (972) 931-0700
Cell Phone: (214) 415-3010

Randy Ford
415 W. Wall Street, Suite 1700
Midland, TX 79701
Office Phone: (432) 682-0440
Cell Phone: (432) 559-2222

STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

Murchison Oil & Gas Inc.
1100 Mira Vista Boulevard
Plano, Texas 75093-4698

The undersigned accepts all applicable terms, conditions, stipulations and restrictions covering operations conducted on the leased land or portion thereof, as described below:

Lease No:	SHL: LS # NMNM 104676 BHL: LS #NMNM 12110
Well Name:	Carbon Valley 31 Fed Com #1-H
Legal Description of Land:	SL: 1980' FSL & 200' FEL, Unit I BHL: 1980' FSL & 330' FWL, Unit L Sec 31, T16S, R28E Eddy County, New Mexico
Formation(s) (if applicable):	Wolfcamp
Bond Coverage:	$25,000 statewide bond of Murchison Oil & Gas, Inc.
BLM Bond File No:	Personal Statewide Bond NM 2163

Dec 22, 2009
Date

Arnold Nall
VP, Operations
Murchison Oil & Gas Inc.

Murchison Oil & Gas, Inc.
Carbon Valley 31 Fed Com #1-H
SL: 1980' FSL & 200' FEL, UNIT I
BHL: 1980' FSL & 330' FWL, UNIT L
Sec 31, T16S, R28E
Eddy County, New Mexico

CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Murchison Oil & Gas, Inc. and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

Dec 22, 2009
Date

Arnold Nall
VP, Operations
Murchison Oil & Gas, Inc.

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Murchison Oil & Gas
LEASE NO.:	NM12110
WELL NAME & NO.:	1H Carbon Valley 31 Fed Com
SURFACE HOLE FOOTAGE:	1980' FSL & 200' FEL
BOTTOM HOLE FOOTAGE	1980' FSL & 330' FWL
LOCATION:	Section 31, T. 16 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.

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Submission of ROW

Prior to construction of the access road, a ROW should be submitted.

Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required by engineering to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

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

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

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

Pad Berming:
The pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the pad. All sides will be bermed.

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

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

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

Cave/Karst Subsurface Mitigation

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

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

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

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

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

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

Pressure Testing:
Annual pressure monitoring will be performed by the operator on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Communitization Agreement

A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales.

Downhole Commingle

Subject to like approval by state due to potential downhole commingle behind pipe.

EXHIBIT NO. 1

Date of Issue: 1/21/2010

Bureau of Land Management, Carlsbad Field Office
620 E. Greene Street Carlsbad, NM 88220

Cultural and Archaeological Resources

BLM Report No. 10-NM-523-201

NOTICE OF STIPULATIONS

Historic properties in the vicinity of this project are protected by federal law. In order to ensure that they are not damaged or destroyed by construction activities, the project proponent and construction supervisors shall ensure that the following stipulations are implemented.

Project Name:	Carbon Valley 31 Federal Com No. 1H Well Pad and Access
	1). A 3-day preconstruction call-in notification. Contact BLM Inspection and Enforcement at
Required	***2. Professional archaeological monitoring***. Contact your project archaeologist, or BLM's Cultural Resources Section at (575) 234- 5917, 5967,or 5986, for assistance.
A. ☒	These stipulations must be given to your monitor at least **5 days** prior to the start of construction.
B. ☒	No construction, including vegetation removal or other site prep may begin prior to the arrival of the monitor.
	3. Cultural site barrier fencing. (Your monitor will assist you).
A. ☐	A temporary site protection barrier(s) shall be erected prior to all ground-disturbing activities. The minimum barrier(s) shall consist of upright wooden survey lath spaced no more than ten (10) feet apart and marked with blue ribbon flagging or blue paint. There shall be no construction activities or vehicular traffic past the barrier(s) at any time.
B. ☐	A permanent, 4-strand barbed wire fence strung on standard "T-posts" shall be erected prior to all ground-disturbing activities. No construction activities or vehicle traffic are allowed past the fence.
Required	***4. The archaeological monitor shall:***
A. ☐	Ensure that all site protection barriers are located as indicated on the attached map(s).
B. ☒	Observe all ground-disturbing activities within 100 feet of cultural site no. LA 164866.
C. ☐	Ensure that all reroutes are adhered to avoid cultural site no.(s) LA
D. ☒	Ensure the proposed well pad construction remains within the 150 foot east stake (as per report page 6).
E. ☒	Submit a brief monitoring report within 30 days of completion of monitoring.
Other:	If subsurface cultural resources are encountered during the monitoring, all activities shall cease and a BLM-CFO archaeologist shall be notified immediately.

Site Protection and Employee Education: It is the responsibility of the project proponent and his construction supervisor to inform all employees and subcontractors that cultural and archaeological sites are to be avoided by all personnel, vehicles, and equipment; and that it is illegal to collect, damage, or disturb cultural resources on Public Lands.

For assistance, contact BLM Cultural Resources: Martin Stein (575) 234-5967 Bruce Boeke (575) 234-5917 George MacDonell (575) 234-2228

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) 234-5972 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. V-DOOR DIRECTION: east

C. TOPSOIL

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

D. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

E. FEDERAL MINERAL MATERIALS PIT

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

F. 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.

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 thirty (30) feet.

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

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

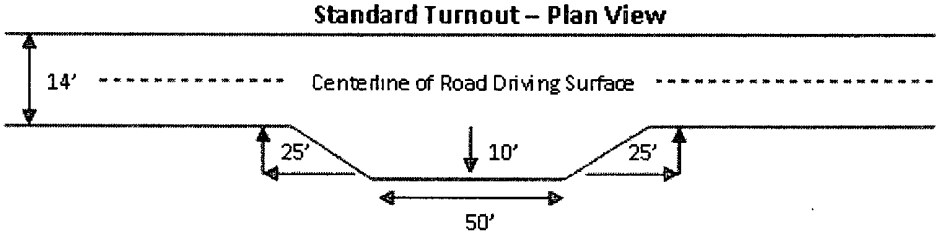
The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing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

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

Ditching

Ditching shall be required on both sides of the road.

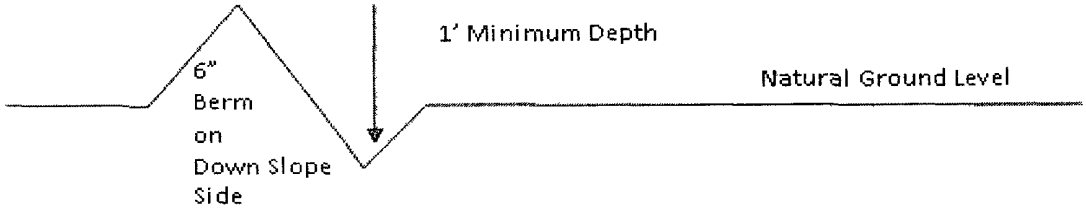
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

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

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

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

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

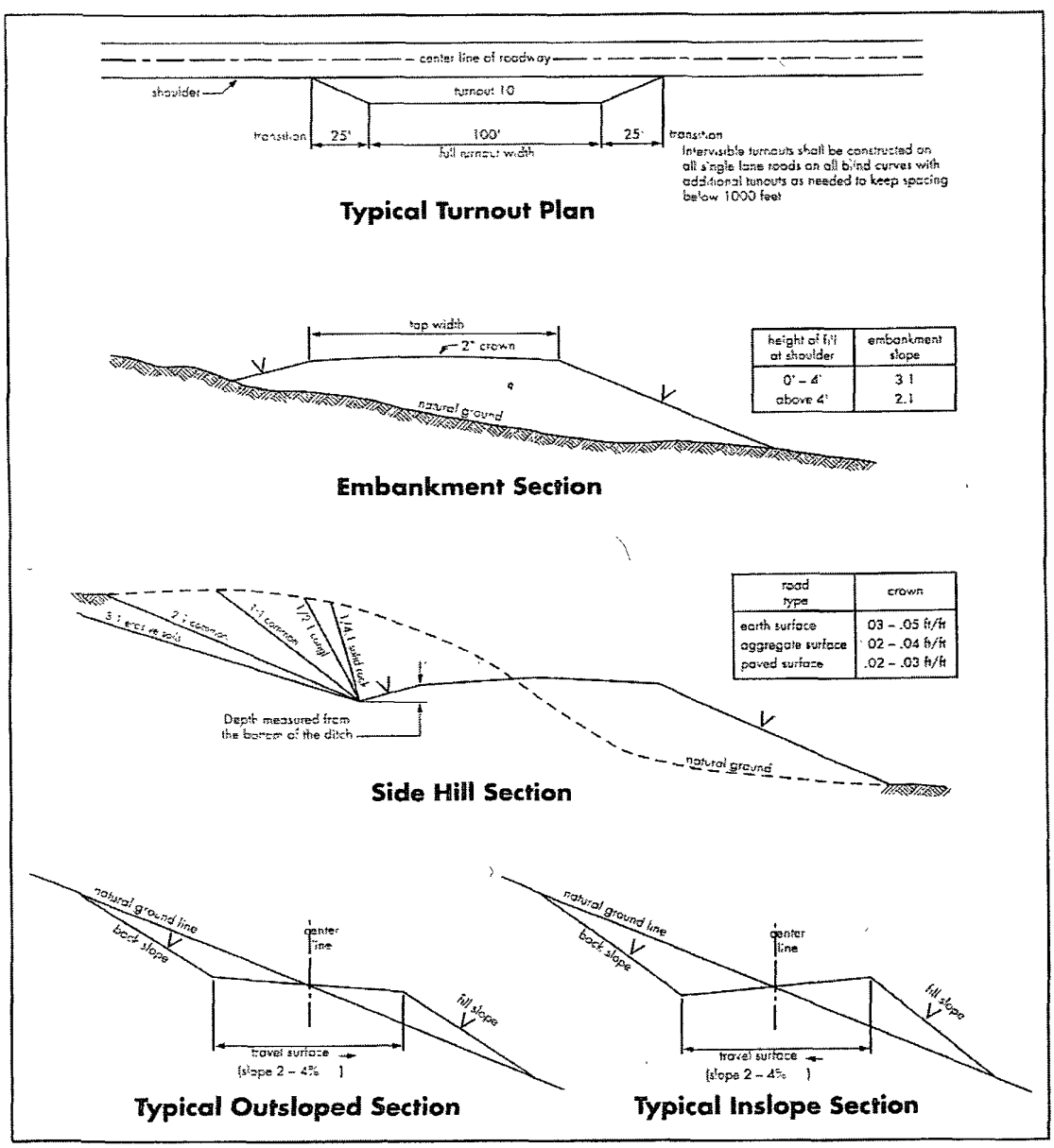
Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

Public Access

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

Figure 1 – Cross Sections and Plans For Typical Road Sections



VI. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

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

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

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

1. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

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

4. **The record of the drilling rate along with the CAL/GR/N well log run from TD to surface will 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.**

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

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

Wait on cement (WOC) time 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. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

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

Possible lost circulation in the Tansill, Grayburg, and San Andres formations.
Possible brine flows in the Salado Formation, if encountered.
Possible high pressure gas bursts in the Wolfcamp formation.

HIGH CAVE/KARST – IF LOST CIRCULATION OCCURS WHILE DRILLING THE SURFACE HOLE, <u>THE BLM IS TO BE NOTIFIED PRIOR TO RUNNING THE SURFACE CASING.</u> REVISED CEMENTING PROGRAM OR CONTINGENCY CASING MAY BE REQUIRED.

1. The **9-5/8** inch surface casing shall be set at approximately **1300** feet and cemented to the surface. **Casing is to be set in a competent formation, which may be difficult in the Artesia group. Onshore Order II requires casing to be set across a competent bed.**

    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 a 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.

IF LOST CIRCULATION OCCURS WHILE DRILLING THE 8-3/4" HOLE, THE CEMENT PROGRAM FOR THE 7" CASING WILL NEED TO BE MODIFIED AND THE BLM IS TO BE CONTACTED PRIOR TO RUNNING THE CASING. A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH THEREFORE, ONE INCH OPERATIONS WILL NOT BE PERMITTED. A DV TOOL WILL BE REQUIRED.

2. The minimum required fill of cement behind the **7** 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.

   A two-stage job will require submitting a sundry and receiving approval prior to commencement of work.

Pilot hole will be plugged when the 7" casing is cemented.

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

   ☒ No cement required. Operator is using Peak Completion Liner.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M)** psi.

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

   a. Casing cut-off and BOP installation will not be initiated until the cement has had 4-6 hours of setup time in a water basin and 12 hours in the potash areas. This time will start after the cement plug is bumped. Testing the BOP/BOPE against a plug can commence after meeting the above conditions plus the BOP installation time.

b. The tests shall be done by an independent service company utilizing a test plug.

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

d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

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

D. DRILLING MUD

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

E. DRILL STEM TEST

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

CRW 012710

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.

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

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

B. PIPELINES

C. ELECTRIC LINES

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 1, for Loamy 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 regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (small/heavier seeds have a tendency to drop the bottom of the drill and are planted first). 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:

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

*Pounds of pure live seed:

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