



Midland Division  
Exploration Production

Conoco Inc.  
10 Desta Drive, Suite 100W  
Midland, TX 79705-4500  
(915) 686-5400

July 8, 1993

Mr. William J. LeMay  
Oil Conservation Division  
310 Old Santa Fe Trail  
Second Floor, Room 219  
Santa Fe, New Mexico 87504

RE: Barbara 17SW Com Well No. 17  
Application of Conoco Inc. for  
Unorthodox Gas Well Location,  
1650' FSL & 1650' FWL,  
Section 17, T-19S, R-25E  
Eddy County, New Mexico

Dear Mr. LeMay:

Conoco requests approval for an unorthodox Morrow location for its proposed Barbara 17SW Com No. 17, located 1650' FSL and 1650' FWL, Section 17, T-19S, R-25E, Eddy County, New Mexico. Although the primary target of the proposed well is the Cisco-Canyon formation of the North Dagger Draw Upper Penn Pool, Conoco also wishes to test the Morrow Formation, which lies 1500' below the Cisco. The proposed location is orthodox for the Cisco reservoir but is unorthodox for the Morrow.

The following exhibits and documentation will demonstrate that due to topographic and geologic constraints, it is not possible, at a standard Morrow location, to maximize the opportunity to develop the Cisco-Canyon reserves. Due to the excessive risk of testing the Morrow, it can only be done economically as a drilling tail on an Cisco development well.

EXHIBIT 1 is a plat map of the North Dagger Draw field in the area of the proposed unorthodox location. The proposed "lay-down" 320-acre Morrow proration unit is outlined by the dashed green line and the 160-acre Cisco proration unit is outlined by the red dashed line. The orthodox Morrow location windows are shown in solid green and the orthodox Cisco location windows in solid red. It can be observed that the only locations which can test both horizons at orthodox locations lie along the common boundaries between the green and red windows.

Also shown are the offset operators of acreage contiguous to the south half of section 17. The only offset operators are Yates Petroleum and Southwest Royalties. They have been notified by certified mail of this application. A list of all operators, addresses, and relative acreage is attached as EXHIBIT 7.

EXHIBIT 2 is an aerial photograph of the south half of section 17, showing the orthodox Morrow location windows (outlined in orange), and the location of the proposed well (red dot and arrow). Conoco's preferred location would have been

in the northwestern Morrow orthodox window. However, the area within that window was untenable due to (a) its proximity to the Howell ranch residence (labeled on the photo), and (b) Conoco's desire to avoid destruction of Mr. Howell's prime grazing pasture which is located in the dark or black areas in the photo.

In consultation with Mr. Howell the proposed location was moved as far from his residence and prime grazing pasture as possible, while still staying within the standard window for Cisco development. The recently drilled Barbara 17SW Com No. 10 location, which is labeled in the southwest corner of the photo, provides an example of typical drilling pad size and illustrates the amount of grassland which would have been destroyed by a well location in the northwestern Morrow orthodox window.

EXHIBIT 3 is a topographic map showing the proposed unorthodox location (red open circle and arrow) and the orthodox Morrow location windows (green shaded boxes). The 320-acre Morrow gas proration unit which would be dedicated to the Barbara 17SW Com No. 17 comprises the south half of section 17 and is outlined with the dashed line. Due to excessive topography, locations built in the two southern Morrow orthodox windows would require significant cut and fill and are undesirable.

EXHIBIT 4 is a structure map on the top of the Cisco dolomite reservoir, mapped in 50-foot contour intervals. The Cisco reservoir is a coarsely vugular, dolomitized algal buildup. The heavy red line at the northwest corner of the map marks the northwestern limit of the Cisco-Canyon reservoir. Due to their lower structural position in the Cisco-Canyon reservoir, the NE, SE, and SW orthodox Morrow location windows have a significantly higher risk of encountering high water cuts in the Cisco formation than does the proposed location. No economic wells have been completed, to date, in the Dagger Draw Cisco reservoir which encountered the top of the reservoir lower than -4175' subsea. The three aforementioned orthodox windows lie at or below -4200' subsea.

EXHIBIT 5 is an isopach map of the gross interval between the top of the Cisco dolomite reservoir and the oil-water contact, mapped in 25-foot contour intervals. The oil/water contact at Dagger Draw is not a horizontal surface, but rather has been tilted approximately 2 degrees eastward by a hydrodynamic aquifer and/or differential hydrocarbon entrapment. This map shows that moving the proposed location either south or east toward one of the three orthodox Morrow windows which lie outside the prime grass pasture (shown on the aerial photo) would cause a loss of between 20 and 35 feet of gross pay in the Cisco reservoir.

Therefore the best opportunity to maximize Cisco recovery from the south half of section 17 lies within unit K. Any movement to the east, south, or southeast significantly decreases the thickness of the reservoir and the probability of encountering an uneconomic water cut.

EXHIBIT 6 is a structure map on the top of the Morrow clastics horizon, mapped in 50-foot contour intervals. This mapped horizon lies immediately above a stratigraphic interval in which productive Morrow channel sand reservoirs tend to occur. The Morrow reservoir, when present, consists of clean, well-sorted, medium-grained sandstones. In this part of North Dagger Draw, the reservoir consists of distributary channels with a pronounced linear geometry which is typically less than 1/2 mile wide, and several miles long. Structures mapped at this horizon are believed to have resulted from differential compaction between

sands and shales in the Lower Morrow. Therefore, the south-southeast-trending nose in section 17 may represent an underlying distributary channel. The location of the proposed Barbara 17SW Com No. 17 well coincides with the center of this nose. Due to sparse well control and the narrow drilling target, Morrow tests have only a 1:20 chance of success.

The risk of drilling a Morrow well in this area is too great to economically justify a drilling project for the Morrow horizon alone. Therefore, a well must be justified by the less risky Cisco reserves. This necessitates that in addition to choosing a favorable Morrow location the potential of the Cisco reservoir must also be maximized. This is the only way the Morrow can be economically tested.

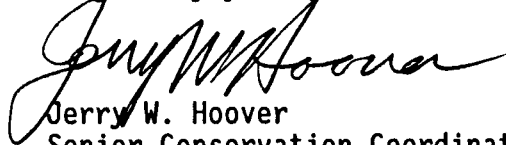
The factors and constraints that necessitated the proposed unorthodox location may be summarized as follows:

1. A favorable position in an apparent Morrow channel.
2. Maximization of Cisco potential, the primary target.
3. Minimizing excessive cut and fill operations in building a location
4. Minimizing destruction of prime grass pasture utilized by Mr. Howell
5. Minimizing the nuisance and hazards of drilling operations relative to Mr. Howell's residence.

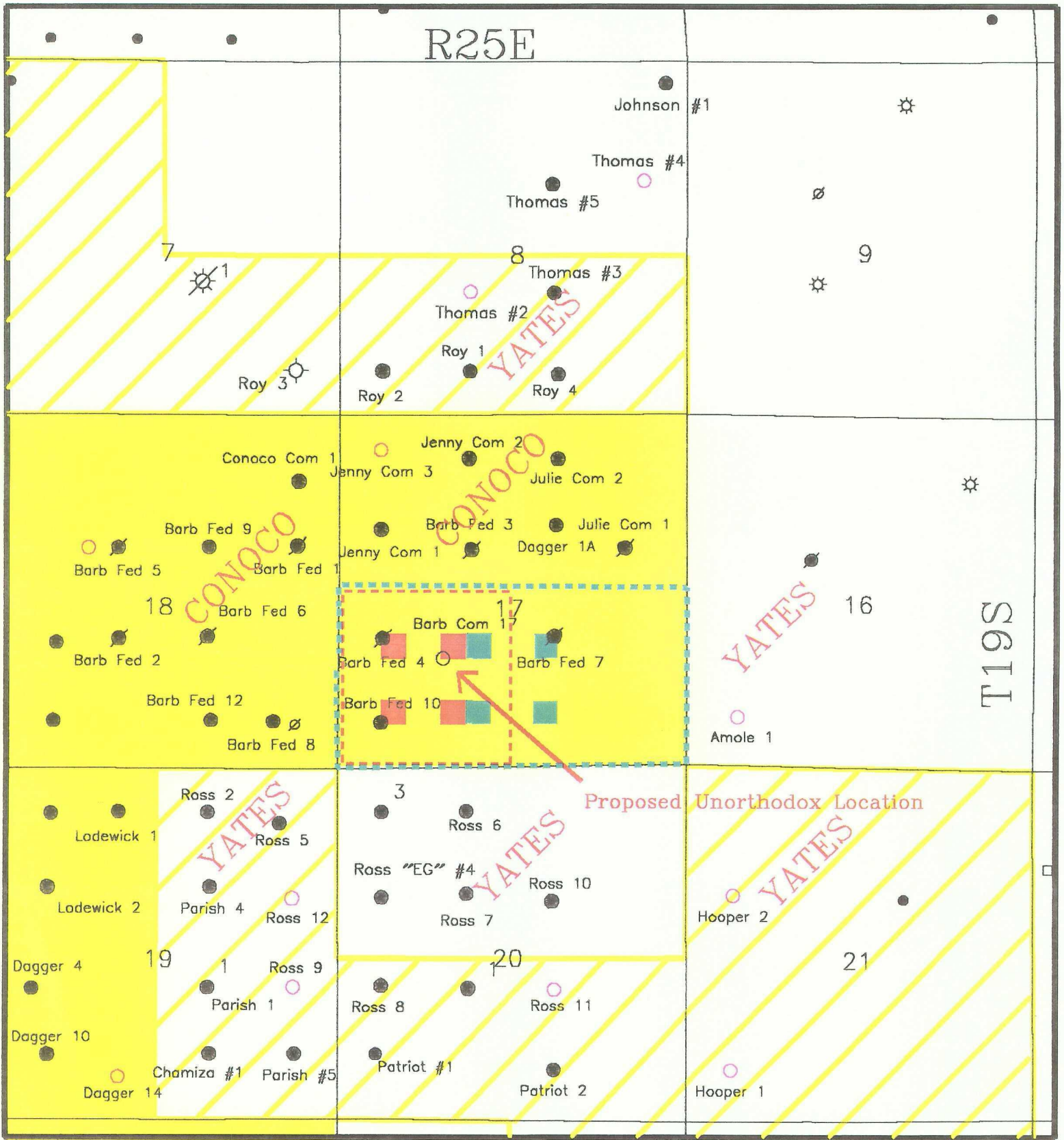
It is believed that the requested location maximizes the efficient recovery of hydrocarbon reserves under the SW/4 of section 17 (preventing waste) and minimizes potential surface damage.

If there are any further questions, please contact me at (915) 686-6548.

Very truly yours,



Jerry W. Hoover  
Senior Conservation Coordinator



SOLID YELLOW

CONOCO—OPERATED

CROSS-HATCHED YELLOW

PARTNER—OPERATED W/ CONOCO  
PARTIAL INTEREST

GREEN

MORROW ORTHODOX LOCATION  
WINDOWS

RED

CISCO ORTHODOX LOCATION  
WINDOW

<i>CONOCO MIDLAND DIVISION</i>		
<i>NORTH DAGGER DRAW</i>		
<i>PLAT MAP</i>		
<i>SHOWING OFFSET OPERATORS</i>		
SCALE 1" = 2000'	DRAWN HARDIE	DATE 11-MAY-93
DRAWING		

EXHIBIT 1



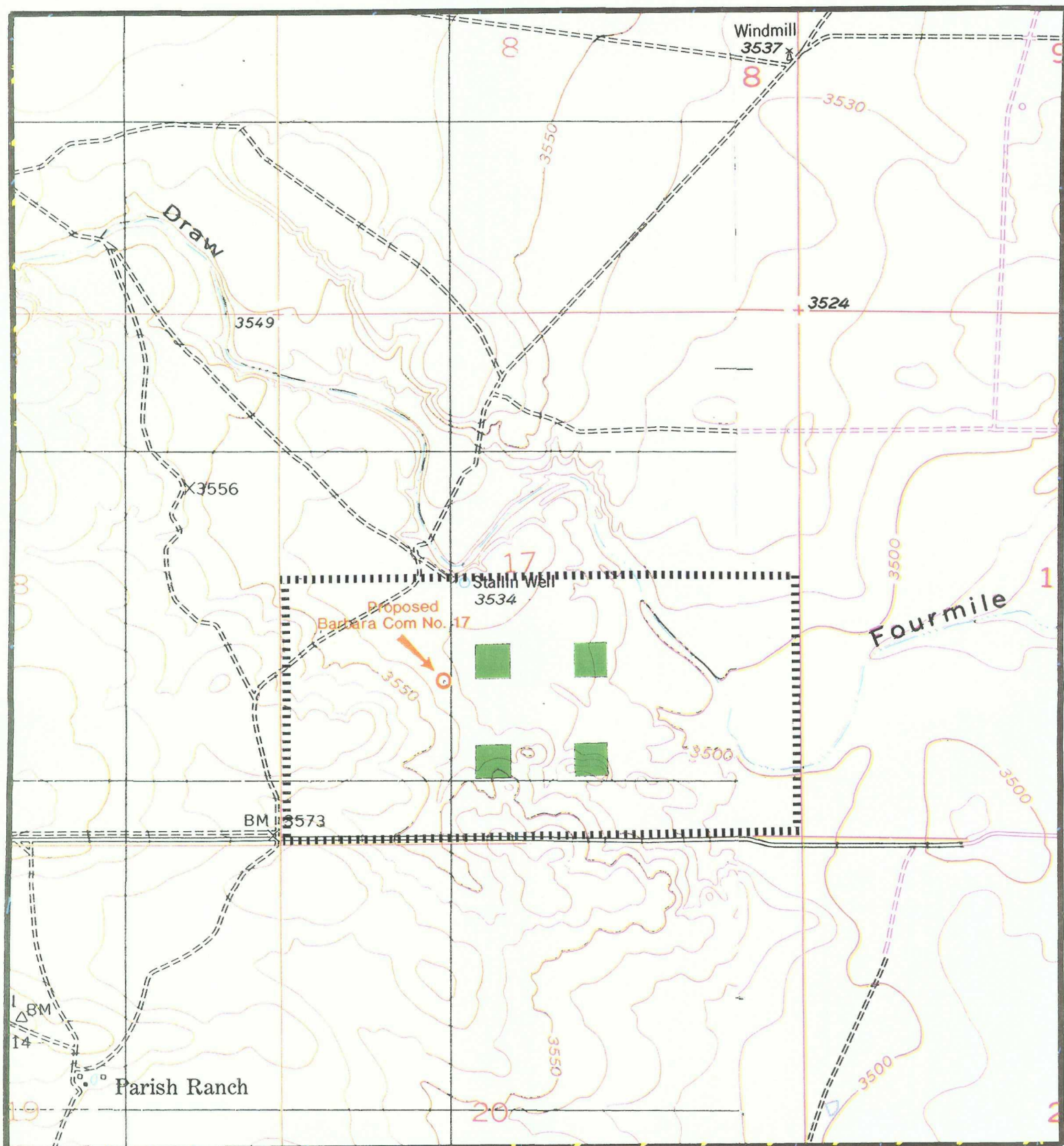


CONOCO MIDLAND DIVISION

NORTH DAGGER DRAW  
AERIAL PHOTOGRAPH  
S/2 SECTION 17, T19S, R25E

SCALE	DRAWN	HARDIE	DATE	13-MAY-93
DRAWING				EXHIBIT 2





Green = Orthodox Morrow  
Location Windows

CONOCO MIDLAND DIVISION

# NORTH DAGGER DRAW TOPOGRAPHIC MAP

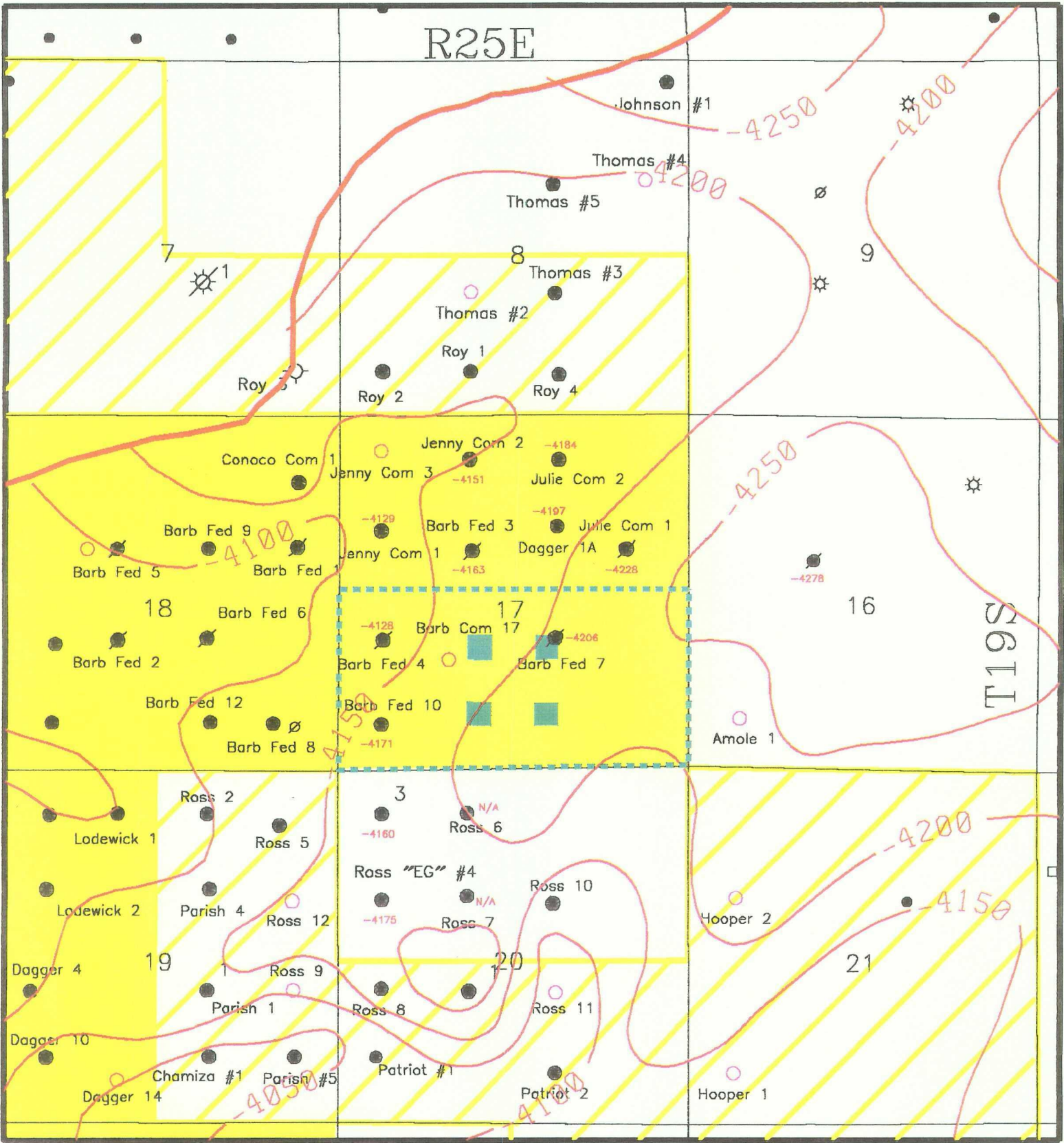
SCALE 1" = 1500'

DRAWN USGS 7.5" QUAD

DATE 11-MAY-93

DRAWING





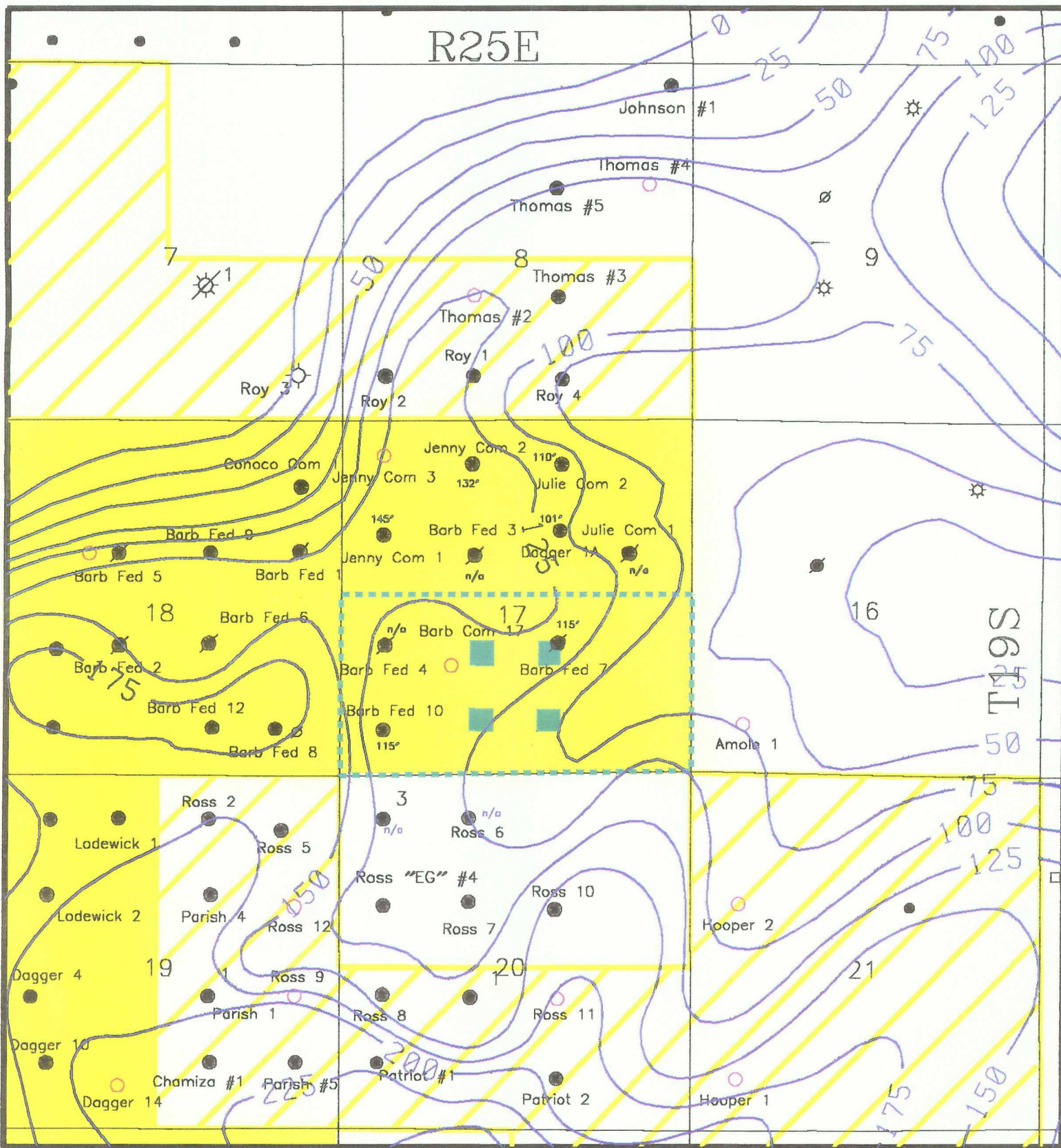
SOLID YELLOW  
CONOCO-OPERATED

CROSS-HATCHED YELLOW  
PARTNER-OPERATED W/ CONOCO  
PARTIAL INTEREST

GREEN  
MORROW ORTHODOX LOCATION  
WINDOWS

CONOCO MIDLAND DIVISION			
NORTH DAGGER DRAW TOP CISCO DOLOMITE			
SCALE 1" = 2000'	DRAWN HARDIE	DATE 11-MAY-93	
DRAWING			





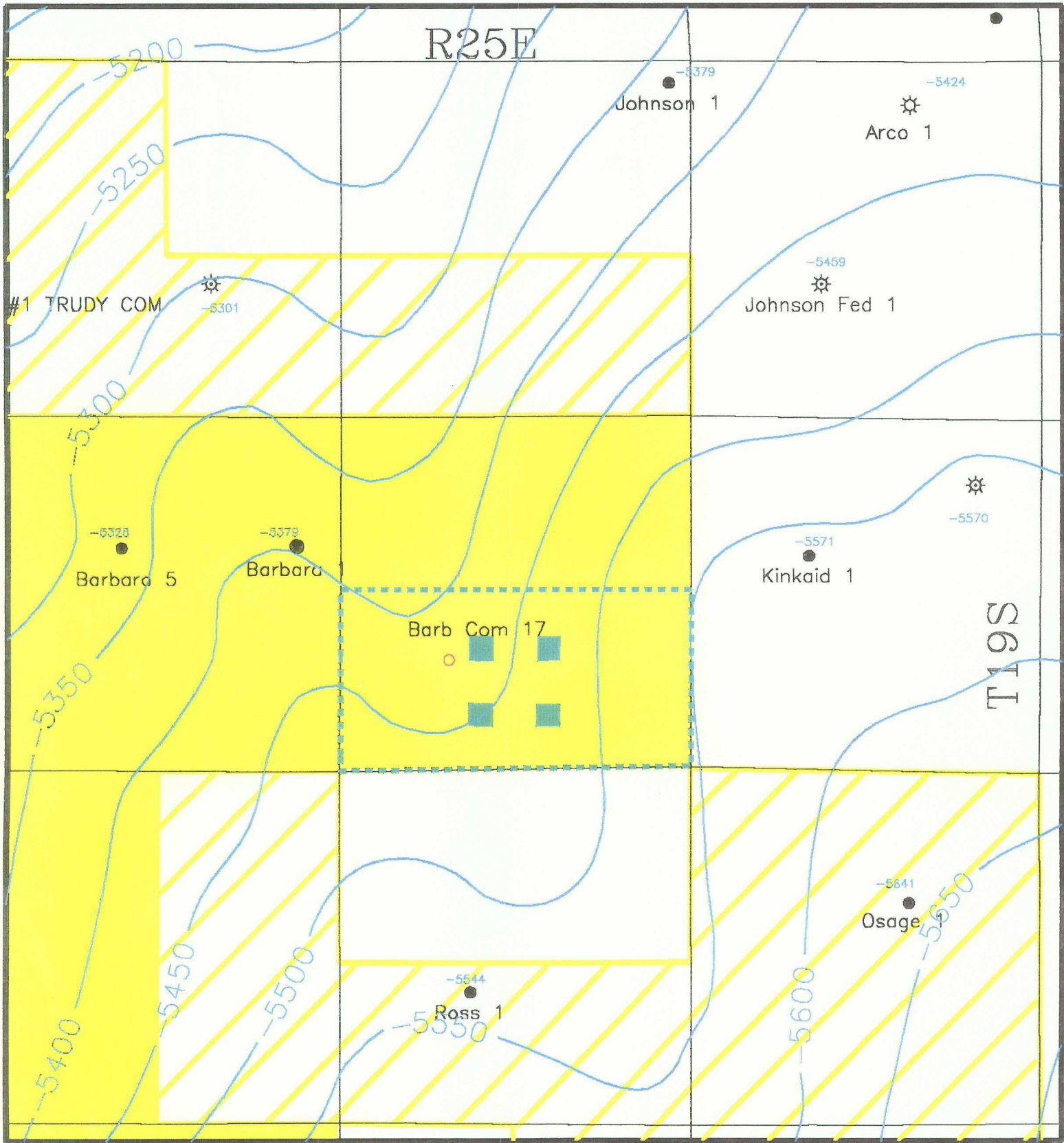
SOLID YELLOW  
CONOCO-OPERATED

CROSS-HATCHED YELLOW  
PARTNER-OPERATED W/ CONOCO  
PARTIAL INTEREST

GREEN  
MORROW ORTHODOX LOCATION  
WINDOWS

CONOCO MIDLAND DIVISION		
NORTH DAGGER DRAW CISCO GROSS OIL COLUMN ISOPACH		
SCALE 1" = 2000'	DRAWN HARDIE	DATE 11-MAY-93
DRAWING		





SOLID YELLOW  
CONOCO-OPERATED

CROSS-HATCHED YELLOW  
PARTNER-OPERATED W/ CONOCO  
PARTIAL INTEREST

GREEN  
MORROW ORTHODOX LOCATION  
WINDOWS

CONOCO MIDLAND DIVISION

NORTH DAGGER DRAW  
TOP MORROW CLASTICS  
(ONLY MORROW PENETRATIONS SHOWN)

SCALE 1" = 2000'

DRAWN HARDIE

DATE 11-MAY-93

DRAWING



ORTHODOX CISCO BOTTOM HOLE LOCATION  
UNORTHODOX MORROW BOTTOM HOLE LOCATION  
SURFACE LOCATION: 1650' FSL & 1650' FWL

POOLS: Cisco - North Dagger Draw  
Morrow - Undesignated Cemetery

PRORATION UNIT: Cisco - 160 acres, SW/4, Sec. 17, T-19S, R-25E  
Morrow - 320 acres, S/2, Sec. 17, T-19S, R-25E

SPACING: Cisco - 660' from all P.U. boundaries  
Morrow - 1980' from end line and 660' from side boundaries

LIST OF OPERATORS OF TRACTS CONTIGUOUS WITH BARBARA COM. #17 PRORATION UNIT

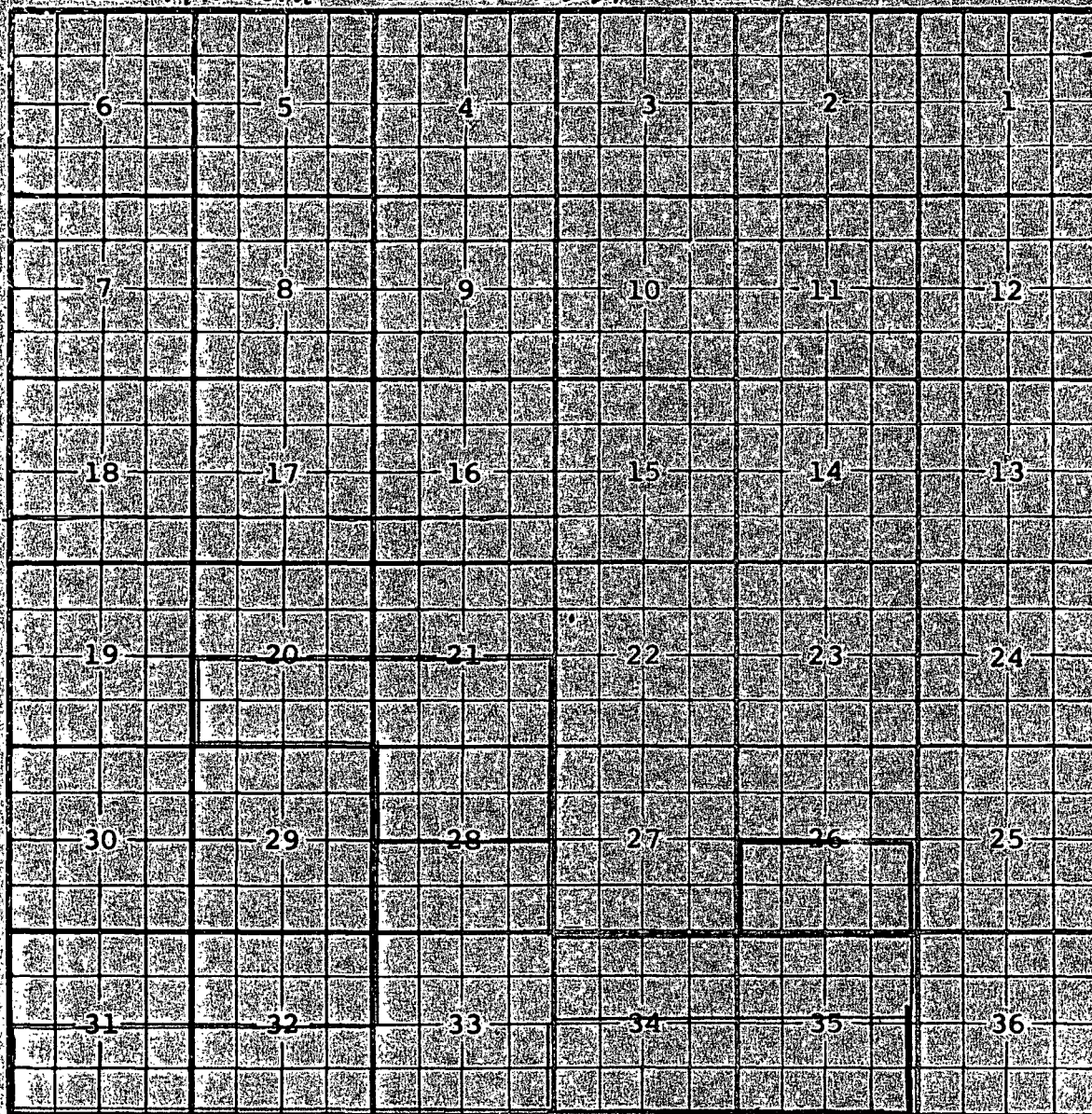
Township 19 S, Range 25 E

Section 16: W/2	Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210
Section 21: NW/4	Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210
Section 20: N/2	Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210
Section 19: NE/4	Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210
Section 18: ALL	Conoco Inc.
Section 17: NW/4	Conoco Inc.
Section 17: S/2 NE/4	Southwest Royalties, Inc. 407 North Big Spring Midland, Texas 79701



COUNTY EddyPOOL Cemetery-Marrow GasTOWNSHIP 19 SouthRANGE 25 East

NMFM



Ext.  $\frac{1}{2}$  Sec 28,  $\frac{1}{2}$  Sec 31,  $\frac{1}{2}$  Sec 32, All Sec 33,  $\frac{1}{2}$  Sec 34, =

=  $\frac{1}{2}$  Sec 35 (R-5417, 4-1-77) Ext.  $\frac{1}{2}$  Secs 20 & 21, =

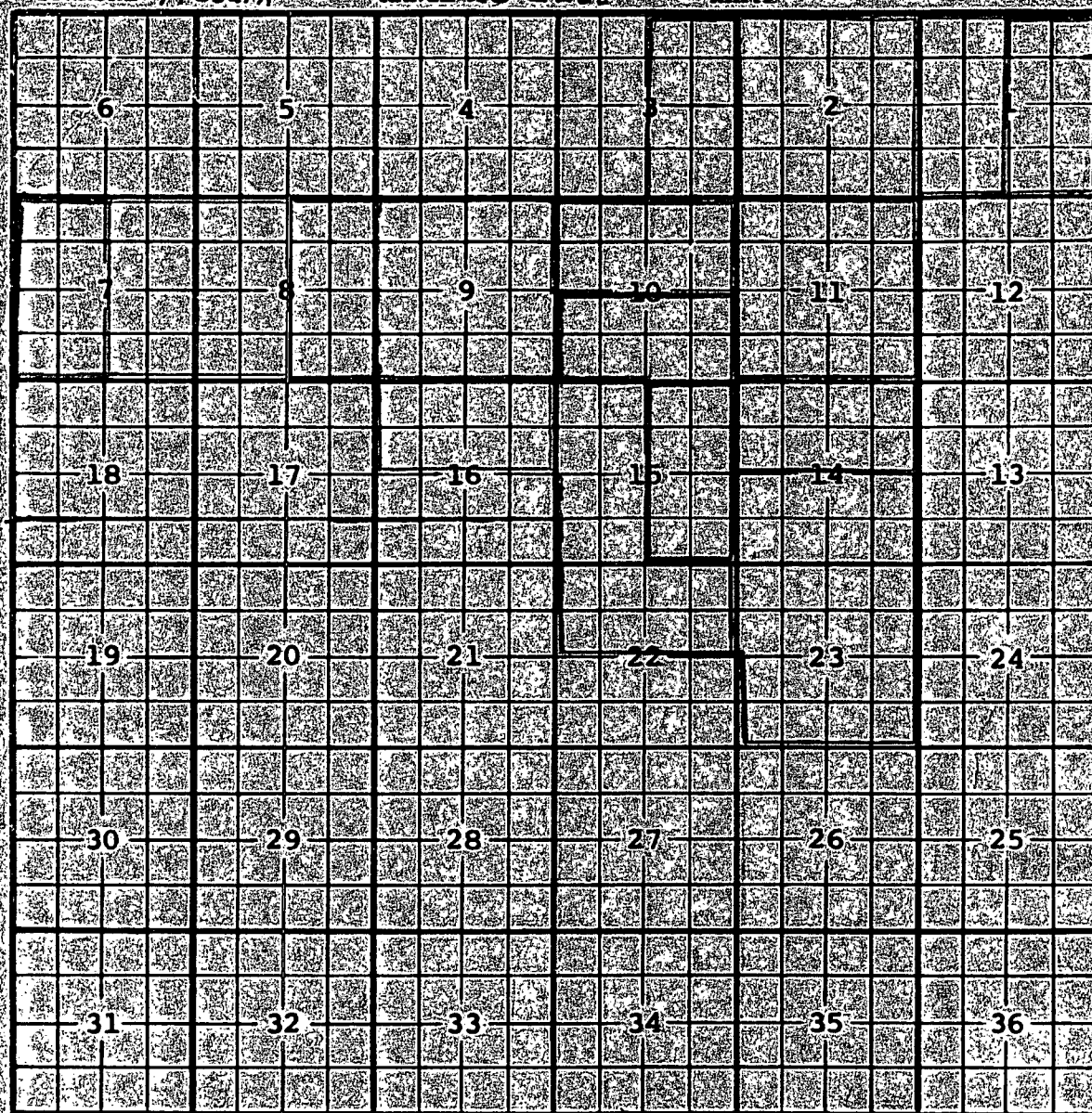
=  $\frac{1}{2}$  Sec 28 (R-5781, 9-1-78) Ext.  $\frac{1}{2}$  Sec 34,  $\frac{1}{2}$  Sec 35 (R-7668, 7-21-84)

EXT.  $\frac{1}{2}$  SEC 26 (R-8827, 12-22-88)



COUNTY *Eddy*POOL *Boyd - Morrow Gas*TOWNSHIP *19 South*RANGE *25 East*

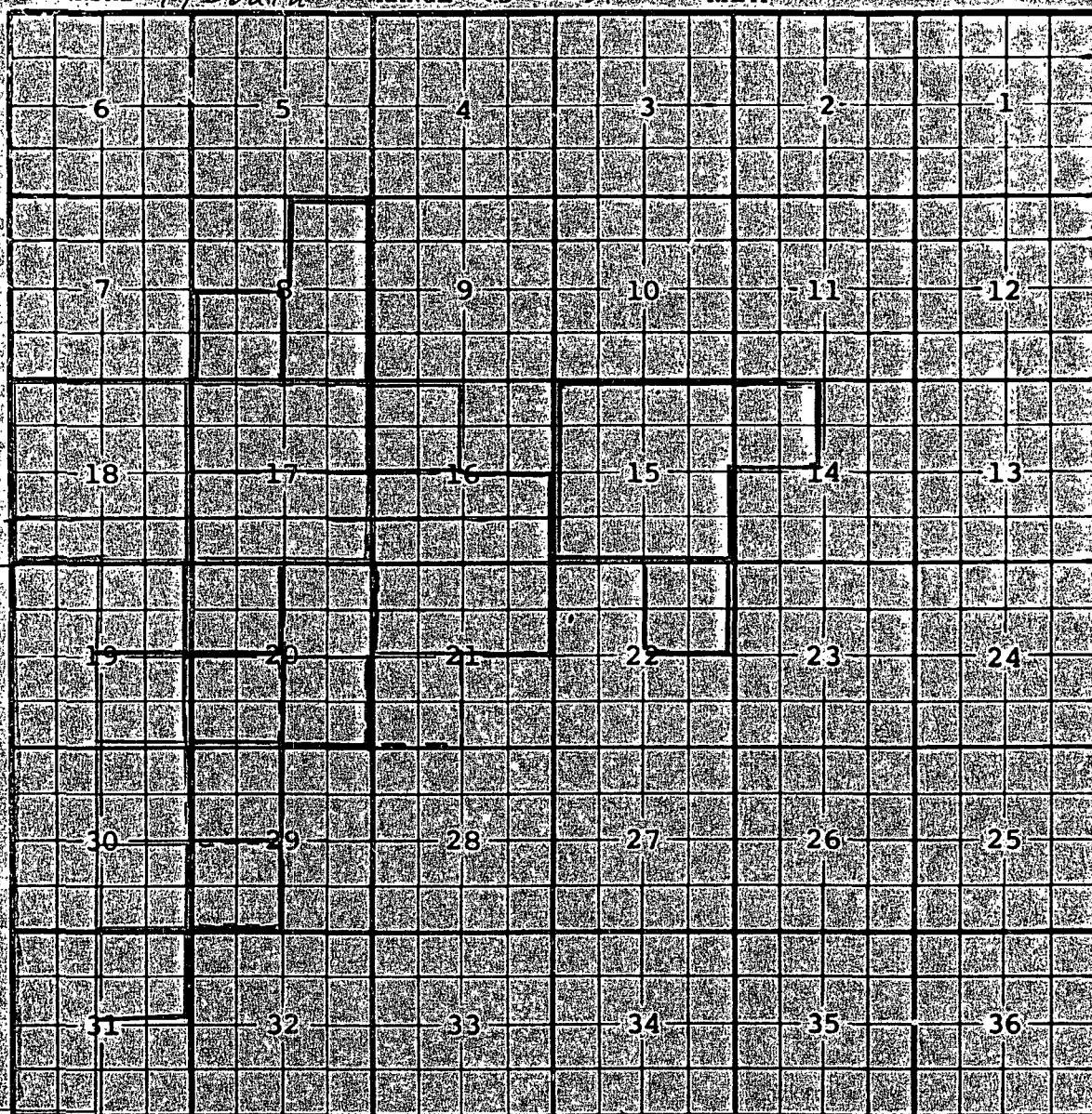
NMPM

Description: *E<sub>2</sub> Sec. 15 (R-3709, 4-1-69)*Ext: *S<sub>2</sub> Sec. 10 (R-4155, 7-1-71) - E<sub>2</sub> Sec. 8; All Sec. 9 (R-4304, 6-1-72)**N<sub>2</sub> Sec. 10 (R-4486, 3-1-73) Ext: N<sub>2</sub> Sec. 16 (R-4861, 11-1-74)*Ext: *E<sub>2</sub> Sec. 7, W<sub>2</sub> Sec. 8 (R-5131, 1-1-76) Ext: W<sub>2</sub> Sec. 7 (R-5988, 5-1-79)*Ext: *All Sec. 11 (R-6328, 5-1-80) Ext: All Sec. 2 (R-6410, 8-1-80)*Ext: *N<sub>2</sub> Sec. 1, N<sub>2</sub> Sec. 14 (R-6499, 11-1-80) Ext: E<sub>2</sub> Sec. 3 (R-6923, 3-9-82)*Ext: *E<sub>2</sub> Sec. 1 (R-7279, 5-17-83) Ext: W<sub>2</sub> Sec. 15, N<sub>2</sub> Sec. 22 (R-7502, 4-20-84)*Ext: *S<sub>2</sub> Sec. 14, All Sec. 23 (R-7555, 6-14-84)*



COUNTY EddyPOOL North Dagger Draw - Upper PennsylvanianTOWNSHIP 19 SouthRANGE 25 East

NMPM



Description: All Sec 18,  $\frac{W}{2}$  Sec 19,  $\frac{W}{2}$  Sec 30,  $\frac{W}{2}$  Sec 31 (R-4691, 1-1-74)

Ext:  $\frac{N}{2}$  Sec 17 (R-4821, 8-1-74) Ext:  $\frac{S}{2}$  Sec 17 (R-5063, 7-1-75)

Ext:  $\frac{SE}{4}$  Sec 30 (R-5309, 11-1-76) Ext:  $\frac{NW}{4}$  Sec 16 (R-5667, 4-1-78)

Ext:  $\frac{S}{2}$  Sec 16,  $\frac{N}{2}$  Sec 21 (R-7131, 11-30-87) Ext:  $\frac{NE}{4}$  Sec 19 (R-8391, 1-22-87)

Ext:  $\frac{SE}{4}$  Sec 19 (R-8484, 8-13-87) Ext:  $\frac{NE}{4}$  Sec 30 (R-8665, 6/9/88)

Ext:  $\frac{SW}{4}$  Sec 8 (R-8827, 12-22-88) Ext:  $\frac{NW}{4}$  Sec 20 (R-8945, 5-31-89)

Ext:  $\frac{SW}{4}$  Sec 20 (R-9096, 1-1-90) Ext:  $\frac{NW}{4}$  Sec 14, All sec 15 (R-9134, 4-1-90)

Ext:  $\frac{E}{2}$  Sec 8,  $\frac{NE}{4}$  Sec 31 (R-9578, 9-10-91) Ext:  $\frac{NE}{4}$  Sec 20,  $\frac{NW}{4}$  Sec 29

(R-9632, 1-27-93) Ext:  $\frac{NE}{4}$  Sec 22,  $\frac{SW}{4}$  Sec 29 (R-9844, 2-8-93)

Ext:  $\frac{SE}{4}$  Sec 20 (R-9884, 4-26-93)