STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

8-13-92

BRUCE KING
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

SWD-489

RE: Proposed:
MC
DHC
NSL
NSP
SWD X
WFX
PMX

Gentlemen:

I have examined the application for the:

Southland Royalty Co. West Corbin Federal #26-K
Operator Lease & Well No. Unit S-T-R

8-18-33

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton
Supervisor, District 1

/ed

MERIDIAN OIL

August 7, 1992

Oil Conservation Division
P. O. Box 2088
State Land Office Building
Santa Fe, NM 87501

RE: SOUTHLAND ROYALTY COMPANY
WEST CORBIN FEDERAL NO. 26
SECTION 8, T18S, R33E
LEA COUNTY, NEW MEXICO
LC-069420

Gentlemen:

Southland Royalty Company requests approval to convert the referenced well to a salt water disposal well for Southland leases. Form C-108 and pertinent attachments are enclosed .

This well will dispose of salt water in the Leonard Formation which is non-productive of hydrocarbons at the interval from 10,160' - 10,328'.

Santa Fe Energy Company is the only offset Operator within a 1/2 mile radius and was notified by certified mail on 8/4/92.

Enclosed is the affidavit of publication from Hobbs Daily News -Sun in Hobbs, N.M. and a copy of the news paper legal notice.

If other information is needed, please call me at 915/688-6906 or Mr. Joe Small at 915-688-6830.

Sincerely,

Maria L. Perez
Prod. Asst.

MLP/sm

xc:	Well File	Jt. Interest	Resv. Engineer	Roxann Scholz
	D. McBee	Prod. Engineer	Geologist	Michele Alcantara
	Land (2)	Hobbs Office	OCD - Hobbs	Richard Atchley
	Reading File	Regulatory File		

P.O. Box 51810, Midland, Texas 79710-1810, Telephone 915-688-6800
3300 N. "A" St., Bldg. 6, 79705-5406

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no

II. Operator: SOUTHLAND ROYALTY COMPANY

Address: P.O. BOX 51810 MIDLAND, TX 79710

Contact party: MARIA L. PEREZ Phone: 915-688-6906

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: MARIA L. PEREZ Title PRODUCTION ASSISTANT

Signature: _____ Date: 8-6-92

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

_____

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, Kathi Bearden

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of

One weeks.
Beginning with the issue dated

July 23, 1992
and ending with the issue dated

July 23, 1992

Kathi Bearden
General Manager
Sworn and subscribed to before

me this day of

, 19

Notary Public.

My Commission expires

Aug. 5, 1995
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

Hobbs Daily News-Sun
P.O. Box 860
Hobbs, New Mexico 88241-0860

LEGAL NOTICE
July 23, 1992

Southland Royalty Company, P.O. Box 51810, Midland, Texas 79710, contact person: Joe Small, Production Engineer, A/C 915-688-6830 is making application with the Oil Conservation Division in Santa Fe to convert the West Corbin Federal No. 26 from oil to salt water disposal. This well is located in unit letter K, 1831' FSL & 2047' FWL, Sec. 8, T18S, R33E, Lea County, New Mexico.

This well will dispose into the Leonard Formation at a depth interval of 10,160' — 10,328' which is non-productive of hydrocarbons. The maximum rate of injection will be 7200 BWPD, average 2900 BWPD. Maximum pressure will be 4200 psi, average 3000 psi.

All interested parties must file objections or requests for hearing with the Oil Conservation Division, P.O. box 2088, Santa Fe, New Mexico 87501 within 15

MERIDIAN OIL

July 24, 1992

Santa Fe Energy Company
500 W. Illinois
Midland, TX 79701

RE: **OPERATORS NOTIFICATION WITHIN A ONE-HALF MILE RADIUS OF WELL LOCATION**
NOTICE OF APPLICATION FOR SALT WATER DISPOSAL
WEST CORBIN FEDERAL NO. 26
K, 1831' FSL & 2047' FWL
SEC. 8, T18S, R33E
LEA COUNTY, NEW MEXICO

Gentlemen:

Southland Royalty Company is making application to the Oil Conservation Division for authorization to convert the captioned well to salt water disposal.

This well will dispose of salt water in the Leonard Formation which is non-productive of hydrocarbons at the interval from 10,160' to 10,328'.

Should you have any objections to this application, please reply to the Oil Conservation Division, P. O. Box 2088, Santa Fe, N.M. 87501 within 15 days from receipt of this letter.

Sincerely,

Maria L. Perez

Maria L. Perez
Prod. Asst.

MLP/sm
(915) 688-6906

Mailed certified mail 7-24-92

xc: Well file
Don McBee
Joe Small
Debbie Davis
Reading File
Regulatory File

P.O. Box 51810, Midland, Texas 79710-1810, Telephone 915-688-6800
3300 N. "A" St., Bldg. 6, 79705-5406

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:

Santa Fe Energy Co.
500 W. Illinois
Midland, TX 79701

4. Article Number
P047 801 040

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X D. Wallis

6. Signature — Agent
X

7. Date of Delivery
8 Jan 92

8. Addressee's Address *(ONLY if requested and fee paid)*

PS Form **3811**, Apr. 1989 ★U.S.G.P.O. 1989-238-815 **DOMESTIC RETURN RECEIPT**

Addendum to Form C-108
West Corbin Federal No. 26

VII. Data on Proposed Operation

1. a) Proposed average rate: 2 bbl/min
Proposed maximum rate: 5 bbl/min

b) Proposed average volume: 1500 bbl/day
Proposed maximum volume: 3500 bbl/day

2. This system is closed.

3. Proposed average injection pressure = 3000 psia
Proposed maximum injection pressure = 4200 psia

4. Sources of water and analysis results - attached.

5. Chemical analysis of disposal zone formation water - attached.

VIII. Geological Data on Injection Zone - Attached

IX. Stimulation Program - Acidize 10,160-10,328' with 8000 gallons of 15% NeFE-HCl.

X. Logs were submitted with the completion report.

XI. There are no known water wells within one (1) mile of this site.

XII. Affirmative Statement - Attached

ATTACHMENT TO FORM C-108

Southland Royalty Company
West Corbin Federal No. 26

VIII. Geological Description

Formation: Leonard

Lithology: Dolomite

Age: Permian
Proposed Disposal Interval: 168' (10,160-10,328')

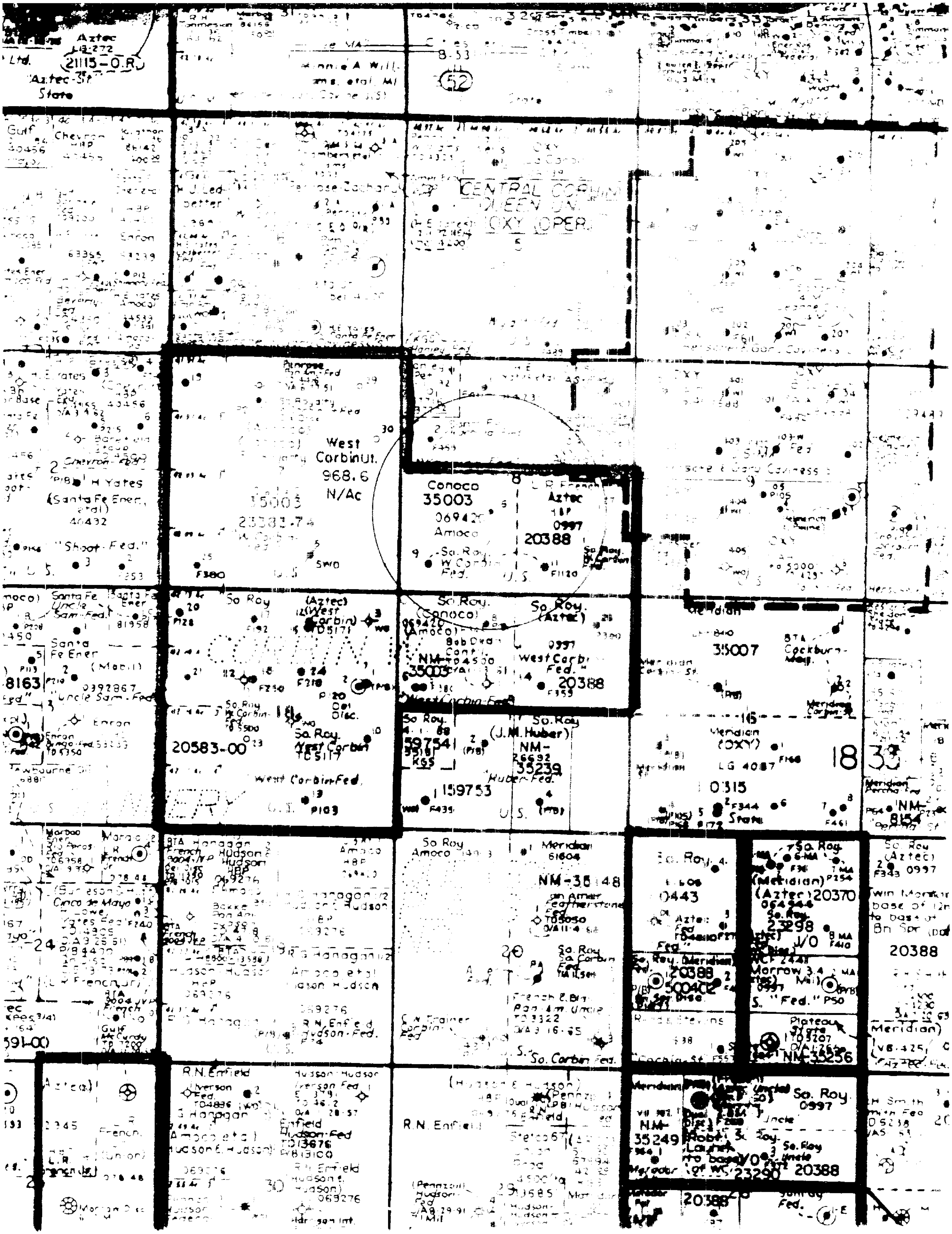
Entire Leonard Thickness: 651' (10,116-10,767')

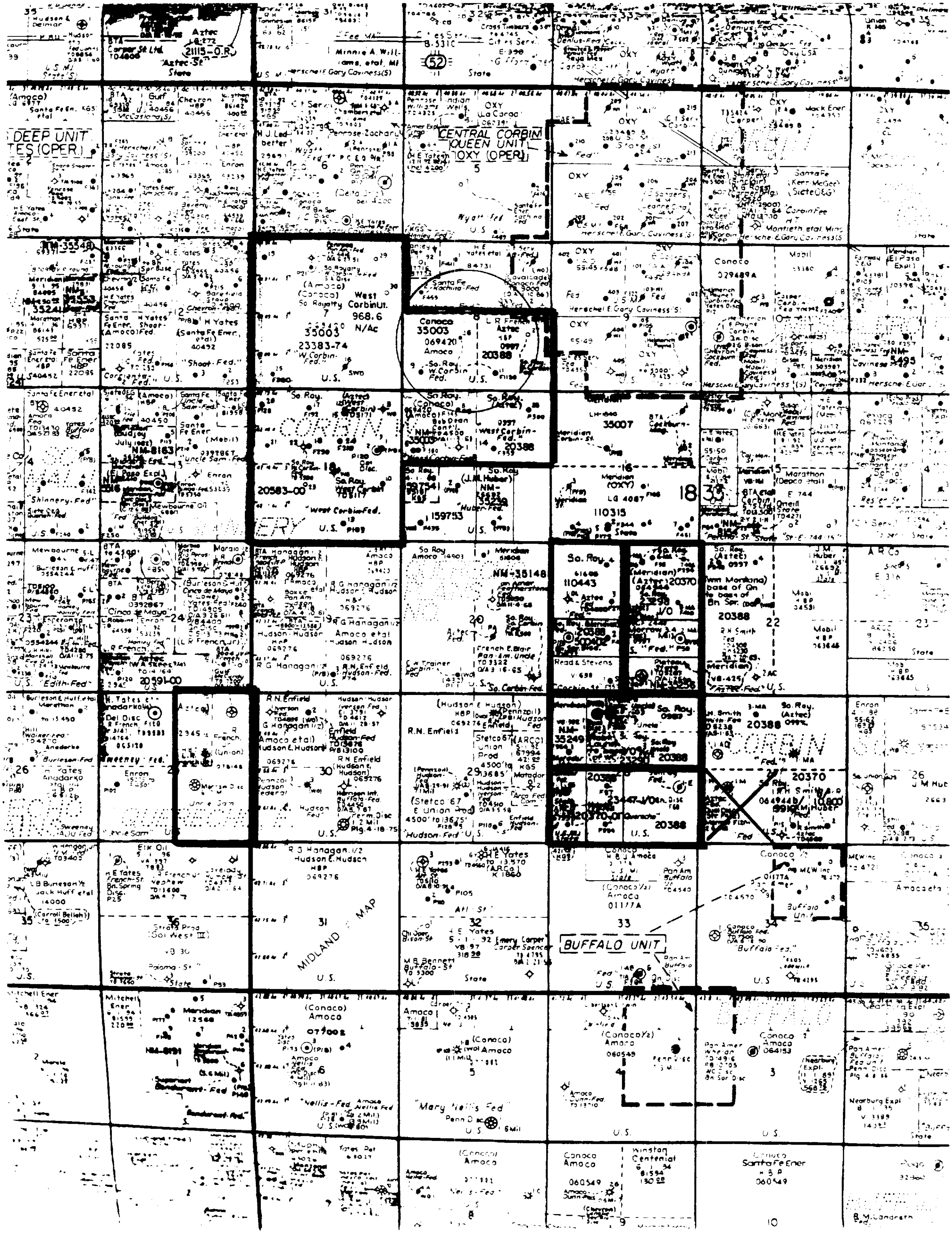
There is no underground drinking water in the area.

XII. Affirmative Statement

To the best of my knowledge, there are no freshwater zones in this wellbore. A check with the surface tenant indicated no existing or previously existing freshwater wells within the outline of the West Corbin Unit. Seismic indicates there is no evidence of shallow faulting within the unit outline that would affect the disposal zone and any possible source of drinking water.

Joseph M. Small
Senior Production Engineer


Aztec
21115-O.R.
Aztec-St. State
Minnie A. Williams, etal, MI
52
Gulf
Chevron
CENTRAL CORBIN QUEEN UN. OXY (OPER.)
Enron
West Corbin Ut.
968.6 N/Ac
Conoco
35003
Amoco
Aztec
20388
U.S.
H. Yates
Santa Fe Ener.
"Shoot-Fed."
So. Roy
(Aztec)
(West Corbin)
(Conoco)
(Amoco)
NM-35003
West Corbin Fed.
35007
Meridian
Santa Fe Ener.
Uncle Sam-Fed.
20583-00
So. Roy West Corbin
West Corbin Fed.
(J.M. Huber)
NM-26692
35239
Huber-Fed.
159753
Meridian (OXY)
LG 4087
18
0315
State
Meridian
61604
NM-35148
20
So. Corbin Fed.
So. Roy
0443
(Meridian)
(Aztec) 20370
23298
20388
500402
Morrow
NM-35256
R.N. Enfield
Hudson-Fed.
Hudson E. Hudson
R.N. Enfield
So. Roy
0997
NM-35249
23290
20388
Meridian
Aztec



CENTRAL CORBIN QUEEN UNIT OXY (OPER)
DEEP UNIT TES (OPER)
West Corbin Ut.
968.6 N/Ac
35003
23383-74
W. Corbin Fed.
Conoco
069420
Amoco
20388
So. Ray.
West Corbin-Fed.
20583-00
159753
Meridian
35007
LG 4087
110315
NM-35148
110443
20370
R.G. Hanagan 1/2 Hudson & Hudson
069276
R.N. Enfield
Sweeney Fed.
Uncle Sam
Shinnery-Fed.
Cinco de Mayo
Edith-Fed.
BUFFALO UNIT
MIDLAND MAP
Buffalo Unit
Buffalo Fed.
H.E. Yates
Mary Nellis Fed.
Nellis-Fed.
Herschel E. Gary Caviness (S)
Winston Centennial
Santa Fe Ener
060549
064153
060545
Amoco
U.S.
State

INJECTION WELL DATA SHEET
Side 1

INJECTION WELL DATA SHEET SIDE 1

OPERATOR	LEASE			
SOUTHLAND ROYALTY CO.	WEST CORBIN FEDERAL			
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE
26	1830' FSL & 2047' FWL	8	18-SOUTH	33-EAST

Schematic

Tabular Data

Surface Casing
Size 13-3/8 " Cemented with 400 sx.
TOC SURFACE feet determined by CIRCULATION
Hole size 17-1/2"

Intermediate Casing
Size 8-5/8 " Cemented with 1300 sx.
TOC SURFACE feet determined by CIRCULATION
Hole size 12-1/4

Long string
Size 5-1/2 " Cemented with 2275 sx.
TOC SURFACE feet determined by CBL
Hole size 7-7/8
Total depth 11,450'

Injection interval
10,160 feet to 10,328 feet PERFORATED
(perforated or open-hole, indicate which)

INJECTION WELL DATA SHEET
Side 2

INJECTION WELL DATA SHEET -- SIDE 2

Tubing size 2-7/8 lined with PLASTIC (material) set in a BAKER LOK-SET (brand and model) packer at 10,080' feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation LEONARD
2. Name of Field or Pool (if applicable) SOUTH CORBIN
3. Is this a new well drilled for injection? [ ] Yes [X] No

   If no, for what purpose was the well originally drilled? OIL PRODUCER
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

   WOLFCAMP: 10,767-854'; 10,868-968'; 11,040-188';
   11,286-346'; THESE ZONES WILL BE PLUGGED AS PER ATTACHED PROCEDURE
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

   DELAWARE 5,165'
   WOLFCAMP 10,767'

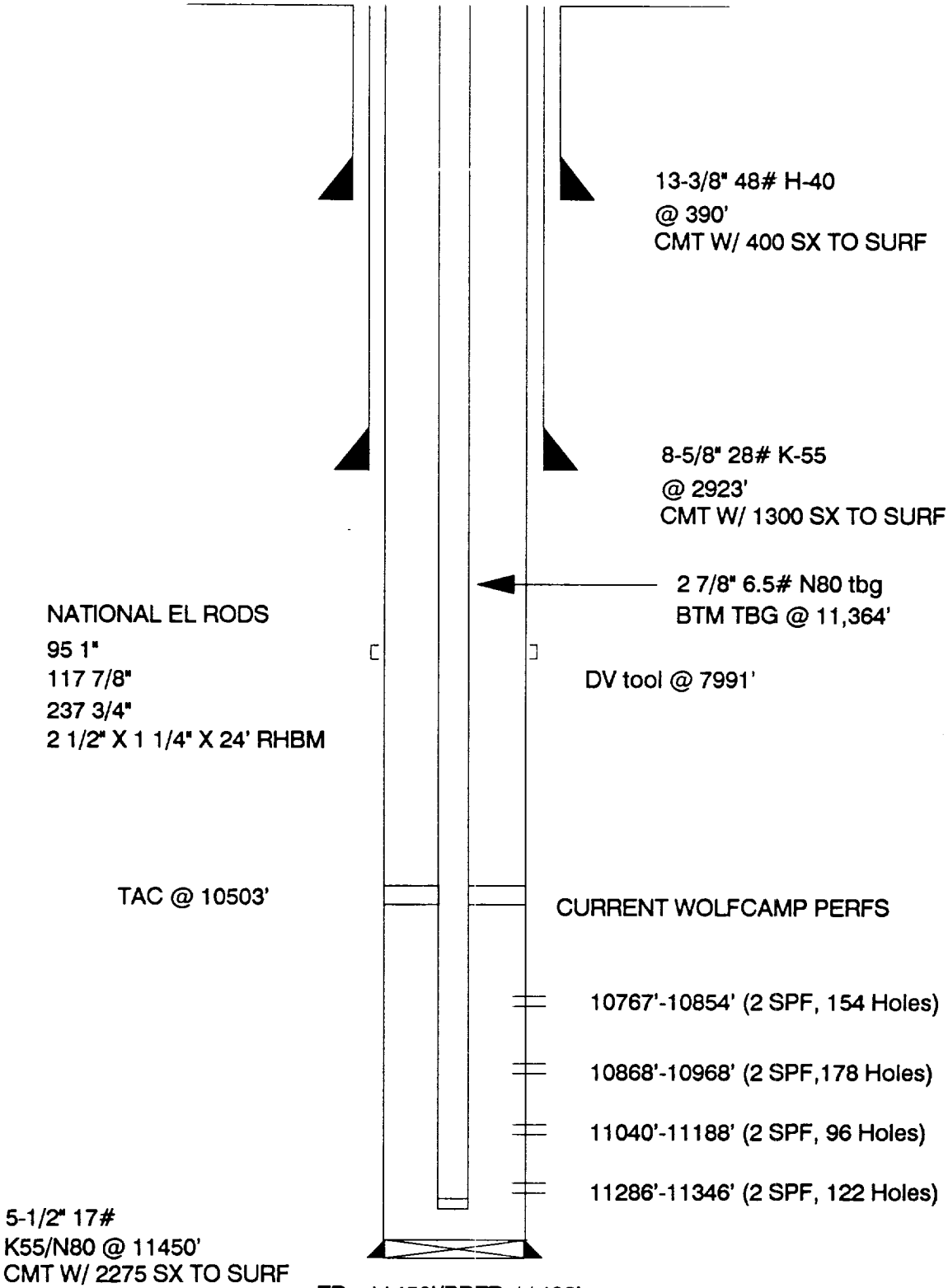
WEST CORBIN FEDERAL #26

SOUTH CORBIN (WOLFCAMP) FIELD

LEA COUNTY, NEW MEXICO

CURRENT CONDITION

JM SMALL
7/15/92



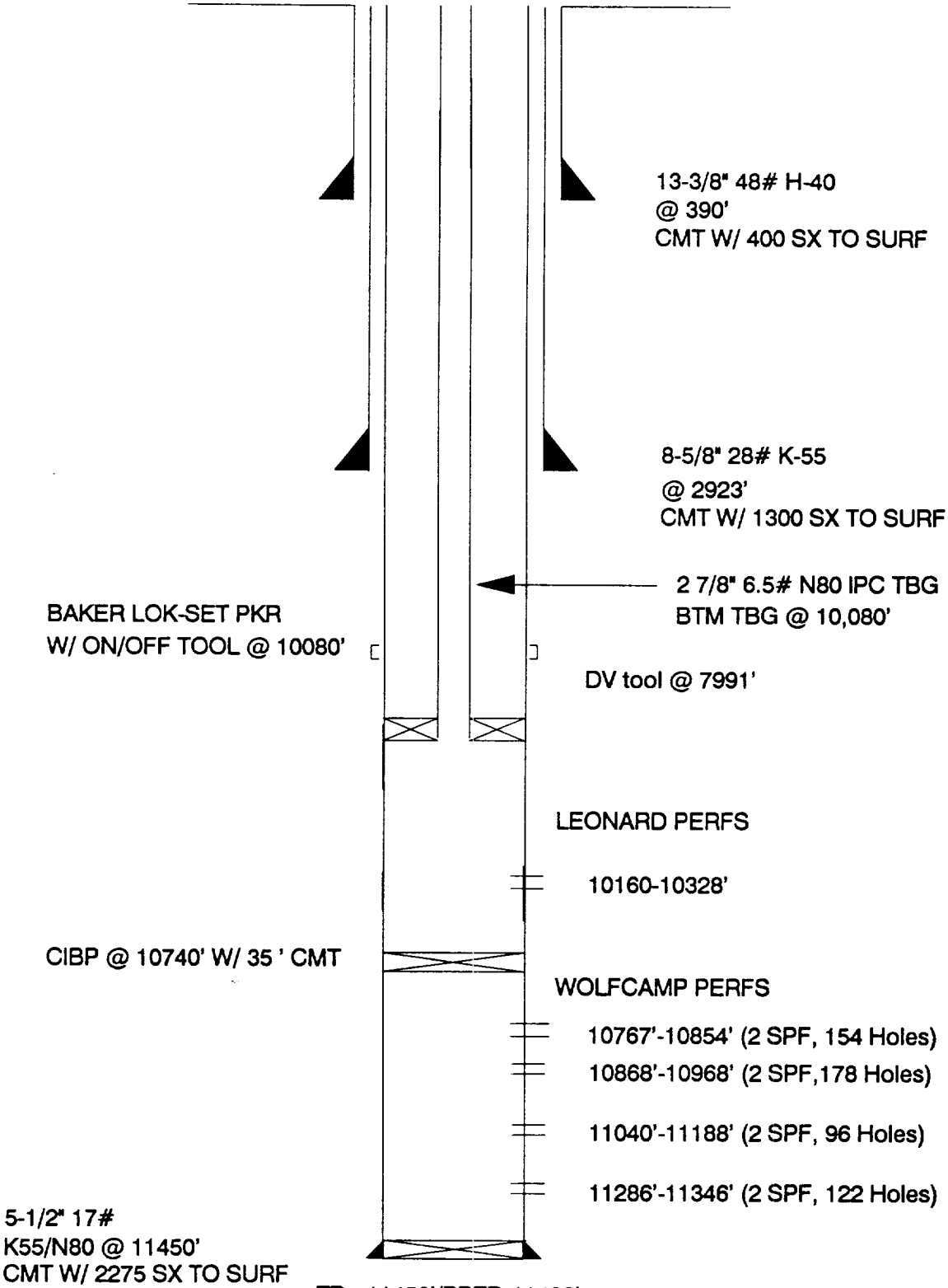
WEST CORBIN FEDERAL #26

SOUTH CORBIN (WOLFCAMP) FIELD

LEA COUNTY, NEW MEXICO

PROPOSED CONDITION

JM SMALL
7/15/92



West Corbin Federal #26
South Corbin (Wolfcamp) Field
Lea County, New Mexico

Current Condition

MECHANICAL DATA

Type Tubular:	OD (in)	ID (in)	Weight (#/ft)	Grade	Conn.	Depth (ft)	Collapse (psi)	Burst (psi)	Tensile (psi)
Surface Casing	13 3/8	12.715	48	H-40	STC	390	770	1730	322
Intermediate Casing	8 5/8	8.097	28	K-55	BUTTRESS	2923	1370	2950	263
Production Casing	5 1/2	4.892	17	N-80	LTC	0-1612	6280	7740	348
	5 1/2	4.892	17	K-55	LTC	1612-9997	4910	5320	272
	5 1/2	4.892	17	N-80	LTC	9997-11450	6280	7740	348
Production Tubing	2 7/8	2.441	6.5	N-80	EUE	11364	11160	10570	145

KB = 15'
DV Tool @ 7991'
PBTD @ 11,402'

2170.1

ATTACHMENT TO FORM C-108

Southland Royalty Company
West Corbin Federal No. 26

Well Data Within Area of Review

Operator: Southland Royalty Company

Lease and Well No.: West Corbin Federal No. 8

Location: 660' FNL & 1980' FWL, Section 17, T18S, R33E

Type Well: Oil

Date Drilled: 11/20/86

Depth: 11,450'

Casing Size	Weight lb/ft	Depth	Hole Size	Cement
13-3/8"	61	350'	17-1/2"	Circ. Surf.
9-5/8"	47	2905'	12-1/4"	Circ. Surf.
5-1/2"	17	11,450'	7-7/8"	Circ. Surf.

Producing Interval: 7140-7184'

Formation: Bone Spring

Stimulation: Frac with 25,000 gal. gel and 44,000 lb sand

Notes: Set CIBP over Wolfcamp at 10,000' and capped with 35' of cement (7/90).

ATTACHMENT TO FORM C-108

Southland Royalty Company
West Corbin Federal No. 26

Well Data Within Area of Review

Operator: Southland Royalty Company

Lease and Well No.: West Corbin Federal No. 11

Location: 660' FSL & 1980' FEL, Section 8, T18S, 33E

Type Well: Oil

Date Drilled: 12/22/88

Depth: 11,450'

Casing Size	Weight lb/ft	Depth	Hole Size	Cement
13-3/8"	48	348'	17-1/2"	Circ. Surf.
8-5/8"	24 & 28	2895'	12-1/4"	Circ. Surf.
5-1/2"	15.5 & 17	11,450'	7-7/8"	1893 sx TOC 2500' .

Producing Interval: 10,778-10,998' & 11,177-11,391'

Formation: Wolfcamp

Stimulation: Acidize with 12,200 gal. 15% HCl

Notes:

ATTACHMENT TO FORM C-108

Southland Royalty Company
West Corbin Federal No. 26

Well Data Within Area of Review

Operator: Southland Royalty Company

Lease and Well No.: West Corbin Federal No. 9

Location: 660' FSL & FWL, Section 8, T18S, R33E

Type Well: Oil

Date Drilled: 1/27/88

Depth: 11,457'

Casing Size	Weight lb/ft	Depth	Hole Size	Cement
13-3/8"	54.5	348'	17-1/2"	Circ. Surf.
8-5/8"	24 & 28	2905'	12-1/4"	Circ. Surf.
5-1/2"	15.5 & 17	11,499'	7-7/8"	Cmt. w/3230 sx - Circ. Surf.

Producing Interval: 11,164-11,270'

Formation: Wolfcamp

Stimulation: 6000 gal. 15% HCl

Notes:

ATTACHMENT TO FORM C-108

Southland Royalty Company
West Corbin Federal No. 26

Well Data Within Area of Review

Operator: Santa Fe Energy Operating

Lease and Well No.: Kachina "8" Federal No. 2

Location: 1830' FNL & 660' FWL, Section 8, T18S, R33E

Type Well: Oil

Date Drilled: 9/12/91

Depth: 11,480'

Casing Size	Weight lb/ft	Depth	Hole Size	Cement
13-3/8"		422'	17-1/2"	450 sx
8-5/8"		3080'	12-1/4"	1500 sx
5-1/2"		11,480'	7-7/8"	1660 sx

Producing Interval: 11,131-11,194'

Formation: Wolfcamp

Stimulation: Acidize w/6500 gal. 15% HCl

Notes: Perf Wolfcamp 11,315-11,343', set CIBP @ 11,300', cap with 30' cement..

High sulfates > as compared to WC wtr samples
Lower Cl⁻

WATER ANALYSIS REPORT

Company	: MERIDIAN	Date	: 2-16-91
Address	: HOBBS, NM	Date Sampled	: 2-16-91
Lease	: WEST CORBIN	Analysis No.	: 1
Well	: #21		
Sample Pt.	: WELL		

LEONARD FORMATION

	ANALYSIS		mg/L		* meq/L
1.	pH	6.7			
2.	H2S	110			
3.	Specific Gravity	1.050			
4.	Total Dissolved Solids		72690.4		
5.	Suspended Solids		NR		
6.	Dissolved Oxygen		2		
7.	Dissolved CO2		NR		
8.	Oil In Water		NR		
9.	Phenolphthalein Alkalinity (CaCO3)				
10.	Methyl Orange Alkalinity (CaCO3)				
11.	Bicarbonate	HCO3	1122.0	HCO3	18.4
12.	Chloride	Cl	40470.0	Cl	1141.6
13.	Sulfate	SO4	3750.0	SO4	78.1
14.	Calcium	Ca	1800.0	Ca	89.8
15.	Magnesium	Mg	1094.2	Mg	90.0
16.	Sodium (calculated)	Na	24323.2	Na	1058.3
17.	Iron	Fe	0.0		
18.	Barium	Ba	125.0		
19.	Strontium	Sr	0.0		
20.	Total Hardness (CaCO3)		9000.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter

90	*Ca <----- *HCO3	18
90	*Mg -----> *SO4	78
1058	*Na -----> *Cl	1142

Saturation Values Dist. Water 20 C

CaCO3	13 mg/L
CaSO4 * 2H2O	2090 mg/L
BaSO4	2.4 mg/L

Compound	Equiv wt.	X meq/L	= mg/L
Ca(HCO3)2	81.0	18.4	1491
CaSO4	68.1	71.4	4862
CaCl2	55.5		
Mg(HCO3)2	73.2		
MgSO4	60.2	6.7	401
MgCl2	47.6	83.4	3968
NaHCO3	84.0		
Na2SO4	71.0		
NaCl	58.4	1058.3	61844

REMARKS:

Petrolite Oilfield Chemicals Group

Respectfully submitted,
S. HOLLINGE

SCALE TENDENCY REPORT

Company	: MERIDIAN	Date	: 2-16-91
Address	: HOBBS, NM	Date Sampled	: 2-16-91
Lease	: WEST CORBIN	Analysis No.	: 1
Well	: #21	Analyst	: S. HOLLINGE
Sample Pt.	: WELL		

STABILITY INDEX CALCULATIONS
(Stiff-Davis Method)
CaCO3 Scaling Tendency

S.I. =	0.7	at	80 deg. F or	27 deg. C
S.I. =	0.8	at	100 deg. F or	38 deg. C
S.I. =	0.9	at	120 deg. F or	49 deg. C
S.I. =	1.0	at	140 deg. F or	60 deg. C
S.I. =	1.0	at	150 deg. F or	66 deg. C

****

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS
(Skillman-McDonald-Stiff Method)
Calcium Sulfate

S =	5152	at	80 deg. F or	27 deg C
S =	6332	at	100 deg. F or	38 deg C
S =	6399	at	120 deg. F or	49 deg C
S =	6438	at	140 deg. F or	60 deg C
S =	6406	at	150 deg. F or	66 deg C

Petrolite Oilfield Chemicals Group

Respectfully submitted,
S. HOLLINGE

WATER ANALYSIS REPORT

Company : MERIDIAN
Address : HOBBS
Lease : WEST CORBIN
Well : #21
Sample Pt. : WELL

Date : 2-26-91
Date Sampled : 2-25-91
Analysis No. : 3

LEONARD FORMATION

	ANALYSIS		mg/L		* meq/L
1.	pH	6.3			
2.	H2S	220			
3.	Specific Gravity	1.045			
4.	Total Dissolved Solids		87577.0		
5.	Suspended Solids		NR		
6.	Dissolved Oxygen		NR		
7.	Dissolved CO2		NR		
8.	Oil In Water		NR		
9.	Phenolphthalein Alkalinity (CaCO3)				
10.	Methyl Orange Alkalinity (CaCO3)				
11.	Bicarbonate	HCO3	1220.0	HCO3	20.0
12.	Chloride	Cl	48930.0	Cl	1381.9
13.	Sulfate	SO4	3750.0	SO4	78.1
14.	Calcium	Ca	2600.0	Ca	129.7
15.	Magnesium	Mg	366.1	Mg	30.1
16.	Sodium (calculated)	Na	30350.9	Na	1320.2
17.	Iron	Fe	0.0		
18.	Barium	Ba	300.0		
19.	Strontium	Sr	0.0		
20.	Total Hardness (CaCO3)		8000.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter

130	*Ca <----- *HCO3	20
30	*Mg -----> *SO4	78
1320	*Na -----> *Cl	1362

Saturation Values Dist. Water 20 C

CaCO3	13 mg/L
CaSO4 * 2H2O	2090 mg/L
BaSO4	2.4 mg/L

Compound	Equiv wt.	X meq/L	= mg/L
Ca(HCO3)2	81.0	20.0	1621
CaSO4	68.1	78.1	5315
CaCl2	55.5	31.7	1756
Mg(HCO3)2	73.2		
MgSO4	60.2		
MgCl2	47.6	30.1	1434
NaHCO3	84.0		
Na2SO4	71.0		
NaCl	58.4	1320.2	77151

REMARKS:
SECOND WATER RUN THIS LEASE

Petrolite Oilfield Chemicals Group

Respectfully submitted,
B. HOLLINGER

SCALE TENDENCY REPORT

Company	: MERIDIAN	Date	: 2-25-91
Address	: HOBBS	Date Sampled	: 2-25-91
Lease	: WEST CORBIN	Analysis No.	: 3
Well	: #21	Analyst	: S. HOLLINGER
Sample Pt.	: WELL		

STABILITY INDEX CALCULATIONS
(Stiff-Davis Method)
CaCO3 Scaling Tendency

S.I. =	1.1	at	80 deg. F or	27	deg. C
S.I. =	1.2	at	100 deg. F or	38	deg. C
S.I. =	1.3	at	120 deg. F or	49	deg. C
S.I. =	1.3	at	130 deg. F or	54	deg. C
S.I. =	1.4	at	140 deg. F or	60	deg. C

****

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS
(Skillman-McDonald-Stiff Method)
Calcium Sulfate

S =	5316	at	80 deg. F or	27	deg C
S =	5510	at	100 deg. F or	38	deg C
S =	5592	at	120 deg. F or	49	deg C
S =	5620	at	130 deg. F or	54	deg C
S =	5647	at	140 deg. F or	60	deg C

Petrolite Oilfield Chemicals Group

Respectfully submitted,
S. HOLLINGER

P. O. BOX 1468
MONAHANS, TEXAS 79756
PH. 943-3234 OR 563-1040

Martin Water Laboratories, Inc.

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 128995
TO: Mr. Jim Kramer
21 Desta Drive, Midland, Texas
SAMPLE RECEIVED 12-11-89
RESULTS REPORTED 12-14-89

COMPANY Meridian Oil, Inc. LEASE West Corbin Federal #16
FIELD OR POOL South Corbin (Wolfcamp)
SECTION ___ BLOCK ___ SURVEY ___ COUNTY Lea STATE NM

SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Recovered water - taken from West Corbin Federal #16 @ 11,278'-11,316'. 11-29-89
NO. 2 Recovered water - taken from West Corbin Federal #16 @ 11,161'-11,248'. 12-4-89
NO. 3
NO. 4
REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.1038	1.1003		
pH When Sampled				
pH When Received	5.86	6.14		
Bicarbonate as HCO_3	939	1,019		
Supersaturation as $CaCO_3$				
Undersaturation as $CaCO_3$				
Total Hardness as $CaCO_3$	38,250	44,250	TYPICAL WOLFCAMP WATER ANALYSIS. THIS IS THE TYPE OF WATER THAT WILL BE DISPOSED IN WC #26	
Calcium as Ca	12,900	15,500		
Magnesium as Mg	1,458	1,336		
Sodium and/or Potassium	41,441	39,132		
Sulfate as SO_4	379	297		
Chloride as Cl	90,194	90,904		
Iron as Fe	284	156		
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	147,311	148,189		
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen,				
Hydrogen Sulfide	0.0	0.0		
Resistivity, ohms/m at 77° F.	0.072	0.070		
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks: Our records of Wolfcamp are limited to some rather distant records surrounding this field. In studying these records of Wolfcamp, we find it does vary significantly in characteristics. This leaves us with no specific characteristic to look for to identify this water regarding its originating from the Wolfcamp. However, the ratios and levels of salts are those that we would normally expect from a natural subsurface water as opposed to any artificially induced waters, therefore tending to suggest the probability that these waters are predominantly natural Wolfcamp.

Form No. 3

By ________
Waylan C. Martin, M.A.

$R_{w\,corr} = .072 \left(\frac{77 + 6.77°}{146° + 6.77}\right)$

looks like Good FW sample!!