

HINKLE, COX, EATON, COFFIELD & HENSLEY
P.L.L.C.*

ATTORNEYS AT LAW

218 MONTEZUMA POST OFFICE BOX 2068
SANTA FE, NEW MEXICO 87504-2068
(505) 982-4554 FAX (505) 982-8623

PAUL W. EATON
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
STUART D. SHANOR
ERIC D. LANPHERE
C. D. MARTIN
ROBERT P. TINNIN, JR.
MARSHALL G. MARTIN
MASTON C. COURTNEY**
DON L. PATTERSON**
DOUGLAS L. LUNSFORD
NICHOLAS J. NOEDING
T. CALDER EZZELL, JR.
WILLIAM B. BURFORD*
RICHARD E. OLSON
RICHARD R. WILFONG*
THOMAS J. MCBRIDE
NANCY S. CUSACK

JEFFREY L. FORNACIARI
JEFFREY D. HEWETT
JAMES BRUCE
JERRY F. SHACKELFORD*
JEFFREY W. HELLBERG*
WILLIAM F. COUNTISS**
ALBERT L. PITTS
THOMAS M. HNASKO
JOHN C. CHAMBERS*
GARY D. COMPTON*
W. H. BRIAN, JR. **
RUSSELL J. BAILEY**
CHARLES R. WATSON, JR. **
THOMAS D. HAINES, JR.
GREGORY J. NIBERT
MARK C. DOW
FRED W. SCHWENDIMANN
JAMES M. HUDSON

*REGISTERED IN NEW MEXICO
AS HINKLE, COX, EATON,
COFFIELD & HENSLEY, P.L.L.C., LTD., CO.

LEWIS C. COX, JR. (1924-1993)
CLARENCE E. HINKLE (1901-1985)

OF COUNSEL
O. M. CALHOUN*, JOE W. WOOD
RICHARD L. CAZZELL**, RAY W. RICHARDS**
L. A. WHITE**

AUSTIN AFFILIATION
HOFFMAN & STEPHENS, P.C.
KENNETH R. HOFFMAN*
TOM D. STEPHENS*
RONALD C. SCHULTZ, JR.*
JOSE CANO*

JEFFREY S. BAIRD*
THOMAS E. HOOD**
REBECCA NICHOLS JOHNSON
STANLEY K. KOTOVSKY, JR.
H. R. THOMAS
ELLEN S. CASEY
MARGARET CARTER LUDEWIG
S. BARRY PAISNER
MARTIN MEYERS
WYATT L. BROOKS**
DAVID M. RUSSELL**
ANDREW J. CLOUTIER
STEPHANIE LANDRY
KIRT E. MOELLING**
DIANE FISHER
JULIE P. NEERKEN
WILLIAM P. SLATTERY
CHRISTOPHER M. MOODY

JAMES A. GILLESPIE
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LISA K. SMITH*
NORMAN D. EWART
DARREN T. GROCE*
MOLLY MCINTOSH
MARCIA B. LINCOLN
SCOTT A. SHUART*
PAUL G. NASON
R. "TREY" ARVIZU, III
AMY C. WRIGHT*
BRADLEY G. BISHOP*
KAROLYN KING NELSON
ELLEN T. LOUDERBOUGH
BARBARA GREGG GLENN
JAMES H. WOOD*

*NOT LICENSED IN NEW MEXICO
**FORMERLY COMPRISING THE FIRM OF
CULTON, MORGAN, BRITAIN & WHITE, P.C.

October 10, 1995

HAND-DELIVERY

Florene Davidson
Oil Conservation Division
2040 So. Pacheco Street
Santa Fe, NM 87505

Re: Case No. 11403 (Pogo Producing Company)

Dear Florene:

Enclosed are an original and two copies of an Amended Application regarding the above case, and a revised proposed advertisement. There are two changes: The project is a pressure maintenance project rather than a waterflood project, and the perforated interval has been changed. As a result of this amendment, the case will have to be continued from the October 19th hearing to the November 2nd hearing. Please call if you have any questions.

Very truly yours,

HINKLE, COX, EATON, COFFIELD
& HENSLEY, P.L.L.C., Ltd., Co.


James Bruce

Enclosures
JB/sp

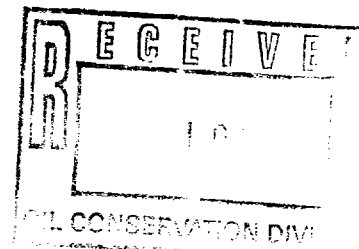
POST OFFICE BOX 10
ROSWELL, NEW MEXICO 88202
(505) 622-6510
FAX (505) 623-9332

POST OFFICE BOX 3580
MIDLAND, TEXAS 79702
(915) 683-4691
FAX (915) 683-6518

POST OFFICE BOX 9238
AMARILLO, TEXAS 79105
(806) 372-5569
FAX (806) 372-9761

POST OFFICE BOX 2043
ALBUQUERQUE, NEW MEXICO 87103
(505) 768-1500
FAX (505) 768-1529

401 W. 15TH STREET, SUITE 800
AUSTIN, TEXAS 78701
(512) 476-7137
FAX (512) 476-5431



BEFORE THE NEW MEXICO OIL CONSERVATION DIVISION

APPLICATION OF POGO PRODUCING
COMPANY FOR A PILOT PRESSURE
MAINTENANCE PROJECT, EDDY COUNTY,
NEW MEXICO

NO. 11403

AMENDED APPLICATION

Pogo Producing Company, for its application, states:

1. Applicant is the operator of the Neff Federal lease, which covers all of Section 25, Township 22 South, Range 31 East, N.M.P.M., Eddy County, New Mexico.

2. Applicant proposes to institute a pilot pressure maintenance project for the Neff Federal lease by injecting water into the Delaware formation (Livingston Ridge-Delaware Pool) through perforations from 7050 feet to 7068 feet in its existing Neff Federal Well No. 3, located 430 feet from the North line and 760 feet from the West line (Unit D) of Section 25.

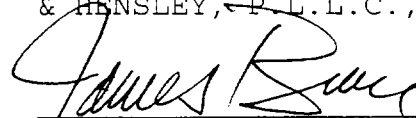
3. The Form C-108 for the project is attached hereto as Exhibit A.

4. The granting of this application is in the interests of conservation and the prevention of waste.

WHEREFORE, Applicant requests that, after notice and hearing, the relief requested herein be granted.

Respectfully submitted,

HINKLE, COX, EATON, COFFIELD
& HENSLEY, P.L.L.C., Ltd., Co.

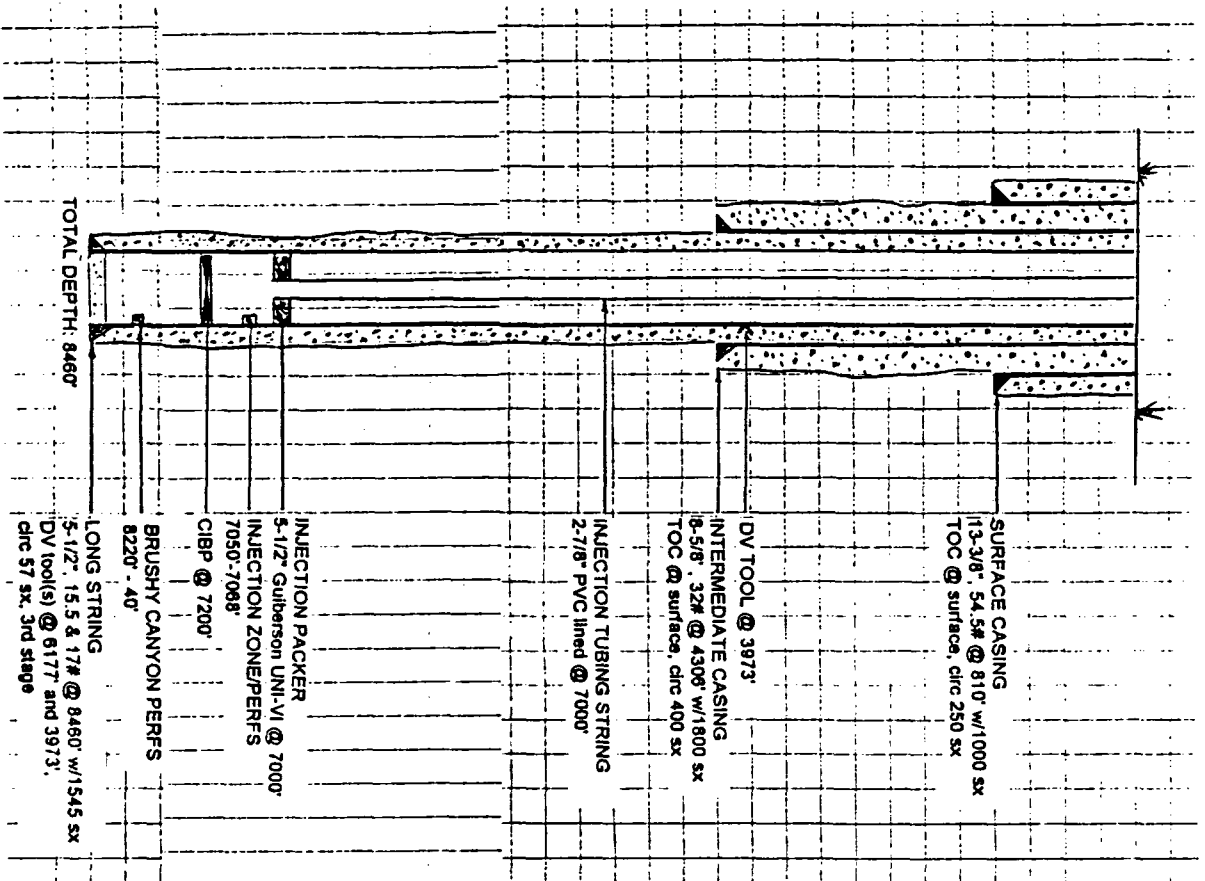


James Bruce
Post Office Box 2068
Santa Fe, New Mexico 87504-2068
(505) 982-4554

Attorneys for Applicant

- I. Purpose: ☐ Secondary Recovery ☒ Pressure Maintenance ☐ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☒ no
- II. Operator: POGO PRODUCING COMPANY
Address: P. O. Box 10340, Midland, Texas 79702
Contact party: Richard L. Wright Phone: 915/682-6822
- 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.
- II. 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.
- III. Applicants must complete the "Proof of Notices" section on the reverse side of this form.
- IV. Certification
- I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- Name: Bill F. Halepeska Title: Agent, P. E.
Signature: *Bill Halepeska* Date: 08/16/95
- If the information required under Sections VI, VIII, X, and XI above has been submitted, it need not be duplicated and resubmitted. Please show the date and of the earlier submittal.

SCHEMATIC



INJECTION WELL DATA SHEET

TABULAR DATA

(1). LEASE: Neff Federal WELL # 3

LOCATION: Sec. 25 TWP 22-S Range 31-E

County Eddy

Footage 430' FNL & 760' FNL

(2). CASING STRINGS:

Surface Casing

Size 13-3/8" Depth 810' Cemented w/ 1000 sx.

TOC surf Determined by circ 250 sx

Hole size 17-1/2"

Intermediate Casing

Size 8-5/8" Depth 4306' Cemented w/ 1800 sx.

TOC surf Determined by circ 400 sx

Hole size 11"

Long String

Size 5-1/2" Depth 8460' Cemented w/ 1545 sx.

TOC surf Determined by circ 57 sx, 3rd sty

Hole size 7-7/8"

Injection interval, from 7050' to 7068 ft.

(3). INJECTION TUBING STRING:

Size 2-7/8" in., coated/lined with PVC

Setting depth 7000 ft.

(4) INJECTION PACKER:

Size 5-1/2 in.; Make/Model Gulberson UNI-VI

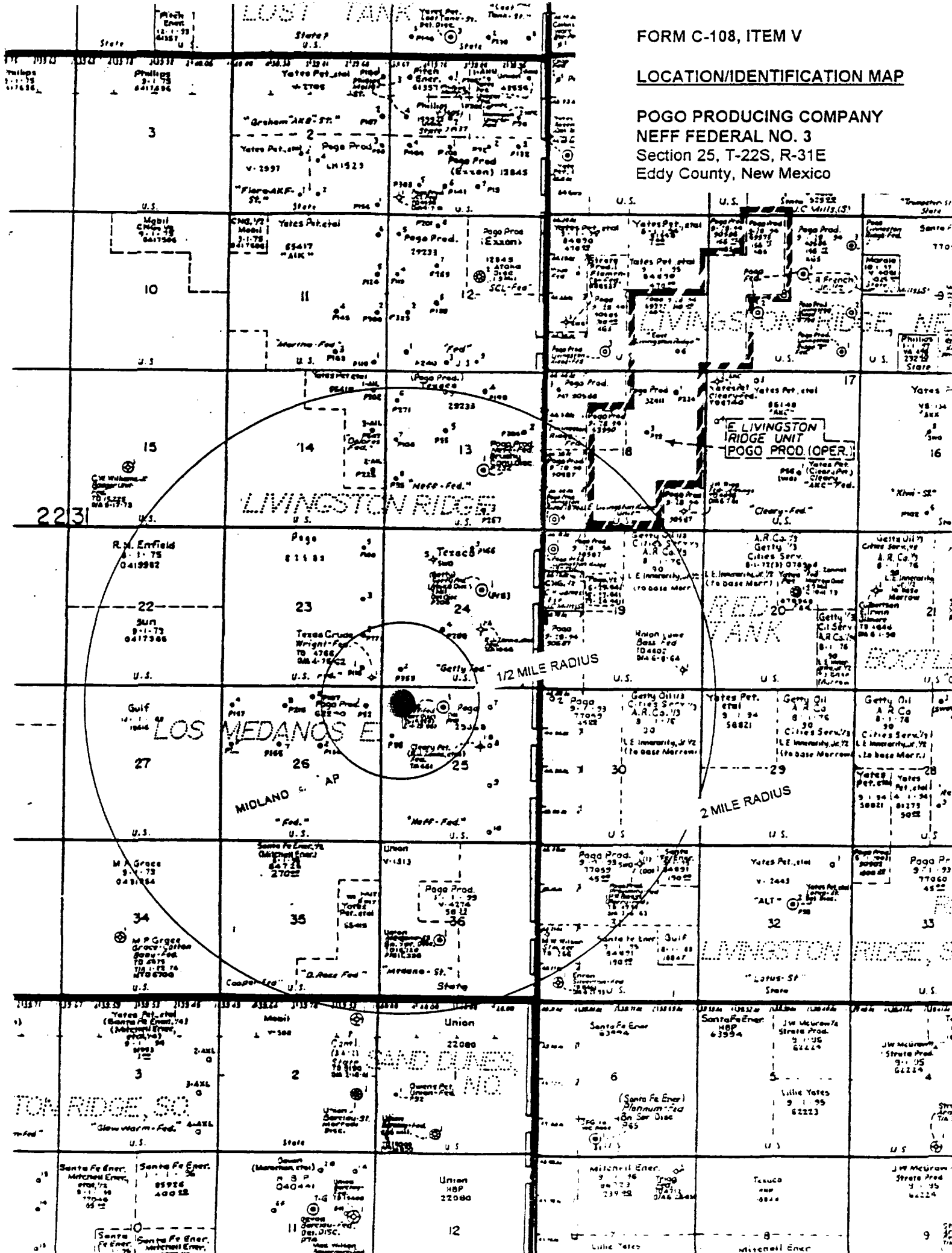
Setting depth 7000 ft.

ITEM 111-B

INJECTION WELL DATA

- (1). Injection Formation: Delaware (Brushy Canyon)
Field/Pool: Livingston Ridge Delaware
- (2). Injection interval; from 7050 Ft. to 7068 Ft.
Perforated XX Open Hole
- (3). Original purpose well drilled -- as producer from the Brushy Canyon
- (4). Other perforated intervals; XX Yes No
Squeezed with sx., or isolated by CIBP @ 7200'
8220' - 40'
- (5). Oil or gas productive zone(s):
Next higher: none
Next lower: Lower Brushy Canyon - 8200'

POGO PRODUCING COMPANY
NEFF FEDERAL NO. 3
Section 25, T-22S, R-31E
Eddy County, New Mexico



ITEM VI

WELL DATA - AREA OF REVIEW

- (1). Location: 660' FNL & 1980' FWL, Sec 25, T-22S, R-31E, Eddy County
Operator: Pogo Producing Company Lease: Neff Federal Well # 1
Well type: Oil XX Gas XX OSA Total depth 15,026 Ft.
Date drilled: 1986; recomple 11/04/89
Completion Data: 13-3/8" @ 800' w/827 sx, circ; 10-3/4" @ 4530' w/2000 sx; 7-5/8"
@ 11,885' w/1135 sx; 5" 11,531' to 14,998' w/515 sx; perf 14,904' - 912'; A/
2000 gal; perf 14,717' - 723'; A/2000 gal; perf 14,460' - 522'; A/4000 gal; IP
CAOF 626 MCF; PB to 7180'; perf 7080' - 7120'; A/1000 gal; F/16,000 GW + 30,700#
sd; IPP 41 BOPD +219 BW
Plugged Date: (Schematic attached)
- (2). Location: 1650' FNL & 330' FWL, Sec 25, T-22S, R-31E, Eddy County
Operator: Pogo Producing Company Lease: Neff Federal Well # 2
Well Type: Oil XX Gas OSA Total Depth: 8440 Ft.
Date Drilled: 11/12/91
Completion Data: 13-3/8" @ 814' w/1000 sx, circ; 8-5/8" @ 4340' w/1675 sx; 5-1/2"
@ 8440' w/1385 sx; perf 8054' - 8108'; A/1500 gal 15%; F/35,000 GW + 85,000# sd;
IP 88 BOPD + 300 BW
Plugged Date (Schematic attached)
- (3). Location: 610' FNL & 510' FEL, Sec 26, T-22S, R-31E, Eddy Co.
Operator: Pogo Producing Company Lease: Federal 26 Well # 1
Well Type ; Oil XX Gas OSA Total Depth: 8415 Ft.
Date Drilled: 07/06/90
Completion Data: 13-3/8" @ 850' w/900 sx, circ; 8-5/8" @ 4447' w/1280 sx, circ;
5-1/2" @ 8415' w/1220 sx; perf 8224' - 8318'; A/2000 gal 7-1/2%; F/22,205 GW +
51,200# 16/30 sd; IP 52 BOPD + 165 BW; set RBP; perf 7053' - 71'; A/2000 gal 7-1/2%;
F/51,780# 20/40 sd; IP 110 BOPD + 127 BW commingle
Plugged Date (Schematic attached)

ITEM VI

WELL DATA - AREA OF REVIEW

(4). Location: 660' FS & EL, Sec 23, T-22S, R-31E, Eddy County
 Operator: Pogo Producing Company Lease: Federal 23 Well # 1
 Well type: Oil XX Gas OSA Total depth 8420 Ft.
 Date drilled: 08/03/90
 Completion Data: 13-3/8" @ 845' w/800 sx, circ; 8-5/8" @ 4394' w/1340 sx,
circ; 5-1/2" @ 8420' w/1240 sx, 2 stg; perf 8090'-8198'; A/2000 gal 7-1/2%;
F/38,890 GW + 96,000# 16/30 sd; IP 58 BOPD +138 BW; TA; perf 7046'-65'; A/1500
gal 7-1/2%; F/20,000 GW +52,000# 20/40 sd; IP 110 BOPD + 124 BW: commingled

Plugged Date: (Schematic attached)

(5). Location: 1750' FSL & 660' FEL, Sec 23, T-22S, R-31E, Eddy County
 Operator: Pogo Producing Company Lease: Federal 23 Well # 2
 Well Type: Oil XX Gas OSA Total Depth: 8430 Ft.
 Date Drilled: 04/16/92
 Completion Data: 13-3/8" @ 828' w/1000 sx, circ; 8-5/8" @ 4279' w/1700 sx,
circ; 5-1/2" @ 8430' w/1400 sx; TOC 1250 CBL; perf 7000'-20'; A/1000 gal 15%;
F/25,000 GW +44,375# 20/40 sd; IP 77 BOPD +177 BW; recomp 6/94; perf 8208'-57';
A/1500 7-1/2%; F/44,800 GW + 61,800# 20/40 sd; perf 8090'-8140'; A/1500 gal; see below
 Plugged Date (Schematic attached)

(6). Location: 660' FS & WL, Sec 24, T-22S, R-31E, Eddy County
 Operator: Texaco Lease: Getty 24 Federal Well # 2
 Well Type ; Oil XX Gas OSA Total Depth: 8000 Ft.
 Date Drilled: 03/27/90
 Completion Data: 11-3/4" @ 840' W/700 sx; 8-5/8" @ 4500' w/1350 sx; 5-1/2" @
8000' w/1950 sx; perf 7672'-84'; acid; set CIBP @ 7622'; perf 7062'-7101'; A/1500
gal; F/25,500 GW + 57,500# sd; IP 353 BOPD + 219 BW

Plugged Date (Schematic attached)

Federal 23 No. 2, cont'd.

F/44,000 GW + 47,230# 20/40 sd; IP 97 BO +279 BW; commingled

ITEM V1

WELL DATA - AREA OF REVIEW

(7). Location: 1980' FS & WL, Sec 24, T-22S, R-31E, Eddy County
Operator: Texaco Lease: Getty 24 Federal Well # 4
Well type: Oil XX Gas DSA Total depth 8400 ft.
Date drilled: 02/18/91
Completion Data: 11-3/4" @ 840' w/800 sx; 8-5/8" @ 4350' w/1350 sx; 5-1/2" @
8400' w/1750 sx; perf 7068'-7118'; A/2000 gal 7-1/2%; F/50,000 GW + 117,000#
sd; IP 288 BOPD + 34 BW

Plugged Date: (Schematic attached)

(8). Location: 330' FS & El; Sec 23, T-22S, R-31E, Eddy County
Operator: Texas Crude Oil Company Lease: Wright 23 Federal Well # 1
Well Type: Oil Gas DSA XX Total Depth: 4766 ft.
Date Drilled: 04/25/62
Completion Data: 8-5/8" @ 305' w/225 sx; DST 4490'-4531', NS

Plugged XX Date 04/25/62 (Schematic attached) FIGURE 1

(.). Location:
Operator: Lease: Well #
Well Type ; Oil Gas DSA Total Depth: ft.
Date Drilled:
Completion Data:

Plugged Date (Schematic attached)

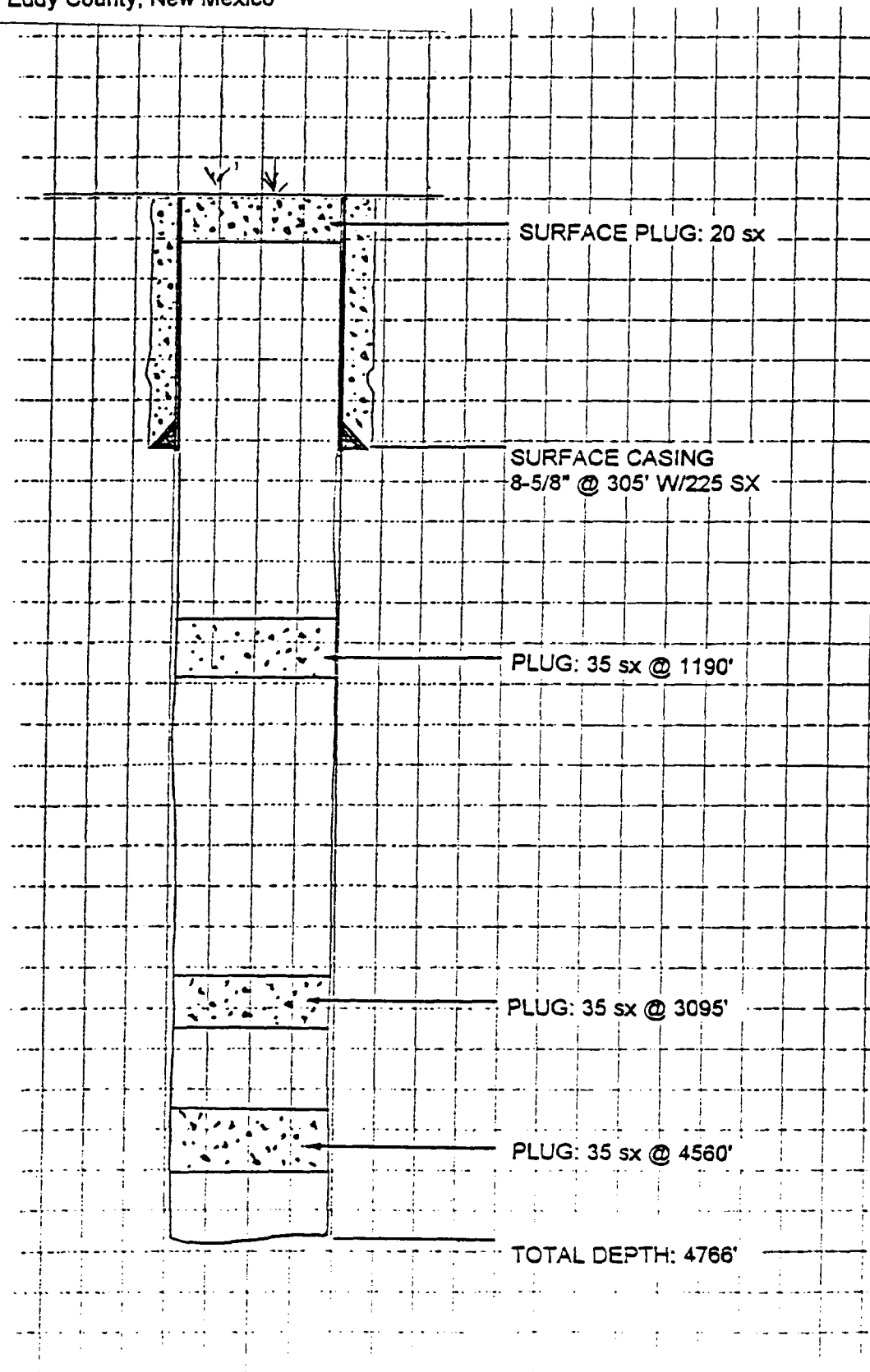
P & A SCHEMATICTEXAS CRUDE - WRIGHT 23 FED NO. 1

POGO PRODUCING COMPANY

NEFF FEDERAL NO. 3

Section 25, T-22S, R-31E

Eddy County, New Mexico



ITEM VII

OPERATIONAL DATA

(1). Average expected injection rate: 1000 BWPD; maximum anticipated rate: 3000 BWPD

(2). Closed system

(3). Estimated average injection pressure: 750 psi.

Estimated maximum pressure: 1410 psi.

(4). Source of injection water: from Lower Delaware zones in nearby Pogo
operated wells

Analysis of waters attached. EXHIBIT II

(5). Analysis of injection zone water attached.

Data source: EXHIBIT II

GEOLOGICAL DATA

INJECTION ZONE

Lithological description: sandstone, lt gray, fine to v fine grained,
poorly consolidated, poor calc cem.

Geological name: Delaware (Brushy Canyon)

Zone thickness: 18 ft.; Depth: 7086 ft.

FRESH WATER SOURCES

Geological name: Santa Rosa

Depth to bottom of zone: +/-650 ft.

ITEM IX

STIMULATION PROGRAM (~~Proposed~~) Performed

ACIDIZE:

Volume: 1500 gal Type acid: 7-1/2% HCl/Pentol 100

Rate: +/- 5 BFM; Misc. Ball Sealers

FRACTURE:

Fluid volume: 38,800 gal.; Type: Gelled Water

Prop type: 20/40 sand Volume (#): 61,800

Rate: BFM; Conductor: in.

Misc.

ITEM X

LOGGING PROGRAM

Logging program included: CNLD, DLL & CBL

Copy of GR/DLL log included in attachments

ITEM XI

FRESH WATER ANALYSIS

Fresh water well within 1 mile radius; _____ Yes XX No

Chemical analysis from well(s) located: Sec 14, T-22S, R-31E

Date sampled: 05/24/78 EXHIBIT IV

Chemical analysis from well(s) located:

Date sampled:

ITEM XII

HYDROLOGY

Various engineering data and area well logs reveal no evidence that there might exist hydrologic connection between the intended injection zone and possible fresh water zone above 650' (Santa Rosa).

ANALYSIS - BRUSHY CANYON
PRODUCED WATER

POGO PRODUCING COMPANY
NEFF FEDERAL NO. 3
Section 25, T-22S, R-31E
Eddy County, New Mexico

16010 Barker's Point Lane • Houston, Texas 77079
713 558-5200 • Telex: 4620346 • FAX: 713 589-4737

Apply to: P.O. Box FF
Artesia, New Mexico 88210
(505) 746-3588 Phone
(505) 746-3580 Fax

WATER ANALYSIS REPORT

Company : POGO PRODUCING
Address : MIDLAND, TEXAS
Lease : RED TANK FED. 28
Well : #1 *Brushy Canyon (Del)*
Sample Pt. : WELLHEAD

Date : 01/08/93
Date Sampled : 01/04/93
Analysis No. : 005

ANALYSIS		mg/L		* meq/L
-----		----		-----
1. pH	6.2			
2. H ₂ S	3 PPM			
3. Specific Gravity	1.160			
4. Total Dissolved Solids		279018.4		
5. Suspended Solids		NR		
6. Dissolved Oxygen		NR		
7. Dissolved CO ₂		80 PPM		
8. Oil In Water		NR		
9. Phenolphthalein Alkalinity (CaCO ₃)				
10. Methyl Orange Alkalinity (CaCO ₃)		60.0		
11. Bicarbonate	HCO ₃	73.2	HCO ₃	1.2
12. Chloride	Cl	170409.6	Cl	4807.0
13. Sulfate	SO ₄	1000.0	SO ₄	20.8
14. Calcium	Ca	15881.7	Ca	842.4
15. Magnesium	Mg	1186.3	Mg	97.6
16. Sodium (calculated)	Na	89409.6	Na	3889.1
17. Iron	Fe	58.0		
18. Barium	Ba	NR		
19. Strontium	Sr	NR		
20. Total Hardness (CaCO ₃)		47042.3		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter		Compound	Equiv wt X meq/L	= mg/L
842	*Ca <----- *HCO ₃	Ca (HCO ₃) ₂	81.0	97
98	*Mg <----- *SO ₄	CaSO ₄	68.1	1417
3889	*Na <----- *Cl	CaCl ₂	55.5	45523
		Mg (HCO ₃) ₂	73.2	
		MgSO ₄	60.2	
		MgCl ₂	47.6	4646
		NaHCO ₃	84.0	
		Na ₂ SO ₄	71.0	
		NaCl	58.4	227277

Saturation Values Dist. Water 20 C	
CaCO ₃	13 mg/L
CaSO ₄ * 2H ₂ O	2090 mg/L
BaSO ₄	2.4 mg/L

REMARKS:

L. MALLET / FILE

ANALYSIS - SANTA ROSA WATER

POGO PRODUCING COMPANY

EXHIBIT NO. IV

NEFF FEDERAL NO. 3

Section 25, T-22S, R-31E

Eddy County, New Mexico

Chemical and radiochemical analyses of water from test hole H-5

Water produced from the Santa Rosa Sandstone, sample taken 5/24/78

Alkalinity Field (mg/l as HCO ₃)	200
Bicarbonate FET-FLD (mg/l as HCO ₃)	240
Nitrogen, NO ₂ + NO ₃ Dissolved (mg/l as N)	0.36
Hardness (mg/l as CaCO ₃)	150
Hardness, noncarbonate(mg/l as CaCO ₃)	150
Calcium Dissolved (mg/l as Ca)	56
Magnesium, Dissolved (mg/l as Mg)	51
Sodium, Dissolved (mg/l as Na)	280
Potassium, Dissolved (mg/l as K)	25
Chloride, Dissolved (mg/s as Cl)	120
Sulfate, Dissolved (mg/l as SO ₄)	530
Fluoride, Dissolved (mg/l as F)	1.2
Silica, Dissolved (mg/l as SiO ₂)	11.0
Boron, Dissolved (ug/l as B)	890
Solids Residue at 105 Deg C, Dissolved (mg/l)	1200