



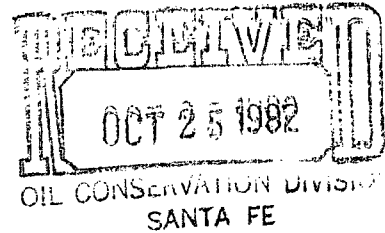
## FOY BOYD ASSOCIATES, INC.

ONE MARIENFELD PLACE-SUITE 290

PHONE (915) 684-7877

MIDLAND, TEXAS 79701

October 20, 1982



Mr. Joe Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Mr. Ramey:

Attached is a New Mexico Oil Conservation Commission Form C-108 and all related data, requesting administrative approval to inject produced water into the captioned well. The proposed injection zone is the open hole section from approximately 4475' to 5970' in the San Andres Formation.

Study indicates that this formation is not productive of oil or gas within the two mile radius of investigation and, therefore, qualifies for administrative approval.

Included are schematics, logs, water analysis, maps, advertisement, notices, etc., as required for approval.

It is respectfully requested that approval be granted administratively and at the earliest possible date since wells capable of producing approximately 100 BOPD are shut-in for lack of disposal facilities. Your prompt attention and approval would be appreciated.

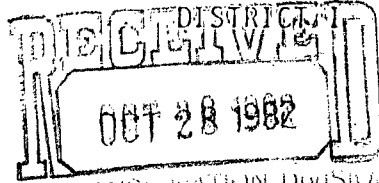
Yours very truly,

FOY BOYD ASSOCIATES, INC.

John W. Mulloy

JWM:bb  
Enc.

OIL CONSERVATION DIVISION



OIL CONSERVATION DIVISION  
SANTA FE

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

DATE October 26, 1982

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

Gentlemen:

I have examined the application for the:

Sage Oil Co. Shell State	No. 1-K	32-14-34
Operator	Lease and Well No.	Unit, S - T - R

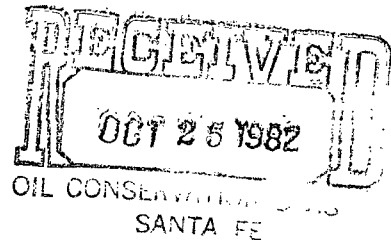
and my recommendations are as follows:

O.K.----J.S.

Yours very truly,

mc

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

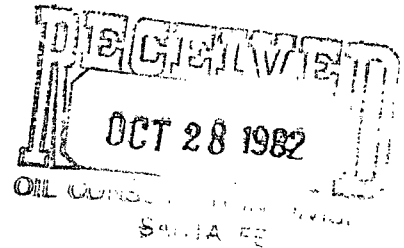
We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,

C. W. Trainer

bb

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

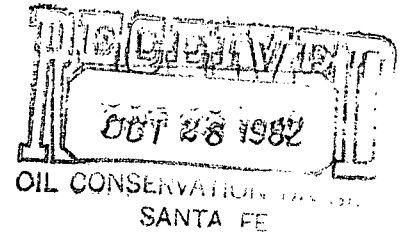
We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,

Alex J. Armijo  
Commissioner of Public Lands

bb

By *Ray D. Graham*  
Ray D. Graham, Director  
Oil and Gas Division



October 20, 1982

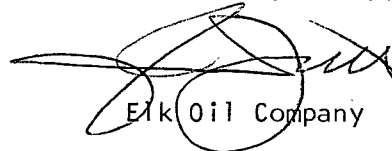
Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,



Eik Oil Company

bb

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Sage Oil Company

Address: 425 Hamilton Bldg., Wichita Falls, Texas 76301

Contact party: J. W. Mulloy

Phone: 915/684-7877

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: J. W. Mulloy

Title: Agent

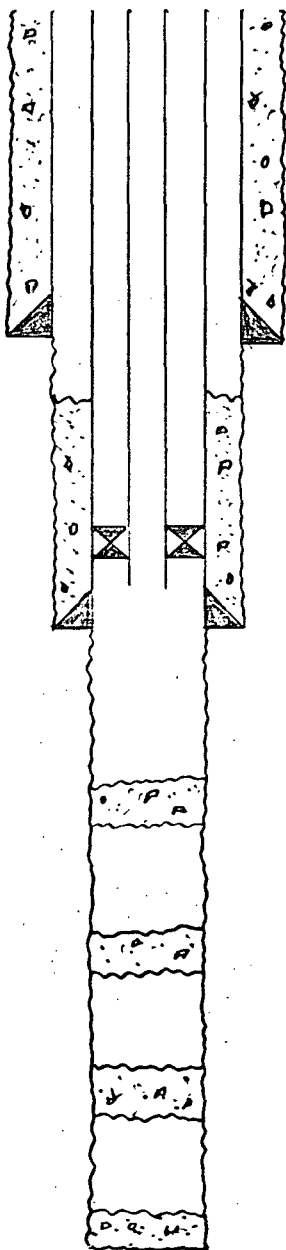
Signature: *J. W. Mulloy*

Date: October 20, 1982

\* 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.

## INJECTION WELL DATA SHEET

Sage Oil Company	Shell State Lease			
OPERATOR	LEASE			
1-SWD	1980' FSL & 1980' FWL	32	T-14-S	R-34-E
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP	RANGE

SchematicTabular DataSurface Casing

Size 11 3/4 " Cemented with 400 sx.  
 TOC Surface feet determined by Circulated  
 Hole size 15"

Intermediate Casing

Size 8 5/8 " Cemented with 300 sx.  
 TOC ± 1200' feet determined by Calculated  
 Hole size 11"

Long string

Size -- " Cemented with -- sx.  
 TOC -- feet determined by --  
 Hole size --  
 Total depth --

Injection interval

4475 feet to 5895 feet  
~~open-hole~~ open-hole, indicate which)

Tubing size 2 7/8" lined with Tuboscope TK-75 (or equivalent) set in a  
 (material)

Baker AD-1 Tension Packer (or equivalent) packer at ± 4400' feet  
 (brand and model)

(or describe any other casing-tubing seal).

Other Data

- Name of the injection formation San Andres
- Name of Field or Pool (if applicable) None

- Is this a new well drilled for injection? ☐ Yes ☒ No

If no, for what purpose was the well originally drilled? Drilled as a producer of oil  
and abandoned.

- 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) No perforations

10 sx @ surface; 25 sx 4425-4500'; 25 sx 5895-5970'; 25 sx 8050-8125'; 25 sx 9805-9880';  
35 sx 10,300-10,400'.

- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Proposed injection zone overlies the Tres Papalotes Penn. West Field  
There is no overlying producing interval.

## DATA SHEET

- I. Proposed Daily Injection:
  - A. Maximum - 3000 barrels produced water
  - B. Average - 2000 barrels produced water
- II. System will be open.
- III. Produced Injection Pressure:
  - A. Maximum - 400 psia
  - B. Average - 100 psia
- IV. Source of injection water:

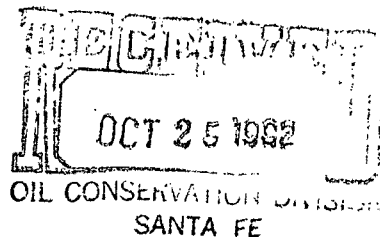
Major source will be water produced in the Saunder Permo Upper Penn Field from wells owned by Sage Oil Company and located approximately 3 miles West in Section 35, T-14-S, R-33-E. An analysis of this water is attached. Injection will be into the San Andres, not productive of oil or gas in the 2 mile area. A random analysis of water in this formation is also attached.
- V. Geological Data on Injection Zone:

Injection will be into the San Andres Formation which is a Limestone-Dolomite Section of Middle Permian Age. It is overlain by the Greyburg Formation and overlays the Glorietta Formation. The top occurs at a depth of 4436' in the proposed well and extends down to 5970', for an overall thickness of 1534'. Maximum porosity is approximately 20 percent and occurs from approximately 5340' to 5400'. Fresh water occurs in the area on a limited basis from shallow tertiary sands that do not occur below a depth of 500' to 600'. Brackish and highly mineralized water could occur at a depth of approximately 2000' from the Santa Rosa Formation of Triassic Age, but would not be suitable for domestic use. There are no fresh water zones underlying the proposed injection interval.
- VI. Stimulation Program:

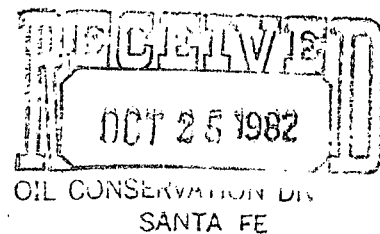
Treat open hole section from 4475' to 5970' with approximately 2500 gallons regular 15% acid.
- VII. Well log is attached.

(Also available on file with NMOCC.)
- VIII. Fresh Water Wells:

Chemical analysis of fresh water from a windmill located 1 mile Northeast from the proposed injection well is attached. Samples were taken on October 16, 1982.



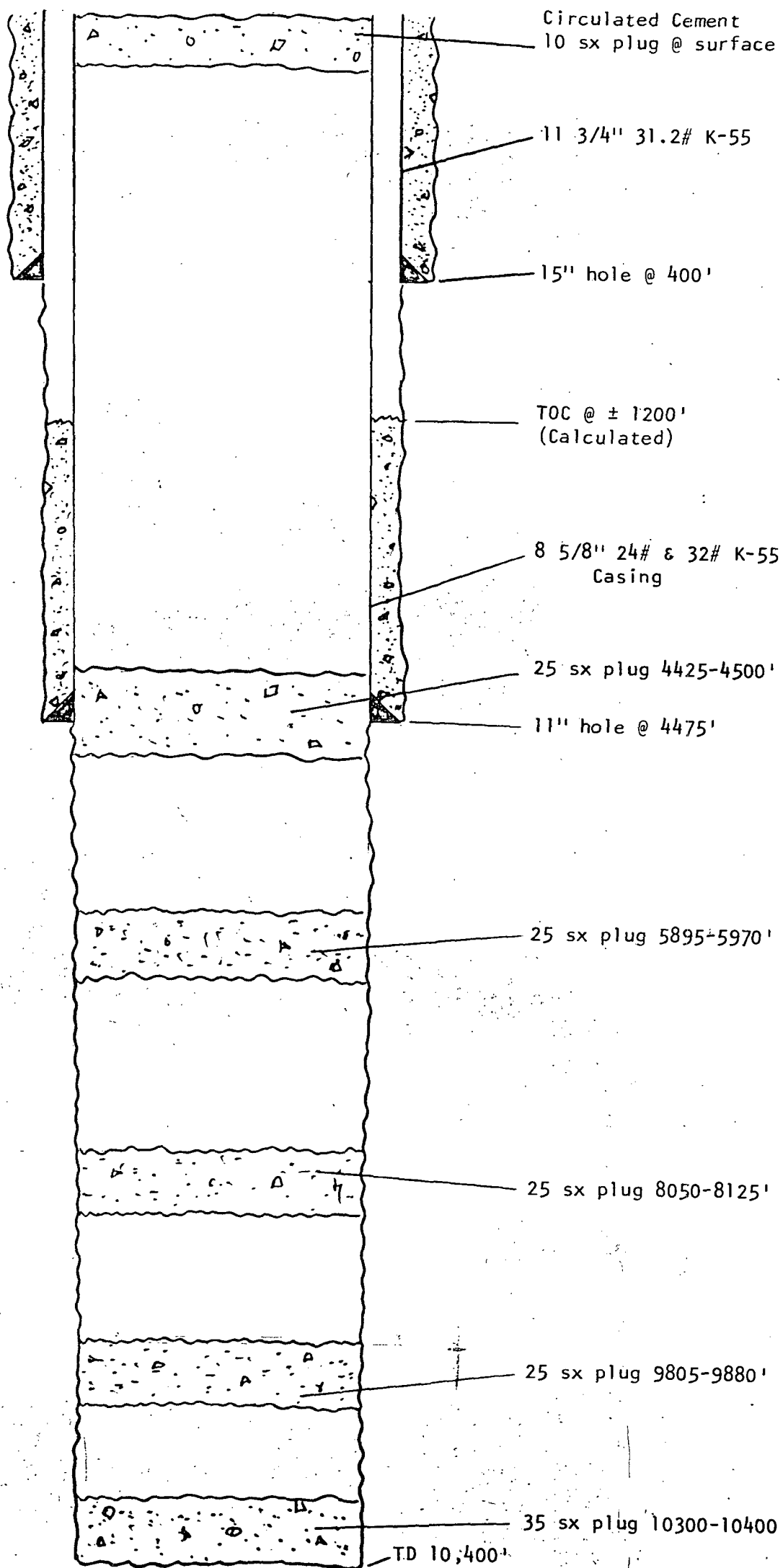
- IX. All geologic and engineering data available has been examined and there is no evidence that open faults or any other hydrologic connection exists between the disposal zone and any underground source of drinking water.





Cemented with 400 sx

Cemented with 300 sx.

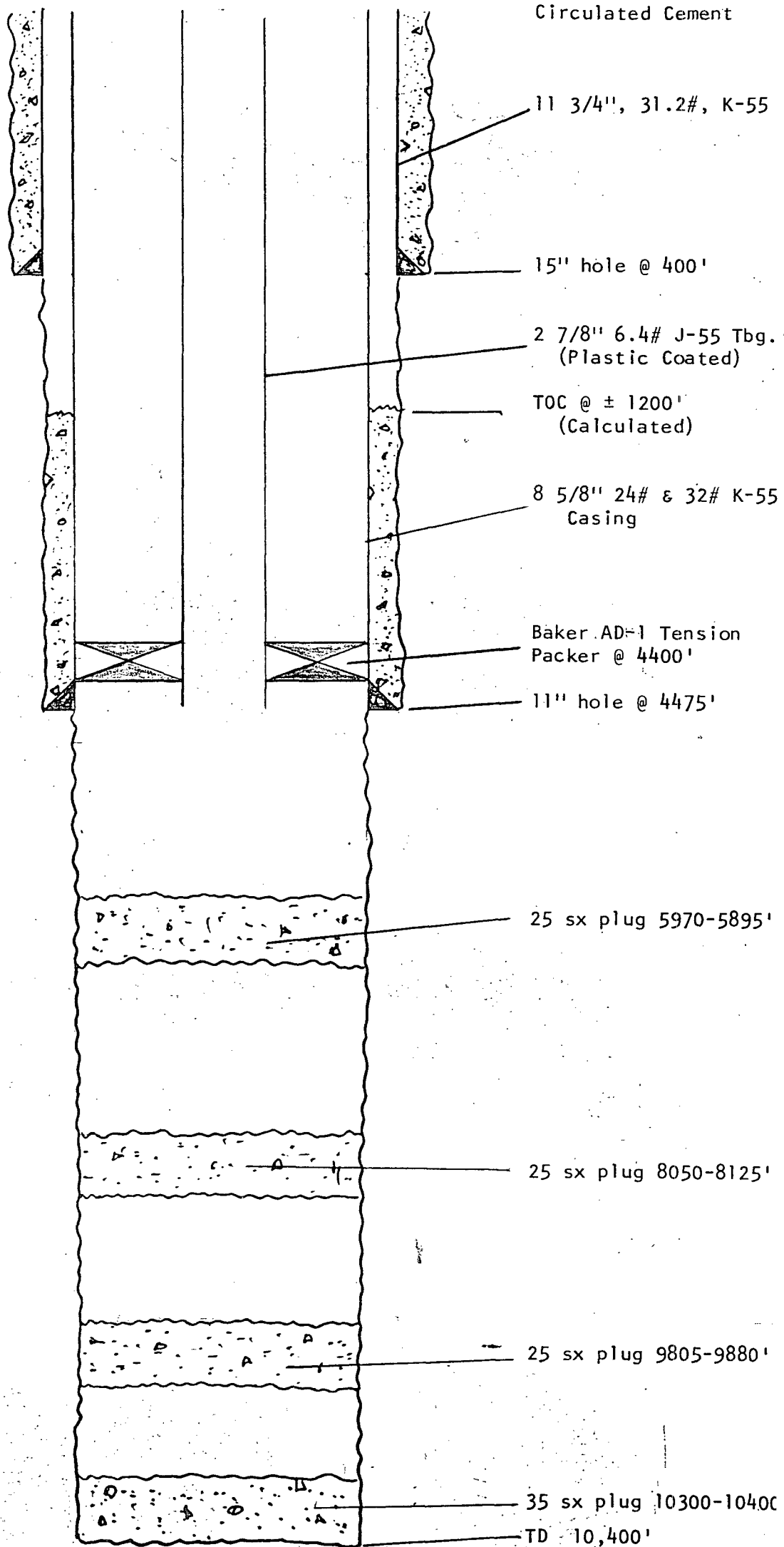


Diagrammatic Sketch  
Sage Oil Company  
\* \* Existing \* \*

Shell State No. 1 P & A Unit "K"  
1980' FSL & 1980' FWL, Section 32, T-14-S, R-34-E  
Lea County, New Mexico

Cemented with 400 sx.

Cemented with 300 sx.



Diagrammatic Sketch

Sage Oil Company

\*\* Proposed \*\*

Shell State No. 1 - SWD Unit K

1980' FSL & 1980' FWL, Section 32, T-14-S, R-34-E

Lea County, New Mexico

Cemented with 350 sx.

Cemented with 250 sx.

Cemented with 500 sx.

Cement Circulated

12 3/4" 31.2# K-55

17 1/2" hole @ 373'

Calculated Cement  
Top @  $\pm$  3500'

8 5/8" 24# & 32# K-55

12 1/4" hole @ 4260'

5 1/2" 15.5# N-80

2 3/8" 4.6# N-80 Tbg.

Calculated Cement  
Top @  $\pm$  7200'

Packer @ 10,250'

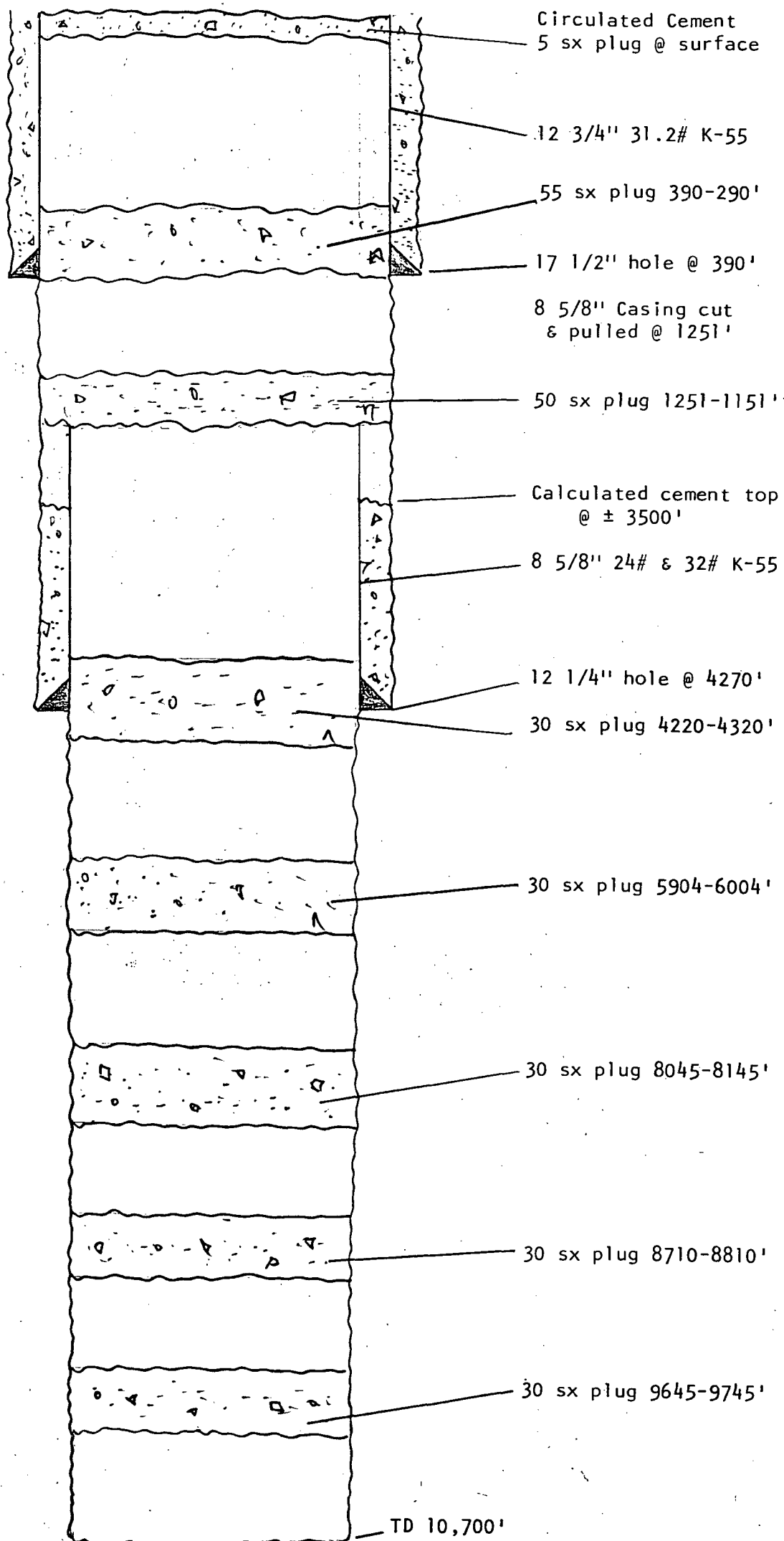
10,385'-10,396'

7 7/8" hole @ 10,597'

Sage Energy Company  
State New Mexico Well No. 2  
Tres Papalotes Penn, West Field  
2080' FSL & 560' FEL, Unit "1"  
Section 31, T-14-S, R-34-E  
Lea County, New Mexico

Cemented with 425 sx.

Cemented with 250 sx.



Amini Oil Company  
 State New Mexico "B" Well No. 1  
 2080' FSL & 560' FWL, Unit "L"  
 Section 32, T-14-S, R-34-E  
 Lea County, New Mexico

WELL SUMMARY

OPERATOR	LEASE & WELL	TYPE	DATE DRILLED	LOCATION	DEPTH	COMPLETION RECORD
Amini Oil Co.	State N.M. "B" Well No. 1	Oil (P & A)		Unit "L" 32-14-34	10,700'	P & A
Sage Energy Co.	State N.M. Well No. 2	Oil		Unit 1 31-14-34	10,597'	10,385'-10,396'

TUBULAR SUMMARY

OPERATOR	LEASE & WELL	SURFACE CASING	SURFACE CEMENT	SURFACE TOC	INTER. CASING	INTER. CEMENT	INTER. TOC	PROD. CASING	PROD. CEMENT	PROD. TOC	TOTAL DEPTH	PRODUCING INTERVAL
Amini Oil Co.	St. N.M. "B" Well No. 1	12 3/4" @ 390'	425 Sx.	Circulated	*8 5/8" @ 4270'	250 Sx.	Calculated @ ± 3500'	None	None	None	10,700'	P & A
Sage Energy Co.	St. N.M. Well No. 2	12 3/4" @ 373'	350 Sx.	Circulated	8 5/8" @ 4260'	250 Sx.	Calculated @ ± 3500'	5 1/2" @ 10,597'	500 Sx.	7200'	10,597'	10,385-10,396

\* Cut and Pulled @ 1251'

TYPICAL WATER ANALYSIS  
SAN ANDRES FORMATION  
LEA COUNTY, NEW MEXICO

ANALYSIS		P P M or Mg/L	E P M or Meq./L	Ionic P P M	
1. PH	7.25				
2. H <sub>2</sub> S	Pos.				
3. CO <sub>2</sub>	Pos.				
4. Specific Gravity	1.12				
5. Phenol Alkalinity (CaCO <sub>3</sub> )		0.0			
6. M.P. Alkalinity (CaCO <sub>3</sub> )		520.0			
7. Bicarbonate (CaCO <sub>3</sub> )		520.0	10.4	HCO <sub>3</sub>	634
8. Chlorides (Cl)		187,000.0	5,267.6	Cl	187,000
9. Sulphates (SO <sub>4</sub> )		2,800.0	58.33	SO <sub>4</sub>	2,800
10. Total Hardness (CaCO <sub>3</sub> )		10,000.0			
11. Calcium (CaCO <sub>3</sub> )		5,750.0	115.0	Ca	2,300
12. Magnesium (CaCO <sub>3</sub> )		4,250.0	85.0	Mg	1,037
13. Sodium (Na)			5,135.73	Na	118,122
14. <del>Barium (Ba)</del> Barium (Ba)				NO <sub>3</sub>	0
15. Iron (Fe)					
16. Total Dissolved Solids					311,893

P O BOX 1468  
MONAHAN, TEXAS 79756  
PH: 943-3234 OR 563-1040

Martin Water Laboratories, Inc.  
WATER CONSULTANTS SINCE 1953  
BACTERIAL AND CHEMICAL ANALYSES

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

To: Mr. Bob Munsell  
425 Hamilton Building  
Wichita Falls, Texas 76301

Laboratory No. 1082171  
Samples received 10-18-82  
Results reported 10-20-82

Company: Sage Oil Company

Project: Windmill-New Mexico

Subject: To make the determinations listed below on windmill water. Sample submitted by Bob Munsell.

<u>DETERMINATION</u>	<u>MG/L</u>
Aluminum, as Al	0.037
Arsenic, as As	0.000
Barium, as Ba	0
Boron, as B	0.00
Cadmium, as Cd	0.00
Chloride, as Cl	71
Chromium, as Cr	0.00
Cobalt, as Co	0.0
Copper, as Cu	0.00
Cyanide, as CN	0.0
Fluoride, as F	2.5
Iron, as Fe	0.39
Lead, as Pb	0.00
Manganese, as Mn	0.00
Mercury, as Hg	0.0000
Molybdenum, as Mo	< 100
Nickel, as Ni	0.00
Nitrate Nitrogen, as N	3.4
pH	8.1
Sulfate, as SO <sub>4</sub>	123
Total Dissolved Solids, evaporated	*150
Zinc, as Zn	0.10

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

\*Insufficient sample submitted for accurate determination.

W. Reagan White, B.S.

cc: Mr. Johnny Mulloy, Foy Boyd  
Associates, Midland

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

Martin Water Laboratories, Inc.  
WATER CONSULTANTS SINCE 1953  
BACTERIAL AND CHEMICAL ANALYSES

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

To: Mr. Bob Munsell  
425 Hamilton Building  
Wichita Falls, Texas 76301

Laboratory No. 1082169  
Samples received 10-18-82  
Results reported 10-20-82

Company: Sage Oil Company

Project: CK lease in New Mexico

Subject: To make the determinations listed below on produced water from CK lease.  
Sample submitted by Bob Munsell.

<u>DETERMINATION</u>	<u>MG/L</u>
Aluminum, as Al	0.00
Arsenic, as As	0.000
Barium, as Ba	0
Boron, as B	22.0
Cadmium, as Cd	0.07
Chloride, as Cl	75,280
Chromium, as Cr	0.00
Cobalt, as Co	10.0
Copper, as Cu	0.00
Cyanide, as CN	0.0
Fluoride, as F	0.0
Iron, as Fe	8.7
Lead, as Pb	1.00
Manganese, as Mn	1.00
Mercury, as Hg	0.000
Molybdenum, as Mo	< 100
Nickel, as Ni	1.40
Nitrate Nitrogen, as N	0.0
pH	7.8
Sulfate, as SO <sub>4</sub>	3,223
Total Dissolved Solids, evaporated	119,180
Zinc, as Zn	0.40

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

cc: Mr. Johnny Mulloy, Foy Boyd  
Associates, Midland

W. Reagan White, B.S.

Martin Water Laboratories, Inc.

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

WATER CONSULTANTS SINCE 1953  
BACTERIAL AND CHEMICAL ANALYSES

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

To: Mr. Bob Munsell  
425 Hamilton Building  
Wichita Falls, Texas 76301

Laboratory No. 1082170  
Samples received 10-18-82  
Results reported 10-20-82

Company: Sage Oil Company

Project: Hobbs "O" lease in New Mexico

Subject: To make the determinations listed below on produced water from Hobbs "O" lease. Sample submitted by Bob Munsell.

<u>DETERMINATION</u>	<u>MG/L</u>
Aluminum, as Al	0.00
Arsenic, as As	0.000
Barium, as Ba	0
Boron, as B	17.50
Cadmium, as Cd	0.00
Chloride, as Cl	13,139
Chromium, as Cr	0.00
Cobalt, as Co	5.0
Copper, as Cu	0.00
Cyanide, as CN	0.0
Fluoride, as F	2.0
Iron, as Fe	22.6
Lead, as Pb	0.00
Manganese, as Mn	0.00
Mercury, as Hg	0.0000
Molybdenum, as Mo	<100
Nickel, as Ni	0.00
Nitrate Nitrogen, as N	0.0
pH	7.3
Sulfate, as SO <sub>4</sub>	2,370
Total Dissolved Solids, evaporated	20,412
Zinc, as Zn	0.40

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

W. Reagan White, B.S.

cc: Mr. Johnny Mulley, Foy Boyd  
Associates, Midland

SIDELINE  
NEUTRON POROSITY LOG

SCHLUMBERGER

COUNTY LEA  
FIELD WILDCAT  
LOCATION SHELL STATE #1  
WELL  
COMPANY MIDWEST OIL CORP

COMPANY MIDWEST OIL CORPORATION  
WELL SHELL STATE #1  
FIELD WILDCAT  
COUNTY LEA STATE NEW MEXICO  
Location: 1980' FSL & 1980' FWL  
Sec. 32 Twp. 14-S. Rge. 34-E  
Other Services:  
M.L. IFS  
Permanent Datum: G.L. Elev.: 4135  
Log Measured From: K.G. 13 Ft. Above Perm. Datum  
Drilling Measured From: K.G.  
Elev.: K.B. 4135  
D.F. 4135  
G.I. 4135

Date 2-4-70  
Run No. ONE  
Type Log EPI NEUTRON  
Depth-Driller 10700  
Depth-Logger 10697  
Bottom logged interval 10696  
Top logged interval 0  
Type fluid in hole LOW SOLID  
Salinity, PPM Cl. 3200  
Density 8.8  
Level FULL  
Max rec. temp., deg. f. 141  
Operating rig time 7.5 HOURS  
Recorded by FREEMAN C. WALLS  
Witnessed by BLACKWELL

BOREHOLE RECORD

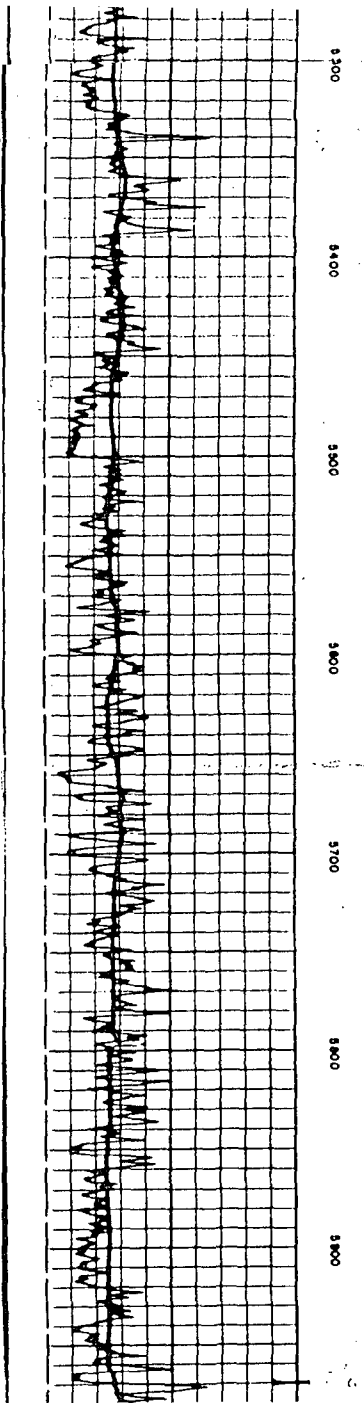
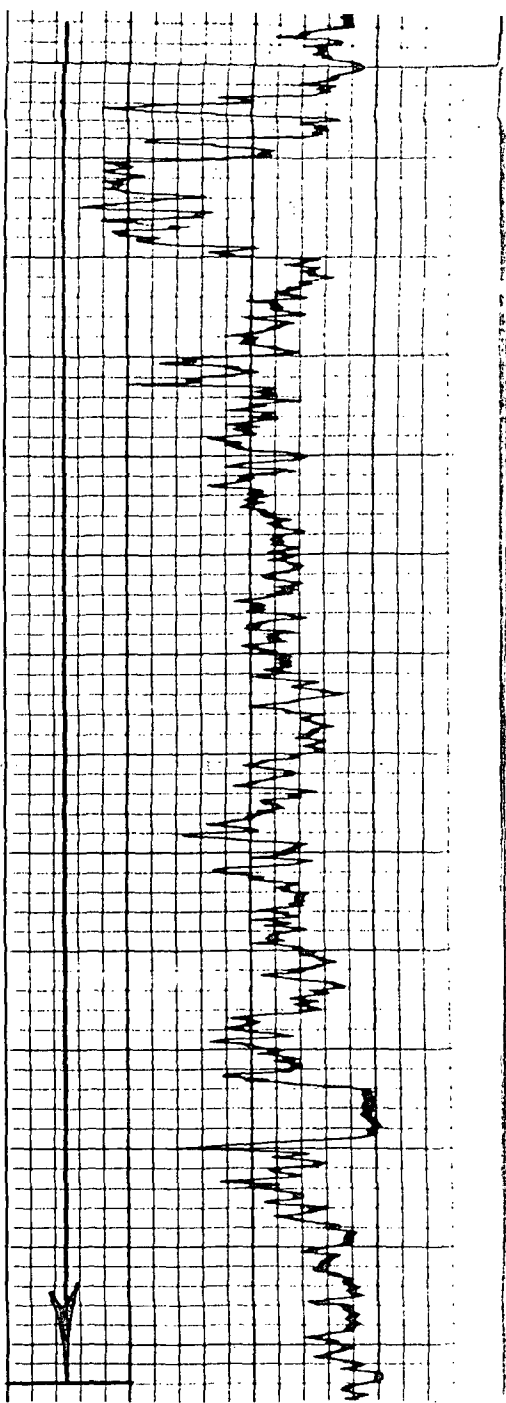
Run	Bit	From	To	Size	Wgt	From	To
1	7 7/8	4485	10700	8 5/8		0	4485

CASING RECORD

Run	Bit	From	To	Size	Wgt	From	To
1	7 7/8	4485	10700	8 5/8		0	4485

The well name, location and borehole reference data were furnished by the customer.

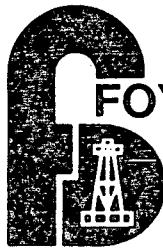
Neutron porosity log plot showing depth from 0 to 10700 feet. The plot includes a central vertical line for the borehole, with handwritten annotations "Proposed Injection Zone" and "Open Hole" near the bottom. The plot is flanked by two columns of handwritten data, likely representing porosity and density logs. The plot is on a grid with depth marked in feet on the left and right sides.



NOTICE

It is the intent of Sage Oil Company, 425 Hamilton Blvd., Wichita Falls, Texas, 76301, 817-322-7837, to re-enter and convert to salt water disposal a well located in NE/4 of SW/4, Section 32, T-14-E, R-34-S, Lea County, New Mexico. It is anticipated that water will be injected into the San Andres from approximately 4475' to 5970'. Injection volume will be approximately 95 bbls. per hour at a pressure not to exceed 400 psia.

Any interested parties must file objections or request for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico, 87501, within 15 days.



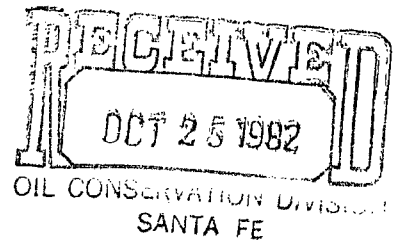
# FOY BOYD ASSOCIATES, INC.

ONE MARIENFELD PLACE-SUITE 290

PHONE (915) 684-7877

MIDLAND, TEXAS 79701

October 20, 1982



Elk Oil Company  
Security National Bank Bldg.  
Roswell, New Mexico 88201

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Gentlemen:

Attached is a waiver and a New Mexico Oil Conservation Form C-108, with attachments, which makes application to dispose of produced water into a porous formation, non-productive of oil or gas. If you have no obligations to the approval of this application, please indicate so by signing the attached waiver and forwarding it to the New Mexico Oil Conservation Commission in the enclosed envelope.

Should you have any questions or require additional information or data, please let us know at the earliest possible time.

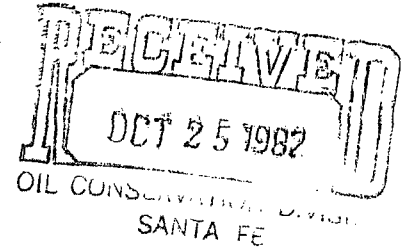
Yours very truly,

FOY BOYD ASSOCIATES, INC.

John W. Mulloy - Agent  
Sage Oil Company

JWM:bb  
Enc.

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,

Elk Oil Company

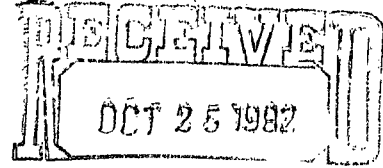
bb



# FOY BOYD ASSOCIATES, INC.

ONE MARIENFELD PLACE-SUITE 290  
PHONE (915) 684-7877  
MIDLAND, TEXAS 79701

October 20, 1982



Mr. Alex J. Armijo  
Commissioner of Public Lands  
State of New Mexico  
P. O. Box 1148  
Santa Fe, New Mexico 87504-1148

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Mr. Armijo:

Attached is a waiver and a New Mexico Oil Conservation Form C-108, with attachments, which makes application to dispose of produced water into a porous formation, non-productive of oil or gas. If you have no obligations to the approval of this application, please indicate so by signing the attached waiver and forwarding it to the New Mexico Oil Conservation Commission in the enclosed envelope.

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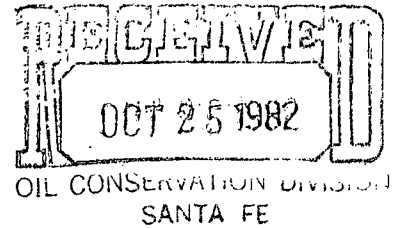
Yours very truly,

FOY BOYD ASSOCIATES, INC.

John W. Mulloy - Agent  
Sage Oil Company

JWM:bb  
Enc.

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,

Alex J. Armijo  
Commissioner of Public Lands

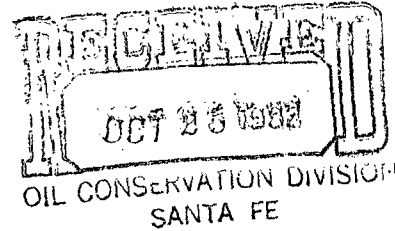
bb



# FOY BOYD ASSOCIATES, INC.

ONE MARIENFELD PLACE-SUITE 290  
PHONE (915) 684-7877  
MIDLAND, TEXAS 79701

October 20, 1982



Mr. C. W. Trainer  
9205 Highway 71 West  
Austin, Texas 78746

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Mr. Trainer:

Attached is a waiver and a New Mexico Oil Conservation Form C-108, with attachments, which makes application to dispose of produced water into a porous formation, non-productive of oil or gas. If you have no obligations to the approval of this application, please indicate so by signing the attached waiver and forwarding it to the New Mexico Oil Conservation Commission in the enclosed envelope.

Should you have any questions or require additional information or data, please let us know at the earliest possible time.

Yours very truly,

FOY BOYD ASSOCIATES, INC.

John W. Mulloy - Agent  
Sage Oil Company

P 265 181 286

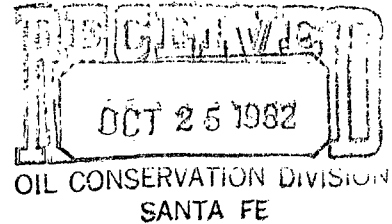
## RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED --  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO <i>C. W. Trainer</i>		STREET AND NO. <i>9205 Hwy 71 West</i>		POSTAGE <i>37</i>	
CITY, STATE AND ZIP CODE <i>Austin, Tex</i>		POSTAGE <i>75</i>		CERTIFIED FEE <i>60</i>	
CONSULT POSTMASTER FOR FEES		OPTIONAL SERVICES		RETURN RECEIPT SERVICE	
SPECIAL DELIVERY		RESTRICTED DELIVERY		SHOW TO WHOM AND DATE DELIVERED	
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY		SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	
TOTAL POSTAGE AND FEES		TOTAL POSTAGE AND FEES		TOTAL POSTAGE AND FEES	
POSTMARK OR DATE		POSTMARK OR DATE		POSTMARK OR DATE	
MIDLAND, TX		MIDLAND, TX		MIDLAND, TX	
OCT 20 1982		OCT 20 1982		OCT 20 1982	

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

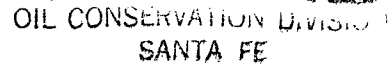
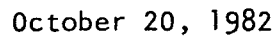
Dear Sir:

We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

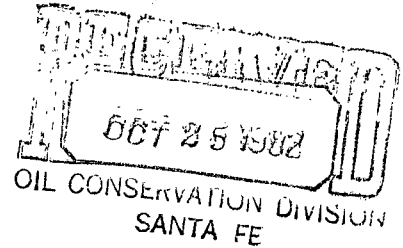
Yours very truly,

C. W. Trainer

bb

[illegible]

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,

C. W. Mewbourne

bb

P 265 181 288

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—  
NOT FOR INTERNATIONAL MAIL

(See Reverse)

SENT TO		Sage Energy	
STREET AND NO.		909 NE Loop - Ste. 700	
CITY, STATE AND ZIP CODE		San Antonio, TX 78209	
POSTAGE		78209 \$ 37	
CERTIFIED FEE		75	
SPECIAL DELIVERY		60	
RESTRICTED DELIVERY			
SHOW TO WHOM AND DATE DELIVERED			
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY			
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY			
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY			
RETURN RECEIPT SERVICE			
CONSULT POSTMASTER FOR FEES			
TOTAL POSTAGE AND FEES		\$172	
POSTMARK OF DATE		OCT 20 1982	

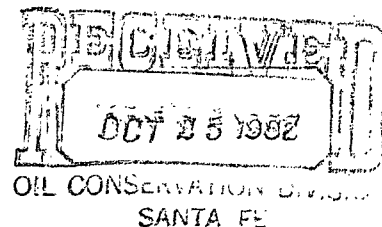
PS Form 3800, Apr. 1976



FOY BOYD ASSOCIATES, INC.

ONE MARIENFELD PLACE-SUITE 290  
PHONE (915) 684-7877  
MIDLAND, TEXAS 79701

October 20, 1982



Sage Energy Company  
909 NE Loop - Ste. 700  
San Antonio, Texas 78209

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Gentlemen:

Attached is a waiver and a New Mexico Oil Conservation Form C-108, with attachments, which makes application to dispose of produced water into a porous formation, non-productive of oil or gas. If you have no obligations to the approval of this application, please indicate so by signing the attached waiver and forwarding it to the New Mexico Oil Conservation Commission in the enclosed envelope.

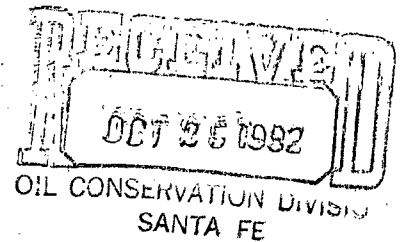
Should you have any questions or require additional information or data, please let us know at the earliest possible time.

Yours very truly,

FOY BOYD ASSOCIATES, INC.

John W. Mulloy - Agent  
Sage Oil Company

October 20, 1982



Mr. Joe D. Ramey  
New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Salt Water Disposal  
Sage Oil Company  
Shell-State #1-SWD  
Unit K, Sec. 32, T-14-S, R-34-E  
Lea County, New Mexico

Dear Sir:

We have been duly notified of the intent of Sage Oil Company to dispose of produced water into the San Andres Formation on the captioned well. We have no objection to the completion and operation of this well as set out on the New Mexico Oil Conservation Commission Form C-108, dated October 20, 1982.

Yours very truly,

Sage Energy Company

bb

TYPICAL WATER ANALYSIS  
SAN ANDRES FORMATION  
LEA COUNTY, NEW MEXICO

ANALYSIS		P P M or Mg/L	E P M or Meq./L	Ionic P P M	
1. PH	7.25				
2. H <sub>2</sub> S	Pos.				
3. CO <sub>2</sub>	Pos.				
4. Specific Gravity	1.12				
5. Phenol Alkalinity (C=CO <sub>3</sub> )		0.0			
6. M.P. Alkalinity (C=CO <sub>3</sub> )		520.0			
7. Bicarbonate (C=CO <sub>3</sub> )		520.0	10.4	HCO <sub>3</sub>	634
8. Chlorides (Cl)		187,000.0	5,267.6	Cl	187,000
9. Sulphates (SO <sub>4</sub> )		2,800.0	58.33	SO <sub>4</sub>	2,800
10. Total Hardness (C=CO <sub>3</sub> )		10,000.0			
11. Calcium (C=CO <sub>3</sub> )		5,750.0	115.0	Ca	2,300
12. Magnesium (C=CO <sub>3</sub> )		4,250.0	85.0	Mg	1,037
13. Sodium (Na)			5,135.73	Na	118,122
14. <del>Barium (Ba)</del> Barium (Ba)				NO <sub>3</sub>	0
15. Iron (Fe)					
16. Total Dissolved Solids					311,893

To: Mr. Bob Musell  
425 Hamilton Building  
Wichita Falls, Texas 76301

Laboratory No. 1082171  
Samples received 10-18-82  
Results reported 10-20-82

Company: Sage Oil Company

Project: Windmill-New Mexico

Subject: To make the determinations listed below on windmill water. Sample submitted by Bob Musell.

<u>DETERMINATION</u>	<u>MG/L</u>
Aluminum, as Al	0.037
Arsenic, as As	0.000
Barium, as Ba	0
Boron, as B	0.00
Cadmium, as Cd	0.00
Chloride, as Cl	71
Chromium, as Cr	0.00
Cobalt, as Co	0.0
Copper, as Cu	0.00
Cyanide, as CN	0.0
Fluoride, as F	2.5
Iron, as Fe	0.39
Lead, as Pb	0.00
Manganese, as Mn	0.00
Mercury, as Hg	0.0000
Molybdenum, as Mo	< 100
Nickel, as Ni	0.00
Nitrate Nitrogen, as N	3.4
pH	8.1
Sulfate, as SO <sub>4</sub>	123
Total Dissolved Solids, evaporated	*150
Zinc, as Zn	0.10

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

\*Insufficient sample submitted for accurate determination.

W. Reagan White, B.S.

cc: Mr. Johnny Mulloy, Foy Boyd  
Associates, Midland

To: Mr. Bob Munsell  
425 Hamilton Building  
Wichita Falls, Texas 76301

Laboratory No. 1082169  
Samples received 10-18-82  
Results reported 10-20-82

Company: Sage Oil Company

Project: CK lease in New Mexico

Subject: To make the determinations listed below on produced water from CK lease.  
Sample submitted by Bob Munsell.

<u>DETERMINATION</u>	<u>MG/L</u>
Aluminum, as Al	0.00
Arsenic, as As	0.000
Barium, as Ba	0
Boron, as B	22.0
Cadmium, as Cd	0.07
Chloride, as Cl	75,280
Chromium, as Cr	0.00
Cobalt, as Co	10.0
Copper, as Cu	0.00
Cyanide, as CN	0.0
Fluoride, as F	0.0
Iron, as Fe	8.7
Lead, as Pb	1.00
Manganese, as Mn	1.00
Mercury, as Hg	0.000
Molybdenum, as Mo	< 100
Nickel, as Ni	1.40
Nitrate Nitrogen, as N	0.0
pH	7.8
Sulfate, as SO <sub>4</sub>	3,223
Total Dissolved Solids, evaporated	119,180
Zinc, as Zn	0.40

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

---

W. Reagan White, B.S.

cc: Mr. Johnny Mulloy, Foy Boyd  
Associates, Midland

To: Mr. Bob Munsell  
425 Hamilton Building  
Wichita Falls, Texas 76301

Laboratory No. 1082170  
Samples received 10-18-82  
Results reported 10-20-82

Company: Sage Oil Company

Project: Hobbs "O" lease in New Mexico

Subject: To make the determinations listed below on produced water from Hobbs "O" lease. Sample submitted by Bob Munsell.

<u>DETERMINATION</u>	<u>MG/L</u>
Aluminum, as Al	0.00
Arsenic, as As	0.000
Barium, as Ba	0
Boron, as B	17.50
Cadmium, as Cd	0.00
Chloride, as Cl	13,139
Chromium, as Cr	0.00
Cobalt, as Co	5.0
Copper, as Cu	0.00
Cyanide, as CN	0.0
Fluoride, as F	2.0
Iron, as Fe	22.6
Lead, as Pb	0.00
Manganese, as Mn	0.00
Mercury, as Hg	0.0000
Molybdenum, as Mo	<100
Nickel, as Ni	0.00
Nitrate Nitrogen, as N	0.0
pH	7.3
Sulfate, as SO <sub>4</sub>	2,370
Total Dissolved Solids, evaporated	20,412
Zinc, as Zn	0.40

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

---

W. Reagan White, B.S.

cc: Mr. Johnny Mulloy, Foy Boyd  
Associates, Midland

SCHLUMBERGER		SIDEWALL NEUTRON POROSITY LOG					
COUNTY	LEA	COMPANY	MIDWEST OIL CORPORATION				
WELL	WILDCAT	WELL	SHELL STATE #1				
FIELD	WILDCAT	FIELD	WILDCAT				
COUNTY	LEA	STATE	NEW MEXICO				
Location	1980' FSL & 1980' FWL		Other Services:				
Sec.	32	Twp.	14-S Rge. 34-E				
Permanent Datum:		G.L.	Elev. 4135				
Log Measured From		K.B.	13 Ft. Above Perm Datum				
Drilling Measured From		K.B.	Elev. 4135				
Date	2-4-70						
Run No.	ONE						
Type Log	EFT NEUTRON						
Depth - Driller	10760						
Depth - Logger	10697						
Bottom logged interval	10696						
Top logged interval	0						
Type fluid in hole	LOW SOLID						
Salinity, PPM Cl	3200						
Density	8.8						
Level	FULL						
Max rec. temp., deg F	141						
Operating rig time	4.5 HOURS						
Recorded by	FREEMAN & WALLS						
Witnessed by	BLACKWELL						
The well name, location and borehole reference data sets furnished by the customer.							
RUN BORE HOLE RECORD							
Run No.	Bit	From	To	Size	Wgt	From	To
1	7 7/8	4485	10700	8 5/8		0	4485

