BW - 1

GENERAL CORRESPONDENCE

YEAR(S):

1989 → 1979

New Mexico Health and Environment Department

GARREY CARRUTHERS
Governor

DENNIS BOYD
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

December 26, 1989

Rosa E. Jones
Conoco, Inc.
P.O. Box 460
Hobbs, New Mexico 88240

Dear Ms. Jones:

This is in reference to your quarterly reports dated May-July 1989 and August-October 1989 for the Warren McKee Brine Well. Several months ago the New Mexico Water Quality Control Commission transferred regulatory authority for brine wells from the Environmental Improvement Division to the Oil Conservation Division.

By copy of this letter I am forwarding the above referenced quarterly reports to Dave Boyer of the Oil Conservation Division. You should send future reports directly to:

Dave Boyer
Oil Conservation Division
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504

You may phone Mr. Boyer at 827-5012.

Sincerely,

John W Runberg

for Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

cc: Dave Boyer, Oil Conservation Division

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-101
Revised 1-1-89

API NO. (assigned by OCD on New Wells) 30-025-30707

5. Indicate Type of Lease STATE [xx] FEE [ ]

6. State Oil & Gas Lease No. B-9652

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL [x] RE-ENTER [ ] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well:
OIL WELL [ ] GAS WELL [ ] OTHER Brine Extraction SINGLE ZONE [x] MULTIPLE ZONE [ ]

7. Lease Name or Unit Agreement Name: Warren McKee Brine

2. Name of Operator: Conoco Inc.

8. Well No. 2

3. Address of Operator: P.O. Box 460 - Hobbs, NM 88240

9. Pool name or Wildcat ~~Warren McKee~~ Salado

4. Well Location
Unit Letter N : 660 Feet From The South Line and 1980 Feet From The West Line

Section 2 Township 20S Range 38E NMPM Lea County

10. Proposed Depth	11. Formation	12. Rotary or C.T.
2750'	Salado Salt	Rotary

13. Elevations (Show whether DF, RT, GR, etc.)	14. Kind & Status Plug. Bond	15. Drilling Contractor	16. Approx. Date Work will start
3590' KB	Blanket	Not available	August 1, 1989

17. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12-1/4"	9-5/8"	36#	400'	200	Circ.
8-1/2"	7"	26#	1625'	350	Circ.

It is proposed to drill a straight hole to a depth of 2750' in an effort to complete as a brine extraction well. The hole will be drilled to the base of the Salado Salt and then be completed open hole as a brine extraction well.

OIL CONSERVATION DIVISION
RECEIVED
89 OCT 26 AM 10 12

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE W W Baker W.W. Baker TITLE Administrative Supervisor DATE October 17, 1989

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)

APPROVED BY Eddie W Seay TITLE OIL & GAS INSPECTOR DATE OCT 20 1989

CONDITIONS OF APPROVAL, IF ANY:

Permit Expires 6 Months From Approval Date Unless Drilling Underway.

THE REPRODUCTION OF

THE

FOLLOWING

DOCUMENT (S)

CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL

omit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

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

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102
Revised 1-1-89

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
Conoco, Inc.	Warren McKee Brine	2

Unit Letter	Section	Township	Range	County
N	2	20 South	38 East NMPM	Lea

Actual Footage Location of Well:
1980 feet from the West line and 660 feet from the South line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3581.6	Salado		None Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

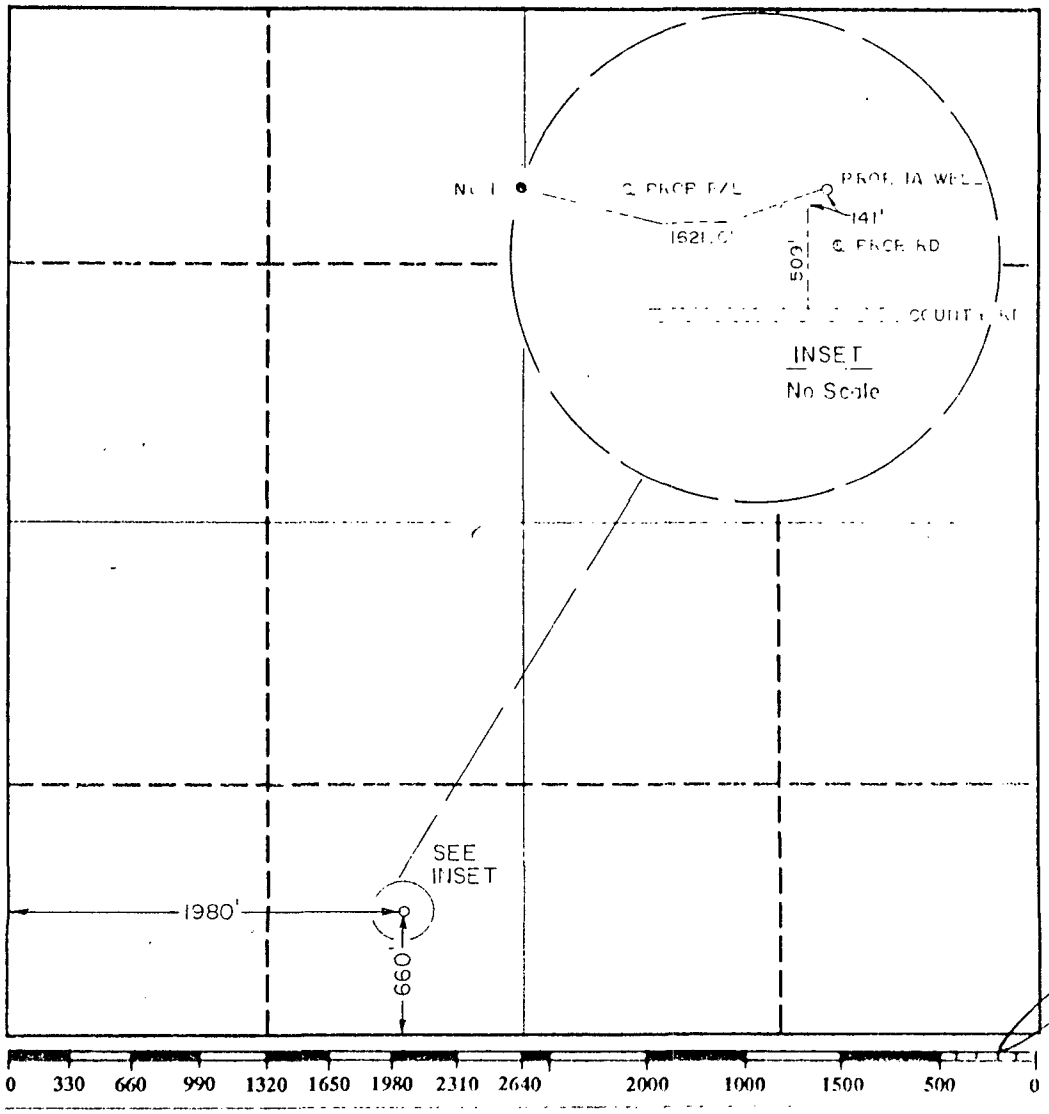
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.?

☐ Yes ☐ No If answer is "yes" type of consolidation _____

If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if neccessary. _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division.



OPERATOR CERTIFICATION

I hereby certify that the information contained herein in true and complete to the best of my knowledge and belief.

W. W. Baker
Signature

W.W Baker
Printed Name

Adm Supervisor
Position

CONOCO INC
Company

Oct. 17, 1989
Date

SURVEYOR CERTIFICATION

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

Date Surveyed
June 1, 1989

Signature & Seal of Professional Surveyor

JOHN W. WEST
RONALD J. EIDSON

Certificate No. JOHN W. WEST 676
RONALD J. EIDSON 3239

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

October 17, 1989

GARREY CARRUTHERS
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

CERTIFIED MAIL
RETURN RECEIPT NO. P-106-675-223

Mr. David L. Wacker
Division Manager
CONOCO, INC.
P. O. Box 460
Hobbs, New Mexico 88241

RE: Discharge Plan DP 318, Warren McGee Brine Facility

Dear Mr. Wacker:

The Oil Conservation Division (OCD) has received your application, dated October 4, 1989, for modification of the above referenced discharge plan. The application was submitted pursuant to Water Quality Control Commission (WQCC) Regulation 3-107.C. Based on the information provided in the application, the original discharge plan as renewed on April 10, 1989, and pursuant to WQCC Regulation 3-109, the modification is hereby approved.

Please be advised that the approval of this modification does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

There will be no routine monitoring or reporting requirements other than those mentioned in the plan and modification.

Please note than Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan." Pursuant to Section 3-107.C you are required to notify the Director of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants.

Sincerely,

William J. LeMay
Director

WJL/RCA/sl

cc: OCD Hobbs Office

David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

October 4, 1989

Mr. William LeMay, Director
State of New Mexico
Energy & Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87501-2088

Dear Mr. LeMay:

Modification of Discharge Plan, DP-318, for
Replacement of Warren McKee Brine Well No. 1

Conoco hereby requests permission to modify Discharge Plan, DP-318, to include a replacement brine extraction well. The existing brine well, while still mechanically sound, is becoming too costly to operate due to increasingly frequent cave-ins which temporarily halt operations. Our intention is to plug and abandon the existing well and replace it with a new well to be drilled a safe distance from the old well (See Attachment 1). Since the majority of the subject discharge plan will remain unchanged, only information specifically pertaining to the proposed new well will be addressed in this request. We respectfully request that this application be approved as soon as possible so that we may commence drilling this replacement well.

Replacement Well Location:

The replacement brine well, Warren McKee Brine No. 2, will be located in Section 2, T-20S, R-38E (See Attachment 2). There are two wells within the 1/4 mile radius Area of Review of the proposed location (See Attachment 3 for map detailing Area of Review). Exxon's New Mexico DK State No. 1 lies 660 feet due west of our proposed location. This well was junked and abandoned while drilling during 1983. The casing and cementing history for that well indicates that isolation of the surface environment was achieved (See Attachment 4 for a wellbore schematic of this well). The other well within the Area of Review is a surface water monitoring well operated by the City of Hobbs which is located 570 feet due east of our proposed location. This well is only 40 feet deep and is completed with 4", uncemented, plastic pipe.

Construction and Operation of Replacement Well:

The well will be drilled, completed and operated in a manner similar to the original well. Surface casing will be set through the surface fresh water zones (@ ±400') and cemented to surface to provide isolation against any possible contamination. Production casing will then be set in the

Rustler Anhydrite cap immediately above the top of the Salado salt (@ ±1630'). This string will also be cemented to surface to insure that near-surface ground waters are safely isolated from all well fluids. The well will then be drilled to the base of the salt interval (@ ±2770') and completed open hole. Prior to installing production equipment, a Cement Bond Log will be run. A copy of that log will be forwarded to your office for reference. A proposed wellbore diagram is included as Attachment 5.

As is the case with the current brine well, the well will be completed by running tubing through the open hole section and circulating fresh water from our brine facility across the salt section to create a brine with a total dissolved solids concentration of approximately 267,000 mg./liter. The wellhead will be constructed so as to allow for circulation in either direction. Surface piping from the brine facility to the well will simply be an extension of the piping going to and from the existing well.

Plug and Abandonment Plans - Existing & Proposed Wells:

Once a replacement well is drilled, the existing brine well will be plugged and abandoned. A brief outline of that procedure is as follows:

1. Pull all production equipment from the well.
2. Set a cast iron bridge plug at the bottom of the cased hole section of the well (± 1400') to isolate the open hole cavity from the wellbore.
3. Go in the hole with open ended tubing and set a cement plug from 1400' to surface.
4. Pull the tubing out of the hole.
5. Cut off the wellhead and erect a P&A marker.
6. Re-seed the location.

A wellbore diagram detailing the proposed plugging and abandonment of the existing well is included as Attachment 6.

The plugging and abandonment plan for the proposed brine well will be identical to that of the existing well.

Bearing in mind the current marginal status of our existing brine well, Conoco requests your office review our proposal as quickly as reasonably possible so that we may commence drilling operations.

If you have any questions concerning this matter please contact Ms. Kandy Lawson at (505) 397-5826.

We appreciate your consideration of our request.

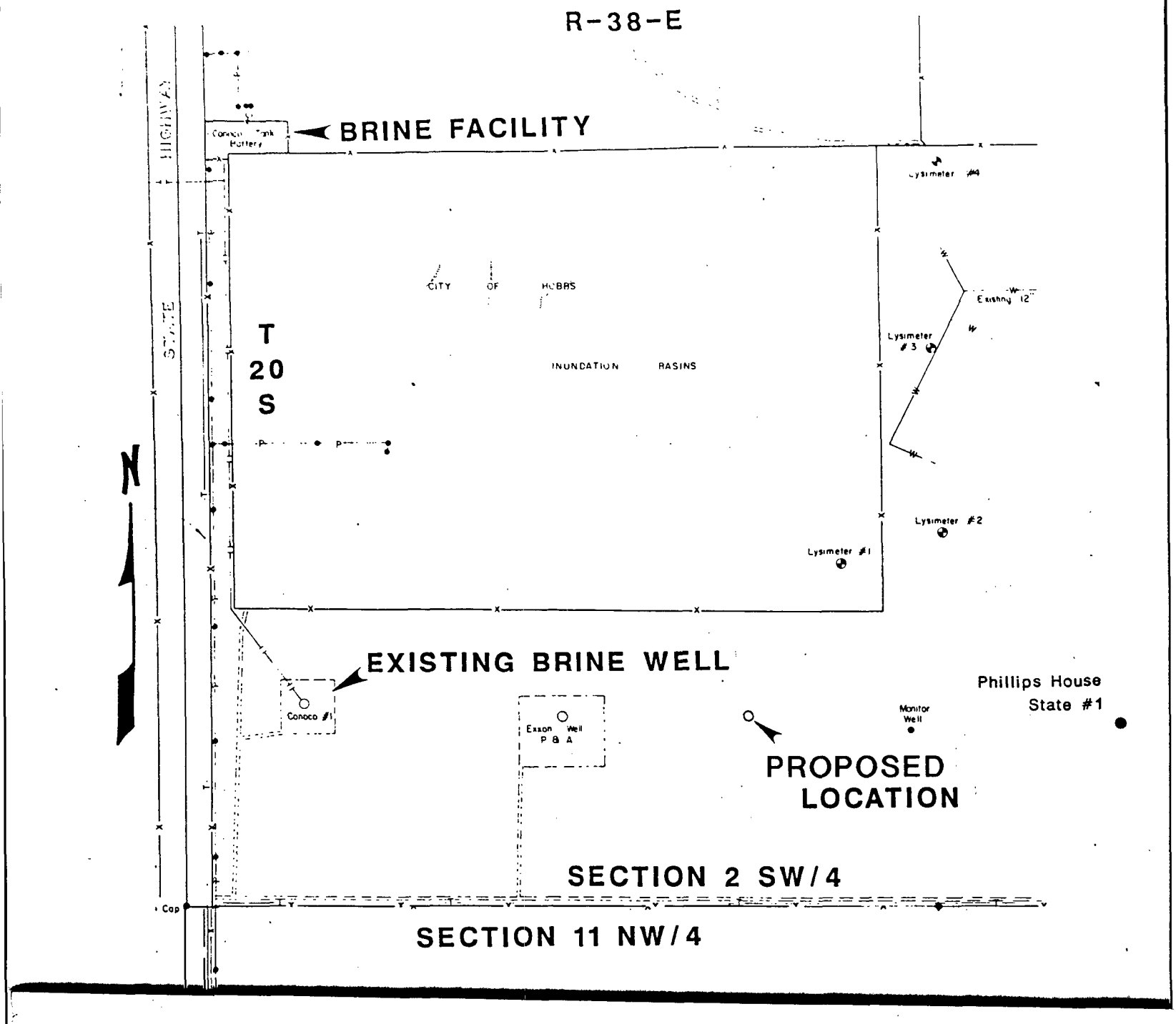
Sincerely,

David L. Wacker

David L. Wacker
Division Manager

KLL/tm

Attachments


R-38-E
BRINE FACILITY
Conoco Tank Battery
HIGHWAY
STATE
CITY OF HOBBS
INUNDATION BASINS
T
20
S
N
Lysimeter #4
Existing 12"
Lysimeter #3
Lysimeter #2
Lysimeter #1
EXISTING BRINE WELL
Conoco #1
Exxon Well P & A
Monitor Well
Phillips House State #1
PROPOSED LOCATION
SECTION 2 SW/4
Cap
SECTION 11 NW/4

Submit to Appropriate
District Office
State Lease - 4 copies
Fee Lease - 3 copies

DISTRICT I
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DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

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1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-102
Revised 1-1-89

WELL LOCATION AND ACREAGE DEDICATION PLAT

All Distances must be from the outer boundaries of the section

Operator	Lease	Well No.
Conoco, Inc.	Warren McKee Brine	2

Unit Letter	Section	Township	Range	County
N	2	20 South	38 East NMPM	Lea

Actual Footage Location of Well:
1980 feet from the West line and 660 feet from the South line

Ground level Elev.	Producing Formation	Pool	Dedicated Acreage:
3581.6			Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

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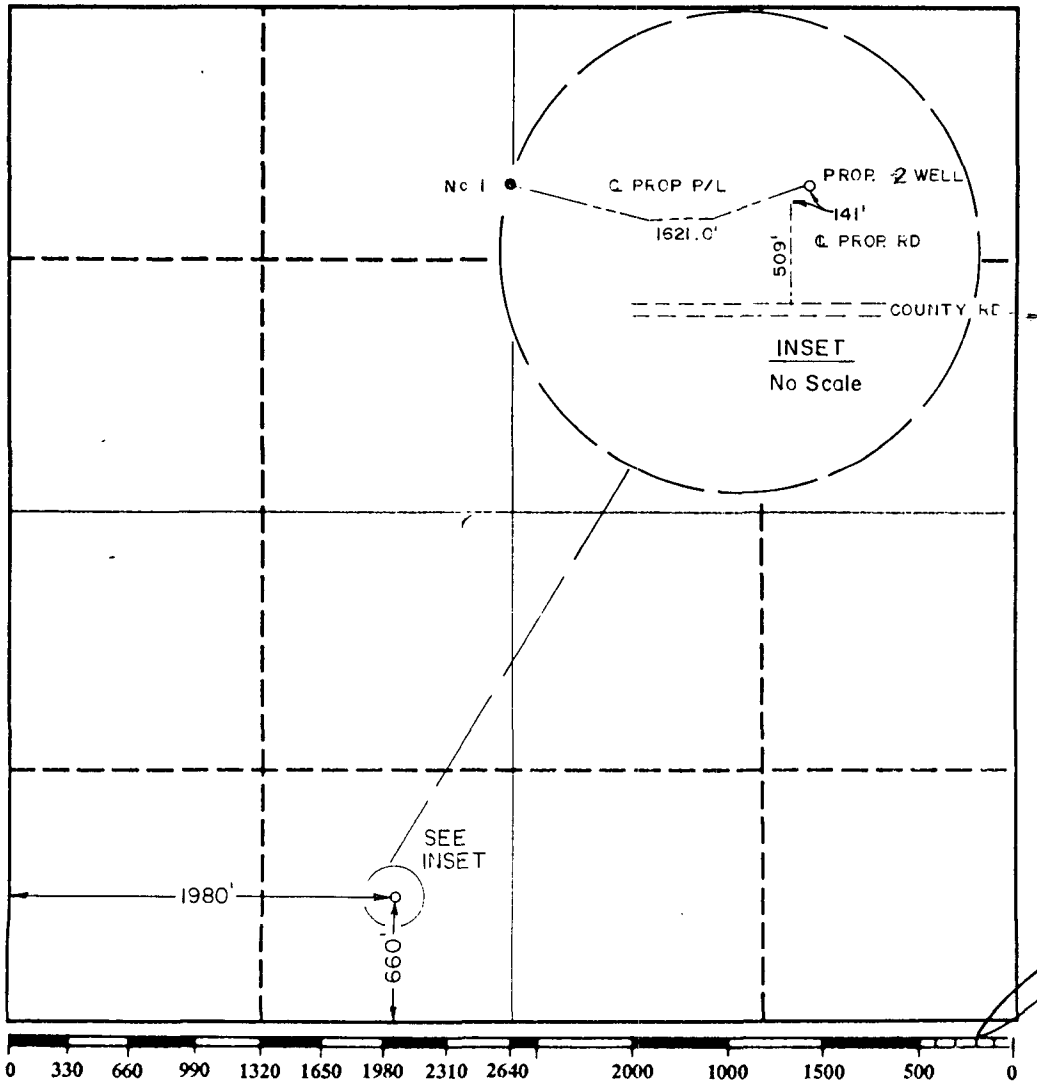


OPERATOR CERTIFICATION

I hereby certify that the information contained herein in true and complete to the best of my knowledge and belief.

Signature

Printed Name

Position

Company

Date

SURVEYOR CERTIFICATION

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

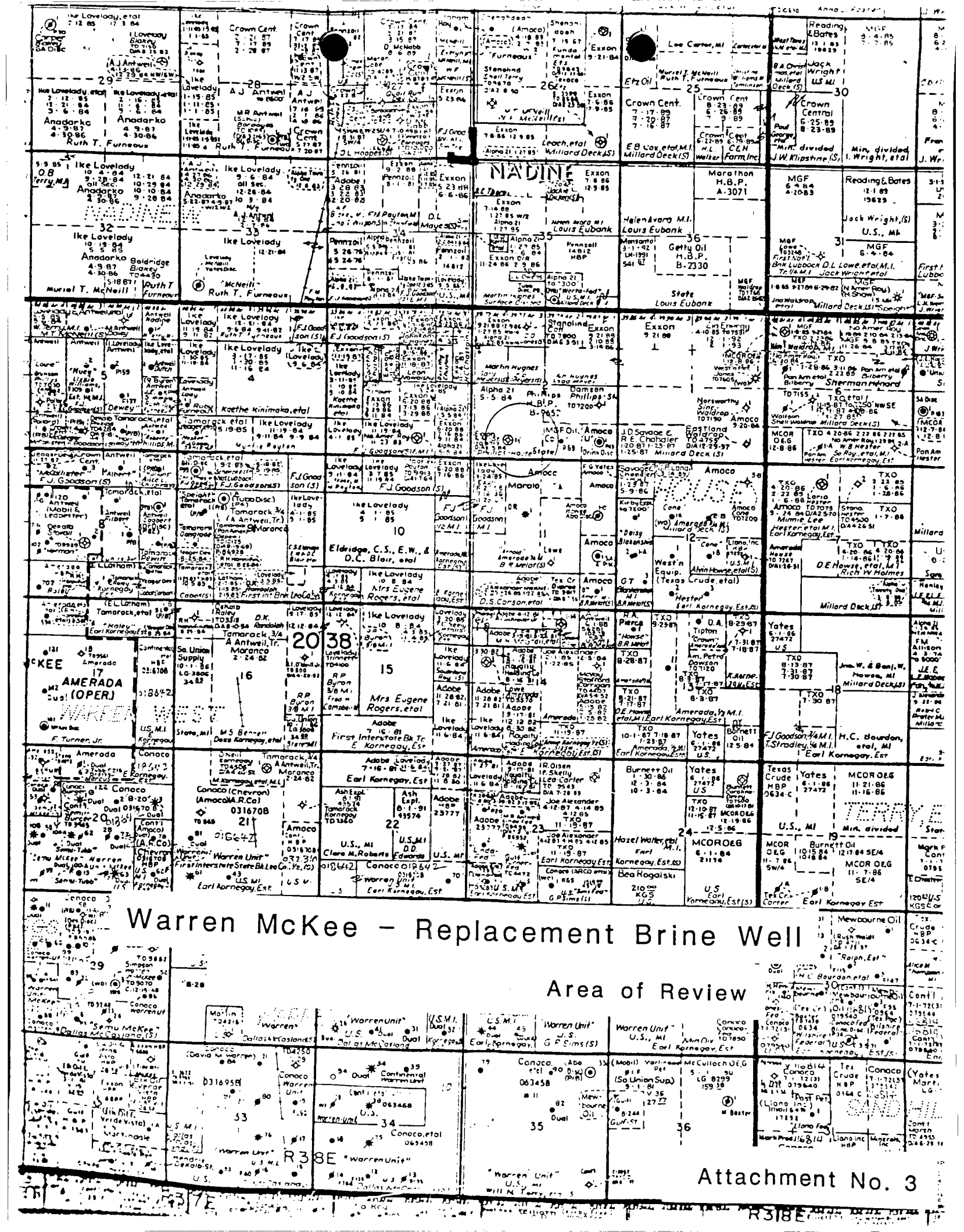
Date Surveyed
June 1, 1989

Signature & Seal of Professional Surveyor

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR NO. 676 STATE OF NEW MEXICO JOHN W. WEST

Certificate No. JOHN W. WEST 676
RONALD J. EIDSON 3239

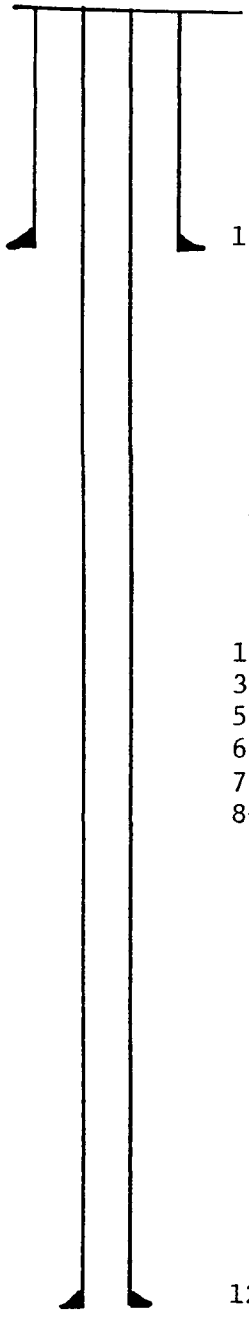
Attachment 2


NADINE
Warren McKee – Replacement Brine Well
Area of Review
Attachment No. 3
R38E
R37E

EXXON CORPORATION

NEW MEXICO "DK" NO. 1
660' FSL 1320' FWL
2-20s-38e ELEV.: 3580' GR SS: 15'

SPUD: 8-22-83 COMP: 1-5-84



17 1/2" HOLE, SET 13 3/8" CSG, 61#, @ 350 SX C1C, CIRC 50 SX OUT SURFACE.

COULD NOT RECOVER JUNK IN HOLE:

P & A PROCEDURE: 1-23-84

0-10'	100 SX	C1 H NEAT
350- 500	100 SX	
1350-1500	100 SX	
3500-4100	100 SX	
5400-5700	100 SX	
6400-6700	100 SX	
7300-7600	100 SX	
8050-8350	100 sx	

12 1/2" HOLE, SET 9 5/8" CSG, 40#, 1500 SX C1C. CIRC 225 SX to SURFACE.

T.D. 9713'

1 DST: 5990-6210', OPEN 2', REC 150 FT MUD. IFP 114-71, 1' ISIP 1840, FFP 128-200, 4' FSIP 2320, HP 2759. BHT 106°.

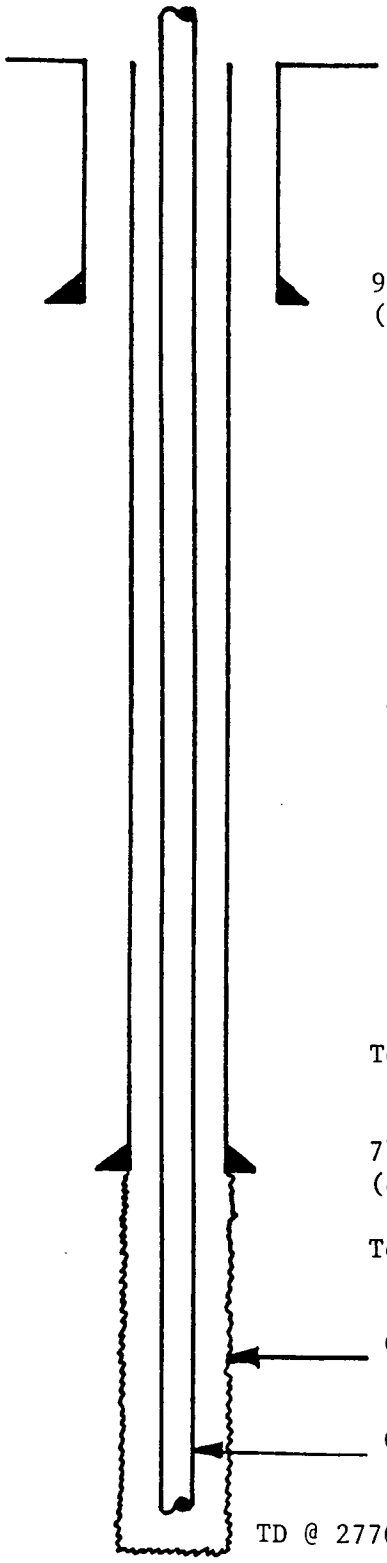
2-17-89 JS

Attachment No. 4

Conoco, Inc.
Replacement Brine Well - Warren McKee

660' FSL & 1980' FWL, Section 2,
T-20S, R-38E, Lea County, NM

"Proposed Wellbore Diagram"



9-5/8",36 lb/ft, K-55 casing @ 400'
(circulate cement to surface)

Top of Anhydrite @ 1590'

7", 20 or 23 lb/ft, K-55 casing @ 1630'
(circulate cement to surface)

Top of Salt @ 1680'

Open Hole

Open-ended 2-3/8" or 2-7/8", J-55 tubing @ 2650'

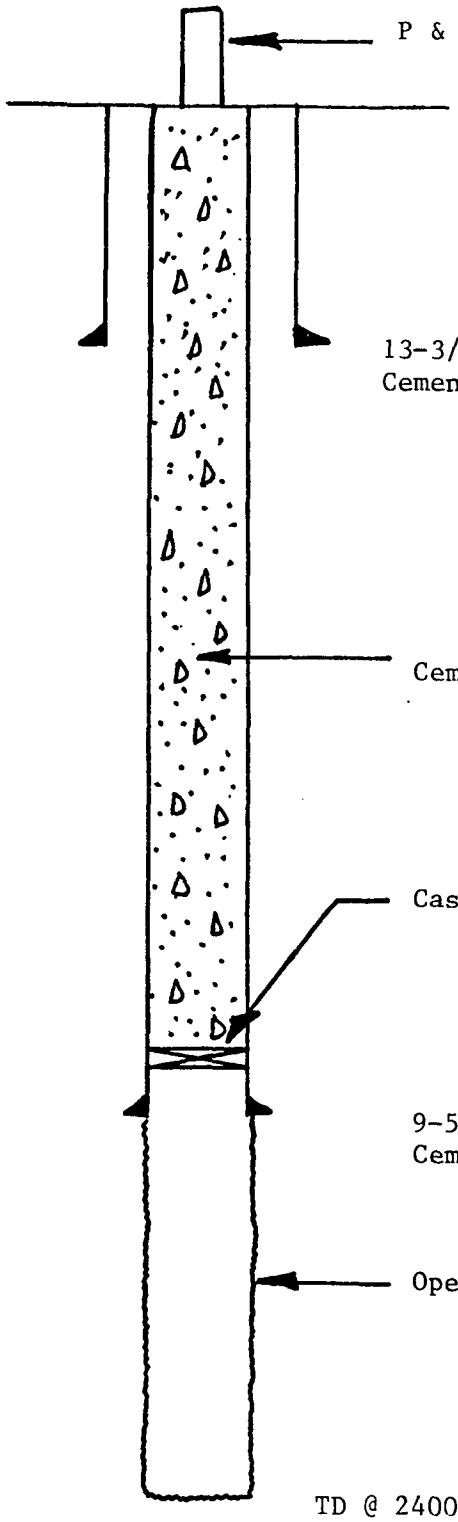
TD @ 2770' (PBTD @ 2700')

Base of Salt @ 2770'

Attachment No. 5

Conoco, Inc.
Warren McKee Brine Well No. 1
710' FSL & 420' FWL, Section 2,
T-20S, R-38E, Lea County, NM

"Proposed P&A Wellbore Diagram"



Attachment No. 6

Memo

6-27-89

From
EVELYN DOWNS
Oil Conservation Staff Specialist

To Dave Boyer

We have Conoco's APD for their Warren McKee Brine well #1A.

We will withhold approval until we have an OK from your office.

Evelyn

Roger - I found this in my pile. I don't what the board talked in June

8/24

Oil Conservation Division
PO Box 1980, Hobbs, New Mexico 88241-1980

Submit to Appropriate
District Office
State Lease – 6 copies
Fee Lease – 5 copies

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

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

P.O. Box 2088
Santa Fe, New Mexico 87504-2088

Form C-101
Revised 1-1-89

API NO. (assigned by OCD on New Wells)

5. Indicate Type of Lease STATE [x] FEE [ ]

6. State Oil & Gas Lease No. B-9652

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work:
DRILL [X] RE-ENTER [ ] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well:
OIL WELL [ ] GAS WELL [ ] OTHER Brine extraction SINGLE ZONE [X] MULTIPLE ZONE [ ]

7. Lease Name or Unit Agreement Name: Warren Mckee Brine

2. Name of Operator: Conoco Inc.

8. Well No. #1A

3. Address of Operator: P.O. Box 460-Hobbs, NM 88240

9. Pool name or Wildcat: Warren McKee

4. Well Location
Unit Letter N : 660 Feet From The South Line and 1980 Feet From The West Line

Section 2 Township 20S Range 38E NMPM Lea County

10. Proposed Depth	11. Formation	12. Rotary or C.T.
2750'	Salado Salt	Rotary

13. Elevations (Show whether DF, RT, GR, etc.)	14. Kind & Status Plug. Bond	15. Drilling Contractor	16. Approx. Date Work will start
3590' KB	Blanket	Not Available	August 1, 1989

17. PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12-1/4"	9-5/8"	36#	400'	200	Circ.
8-1/2"	7"	20#	1625'	350	Circ.

It is proposed to drill a straight hole to a depth of 2750' in an effort to complete as a brine extraction well. The hole will be drilled to the base of the Salado Salt and then be completed open hole as a brine extraction well.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE W. W. Baker W.W. Baker TITLE Administrative Supervisor DATE June 23, 1989

TYPE OR PRINT NAME TELEPHONE NO.

(This space for State Use)

APPROVED BY TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

New Mexico Health and Environment Department

MARALYN BUDKE
Acting Secretary

CARLA L. MUTH
Deputy Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

April 28, 1989

John C. Peterson/Field Supervisor
Fish and Wildlife Service
U.S. Department of the Interior
Suite D, 3530 Pan American Highway, NE
Albuquerque, NM 87107

Dear Mr. Peterson:

The Environmental Improvement Division Ground Water Bureau of the New Mexico Health and Environment Department is in receipt of your April 13, 1989 comments regarding DP-318, the discharge plan for Conoco's Warren McGee No. 1 brine facility. In response to your comments and concerns the following information is offered:

> The Conoco Warren McGee No. 1 brine well supplies brine to above grade tankage, and there are no open impoundments of brine at the facility.

If we can be of further service, please feel free to call me at telephone number (505) 827-0027.

Sincerely,

John W. Parker
Water Resource Specialist
Ground Water Section

JWP/mar

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Parker

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
Suite D, 3530 Pan American Highway, NE
Albuquerque, New Mexico 87107

April 13, 1989

Mr. Stuart P. Castle, Bureau Chief
Ground Water Bureau
Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87503

Dear Mr. Castle:

This responds to your public notice dated March 31, 1989, in which several proposed groundwater discharge plans were described. We have not identified any resource issues of concern to our agency for the following plans:

DP-608, El Caso Ranches, Inc., Catron County, Quemado, NM.
DP-231, SOLV-EX Corporation, Bernalillo County, Albuquerque, NM.
DP-32, City of Socorro, Socorro County, Socorro, NM.
DP-53, Manning Trading Company, Inc., San Juan County, Kirtland, NM.
DP-609, Town of Cochiti Lake Wastewater Treatment Plant, Sandoval County, Cochiti Lake, NM.
DP-506, Petro Park, Ltd., Chaves, County, Roswell, NM.
DP-605, Bosque Farms Disposal System, Valencia, County, Peralta, NM.

With regard to the proposed discharge at Warren McKee No. 1 on Highway 18 (DP-318), we have the following comments:

Our concern is that any surface water discharges resulting from these operations should not have visible traces of oil or gas. If migratory birds were to come in contact with the contaminated waters and perish, violations of the Migratory Bird Treaty Act would have occurred. The Migratory Bird Treaty Act prohibits the taking, except by permit, of individual migratory birds (16 U.S.C. 703). The Migratory Bird Treaty Act prohibits unpermitted taking "by any means or in any manner" of the protected species. Case law has found that unintentional kills of migratory birds, by poisoning or other circumstances is prohibited. Fines of up to $10,000 have been levied against violators.

These comments represent the views of the Fish and Wildlife Service. If you have any questions concerning our comments, please contact Tom O'Brien or Rick Roy at FTS 474-7877 or (505) 883-7877.

Sincerely yours,

John C. Peterson
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, Albuquerque, New Mexico

New Mexico Health and Environment Department

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 10, 1989

Hugh Ingram
Conoco Inc.
P.O. Box 460
Hobbs, NM 88241

RE: Renewal of DP-318

Dear Mr. Ingram:

The renewal of the discharge plan (DP-318) for the Conoco Inc. Warren McKee brine facility located in Section 2, T20S, R38E, Lea County, New Mexico is hereby approved subject to the condition listed below, which is part of the financial assurance required pursuant to Section 5-210.B.17 of the New Mexico Water Quality Control Commission (WQCC) regulations.

Conoco Inc. will establish a trust fund using the enclosed trust agreement, funded by the performance bond submitted on April 3, 1989 (surety number: 8104-39-36).

The discharge plan was submitted pursuant to Section 3-106 of the New Mexico Water Quality Control Commission Regulations. It is approved pursuant to Section 3-109. Please note subsections 3-109.E. and 3-109.F., which provide for possible future modification of the plan. Please be advised that the approval of this plan does not relieve you of liability should your operation result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

The monitoring and reporting shall be as specified in the discharge plan and supplements thereto. These requirements are summarized on the attached sheet(s). Any inadvertent omissions from this summary of a discharge plan monitoring or reporting requirement shall not relieve you of responsibility for compliance with that requirement.

Please note that Section 3-104 of the regulations requires that "When a plan has been approved, discharges must be consistent with the terms and conditions of the plan."

Pursuant to subsection 3-109.G.4., this plan approval is for a period of 5 years. This approval will expire on April 10, 1994, and you should submit an application for new approval in ample time before that date.

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

On behalf of the staff of the Ground Water Section, I wish to thank you (and your consultant) for your cooperation during the discharge plan review.

Sincerely,

Stuart P. Castle

Stuart P. Castle
Bureau Chief
Ground Water Bureau

SPC:JP:mar

cc: Garrison McCaslin, EID, District IV, Roswell
Rolf Ruttner, EID, Hobbs

EID BUCKSLIP

CHECK ONE:

☒ LETTER TO Hugh Ingram

FOR Stuart Castle SIGNATURE

☐ MEMO TO _____

☐ PRESS RELEASE

☐ OTHER

SUBJECT: Conditional Approval of DP-518

DRAFTED BY: John Parker 4/7/89 (DATE)

CONCURRENCES:

NAME:		INITIAL	DATE REC'D	DATE APPROVED
Ernest Rebuck	Prog. Mgr.	ER	4/7	4/7
Stuart P. Castle	Bur. Chief	SC	4/11	4/11
_____	Deputy Dir.	_____	_____	_____
Jon Thompson	Deputy Dir.	_____	_____	_____
Richard Mitzelfelt	Director	_____	_____	_____
_____	Legal Review	_____	_____	_____
_____	Branch Admin.	_____	_____	_____

FINAL DECISION NEEDED BY _____ (Date) BECAUSE _____

COMMENTS BY DRAFTER OR REVIEWER(S):

Trust agreement only outstanding requirements. Conoco has re-drafted EID language of EID's performance bond form so as to eliminate language regarding establishment of Trust Agreement.

GROUND WATER SECTION
Environmental Improvement Division
Health and Environment Department
Santa Fe, N.M. 87503
Phone: (505) 827-2900

Summary of Discharge Plan

April 6, 1989

DP number: 318 Facility name: CONOCO, INC.
Alternate name: WARREN MCGEE WATERFLOOD
Type of facility: MINING - SALT - INSITU
Means of discharge: HOLDING TANKS - STEEL - ABOVE

County: LEA EID District 4 T20S, R38E, Sec. 2.000
Location: SOUTH OF HOBBS ON RT.18 Nearest city: EUNICE

	Responsible person:	Contact or consultant person:
	M.K. MOSLEY	GREG ASHDOWN
Title:	DIVISION MGR.	ENGINEER
Address:	P.O. BOX 460	P.O. BOX 460
City, zip:	HOBBS NM 88240	HOBBS NM 88240
Phone:	505-393-4141	505-397-5865

The Ground Water Section staff reviewer is JOHN PARKER.
Application was received 06/17/87 and Public Notice published 07/01/87.
The modification was approved / / and the plan expires 12/18/87.
(Application for renewal should be submitted in ample time before expiration.)

Monitoring Requirements summary

No. of monitoring reports required annually: 4
Monitoring reports are due no later than March 1, November 30, August 31, and May 30 of each year.

Sampling required	Annual freq.	# of sites	Comments, description
Water levels:	0	0	
Disch. vols:	4	1	VOLUME OF "FRESH WATER" INJECTED, BRINE SOLD
Major ions:	0	0	
Heavy metals:	0	0	
N Species:	0	0	
Organics:	0	0	
Other:	0	0	

___ If this space is checked, monitoring requirements are summarized or explained in more detail on the attached sheet.
Any inadvertent omission from this summary does not relieve the discharger of responsibility for compliance with that requirement.
Send monitoring reports to the address at top, "Attention: JOHN PARKER, re: DP-318".

New Mexi[illegible]lth and Environment Department

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

DP-318 (JP)

March 29, 1989

The Honorable Keith Spradlin
City of Lovington
P.O. Box 1268
Lovington, NM 88260

Dear Mayor Spradlin:

Enclosed is a public notice which includes notice of a proposed discharge plan(s) for one or more operations in or near your city.

If you have any questions, please do not hesitate to contact me at:

EID Ground Water Section
Harold Runnels Bldg., Rm. S2050
Santa Fe, NM 87503
(505) 827-2900

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR:mar

Enclosures

New Mexico Health and Environment Department

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

DP-318 (JP)

March 29, 1989

David L. Wacker, Division Manager
Conoco, Inc.
P.O. Box 460
Hobbs, NM 88240

Dear Mr. Wacker:

Enclosed is a copy of the public notice pertaining to your proposed discharge(s) which was issued by this division pursuant to New Mexico Water Quality Control Commission regulations, Section 3-108.

If you have any questions, please do not hesitate to contact me at the following address:

EID Ground Water Section
Harold Runnels Building, Rm. S2050
Santa Fe, NM 87503
(505) 827-2900

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR:mar

Enclosure

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

New Mexico Health and Environment Department

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

DP-318

March 29, 1989

Board of County Commissioners
Lea County
Lea County Courthouse
Lovington, NM 88260

Board of County Commissioners:

Enclosed is a public notice for one or more operations located in your county.

If you have any questions, please do not hesitate to contact me at:

EID-Ground Water Section
Harold Runnels Building, Rm. S2050
Santa Fe, NM 87503
(505) 827-2900

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR:mar

Enclosure

March 21, 1989

TO BE PUBLISHED ON OR BEFORE APRIL 1, 1989

PUBLIC NOTICE

NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION

Notice is hereby given that, pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plans have been submitted for approval to the Director of the New Mexico Environmental Improvement Division, Harold Runnels Building, 1190 St. Francis Drive, Santa Fe, NM 87503.

(DP-318) **CONOCO INC.**, David L. Wacker, Division Manager, P.O. Box 460, Hobbs, NM 88240, proposes to modify the discharge plan for the Warren McKee No.- 1 brine water in-situ extraction well and surface facility located south of Hobbs on Highway 18. The proposed modification would allow for the drilling of a new well in Section 2, T20S, R38E, Lea County. The operation involves injection of fresh water into an underlying salt formation, thereby dissolving the salt and forming a brine water solution. The brine is produced through a tubing in the injection well, mixed with effluent from the Hobbs Waste Water Treatment Plant and pumped via pipeline to oil production fields. Ground water below the site is at a depth of 70 to 145 feet and has a total dissolved solids concentration of approximately 1,150 mg/l.

(DP-608) **EL CASO RANCHES, INC.**, B.T. Easterling, Secretary/Treasurer, P.O. Box 188, Quemado, NM 87829, proposes to discharge up to 6,240 gallons per day of domestic wastewater to septic tank systems at the Pueblo Largo Subdivision. The facility is located approximately one mile northwest of Quemado Lake in the NE 1/4 of Section 9, T2S, R16W, Catron County. Wastewater from the subdivision will be discharged to 3 septic tank/leach field systems. Ground water below the site is at a depth of approximately 225 feet and has a total dissolved solids concentration of approximately 220 mg/l.

(DP-231) **SOLV-EX CORPORATION**, V.W. Vaughn, Assistant to the Chairman, 1650 University Blvd., N.E., Suite 230, Albuquerque, NM 87102, proposes to renew the discharge plan for its research laboratory and pilot plant at 2121 Menaul Blvd., N.E., Albuquerque, in Section 3, T10N, R31E, Bernalillo County. The pilot plant is designed for solvent extraction of heavy oil from tar sands shipped from out-of-state. There is no effluent discharged from the plant as all water and solvents are recycled for continued use. Oil derived from the process is sold to refineries or asphalt manufacturers. Dewatered sand is

used for landscaping and soil improvement. Approximately 2,000 tons of tar sands are processed annually. Ground water below the site is at a depth of approximately 300 feet with a total dissolved solids concentration of approximately 450 mg/l.

(DP-32) **CITY OF SOCORRO**, David B. Jones, Mayor, P.O. Drawer K, Socorro, NM 87801, proposes to renew the discharge plan for the City's sludge disposal land application program. The discharge consists of splash plating approximately 6,900 gallons per day of digested sewage sludge onto various irrigated and cultivated fields located in Sections 6, 7, 12 and 18, T3S, R1E, Socorro County. The fields are within a 4 mile radius of the Socorro Wastewater Treatment Facility. Ground water below the site is at a depth of approximately 10 feet and has a total dissolved solids concentration of approximately 1,000 mg/l.

(DP-53) **MANNING TRADING COMPANY, INC.**, Jack Manning, P.O. Box 795, Kirtland, NM 87417, proposed to renew the discharge plan for the discharge of car wash and laundromat wastewater. Up to 8,000 gallons per day of effluent flows to two lagoons located in the SE 1/4 of the SE 1/4 of Section 7, T29N, R14W, San Juan County. Effluent from the lagoons is used to irrigate 25 acres of alfalfa fields located immediately adjacent to the lagoons. Excess wastewater is discharged to drain fields. Ground water below the site is at a depth of approximately 50 feet and has a total dissolved solids concentration of approximately 400 mg/l.

(DP-609) **TOWN OF COCHITI LAKE WASTEWATER TREATMENT PLANT**, Louise Hammond, Mayor, Box 184, Cochiti Lake, NM 87041, proposes to discharge up to 40,000 gallons per day of treated sewage effluent. The new wastewater treatment facility will be located on the east side of the Town of Cochiti Lake in Section 5, T16N, R6E, Sandoval County. The proposed treatment plant will be an activated sludge sequencing batch system capable of nitrogen removal. The effluent which will be treated to a total nitrogen concentration of less than 10 mg/l will be discharged to a percolation pond. Ground water below the site is at a depth of approximately 220 feet and has a total dissolved solids concentration of approximately 150 mg/l.

(DP-506) **PETRO PARK, LTD.**, (formerly Mealmakers, Inc.), John E. White, Manager, P.O. Box 1798, Roswell, NM 88201, proposes to modify its discharge plan for a vegetable processing facility. The facility is located within the city limits of Roswell in the NE 1/4 of Section 33, T10S, R24E, Chaves County. Petro Park, Ltd. has been applying up to 100,000 gallons per day of vegetable processing wastewater to an approximately 15-acre site adjacent to and north of North Spring River. The modification would allow Petro Park, Inc. to use an approximately 15-acre site adjacent to and south of North Spring River as the primary disposal site. The wastewater would be used to irrigate vegetable crops through the summer and grain crops through the winter. Ground water below the site is at a depth of approximately 20 to 40 feet and has a total dissolved solids concentration of approximately 2,200 to 3,400 mg/l.

(DP-605) **BOSQUE FARMS DISPOSAL SYSTEM**, Joe F. Johnson, Owner, P.O. Box 214, Peralta, NM 87042, proposes to modify its discharge plan application for the

disposal of up to 12,000 gallons per day of septage. The facility is located about 8 miles west of Los Lunas in the NE 1/4 of the SE 1/4 of Section 35, T7N, R1W, Valencia County. The location which appeared in the public notice published on or before February 16, 1989 was listed as the SE 1/4 of the SE 1/4 of Section 35, T7N, R1W.

Any interested person may obtain further information from the Ground Water Section of the Environmental Improvement Division, telephone (505) 827-2900, and may submit written comments to the Director of the EID at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of EID will allow thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why the hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

Production Department
Hobbs Division
North American Production

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

March 29, 1989

State of New Mexico
Environmental Improvement Division
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, New Mexico 87503

Attention Mr. John W. Parker

Gentlemen:

Surety Bond for Warren McKee Replacement Brine Well

Attached is a Surety Bond covering the Warren Unit (McKee) replacement brine well. The application for approval of this well is being held in your file awaiting the filing of this bond. We trust this will satisfy your requirements and respectfully request that our application be approved at your earliest convenience.

The replacement well will be named Warren McKee Brine Well No. 1A.

Yours very truly,

Hugh Ingram
Conservation Coordinator

dw

cc:
Faye Fritzsche
E.I. du Pont de Nemours & Co. (Inc.)
Finance - Insurance, D-10100
1007 Market Street
Wilmington, De. 19898

PERFORMANCE BOND

Date Bond Executed: March 7, 1989

Effective Date: March 29, 1989

Principal: Conoco Inc.

Type of Organization: Warren McKee Brine Well #1A

State of Incorporation: State of Delaware

Surety: Federal Insurance Company

Total Penal Sum of Bond: $8,667.00

Surety's Bond Number: 8104-39-36

Know All Persons By These Presents, That we, Conoco Inc. (hereinafter called the Principal) and Federal Insurance Company (hereinafter called Surety), are firmly bound to the New Mexico Environmental Improvement Division (hereinafter called EID), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the New Mexico Water Quality Control Commission Regulations to have a permit to operate under rule for each injection well identified above, and

Whereas said Principal is required to provide financial assurance for the proper closing, plugging and abandonment of a well, and hydrogeologic investigation for groundwater contamination as a condition of the permit to operate under rule, and

Now, Therefore, the conditions of this obligation are such that if the Principal shall faithfully perform the activities described above, whenever required to do so, for each injection well this bond guarantees, in accordance with the plugging and

abandonment plan and other requirements of the permit for operating under rule as may be amended, pursuant to all applicable laws, statutes, rules, and regulations, as such may be amended,

Or if the Principal shall provide alternate financial assurance and obtain the EID Director's written approval of such assurance, within 90 days after the date of notice of cancellation is received by both the Principal and the EID Director, then this obligation shall be null and void, otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above.

Upon notification by the EID Director that the Principal has been found in violation of the proper closing, plugging and abandonment of a well, and hydrogeologic investigation for groundwater contamination requirements for an injection well this bond guarantees, the Surety(ies) shall either perform the required activities in accordance with the plugging and abandonment plan and other permit requirements or place the penal sum guaranteed into the standby trust fund as directed by the EID Director.

Upon notification by the EID Director that the Principal has failed to provide alternate financial assurance as specified, and obtain written approval of such assurance from the EID Director during the 90 days following receipt by both the Principal and the EID Director of a notice of cancellation of the bond, the Surety(ies) shall place funds in the amount guaranteed for the injection well(s) into the standby trust fund as directed by the EID Director.

The Surety(ies) hereby agree that no amendments to the Settlement Agreement, applicable laws, statutes, rules and regulations shall in any way alleviate its (their) obligation on this bond.

The liability of the Surety(ies) shall not be discharged by any payment of succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail the (name of discharger) and

In Witness Whereof, the Principal and Surety(ies) have executed this Performance Bond and have affixed their seals on the date set forth above.

The person(s) whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies).

Principal: Conoco Inc.

J. A. Mitchell
Corporate Insurance Manager

Federal Insurance Company

Kathleen A. Raymond
Attorney-In-Fact

State of Incorporation:

New Jersey

Liability Limit:

$8,667.00

Bond Premium:

$40.00

1431i

CONOCO, INC.

* * * * *

AUTHORITY TO EXECUTE PROPOSALS
CONTRACTS AND/OR INDEMNITY, SURETY
OR GUARANTY BONDS OR AGREEMENTS

I, the undersigned, L. R. Wonderly, Assistant Secretary of Conoco Inc., a corporation organized and existing under and by virtue of the laws of the State of Delaware, hereby certify that the following is a true copy of a resolution adopted by the Board of Directors of said corporation at a meeting thereof duly held, a majority of said Board being present and voting on the 30th day of September, 1981, and said resolution, as amended, is now in full force and effect, to-wit:

> RESOLVED, That the chairman of the board, the vice chairman of the board, the deputy chairmen of the board, the presidents of operations and the vice presidents of this Corporation be, and each of them hereby is, authorized to execute and deliver on behalf of this Corporation any and all agreements, releases, bids, offers, applications and other legal documents and instruments which may be necessary or expedient in, or incident to, the conduct of the ordinary business of this Corporation; and that the secretary and the assistant secretaries of this Corporation be, and each of them hereby is, authorized to affix the corporate seal of this Corporation, if required, to any such document or instrument and to attest said seal when the same is so affixed.

The authority to sign and execute indemnity, surety or guaranty bonds on behalf of Conono, Inc. has been delegated by the Vice President and Treasurer to the Corporate Insurance Manager, and the Manager - Insurance. J. A. Mitchell, Jr. is the Corporate Insurance Manager.

L. R. Wonderly

Assistant Secretary
CONOCO INC.

0004

POWER OF ATTORNEY

Know all Men by these Presents, That the **FEDERAL INSURANCE COMPANY**, 15 Mountain View Road, Warren, New Jersey, a New Jersey Corporation, has constituted and appointed, and does hereby constitute and appoint Eugene J. Slesicki and Kathleen a. Raymond of Wilmington, Delaware----------

each its true and lawful Attorney-in-Fact to execute under such designation in its name and to affix its corporate seal to and deliver for and on its behalf as surety thereon or otherwise, bonds or obligations on behalf of E. I. DU PONT DE NEMOURS & CO., INC. & SUBSIDIARIES-------

in connection with bids, proposals or contracts to or with the United States of America, any State or political subdivision thereof or any person, firm or corporation. And the execution of such bond or obligation by such Attorneys-in-Fact in this Company's name and on its behalf as Surety thereon or otherwise, under its corporate seal, in pursuance of the authority hereby conferred shall, upon delivery thereof, be valid and binding upon this Company.

In Witness Whereof, the said **FEDERAL INSURANCE COMPANY** has, pursuant to its By-Laws, caused these presents to be signed by its Assistant Vice-President and Assistant Secretary and its corporate seal to be hereto affixed this 23rd day of November 19 87

Corporate Seal

FEDERAL INSURANCE COMPANY
By

Richard D. O'Connor
Assistant Secretary

George McClellan
Assistant Vice-President

STATE OF NEW JERSEY
County of Somerset } SS.

On this 23rd day of November 19 87, before me personally came Richard D. O'Connor to me known and by me known to be Assistant Secretary of the **FEDERAL INSURANCE COMPANY**, the corporation described in and which executed the foregoing Power of Attorney, and the said Richard D. O'Connor being by me duly sworn, did depose and say that he is Assistant Secretary of the **FEDERAL INSURANCE COMPANY** and knows the corporate seal thereof; that the seal affixed to the foregoing Power of Attorney is such corporate seal and was thereto affixed by authority of the By-Laws of said Company, and that he signed said Power of Attorney as Assistant Secretary of said Company by like authority; and that he is acquainted with George McClellan and knows him to be the Assistant Vice-President of said Company, and that the signature of said George McClellan subscribed to said Power of Attorney is in the genuine handwriting of said George McClellan and was thereto subscribed by authority of said By-Laws and in deponent's presence.

Notarial Seal

Acknowledged and Sworn to before me
on the date above written.

ALICE LEONARD Notary Public

CERTIFICATION **NOTARY PUBLIC OF NEW JERSEY**
My Commission Expires June 28, 1988

STATE OF NEW JERSEY
County of Somerset } SS.

I, the undersigned, Assistant Secretary of the **FEDERAL INSURANCE COMPANY**, do hereby certify that the following is a true excerpt from the By-Laws of the said Company as adopted by its Board of Directors on March 11, 1953 and most recently amended March 5, 1986 and that this By-Law is in full force and effect.

"ARTICLE XVIII.

Section 2. All bonds, undertakings, contracts and other instruments other than as above for and on behalf of the Company which it is authorized by law or its charter to execute, may and shall be executed in the name and on behalf of the Company either by the Chairman or the Vice-Chairman or the President or a Vice-President, jointly with the Secretary or an Assistant Secretary, under their respective designations, except that any one or more officers or attorneys-in-fact designated in any resolution of the Board of Directors or the Executive Committee, or in any power of attorney executed as provided for in Section 3 below, may execute any such bond, undertaking or other obligation as provided in such resolution or power of attorney.

Section 3. All powers of attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman or the Vice-Chairman or the President or a Vice-President or an Assistant Vice-President, jointly with the Secretary or an Assistant Secretary, under their respective designations. The signature of such officers may be engraved, printed or lithographed. The signature of each of the following officers: Chairman, Vice Chairman, President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached."

I further certify that said **FEDERAL INSURANCE COMPANY** is duly licensed to transact fidelity and surety business in each of the States of the United States of America, District of Columbia, Puerto Rico, and each of the Provinces of Canada with the exception of Prince Edward Island; and is also duly licensed to become sole surety on bonds, undertakings, etc., permitted or required by law.

I, the undersigned Assistant Secretary of **FEDERAL INSURANCE COMPANY**, do hereby certify that the foregoing Power of Attorney is in full force and effect.

Given under my hand and the seal of said Company at Warren, N.J., this 9th day of March, 19 89

Corporate Seal

Assistant Secretary

David L. Wacker
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

March 7, 1989

New Mexico Environmental Improvement Division
Harold Runnels Bldg. - 1190 St. Francis Drive
Santa Fe, New Mexico 87503

Attention: Mr. John W. Parker

Gentlemen:

Specific Location for Replacement Brine Extraction Well

Referring to Conoco's February 27, 1989 request to your office for permission to drill a replacement brine well under Discharge Plan, DP-318, we therein requested approval for two drilling locations. It is now our understanding that the approval process could be simplified if Conoco would request approval for one specific location. Therefore, Conoco hereby requests approval to drill a replacement brine well at the following location: 660' FSL & 1980' FWL of Section 2, Township 20 South, Range 38 East, Lea County, New Mexico (formerly labeled our "Secondary Location").

Please advise us at the address above if other measures could be taken to further reduce the time required for the subject approval.

Sincerely,

David L. Wacker
Division Manager

LGA/ga

cc: Michael L. Morrison
Hugh A. Ingram
Frank E. Patton
Joel E. Porter
L. Greg Ashdown
Warren McKee Brine Well - Well File

Conoco Inc.
P.O. Box 2197
Houston, TX 77252

March 2, 1989

Mr. John Parker
Water Resource Specialist
Ground Water Section
Environmental Improvement Division
New Mexico Health & Environment Department
Harold Runnels Building
1190 St. Francis Drive
Santa Fe, NM 87503

Dear John:

Enclosed is the Self Insurance for a Hydrogeologic Investigation statement signed by Mr. Etheredge. The bond will be forthcoming from our Wilmington office.

Sincerely,

Jim Hughes

James F. Hughes III
Insurance Division

JFH/pa

enc.

cc/enc: Hugh Ingram, Hobbs, NM

JFH/03010589/PA

Self Insurance for a Hydrogeologic Investigation

I, Jay S. Etheredge, am Manager, Insurance, Petroleum Operations for Conoco Inc., a wholly owned subsidiary of Du Pont. This letter is in support of the use of the financial test of self-insurance to demonstrate financial responsibility for undertaking a hydrogeologic investigation for ground water contamination arising from operating the Warren McGee, waterflood located in Section 32, T21S, R37E, Lea County, New Mexico.

Conoco Inc., or Du Pont, have neither received an adverse opinion or a disclaimer of opinion from an independent auditor on their financial statements for the latest completed fiscal year.

Tangible net worth is derived from the year-end financial statements of Conoco Inc. and Du Pont, for the latest completed fiscal year.

1. Amount of hydrogeologic investigation costs covered by the financial test -- $35,000.00.

2. Tangible net worth -- $14 billion.

3. Is Line 2 at least 10 times line 1? -- Yes.

Jay S. Etheredge

Jay S. Etheredge
Manager, Insurance
Petroleum Operations
Conoco Inc.

3-2-89

Date

JFH/03010589/PA

David L. Wacker
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

February 27, 1989

New Mexico Environmental Improvement Division
Harold Runnels Bldg. - 1190 St. Francis Drive
Santa Fe, New Mexico 87503

Attention Mr. John W. Parker

Gentlemen:

Modification Of Discharge Plan, DP-318, For Replacement of In-Situ Extraction Well, Warren McKee No. 1

Conoco hereby requests permission to modify Discharge Plan, DP-318, to include a replacement brine extraction well. We also request temporary approval of the discharge plan modification to allow drilling the replacement well quickly if the existing brine extraction well becomes completely inoperable. The existing brine well, while still mechanically sound, is becoming too costly to operate due to increasingly frequent cave-ins which temporarily halt operations. During the past seven months, three such cave-ins have been experienced, and the probability of the well becoming totally inoperable increases with each cave-in. Such a loss would pose an immediate threat to our Warren McKee and North Blinebry waterfloods which currently produce 1030 BOPD.

Our intention is to plug and abandon the existing well and replace it with a new well to be drilled a safe distance from the old well. Whereas the vast majority of the subject discharge plan will remain unchanged (Please refer to DP-318 Renewal Application dated June 12, 1987 and associated correspondence dated May 26, 1988 and January 26, 1989 for a complete description of the plan), only information specifically pertaining to the proposed new well(s) will be addressed in this request. We desire to commence operations in the new well within 2-3 months, and, therefore, respectfully request that this application be approved as soon as possible.

Replacement Well Locations:

To preserve time and effort, we have proposed and are requesting approval for two locations for a replacement well, only one of which will be drilled, a primary and a secondary choice. Both of the locations satisfy the criteria for an In-Situ extraction well. The two proposed locations are as follows: Primary - 1300' FNL & 420' FWL, Sec. 11, Township 20 South, Range 38 East and Secondary - 660' FSL & 1980' FWL, Sec. 2, of the same township (see Attachment 1 for a map of the general area surrounding these locations.)

The calculated average diameter of the current salt cavity (as of December 31, 1988) was only 36'. (Values used to make this calculation are as follows: salt zone thickness = 1100', salt density = 135 lbs./cubic foot, total water injected in associated waterfloods = 26,445,212 Bbls., and average salt concentration of injected water = 22.8 lbs./Bbl.) Both of the proposed locations have been selected so as to be a minimum of 1500 feet from the existing extraction well to insure that no communication will exist between the new and the abandoned cavities.

There are no other wells, active or abandoned, within the 1/4 mile radius Area of Review of the proposed Primary Location, but there are two wells within the Area of Review of the Secondary Location (see Attachments 2 & 3 for maps detailing the Areas of Review for each of these locations). Exxon's New Mexico DK State No. 1 lies 660 feet due west of our Secondary Location. This well was junked and abandoned while drilling during 1983. The casing and cementing history for that well indicates that isolation of the surface environment was achieved; a wellbore diagram of this well is included as Attachment 4. The other well within the Secondary Location's Area of Review is a surface water monitoring well operated by the City of Hobbs which is located 570 feet due east of our proposed location. This well is only 40 feet deep and is completed with 4", uncemented, plastic pipe. Considering its shallow depth, Conoco feels that this well should not have any bearing on the approval of our Secondary Location.

Construction and Operation of Replacement Well:

Regardless of the actual location chosen, the well will be drilled, completed and operated in a manner similar to the original well. Surface casing will be set through the surface fresh water zones (@ ±400') and cemented to surface to provide isolation against any possible contamination. Production casing will then be set in the Rustler Anhydrite cap immediately above the top of the Salado salt (@ ±1630'). This string will also be cemented to surface to insure that near-surface ground waters are safely isolated from all well fluids. The well will then be drilled to the base of the salt interval (@ ±2770') and completed open hole. Prior to installing production equipment, a Cement Bond Log will be run. A copy of that log will be forwarded to your office for reference. A proposed wellbore diagram is included as Attachment 5. Stated depths are based on open hole logs from Exxon's New Mexico DK State No. 1 and Len G. McCormick's Phillips House State No. 1 which show that little to no structural changes are occurring in the salt or anhydrite in this area.

Besides the cement bond log, the mechanical integrity of the well will be continually monitored by comparing total injected volumes to the volume of brine returned. Conoco will also commit to performing a pressure leak-off test on the casing at least once during the five year renewal period of the discharge plan.

As is the case with the current brine well, the well will be completed by running tubing through the open hole section and circulating fresh water

from our brine facility across the salt section to create a brine with a total dissolved solids (TDS) concentration of approximately 267,000 mg/liter. The brine will then be returned to the brine facility where it is diluted with fresh water to a waterflood injection concentration of 65,200 mg/liter. The wellhead will be constructed so as to allow for circulation in either direction (i.e. pump down the tubing and return through annulus or pump down the annulus and return up the tubing). Surface piping from the brine facility to the well will simply be an extension of the piping going to and from the existing well.

The maximum planned operating pressure for the proposed well is 260 psi. This pressure is significantly less than the fracture pressure of the Salado salt which is approximately 800 psi surface pressure. Assuming a fluid specific gravity of 1.03 grams per cubic centimeter, these surface pressure readings convert to bottom hole (base of salt) values of 1495 and 2035 psi for maximum operating pressure and salt fracture pressures respectively.

Conoco will commit to providing the Ground Water Bureau with a 24 hour notice "prior to the commencement of drilling, cementing and casing, well logging, mechanical integrity tests and any other well workover" and also to having all reports submitted pursuant to requirements under DP-318 signed and certified pursuant to Section 5-101.H. Quarterly reports detailing the volume of injected fluids and produced brines are currently being sent with a royalty check for salt extraction. This information will continue to be sent on the quarterly basis.

Plug and Abandonment Plans - Existing & Proposed Wells:

Once a replacement well is drilled, the existing brine well will be plugged and abandoned according to the procedure outlined in the previous correspondence mentioned above and approved by your office. A brief outline of that procedure is as follows:

1. Pull all production equipment from the well.
2. Set a cast iron bridge plug at the bottom of the cased hole section of the well (± 1400') to isolate the open hole cavity from the wellbore.
3. Go in the hole with open ended tubing and set a cement plug from 1400' to surface.
4. Pull the tubing out of the hole.
5. Cut off the wellhead and erect a P&A marker.
6. Re-seed the location.

A wellbore diagram detailing the proposed plugging and abandonment of the existing well is included as Attachment 6.

The plugging and abandonment plan for the proposed brine well will be identical to that of the existing well.

As discussed in our correspondence to your office dated January 16, 1989, the cost of performing the subject abandonment work was taken from bids by

three local contractors. The average of those bids was $8666.42, and a copy of the bids was included with the correspondence mentioned. With that correspondence, we also included a copy of Conoco's $50,000.00 Blanket Plugging Bond that is on file with the State of New Mexico. That bond is sufficient to cover any plugging liability that Conoco would incur on the subject well plus the financial assurance in the amount of $35,000 that you have requested for a possible hydro-geologic investigation.

Bearing in mind the current marginal status of our existing brine well, Conoco requests that your office review our proposal as quickly as reasonably possible so that any remaining questions can be answered in a timely fashion. Any requests or questions concerning this matter should be addressed to Joel Porter, P.O. Box 460, Hobbs, NM 88240 or 397-5861.

We appreciate your consideration of our request.

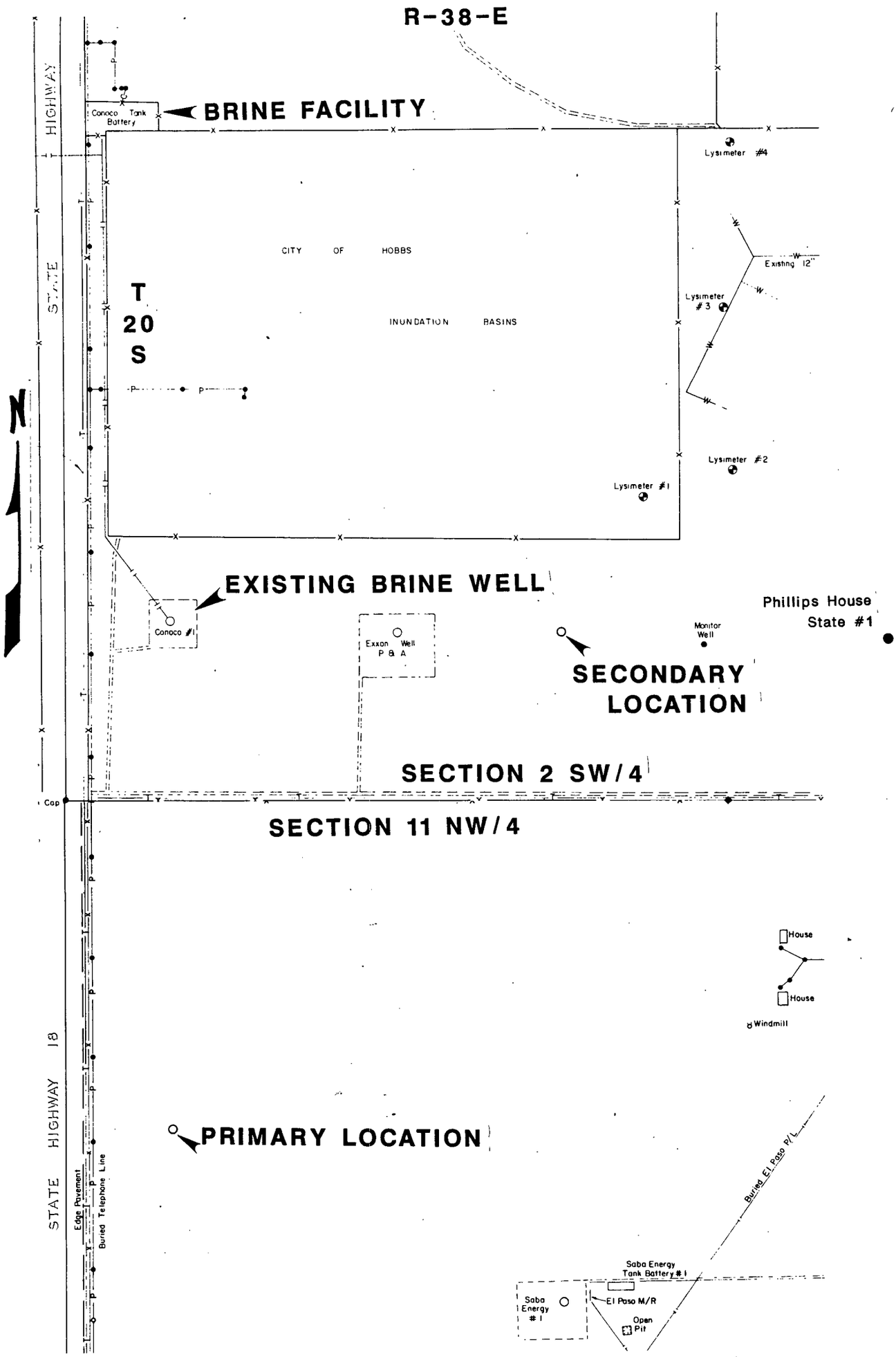
Sincerely,

David L. Wacker
Division Manager

LGA/ga

Attachments

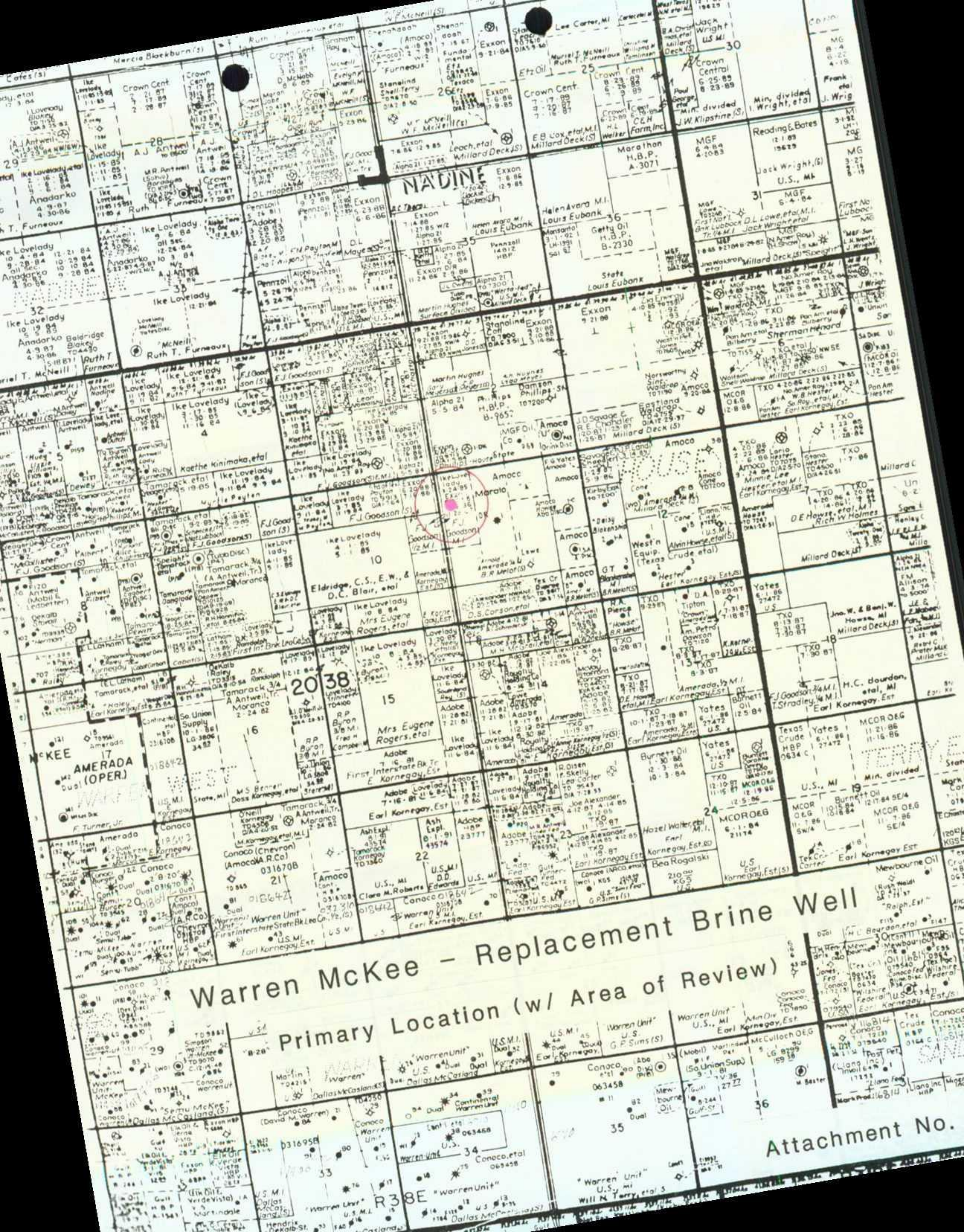
cc: Michael L. Morrison
Hugh A. Ingram
Frank E. Patton
Joel E. Porter
Greg Ashdown
Warren McKee Brine Well - Well File

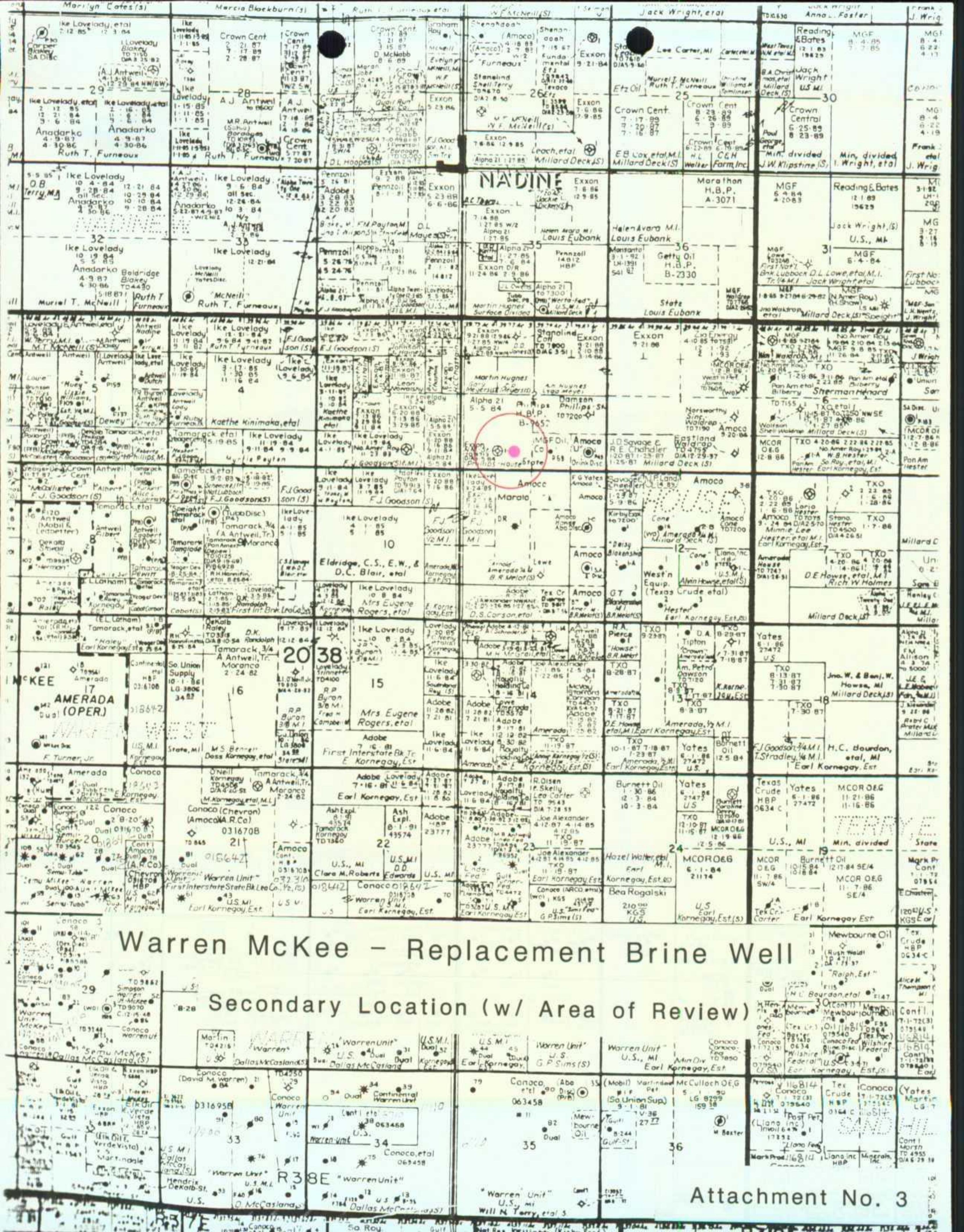


WARREN McKEE BRINE FACILITY

SURFACE DETAIL

Attachment No. 1


Warren McKee - Replacement Brine Well
Primary Location (w/ Area of Review)
Attachment No.
NADINE
R38E



Warren McKee - Replacement Brine Well

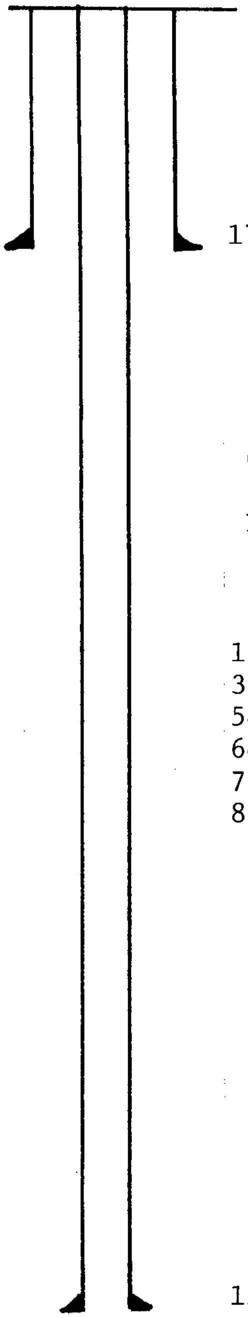
Secondary Location (w/ Area of Review)

Attachment No. 3

EXXON CORPORATION

NEW MEXICO "DK" NO. 1
660' FSL 1320' FWL
2-20s-38e ELEV.: 3580' GR SS: 15'

SPUD: 8-22-83 COMP: 1-5-84



17 1/2" HOLE, SET 13 3/8" CSG, 61#, @ 350 SX C1C, CIRC 50 SX OUT SURFACE.

COULD NOT RECOVER JUNK IN HOLE:

P & A PROCEDURE: 1-23-84

0-10'	100 SX	C1 H NEAT
350- 500	100 SX	
1350-1500	100 SX	
3500-4100	100 SX	
5400-5700	100 SX	
6400-6700	100 SX	
7300-7600	100 SX	
8050-8350	100 sx	

12 1/2" HOLE, SET 9 5/8" CSG, 40#, 1500 SX C1C. CIRC 225 SX to SURFACE.

T.D. 9713'

1 DST: 5990-6210', OPEN 2', REC 150 FT MUD. IFP 114-71, 1' ISIP 1840, FFP 128-200, 4' FSIP 2320, HP 2759. BHT 106°.

2-17-89 JS

Conoco Inc.

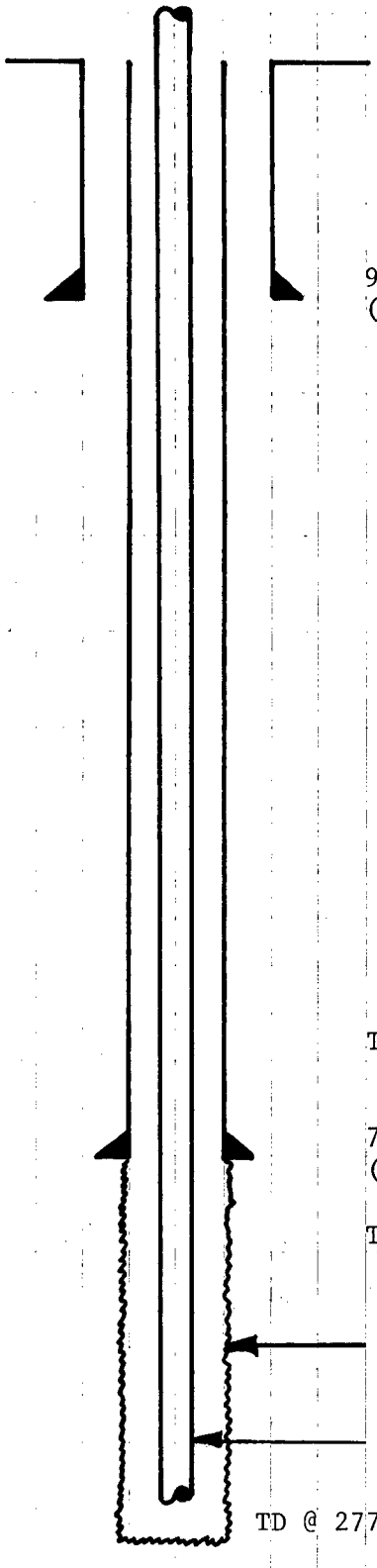
Job No.

Title

Attachment No. 4

Conoco, Inc.
Replacement Brine Well - Warren McKee
1300' FNL & 420' FWL, Section 11 or
660' FSL & 1980' FWL, Section 2,
T-20S, R-38E, Lea County, NM

"Proposed Wellbore Diagram"



9-5/8",36 lb/ft, K-55 casing @ 400'
(circulate cement to surface)

Top of Anhydrite @ 1590'

7", 20 or 23 lb/ft, K-55 casing @ 1630'
(circulate cement to surface)

Top of Salt @ 1680'

Open Hole

Open-ended 2-3/8" or 2-7/8", J-55 tubing @ 2650'

TD @ 2770' (PBTD @ 2700')

Base of Salt @ 2770'

Made By
Checked By
Date
Page of

Conoco Inc.
Calculation Sheet

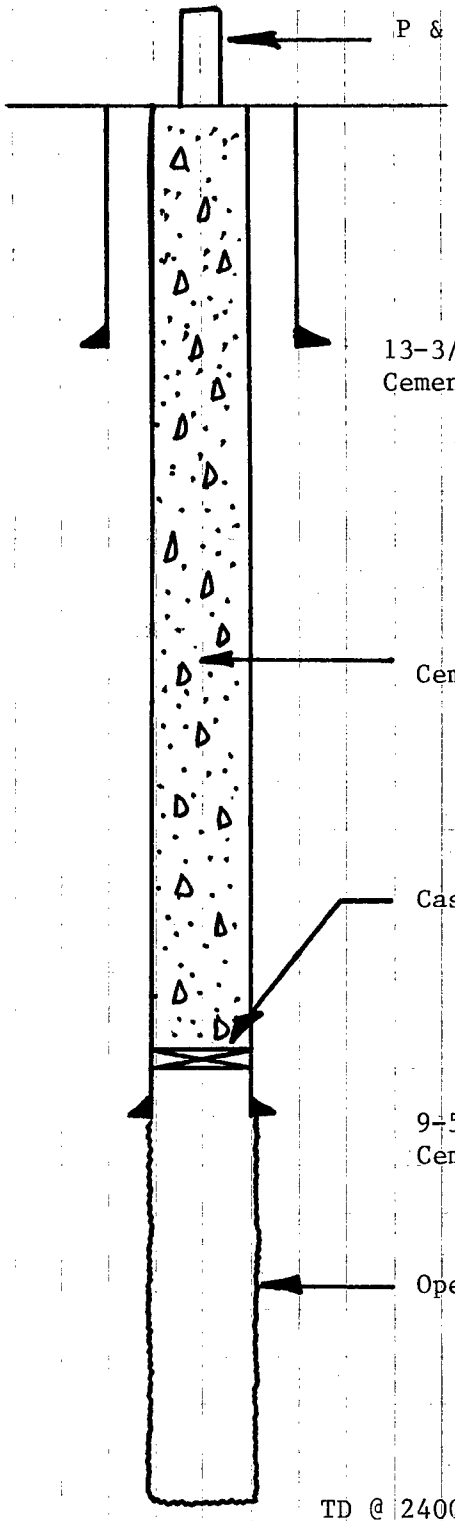
Job No.

Title

Attachment No. 5

Conoco, Inc.
Warren McKee Brine Well No. 1
710' FSL & 420' FWL, Section 2,
T-20S, R-38E, Lea County, NM

"Proposed P&A Wellbore Diagram"



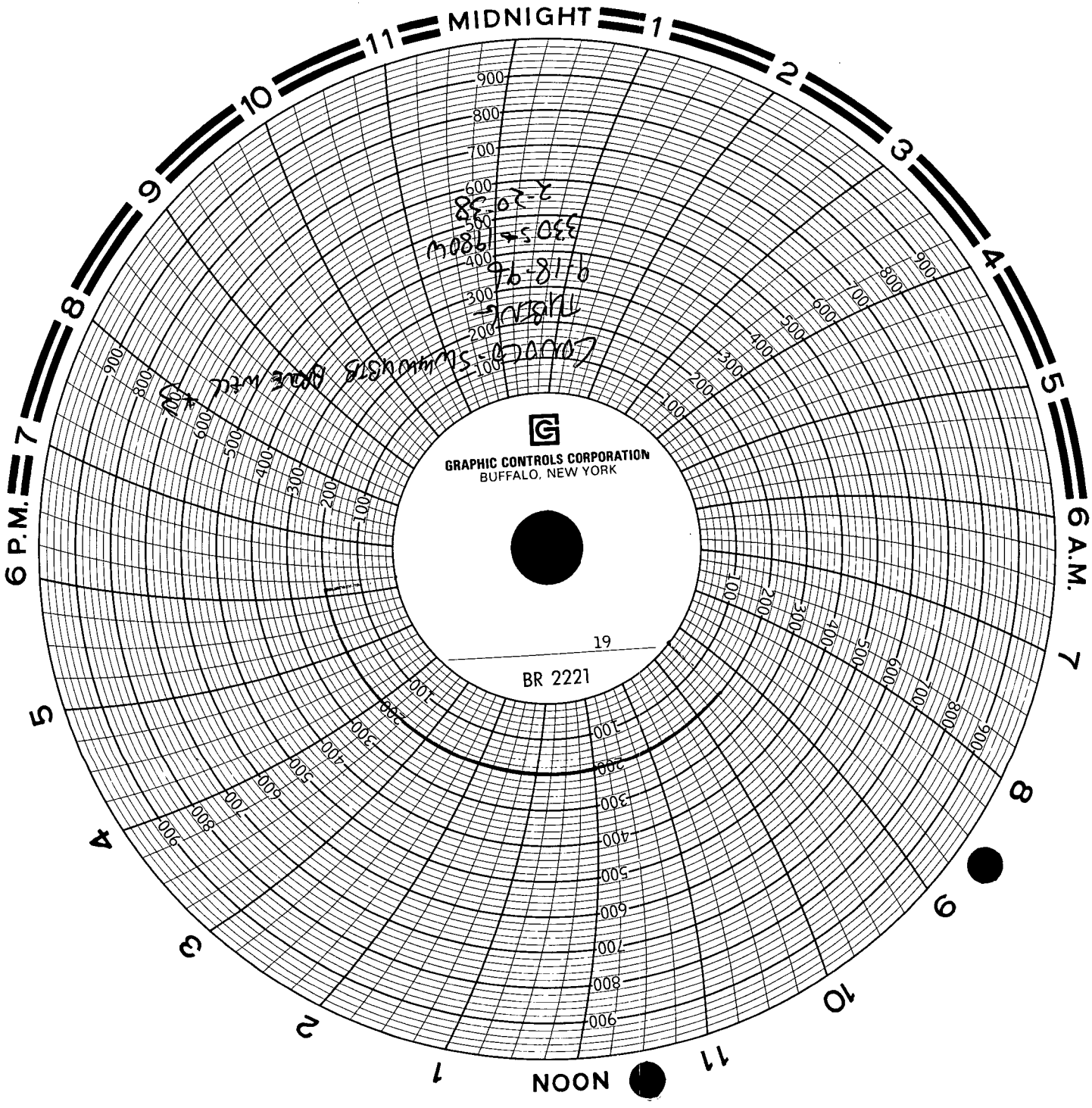
Made By
Checked By
Date
Page of

Conoco Inc.
Calculation Sheet

Job No.

Title

Attachment No. 6


MIDNIGHT
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6 P.M.
6 A.M.
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
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BR 2221

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CHARTS
PRINTED IN U.S.A.

New Mexico Health and Environment Department

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

RICHARD MITZELFELT
Director

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 20, 1989

Jim Hughes
Conoco, Inc.
P.O. Box 2197
Houston, Texas 77252

Dear Mr. Hughes:

Pursuant to our telephone conversation of February 17, 1989, I've enclosed financial assurance documents for your use in acquiring financial assurances to cover the costs of plugging and abandonment of Conoco's Warren McGee brine well. Documentation submitted by Conoco on January 16, 1989 gives the average contractor bid for plugging and abandonment as $8,666.42. Hence, this is the dollar amount which you should provide financial assurance for using one of the following instruments:

1. Trust Agreement
2. Letter of Credit*
3. Financial Guarantee Bond*
4. Performance Bond*

* note: a Trust Agreement must also be submitted for 2 through 4.

In addition, EID is requiring financial assurance(s) to cover the costs of a hydrogeological survey. Based on an internal cost analysis, EID has established a minimum of $35,000.00 for this purpose. EID is allowing self insurance or a parental guarantee for this purpose. To qualify your company (or parent corporation) must have a tangible net worth greater than or equal to ten times this amount (e.g. $350,000). Please complete the attached "Self Insurance for a Hydrogeologic Investigation" and submit financial reports from the prior two years.

— ENVIRONMENTAL IMPROVEMENT DIVISION —
Harold Runnels Building
1190 St. Francis Dr.
Santa Fe, New Mexico 87503

In conclusion, the $50,000.00 Blanket Plugging Bond (Bond No. 8076-34-52) sent by Conoco to fulfill the financial assurance requirement is not sufficient because it covers only oil, gas, carbon dioxide (CO_2) gas and helium gas, not brine, and is made out to the wrong state agency (i.e. OCD). Therefore, prior to renewal of DP-318, Conoco must have in place additional financial assurances as delineated above.

Should you have any questions or wish to discuss your options further, I may be reached at (505) 827-0027. Thank you for your prompt response.

Sincerely,

John W. Parker
Water Resource Specialist
Ground Water Section

JWP/mp

cc: Garrison McCaslin, EID District IV Field Office, Hobbs
David L. Wacker, Division Manager, Conoco, Inc.

Enclosures

David L. Wacker
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

January 16, 1989

New Mexico Environmental Improvement Division
Harold Runnels Bldg. - 1190 St. Francis Dr.
Santa Fe, New Mexico 87503

Attention Mr. John W. Parker

Gentlemen:

Warren McKee Brine Facility, DP-318

The following is submitted in response to your memo originally sent on July 26, 1988. As you will recall, the first mailing never reached our office, so a second copy was sent on October 18, 1988.

In your correspondence, the following were requested prior to renewing our Warren McKee Brine Facility Discharge Renewal Plan, DP-318:

1. A commitment to comply with Section 5-204 which requires us to test for "conducts of fluid movement" by means of a Cement Bond Log or other acceptable means
2. Detailed cost estimates for our plugging and abandonment plan with a minimum of three bids from contractors providing such services
3. A copy of our $50,000 plugging bond on file with the State of New Mexico.

Attached, please find:

1. A copy of the Cement Bond Log run through the cased portion of the subject well showing zonal isolation.
2. Three contractor bids to P&A the subject well following the previously approved procedure. The average contractor bid of $8666.42 is significantly less than our estimate of $15,000.00.
3. A copy of our $50,000.00 Blanket Plugging Bond with the State of New Mexico.

In addition, you had also requested information concerning the nature of the workover operations in progress during your December visit to the wellsite. From time to time, ledges on the walls of the salt cavity will give way and collapse our tubing string. When this happens, the open hole section of the hole is redressed with a drilling bit on tubing, then a new tubing string is installed. Considering the depth of the salt zone and the

relatively small volume of this particular cavity (as discussed in earlier correspondence) these minor cave-ins do not compromise the integrity of the cased wellbore nor do they in any way pose a threat of contamination to the shallower aquifers or surface environment.

The increasing frequency of these cave-ins is, however, becoming costly for us to maintain, therefore, we are currently evaluating the surrounding area for a new brine well location. Once we have chosen a suitable location for a new well, a proposal to drill that well and alter the necessary portions of the discharge plan will be submitted to your office for approval.

If you have any further questions concerning the subject discharge plan or our intentions concerning a new brine well, please contact Greg Ashdown at 397-5865.

Sincerely,

for Robert Gault III

David L. Wacker
Division Manager

LGA/lga
mjm/STATE
Attachments
cc:
MLM HAI COY JEP LGA Well File

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

1190 St. Francis Drive
Santa Fe, New Mexico 87503

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

October 18, 1988

Greg Ashdown
Conoco, Inc.
P.O. Box 460
Hobbs, NM 88240

Dear Greg:

The attached letter was sent to Conoco in July. Please respond as soon as possible so that we may proceed with renewal of DP-318. Thank you for your cooperation. Should you have any questions you may reach me at telephone number (505) 827-0027.

Sincerely,

John W. Parker
Water Resource Specialist
Ground Water Section

JWP:dg

Attachment

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

July 26, 1988

David L. Wacker, Div. Mngr.
Production Department, Hobbs, Div.
Conoco Inc.
P.O. Box 460
Hobbs, NM 88240

The Environmental Improvement Division (EID) Ground Water Section has reviewed your submittal received June 7, 1988 in support of DP-318 renewal. The following comments and requests for additional information are offered in response to your submittal:

1. EID hereby withdraws its request of Conoco to commit to conducting a sonar log of the solution cavity during and renewal period. Conoco satisfactorily demonstrated flaws in EID's calculations underlying the request.

2. Section 5-204.B.2. of the Water Quality Control Commission (WQCC) Regulations allows for other means of determining existance of conducts for fluid movement than a cement-bond log. (My letter should have stated "----Cement-Bond log or other acceptable method----"). A simple commitment to comply with Section 5-204 will be adequate.

3. The plugging and abandonment plan submitted is acceptable. While EID does not dispute your assertion that the costs should be less than $15,000.00, it is still necessary to provide a detailed cost estimate. You should obtain a minimum of three bids from companies providing such services and submit copies to this office for our review.

4. Please submit a copy of the $50,000.00 bond referred to in your submittal for our review.

Thank you for your cooperation. Should you have any questions you may reach me at telephone number 827-0027.

Sincerely,

John W Parker

John Parker
Water Resource Specialist
Ground Water Section

JP:mc

cc: Roelf Ruffner, Hobbs, OCP

BABER

P.O. BOX 1772
500 W. TAYLOR
HOBBS, N.M. 88241
505-393-5516
505-397-3502

December 16, 1988

Conoco, Inc.
P. O. Box 460
Hobbs, NM 88240

ATTN: Frank E. Patton & Greg Ashdown

RE: Bid to Plug and Abandon Warren McKee Brine Well located 710' FSL, 420' FWL, Sec. 2, T-20-S, R-38-E, Lea County, New Mexico

Dear Sir:

Baber Well Servicing Company submits a bid of $8,545.00 to plug and abandon the above captioned well.

Estimated cost to re-seed the road and location will be $450.00.

State sales tax will be applied where applicable.

If for some unknown reason, due to well conditions or recommendations by the Oil Conservation Commission, the procedure is changed; BWSCO will revert to the daywork charges listed below:

Rig - 88.00/hr.
Operator/Supervisor - 170.00/day
Pump truck - 550.00/day
Cement - 6.00/sk.
Water - Cost

Please call if you have any questions.

Sincerely,

Guy A. Baber

GAB/kh

DA&S OIL WELL SERVICING
INCORPORATED

December 16, 1988

Conoco, Inc.
Attn: Greg Ashdown
P.O. Box 460
Hobbs, NM 88240

Gentlemen:

Warren McKee Brine Well - Turnkey P & A Services

Per your request, the following is submitted for the referenced well.

Turnkey	--	$8,855.30
Tax	--	475.97
Total	--	$9,331.27

Thank you for the opportunity to be of service.

Sincerely,

D.A. "Beach" Snyder, Jr.
President

DAS:pw

POOL COMPANY
P.O. Box 9067
Midland, Texas 79708
915/563-2481
8004 W. Hwy. 80 (79703)

December 15, 1988

Conoco, Inc,
726 E. Michigan
Hobbs, NM 88240

ATTN: Mr. Greg Ashdown

Re: To turnkey P&A your Warren McKee Brine Well in Lea County, New Mexico.

Dear Mr. Ashdown:

Pool Company is pleased to submit a bid of $8,123.00 to turnkey P&A the above referenced well. Attached is a plugging procedure, a schedule of responsibilities showing materials and services included our turnkey bid and a warranty of our plugging work.

This bid is based on the plugging procedure written by Pool Company based on well information furnished by you. If it should become necessary to depart from the procedure or work schedule, we will go off turnkey and convert to an hourly rate until such time that we are able to return to the procedure or work schedule. In the event that this occurs, your representative will be notified that we are converting to an hourly rate.

This bid is good for thirty days from the date of this letter. We appreciate the opportunity to be of service to you. If you should have any questions, please do not hesitate to call me at (915) 563-2481.

Sincerely,

Tim Friesenhahn

Tim Friesenhahn
Project Engineer
West Texas Operations

TJF/gkh

Attachments

POOL COMPANY

P.O. Box 9067

Midland, Texas 79708
915/563-2481

8004 W. Hwy. 80 (79703)

CERTIFICATE OF WARRANTY

TURNKEY

PLUGGING AND ABANDONMENT SERVICES

Pool Company ("Pool") warrants that its well Plugging and Abandonment ("P&A") services conducted under the terms and conditions of that certain contract executed between Pool and Conoco Inc. ("Customer") dated December 15, 1988, will be conducted in accordance with Customer specifications as may be from time to time modified by mutual consent. Further, Pool warrants that said P&A services will comply in every respect with the applicable standards set forth by the Texas Railroad Commission or, in the case of P&A services performed in a state other than Texas, the applicable regulatory authority in such state, on a continuing basis for a period of one (1) year after performance of such services on each well (the "Warranty Period").

In the event the P&A services performed by Pool pursuant to the aforesaid contract shall fail to conform to the aforesaid standards, Customer shall notify Pool of such deficiency not later than thirty (30) days after the end of the Warranty Period, whereupon Pool will rectify the deficiency at no cost to Customer.

The warranty set forth in this certificate is in lieu of all other warranties, expressed or implied.

Conoco, Inc.
Warren McKee Brine Well
Lea County, New Mexico

SCHEDULE OF RESPONSIBILITIES

	I.	II.	III.	IV.
Cement 525 Sacks	X			
Salt Gel _____ Sacks	N/A			
Calcium Chloride _____ Sacks	N/A			
Elevators, Bowls, Slips _____	N/A			
Pumping Equipment _____	X			
Hydraulic Jacks	N/A			
Pulling Unit with Tubing Tongs _____	X			
Casing Tongs _____	N/A			
Trucking for Equipment	X			
B.O.P. (Single, Manual) or _____	X			
Test Packer _____	N/A			
Water Tanks (Brine & Fresh)	X			
Travel Time _____	X			
Out of Town Expense _____	N/A			
Supervisor Labor & Expense	X			
Dirt Work: Dig Pit X Cover Pit _____	X			
Water: Fresh 130 Bbls. Brine N/A	X			
Welding As required by procedure.	X			
Equipment and Tool Rentals If required.		X		
Retainers and Bridge Plugs _____				
(1) 9-5/8" CIBP	X			
Wireline Services				
(1) 9-5/8" CIBP set	X			
Site Preparation (including anchors)				X
Salvage Removal	N/A			
Other (specify) Wellhead Flange	X			
Re-seed the road and location				X

I. Furnished by Contractor at Contractor's Expense.
II. Furnished by Contractor at Company's Expense.
III. Furnished by Contractor at Company's Expense (subject to 15% handling charge).
IV. Furnished by Company at Company's Expense.

Copy of Bond

Form O & G 8-B
Adopted 6-17-77

STATE OF NEW MEXICO

$50,000.00 BLANKET PLUGGING BOND

BOND NO. 8076-34-52
(For Use of Surety Company)

Note: File with Oil Conservation Commission, P. O. Box 2088, Santa Fe 87501

KNOW ALL MEN BY THESE PRESENTS:

That CONTINENTAL OIL COMPANY, (~~xxxxxxxxxxxxxxxxxx~~) a corporation organized in the State of Delaware, with its principal office in the city of Ponca City, State of Oklahoma, and authorized to do business in the State of New Mexico), as PRINCIPAL, and FEDERAL INSURANCE COMPANY, a corporation organized and existing under the laws of the State of New Jersey, and authorized to do business in the State of New Mexico, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Commission of New Mexico pursuant to Section 65-3-11, New Mexico Statutes Annotated, 1953 Compilation, as amended, in the sum of Fifty Thousand Dollars($50,000.00) lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or may commence the drilling of wells to prospect for and produce oil or gas, or carbon dioxide (CO_2) gas or helium gas, or does own or may acquire, own or operate such well, or such wells started by others on land embraced in said State oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases, and on land patented by the United States of America to private individuals, and on land otherwise owned by private individuals, the identification and location of said well being expressly waived by both principal and surety hereto.

NOW, THEREFORE, If the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug all of said wells when dry or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Commission of New Mexico in such way as to confine the oil, gas, and water in the strata in which they are found, and to prevent them from escaping into other strata; [ ]

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

PROVIDED, HOWEVER, That thirty (30) days after receipt by the Oil Conservation Commission of New Mexico of written notice of cancellation from the surety, the obligation of the surety hereunder shall terminate as to property or wells acquired, drilled, or started after said thirty (30) day period but shall continue in effect, notwithstanding said notice, as to property or wells theretofore acquired, drilled or started.

Sealed with our seals and dated this 14th day of November, 1977.

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

ENVIRONMENTAL IMPROVEMENT DIVISION
Harold Runnels Bldg.-1190 St. Francis Drive
Santa Fe, New Mexico 87503

Richard Mitzelfelt
Director

GARREY CARRUTHERS
Governor
CARLA L. MUTH
Secretary
MICHAEL J. BURKHART
Deputy Secretary

December 22, 1988

Mr. Hugh A. Ingram
Conoco, Inc.
P.O. Box 460
Hobbs, New Mexico 88240

Dear Mr. Ingram:

The Underground Injection Control staff of the New Mexico Environmental Improvement Division Ground Water Section would like to thank you for your cooperation during our recent inspection of the Warren McKee brine facility. A copy of the inspection forms is attached for your reference. No violations were noted during the inspection. EID needs report from Conoco detailing circumstances leading to well workover, and remedial actions undertaken.

Thank you for your continued cooperation. Should you have any questions feel free to contact me (827-2902) or John Parker (827-0027).

Sincerely,

Kevin Lambert
Hydrologist
Ground Water Section - UIC Program

KL/JP/mw

cc: Roelf Ruffner, EID Hobbs Field Office

Enclosure

No. of Samples	Ion
1	Na
1	K
1	Ca
1	Mg
1	Cl
1	HCO3
1	CO3
1	SO4
1	TDS
	NO3+ NO2
	NH3
	kjeld N
	As
	Ba
	Cd
	CN
	Cr
	F
	Pb
	Hg
	Se
	Ag
	U
	V
	Ra 226
	Ra 228
	Cu
	Fe
	Mn
	Phenols
	Zn
	Al
	B
	Co
	Mo
	Ni
	pH
	Conduct.

FIELD TRIP REPORT
GROUND WATER SECTION

SLD USER CODES

County Eddy/Lea

Ground Water: 59300

NO_3, HC, & Toxics: 59600

UIC: 59500

FACILITY VISITED

Name of Facility: 20 Brine Facilities & Climax Chemical

Location: Carlsbad/Hobbs in Southeast NM

Discharge Plan Number: DP- See Below

Type of Operation: Brine Production / Chemical Manufacturing

ENVIRONMENTAL IMPROVEMENT DIVISION FIELD VISIT

EID Inspector(s): Lambert

Date of Inspection or Visit: 12/5-8/88

Discharger's Representative Present During EID Visit:

Name:

Title or Position:

Purpose of Visit:

a. Evaluation of Proposed Discharge Plan

b. Compliance Inspection of Discharge with Approved Plan

c. Other (specify)

Inspection Activities During Field Visit:

a. Inspection of Facilities or Construction (specify)

b. Sampling of Effluents (give sampling locations)

c. Sampling of Ground Water (give names or locations of wells)
Sampled M.W. at Marathon

d. Evaluation of geology, soils, water levels or other physical characteristics of the location (specify)

e. Other (specify)

Observations and Information Obtained during the Visit:
The 20 Brine Facilities & Climax are listed below by DP#. See Individual File for specifics

ACTION REQUIRED

#	#	#	#	#
	323	354	370	298
318	324	355	371	426
319	325	360	372	
320	326	361	394	
321	351	369	401	
322				

BRINE STATION INSPECTION FORM

1650

DATE 12/6 1988 EID INSPECTOR Lambert
FACILITY Conoco LOCATION Hobbs
FACILITY REP ON SITE _____ COUNTY LEA

WELL OPERATION Drill Rig set up over wellhead
Appears major workover being done
WELL IS INJECTING: __ THROUGH ANNULUS __ THROUGH TUBING
SOURCE OF FRESH WATER _____
TRACE INJECTION/PRODUCTION LINES _____

WELL HEAD PRESSURE _____ PSIG PUMP PRESSURE _____ PSIG
LEAKS AROUND WELL OR PUMP _____

What is present status?

STORAGE AREA

* FOR PONDS: store Hobbs wastewater used to make brine for waterflood
GENERAL LINER APPEARANCE _____

AMOUNT OF FREEBOARD _____
ANY SIGN OF OVERFLOW OR LEAKS _____
LEAK DETECTION SYSTEM __ FLUIDS __ DRY

FOR TANKS: 2
GENERAL APPEARANCE Looks Good
LABLED PLAINLY __ YES __ NO
BERMED TO PREVENT RUNOFF __ YES __ NO
CHECK CONTENTS TO ASSURE PROPER FLUID/LABLE MATCH _____

NUMBER OF TANKS FOR BRINE ____ FRESH WATER ____
Brine for Waterflood in oilfield

LOADING AREA Not Applicable piped to waterflood

PROPERLY GRADED AND BERMED TO CONTAIN SPILLAGE	__ YES	__ NO
ANY EVIDENCE OF RECENT SPILLAGE	__ YES	__ NO
DOES FACILITY HAVE A SPILL COLLECTION SYSTEM	__ YES	__ NO
ANY EVIDENCE OF OIL SPILLING/DUMPING	__ YES	__ NO

MONITORING WELLS

DEPTH _____ FT STATIC WATER LEVEL _____ FT BELOW CASING
SAMPLED THIS VISIT __ YES __ NO TEMP _____ Ec _____

COMMENTS Overall facility in good shape
WHAT IS STATUS of Well
Drill Rig over wellhead
What is workover?

12/7
Bob Patterson/Sims - McCasland
Doing major workover - Had Tubing [redacted] snap [illegible]
Shale shaker sliding down into tubing

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
	11:15	11/30/88

Originating Party	Other Parties
John Parker WRS	Greg Aldown Conoco

Subject
DP-318 Renewal

Discussion
I verified that Greg had received my October 18, 1988 transmittal and that Conoco was working in good faith toward renewal of their discharge plan. He said that he had been very busy (... during a depression in the Industry?) but that he planned to get on it ASAP.

Conclusions or Agreements

Distribution
File.

Signed
JWP

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

1190 St. Francis Drive
Santa Fe, New Mexico 87503

GARREY CARRUTHERS
Governor

CARLA L. MUTH
Secretary

MICHAEL J. BURKHART
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

October 18, 1988

Greg Ashdown
Conoco, Inc.
P.O. Box 460
Hobbs, NM 88240

Dear Greg:

The attached letter was sent to Conoco in July. Please respond as soon as possible so that we may proceed with renewal of DP-318. Thank you for your cooperation. Should you have any questions you may reach me at telephone number (505) 827-0027.

Sincerely,

John W. Parker
Water Resource Specialist
Ground Water Section

JWP:dg

Attachment

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 1:45	Date 10/17/88
Originating Party		Other Parties
John W Parker WRS II		Greg Ashdown Conoco (397-5865

Subject DP-318 Renewal (Warren McGee Waterflood)

Discussion

I asked Gregg why Conoco hasn't responded to my July 26th letter requesting additional information. He stated that he had never received the letter - that Mr. Wheeler must not have sent it down.

Conclusions or Agreements

I agreed to send Gregg a copy of the letter - and asked that he work quickly to move this renewal along.

Distribution

File

Signed John W Parker

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

July 26, 1988

David L. Wacker, Div. Mngr.
Production Department, Hobbs, Div.
Conoco Inc.
P.O. Box 460
Hobbs, NM 88240

The Environmental Improvement Division (EID) Ground Water Section has reviewed your submittal received June 7, 1988 in support of DP-318 renewal. The following comments and requests for additional information are offered in response to your submittal:

1. EID hereby withdraws its request of Conoco to commit to conducting a sonar log of the solution cavity during and renewal period. Conoco satisfactorily demonstrated flaws in EID's calculations underlying the request.

2. Section 5-204.B.2. of the Water Quality Control Commission (WQCC) Regulations allows for other means of determining existance of conducts for fluid movement than a cement-bond log. (My letter should have stated "----Cement-Bond log or other acceptable method----"). A simple commitment to comply with Section 5-204 will be adequate.

3. The plugging and abandonment plan submitted is acceptable. While EID does not dispute your assertion that the costs should be less than $15,000.00, it is still necessary to provide a detailed cost estimate. You should obtain a minimum of three bids from companies providing such services and submit copies to this office for our review.

4. Please submit a copy of the $50,000.00 bond referred to in your submittal for our review.

Thank you for your cooperation. Should you have any questions you may reach me at telephone number 827-0027.

Sincerely,

John W Parker

John Parker
Water Resource Specialist
Ground Water Section

JP:mc

cc: Roelf Ruffner, Hobbs, OCP

David L. Wacker
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
P.O. Box 460
726 East Michigan
Hobbs, NM 88240
(505) 397-5800

May 26, 1988

New Mexico Environmental Improvement Division
Ground Water Bureau
P.O. Box 968
Santa Fe, New Mexico 87504-0968

Attention: Mr. John W. Parker

Discharge Plan Renewal Application - Warren McKee Brine Well, DP-318

Gentlemen:

The following is submitted as requested by your correspondence of November 24, 1987 with regards to the subject application. A copy of your letter is attached.

1. Conoco has performed a mechanical integrity test in accordance with the pressure test procedure prescribed in your letter. The test was performed at 260 psi which is the maximum operating pressure witnessed at this facility since operations began and is significantly greater than our normal operating pressure of 180 psi. Results of the test showed no pressure leak-off during the four hour shut-in period. Test results are included.

   Conoco will also commit to running a cement bond log (CBL) during the five year renewal period providing that a "dummy" run proves that the tool can be run in the subject well. This log will most likely be run the next time the tubing is pulled out of the well.

   You quote a from a letter by Paige Grant Morgan to Conoco dated January 24, 1986. In this letter, Ms. Morgan stated that her calculations showed our salt cavity to be the largest in the state, and "Given the very large size of the cavity...and the uncertainty of our information as to when such a cavity becomes unstable, Conoco will be required to submit to the EID the results of a sonar log or some other direct measurement of the cavity dimensions with depth at your site." Conoco has reviewed Ms. Morgan's calculations and discovered an error that results in a cavity volume that is significantly larger than actual. To calculate a cavity volume, Ms. Morgan multiplied the average total dissolved solids (TDS) content of the brine well (267,320 mg/liter) to the total volume of water that has been processed by the subject facility. In reality, however, only a small portion of the total fluid processed by the facility is circulated through the brine well and then recombined with the larger portion to create a diluted solution. The average TDS of all water processed by

this facility is 65,200 mg/liter. This error caused Ms. Morgan to calculate a cavity volume of over 14.0 million cubic feet, while Conoco's calculations result in a cavity volume (as of April 1, 1988) of 4.224 million cubic feet. (Conoco's volume resulted from the following values: Total produced water through 4/1/88 - 25,012,945 bbls., Average TDS of produced water - 65,200 mg/liter, and Salt density - 135 lb/cubic ft.)

According to the State's rule-of-thumb, 50 feet of overburden per million cubic feet of cavity are required for subsidence purposes. Based on this value, Conoco's cavity would presently require 211 feet of overburden; actual overburden thickness at this site is 1550 feet.

Given the facts that Conoco's cavity is much smaller than previously perceived by your office and that we are well within the overburden requirement, Conoco is not committing to run a sonar log during the current renewal period.

2. As stated above, the maximum recorded operating pressure for the subject facility is 260 psi. This pressure is significantly less than the fracture pressure of the Salado salt which is approximately 800 psi surface pressure. Assuming a fluid specific gravity of 1.03 grams per cubic centimeter, these surface pressure readings convert to bottom hole (base of salt) values of 1442 and 1982 psi for maximum operating and salt fracture pressures respectively.

3. Conoco will commit to providing the Ground Water Bureau with a 24 hour notice "prior to the commencement of drilling, cementing and casing, well logging, mechanical integrity tests and any other well workover."

4. Conoco will commit to having all reports submitted pursuant to requirements under DP-318 signed and certified pursuant to Section 5-101.H.

5. Quarterly reports detailing the volume of injected fluids and produced brines are currently being sent with a royalty check for salt extraction. This information will continue to be sent on the quarterly basis.

6. A plugging and abandonment plan was submitted to your office during January of 1986 in response to a request from Paige Morgan dated November 20, 1985. A summary of the steps in that plan follow:
   a. Pull tubing out of the hole.
   b. Go in the hole with a 9-5/8" (actual O.D. = 8.921") cast iron bridge plug on wireline and set at ± 1400' (above open hole section).
   c. Go in the hole with open ended tubing and spot a cement plug from 1400' to the surface (approximately 373 sacks of cement).

460,

d. Remove wellhead equipment and erect a plug & abandonment marker.

This operation should cost approximately $15,000 which is well within the limits of the $50,000 blanket plugging bond Conoco has posted with the State of New Mexico

7. The map requested by your office is attached.

8. Concerning your request for Conoco's monitoring capability to detect casing leaks and whether the Ogalalla has been contaminated, Conoco requests that you refer to Part IV of our original application for a detailed discussion on our monitoring techniques.

In a phone conversation between you and Greg Ashdown of our office during April of this year, you also requested that Conoco provide "financial assurance" in the amount of $35,000 for a hydro-geologic investigation. You also stated that this financial assurance could be tied to Conoco's plugging bond if it was sufficient to cover the requested amount. As stated previously, Conoco has posted a $50,000 plugging bond with the State of New Mexico, so it should be sufficient to cover the subject investigation.

Sincerely,

Michael L. Morrison

for David L. Wacker
Division Manager

LGA:lga

Attachments

cc: Joel E. Porter
Hugh A. Ingram
Well File: Warren McKee Brine Facility

827-0027

NEW MEXICO
HEALTH AND ENVIRONMENT DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor
LARRY GORDON
Secretary
CARLA L. MUTH
Deputy Secretary

RECEIVED
HOBBS DIVISION
NOV 30 '87

Div. Mgr.	✓	B	
Div. Supt. Mgr.			
Div. Adm. Mgr.			
Div. Log. Mgr.	✓	B	
Div. Drlg. Supt.			
Prod. Supt.-RMD	✓	D	
Prod. Supt.-E.			
Consv. Coord.			
Coord. Eng.			
Adm. Supv-F.			
Adm. Supv-C.			
Supv. Syst. Anal.			
Proj. Engr.			
Supv. Prod. Engr.			
Supv. Prod. Engr.			
Supv. Prod. Engr.			

12/1 Hugh - once you've reviewed let's talk. RAB

November 24, 1987

R.E. Irelan
Division Manager
Conoco Inc.
P.O. Box 460
Hobbs, NM 88240

Dear Mr. Irelan:

The Environmental Improvement Division's (EID) Ground Water Section has completed preliminary review of Conoco's discharge plan renewal application for the Warren McKee Brine Well, DP-318. Comments submitted herein are in response to the application and attachments submitted to EID on June 17, 1987. Regulatory reference to the Water Quality Control Commission (WQCC) Regulations follow in parenthesis.

1. Conoco has not performed a mechanical integrity test (MIT) of the brine well. Prior to discharge plan renewal, Conoco needs to perform and report the results of a pressure test (see attached pressure test procedure) and commit to performing a cement bond log sometime during the five year renewal period (5-204.B, 5-205.A.4.b).

   In a letter to Conoco from EID dated January 24, 1986, Paige Morgan stated: "Given the very large size of the cavity... and the uncertainty... as to when such a cavity becomes unstable, Conoco will be required to submit to the EID the results of a sonar log or some other direct measurement of the cavity dimensions with depth of your site." Conoco needs to commit to performing a sonar log or some other direct measure of the cavity during the five year renewal period. In additon, please submit calculations to demonstrate that there is sufficent overburden (at least 50 feet for every million cubic feet of cavity) to prevent cavity collapse (5-205.A.4.).

2. Conoco has reported an average operating pressure of 180 psi. Please submit the maximum operating pressure and using this figure, submit a comparison of the fracture pressure of the salt formation (you report a figure of 800 psi), and the pressure equivalent at depth of the maximum operating pressure (5-206.A.1).

3. Conoco needs to make a commitment to notify this office "prior to commencement of drilling, cementing and casing, well logging, mechanical integrity tests and any other well workover..." (5-205.A.5.).

4. Conoco needs to make a commitment to have all reports submitted pursuant to requirements under DP-318 signed and certified pursuant to Section 5-101.H. (5-208.C).

5. In addition to the monitoring and reporting commitment you have made under Item III.C.6 of your submittal, we need a commitment to provide quarterly reports of the volume of injected fluids and produced brines (5-207).

6. Conoco needs to submit a plugging and abandonment plan. The plan should include the methods and materials employed (5-209; 5-210.B.17.).

7. Map submitted depicting area of review needs reference scale and a delineated area of ¼ mile radius centered on brine well (5-202; 5-210.B.2.).

8. Item 10.b. states: "In the event that a casing leak is discovered, operations will be suspended until the leak is repaired." Please expand with regard to what monitoring capability Conoco has to detect such leaks, and further, how will Conoco determine if the Ogalalla has been contaminated (5-210.B.15.).

Sincerely,

John W Parker

John Parker
Water Resource Specialist
Ground Water Bureau

JP:egr

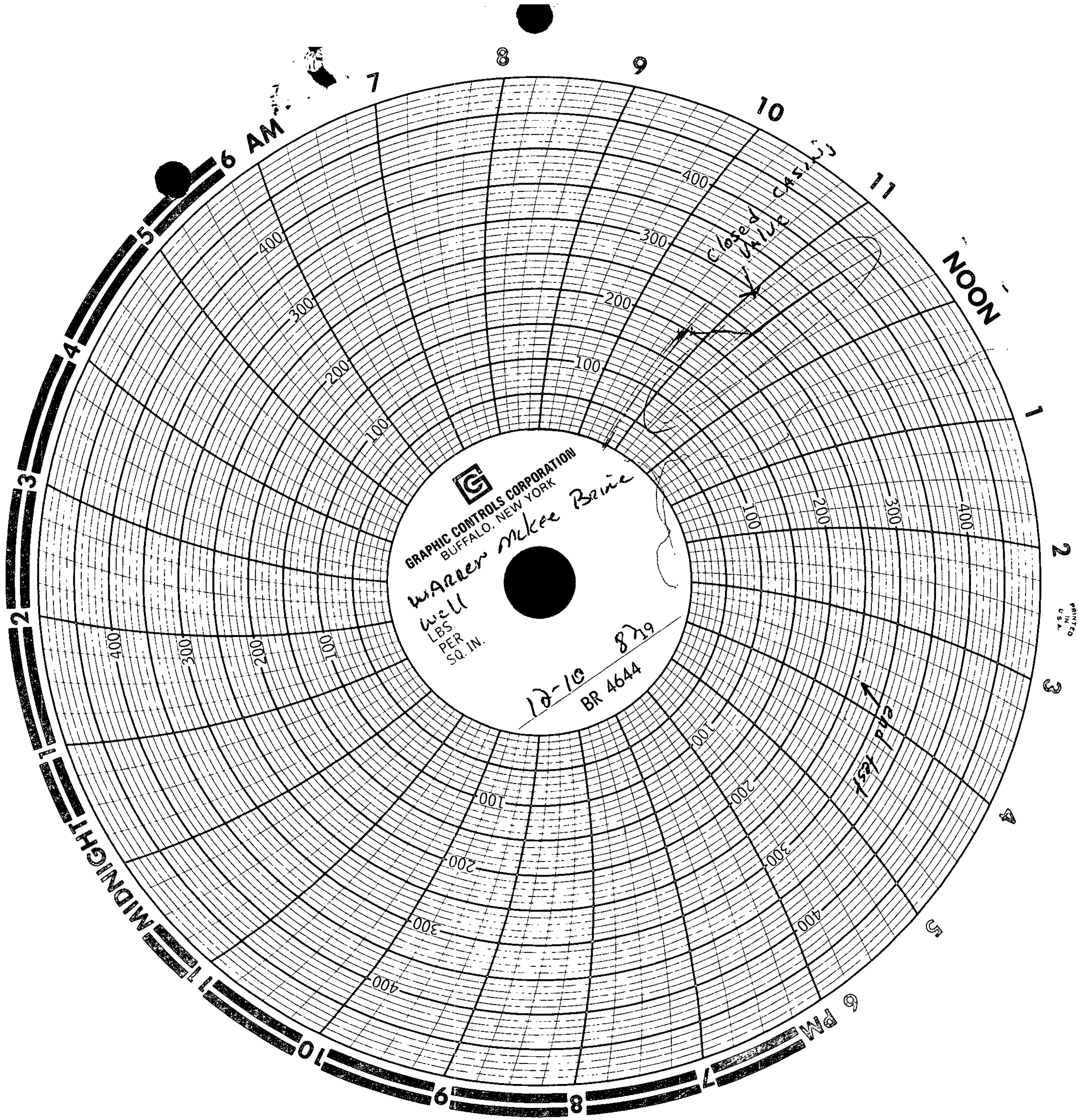
Attachment

cc: Donald Johnson, Conoco
Garrison McCaslin, EID District IV Manager, Roswell
EID Field Office, Hobbs

BRINE WELL PRESSURE TEST

1. Attach pressure recorder to well head assembly.
2. Attach separate pressure guage to well head.
3. Pressurize casing, tubing and cavity to maximum operating pressure.
4. Shut well in. Well head fittings and valves must be free of leakage.
5. Monitor pressure change every ten minutes for one hour.
6. If inital pressure drops - repressurize to starting pressure.
7. Record pressure for two to four hours, using continuous pressure recorder.
8. Read pressure gauge and record at two hour intervals.
9. Note any leaks around well head, and repair after test

- Pressure gauge should be of sufficient accuracy to read two psi changes (1%)
- If well pressure changes greater than 3% per hour then suspect problem. May need to pull tubing and run test packer for pressure test.


GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
Warren McKee Brine
Well
LBS.
PER
SQ. IN.
BR 4644
Closed
VALVE CASING
end test
6 AM
NOON
6 PM
MIDNIGHT
PRINTED IN U.S.A.

AGENCY LETTERHEAD

To _____ Location WARREN McREE Date 12-10-87

From _____ Location Brine well DP-318

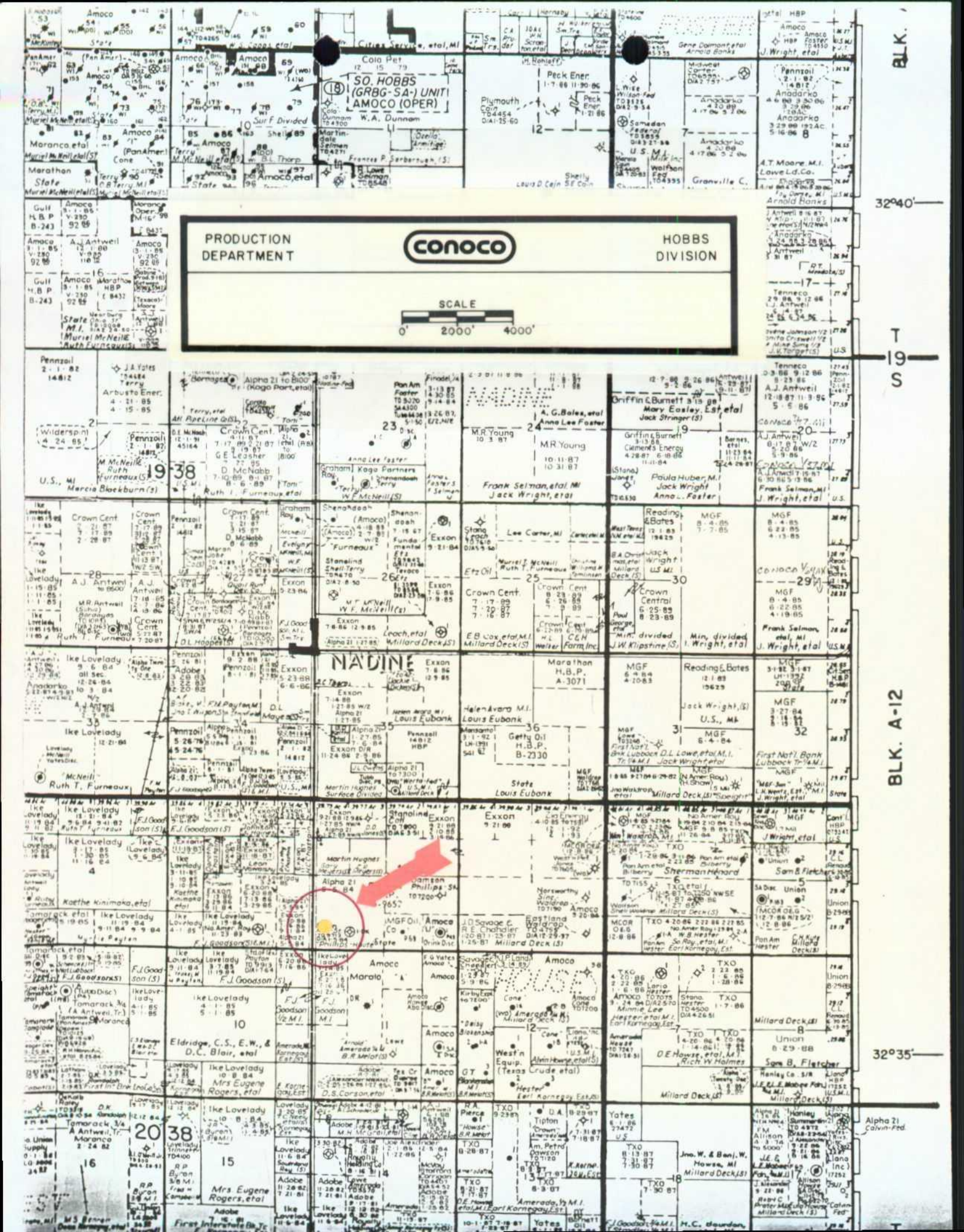
Subject Brine well Pressure test

Pressured CASING tubing and cavity to 260 PSI Gauge at 11:25 AM 12-10-87.

time	Pressure reading
11:25	260
11:35	260
11:45	260
11:55	260
12:05	260
12:15	260
12:25	260
2:33	260
3:25	260

test completed at 3:25 PM 12-10-87

Jean Petre


PRODUCTION DEPARTMENT
conoco
HOBBS DIVISION
SCALE
0' 2000' 4000'
SO. HOBBS (GRBG-SA-) UNIT
AMOCO (OPER)
NADINE
T 19 S
BLK. A-12
32°40'
32°35'

MEMORANDUM OF MEETING OR CONVERSATION

[X] Telephone [ ] Personal	~~Time~~ Date 5/25/88	~~Date~~ Time 3:55 PM

Originating Party	Other Parties
Greg Ashdown	John Parker
Eng., Conoco	EID/WRS

Subject

DP-318

Warren McBee Waterflood

Discussion

Greg returned my call from earlier in the day. I inquired as to the status of their renewal effort. Greg stated that a letter was to have gone out last week but hadn't gotten all the necessary signatures. The letter should go out very soon, and will contain answers to all my questions regarding the original renewal pkg.

Conclusions or Agreements

I stated that I would be expecting the letter sometime next week.

Distribution

File

Signed John W Parker

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time 2:30 PM	Date 03/16/88
Originating Party		Other Parties
John Parker WRS		Hugh Ingraham Div. Mngr

Subject: DP-318, Warren McGee Waterflood Renewal

Discussion

I asked Mr. Ingraham why it had been so long without a response to our November 28, 1987 letter requesting additional information. He stated that Greg Ashdown of Conoco has been working on the renewal, and that as far as he knew the one thing holding its submittal up was they're waiting to do a sonar log "as requested" of the cavity.

Conclusions or Agreements

Greg Ashdown will call me when he returns from school in approx 1 week.

Distribution

File

Signed John W Parker

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

December 31, 1987

Ed Kepford
Conoco, Inc.
P.O. Box 460
Hobbs, NM 88240

Dear Mr. Kepford:

The Underground Injection Control staff of the New Mexico Environmental Improvement Division Ground Water Section would like to thank you for your cooperation during our recent inspection of Warren McKee Waterflood brine facility. A copy of the inspection form is attached for your reference. Deficiencies noted during the inspection are as follows:

1. There was a crew onsite repairing a significant leak in one of the underground lines near the well head. It was not determined whether the leak was fresh water or brine.

Thank you for your continued cooperation. Should you have any questions feel free to contact me (827-2902) or John Parker (827-0027).

Sincerely,

John W Parker

for Kevin Lambert
Hydrologist
Ground Water Section

KL:JP:egr

Enclosure

BRINE STATION INSPECTION FORM

DATE 12/3 1987 EID INSPECTOR Lambert/Parker
FACILITY Conoco LOCATION Hobbs
FACILITY REP ON SITE Greg Ashdown COUNTY Lea
Gerald Petree

WELL OPERATION 1 well system

WELL IS INJECTING: ✓ THROUGH ANNULUS __ THROUGH TUBING
SOURCE OF FRESH WATER
TRACE INJECTION/PRODUCTION LINES Buried line

WELL HEAD PRESSURE PSIG PUMP PRESSURE PSIG
LEAKS AROUND WELL OR PUMP yes Had significant leak w/ spillage leaking pad

STORAGE AREA Clean up & Repair crew onsite preparing to correct leak

FOR PONDS:
GENERAL LINER APPEARANCE No liner backup for 10,000 bbl storage tank not in use only in emergency never been used
AMOUNT OF FREEBOARD
ANY SIGN OF OVERFLOW OR LEAKS
LEAK DETECTION SYSTEM __ FLUIDS __ DRY

FOR TANKS:
GENERAL APPEARANCE Great Shape
LABLED PLAINLY __ YES __ NO
BERMED TO PREVENT RUNOFF __ YES __ NO
CHECK CONTENTS TO ASSURE PROPER FLUID/LABLE MATCH

NUMBER OF TANKS FOR BRINE____ FRESH WATER____

LOADING AREA NA Brine Not for sale Used in Waterflood Warren McKee Station

PROPERLY GRADED AND BERMED TO CONTAIN SPILLAGE	__ YES	__ NO
ANY EVIDENCE OF RECENT SPILLAGE	__ YES	__ NO
DOES FACILITY HAVE A SPILL COLLECTION SYSTEM	__ YES	__ NO
ANY EVIDENCE OF OIL SPILLING/DUMPING	__ YES	__ NO

MONITORING WELLS

DEPTH FT STATIC WATER LEVEL FT BELOW CASING
SAMPLED THIS VISIT __ YES __ NO TEMP Ec

COMMENTS Ed [redacted] Kepford

FILE REVIEW

Permit No. _____ Pass _____ Fail _____

Well Class _____ Reviewer: Parker

Operator Conoco Date: 11/16/87

Well Name Warren McKee State: NM

Well Location Hobbs Agency: EID

Lease Name _____ Drill Date: 1978

CONSTRUCTION

	size	depth	cement (sacks)	calculated interval
Surface csg.	13 5/8"	250'	250 (40 circ)	
Intermediate csg	9 5/8"	1456'	721 (275 circ)	
Long string csg.	8 5/8"		open interval	
Tubing	3 1/2"	2340'	—	

Hole size 17 1/2"

Is construction adequate? ✓ yes ____ no

Packer required? ____ yes ____ no

Packer depth _____

Total Depth 2400'

HYDROLOGY

USDW Depth (10,000 mg/l) 75'-100'

Log Types? caliper

Faults in area addressed? ____ yes X no

Chemical analysis, formation fluid included? X yes ____ no

Chemical analysis injected fluid included? X yes ____ no

Adequate confining layer? X yes ____ no

Permitted injection pressure 180 psi

Permitted injection rate 7,000 BWPD (~10^8 gpy)

Does pressure and rate exceed allowable? no

Type of injectant Sewage plant effluent

GENERAL INFORMATION

Plugging bond or financial assurance included? ✓ yes ___ no

Public notice included? ✓ yes ___ no

Hearing required? ___ yes ✓ no

Citizen comments addressed? NA ___ yes ___ no

Workover, if yes put in general comments ___ yes ___ no

AREA OF REVIEW

Calculated _____ 1/4 mile ✓ minimum State AOR _____

Wells in AOR: _____ injection _____ production 1 ✓ abandoned

Deficient wells: _____ construction _____ plugging

Wells receiving CA: _____ injection _____ production _____ abandoned

Were all wells addressed for CA? NA yes ___ no

If no, comments: _____

AOR landowners notified? ___ yes ___ no

Has well received (pressure test) MIT? ___ yes X no

Date of most recent MIT _____ ___pass ___fail

Has absence of fluid movement been demonstrated? ___ yes X no

Enforcement actions included? ___ yes ___ no

If yes, comments: _____

Has well been a SNC? ___ yes X no

Is all information in permit? ___ yes X no

Is permit issued properly? ☒ yes ____ no

Citizen comments and investigations? ____ yes ____ no

If yes, comments: N/A

PLUGGING AND ABANDONMENT

Properly Plugged? ____ yes ____ no

Cement Placement	Cement (sx)		
	_____	from _____	to _____
	_____	from _____	to _____
	_____	from _____	to _____
Required Placement		from _____	to _____
		from _____	to _____
		from _____	to _____
		from _____	to _____

GENERAL COMMENTS

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

ENVIRONMENTAL IMPROVEMENT DIVISION

Michael J. Burkhart
Director

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

November 24, 1987

R.E. Irelan
Division Manager
Conoco Inc.
P.O. Box 460
Hobbs, NM 88240

Dear Mr. Irelan:

The Environmental Improvement Division's (EID) Ground Water Section has completed preliminary review of Conoco's discharge plan renewal application for the Warren McKee Brine Well, DP-318. Comments submitted herein are in response to the application and attachments submitted to EID on June 17, 1987. Regulatory reference to the Water Quality Control Commission (WQCC) Regulations follow in parenthesis.

1. Conoco has not performed a mechanical integrity test (MIT) of the brine well. Prior to discharge plan renewal, Conoco needs to perform and report the results of a pressure test (see attached pressure test procedure) and commit to performing a cement bond log sometime during the five year renewal period (5-204.B, 5-205.A.4.b).

   In a letter to Conoco from EID dated January 24, 1986, Paige Morgan stated: "Given the very large size of the cavity... and the uncertainty... as to when such a cavity becomes unstable, Conoco will be required to submit to the EID the results of a sonar log or some other direct measurement of the cavity dimensions with depth of your site." Conoco needs to commit to performing a sonar log or some other direct measure of the cavity during the five year renewal period. In additon, please submit calculations to demonstrate that there is sufficent overburden (at least 50 feet for every million cubic feet of cavity) to prevent cavity collapse (5-205.A.4.).

2. Conoco has reported an average operating pressure of 180 psi. Please submit the maximum operating pressure and using this figure, submit a comparison of the fracture pressure of the salt formation (you report a figure of 800 psi), and the pressure equivalent at depth of the maximum operating pressure (5-206.A.1).

3. Conoco needs to make a commitment to notify this office "prior to commencement of drilling, cementing and casing, well logging, mechanical integrity tests and any other well workover..." (5-205.A.5.).

4. Conoco needs to make a commitment to have all reports submitted pursuant to requirements under DP-318 signed and certified pursuant to Section 5-101.H. (5-208.C).

5. In addition to the monitoring and reporting commitment you have made under Item III.C.6 of your submittal, we need a commitment to provide quarterly reports of the volume of injected fluids and produced brines (5-207).

6. Conoco needs to submit a plugging and abandonment plan. The plan should include the methods and materials employed (5-209; 5-210.B.17.).

7. Map submitted depicting area of review needs reference scale and a delineated area of ¼ mile radius centered on brine well (5-202; 5-210.B.2.).

8. Item 10.b. states: "In the event that a casing leak is discovered, operations will be suspended until the leak is repaired." Please expand with regard to what monitoring capability Conoco has to detect such leaks, and further, how will Conoco determine if the Ogalalla has been contaminated (5-210.B.15.).

Sincerely,

John W Parker

John Parker
Water Resource Specialist
Ground Water Bureau

JP:egr

Attachments

cc: Donald Johnson, Conoco
Garrison McCaslin, EID District IV Manager, Roswell
EID Field Office, Hobbs

Richard Parker RM
Ernest

RECEIVED
JUL 8 1987
EID DIRECTOR'S OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
Suite D, 3530 Pan American Highway NE
Albuquerque, New Mexico 87107

July 7, 1987

RECEIVED
JUL 9 1987
GROUND WATER/HAZARDOUS WASTE BUREAU

Mr. Michael J. Burkhart, Director
New Mexico Health and Environment Department
Environmental Improvement Division
P. O. Box 968-Crown Building
Santa Fe, New Mexico 87504-0968

Dear Mr. Burkhart:

This responds to your public notice dated July 1, 1987 in which several proposed groundwater discharge plans were described. We have reviewed all of the plans and have not identified any resource issues of concern to our agency in the following:

DP-~~381~~ 319, Conoco Incorporated, Lea County, Hobbs, NM. ✓
DP-497, Kirtland Air Force Base, Bernalillo County, Kirtland AFB, NM.
DP-496, Phelps Dodge Corp., Grant County, Tyrone, NM.
DP-320, Salado Brine Sales, Lea County, Jal, NM.
DP-326, Sims-McCasland Water Sales, Lea County, Eunice, NM.
DP-297, U.S. Army White Sands Missile Range, Otero County, NM.

These comments represent the views of the Fish and Wildlife Service. If you have any questions concerning our comments, please contact Tom O'Brien at FTS 474-7877 or (505) 883-7877.

Sincerely yours,

John C. Peterson
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico
Regional Administrator, Environmental Protection Agency, Dallas, Texas
Regional Director, FWS, FWE, Albuquerque, New Mexico

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 23, 1987

Conoco Incorporated
P.O. Box 460
Hobbs, New Mexico 88240

Gentlemen:

Enclosed is a copy of the public notice pertaining to your proposed discharge which was issued by this division pursuant to New Mexico Water Quality Control Commission Regulations, Section 3-108.

If you have any questions, please do not hesitate to contact me at the address listed above or at phone number (505) 827-2900.

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

Enclosure

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 23, 1987

The Honorable JoAnn Martin, Mayor
City of Hobbs
P.O. Box 1117
Hobbs, New Mexico 88240

Dear Mayor Martin:

Enclosed is a public notice which includes notice of a proposed discharge plan(s) for one or more operations in or near your city.

If you have any questions, please do not hesitate to contact me at the address given above or at 827-2900.

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

Enclosure

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 23, 1987

Board of County Commissioners
Lea County Courthouse
Hobbs, New Mexico 88240

Board of County Commissioners:

Enclosed is a public notice for one or more operations located in your county.

If you have any questions, please do not hesitate to contact me at the address listed above or at phone number (505) 827-2900.

Sincerely,

Ernest C. Rebuck
Program Manager
Ground Water Section

ECR/mp

Enclosure

TO BE PUBLISHED ON OR BEFORE JULY 1, 1987

PUBLIC NOTICE
NEW MEXICO ENVIRONMENTAL IMPROVEMENT DIVISION

Notice is hereby given that, pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plans have been submitted for approval to the Director of the New Mexico Environmental Improvement Division, P.O. Box 968, Santa Fe, New Mexico 87504-0968; telephone (505) 827-2900.

(DP-318) CONOCO INCORPORATED, P.O. Box 460, Hobbs, New Mexico 88240, proposes to renew their approved discharge plan (DP-318) for a brine water in situ extraction well and surface facility located at Section 2, T20S, R38E, Lea County, New Mexico. The operation involves the injection of fresh water into an underlying salt formation thereby dissolving the salt and forming a brine water solution which is then extracted via a production well and used for oil and gas production. The groundwater below the site is at a depth of 70 to 145 feet and has a total dissolved solids concentration of 1,150 mg/l.

(DP-497) KIRTLAND AIR FORCE BASE, Harry M. Davidson, contact person, 1606 ABW/DEEV, Kirtland AFB, New Mexico 87117-5000, has submitted a discharge plan application for their existing sewage lagoons. Approximately 440,000 gallons per day of mixed sewage effluent (30% domestic, 70% nondomestic) are applied to their 161 acre golf course during the months of March thru October. The effluent is mixed with ground water from a water supply well near the golf course before it is applied. The location of the discharge site is T4N, R4E, Section 8 in Bernalillo County, New Mexico. During the months of November through February, approximately 27,370,000 gallons are stored in two 7 acre lagoons located at T9N, R4E, Section 6. The effluent is pumped from the lagoons to a holding pond at the gold course from which they irrigate. The depth to ground water is estimated by the discharger to be approximately 580 feet with a total dissolved solids concentration of 380 mg/l.

(DP-496) PHELPS DODGE CORPORATION, Tyrone Branch, Tyrone, New Mexico 88065, Richard E. Rhoades, Manager, has submitted a proposed discharge plan for the 1D copper leach dump located in Sections 13 and 14, T19S, R15W, NMPM in Grant County. The dump area covers approximately 266 acres. Copper is leached out of the dump by low pH, acidic fluids. The copper bearing solution is then pumped to a solvent extraction/electrowinning plant for removal of the copper. The barren solution is then returned to the leach circuit. The flowrate is approximately 6000 gpm. The ground water most likely to be affected is at a depth ranging from 200 to 600 feet with a total dissolved solids concentration ranging from 300 to 2500 mg/l.

(DP-320) SALADO BRINE SALES, W.H. Brininstool, Owner-Operator, Drawer A, Jal, New Mexico 88252, proposes to renew its approved discharge plan (DP-320) for their brine in situ extraction well and surface facility located in T25S, R37E, Section 14, Lea County, New Mexico. Brine is manufactured by injecting fresh water down their injection well to an underlying salt formation. The brine water solution has a total dissolved solids content of approximately 350,000 mg/l. Ground water most likely to be affected is at a depth of 200 feet with a total dissolved solids concentration of about 1000 mg/l.

(DP-326) SIMS-McCASLAND WATER SALES, 2105 Avenue O, Eunice, New Mexico 88231, proposes to renew their approved discharge plan (DP-326) for a brine water in situ extraction well and surface facility located at Section 32, T21S, R37E, Lea County, New Mexico. The operation involves the injection of fresh water into an underlying salt formation thereby dissolving the salt and forming a brine water solution with a total dissolved solids content of approximately 300,000 mg/l. The brine solution is then extracted via a production well and sold to other companies for oil and gas production use. The groundwater below the site is at a depth of 140 feet and has a total dissolved solids concentration of 2,500 mg/l.

(DP-297) U.S. ARMY WHITE SANDS MISSILE RANGE, White Sands Missile Range, New Mexico 88002-5076, proposes to renew and modify previously approved discharge plan DP-297. The original discharge plan was for the discharge of 15,000 gallons per day of domestic wastewater from the High Energy Laser Systems Test Facility into Hypalon lined evaporation lagoons located in Section 28, T19S, R6E, Otero County, New Mexico. The proposed modification is to discharge overflow from the lined lagoons into an adjacent unlined lagoon during emergency situations. Wastewater from the lined lagoons would also be used to water trees. The ground water below the site is at a depth of 90 to 130 feet and has total dissolved solids concentration of approximately 6,700 mg/l.

Any interested person may obtain further information from the Ground Water Section, Ground Water/Hazardous Waste Bureau, EID, and may submit written comments to the Director of the EID at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of EID will allow thirty (30) days after the date of publication of this Notice during which comments may be submitted to him and a public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why the hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

R. E. Irelan
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
P.O. Box 460
726 East Michigan
Hobbs, NM 88240
(505) 393-4141

June 12, 1987

post marked 6/12/87

New Mexico Environmental Improvement Division
P.O. Box 968
Santa Fe, New Mexico 87504-0968

Attention: Mr. Michael Burkhart

Gentlemen:

Application for Discharge Plan Approval - In Situ Extraction Well - Conoco Inc.

Pursuant to Water Quality Control Commission Regulations (WQCC 82-1), Conoco Inc. respectfully requests approval for continued operation of our in situ salt extraction well, the Warren McKee Brine Well No. 1. The Part 5 Discharge Plan attached has been prepared in accordance with the suggested outline supplied by your office. Should you have any questions or require additional information, please contact Pete Bowser of this office at your earliest convenience.

Yours very truly,

R. E. Irelan

PDB:mgt

Attachments

June 12, 1987

Part 5 Discharge Plan
Warren McKee Brine Well No. 1
In Situ Salt Extraction Well

I. General Description

A. Name of Facility: Warren McKee Brine Well No. 1

B. Location: Section 2, Township 20S, R-38E
Facilities Located: SW 1/4 SW 1/4 NW/4, Sec. 2, T-20S, R-38E
Wells Located: 710' FLS & 420' FWL, SW 1/4 SW 1/4, Sec. 2, T-20S, R-38E
See Attachment No. 1 of previous correspondence dated November 11, 1982, for topographic map.

C. Facilities & Process Description: See Attachment No. 1 for facilities schematic. The process of salt extraction is as follows: approximately 7000 BWPD of treated sewage effluent are purchased from the City of Hobbs. A small portion of this amount (± 900 BWPD) is circulated through the salt extraction well. The resulting brine is then mixed with the treated effluent yielding a solution with approximately 1.03 specific gravity. The solution is then piped to injection facilities located about 4 miles to the southwest for use in the Warren McKee and North Blinebry waterfloods. The quantity, quality and flow characteristics of the brine well discharge are listed in Attachments No. 2 and No. 3.

D. Operational History: The well was completed in February 1978, and the facility was placed in operation in July, 1978. Yearly volumes circulated through the brine well are listed in Attachment No. 2.

II. Description of Facility

A. Surface Facilities: No changes have been made in the facilities since the 1982 application, other than routine maintenance. A complete description can be found in correspondence from this office dated September 30 and November 11, 1982. The average daily discharge from the brine well is currently 873 BWPD and the mixed water discharge currently averages 7117 BWPD (May, 1987 average).

B. Underground Facilities: See Attachment No. 4 for a wellbore schematic detailing the casing program and history of work on the well. The well was not logged upon completion and no stimulation was required. The average pressure upstream of the brine well is 180 psi (fresh water side) and the downstream pressure is approximately 10 psi.

III. Site Characteristics

A. Unlined Ponds: The 10,000 bbl storage tank is piped in such a way that any overflow of fresh, treated effluent will go to an unlined pond owned and operated by the City of Hobbs for the storage of fresh, treated effluent. As the pond is not owned or operated by Conoco, and there has been no overflow to the pond since the inception of the project, the pond is not considered as part of the system in this application.

B. Geology: The geologic formations penetrated by the well are detailed in Item No. 8 of correspondence dated November 11, 1982, and are indicated on the geologic cross section included as Attachment No. 5. The only known fresh water zone in the area is the Ogalalla. As shown by Attachment No. 6, the Ogalalla is presumed to be present from 70 ft. to 145 ft. below ground level (3511 ft. to 3436 ft. above sea level). No other water bearing strata was noted in the drilling of the subject well.

The "fracture" pressure of the Salado salt section is generally considered to be 800 psi. The confining Rustler anhydrite and the redbeds breakdown at slightly higher pressures.

A lithologic description of rock at the base of alluvium can be found under Item No. 6 of correspondence dated September 30, 1982.

C. Hydrology:

1. Fresh water zones: As mentioned above, the Ogalalla is the only known aquifer in the area. As the Ogalalla is some 1500 ft. above the top of the salt and is protected by two casing strings cemented to surface, there is very little possibility of ground water being affected by injection operations.

2. There are no injection wells, producing wells, surface bodies of water (other than the City of Hobbs' sewage effluent storage ponds), springs, quarries, residences, or pertinent surface features within a quarter mile radius of the well. Roads are indicated on the topographic map submitted with earlier correspondence dated November 11, 1982. An ownership map included in Attachment 5 shows one dry-hole (the Exxon "DK" State No. 1) within the quarter mile radius.

3. Flooding potential of the site: None. There are no surface bodies of water nearby and surface relief of the area, though minimal, is such that flash flooding is not considered possible.

4. Fresh water: The depth of the Ogalalla is mentioned above. An analysis of the water taken from a nearby water well, located about one-half mile north of the storage facility, is contained as Attachment No. 7.

5. Injection water: See Attachment No. 8 for an analysis of the Hobbs city effluent water.

6. Discharge water: See Attachment No. 3 for the analysis of the brine well discharge. Subsequent analyses will be submitted quarterly, beginning with this application.

IV. Procedures to Protect Ground Water Quality

A. During Operations

1. Nearby wells/area of review: The salt section and confining anhydrite are impermeable. Therefore, under specifications set forth in 5-202-B-3 of WQCC 82-1, the area of review is taken to be one-quarter mile from the in situ extraction well. Within this area, there are no active wells and only one plugged well (the Exxon "DK" State No. 1). A copy of the completion and plugging records is included as Attachment No. 9.

2. Subsequent information: Not applicable.

3. Mechanical integrity testing: The integrity of the 9-5/8" has pressure tested upon initial completion and subsequently when the well was pulled for repairs. During operations, water is circulated down the annulus and up the tubing to extract salt; monitoring of the flowing annulus pressure is checked periodically as a qualitative indication of mechanical integrity by comparison with the flowing tubing pressure. The chief means of monitoring mechanical integrity is by daily comparison of inflow and outflow of the system, and by daily sampling of the mixed brine water used in the waterflood. Any sudden change in fluid volumes or water characteristics would indicate a potential problem and would be investigated immediately.

4. Meter locations: There are three meters in the system, as illustrated by Attachment No. 1. The volume of water taken from the city is metered, as is the mixed brine water transferred to the waterfloods and water circulated through the brine well.

5. Volume comparison: As mentioned above, daily meter readings are taken. Within the accuracy of the turbine meters, the volume of water purchased from the city is the same as the volume transferred to the waterfloods.

6. Sampling sites and methods: See Item No. 5 of correspondence dated September 30, 1982, for details.

7. Leak detection system under pond: Not applicable.

8. Monitoring of groundwater: The nearby water well, at the Nadine Church located one half mile north of the facilities, serves as the observation well. A water analysis can be found in Attachment No. 7. Quality reports will be submitted periodically. Also, periodic samples will be taken from a well located approximately three-quarters of a mile northeast of the storage facilities. This well will serve to indicate background levels of water quality.

9. Prevention of spills/leaks: Truck loading occurs only if sub-standard quality water is received from the City of Hobbs and on those infrequent occasions, extreme care is taken by the personnel involved to avoid spills.

   The chief means of spill prevention is by maintaining the facility in excellent condition. Daily inspections are made by company employees and since the facility is within sight of the highway, drive-by inspections are, in effect, performed throughout the workday.

10. Contingency Plans

    a. spills/leaks: If a major spill or leak should occur, vacuum trucks would be used to remove any standing liquids. Generally, the damaged soil would then be skimmed off and replaced.

    b. loss of mechanical integrity: In the event that a casing leak is discovered, operations will be suspended temporarily until the leak is repaired. In the extremely unlikely event that there is evidence of contamination of the Ogalalla, the technical resources of this company will be utilized to initiate appropriate corrective measures.

11. If there is a leak, spill or other unanticipated discharge of a significant amount of water contaminants on the surface or underground, the EID Ground Water Section will be notified within 48 hours.

B. Post-operational Commitments

1. Plugging and abandonment/bonding requirements: In response to a request from your office, the information relating to plugging and bonding requirements was submitted to your office in correspondence dated January 10, 1985.

2. Pond Closure - Not applicable.

V. Sign-off Requirement

Responsible official must certify as follows:

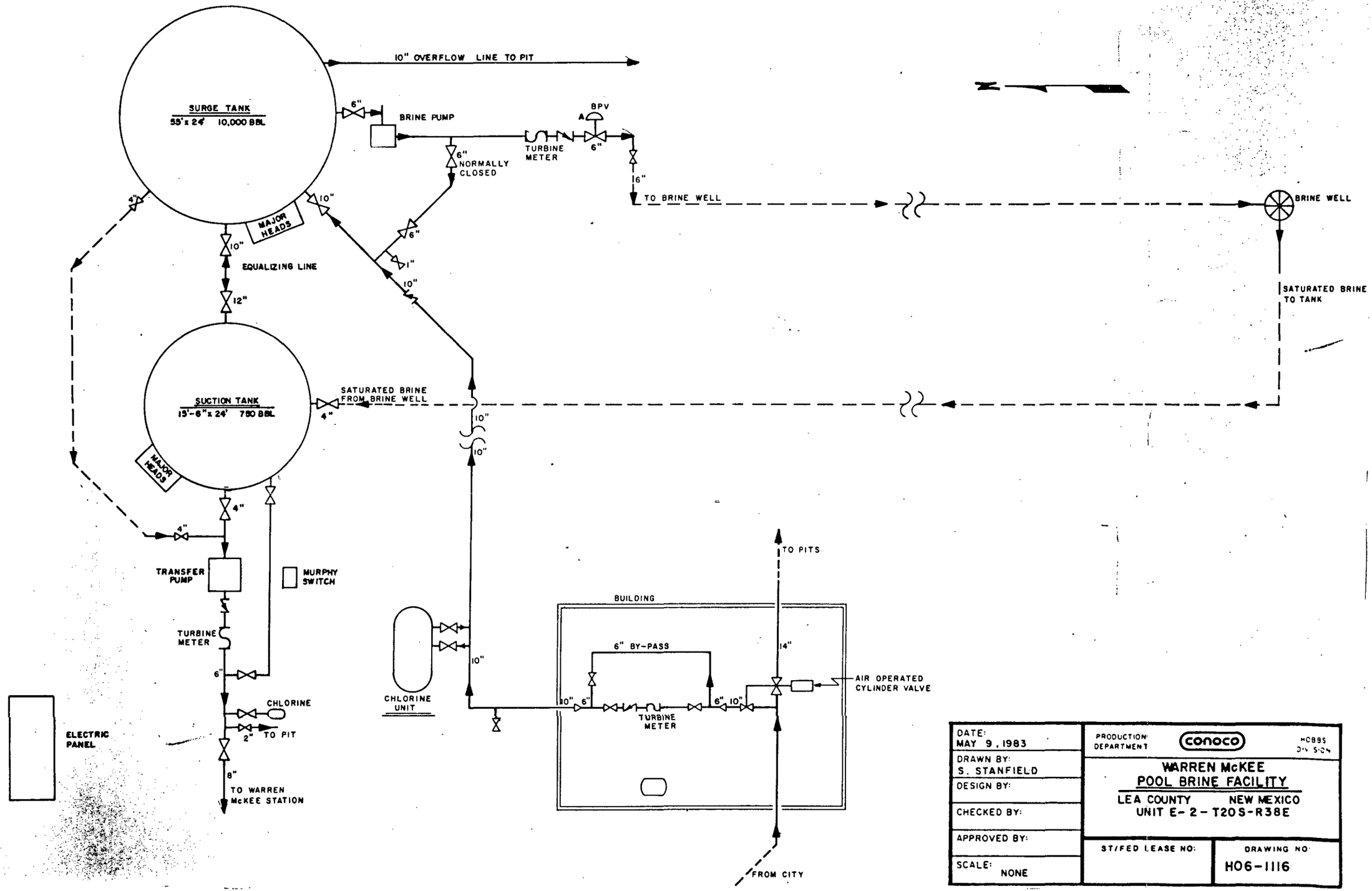
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

R. E. Irelan

Robert E. Irelan
Division Manager

PDB:mgt

ATTACHMENT NO. 1



DATE: MAY 9, 1983	PRODUCTION DEPARTMENT conoco HOBBS DIVISION
DRAWN BY: S. STANFIELD	WARREN McKEE POOL BRINE FACILITY
DESIGN BY:	LEA COUNTY NEW MEXICO
CHECKED BY:	UNIT E-2-T20S-R38E
APPROVED BY:	STATE LEASE NO:
SCALE: NONE	DRAWING NO. H06-1116

Part 5 Discharge Plan Attachment No. 2

Warren McKee Brine Well No. 1

Yearly Brine Volumes (Bbls)

1978	138,480	(July - December)
1979	1,153,240	
1980	1,025,804	
1981	951,815	
1982	334,539	
1983	392,149	
1984	590,935	
1985	606,802	
1986	377,423	
1987	94,064	(January - May)

ATTACHMENT NO. 3

WATER ANALYSIS REPORT
furnished by TRETOLITE CHEMICALS

COMPANY:	CONOCO
LEASE:	WARREN McKEE
SAMPLE POINT:	WELL 1
SAMPLE DATE:	5-26-87
SAMPLE TEMP.:	

pH:	6.5
H2S:	-
SPECIFIC GRAVITY:	1.215

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO3	305.00	5.00
Cl	180481.00	5083.97
SO4	3750.00	78.13
Ca	7400.00	370.00
Mg	0.00	0.00
Na	110333.20	4797.10

IONIC STRENGTH = 5.41
TOTAL HARDNESS = 16500.0 mg/ltr.
TOTAL DISSOLVED SOLIDS = 302083.0 mg/ltr.
TOTAL IRON (Fe) = 2.0 ppm

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO3)2	5.00	405.20
CaSO4	78.13	5317.97
CaCl2	286.88	15921.56
Mg(HCO3)2	0.00	0.00
MgSO4	0.00	0.00
MgCl2	0.00	0.00
NaHCO3	0.00	0.00
Na2SO4	0.00	0.00
NaCl	4797.10	280438.30

CALCULATED SCALING TENDENCIES

SCALING INDEX
CaCO3 @ 80 DEG F. = 1.3
CaCO3 @ 120 DEG F. = 2.0

SATURATION POINT
CaSO4 @ 70 DEG F. = 1829.1 MG/LTR.
CaSO4 @ 110 DEG F. = 1970.3 MG/LTR.

(THIS SAMPLE CONTAINED 5318.0 MG/LTR. CaSO4)

ATTACHMENT NO. 4

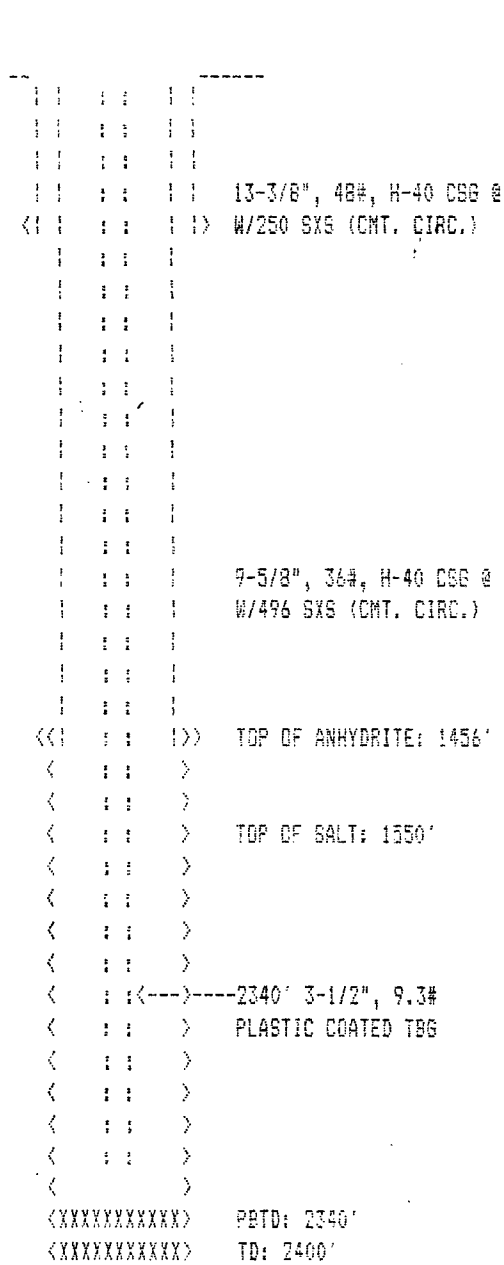
WELL: WARREN McKEE BRINE WELL NO. 1 — PREPARED BY: PDB — DATE: 6/5/87

LOCATION: 710' FSL & 420' FWL — SECTION: 2 — TOWNSHIP: 20 SOUTH — RANGE: 38 EAST

COUNTY: LEA — STATE: NM

DATUM: KBM 11' AG — GROUND LEVEL: 3581' — TD: 2400' — PBTD: 2340'

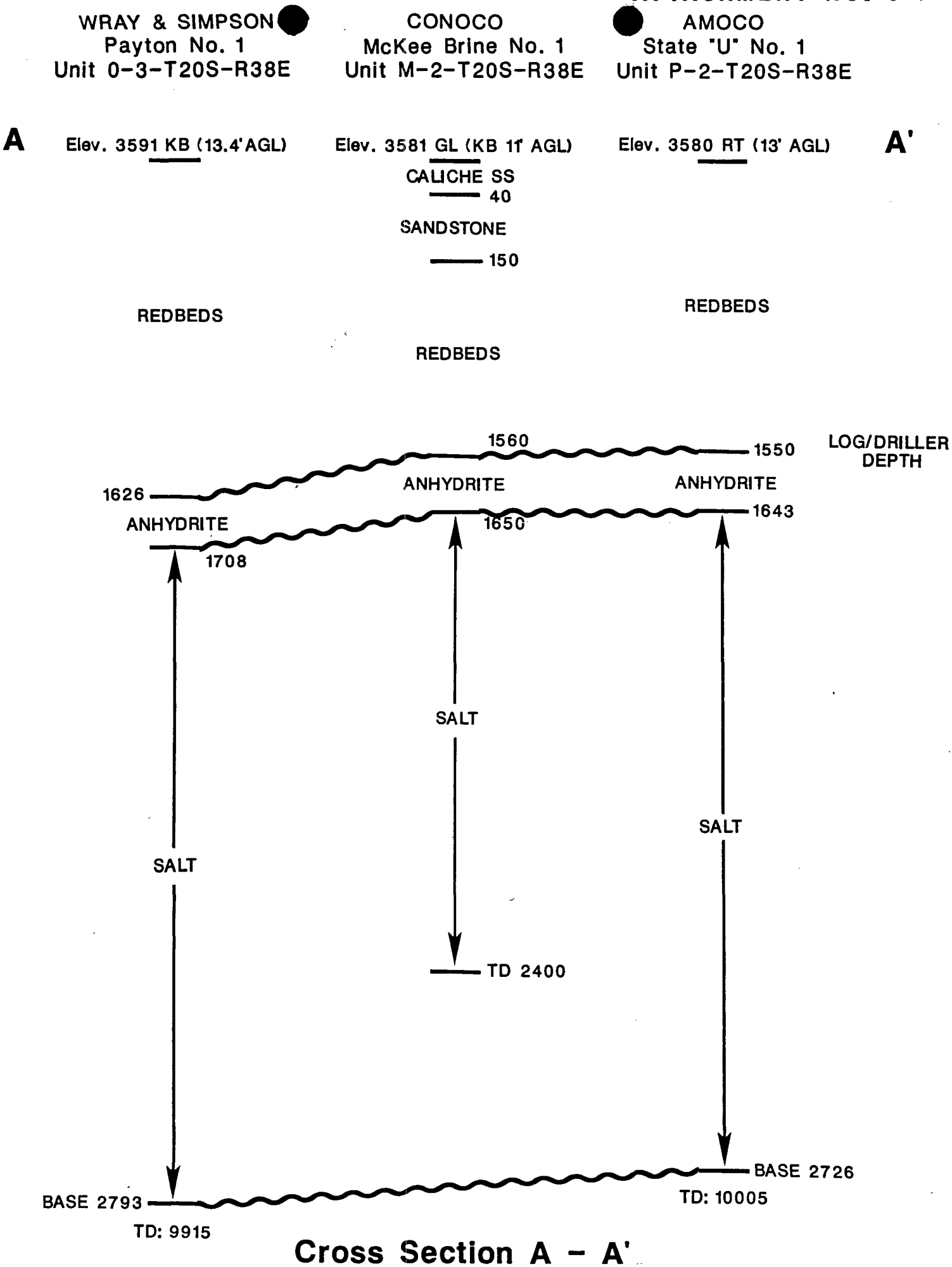
WELLBORE DIAGRAM



PULLING AND WORKOVER HISTORY

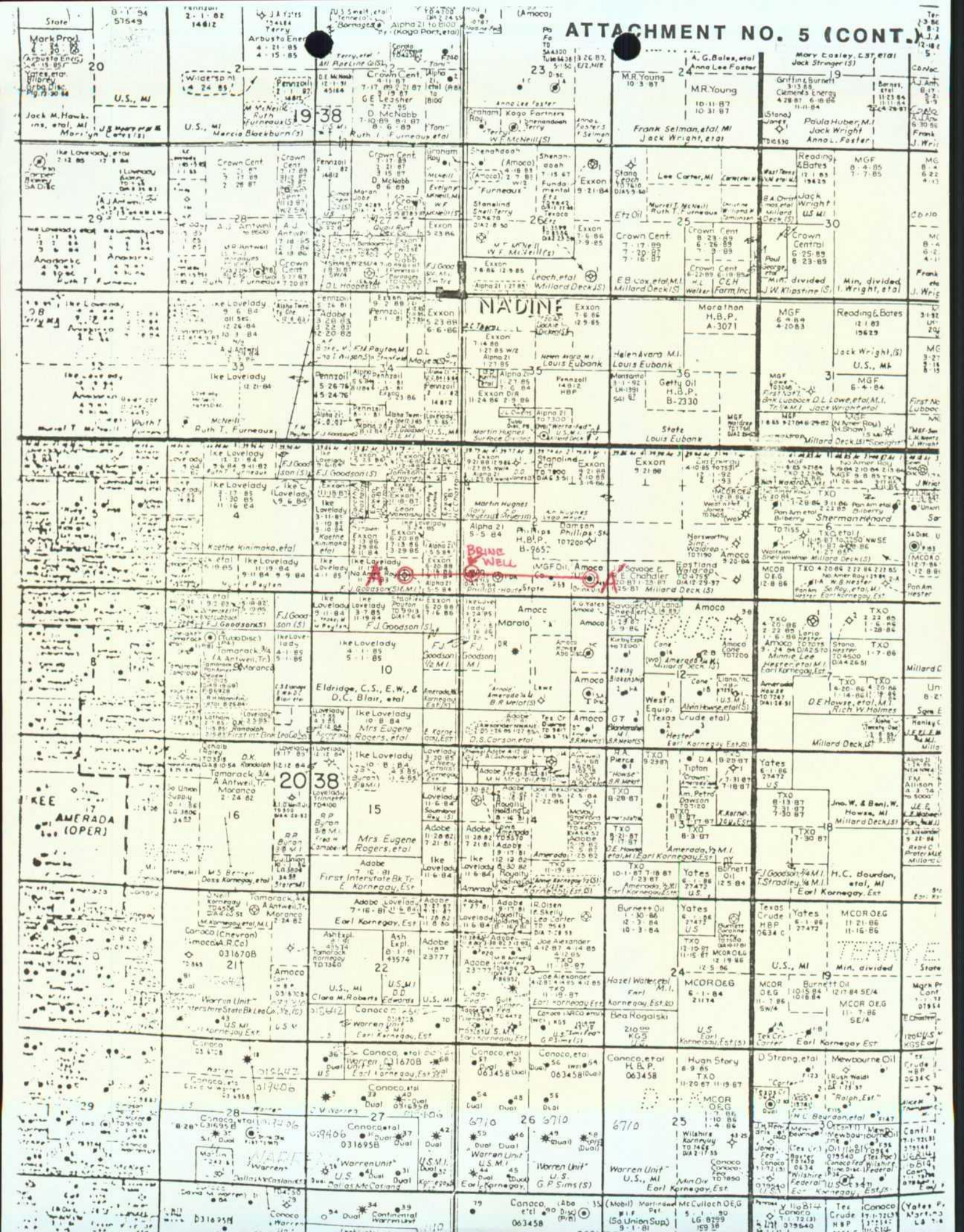
DATE	WORK PERFORMED
2/14/78	SPUD WELL. DRL 17-1/2" HOLE TO 250'. SET 13-5/8" CSG W/250 SXS CLASS C W/ADDITIVES. CIRC 40 SXS. DRL 12-1/4" HOLE TO 1456. SET 9-5/8" CSG W/721 SXS CLASS C. CIRC 225 SXS. DRL 8-5/8" HOLE TO 2400' (TD). RD 2/26/78. TD:2400', OPEN HOLE 1456'-2400'.
5/11/78	RAN 73 JTS 3-1/2", 9.3#, J-55 TBG (PLASTIC COATED). TBG SET @ 2198'
2/28/79	RAISED TUBING, REMOVED 1 JT.
6/29/79	RIG UP TO TREAT FOR BACTERIA DOWNHOLE. LAID DOWN 16 JTS CORKSCREWED TBG. CLEAN OUT TO 1760'. RAN OPEN HOLE CALIPER LOG TO 1710'. RAN ELECTRONIC CSG CALIPER LOG FROM 0-1450'. SET RBP @ 1400' & TEST CSG TO 750 PSI, HELD OK. CLEAN OUT OPEN HOLE TO 1930'. RAN CALIPER LOG. CLEAN OUT TO 2182'. SET RBP @ 1400' & TEST CSG TO 1000 PSI, HELD OK. RAN 3-1/2" TBG, LANDED @ 2095'. RD 7/20/79
6/3/85	INSPECT TBG FOR LEAK. POOH W/TBG, PARTED @ 1642'. CLEAN OUT HOLE TO 2340', RAN 76 JTS NEW PLASTIC COATED TBG. LAND TBG @ 2340'. LEFT 14 JTS OLD 3-1/2" TBG IN HOLE. RD 6/13/85

ATTACHMENT NO. 5



Cross Section A - A'

ATTACHMENT NO. 5 (CONT.)



THE REPRODUCTION OF

THE

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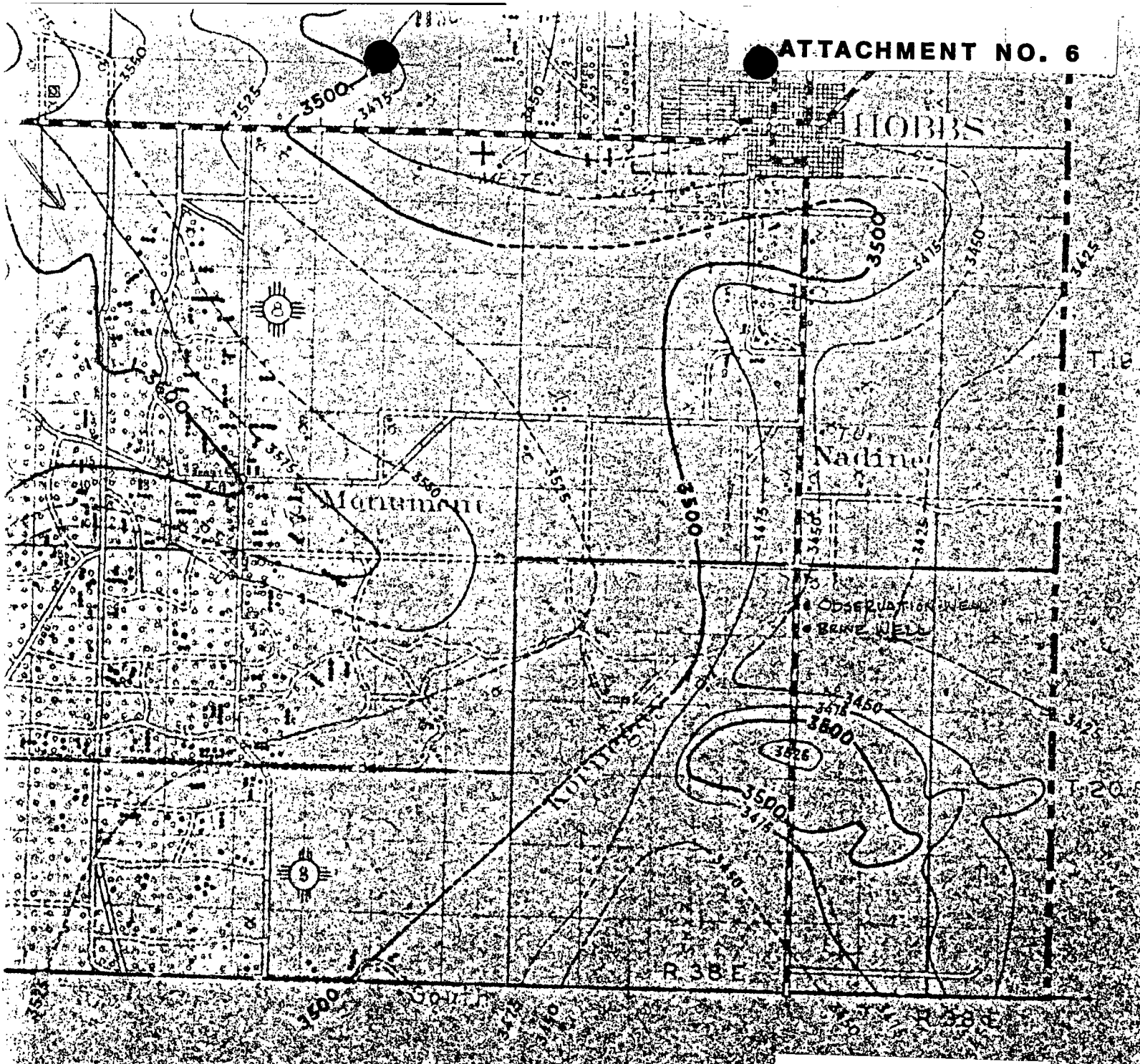
CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL

ATTACHMENT NO. 6



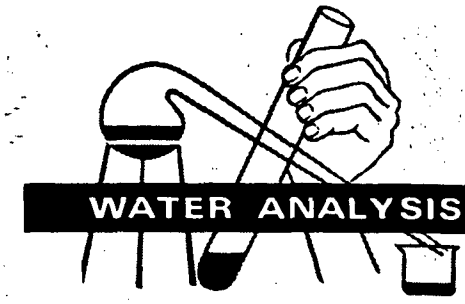
STRUCTURE ON BASE OF THE OGALALLA

MAP PREPARED BY J.C. YATES & S.E. GALLOWAY, OFFICE OF
(REVISES MAP PREPARED BY W.E. HALE AND A. NICHOLSON,

JANUAR

ART OF LEA COUNTY, NEW MEXICO

ATTACHMENT NO. 7



WATER ANALYSIS REPORT

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 363-9105
RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561
PLANT: Odessa, Texas Phone (915) 363-9105

Champion Chemicals, Inc.
BOX 4513
ODESSA, TEXAS 79760

REPORT FOR: Pete Bowser
CC:
CC:
CC:
COMPANY: Conoco
ADDRESS:
SERVICE ENGINEER: Kathy Marshall

DATE SAMPLED: 6/11/87
DATE REPORTED: 6/11/87
FIELD, LEASE, OR WELL: Nadine Church
COUNTY: STATE:
FORMATION:
DEPTH:
SUBMITTED BY: Kathy Marshall

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

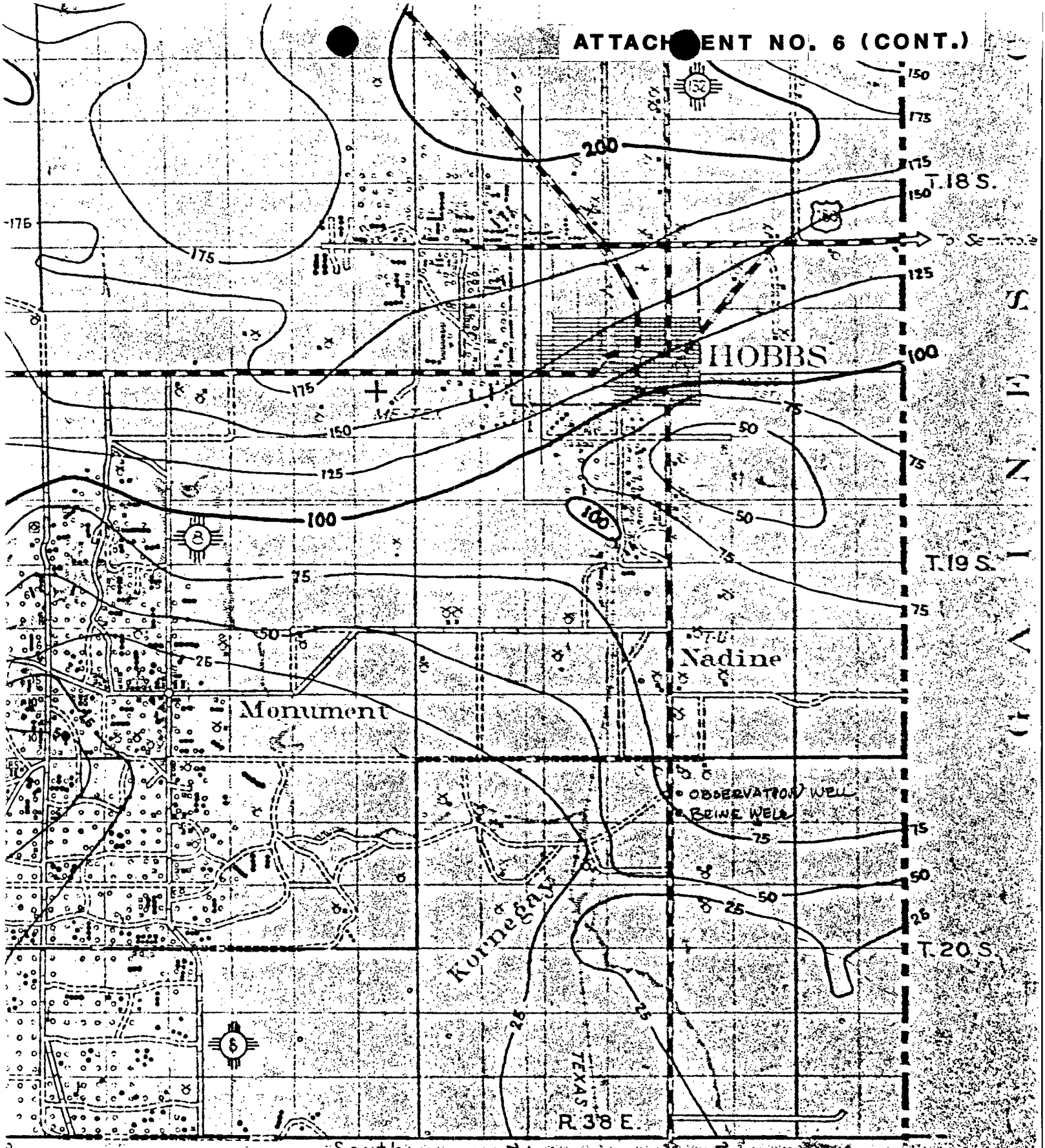
	Field, Lease, or Well					
Chemical Component	Nadine Church					
Chloride (Cl)	200					
Iron (Fe)	2					
Total Hardness ($CaCO_3$)	480					
Calcium (Ca)	168					
Magnesium (Mg)	14					
Bicarbonate (HCO_3)	311					
Carbonate (CO_3)	0					
Sulfate (SO_4)	152					
Hydrogen Sulfide (H_2S)	1					
Specific Gravity	1.000					
Density, lb./gal.	8.334					
pH - Beckman [ ] Strip [ ]	6.800					
Carbon dioxide						
Sodium (calc.)	99					
TDS	945					
CaSO4 Sol @ 82F	2269					
CaSO4 Present	215					

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

CaCO3 SI @ 86 F +0.26
104 F +0.48
122 F +0.71
140 F +0.95
158 F +u.20

REPORTED BY: Randolph Root TITLE: Chemist

ATTACHMENT NO. 6 (CONT.)



SATURATED THICKNESS OF OGALALLA AQUIFER

ATTACHMENT NO. 8

WATER ANALYSIS REPORT
furnished by TRETOLITE CHEMICALS

COMPANY:	CONOCO
LEASE:	WARREN McKEE CITY WATER
SAMPLE POINT:	TANK
SAMPLE DATE:	5-26-87
SAMPLE TEMP.:	

pH:	6.4
H2S:	-
SPECIFIC GRAVITY:	1.002

TITRATED AND CALCULATED IONS

	MILLIGRAMS PER LITER	MILLIEQUIVALENTS PER LITER
HCO3	244.00	4.00
Cl	403.00	11.35
SO4	25.00	0.52
Ca	180.00	9.00
Mg	24.30	1.99
Na	112.27	4.88

IONIC STRENGTH =	0.02
TOTAL HARDNESS =	550.0 mg/ltr.
TOTAL DISSOLVED SOLIDS =	988.4 mg/ltr.
TOTAL IRON (Fe) =	1.0 ppm

PROBABLE MINERAL COMPOSITION AND ION PAIRING

	MILLIEQUIVALENTS PER LITER	MILLIGRAMS PER LITER
Ca(HCO3)2	4.00	324.16
CaSO4	0.52	35.45
CaCl2	4.48	248.59
Mg(HCO3)2	0.00	0.00
MgSO4	0.00	0.00
MgCl2	1.99	94.85
NaHCO3	0.00	0.00
Na2SO4	0.00	0.00
NaCl	4.88	285.35

CALCULATED SCALING TENDENCIES

SCALING INDEX
CaCO3 @ 80 DEG F. = -0.4
CaCO3 @ 120 DEG F. = -0.1

SATURATION POINT
CaSO4 @ 70 DEG F. = 2144.8 MG/LTR.
CaSO4 @ 110 DEG F. = 2201.3 MG/LTR.

(THIS SAMPLE CONTAINED 35.5 MG/LTR. CaSO4)

ATTACHMENT NO. 9

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

NO. OF COPIES RECEIVED		
DISTRIBUTION		
SANTA FE		
FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease: State [X] Fee [ ]

5. State Oil & Gas Lease No.: B-9652

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL [ ] GAS WELL [ ] OTHER- Dry

7. Unit Agreement Name: --

2. Name of Operator: Exxon Corporation

8. Farm or Lease Name: New Mexico DK State

3. Address of Operator: P. O. Box 1600, Midland, TX 79702

9. Well No.: 1

4. Location of Well
UNIT LETTER NM, 660 FEET FROM THE South LINE AND 1320 FEET FROM THE West LINE, SECTION 2 TOWNSHIP 20S RANGE 38E NMPM.

10. Field and Pool, or Wildcat: Wildcat

15. Elevation (Show whether DF, RT, GR, etc.): 3580' GL

12. County: Lea

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [X]
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [ ]	
OTHER [ ]		OTHER [ ]	

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

The above well was plugged as follows 11-22-83

Plug @ 8050-8350 w/100 sx Cl H Neat
7300-7600 w/100 sx Cl H Neat
6400-6700 w/100 sx Cl H Neat
5400-5700 w/100 sx Cl H Neat
3500-4100 w/200 sx Cl H Neat
1350-1500 w/ 50 sx Cl H Neat
350- 500 w/ 50 sx Cl H Neat
0- 10 w/ 10 sx Cl H Neat

THE COMMISSION MUST BE NOTIFIED 24 HOURS PRIOR TO COMMENCING WORK

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED Melba Knipling TITLE Unit Head DATE 1-10-84

APPROVED BY Ronald M. Matthews TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
IGY AND MINERALS DEPARTMENT

ATTACHMENT NO. 9 (CONT.)

Form C-105
Revised 10-1-78

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DISTRIBUTION		
SANTA FE		
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LAND OFFICE		
OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [XX] Fee [ ]
5. State Oil & Gas Lease No.: B-9652

1a. TYPE OF WELL
b. TYPE OF COMPLETION: OIL WELL [ ] GAS WELL [ ] DRY [ ] OTHER Fish in hole
NEW WELL [XX] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER

7. Unit Agreement Name: --
8. Farm or Lease Name: New Mexico DK State
9. Well No.: 1
10. Field and Pool, or Wildcat: Wildcat

2. Name of Operator: Exxon Corporation
3. Address of Operator: P.O. Box 1600, Midland, Texas 79702
4. Location of Well: UNIT LETTER NM LOCATED 660 FEET FROM THE South LINE AND 1320 FEET FROM THE West LINE OF SEC. 2 TWP. 20S RGE. 38E NMPM
12. County: Lea

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
8-22-83	11-8-83	--	3580' GL	--

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
9713'	Surface		→	0-9713	

24. Producing Interval(s), of this completion — Top, Bottom, Name: --
25. Was Directional Survey Made: No
26. Type Electric and Other Logs Run: BHC-Sonic; LDT-CNL; Microlog; Velocity Survey, DIL
27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	61#	448'	17 1/2"	350 sx C1C	
9 5/8"	40#	3825'	12 1/4"	1500 sx C1C	

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET

31. Perforation Record (Interval, size and number)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
8050-8350	
7300-7600	Each plug set w/100 sx C1H
6400-6700	
5400-5700	

33. PRODUCTION (over)

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas — Oil Ratio

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)

34. Disposition of Gas (Sold, used for fuel, vented, etc.)
Test Witnessed By

35. List of Attachments

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED Micha Knifling TITLE Unit Head DATE 1-10-84

NEW MEXICO
HEALTH AND ENVIRONMENT
DEPARTMENT

Post Office Box 968
Santa Fe, New Mexico 87504-0968

GARREY CARRUTHERS
Governor

LARRY GORDON
Secretary

CARLA L. MUTH
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 25, 1987

Donald Johnson
Conoco, Inc.
P.O. Box 460
Hobbs, NM 88240

RE: Discharge Plan DP-318

Dear Mr. Johnson:

In the summer of 1983, the Water Quality Control Commission (WQCC) transferred its delegation of authority from the Oil Conservation Division (OCD) to the Environmental Improvement Division (EID) to administer discharge plans for brine extraction facilities. On December 18, 1982, the discharge plan DP-318 for your brine facility south of Hobbs located in Lea County was approved by the Director of the OCD. This discharge plan was required and submitted pursuant to WQCC Regulations and it was approved for a period of up to five years. The approval will expire on December 18, 1987.

If you are still discharging at this facility and wish to continue discharging, please submit your application for renewal of plan approval, including a complete Part 5 discharge plan amendment/renewal, as quickly as possible. The necessary forms for making those submissions are enclosed. Submitting your application in a timely fashion will aid the EID in processing your discharge plan prior to the expiration date. Also, please indicate whether you have made or intend to make any changes in your discharge.

Section 5-101.G. of the WQCC regulations assures that those who are in compliance with their approved discharge plan on the date of its expiration, and who submit a complete application for a discharge plan renewal at least 180 days before the expiration date, which in this case would be June 15, 1987, will remain in compliance until the application for discharge plan renewal has been approved or disapproved. Applications for renewals submitted after June 15, 1987 may result in a discharge not in compliance, if EID is not provided sufficient time to process the application. Therefore, the EID recommends you submit an application for discharge plan renewal which include and adequately address all of the information necessary for evaluation of a new discharge plan well in advance of June 15, 1987.

If you are no longer discharging and discharge plan renewal is not needed, please notify this office.

If you have any questions, please do not hesitate to contact me at the address listed on the letterhead or telephone number 827-2902.

Sincerely,

Kevin Lambert
Hydrologist
Ground Water Section/Underground
Injection Control

KL:egr

Enclosures

cc: Garrison McCaslin, EID District IV Manager, Roswell

BRINE STATION INSPECTION FORM

DATE 12/10 1986 EID INSPECTOR Lambert, Koschal Baker
FACILITY Conoco Inc LOCATION Hobbs
FACILITY REP ON SITE None Available COUNTY LEA

DP-318

WELL OPERATION

WELL IS INJECTING: __ THROUGH ANNULUS __ THROUGH TUBING
SOURCE OF FRESH WATER City Wastewater
TRACE INJECTION/PRODUCTION LINES Buried Lines

WELL HEAD PRESSURE _____ PSIG PUMP PRESSURE _____ PSIG
LEAKS AROUND WELL OR PUMP None

STORAGE AREA

FOR PONDS:
GENERAL LINER APPEARANCE _____
AMOUNT OF FREEBOARD _____
ANY SIGN OF OVERFLOW OR LEAKS _____
LEAK DETECTION SYSTEM __ FLUIDS __ DRY

FOR TANKS:
GENERAL APPEARANCE Good Shape
LABLED PLAINLY x YES __ NO
BERMED TO PREVENT RUNOFF __ YES __ NO
CHECK CONTENTS TO ASSURE PROPER FLUID/LABLE MATCH _____
NUMBER OF TANKS FOR 2 BRINE 1 small FRESH WATER 1 large

LOADING AREA No Loading Area at site Pipeline to ? 12 miles West Water flood

PROPERLY GRADED AND BERMED TO CONTAIN SPILLAGE	__ YES	__ NO
ANY EVIDENCE OF RECENT SPILLAGE	__ YES	__ NO
DOES FACILITY HAVE A SPILL COLLECTION SYSTEM	__ YES	__ NO
ANY EVIDENCE OF OIL SPILLING/DUMPING	__ YES	__ NO

MONITORING WELLS

DEPTH _____ FT STATIC WATER LEVEL _____ FT BELOW CASING
SAMPLED THIS VISIT __ YES __ NO TEMP _____ Ec _____

COMMENTS No problem Clean Operation

1/28/86: Received a call from Eddie Rodriguez, Conoco: 393-4141 ext 171.

He said that the TDS figure I used to calculate the salt capacity at Conoco was not a representative figure — that NaCl comprised the bulk of brine and was adequate for computing capacity size. We debated this point for a while.

He said that the volumes of water and brine that he had sent us were probably not altogether accurate, due to changes over the years in how they kept records.

He offered to send us a new analysis of the brine. I said that Steve Sanes would be in the Hobbs area within 2-3 weeks and I suggested that he and Rodriguez could grab samples of brine straight from the wellhead and from the tank from which it goes to the Conoco waterflood (there is a question about whether the brine is mixed with more sewage

1/28/86: Addendum to same 1/28 conversation between Morgan and Rodriguez: Rodriguez reported that they had pulled the tubing in the Conoco well last year: it had stuck and then broken off and they were unable to locate the broken-off piece. He said that the fact the tubing had stuck indicated that the cavity was very small. I said it seemed to me that the salt had probably caved in on the tubing in a zone that they were not actively washing, and the fact that the other piece was lost could indicate the size of the cavern it had fallen into.

I asked if they had run any logs when they re-entered the well on that occasion. He said he thought a casing inspection log and a caliper log had been run. I said that was exactly the kind of information we'd be looking for in their Part 5 DP.

Lacy Morgan.

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

January 24, 1986

Donald W. Johnson, Division Manager
Production Department, Hobbs Division
North American Production - Conoco, Inc.
P.O. Box 460
Hobbs, New Mexico 88240

Dear Mr. Johnson:

Thank you for your January 10th response to my November 20, 1985 letter. The bond you have submitted is adequate and the estimated cost of plugging your brine well is reasonable, and is clearly covered by the amount of your bond.

I differ with you on calculating the probable size of your salt cavity. However, I agree with your conclusion that, using the rule of thumb of 50 feet of overburden per million cubic feet of salt cavity, there is ample overburden at the Conoco site to guard against subsidence. For future reference:

1) I assume your abbreviation "MM" signifies a million and that you use a 42-gallon barrel. Correct me if I am wrong.

2) It is inadequate to consider only the NaCl component of the brine you produce. Total dissolved solids of the Conoco brine was calculated to be 267,320 mg/l on October 8, 1979, according to an analysis found in your facility file. This is a reasonable value for dissolved solids of brine, based on analyses at other brine facilities. To calculate cavity formation on the basis of NaCl alone results in a considerable underestimate of cavity size.

3) Calculation of Cavity Size:

Brine TDS - 267,320 mg/l (10/8/79 analysis)
Rock Salt Density: 2.14 g/cm^3

$$2.14\ g/cm^3 \times \frac{2.2046\ \text{pounds}}{1000\ g} \times \frac{1000\ cm^3}{0.0353\ ft^3} = 133.6\ \frac{\text{lbs}}{ft^3} = \frac{.0075\ ft^3}{1\ \text{lb.}}$$

$$.0075\ ft^3/\text{lb} \times 2000\ \text{lbs} = \underline{14.9\ ft^3/\text{TON}}$$

$$350{,}000\ \text{mg/l} = 350{,}000\ \text{mg/l} \times \frac{2.2046\ \text{lbs}}{1.10^6\ \text{mg}} = 0.772\ \text{lbs/l}$$

1 BBl = 159 l
1 BBl brine contains 0.772 lbs/l x 159 l or 122.7 lbs of rock salt
122 lbs salt x $\frac{.0075\ ft^3}{\text{lb.}}$ = cavity of 0.915 ft^3

Therefore, 1 BBl of 350,000 mg/l brine creates a cavity of 0.915 ft^3 and 20,101,350 BBls produces a cavity of 14,058,593 ft^3. An estimated 703 feet of overburden required under "subsidence control rule of thumb".

I must stress that the 50-feet-of-overburden rule of thumb is only that, a rule of thumb. It was proposed by a geologic consultant, Lee Wilson, in a 1982 report to the Oil Conservation Division. Wilson based his estimate on a review of the literature regarding subsidence problems related to subsurface cavity development, and on an assumption that the bulking rate of most rock types is 140%: i.e., when the roof caves in, the resulting rubble will occupy 40% more space than the same material prior to collapse. However, he emphasized the need to gather additional data in order to develop a more realistic basis on which to regulate brine extraction wells from the standpoint of subsidence control.

Given the very large size of the cavity at your facility (the largest in the state, as far as I'm aware) and the uncertainty of our information as to when such a cavity becomes unstable, Conoco will be required to submit to the EID the results of a sonar log or some other direct measurement of the cavity dimensions with depth at your site.

This information may be submitted together with the information required under a "Part 5" discharge plan when you apply for renewal of your present discharge plan approval, which expires December 18, 1987. "Part 5" refers to Part 5 of the Water Quality Control Commission Regulations, those that apply specifically to underground injection wells. You will recall that your present discharge plan was approved under the more general provisions of Part 3 of the regulations, just prior to Part 5 taking effect. Renewed approval will be contingent on your submittal of a full Part 5 discharge plan, an outline for which is enclosed. It is recommended that you submit this material six to eight months before the expiration date of your current plan, to allow ample time for publication of public notice and for negotiation on the contents of the plan, if necessary.

Please be in touch if you have any questions. My telephone number is 827-2901.

Again, thank you for your cooperation.

Sincerely,

Paige Grant Morgan
Water Resource Specialist
Ground Water Section

PGM/mp

cc: Garrison McCaslin, Acting District IV Manager, EID
Eddie Rodriguez, Conoco-Hobbs

Donald W. Johnson
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
P.O. Box 460
726 East Michigan
Hobbs, NM 88240
(505) 393-4141

January 10, 1986

Environmental Improvement Division
P.O. Box 968
Santa Fe, NM 87504

Attention Ms. Paige Grant Morgan

Gentlemen:

Warren McKee Brine Well No. 1 located 710' FSL and 420' FWL Section 2, T-20-S, R-38-E, Lea County, New Mexico

Your letter dated November 20, 1985 regarding the above captioned well requested that Conoco Inc. submit the following financial and engineering data.

1) In response to your first question, it would cost approximately $15,000 to plug and abandon the subject well by filling the entire production casing string completely with cement while leaving the open hole section of the well full of brine. Conoco Inc. has an existing $50,000 blanket plugging bond posted with the State of New Mexico. This bond conforms with the requirements of the State of New Mexico Department of Energy and Minerals Department. A copy is attached for your information.

2) The second question inquired about the volumes of brine produced by circulating water in the salt section of this well. Since September, 1982 approximately 7.6 MMBbls of water have been circulated thru this well. Since July, 1978 (Date of first operations) to present a total of 20.1 MMBbls of water have been circulated.

   The average salinity of produced brine water has been 65,200 mg/liter of $NaCl_2$. Using the volume of 20.1 MMbbls of water circulated to date, a calculated volume of 3.4 MM cubic feet of salt has been extracted from this brine well (see calculation sheet). The EID requires that at least 50 feet of overburden per million cubic feet of salt cavity exist as protection against overburden collapse. The volume of salt extracted in this well indicates that a minimum of 170' of overburden is needed. Since the depth to the top of the open hole section (top of the salt zone) is 1456' from surface minimum requirements are well exceeded.

Additional questions concerning this matter should be directed to Eddie Rodriguez @ 505-393-4141 ext. 171 in this office.

Yours very truly,

D. W. Johnson
Division Manager

JER:tr
cc: PAB, JER, COY, HAI, Well file

Calculation Sheet

Given: a) Total brine produced since inception = 20,101,350 Bbls*
b) Total brine produced since Sept. 82 = 7,592,817 Bbls*
c) Average salinity = 65,200 mg/liter $NaCl_2$ (measured)
d) Density of $NaCl_2$ = 135 lbs/ft^3
e) 1 mg/liter = 1.7525 X 10^{-7} ton/Bbl

Volume of Salt Extracted

20,101,350 Bbls X 65,200 mg/liter X (1.7525 X 10^{-7} ton/Bbl) X

(2000 lbs/ton) / 135 lbs/ft^3 = 3,392,288 ft^3

Evaluation

The minimum overburden required by the EID is 50 feet per each million cubic feet of salt cavity. In this case 170 feet or (3.4 $MMft^3$ X 50 feet/$MMft^3$) is required. The top of the salt section in the Warrren McKee Brine Well No. 1 is @ + 1456'; therefore, the requirements of overburden are greatly exceeded since 1456' is much greater than 170'.

* Note: These volumes were obtained from Conoco's Project Summary reports.

CHUBB

CHUBB & SON INC.
Manager

100 William Street, New York, N.Y. 10038

FEDERAL INSURANCE COMPANY

RIDER to be attached to and form a part
of Bond No. 8076-34-52
Wherein CONTINENTAL OIL COMPANY
is named as Principal, and FEDERAL INSURANCE
COMPANY as Surety, in the sum of $50,000
dated Nov. 14, 1977, in favor of
State of New Mexico - Blanket Plugging Bond

IT IS HEREBY STIPULATED AND AGREED that, effective July 1, 1979 said bond be amended as follows, to wit: That the Principal in said bond be changed from CONTINENTAL OIL COMPANY to Conoco Inc. and that Conoco Inc. shall be held and firmly bound, and hereby binds itself, its successors and assigns, as Principal, and FEDERAL INSURANCE COMPANY hereby binds itself, its successors and assigns, as Surety in accordance with the terms, provisions and conditions of said bond as hereby amended.

This Rider is executed upon the express condition that the liability of the Surety herein shall in no event exceed in the aggregate the penal sum of said bond, subject, otherwise, to all other terms, provisions and conditions of said bond as hereby amended.

Signed, sealed and dated this 12th day of June, 19 79.

CONTINENTAL OIL COMPANY
Principal (Old Name)

BY _____
J. A. Begley, Asst. Manager-Insurance Div.

Conoco Inc.
Principal (New Name)

BY _____
Warren L. Jensen, Vice-President

FEDERAL INSURANCE COMPANY

BY _____
Lou Ann Sims, Attorney in Fact

Form O & G B-B
Adopted 6-17-77

STATE OF NEW MEXICO

$50,000.00 BLANKET PLUGGING BOND

BOND NO. 8076-34-52
(For Use of Surety Company)

Note: File with Oil Conservation Commission, P. O. Box 2088, Santa Fe 87501

KNOW ALL MEN BY THESE PRESENTS:

That CONTINENTAL OIL COMPANY (XXXXXXXXXXXXXXXXXXXXXX) (a corporation organized in the State of Delaware, with its principal office in the city of Ponca City, State of Oklahoma, and authorized to do business in the State of New Mexico), as PRINCIPAL, and FEDERAL INSURANCE COMPANY, a corporation organized and existing under the laws of the State of New Jersey, and authorized to do business in the State of New Mexico, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Commission of New Mexico pursuant to Section 65-3-11, New Mexico Statutes Annotated, 1953 Compilation, as amended, in the sum of Fifty Thousand Dollars($50,000.00) lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or may commence the drilling of wells to prospect for and produce oil or gas, or carbon dioxide (CO_2) gas or helium gas, or does own or may acquire, own or operate such well, or such wells started by others on land embraced in said State oil and gas leases, or carbon dioxide (CO_2) gas leases, or helium gas leases, and on land patented by the United States of America to private individuals, and on land otherwise owned by private individuals, the identification and location of said well being expressly waived by both principal and surety hereto.

NOW, THEREFORE, If the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug all of said wells when dry or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Commission of New Mexico in such way as to confine the oil, gas, and water in the strata in which they are found, and to prevent them from escaping into other strata;

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

PROVIDED, HOWEVER, That thirty (30) days after receipt by the Oil Conservation Commission of New Mexico of written notice of cancellation by the surety, the obligation of the surety hereunder shall terminate as to property or wells acquired, drilled, or started after said thirty (30) day period but shall continue in effect, notwithstanding said notice, as to property or wells theretofore acquired, drilled or started.

Sealed with our seals and dated this 14th day of November, 1977.

CONTINENTAL OIL COMPANY
PRINCIPAL
P. O. Box 1267
Ponca City, Oklahoma 74601
Address

pmt By J. A. Begley
Signature

J. A. Begley, Asst. Manager-Insurance
Title

(Note: Principal, if corporation, affix corporate seal here.)

FEDERAL INSURANCE COMPANY
SURETY
100 William Street
New York, New York
Address

By Lorn W. Edwards
Attorney-in Fact

(Note: Corporate surety affix corporate seal here.)

Countersigned by:

New Mexico Resident Agent

Men by these
New Jersey Corporati
Alexander, Daniel
and lawful Attorney-in-Fact to execu
in its name and to affix its corporate
tions on behalf of Continental
Oil Company of Calif
Company Yellowstone
of the following classes, to-wi
1. Bonds on behalf of contr
any State or political s
2. Surety Bonds to th
laws or regulatio
the laws, ord
private; bo
Miscella
offici
3. Bo

ACKNOWLEDGEMENT FORM FOR NATURAL PERSONS

STATE OF _____)
COUNTY OF _____) ss.

On this _____ day of _____, 19____, before me personally appeared _____, to me known to be the person (persons) described in and who executed the foregoing instrument and acknowledged that he (they) executed the same as his (their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission expires

ACKNOWLEDGEMENT FORM FOR CORPORATION

STATE OF OKLAHOMA)
COUNTY OF KAY) ss.

On this 14th day of November, 19 77, before me personally appeared J. A. Begley, to me personally known who, being by me duly sworn, did say that he is Asst. Manager-Insurance Division of Continental Oil Company and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Patricia M Thompson
Notary Public

9-3-80
My Commission expires

ACKNOWLEDGEMENT FORM FOR CORPORATE SURETY

STATE OF OKLAHOMA)
COUNTY OF KAY) ss.

On this 14th day of November, 1977, before me appeared Lorn W. Edwards, to me personally known, who, being by me duly sworn, did say that he is Attorney-in-Fact of FEDERAL INSURANCE COMPANY and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

Patricia M Thompson
Notary Public

9-3-80
My Commission expires
(Note: Corporate surety attach power of attorney.)

APPROVED BY:

OIL CONSERVATION COMMISSION OF NEW MEXICO

By _____

Date _____

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

November 20, 198[illegible]

Mark K. Mosley, Manager
Production Department, Hobbs Division
'Conoco, Inc.
PO Box 460
Hobbs, NM 88240

Dear Mr. Mosley:

I wrote to you nearly two years ago to inform you that the Environmental Improvement Division had been granted the authority for regulating brine extraction wells in New Mexico. Since that time, Conoco's brine station on the Hobbs-Eunice highway has been included on EID's inspections of the surface facilities at brine stations, and has always appeared to be well-run from the standpoint of surface operations.

Nonetheless, a review of Conoco's discharge plan DP-318, which was approved by the Oil Conservation Division in December 1982, has revealed two problems that I need to bring to your attention:

1) The only bond associated with this facility is a $500 bond with the New Mexico State Land Office, "... to secure the payment of such damage to the livestock, water, crops or other tangible improvements on the lands as may be suffered by reason of development, use and occupation of the lands by the said lessee". This does not address the concerns expressed in Section 5-210.B.17 of the Water Quality Control Commission regulations (enclosed), for which a bond or other demonstration of financial responsibility is required.

Therefore, please submit an estimate of the cost to plug the Conoco brine extraction well with cement from the foot of the casing to ground surface, having left the salt cavity full of brine; together with a bond or other demonstration of financial responsibility for that amount. This modification of your discharge plan is requested under Section 3-109.E of the enclosed WQCC regulations.

2) The volumes of brine extracted from the Salado Formation at your facility raise some concern regarding the potential for overburden collapse. Please submit the figures for volume of brine removed between September 1982 (the last date for which you submitted this information to the OCD) and the present time. In addition, please submit data to demonstrate that there is at least 50 feet of overburden to each million cubic feet of volume of the salt cavity at your facility.

Thank you for your attention to these requests.

Sincerely,

Paige Grant Morgan
Water Resource Specialist

PGM:pgm

cc: John Guinn, EID District IV Mgr.

No. of Samples	Ion
	Na
	K
	Ca
	Mg
	Cl
	HCO3
	CO3
	SO4
	TDS
////////	////////////
	NO3+ NO2
	NH3
	kjeld N
////////	////////////
	As
	Ba
	Cd
	CN
	Cr
	F
	Pb
	Hg
	Se
	Ag
	U
	V
	Ra 226
	Ra 228
////////	////////////
	Cu
	Fe
	Mn
	Phenols
	Zn
////////	////////////
	Al
	B
	Co
	Mo
	Ni
////////	////////////
	pH
	Conduct.

FIELD TRIP REPORT
GROUND WATER SECTION

SLD USER CODES

County *Lea*

Ground Water: 59300

NO_3, HC, & Toxics: 59600

UIC: 59500

FACILITY VISITED

Name of Facility: *Conoco brine station*

Location: *Between Hobbs and Eunice on Eunice Hwy.*

Discharge Plan Number: DP- *318*

Type of Operation: *brine extraction well using city sewage effluent for injection. Brine sent directly to waterflood.*

ENVIRONMENTAL IMPROVEMENT DIVISION FIELD VISIT

EID Inspector(s): *Sares, Morgan*

Date of Inspection or Visit: *11/11/85*

Discharger's Representative Present During EID Visit:

Name: *NONE*

Title or Position:

Purpose of Visit:

a. Evaluation of Proposed Discharge Plan _____

b. Compliance Inspection of Discharge with Approved Plan *X*

c. Other (specify) _____

Inspection Activities During Field Visit:

a. Inspection of Facilities or Construction (specify)

Looked at general housekeeping on surface. Did not enter locked gate to inspect wellhead.

b. Sampling of Effluents (give sampling locations)

c. Sampling of Ground Water (give names or locations of wells)

d. Evaluation of geology, soils, water levels or other physical characteristics of the location (specify)

e. Other (specify)

Observations and Information Obtained during the Visit:

Very clean on surface. Should notify Conoco of our concern for subsidence at this site given enormous injection rates.

ACTION REQUIRED

Letter requesting info on volumes of brine extracted over life of project.

STATE OF NEW MEXICO
ENVIRONMENT Department

MEMORANDUM

DATE: March 5, 1984

TO: Roelf Ruffner, EID Hobbs Field Office

FROM: Paige Grant, WRS II, Ground Water Section

SUBJECT: Conoco operation at Maljamar

I spoke with Mr. Hugh Ingram of Conoco - he explained that their Maljamar operations were waterflood oil and gas wells at the "MCA unit." Those facilities are regulated by OCD. I checked with Prentiss Childs of OCD to see if they were aware of the facility, and they are - it is listed on their inventory, included in their inspection circuit, and so on.

Thanks for keeping me posted on operations that may be of potential concern to us.

PG:egr

STATE OF NEW MEXICO
HEALTH ENVIRONMENT department

MEMORANDUM

DATE: February 27, 1984

TO: Paige Grant, Groundwater Surveillance, Santa Fe

FROM: Roelf Ruffner, Environmentalist, Hobbs RR

SUBJECT: INJECTION WELLS

I was informed recently that CONOCO is injecting fresh water into brine wells at Maljamar, NM. Are you aware of this situation?

RR/jp

cc John Guinn, HPM II, Roswell
Tom Burt, HPM I, Carlsbad/Hobbs
Files - Hobbs EID

RECEIVED

MAR 1 1984

GROUND WATER/HAZARDOUS WASTE BUREAU

W. of Hobbs

HEALTH ENVIRONMENT department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box 968, Santa Fe, New Mexico 87504-0968
(505) 984-0020

Steven Asher, Director

TONEY ANAYA
GOVERNOR

ROBERT McNEILL
SECRETARY

ROBERT L. LOVATO, M.A.P.A.
DEPUTY SECRETARY

JOSEPH F. JOHNSON
DEPUTY SECRETARY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 9, 1984

Mr. Mark K. Mosley, Manager
Production Department, Hobbs Division
Conoco, Inc.
P.O. Box 460
726 E. Michigan
Hobbs, NM 88240

Dear Mr. Mosley:

For your information, the responsibility for regulating brine extraction wells in the state of New Mexico was transfered in September, 1983 from the Oil Conservation Division (OCD) of the Energy and Minerals Department, to the Environmental Improvement Division (EID) of the Health and Environment Department.

The transfer will probably have no effect on your operation until 1986, when, if you plan to continue producing brine at your facility, you will need to start the process of applying for renewed approval of your discharge plan. Your present approval expires December 18, 1987, five years after the date the plan was approved.

At that time, you will need to prepare a discharge plan which includes the elements required under Section 5 as well as Section 3 of the Water Quality Control Commission (WQCC) Regulations (copy enclosed). Prior to December 20, 1982, a discharge plan consisted of only those elements listed in Section 3. Section 5 was added to the regulations in order to comply with federal Environmental Protection Agency (EPA) regulations to protect drinking water from pollution that might occur due to injection of fluids underground. The preparation of a Part 5 UIC application will require you to provide considerably more technical information than was needed for Part 3 discharge plan approval. It is for this reason that we recommend you begin to prepare your discharge plan renewal about eighteen months before the date that you current permit lapses. This should allow ample time for preparation, review, correction and final submittal of your new plan.

In the meantime, you are required to operate your facility in compliance with the standards of Section 3 of the WQCC Regulations. As time permits, we will

undertake a review of your present discharge plan and your field operation, to assure that it meets those standards.

If you have any questions or require further information, please contact me at the above address and telephone number (ext. 285).

Sincerely,

Paige Grant
Hydrologist
Ground Water Section

PG:egr

Enclosure

cc: John Guinn, EID District IV, Manager
EID Field Office, Hobbs
Joe Ramey, Director, OCD

mst

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

December 18, 1982

Conoco Inc.
P. O. Box 460
Hobbs, New Mexico 88240

Re: GWB-3 Discharge Plan

Gentlemen:

The discharge plan submitted for the brine production facility and in site extraction well located in Section 2, Township 20 South, Range 38 East, NMPM, Lea County, New Mexico, is hereby approved.

The discharge plan was submitted pursuant to section 3-106 of the Water Quality Control Commission regulations. It is approved pursuant to section 109. Please note subsections 3-109.E and 3-109.F which provide for possible future amendment of the plan. Please also be advised that the approval of this plan does not relieve you of liability should your operations result in actual pollution of surface or ground waters which may be actionable under other laws and/or regulations.

Yours very truly,

JOE D. RAMEY,
Director

JDR/jc

BSW#3

NOTICE OF PUBLICATION

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

SANTA FE, NEW MEXICO

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following proposed discharge plan has been submitted for approval to the Director of the Oil Conservation Division, P. O. Box 2088, State Land Office Building, Santa Fe, New Mexico 87501, telephone (505) 827-3260. (DP-318) CONOCO INC., P. O. Box 460, Hobbs, New Mexico 88240, telephone (505) 393-4141, requests approval of their discharge plan for their brine in situ extraction well and facility located in Section 2, Township 20 South, Range 38 East, NMPM, Lea County, New Mexico. Conoco produces approximately 1650 barrels of brine water per day to be used in their Warren Unit McKee Waterflood. The total dissolved solids content of brine water is approximately 270,000 mg/L.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and a public hearing may be requested by any interested person. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 12th day of November, 1982.

STATE OF NEW MEXICO

OIL CONSERVATION DIVISION

Joe D. Ramey

JOE D. RAMEY

Director

S E A L

Mark K. Mosley
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
P. O. Box 460
726 E. Michigan
Hobbs, NM 88240
(505) 393-4141

received
11-15-82

November 11, 1982

New Mexico Oil Conservation Division
Department of Energy and Minerals
P. O. Box 2088
Santa Fe, NM 87501

Attention: Oscar Simpson

Discharge Plan for Conoco's Brine in Situ Extraction Well, Section 2, T-20-S, R-38-#, Lea County, New Mexico

The following information is submitted in response to your letter dated October 8, 1982, and supplements our letter dated September 30, 1982:

1. Topographic map showing the location of our facility is attached as Exhibit #1.

2. Exhibit #2 is a well location plat. The well is located on a 40-acre State tract leased from the State of New Mexico (M-19439), attached as Exhibit #3. Rights to surface use are a provision of the lease agreement. Storage facilities are located on land owned by Conoco. Exhibit #4 is a letter from the City of Hobbs granting Conoco the right to construct the pipeline across the City's property.

3. The City of Hobbs' pits are shown on Exhibit #1. Photographs of the well and the dikes are attached.

4. Conoco takes effluent water from the City of Hobbs at the point where storage facilities are located. Water is transferred from the 10,000 barrel storage tank to the well, then returned to the 750 barrel brine mixing tank, via the pipeline shown on Exhibit #1. Here the appropriate mixture of fresh water from the 10,000 barrel tank and saturated brine water from the well is made before transferring via pipeline to the Warren McKee Waterflood System about 4 miles to the southwest. The entire process is enclosed in plastic coated steel tanks and fiberglass pipelines with plastic coated connections. Daily visual inspections are made by company personnel. See Exhibit #5 and photographs.

5. In July, 1979, the well was shut-in to perform a chemical treatment to kill bacteria downhole. During this work it was discovered that the open hole section had sloughed around the 3 1/2" tubing. When the tubing was pulled, it was found that approximately 500' of the tubing was corkscrewed. Fill and bridges were tagged at 1630'.

In order to determine the condition of the open hole section and the extent of corrosion to the casing, an open hole caliper log and a casing inspection log were run. The open hole was then cleaned out to 2180'. Tubing was run and the well was placed back in operation.

6. Exhibit #6 is an analysis of water taken from a 105' deep well about one-half mile north of the storage facilities. This is the Ogalalla aquifer.

7. There are three meters in the system: a meter showing the volume of water taken from the city and placed into the 10,000 barrel tank; a meter showing volume of water from the fresh water tank to the brine well; and a meter from the brine mixing tank to the waterflood system. Daily samples are taken of the mixed brine water going into the waterflood. A sudden change or imbalance at that point would indicate a problem in the system. Also daily visual inspections would reveal any serious leaks that might occur.

8. The geologic formations penetrated by this well are:

   Redbed, 150' - 1560'
   Rustler Anhydrite, 1560' - 1650'
   Salado Salt, 1650' - 2400' TD

   Electric logs are not available.

9. Attached as Exhibit #7 is a summary of water circulated thru this brine well since inception. Royalties have been paid to the State of New Mexico based on these volumes. Exhibit #8 is a copy of the most recent salinity report, which is consistent with previous reports kept on file.

10. According to our interpretation, the brine system (in situ mining) terminates at the point of transfer to the McKee Waterflood System, which would not be a part of this application. If we are incorrect in this assumption, please advise.

We trust that this additional information will satisfy your requirements, however, if more is needed or if we have misinterpreted any part, we would appreciate your further advice.

Yours very truly,

M. K. Mosley
Division Manager

IAH:sjl

EXHIBIT #1

HOBBS SW QUADRANGLE
NEW MEXICO-LEA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

EXHIBIT #1

(1) Overflow Pit from 10,000 bbl Effluent Water Tank - Normally Dry

(2) Inundation Pit - Effluent water not taken by Cenco. Owned by City of Hobbs.

EXHIBIT #2

NEW MEXICO OIL CONSERVATION COMMISSION

WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-128
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section

Operator	Lease	Well No.
Continental Oil Company	Warren McKee Brine	1

Unit Letter	Section	Township	Range	County
M	2	20 South	38 East	Lea

Actual Footage Location of Well:
709 feet from the South line and 420 feet from the West line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3580.9	Salado	~~Salado~~ Undesignated	40 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

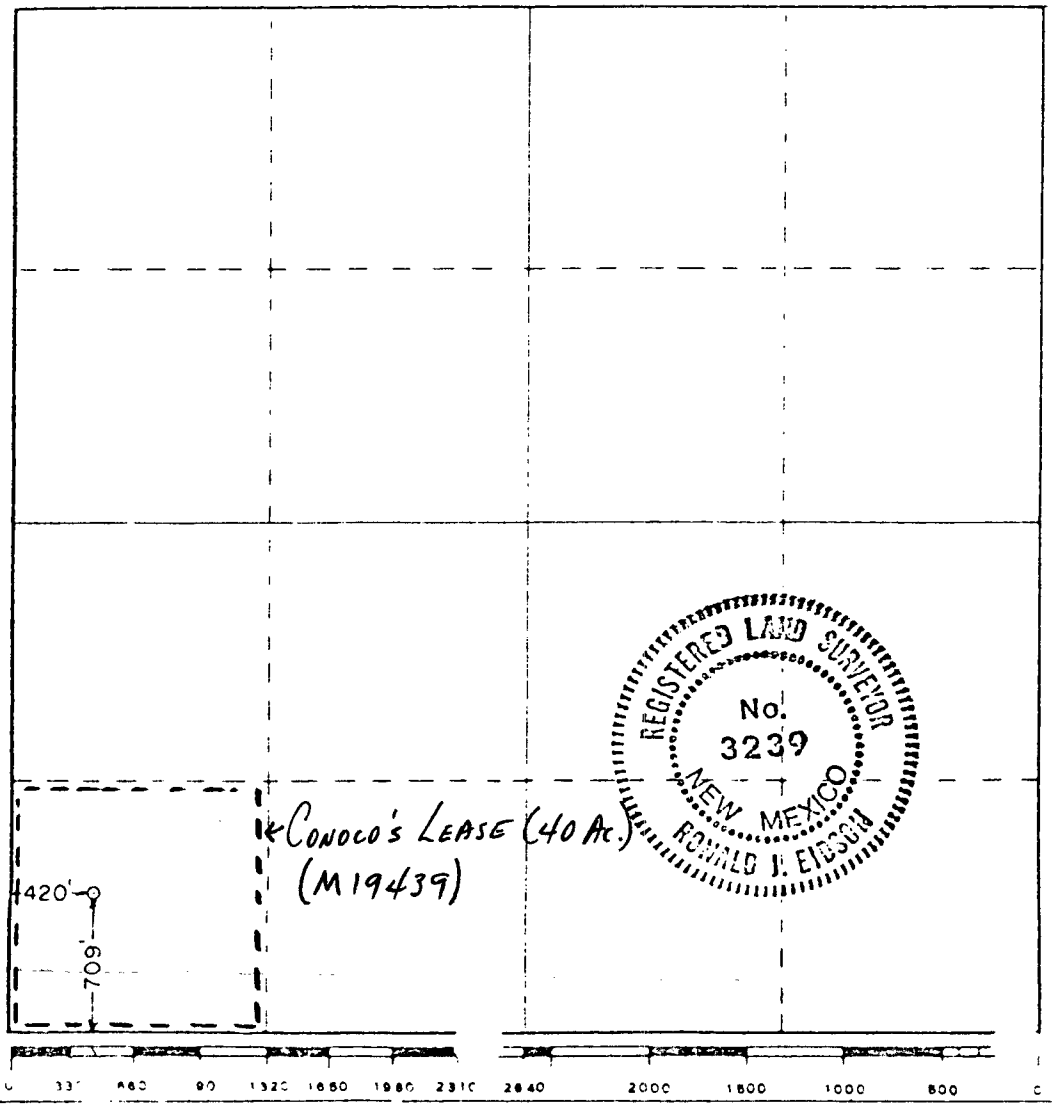
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name: Wm. A. Butterfield
Position: ADMIN. SUPV.
Company: CONTINENTAL OIL CO.
Date: FEB. 14, 1978

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

Date Surveyed: Feb. 13, 1978

Registered Professional Engineer and/or Land Surveyor: Ronald J. Eidson

Certificate No. John W. West 676
Ronald J. Eidson 3239

EXHIBIT #3

NEW MEXICO STATE LAND OFFICE

SALT MINING LEASE

LEASE NO. M-19439

THIS AGREEMENT, dated this 11TH day of APRIL, 1977, made and entered into between the STATE OF NEW MEXICO, acting by and through the undersigned, its COMMISSIONER OF PUBLIC LANDS, hereinafter called the "Lessor, and CONTINENTAL OIL COMPANY P. O. BOX 460, HOBBS, NEW MEXICO 88240, hereinafter called the "Lessee".

WITNESSETH:

WHEREAS, the lessee had duly filed an application for a mining lease for the purpose stated herein, covering the lands hereinafter described, and with said application has tendered as the first annual rental the sum of $ 25.00, and the further sum of $10.00 application fee, and the lessor has accepted said application as tendered;

WHEREFORE, lessor does grant, demise and lease for the sole and only purpose of exploring for, mining and removing chloride of sodium, usually called and known as "common salt", thereon and therefrom, the following described lands situated in LEA County, New Mexico:

INSTITUTION	SECTION	TOWNSHIP	RANGE	SUBDIVISION	ACRES
C.S.	2	20S	38E	SW¼SW¼	40.00

TO HAVE AND TO HOLD said land for a term of 10 years and as long thereafter as said salt in paying quantities shall be produced from the leased land, subject to the terms and conditions hereinafter provided:

1. In addition to the advance annual rental of $ 25.00 hereinbefore provided, lessee agrees to pay the lessor a sum equal of 10% of the actual sale price at the place of extraction, as royalty for all salt mined and removed from the premises. Payment of said royalty shall be made on the 20th day of the month next following the first calendar quarter in which the salt was sold. Further, lessee agrees to keep an accurate record of all production and to submit quarterly reports of same to the lessor upon forms to be furnished by the lessor.

2. The right and privilege of the lessee to mine and remove the salt shall be exclusive, in that the lessor will not grant the same rights and privileges to anyone else during the term of this lease.

3. The lessee, with the consent of the lessor, may at any time surrender or relinquish this lease, in whole or in part, to the lessor; provided however, that no relinquishment of any undivided interest herein nor less than a legal subdivision shall be approved or recognized by the lessor. Provided, further, that no relinquishment shall be approved or recognized by the lessor where the rentals and royalties have not been paid and the lease is not otherwise in good standing.

4. The lessee, with the consent of the lessor, may assign this lease, in whole or in part; provided, however that no assignment or an undivided interest in the lease, or any part thereof, nor any assignment of less than one legal subdivision, shall be recognized or approved by the lessor. Upon approval of an assignment in writing by the lessor, the assignor shall stand relieved from all obligations to the lessor with respect to the lands embraced in the assignment, and the lessor shall likewise be relieved from all obligations to the assignor as to such tracts, and the assignee shall succeed to all of the rights and privileges of the assignor with respect to such tracts and shall be held to have assumed all of the duties and obligations of the assignor to the lessor as to such tracts.

5. Lessor may cancel this lease for violation of any of the terms, convenants, and conditions thereof; provided, however, that before any such cancellation shall be made, lessor must mail to the lessee, by registered mail addressed to the post office address of such lessee as shown by the records, a thirty day notice of intention to cancel said lease, specifying the default for which the lease is subject to cancellation. No proof of receipt of notice shall be necessary and thirty days after such mailing the lessor may enter cancellation unless the lessee shall have sooner remedied the default.

(a) Lessees, including their heirs, assigns, agents, and contractors shall at their own expense fully comply with all laws, regulations, rules, ordinances, and requirements of the city, county, state, federal authorities and agencies, in all matters and things affecting the premises and operations thereon which may be enacted or promulgated under the governmental police powers pertaining to public health and welfare, including but not limited to conservation, sanitation, aesthetics, pollution, cultural properties, fire, and ecology.

(b) The State has a continuing option to purchase at any time and from time to time, at the market price prevailing in the area on the date of purchase, all or any part of the minerals (_____) that will be produced from the lands covered by this lease (or other conveyance).

6. Lessor shall have the right to inspect all records, books or accounts pertaining to mining, extraction, transportation and returns of materials taken from the lands.

7. Lessee may make or place such improvements and equipment upon the land as may be reasonable necessary to explore for, mine and remove the materials, and upon termination of this lease for any reason, lessee may remove such improvements and equipment as can be removed without material injury to the premises; provided, however, that all rentals and royalties have been paid and that such removal is accomplished within two years of the termination date or before such earlier date as the lessor may set upon thirty days' written notice to the lessee. All improvements and equipment remaining upon the premises after the removal date, as set in accordance with this paragraph, shall be forfeited to the lessor without compensation.

8. Before lessee shall commence development or operations upon the lands embraced herein, he shall execute and file with the lessor a good and sufficient bond in the amount of $ 500.00 in favor of the State of New Mexico, for the benefit of the lessor, its surface lessee, patentee or contract purchaser, to secure the payment of such damage to the livestock, water, crops or other tangible improvements on the lands as may be suffered by reason of development, use and occupation of the lands by the said lessee, and the lessee shall be liable and agrees to pay for all such damages to the livestock, growing crops, or other improvements upon the land. In addition, lessee shall furnish a bond in the amount of $ 500.00 in favor of lessor to guarantee payment of royalties to become due under this lease, or in the alternative to filing said performance bond, lessee may pay to the lessor on or before the first day of each calendar quarter of the year, in advance, the sum of $****NIL**** as advance royalty to be credited against royalty becoming due during the quarter.

9. This lease is made subject to all the provisions and requirements applicable thereto which are to be found in various acts of the Legislature of New Mexico, the same as though they were fully set forth herein, and said laws, so far as applicable to this lease, are to be taken as a part hereof.

10. Nothing herein contained shall be held or construed to prevent the lessor from leasing or letting the said lands or any portion thereof for grazing or agricultural purposes, or for leasing them for the exploration, development and production of products from deposits other than the item, including but not limited to oil and gas, potash and coal, or for leasing them for the operation of a business, or for selling them under a deferred purchase contract with minerals reserved, or for patenting them with minerals reserved, or for the issuance of rights of way, and easements over, upon, or across them for public highways, railroads, tramways, telegraph, telephone and power lines, irrigation works, mining, logging, and for any of the purposes mentioned hereinabove in this paragraph, and for other purposes.

11. The lease herein is issued subject to all valid existing rights and with special but not exclusive reference to the present existence of the matters mentioned in the paragraph above.

12. All mining operations hereunder shall be in conformance with good mining practices, shall be carried on in a workmanlike manner, and shall be in conformance with all of the laws of the State of New Mexico and all rules and regulations of the State Land Office as may be issued from time to time under authority of law for the protection of valuable deposits of other minerals in or upon the lands but not covered by this lease.

13. Payment of all sums due the lessor by the lessee under the terms of this lease, including but not limited to payment for royalties and fees, shall be made at the office of the Commissioner of Public Lands, P. O. Box 1148, Santa Fe, New Mexico 87501, and after notice given, lessor may require such payments to be made in cash or certified exchange.

IN WITNESS WHEREOF, the State of New Mexico has hereunto signed and caused its name to be signed by its Commissioner of Public Lands thereunto duly authorized, with the seal of his office affixed, and the lessee has signed this agreement to be effective the day and year above written.

STATE OF NEW MEXICO

BY: Phil R. Lucero

COMMISSIONER OF PUBLIC LANDS,
Lessor

CONTINENTAL OIL COMPANY

BY: L. P. Thompson

Lessee L.P. THOMPSON, DIVISION MGR.

PERSONAL ACKNOWLEDGMENT

STATE OF _____)
ss:
COUNTY OF _____)

The foregoing instrument was acknowledged before me on this _____ day of _____, 19____

by _____

_____
Notary Public

My Commission Expires:

ACKNOWLEDGMENT BY ATTORNEY

STATE OF _____)
ss:
COUNTY OF _____)

The foregoing instrument was acknowledged before me on this _____ day of _____, 19____

by _____ as attorney-in-fact on behalf of _____

_____

_____
Notary Public

ACKNOWLEDGMENT BY CORPORATION

STATE OF NEW MEXICO)
ss:
COUNTY OF LEA)

The foregoing instrumen was acknowledged before me on this 21st day of April, 19 77

by L. P. Thompson (name), Division Manager (title) of Continental Oil Company (corporation)

a Delaware (state or county) corporation, on behalf of said corporation.

J. L. Jones
Notary Public

My Commission expires:

October 27, 1978

10

EXHIBIT #4

P. O. Box 1117
Hobbs, New Mexico 88240

January 5, 1978

Mr. Mike Rooney
Continental Oil Company
1001 N. Turner
Hobbs, New Mexico 88240

SUBJECT: Salt water pipeline crossing at Wastewater Inundation Basins

Dear Mike:

This letter is to notify you that you may construct a saltwater pipeline on the City's property at the Wastewater Inundation Basins in the following locations:

> Parallel to and 10 feet west of the west portion of the basins perimeter fence. Extending from the ten (10) acre lease site on the south to the Conoco tank battery on the north.

Any areas disturbed by construction shall be leveled to the existing ground line and thoroughly compacted so that no settlement will occur.

Permission for this pipeline shall be in effect for as long as the ten (10) acre brine well lease is effective and shall terminate when the brine well lease is terminated.

Please contact me if I can be of any further assistance.

Sincerely yours,

CITY OF HOBBS, NEW MEXICO

Ken Martin

Ken Martin, P.E.
CITY ENGINEER

KM/at

EXHIBIT #5

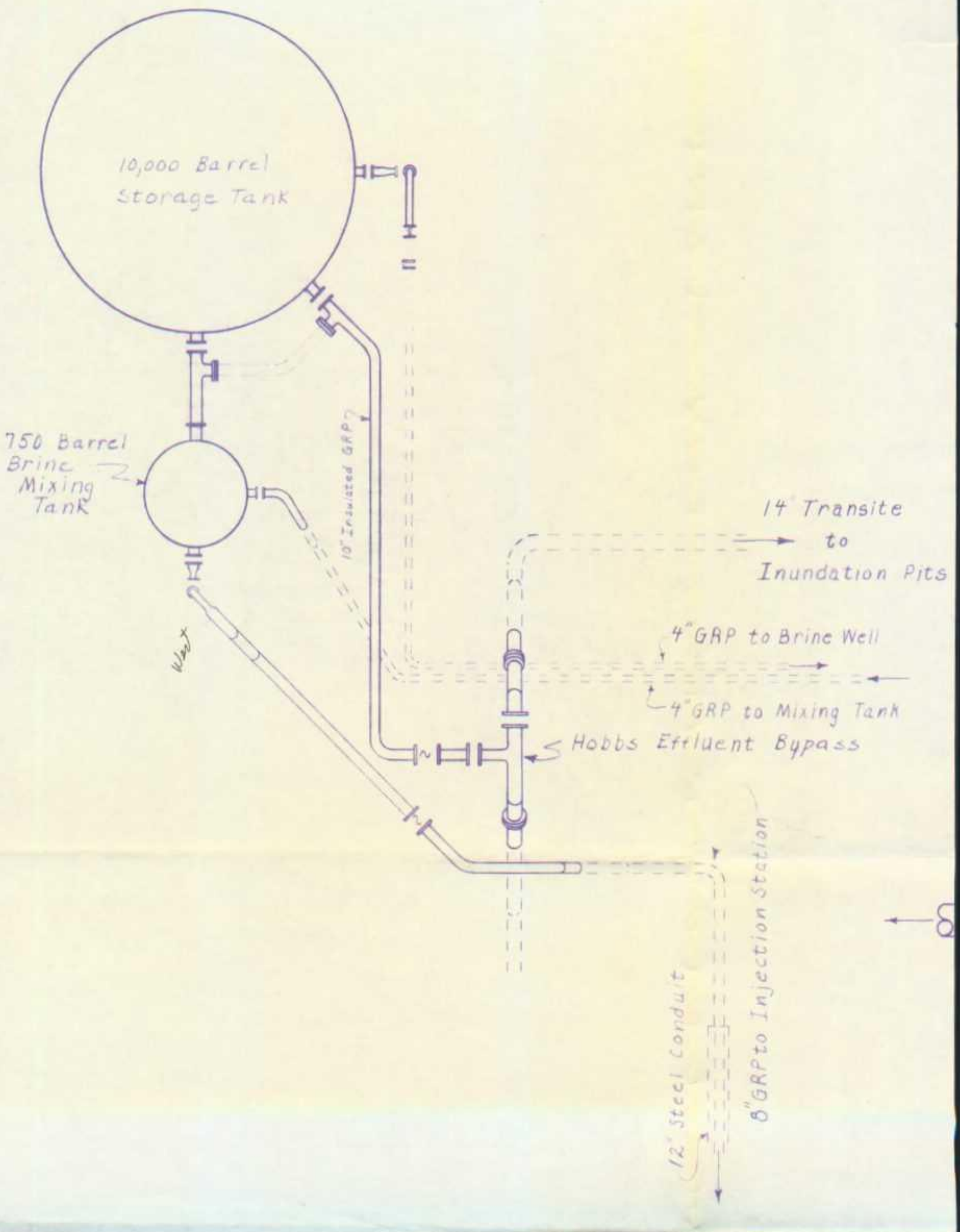

10,000 Barrel
Storage Tank
750 Barrel
Brine
Mixing
Tank
10" Insulated GRP
14" Transite
to
Inundation Pits
4" GRP to Brine Well
4" GRP to Mixing Tank
Hobbs Effluent Bypass
12" Steel Conduit
8" GRP to Injection Station

EXHIBIT #6

UNICHEM INTERNATIONAL

601 NORTH LEECH P.O.BOX1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO
DATE : 11-10-82
FIELD,LEASE&WELL : ALLEN PETREE RESIDENCE
SAMPLING POINT: WATER WELL
DATE SAMPLED : 11-9-82

SPECIFIC GRAVITY = 1
TOTAL DISSOLVED SOLIDS = 1112
PH = 7.13

		ME/L	MG/L
CATIONS			
CALCIUM	(CA)+2	4.8	96.1
MAGNESIUM	(MG)+2	8	97.2
SODIUM	(NA),CALC.	4.5	104.
ANIONS			
BICARBONATE	(HCO3)-1	5.6	341.
CARBONATE	(CO3)-2	0	0
HYDROXIDE	(OH)-1	0	0
SULFATE	(SO4)-2	4.4	212.
CHLORIDES	(CL)-1	7.3	259.
DISSOLVED GASES			
CARBON DIOXIDE	(CO2)	NOT RUN	
HYDROGEN SULFIDE	(H2S)	NOT RUN	
OXYGEN	(O2)	NOT RUN	
IRON(TOTAL)	(FE)		1
BARIUM	(BA)+2		.06
MANGANESE	(MN)	NOT RUN	

SCALING INDEX	TEMP
	30C 86F
CARBONATE INDEX	1.36
CALCIUM CARBONATE SCALING	LIKELY
SULFATE INDEX	-3.4
CALCIUM SULFATE SCALING	UNLIKELY

WARREN MCKEE WF SALINITY Exhibit #8

DATE	TIME	SP. GR.	PPM NaCL
10-01-82	11:40 a.m.	1.0450	65122
10-03-82	12:45 p.m.	1.0435	63051
10-04-82	2:15 p.m.	1.0535	76749
10-05-82	1:30 p.m.	1.0500	71985
10-06-82	12:00 p.m.	1.0535	76744
10-07-82	1:00 p.m.	1.0569	80821
10-08-82	2:00 p.m.	1.0550	78781
10-10-82	11:20 a.m.	1.0615	87643
10-22-82	10:30 a.m.	1.0250	37511
10-23-82	9:45 a.m.	1.0225	34043
10-24-82	10:45 a.m.	1.024	36126
10-26-82	11:00 a.m.	1.070	99094
10-28-82	12:30 p.m.	1.0260	38894
10-29-82	1:00 p.m.	1.030	44461
10-30-82	9:30 a.m.	1.0360	52755
10-31-82	9:30 a.m.	1.0380	55498
11-01-82	11:25 a.m.	1.0450	65122
11-02-82	9:05 a.m.	1.0380	55498

Warren McKee Pool Waterflood

Exhibit #7

Brine Well #1

	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	NOV.	DEC.
1978							16267	27221	37709	40362	16696	225
1979	18047	26380	35128	141059*	170421	96337	55500	145705	130055	93717	116483	124408
1980	63832	94457	82103	96151	92584	83083	19001	50340	72781	106670	127634	137168
1981	140237	127877	143105	137793	144400	59126	49486	33408	27792	26612	28172	33807
1982	38754	38452	10726	35207	27592	26507	30027	32915	38991			

*1st-5th - 4630
6th-10th- 19916
11th-15th- 28012
16th-20th- 29040
21st-25th- 25970
26th-30th- 33491

EXHIBIT #7

Conoco Inc.
Warren McKee Brine System

← Brine Well

← 10,000 Bbl. Effluent Water Storage Tank and 750 Bbl. Brine Water Mixing Tank

← City of Hobbs Effluent Pit

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

October 8, 1982

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

CONOCO, INC.
P.O. Box 460
Hobbs, NM 88240

ATTENTION: M. K. Mosley

RE: Discharge Plan for Conoco's
Brine in Situ Extraction
Well Section 2, T-20-S, R-38E
NMPM, Lea County, New Mexico

Dear Sir:

The Oil Conservation Division (OCD) received Conoco's discharge plan for its in situ extraction brine well located in Section 2, Township 20 South, Range 38 East, New Mexico Principal Merdian, Lea County, New Mexico.

I have reviewed Conoco's plan and find that the following additional information is needed:

1. Submit a topographic map showing the location of your facility. Suggested Map; USGS Topgraphic Map, 7.5 minute series or equivalent.

2. Submit a plat plan illustrating Conoco's property boundaries in relation to their brine facility.

3. Explain in detail from your discharge plan number 2-b. In other words show the location of the dike to your facility, illustrate with photographs of the dike and show location on topo map.

4. Submit a detailed flow diagram which illustrates the operation of your facility, from the source water to make the brine to the distribution or loading point(s). Submit photographs to help illustrate. Also submit a narrative description of this process and how each stage is accomplished and controlled to prevent spillage and leakage of brine.

5. Submit a narrative of past workovers done on your brine well.

6. Item three (3) on page one of your discharge plan is not correct and is a misinterpretation of question 3, page 25 of the WQCC regulations.

   Question 3 requests the depth to and total dissolved concentration (TDS) of ground water in the area, not a statement of whether fresh water exists or not. Submit an analysis and locations of distant wells if needed to provide the information.

7. From your metering system of both supply and brine water, is there an accounting system used to detect leakage of your system? What methods of inspection are employed to prevent and maintain mechanical integrity of your injection well and facility.

8. Submit the name and depth to the various geologic formations penetrated by your well. Submit electric logs of your brine well if available.

9. Submit a summary of each years production of brine over the past years of operation.

10. Submit a schematic diagram and distribution system showing where your produced brine water is used in the McKee Waterflood.

If you have any questions regarding this matter, please call me at (505) 827-2534.

Sincerely,

Oscar A. Simpson

Oscar Simpson
Water Resource Specialist

OS/dp

Mark K. Mosley
Division Manager
Production Department
Hobbs Division
North American Production

Conoco Inc.
P. O. Box 460
726 E. Michigan
Hobbs, NM 88240
(505) 393-4141

September 30, 1982

New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention Mr. J. D. Ramey

Gentlemen:

Application for Discharge Plan Approval - In Situ Extraction Well - Conoco Inc.

Pursuant to Water Quality Control Commission Regulations (WQCC 82-1), Conoco Inc. respectfully requests your approval for continued operation of its In Situ Extraction Well as follows:

1. Quantity, quality and flow characteristics of the discharge: From 1250 to 1650 barrels water per day is being circulated. See Attachments 2 and 3 for analysis of water in and out of this well.

2. a. Location of the discharge: 710' FSL & 420' FWL of Section 2, T-20S, R-38E, Lea County, New Mexico

   b. Bodies of water, watercourses and ground water discharge sites within one mile: None, except the City of Hobbs has a diked earthen overflow reservoir at the site of this well for storing overflow effluent from the sewage processing plant.

   c. Wells to be used for monitoring: None.

3. Depth to and TDS concentration of the ground water most likely to be affected by the discharge: This site was selected by the City of Hobbs for its storage pit because of the lack of a fresh water aquifer. There are no known fresh water wells within one mile of the well of this application.

4. Flooding potential of the site: None. The city's open pit is diked and there are no other surface waters in the area.

5. Location and design of site and method available for sampling and for measuring flow: The wellhead, pump, and other facilities are equipped with valves that permit the taking of samples. Turbine meters are installed to measure water input and outflow on a continuing basis.

6. Depth of and lithological description of rock at base of alluvium below the discharge site: See Attachment 1.

The Warren Unit McKee Brine Well No. 1 serves Conoco Inc.'s Warren Unit McKee Waterflood. Effluent water is purchased from the City of Hobbs, a small portion is then circulated through the salt section of this well, returned to a mixing tank and diluted with additional effluent water to achieve the brine concentration needed for injection in the waterflood.

If you have additional questions or need more information, we would appreciate your calling Hugh Ingram of this office.

Yours very truly,

D. L. Wacker

for M. K. Mosley
Division Manager

HAI:mhe

Attachments

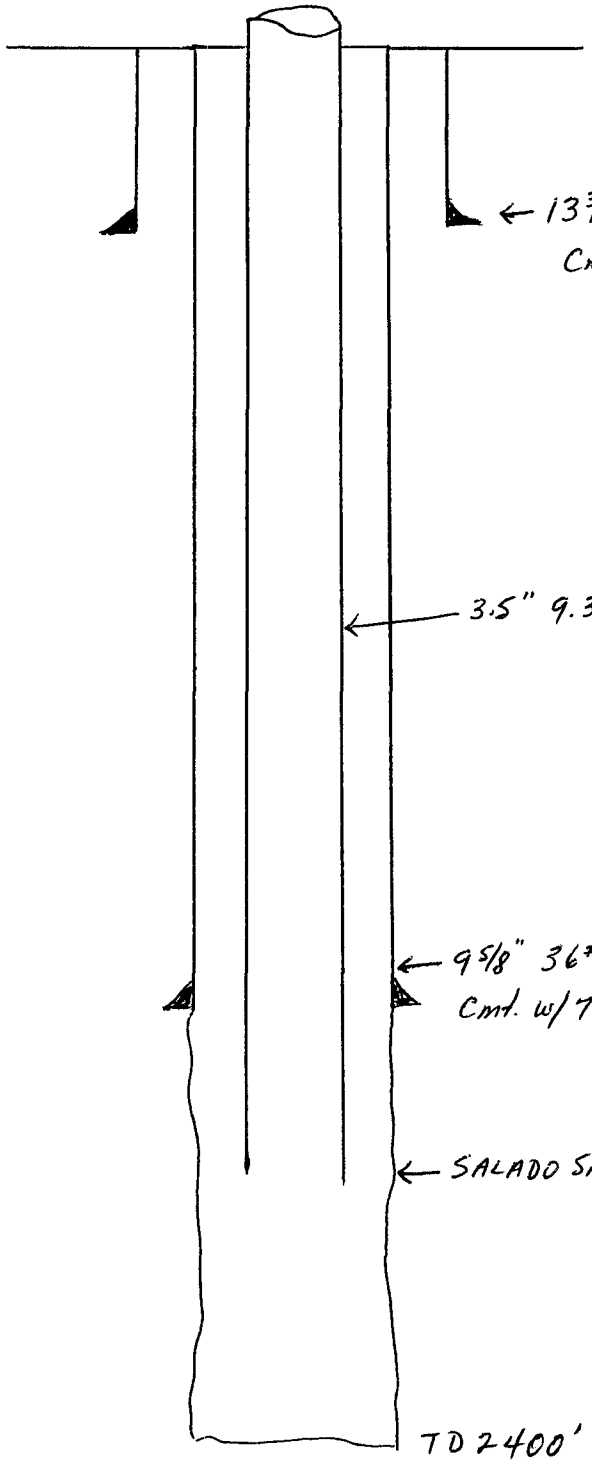
ATTACHMENT #1

WARREN McKee Brine Well No. 1

Date Spudded: 1-20-78 Date Completed: 2-26-78 Elev: 3580.9' G.L.

TD: 2400' Location: 710' FSL & 420' FWL RBM: 11' AGL
Sec. 2, T-20S, R-38E
Lea County, New Mexico

0'-40' Caliche & sfc. Rock
40'-150' Surface Rock
150'-1560' Redbed
1560'-1650' Anhydrite
1650'-2400' Salt, Anhydrite



ATTACHMENT #3
(water out)

UNICHEM
INTERNATIONAL

Home Office 707 N. Leech, P. O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

Company Conoco, Inc.; Hobbs, New Mexico

Field

Lease Warren McKee WF Sampling Date 10- 8-79

Type of Sample Brine well discharge

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	92.00	1,840
Magnesium (Mg++)	188.00	2,256
Sodium (Na+) (CALCULATED)	4,309.51	99,076
Iron (Total)		2.7
Bicarbonate (HCO_3^-)	5.50	336
Carbonate (CO_3^-)	Not	Found
Hydroxide (OH^-)	Not	Found
Sulphate (SO_4^-)	100.21	4,813
Chloride (Cl^-)	4,483.80	159,000
Total Dissolved Solids		267,320
7.04 ph @ 68 °F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as $CaCO_3$	280.00	14,000
Carbonate Hardness as $CaCO_3$ (temporary)	5.50	275
Non-Carbonate Hardness as $CaCO_3$ (permanent)	274.50	13,725
Alkalinity as $CaCO_3$	5.50	275
Specific Gravity @ 68° F 1.178		

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

$CaCO_3$ Scaling Index positive @ 86°F (0.81)

$CaSO_4$ Scaling Index negative (0.96)

ATTACHMENT #2
(Input Water)

UNICHEM INTERNATIONAL

601 NORTH LEECH P.O.BOX1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO
DATE : 11-3-81
FIELD,LEASE&WELL : SEWAGE EFFLUENT
SAMPLING POINT: Conoco Inlet
DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1
TOTAL DISSOLVED SOLIDS = 1055
PH = 7.39

		ME/L	MG/L
CATIONS			
CALCIUM	(CA)+2	5	100.
MAGNESIUM	(MG)+2	1	12.1
SODIUM	(NA),CALC.	9.8	225.
ANIONS			
BICARBONATE	(HCO3)-1	5	305.
CARBONATE	(CO3)-2	0	0
HYDROXIDE	(OH)-1	0	0
SULFATE	(SO4)-2	2.3	112.
CHLORIDES	(CL)-1	8.4	299.
DISSOLVED GASES			
CARBON DIOXIDE	(CO2)	NOT RUN	
HYDROGEN SULFIDE	(H2S)	0	0
OXYGEN	(O2)	NOT RUN	
IRON(TOTAL)	(FE)		2.6
BARIUM	(BA)+2	~~NOT RUN~~	0
STRONTIUM	(SR)+2	NOT RUN	

SCALING INDEX	TEMP
	30C 86F
CARBONATE INDEX	1.57
CALCIUM CARBONATE SCALING	LIKELY
SULFATE INDEX	-6.9
CALCIUM SULFATE SCALING	UNLIKELY

WARREN MCKEE #1

B3

INVENTORY OF SOLUTION MINING WELLS OIL CONSERVATION DIVISION, 1981

*.= please attach pertinent documents

I. OPERATOR / LOCATION INFORMATION Warren McKee #1

Operator Conoco Inc.

Address Box 460

Hobbs, NM 88240 Phone

Well unit # M Location 710/S, 420/W

T. 20 R. 38 Sec. 2 SW 1/4 SW 1/4 NW 1/4 .233

County Lea

Purpose of well (brine supply, LPG storage, potash dissolution)

Brine Supply

II. DRILLING / SITING INFORMATION

Contractor Cactus Drilling Co. #63

Date drilling started 2/20/78 Date drilling completed 2/26/78

Drilling method Rotary

Elevation of ground surface 3580.9 GR How measured NA

Date measured Feb. 13, 1978 Order of survey NA

Name of surveyor Ronald J. Eidson

Total depth of hole 2400'

Attach schematic of well ,include open hole interval, perforations, etc. *

Type of drilling fluid Spud mud, native mud

Type of drilling mud if used (brand if known) IMCO

List any additives to the drilling mud, or any other chemicals put down well:

Lime, Saltgel, paper

Describe casing tests performed Csg inspection log run on 9-5/8" csg.

Pressure tested at 1000 psi.

Other tests

* = please attach pertinent documents

II. DRILLING / SITING (continued)

Casing, tubing, and cementing record (please attach copy)*

Note: if a copy is not available detail casing record on back of this sheet using the following format. Include brand or type of cement if known.

See Back of Sheet.

From	To	Size of Hole	Size of Casing	Weight per Foot	Sacks of Cement	Estimated Top of cmt.

Was mudcake on bore wall removed before cementing production casing? Yes

Was salt saturated cementing material used opposite salt formation? Yes

Is site within 1/2 mile of another well? If so, use note to explain. No

Site preparation (concrete pad, graded dirt, pit, etc) Caliche pad.
Plastic lined pits

Type of surface seal or well-head (locking security cap, welded, etc.)
Threaded

Comments (include problems encountered while drilling, loss of circulation, deviation of hole from vertical, centralizers used, tools lost or stuck, fracturing techniques used, etc.) No drilling problems
Centralizers 0-250' every third joint & 2 on bottom joint
250-1500 1 on shoe 1 every third joint & 3 on bottom joint

(use back of sheet if more space is required)

From	To	Size Hole	Size Csg/Tbg	Weight	Sx Cement	Top of Cement
0'	250'	17-1/2"	13-3/8"	43#	250	Surface
250'	1456'	12-1/4"	9-5/8"	36#	721	Surface
(Tbg)0'	2198'	---	3-1/2"	9.3#	---	---

* = please attach pertinent documents

III. FORMATION INFORMATION

Formation Record

From	To	Thickness	Formation (name, description)
0	40	40	Caliche SS
40	150	110	SS
150	1560	1410	Redbed
1560	1650	90	Anhy
1650	2400	750	Salt, Anhy

Logs (specify type) No open hole logs

Identify where logs are on file

* = please attach pertinent documents

IV. AQUIFER INFORMATION

Aquifers encountered during drilling

From	To	Aquifer Description	Amount of Water entering hole	Quality of Water

None mentioned on Driller's Daily report.

Note: if water quality analyses are available please attach.*

Source of aquifer description _____

Depth at which water was first encountered _____

Depth to which water rose _____

Source of water level data _____

Comments (include information regarding determination of piezometric level and method of sealing off water zone) _____

INVENTORY OF SOLUTION MINING WELLS OIL CONSERVATION DIVISION, 1981

* = please attach pertinent documents

V. PRODUCTION / BRINE STORAGE INFORMATION

Method of production (describe fully) Fresh water from city is injected into Salado Salt formation for purpose of saturating fresh water w/formation salt, and returned to surface via pressure of injection pump.

Was well used previously for some purpose other than brine supply, potash dissolution, or LPG storage. If so use note to explain. No

Use of brine Waterflood Injection

Source of injection water (be specific) Hobbs Municipal Sewage Treatment Plant

Attach detailed production history (include dates of production, amount of water injected, injection rates, amount of brine produced, production rates, method of gaging injection/production rates)* See Attached

Note: If the cavity was used for LPG storage include volumes of product injected and withdrawn as well as a summary of the maximum and minimum pressures during injection, storage and withdrawal.

Chemical analyses of injection water (attach)* See Unichem rpt. Attached

Note : Chemical analyses should include sampling point and method, pH, temperature, method of analysis, name and location of laboratory, etc.

Chemical analyses of water produced (attach)* See Unichem rpt. Attached

* = please attach pertinent documents

V. PRODUCTION / BRINE STORAGE (continued)

Brine storage facilities (describe) Tank monitored daily by Conoco field personnel.

Current condition/status of brine storage pit None

Is brine storage pit currently being monitored for leakage? No

Specify company or agency which is monitoring leakage None

If pit leakage has been monitored in past use note to explain. None

Comments on production history (note if production rates or brine concentrations have changed through time) Variances in production due to mechanical problems and/or reservoir control considerations.

*.= please attach pertinent documents

VI. ABANDONMENT / PLUGGING RECORD N/A

Date well abandoned/plugged _____

Reason for well abandonment or plugging _____

_____

Method of Plugging (describe fully, include amounts of cement, est. top, plug type, depth, etc.) _____

_____

_____

_____

_____

_____

_____

_____

VII. Further comments (subsidence noted, subsidence monitoring, leakage noted, natural subsidence features noted nearby, LPG storage data, etc.)

_____

_____

_____

_____

_____

_____

_____

Recorded by _____

Date _____

Warren McKee #1 Brine Supply

Note: Supply water from city is metered; amount received from city = amount injected = amount of brine taken to waterflood station.

Mo/Yr	BBL. Brine Produced
7-78	95,290
8-78	144,054
9-78	242,843
10-78	153,008
11-78	153,881
12-78	24,221
1-79	151,725
2-79	178,087
3-79	205,897
4-79	196,698
5-79	293,169
6-79	332,443
7-79	113,080
8-79	389,324
9-79	385,544
10-79	339,500
11-79	346,565
12-79	434,922
1-80	169,619
2-80	343,798
3-80	417,621
4-80	347,462
5-80	338,016
6-80	287,909
7-80	288,311
8-80	270,278
9-80	326,547
10-80	211,613
11-80	303,000
12-80	218,629
1-81	247,661
2-81	199,503
3-81	188,464
4-81	184,745
5-81	216,616
6-81	99,992
7-81	171,462
8-81	167,327
9-81	148,657
10-81	180,548
	9,508,020

40 mo

THE REPRODUCTION OF

THE

FOLLOWING

DOCUMENT (S)

CANNOT BE IMPROVED

DUE TO

THE CONDITION OF

THE ORIGINAL

Merrion [illegible] Bruce [illegible] #1

[illegible] 2-20-[illegible] Date Completed: 2-26-73 Elev: 3530.[illegible]' G.L. KBM: 11' AGL

TD: 2400' TBTD: 2400' Location: 710' FSL & 420' FWL Sec. 2 T-20S R-28E

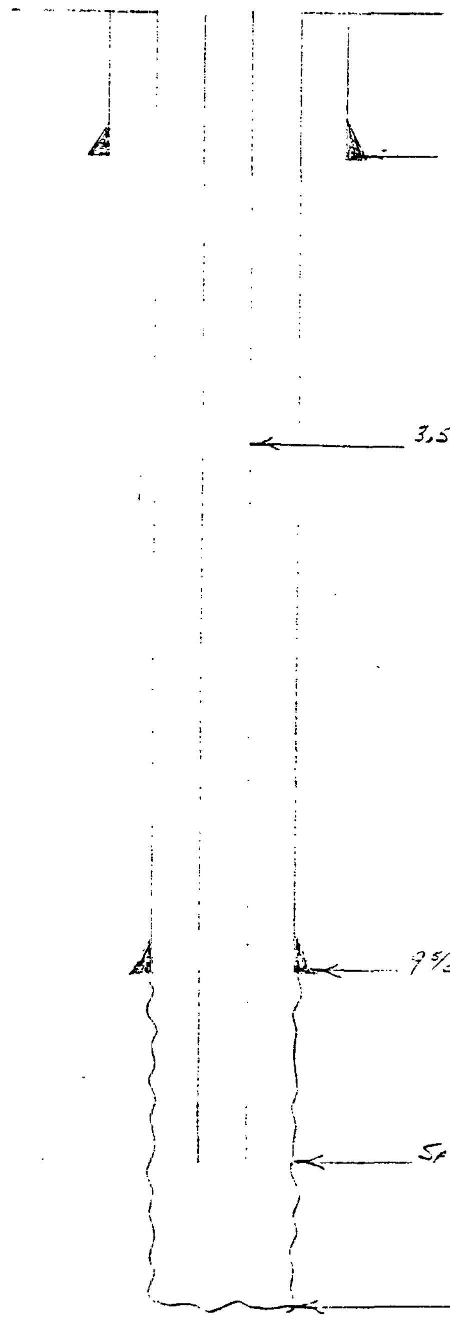
0-40' Caliche, S.S.

40-150' S.S.

150-1560 Redbeds

1560-1650 Anhydrite

[illegible]-2400' Salt, Anhydrite



[illegible]

2-19-[illegible] Wellbore Diagram [illegible]

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U.S.G.S.	
LAND OFFICE	
OPERATOR	

Form C-105
Revised 11-1-75

NEW MEXICO OIL CONSERVATION COMMISSION
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [X] Fee [ ]

5. State Oil & Gas Lease No.: B-9652

7. Unit Agreement Name: Warren Mckee

8. Farm or Lease Name: Warren Mckee

9. Well No.: 1

10. Field and Pool, or Wildcat: NMFU

12. County: Lea.

TYPE OF WELL: OIL WELL [ ] GAS WELL [ ] DRY [ ] OTHER Brine

TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER

Name of Operator: Continental Oil Company

Address of Operator: Box 460, Hobbs, N.M. 88240

Location of Well: UNIT LETTER M LOCATED 710' FEET FROM THE South LINE AND 420 FEET FROM West LINE OF SEC. 2 TWP. 20S RGE. 38E NMPM

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Cashinghead
2-20-78	2-25-78	5-11-78	3580.9 GR	

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
2400'			→	Rotary	-

24. Producing Interval(s), of this completion — Top, Bottom, Name: 1456'-2400' Salado Salt

25. Was Directional Survey Made: No

26. Type Electric and Other Logs Run: None

27. Was Well Cored: No.

CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48	250	17 1/2"	250 SX	
9 5/8"	36	1456	12 1/4"	721 SX	

LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
3 1/2"	2198'	

Perforation Record (Interval, size and number): Open Hole 1456'-2400'

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
	None

PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas — Oil Ratio

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)

Disposition of Gas (Sold, used for fuel, vented, etc.): This well will be used to manufacture Brine Water Suitable for injection into the Warren Mckee Waterflood System

Test Witnessed By:

List of Attachments:

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED W. A. Rutherford TITLE Admin. Supv. DATE 7-28-78

OCC(5), NMFU(4), F-15

UNICHEM INTERNATIONAL

601 NORTH LEECH P.O.BOX1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO
DATE : 11-3-81
FIELD,LEASE&WELL : SEWAGE EFFLUENT
SAMPLING POINT:
DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1
TOTAL DISSOLVED SOLIDS = 1055
PH = 7.39

		ME/L	MG/L
CATIONS			
CALCIUM	(CA)+2	5	100.
MAGNESIUM	(MG)+2	1	12.1
SODIUM	(NA),CALC.	9.8	225.
ANIONS			
BICARBONATE	(HCO3)-1	5	305.
CARBONATE	(CO3)-2	0	0
HYDROXIDE	(OH)-1	0	0
SULFATE	(SO4)-2	2.3	112.
CHLORIDES	(CL)-1	8.4	299.
DISSOLVED GASES			
CARBON DIOXIDE	(CO2)	NOT RUN	
HYDROGEN SULFIDE	(H2S)	0	0
OXYGEN	(O2)	NOT RUN	
IRON(TOTAL)	(FE)		2.6
BARIUM	(BA)+2	NOT RUN	
STRONTIUM	(SR)+2	NOT RUN	

SCALING INDEX	TEMP
	30C 86F
CARBONATE INDEX	1.57
CALCIUM CARBONATE SCALING	LIKELY
SULFATE INDEX	-6.9
CALCIUM SULFATE SCALING	UNLIKELY

UNICHEM
INTERNATIONAL

Home Office 707 N. Leech, P. O. Box 1499 / Hobbs, NM 88240 / Ph. 505/393-7751, TWX 910/986-0010

Company Conoco, Inc.; Hobbs, New Mexico

Field

Lease Warren McKee WF Sampling Date 10- 8-79

Type of Sample Brine well discharge

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	92.00	1,840
Magnesium (Mg++)	188.00	2,256
Sodium (Na+) (CALCULATED)	4,309.51	99,076
Iron (Total)		2.7
Bicarbonate (HCO_3)	5.50	336
Carbonate (CO_3 -)	Not	Found
Hydroxide (OH-)	Not	Found
Sulphate (SO_4 -)	100.21	4,813
Chloride (Cl-)	4,483.80	159,000
Total Dissolved Solids		267,320
		-1 053
7.04 ph c 68 °F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO_3	280.00	14,000
Carbonate Hardness as $CaCO_3$ (temporary)	5.50	275
Non-Carbonate Hardness as $CaCO_3$ (permanent)	274.50	13,725
Alkalinity as $CaCO_3$	5.50	275
Specific Gravity c 68° F 1.178		

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

$CaCo_3$ Scaling Index positive @ 86°F (0.81)

$CaSo_4$ Scaling Index negative (0.96)

CONOCO - McKEE (BW) 15

9-17-96

Conoco - Warren McGee Brine Well DP-318 Dec 1988

Workover Rig on well

Conoco DP-318

Dec 88

Workover Rig on Well