June 16, 1986

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

Oil Conservation Division (2) Post Office Box 2088 Santa Fe, New Mexico 87501 Case 8973

7.01
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
FENTON, N.W. DELAWARE FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), respectfully requests authority to dispose of produced water into the Delaware formation in the subject well.

Conversion of this well to a water disposal well is necessary to economically dispose of lease and offlease water.

The supporting information for this application is organized in accordance with Form C-108.

If any further information is needed concerning this application, please call C.A. Moore at (915) 688-1772.

Yours very truly,

C.a. moore

for G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Offset Operators & Surface Owner (w/attach) New Mexico State Land Office County Clerk, Carlsbad, New Mexico District Director OCD - Artesia



Set for hearing

They are enjecting ente

the Morthwood Ferson

Delaware Pool There
is extensive production in

this

Informal Bobb

Talk to me when you

with the get please, Donn C.

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT

APPLICATION FOR AUTHORIZATION TO INJECT

OIL CONSERVATION DIVISION

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
GANTA FE, NEW MEXICO B/501

FORM C-108 Revised 7-1-81

LAND DIFFCE HUNDING
PEL NEW MEXICO BIJOTI
PURPLE SERVICE SERVI

	-	Secondary Recovery	Pressure Maintena	ince X Disposal	Storage
11.	Operator:	Mobil Producing Texas			

Contact party: G. E. Tate Phone: (915) 688-1772

- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? yes no If yes, give the Division order number authorizing the project _____
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
 - Proposed average and maximum daily rate and volume of fluids to be injected;
 - 2. Whether the system is open or closed;

Address: P. O. Box 633, Midland, TX 79702

- 3. Proposed average and maximum injection pressure;
- 4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
- 5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- *VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.
 - IX. Describe the proposed stimulation program, if any.
- * X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
- * XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if avai¹able and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
 - XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification

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

to the bear	c or my knowledge ar	d beller.			
Name:	G. E. Tate		Title En	v. & Reg. Mgi	
Signature:	C.a. Moore	for D.E. Tate	Date:	June 16, 19	986

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

III. WELL DATA

and the second second second

- A. The following well data must be submitted for each injection well covered by this application.

 The data must be both in tabular and schematic form and shall include:
 - Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INDEX OF ATTACHMENTS ORGANIZED IN ACCORDANCE WITH FORM C-108 MIDLAND, TEXAS 79702 PROPOSED WATER DISPOSAL WELL NO. 4 GOVERNMENT "D" LEASE MIDLAND DIVISION EDDY COUNTY, NEW MEXICO

III. Well Data

- A. See well sketch also
 - 1. Government "D" No. 4, Sec. 1, T-21-S, R-27-E
 - 2. 20" csg @ 40' cemented with redimix to surface 26" hole

13-3/8" csg @ 665' cmt w/700sx circulated 17-1/2" hole

8-5/8" csg @ 2437' cmt w/2200sx circulated 11" hole

5-1/2" csg @ 5712' cmt w/835sx TOC @ 2200 (calc) 7-7/8" hole

- 3. 2-7/8" N-80 steel tbg pvc lined 2.14" ID set @ 3800'
- 4. Baker AD-1 tension pkr 5-1/2" set @ 3800'

В.

- 1. Delaware; Fenton NW Field
- 2. 3849'- 56'; 3869'- 80'; 3898'- 3934'; 3964'- 4022'; perf 4 jspf
- 3. Well originally drilled as a Bone Spring producer
- 4. See sketch
- 5. Next higher zone Delaware, oil 2800'- 3200'
 Next lower zone Bone Spring, oil 5500'- 5650'
- V. Map attached
- VI. C-105's and 9-330's are attached

VII.

- 1. Avg. rate: 1000 BWPD, max rate: 2000 BWPD
- 2. Closed system

Index of Attachments
Proposed Water Disposal Well #4
Government "D" Lease
Eddy County, New Mexico

- 3. Avg. inj. pressure: 500#, max inj. press.: 770#
- 4. Sources include Delaware water and offlease Bone Spring water from the Burton Flat Lease. See attached letters and water analyses on compatibility.
- 5. Attached chemical analysis of disposal zone formation water

VIII. Attached geological data

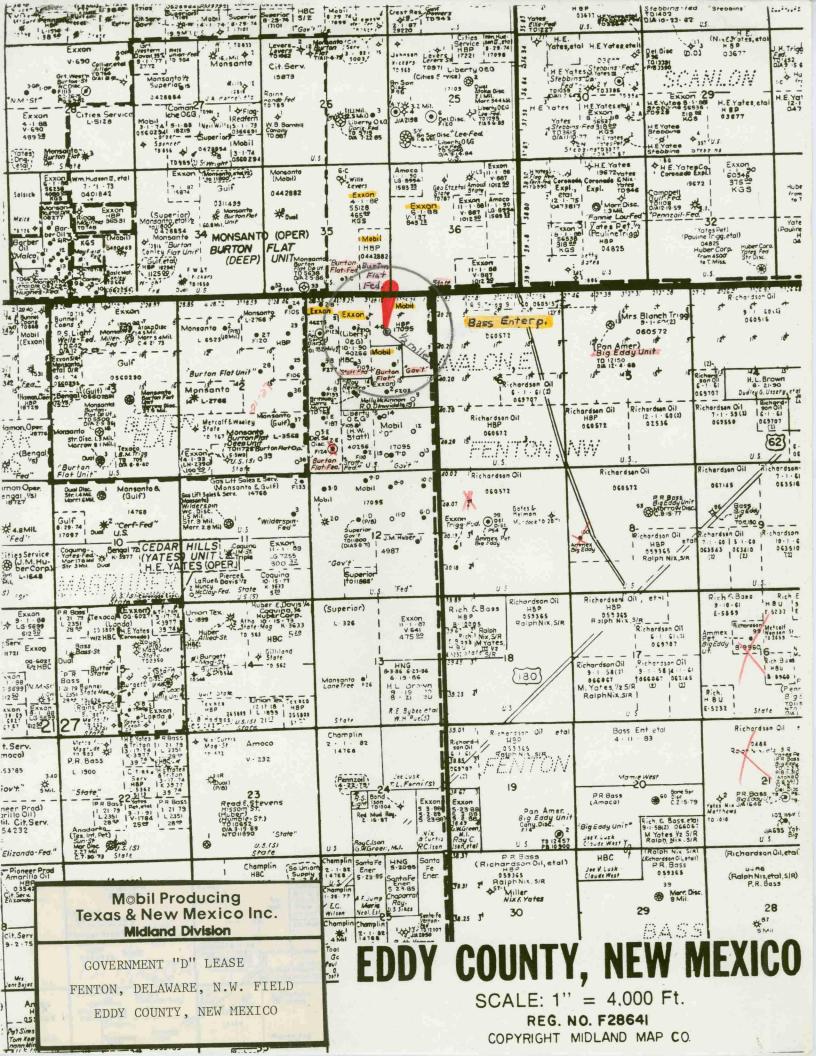
- IX. Proposed stimulation
 - 1. Pump 3000 gals 10% NEFE HCL down 2-7/8" tbg.
 - 2. Pump 500 lbs blocking agent (50% 100 mesh rock salt + 50% para formaldehyde)
 - 3. Pump 3000 gals HCL
 - 4. Pump 800 lbs blocking agent
 - 5. Pump 3000 gals HCL
 - 6. Pump 800 lbs blocking agent
 - 7. Pump 2000 gals HCL
 - 8. Pump 1100 gals 2% KCL wtr flush
- X. Logs have been previously filed
- XI. Attached chemical analysis of fresh water
- XII. Attached affirmative statement
- XIII. Attached proof of notice

and the little white exercise a Flick EHSI AVPLOY LOCATION | T-21-5 R-27-E SIGNED ME VASICEK G.L. 3196 EDDY CO., N.M. D.F. K.B. 3205 Present ZERO 20" CONDUCTOR PIPE CMTO TO SURFACE 655' 13 3/8" 54.5# K-55 CS4 SET W/ 700 SY CMT CIRC _ ± 2200' TOC (CALE) _ 2437' B 5/8" 24# K-55 CS4 SET W/ 2200 S. CMT IN 2 STAGES CH 2 1/8" 6.5 # NBO 184 TO 5500'. SNB 5498' 5500' BAKER MODEL DG PKR BONE SPRINGS FERFS 5615 - 5632' 5 6 69' PBTD

5712' 512" 15.5# K-55 154 SET WI 415 ST CMT + 420 SK CLC

420 sx cmt class C

5712 TD



MOBIL PRODUCING TEXAS & NEW MEXICO, INC. GOVERNMENT "D" LEASE PROPOSED WATER DISPOSAL WELL

WELL NO. 4
T-21-S, R-27-E
EDDY COUNTY, NEW MEXICO

Ξ	Stott Federal	OPERATOR- EXXON CORP.	3	Burton Flat	OPERATOR- MOBIL PRODUCING TX. & N.M., INC.	OPERATOR LEASE
ω	2		2	Н		WELL NO.
1980' FWL; 2912' FNL Sec. 1 T-21-S, R-27-E	1980' FWL; 1392' FNL Sec. 1 T-21-S, R-27-E		3300' FSL; 1980' FEL Sec. 1 T-21-S, R-27-E	2950' FNL; 1700' FEL, Sec. 1 T-21-S, R-27-E		LOCATION
'n	r u		P)	ъ		TYPE
7-13-84	6-17-84		11-29-84	7-24-85		DATE DRILLED
5630"	5670'		5745'	5722		DEPTH
Bone Spring 5488-5516'	Bone Spring 5537-5560'		Bone Spring 5552-5574'	Bone Spring 5604-5622'		COMPLETION INTERVAL

6. I hereby certify that the information shown or both sides of this form is true will complete to the best of my knowledge and belief. ALWW SIGNED

MOBIL PRODUCING TX & N.M., INC. AS AGENT FOR THE SUPERIUR OIL COMPANY

10-11-85

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Mobil Produ Address of Operator	Je my IA. a	N.Fi. IIIC.						10. F	leld ond	Peel, or Wildcat
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11-29-84	12-27-	-84 1-	-23-85			3178	B' GR			
, Total Depth	21. Ph	ug Back T.D.			le Compl., Ho	w	23, Intervals		s	Cuble Tools
5745'	5	5700'		Many			Drilled By	Yes		
. Froducing Interval(s), of this comple	tion - Top, Botto	om, Naine						25	, Was Directional Survey Made
										Mage
5552'-5574	' Bone Spri	ng								No
. Type Electric and (Other Logs Run								27. Was	Well Cored
LDT-GR-Cal	iper, DLL-M	1SFL-GR-Cali	iper, Si	dewal:	1 Cores				<u> </u>	No
		C/	ASING RECO	RD (Rep	ort all string	5 501	in woll)			,
CASING SIZE	WEIGHT LB	./FT. DEPT	THSET	ног	LE SIZE	<u> </u>	CEMENTIN	G RECORD		AMOUNT PULLED
<u> 13-3/8"</u>	54.5	, 6	530'	17	-1/2"	67	75 sx Clas	s C Lite		NoneN
8 - 5/8"	24		539'	11'		7	00_sx_Clas			None
5-1/2"	15.5	57	708 '	7:	-7/8"		<u>25 sx Clas</u>			None
						land	d 500 Clas			J
		LINER RECORD		 1			30.	TUBIN	G RECO	
SIZE	TOP	воттом	SACKS	EMENT	SCREEN	· ·	SIZE	DEPTHS		PACKER SET
							2-7/8"	5578	<u> </u>	5406'
		<u> </u>	!		T					
, Perforction Record	•	•	,		32.		D, SHOT, FRAC			
5552-5574	(45 holes	w/3-1/8" gu	un)				ERVAL			MATERIAL USED
										SI-No break do
					5552-5	3/4				w/additives. rogen, 10,400
		•								gals CO2, 24,00
				PROD	OUCTION 2	0-4				10# silica flou
te First Production	Prod	uction Method (Fl	lowing, gas							(Prod. or Shut-in)
1-19-85		Flowing							SI	
1-19-85	Hows Tested	Choke Size	Frod'n.		011 — Вы.		Gas - MCF	Water — B		Gas - Otl Ratio
1-26-85 DW Tubing Press.	24	21/64	II Test Po		202		380		2	1881
w Tubing Press.	Cosing Pressu	re Calculated : How Rate	24- OII - E	bl.	Gas -	MCF	Water	- Вы.	Oil C	Gravity - API (Corr.)
320	0		→							14.0°
Disposition of Gas								Test Witne	ssed by	
SI - Negot	iating for	sales cont	racts.	·				<u>Jim F</u>	letche	er
Logs and I hereby certify that	Inclinat	tion Survey								
I hereby cerusy tha	the information	shown on both sie	des of this fo	ormits tre	ie wid compli	ete w	the best of my	knowledge and	belief.	
3	8 11	/								4 00 05
SIGNED XI (o. Ial	e GFT	ate	Re	gulatory	/ Ma	nager	,		1-28-85

to Coont for The Superior Oil Company

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Rev. 5-63)		UNITE	STAT	rec_	SUBMI	r-in	DUPLICAT	Ē.	ļ	Form a	approved.
	DEPLE	TMENT C	OF THI		TERIOE	y El	いし(See oth structio	ner in- ne on			Bureau No. 42-R355.5.
		GEOLOGIC			AUG (reverse 984		NM-4	4025 <i>6</i>	
WELL CO	MPLETION	OR RECC	MPLETI	ONF	REPORT	ĄΝ	D LOG	*	6. IF INDIA	N, ALLC	OTTEE OR TRIBE NAME
1a. TYPE OF WEI	L: OIL WE				Other ARTES	ب ۱۸, ۲	SELICE	士	7. UNIT AC	REEMEN	T NAME
b. TYPE OF COM NEW WELL X	WORK DEI	EP- PLUG BACK	DIFF	/R. 🗌	Other				S. FARM OR	LEASE	NAME
2. NAME OF OPERAT) *							9. WELL N	`	
3. ADDRESS OF OPE	rporation BATOR	•							g. Will M	<i>,.</i>	
P. O. Bo	x 1600, Mi	dland, TX	79702								t, or WILDCAT - Bone Spring
4. LOCATION OF WE	LL (Report locati 1980' FWL :						(8) *		FILTIVE	2101.	OR BLOCK AND SURVEY
	1900 FWL (FNL OI	sec.	I (SE/NW	,			OR ARE	A	
	icival reported by								1-2.	l S-27	E
At total depth			14. PE	BMIT NO.		DATE	ISSUED		12. COUNTY		13. STATE
						4	-13-84		PARISH Edd	<u>-</u>	New Mexico
15. DATE SPEDDED 6-17-84	7-10-8		7-21-84		prod.) 18.		ATIONS (DF, 97' GR	RKB, F	RT, GR, ETC.)*	19.	ELEV. CASINGHEAD
20. TOTAL DEPTH, MD	1	IQ, BACK T.D., MD			TIPLE COMPL.,		23. INTER		ROTARY TO	OLS	CABLE TOOLS
5670 '									0-5670'	1 9	5. WAS DIRECTIONAL
24. PRODUCING INTE	RVAL(S), OF THIS	COMPLETION-T	or, Buttom,	NAME (B	AD AND TVD)-					-	SURVEY MADE
	560' Bone			_ ,							
26. TYPE ELECTRIC				•						27. 7	vas well cored No
FDC-UNL;	DLL-MSFL;			RD (Rep	ort all strings	set i	n well)			1	110
CASING SIZE	WEIGHT, LB.	FT. DEPTH	SET (MD)	но	LE SIZE		CEME	NTING	RECORD		AMOUNT PULLED
13-3/8"	48#		75'		-1/2"		00 sx C			• ,	
8-5/8"	24#		95'	11		1	00 sx P 00 sx C			ite:	400 sx C1C
5-1/2"	14. 15.5	# 56	61'	7	-7/8"		15 sx C				
29.		LINER RECOR			nanna (se		30.		TUBING RE		PACKER SET (MD)
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CI	SMENT	SCREEN (M		2-7/8	<u> </u>	5300'	MD)	5300'
31. PERFORATION RE	CORD (Interval, 8	ize and number)			32.				URE, CEME		
Dorf 553	7 ~ 5560 w	/ 96 shore			DEPTH INT				gals l		MATERIAL USED
Terr 333	7 - 3300 W	/ Jo Shots	1						. •		0 ₂ , 28,700#
									0 mesh		
33.*				PROI	DUCTION						
DATE FIRST PRODUCT	rion PROI	OUCTION METHOD	(Flowing, g	as lift, p	umping—size	and t	ype of pump))		L STATI	s (Producing or
7-19-84 DATE OF TEST	HOURS TESTED	Flowing CHOKE SIZ	E PROD'	N. FOR	OIL—BBL.		GAS-MCF		WATER-B	BL.	Producing GAS-OIL RATIO
7-25-84	24	20/64"	TEST	PERIOD	210		235		4		1117
FLOW. TUBING PRESS. 215	CASING PRESSU	RE CALCULATE 24-HOUR R		88L.	GAS-	MCF.	v I	VATER-	-BBL.	OIL	GRAVITY-API (CORR.) 45
34. DISPUSITION OF	GAS (Sold, used fo	r fuel, vented, et	0.)						TEST WITN	ESSED	
Flared				-, , ,							
35. LIST OF ATTACE	IMENTS	. —									_
36. I hereby certify	that the forego	ing and aytached	information	i is comi	lete and corr	ect as	determined	frem	all available	record	s
SIGNED	Jun 1	X÷//		TLE	Unit	He	ad		DA'	7-	- 3 <i>o</i> -84
	1	y							DA.		

Form 9-330 (Rev. 5-63)

SIGNED __

Proventy (3 C.III) BS101

Artenia, MI SUBMIT IN SUPLICATE. Form approved. Budget Bureau No. 42-R355.5. UNITED STATES DEPARTMENT OF THE INTERIOR structions on 5. LEASE DESIGNATION AND SERIAL NO. reverse side) GEOLOGICAL SURVEY NM-40256 WELL COMPLETION OR RECOMPLETION REPORT AND 6. IF INDIAN, ALLOTTEE OR TRIBE NAME 1a. TYPE OF WELL: WELL X GAS WELL 7. UNIT AGREEMENT NAME Other b. TYPE OF COMPLETION: SEP 24 1984 NEW X DEEP-EN PLFG BACK S. FARM OR LEASE NAME 2. NAME OF OPERATOR O. C. D. 9. WELL NO. Exxon Corporation ARTESIA, OFFICE ADDRESS OF OPERATOR 10, FIELD AND POOL, OR WILDCAT

E. 17 / 0 / 0 //

Undesig - Bone Spring

11. SEC. T. R., M., OR BLOCK AND SPRVEY
OR AREA P. O. Box 1600, Midland, TX 79702 4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface 1980' FWL and 2912.3' FNL of Sec. 1 (NE/SW) 1 - 21S - 27E At top prod. Interval reported below At total depth 12. COUNTY OR PARISH 14. PERMIT NO. DATE ISSUED 13. STATE Eddy 4-13-84 New Mexico 19. ELEV. CASINGHEAD 15. DATE SPUDDED 16. DATE T.D. REACHED 17. DATE COMPL. (Ready to prod.) 18. ELEVATIONS (DF, REB, RT, GR. ETC.)* 8-29-84 KB-3196; GL-3184 8-17-84 20. TOTAL DEPTH, MD & TVD 22. IF MULTIPLE COMPL., HOW MANY* 23. INTERVALS DRILLED BY ROTARY TOOLS CABLE TOOLS 21. PLUG, BACK T.D., MD & TVD 10 - 56305630 WAS DIRECTIONAL SURVEY MADE 24. PRODUCING INTERVAL(S), OF THIS COMPLETION -- TOP, BOTTOM, NAME (MD AND TVD)* 5488 - 5516 Bone Spring No 26. TYPE ELECTRIC AND OTHER LOGS RUN 27. WAS WELL CORED No MLL-DLL-GR; FDC-CNL; SWC CASING RECORD (Report all strings set in well) CASING SIZE DEPTH SET (MD) CEMENTING RECORD WEIGHT, LB./FT. HOLE SIZE AMOUNT PULLED 17-1/2" 13-3/8" 68# 604' 300 sx PSL, 300 sx C1C 11" 3000 sx PSL, 2700 sx Clo 2594 1 8-5/8" 24# 14. 15.5# 7-7/8" 5-1/2" 5625 1170 sx TLW, 250 sx C1C TUBING RECORD 29. LINER RECORD 30. SACKS CEMENT* SIZE TOP (MD) BOTTOM (MD) SCREEN (MD) BIZE DEPTH SET (MD) PACKER SET (MD) 2-7/8" 5400 5400 31. PERFORATION RECORD (Interval, size and number) ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC. AMOUNT AND KIND OF MATERIAL USED DEPTH INTERVAL (MD) 5488 - 5516' w/ 88 shots 5488 - 5516 2500 gals. 15% NeHCl 20,000 gals. YFCO, frac fl. 33,000# 20-40 sand 33 * PRODUCTION DATE FIRST PRODUCTION PRODUCTION METHOD (Flowing, gas lift, pumping-size and type of pump) WELL STATUS (Producing or shut-in) 8-29-84 Producing Flowing DATE OF TEST HOURS TESTED PROD'N. FOR TEST PERIOD CHOKE SIZE OIL-BBL. GAS-MCF. WATER---BBL. GAS-OIL RATIO 12/64" 24 109 287 2630 CALCULATED 24-HOUR RATE FLOW. TUBING PRESS. CASING PRESSURI OIL-BBL WATER-BBL OIL GRAVITY-API (CORR.) GAS---MCF 42.6 COPPTED FOR RECORD 34 DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) TEST WITNESSED BY Flared 35. LIST OF ATTACHMENTS SEP 2 1 1984 36. I hereby certify that the foregoing and/attached information is complete and correct as determined from all available records DATE 9-19-84 Head

TITLE .

VII. 4. It is our intention to dispose of 3300 BWPD from the Delaware zone, which is produced from the Government D Lease. Offlease water from our Burton Flat Lease will also be disposed off in the amount of only 20 BWPD of Bone Spring water.

In an attempt to comply with your request for a water analysis of this offlease water, we sent a water sample to Core Laboratoratories, Inc. They were unable to get a very sucessful analysis due to the turbid condition of the Bone Spring water. It is however, safe to say that the Bone Springs water in uncompatible with the Delaware water because of the scaling tendency when the two are mixed. We have every intention, however, of treating this water with chemicals to prevent scaling and ask that you take into consideration the very small amount of Bone Spring water being disposed of, amounting to only 1% of total water injected.

Attached are also analyses of the Government D Lease water and our neighboring Federal E-#1 well which produces Bore Spring water. Perhaps this Bone Spring water analysis will serve to tell you what you need to know.

SPECIAL SERVICES



May 27, 1986

Jack Hammer
Mobil Producing Texas & New Mexico
P. O. Box 633
Midland, Texas 79702

Reference File Number: C86090

Dear Mr. Hamner,

Enclosed you will find the compatibility study on the Delaware and Bone Springs waters. Please note that only one concentration was completed. This is due to the turbidities causing the spectrophotometer to read out of range. The Bone Springs water is very turbid with a high iron content. When mixed with the Delaware, iron sulfide precipitates out. Both waters have a tendency to scale and the Delaware has corrosive characteristics which will complicate their compatibility.

The turbidity calculated values are much lower than the actual values. Time appears to worsen this situation. In conclusion, the two waters are incompatible.

We trust this information is useful and appreciate the opportunity to have been of service.

Sincerely yours, CORE LABORATORIES, INC.

Donna Bartlett Group Leader

DB:1t

2001 COMMERCE DRIVE MIDLAND, TEXAS (915) 694-7761

Company: Mobil Producing TX & NM

File No: C86090

Date Received: 5-21-86 Date Reported: 5-26-86 Report To: Jack Hamner

Compatibility

Turbidities

	10 min.	1 hr.	24 hrs.
Mixtures	Actual Calc	Actual Calc	Actual Calc
75 Delaware 25 Bone Springs	156.5 118.4	160.9 113.2	175.7 105.5

2001 COMMERCE DRIVE POST OFFICE BOX 4337 MIDLAND, TEXAS 79704 (915) 894-7761

API WATER ANALYSIS REPORT FORM

Company Mobil Produc	cing Tex	as & New Mexico	Sample No. 86E32	Date Sampled
Field	La	gal Description	County o	or Parish State
Lease or Unit Government "D"	Well	Depth	Formation Delaw	Water, B/D
Type of Water (Produced, Supply	, etc.)	Sampling Point	Battery #3	Sampled By

DISSOLVED SOLIDS

mg/l	me/l
49,350	2,146.7
4,430	221.1
1,270	104.4
	49,350

MICNIC

Bicarbonate, HCO,	371	6.1
Carbonate, CO3	00	0.0
Sulfate, SO ₄	<u>3,130</u>	<u>65.</u> 2
Chloride, Cl	85,140	2,400.9
ANIONS		

Total Dissolved Solids (calc.)

143,690

Iron, Fe (total)
Sulfide, as H,S

2.3

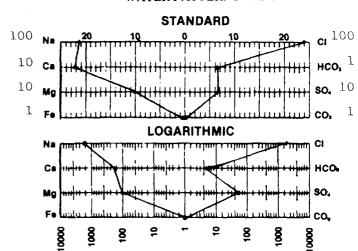
REMARKS & RECOMMENDATIONS:

File No: C86090

OTHER PROPERTIES

pН	8.75
Specific Gravity, 60/60 F.	1.1012
Resistivity (ohm-meters) 77 °F.	0.054
Total Hardness, CaCO,	17,600
Total Alkalinity, CaCO,	304
Supersaturation, CaCO ₃	

WATER PATTERNS-me/l



SCALING TENDENCY: (STIFF-DAVIS, CALCULATED)

Calcium Carbonate @ 77 °F = -6.34, indicating Corrosion Calcium Sulfate Solubility @ 80 °F = 62.3me/1, indicating scaling

2001 COMMERCE DRIVE **POST OFFICE BOX 4337** MIDLAND, TEXAS 79704 (915) 694-7761

API WATER ANALYSIS REPORT FORM

Company	Mobil Pro	ducing Texa	as & New Mexic	O San	ple No. 86E33	Date Sampled
Fleid		Leg	al Description		County or Parish	State
Lease or Unit	<u> </u>	Well	D	epth	Formation	Water, B/D
	Federal	E-	-1		Bone Springs	
Type of Wat	er (Produced, Sup	ply, etc.)	Sampling Point			Sampled By

DISSOL	VED	SOL	IDC
11133CH	Y C.D.	SUL	IDO.

CATIONS	mg/l	me/l
Sodium, Na (calc.)	33,130	1,441.2
Calcium, Ca	5,060	252,5
Magnesium, Mg	762	62.7
Barium, Ba		
		

OTHER PROPERTIES

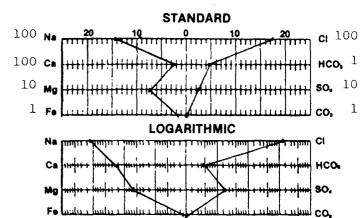
8

8

pН	6.95
Specific Gravity, 60/60 F.	1.0673
Resistivity (ohm-meters) 77 °F.	0.074
Total Hardness, CaCO,	17.040
Total Alkalinity, CaCO3	240
Supersaturation, CaCO ₁	·

ANIONS		
Chloride, Cl	61,370	1,730.6
Sulfate, SO4	1,010	21.0
Carbonate, CO,	0	0.0
Bicarbonate, HCO,	293	4.8

WATER PATTERNS-me/l



8

Total Dissolved Solids (calc.)

101,630

45 Iron, Fe (total) 0 Sulfide, as H,S

REMARKS & RECOMMENDATIONS:

File No: C86090

SCALING TENDENCY: (STIFF-DAVIS, CALCULATED)

Calcium Carbonate @ $77^{\circ}F = .332$, indicating scaling Calcium Sulfate Solubility @ $80^{\circ}F = 40.2$ me/1, indicating non-scaling

Copies - Jack Hamner

5-21-86 Received Reported 5-26-86

2001 COMMERCE DRIVE **POST OFFICE BOX 4337** MIDLAND, TEXAS 79704 (915) 694-7761

API WATER ANALYSIS REPORT FORM

Company		l w w da-		ple No. L20	Date Sampled 12-21-85					
Field Mobil Produ		and New Mexico al Description	ره	County or Paris Lea		State N. Mexico				
Lease or Unit Gov't D	Well 3	Depth	_	ormation elaware	Wate	r, B / D				
Type of Water (Produced, Se	upply, etc.)	Sampling Point			Samı	pled By				
			OTI	HER PROPER	TIES					

				OTHER PROPERTIES	
DISSOLVED SOLIDS CATIONS Sodium, Na (calc.) Calcium, Ca Magnesium, Mg Barium, Ba	mg/l 47,420 4,580 1,250	me/l 2.062.9 228.5 102.8	÷	pH Specific Gravity, 60/60 F. Resistivity (ohm-meters) 77 °F. Total Hardness, CaCO, Total Alkalinity, CaCO, Supersaturation, CaCO,	7.65 1.1054 .0.055 17.940 .456
ANIONS				WATER PATTERN	NS—me/l
Chloride, Cl	82,710	2,332.4		STANDARD	
Sulfate, SO4	2,530	.52.7	1000		
Carbonate, CO,	0	0.0	1000	Na manamanahanahan	10 20 ci 1000
Bicarbonate, HCO,	556	9.1	100	Ca ++++ ++++++++++++++++++++++++++++	************* HCO, 1
			10		
			10	Mo 1111 1111 111	
			1	Fe linchimum linchimum	<u></u>
				LOGARITHMI	<u>-</u>
Total Dissolved Solids (calc					ci
	139,050			Ca India + huntra huntra huntra + + + + + huntra	нсо.
Iron, Fe (total)	23_			Mg miles index sentes index selection	50.
Sulfide, as H ₁ S	150_				uhmi ruhmi co.
REMARKS & RECOM!	MENDATION	NS:		00001 0001 01 01 01	10000

SCALING TENDENCY: (STIFF-DAVIS, CALCULATED)

Calcium Carbonate @ °F = , indicating

Calcium Sulfate Solubility @ °F = me/1, indicating

VIII. The injection zone is in the Guadalupian age Delaware sands. The sands are light gray, very fine grained, subangular to subround, moderate to well sorted with thin argillareous lamintations. The degree of induration varies from friable sands to consolidated, calcareous-cemented sandstone. Four separate injection zones in the Delaware sands are included in the plan: 3840'-3856', 3869'-3880', 3898'-3934' and 3964'-4022'.

The Rustler formation is the primary source of drinking water for this area. The base of the fresh water is \pm 400 ft. A second underground aquifer which contains low salinity water in this area, is the Capitan Reef. The base of the low salinity water in this unit is \pm 2450 ft. No fresh water aquifer underlies the injection zone.

UNICHEM INTERNATIONAL

707 NORTH LEECH

P.O.BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : MOBIL PRODUCING TX & NM

DATE : 04/18/86

FIELD, LEASE&WELL : AVALON BONE SPRINGS

SAMPLING POINT: SPEARS FRESH WATER WELL BURTON FLAT LEASE

DATE SAMPLED : 04/15/86

SPECIFIC GRAVITY = 1.001 TOTAL DISSOLVED SOLIDS = 3844

PH = 7.52

		ME/L	MG/L
CATIONS			
CALCIUM MAGNESIUM SODIUM	(CA)+2 (MG)+2 (NA),CALC.	26.4 14.4 18.7	529. 175. 430.
ANI ONS			
SICARBONATE CARBONATE HYDROXIDE SULFATE CHLORIDES	(HCO3)-1 (CO3)-2 (OH)-1 (SO4)-2 (CL)-1	1.8 0 0 43.7 14	107. 0 0 2100 500
DISSOLVED GASES			
CARBON DIOXIDE HYDROGEN SULFIDE OXYGEN	(CO2) (H28) (O2)	NOT RUN NOT RUN NOT RUN	
IRON(TUTAL) BARIUM MANGANESE	(FE) (BA)+2 (MN)	u NOT RUN	.4 0

IONIC STRENGTH (MOLAL) = .102

SCALING INDEX	TEMP	Raul College
	300	APT Light Str
CARBONATE INDEX	86F .508	G. E. 7.7 *
CALCIUM CARBONATE SCALING	LIKELY	
CALCIUM SULFATE INDEX	4.56	
CALCIUM SULFATE SCALING	LIKELY	

XII. MPTM has examined the available geological and engineering data and finds no evidence of open faults or any other hydrological connection between the Delaware zone and any underground source of drinking water.

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
EDDY COUNTY, NEW MEXICO

This application was sent to the Surface Owner of the land on which these wells are located and to each lease operator within one-half mile radius of the well location.

OFFSET OPERATORS

Exxon Company, U.S.A. Box 2180 Houston, Texas 77001

Bass Enterprises Production Co.
Box 2760
Midland, Texas 79701

SURFACE OWNER

United States Department of the Interior
Bureau of Land Management
Carlsbad Resource Area
Post Office Box 1778
Carlsbad, New Mexico 88220

May 12, 1986

P.O BOX 633 MIDLAND, TEXAS 79702

CERTIFIED MAIL
RETURT RECEIPT REQUESTED

=

United States Department of the Interior Bureau of Land Management Carlsbad Resource Area P.O. Box 1778 Carlsbad, New Mexico 88220

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
DELAWARE, NW FENTON FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to dispose of produced water into a reservoir not productive of oil or gas in the above captioned well.

A copy of this application is furnished to you for your information.

Yours very truly,

C.a. moore

G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division (w/attach)

	The state of the s	35
3	SENDER: Complete items 1, 2, 3 and 4.	
3	Put your address in the "RETURN TO" space on the second reverse side. Fallure to do this will prevent this card from the second reverse side.	
휽	being returned to you. The return receips fee will provide you the name of the person delivered to and the date of	e d
; t	delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.	
8	1. Show to whom, date and address of delivery.	
457.8	2. Restricted Delivery.	
945	Vinited States Dept. of Interior	
	Bureau of Land Management Carlsbad Resource Area	
	80X1778 Capishad, N.M. 88220	猪鸡
	4. Type of Service: Article Number	
	Registered Insured Cortified COD P547380 787	
	Alwaye obtain, signature of addressee or agent and DATE DELIVERED.	
8	x Monde Melerdes	
STIC	6. Signature - Agent X	
AETUR	7. Date of Delivery 5-14-84	
N REC	8. Addresses's Address (ONLY If requested and fee paid)	

The same of the sa

May 12, 1986

PO BOX 633 MIDLAND, TEXAS 79702

CERTIFIED MAIL
RETURT RECEIPT REQUESTED

=

Bass Enterprises Production Co. Box 2760 Midland, Texas 79701

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
DELAWARE, NW FENTON FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to dispose of produced water into a reservoir not productive of oil or gas in the above captioned wells.

A copy of this application is furnished to you for your information.

Yours very truly,

C.G. Moore

Or G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division (w/attach)

SENDER: Complete items 1, 2, 3 and 4. Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the dete of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested. 1.

Show to whom, date and address of delivery. 2. A Restricted Delivery. 3. Article Addressed to: Bass Entorprises Production Co BOX 2760 Midland, Tx. 4. Type of Service: Registered Insure Cortified COD Insured COD Always obtain signature of addressee or agent and DATE DELIVERED.

May 12, 1986

PO BOX 633 MIDLAND, TEXAS 79702

CERTIFIED MAIL
RETURT RECEIPT REQUESTED

Exxon company U.S.A. Box 2180 Houston, Texas 77001

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
DELAWARE, NW FENTON FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to dispose of produced water into a reservoir not productive of oil or gas in the above captioned well.

A copy of this application is furnished to you for your information.

Yours very truly,

C.a. Moore

for G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division (w/attach)

PS Form 3811, July 1983 447-845	SENDER: Complete items 1, 2, 3 and 4. Put your address in the "RETURN TO" space on the reverse side. Fallure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.
8	Show to whom, date and address of delivery.
447	2. Restricted Delivery.
45	3. Article Addressed to: EXXOU COMPANY, U.S.A. P. O. BOX 2180 HOUSTON, TX 77001
	4. Type of Service: Article Number
	Registered Insured P547380779 Express Mail
	Always obtain signature of addressee or agent and DATE DELIVERED.
MOA	5. Signature — Addressee X
DOMESTIC	6. Signature Agent G. Heathers
RETURN	7. Date of Delivery MAY 1 5 1986
AN RECEI	8. Addressee's Address (ONLY if requested and fee paid)

Jan Jan Garage

May 12, 1986

P.O. BOX 633 MIDLAND, TEXAS 79702

Carlsbad Current Argus Post Office Box 1629 Carlsbad, New Mexico 88220

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
FENTON, N. W. DELAWARE FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc., is making application to the Oil Conservation Division of New Mexico for authority to inject produced water into a reservoir not productive of oil or gas through the subject well.

The Oil Conservation Division requires that a public notice of the attached information be published in the county in which the wells are located. Please publish the attached notice as soon as possible and return the completed affidavit and copy of the printed notice in the enclosed stamped envelope. Send the invoice to the attention of Mr. G. E. Tate.

Yours very truly,

C-a. moore

f G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division -

District 2 (w/attach)

bcc: Regulatory Files

May 12, 1986

P.O. BOX 633 MIDLAND, TEXAS 79702

County Clerk Ruth A. King Post Office Box 850 Carlsbad, New Mexico 88221

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
FENTON, N.W. DELAWARE FIELD
EDDY COUNTY, NEW MEXICO

Dear Ms. King:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to inject produced water into a reservoir not productive of oil or gas in the above captioned well.

The Oil Conservation Division requires that the enclosed application be sent to you for public information notice in the county in which the well is located. Please post the attached application as you desire. It is not necessary to record this information.

Yours very truly,

C.a. Moore

for G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division
 District 2 (w/attach)

APPLICATION FOR AUTHORIZATION TO INJECT

1.	Mobil Producing Tx. & N. M. Inc, P.O. Box 633, Midland, Texas 79702
	Attention: Ann Moore, (915) 688-1772
	will apply for permission to inject produced water
	into the following well/wells for the purpose of: Disposal
•	
2.	Well Name and Number: Government "D" #4
	Location: 1554' FNL; 1980' FEL
	Section: 1 ,T-21-S ,R-27-E
	County: Eddy
3.	Formation Name: Delaware
	Injection Interval: 3849' to 4022'
	Maximun Injection Rate: 2000 BWPD
	Maximum Pressure: 770 PSI
4.	Interested parties, who can show that they are adversely affected
	by this application, must file objections or requests for hearing
	with the Energy and Minerals Department, Oil Conservation
	Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within
	15 days after this publication.

June 16, 1986

P O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

Oil Conservation Division (2) Post Office Box 2088 Santa Fe, New Mexico 87501

7.01
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
FENTON, N.W. DELAWARE FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), respectfully requests authority to dispose of produced water into the Delaware formation in the subject well.

Conversion of this well to a water disposal well is necessary to economically dispose of lease and offlease water.

The supporting information for this application is organized in accordance with Form C-108.

If any further information is needed concerning this application, please call C.A. Moore at (915) 688-1772.

Yours very truly,

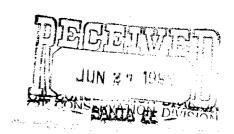
C.a. moore

for G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Offset Operators & Surface Owner (w/attach)
New Mexico State Land Office
County Clerk, Carlsbad, New Mexico
District Director OCD - Artesia



OIL CONSERVATION DIVISION POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING BANTA FE, NEW MEXICO 8/501

FURM C-108 Revised 7-1-81

À	P	P	1	ĭ	r	Δ	T	T	n	IN	F	'n	R	A	11	T	H	n	R	T	7	A	T	1	n	N	1	01	IN	IJ	E	C	T

I,	ATION FOR AUTHORIZATION TO INJECT Purpose: Secondary Recovery Pressure Maintenance Disposal Storage
••	Application qualifies for administrative approval? yes no
II.	Operator: Mobil Producing Texas & New Mexico, Inc.
	Address: P. O. Box 633, Midland, TX 79702
	Contact party: <u>G. E. Tate</u> Phone: <u>(915) 688-1772</u>
111.	Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
IV.	Is this an expansion of an existing project? yes no If yes, give the Division order number authorizing the project
٧.	Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
* VI.	Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
VII.	Attach data on the proposed operation, including:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
*VIII.	Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.
IX.	Describe the proposed stimulation program, if any.
* X.	Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
* XI.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
XII.	Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
XIII.	Applicants must complete the "Proof of Notice" section on the reverse side of this form.
XIV.	Certification
	I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
	Name: G. E. Tate Title Env. & Reg. Mgr.
	Signature: C.a. Moore for D.E. Late Date: June 16, 1986
submi	he information required under Sections VI, VIII, X, and XI above has been previously itted, it need not be duplicated and resubmitted. Please show the date and circumstance he earlier submittal.

III. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application.

 The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one+half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

INDEX OF ATTACHMENTS ORGANIZED IN ACCORDANCE WITH FORM C-108 PROPOSED WATER DISPOSAL WELL NO. 4 GOVERNMENT "D" LEASE EDDY COUNTY, NEW MEXICO

III. Well Data

- A. See well sketch also
 - 1. Government "D" No. 4, Sec. 1, T-21-S, R-27-E
 - 2. 20" csg @ 40' cemented with redimix to surface 26" hole

13-3/8" csg @ 665' cmt w/700sx circulated 17-1/2" hole

8-5/8" csg @ 2437' cmt w/2200sx circulated 11" hole

5-1/2" csg @ 5712' cmt w/835sx TOC @ 2200 (calc) 7-7/8" hole

- 3. 2-7/8" N-80 steel tbg pvc lined 2.14" ID set @ 3800'
- Baker AD-1 tension pkr 5-1/2" set @ 3800'

В.

- 1. Delaware; Fenton NW Field
- 2. 3849'- 56'; 3869'- 80'; 3898'- 3934'; 3964'- 4022'; perf 4 jspf
- 3. Well originally drilled as a Bone Spring producer
- 4. See sketch
- 5. Next higher zone Delaware, oil 2800'- 3200'
 Next lower zone Bone Spring, oil 5500'- 5650'
- V. Map attached
- VI. C-105's and 9-330's are attached

VII.

- 1. Avg. rate: 1000 BWPD, max rate: 2000 BWPD
- 2. Closed system

Index of Attachments
Proposed Water Disposal Well #4
Government "D" Lease
Eddy County, New Mexico

- 3. Avg. inj. pressure: 500#, max inj. press.: 770#
- 4. Sources include Delaware water and offlease Bone Spring water from the Burton Flat Lease. See attached letters and water analyses on compatibility.
- 5. Attached chemical analysis of disposal zone formation water
- VIII. Attached geological data
- IX. Proposed stimulation
 - 1. Pump 3000 gals 10% NEFE HCL down 2-7/8" tbg.
 - 2. Pump 500 lbs blocking agent (50% 100 mesh rock salt + 50% para formaldehyde)
 - 3. Pump 3000 gals HCL
 - 4. Pump 800 lbs blocking agent
 - 5. Pump 3000 gals HCL
 - 6. Pump 800 lbs blocking agent
 - 7. Pump 2000 gals HCL
 - 8. Pump 1100 gals 2% KCL wtr flush
- X. Logs have been previously filed
- XI. Attached chemical analysis of fresh water
- XII. Attached affirmative statement
- XIII. Attached proof of notice

LOCATION T-21-3 R-27-E SIGNED NE VASICEK EDDY CO., N.M.

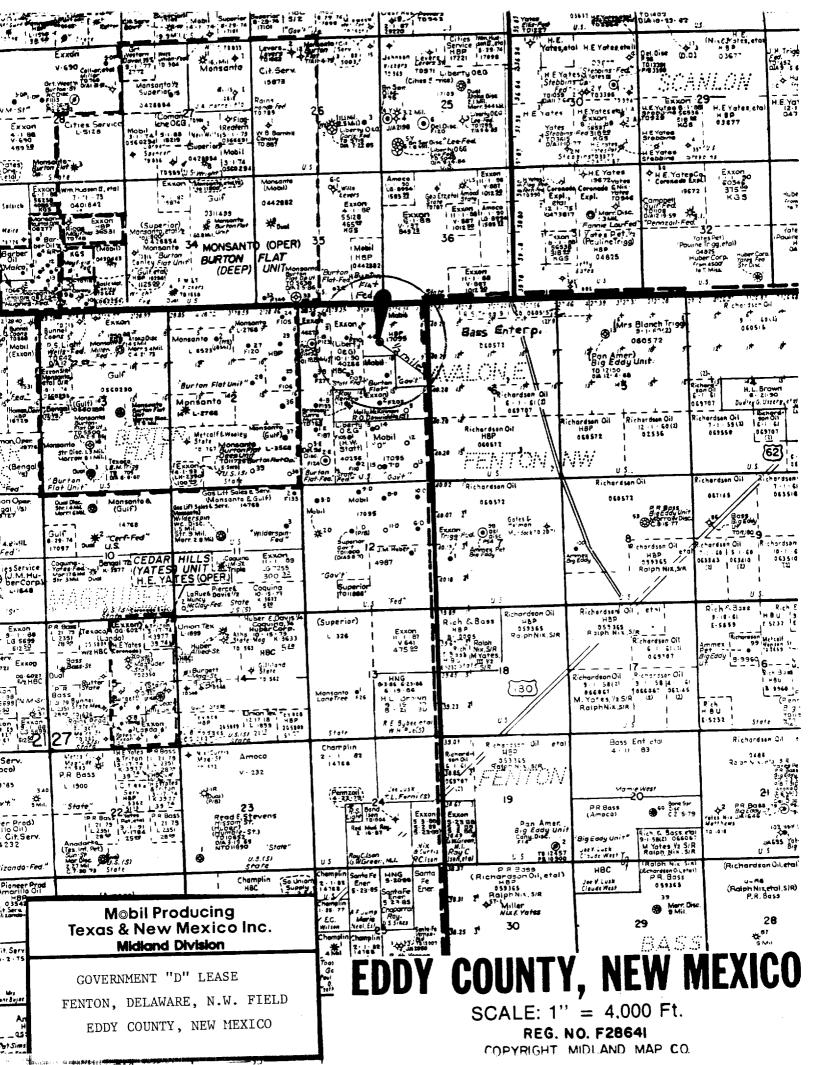
G.L. 3196 D.F.

K.B. 3205 ZERO

Present

40' 655' 13 3/8" 54.5# K-55 C34 SET W/ 700 SY CMT CIFC _ ± 2200' TOC (CALE) _ 2437' B 5/B" 24# K-55 CS4 SET W/ 2200 S. CMT IN 2 STAGES C 2 7/8" 6.5 # N80 TR4 TO 5500' . SNO 5498' 5500' BAKER MODEL DG PKR BONE SPRINGS FERFS 5615'- 5632' 5669' PBTD 5712' 512" 15.5# K-55 1.54 SET WI 415 ST EMT + 420 SK CLC

420 sx cmt class C



MOBIL PRODUCING TEXAS & NEW MEXICO, INC. GOVERNMENT "D" LEASE PROPOSED WATER DISPOSAL WELL WELL NO. 4 T-21-S, R-27-E

ĮΨ	
EDDY	
COUNTY,	,
NEW	٠
MEXI CO	

Ξ	Stott Federal	OPERATOR- EXXON CORP.	=	Burton Flat	OPERATOR- MOBIL PRODUCING TX. & N.M., INC.	OPERATOR LEASE
ω	2		2	H		WELL NO.
1980' FWL; 2912' FNL Sec. 1 T-21-S, R-27-E	1980' FWL; 1392' FNL Sec. 1 T-21-S, R-27-E		3300' FSL; 1980' FEL Sec. 1 T-21-S, R-27-E	2950' FNL; 1700' FEL, Sec. 1 T-21-S, R-27-E		LOCATION
ъ	קי		ਖ	Ą		WELL
7-13-84	6-17-84		11-29-84	7-24-85		DATE DRILLED
5630*	5670'		5745*	5722		DEPTH
Bone Spring 5488-5516'	Bone Spring 5537-5560'		Bone Spring 5552-5574'	Bone Spring 5604-5622'		COMPLETION

STATE OF NEV	V MEXICO	Produktion, tracking the street in									levise	d 10-1-78	
NERGY AND MINERAL	S DEPARTMENT	RECEIV	ED BY	FRΛΔ	TION D	W	ISION						
** ** CO-1EP BCCC1		012	CO.1.0.		X 2088	• •	131311		13			pe of Lease	_
DISTRIBUTION	<u> </u>	OCT_10	.1985	N. B.U.	X 2088 MEXICO	. 07	E 0 1		_	State		Fee [X!
SANTA FE				ı					i	S. State (011 % (Gas Lease No.	
U.S.G.S.	UV VE	LL COMPLE	TION OF	RFC	MPLETIO	N R	FPORT A	ND L	$\frac{1}{2}$	~~~	~~~	~~~~~~~	
LAND OFFICE		C GRYESIA,	Salve.			• • • • • • • • • • • • • • • • • • • •			6				
G. TYPE OF WELL							**************************************			Linti A	7777	ent Nan.e	2.2
d. Type of Rece D		[₹] 6A5		_					1	, O		em manie	
b. TYPE OF COMPLE	TION OIL	₩ELL		DAY L	OTHER					B, Farm	or Lea	se Name	
MEN X WO		PLUG	D 11	ova.	DTHER				İ	Bur	ton 1	Fla f	
. Name of Operator	OTT PEN	/ ****	<u> </u>	3VR. []	DINER				-	9. Well N	Vo.		
The Superio	or Oil Compa	$_{ m ny}$ V ($ ho$	10b:1	Pro	duci no	7	1.4N	m -	Trid.	•	14		
. Addition of Operator					رے			·· /	- 1			Pool, or Wildcat	
Nine Green	way Plaza, S	uite 2700,	Housto	on, Te	xas 7704	6			Ì	Avalo	n-Bo	ne Spring, E	as
. Location of Well										IIII	1111		12.
		•		,			1700						
HIT LETTER J	LOCATED	<u>()</u> FEET F	ROM THE	· · · · · · · · · · · · · · · · · · ·	LINC AND		1700 	FEET F		77777	7777		
*	1	210	27E							12. Coun			<u> </u>
HE E LINE OF			E	NMPM	<u> </u>	777	111111		777,	Eddy		_/////////	7,
	16. Date T.D. Red	1		eady to t					_				
7-24-85 0. Total Depth	8-7-85	9 Back T.D. ∼	<u>-26-85</u>	If Multipl	e Compl., Ho		3204 23. Intervo		319			3190 Cable Tools	
	ì	680		Many	C COMP1., 110		Drilled		X	. 00.3	:	04576 75075	
5722 4. Producing Interval(s			, Name								25.	Was Directional Sur	 rve;
												Made NO	
5604-5	622 Bone Spr	rings										NO	
6. Type Electric and C	ther Logs Run				· · · · · · · · · · · · · · · · · · ·					27	. Was	Well Cored	
CNL-LDT-C	R-CAL, DLL-F	XXO-GR, Son	ic			`					N	10	
8.		CAS	ING RECO	RD (Rep	ort all string	s set	in well)						_
CASING SIZE	WEIGHT LB./F				E SIZE		CEME	HTING	RECO	RD		AMOUNT PULLE	E D
13 3/8	54.5#	665)	1/5			x ClC					<u>Circ</u>	
8-5/8	24#	255		12½			$0 \times CLC$					Circ	
-5½	15.5#	572	22		//8		x lite					Circ	
9.	110	IER RECORD				+ 4	150 x CL	C 13	94 CI	BING R	ECOR!		
SIZE	тор	BOTTOM	SACKS C	FMENT	SCREEN		SIZE			TH SET		PACKER SET	
			1				2 7/8	S	N @			TAC @ 5557	
			İ									· · · · · · · · · · · · · · · · · · ·	
1. Perforation Record	(Interval, size and i	iumber)			32.	ACI	D, SHOT, F	RACTI	JRE, C	EMENT	SQUE	EZE, ETC.	
	5604-5622	(73 holos)			DEPTH		ERVAL					MATERIAL USED	
perf w/4 JSPF	3604-3622	(12 HOTES)			5604-56	522	i			_		Di NeFe HCL	_
												F-4+10878 g and $w/4200$ g	
												740 Brady Sd	
				5500].			1 002	W/ Z	4000#		740 Brady Sa	•
ote First Production	Product	ion Method (Flou	vine, eas l		UCTION	d tvi	e pump)			Well St	atus (F	Prod. or Shut-in)	—
9-26-85	i	x 2 x 24 I		-,-,		,,					rodu		
dte of Test	Hours Tested	Choke Size	Prod'n.		Oil - Bbl.		Gas - MCI	F	Water	- Bbl.		as - OII Hatto	
10-1-85	24	_	Test Pe	riod	10		125			6		12500	
low Tubing Press.	Cosing Pressure	Calculated 24	- OII - B	ы.	Gas - 1	MCF	Wes	iter	Вы.		Oil Gro	avity - API (Corr.)	_
1.51	\	<u> </u>	·						1 == ==			5 @ 60	
4. Disposition of Gas (sola, used for fuel,	vented, etc.)							1	Witnesse			
Sold S. List of Attachments									<u>T.</u>	J. A	uid		
-	ination Surv	ey, Logs											
5. I hereby certify that			s of this fo	rm is tru	e wid comple	ie to	the best of	ray kno	wledge	and bel	ics.		
, A.	'a 1		•		MORN PRODUCING	TX & N.	M., INC.		•				
	IM UL À	11110	•	AS A	GENT FOR THE SUP	LKIUK U	AL WHAT ARE				1/	7-11-85	

MM UL A 11110

10-11-85

<u> </u>					•				Pc	v13ca 10-1-78
FROM ELEN MUMERAL THE STORES AND	T POSTWENT	OIL			тюн ф	EVI	EENELMBY			
DISTRIBUTION SANTA DE		SA		0. 1100 , MEW	х 2088 М:ХІС д	AW	3 01 1985		(
LAND OFFICE		WELL COMPLI	ETION OR	RECO	•		F.F.CO.F.O.F. AN	1		
TYPE OF MELL	016	□ GAS							7. Unit Agi	reement Name
TYPE OF COMPLE	TION	LL X		087 L	OTHER_				E. Form or	Le isa Name
WELL X ove		ZH BACH	ni ne	sva.	OTHER					, , , , , , , , , , , , , , , , , , , ,
Mobil Produ	icing TX. 8	N.M. Inc.							2	
					7704	<u> </u>				
Nine Green	ay Plaza,	Suite 2700,	Housto	n, lex	(as //U4	6			E. AVa	Ton - Bone Spring
T LETTER	LOCATED	3300 FEET	FROM THE	South	LINE AND	` \\\	1980			
East LINE OF	1 .	215	εε. 27E						1	
Date Spudded		Reached 17, Date				Elevo	ations (DF, I	RKB, RT, C		, Elev. Cashinghead
11-29-84	12-27-		23-85			3178	8' GR			
Total Depth	}	ig Back T.D.		f Multipl Jany	e Compl., Ho	w	23. Interval Drilled		y Tools	Cuble Tools
5745 ' Froducing Interval(:		700'	m Name					State Fee X State Fee X State Fee Fee X State Fee Fee X State Fee Fee X State Fee Fee Fee X State Fee Fee Fee X State Fee Fee Fee Fee e State Fee Fee Fee		
, r-roads tily intervert.	i, of this compre	non = 10p, botto	ai, jadine							
5552'-5574'	Bone Spri	na								No
Type Electric and (-					27.	
LDT-GR-Cali	per, DLL-M	ISFL-GR-Cali	per, Si	dewal]	Cores					No
		CA	SING RECO	RD (Rep	ort all string	s set	in well)			
CASING SIZE	WEIGHT LB		HSET		E SIZE		CEMEN	TING REC	ORD	AMOUNT PULLED
13-3/8"	54.5		30'		-1/2"	I			ite	
8-5/8" 5-1/2"	24		39'	11'		1				
3-1/2	155	5/	08'		-7/8"	7				None
		INER RECORD				<u>i a n</u>	30.			CORD
SIZE	TOP	воттом	SACKS C	EMENT	SCREEN		SIZE	DE	PTH SET	PACKER SET
							2-7/8	11	5578'	5406'
	····		<u> </u>							
, Perforction Record	•	•	,		32.					
5552-55/4'	(45 holes	w/3-1/8" gu	ın)				C O ECO			
					5552-5					
		•			0000	<u> </u>				
								gals	ge <mark>l,</mark> 560	00 gals CO2,24,00
- F1 - 6			· · · · · · · · · · · · · · · · · · ·					00# 12		
te First Production	Frod	uction Method (Fl	owing, gas i	iji, pump	ing - Size a	na tyj	pe pumpj			us (Frod. or Shut-in)
1-19-85	Hours Tested	Flowing Choke Size	Frod'n.	For	OII - Bbl.		Gas – MCF	Wat		Gas - OII Ratto
	24	21/64"	Test Pe		202		380		2	,
1-26-85 nw Tubing Press.	Casing Pressu			bl.	Gas -	MCF		ter - Bbl.	0	
320	<u> </u>		>				<u></u>			
Disposition of Gas	_	_						1 .		
SI - Negot		sales contr	acts.						im Fleto	ner
		tion Survey								
I hereby certify that	the information	shown on both sid	les of this fo	erm is tru	e wid comple	ie w	the best of	ns knowled	ige and belia	e f.
Â,	c 17	/ :			. 1.4	. 14				1 20 05

Unit Head

36. I hereby certify that the foregoing and a tached information is complete and correct as determined from all available records

TITLE _

SIGNED

Form 9-330 (Rev. 5-63)

Arteria, III 0307 Quelicate submit in Duplicate (See of

UNITED STATES

TE•	l Budget	ipproved. Bureau No. 42-R355.5.
ons o e side	on F True Section	TION AND SERIAL NO.
*	6. IF INDIAN, ALLO	TTEE OR TRIBE NAME
	7. UNIT AGREEMEN	T NAME
_	S. FARM OR LEASE	
_	9. WELL NO.	eray
• 	10, FIELD AND POO E. 17 V n / n 	
	11. SEC., T., R., M., OR AREA 1 - 215 -	OR BLOCK AND SURVEY
	12 COUNTY OR PARISH Eddy	New Mexico
	B, RT, GR, ETC.)* 19.	ELEV. CASINGHEAD
RVAL LED B		CABLE TOOLS
	2	5. WAS DIRECTIONAL SURVEY MADE
		No
	27. v	NO NO
ENTI	NG RECORD	AMOUNT PULLED
	L, 300 sx ClC	
	2700 sx C10	<u></u>
TLV	1, 250 sx C1C	
	TUBING RECORD	
-	DEPTH SET (MD)	PACKER SET (MD)
	5400	5400
FRA	CTURE, CEMENT SQL	EEZE, ETC.
	AMOUNT AND KIND OF	
	00 gals. 15% N	
20	,000 gals. YF0 33,000# 20-4	CO ₂ frac [1., +O sand
	33,000# 20 -	- Salid
p) 	well stati	s (Producing or lucing
F	WATER-BBL.	GAS-OIL RATIO
287 WATI	0 OIL 0	2630 GRAVITT-API (CORR.)
RE		42.6
···· <u>·</u> `)		31
<u>18</u> /	 1	

	DEPARTM GEO	ENT OF			rerioi	₹	struct	tions on se side)	5. Lease de NM-402		ION AND SERIAL NO.
WELL CO	MPLETION O	R RECON	APLETI	PN-I	EPORT.	AN	סם קו	5 *	6. IF INDIAN	, ALLO	TTEE OR TRIBE NAME
18. TYPE OF WEL	L: OH WELL X	GAS WELL	DF	, []	Other				7. UNIT AGRI	EEMEN1	r NAME
b TYPE OF COM	PLETION:	ך Pt.FG [nier -	١_ ,	EP 24	198	Л	1			
WELL X	WORK DEEP-	BACK	RESV		other AX	150		 	5. FARM OR		
2. NAME OF OPERAT	. /				O. C.				Stote 9. WELL NO.	ked	eray
Exxon Corp				<u> </u>	ARTESIA,	OFFI	E	1-	37		
Р. О. Вох	1600, Midlan	d, TX	79702						10, FIELD AS	D P001	L, OR WILDCAT
4. LOCATION OF WEL									Undes	<u> </u>	Bone Spring
	1980' FWL ar	d 2912.	3' FNL	of S	ec. l (NE/S	W)		OR AREA 1 - 2		
At total depth											
			14. PER	MIT NO.		DATE	ISSUED		12. COUNTY PARISH	OR	13. STATE
	·						3-84		Eddy		New Mexico
7-13-84	16. DATE T.D. REACH	ı	е сомрь. 1 9–84	Keaay te	· • '		96; GI		RT, GR, ETC.)*	19.	ELEV. CASINGHEAD
20. TOTAL DEPTH. MD		CK T.D., MD &			TIPLE COMPL		23. INTE	CRVALS	ROTARY TOO	LS	CABLE TOOLS
5630				HOW M	ANY*		DRIL	LED BT	0 - 5630		
24. PRODUCING INTER	VAL(S), OF THIS COM	PLETION-TOP	, BOTTOM,	NAME (3	ID AND TVD)	•				25	. WAS DIRECTIONAL SURVEY MADE
5488 - 55	l6 Bone Sprin	ıg									No
26. TYPE ELECTRIC A										27. w	AS WELL CORED
MLL-DLL-G	R; FDC-CNL; S		NG RECO	RD (Ren	ort all string	a set is	n well)				No
CASING SIZE	WEIGHT, LB./FT.	DEPTH SE			LE SIZE]		ENTING	RECORD		AMOUNT PULLED
13-3/8"	68#	6	04 '	17-	1/2"	3	00 sx	PSL,	300 sx	<u> </u>	
8-5/8"	24#		94 '	11"					2700 sx		
5-1/2"	-14, 15.5	56	25'	7	7/8"	- $ -11$	70 sx	TLW,	250 sx (<u> </u>	
29.	LIN	ER RECORD				'	30.	· · · · ·	TUBING RECO	ORD	
SIZE	TOP (MD) B01	TOM (MD)	SACKS CE	MENT*	SCREEN (A	(D)	SIZE		DEPTH SET (M	(D)	PACKER SET (MD)
							2-7/8	3''_ _	5400		5400
31. PERFORATION REC	ORD (Interval, eize ar	id number)	l		1 32.	<u> </u>	ID SHOT	FRACT	TURE, CEMEN	T SOL	FEZE ETC
		·	•		DEPTH IN				TOURT AND KIN		
5488 - 55	16' w/ 88 sho	ots			5488 -	551	6	2500	gals. l	5% N	eHC1
								20,0			0 ₂ frac II.,
									33,000#	<u> 20-4</u>	0 sand
33.*				PROI	DUCTION		···•,	!			
DATE FIRST PRODUCT	ION PRODUCTIO	N METHOD (flowing, go	ia lift, p	umping—size	and t	ype of pur	np)		STAT!	S (Producing or
8-29-84			lowing							Prod	ucing
DATE OF TEST	HOIRS TESTED	CHOKE SIZE	PROD'S		OIL—BBL.		GAS-M		WATER-BB	٠.	GAS-OIL RATIO
9-1-84 FLOW, TUBING PRESS.	CASING PRESSURE	CALCULATED	OIL—E	BC.	109	-MCF.	1	287		OILG	2630 RAVITT-API (CORR.)
640		24-HOUR RAT			1	EPTE	ال الم	RECC		· · ·	42.6
34 DISPOSITION OF G	AS (Sold, used for fuel	, vented, etc.)			· · · // \	<u> </u>	ا مل	·	TEST WITNE	SSED B	7
Flared 35 LIST OF ATTACH	MENTO						LEW !	(/	<u> </u>		
GO LIGI 'C AILACH.	··· ··· · · · · · · · · · · · · · · ·					SE	P 2 1	1984			
36 I hereby certify	that the foregoing as	id/attached to	iformation	ls comp	icte and cor	rect as	determin	ed from	all available	records	
SIGNED		1-1	(T) T (ים זי	unit ma	in A 1	٦.		** 4 ····	. c)- <u>19-84</u>
ATTACABLE			11.	rle _		74	(, , , , , , , , , , , , , , , , , , ,		DATI	s2	·

VII. 4. It is our intention to dispose of 3300 BWPD from the Delaware zone, which is produced from the Sovernment D Lease. Offlease water from our Burton Flat Lease will also be disposed off in the amount of only 20 BWPD of Bone Spring water.

In an attempt to comply with your request for a water analysis of this offlease water, we sent a water sample to Core Laboratoratories, Inc. They were unable to get a very sucessful analysis due to the turbid condition of the Bone Spring water. It is however, safe to say that the Bone Springs water in uncompatible with the Delaware water because of the scaling tendency when the two are mixed. We have every intention, however, of treating this water with chemicals to prevent scaling and ask that you take into consideration the very small amount of Bone Spring water being disposed of, amounting to only 1% of total water injected.

Attached are also analyses of the Government D Lease water and our neighboring Federal E-#1 well which produces Bome Spring water. Perhaps this Bone Spring water analysis will serve to tell you what you need to know.

CORE LABORATORIES, INC.

SPECIAL SERVICES



May 27, 1986

Jack Hammer
Mobil Producing Texas & New Mexico
P. O. Box 633
Midland, Texas 79702

Reference File Number: C86090

Dear Mr. Hamner,

Enclosed you will find the compatibility study on the Delaware and Bone Springs waters. Please note that only one concentration was completed. This is due to the turbidities causing the spectrophotometer to read out of range. The Bone Springs water is very turbid with a high iron content. When mixed with the Delaware, iron sulfide precipitates out. Both waters have a tendency to scale and the Delaware has corrosive characteristics which will complicate their compatibility.

The turbidity calculated values are much lower than the actual values. Time appears to worsen this situation. In conclusion, the two waters are incompatible.

We trust this information is useful and appreciate the opportunity to have been of service.

Sincerely yours, CORE LABORATORIES, INC.

Donna Bartlett Group Leader

DB:1t

CORE LABORATORIES, Inc. 2001 COMMERCE DRIVE MIDLAND, TEXAS

(915) 694-7761

Company: Mobil Producing TX & NM

File No: C86090

Date Received: 5-21-86 Date Reported: 5-26-86 Report To: Jack Hamner

Compatibility

Turbidities

	10 min.	1 hr.	24 hrs.
Mixtures	Actual Calc	Actual Calc	Actual Calc
75 Delaware 25 Bone Springs	156.5 118.4	160.9 113.2	175.7 105.5

CORE LABORATORIES, Inc.

2001 COMMERCE DRIVE POST OFFICE BOX 4337 MIDLAND, TEXAS 79704 (915) 884-7761

API WATER ANALYSIS REPORT FORM

Company Mobil Produci	ing Texas	& New Mexico	Sam	ple No. 86E32	Date Sampled
Field	Legal	Description		County or Paris	b State
Lease or Unit Government "D"	Well	Depth	1	Formation Delaware	Water, B / D
Type of Water (Produced, Supply,	etc.)	Sampling Point	Batte:	ry #3	Sampled By

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	49,350	2,146.7
Calcium, Ca	4,430	221.1
Magnesium, Mg	<u> 1,270</u>	104.4
Barium, Ba		
	-	

ANIONS

	·	
Bicarbonate, HCO,	371	6.1
Carbonate, CO,	0	0.0
Sulfate, SO4	3,130	65.2
Chloride, Cl	85,140	2,400.9

Total Dissolved Solids (calc.)

143,690

Iron, Fe (total) Sulfide, as H₂S 2.3 17

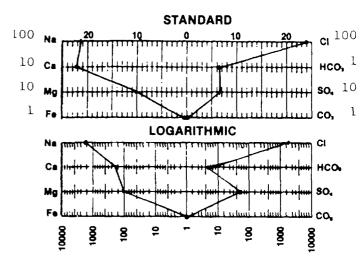
REMARKS & RECOMMENDATIONS:

File No: C86090

OTHER PROPERTIES

pH	8.75
Specific Gravity, 60/60 F.	1.1012
Resistivity (ohm-meters) 77 °F.	0.054
Total Hardness, CaCO,	17,600
Total Alkalinity, CaCO,	_304
Supersaturation, CaCO ₃	

WATER PATTERNS—me/l



SCALING TENDENCY: (STIFF-DAVIS, CALCULATED)

Calcium Carbonate @ 77 °F = -6.34, indicating Corrosion Calcium Sulfate Solubility @ 80 °F = 62.3me/1, indicating scaling

Copies - Jack Hamner

Received 5-21-86 Reported 5-26-86

CORE LABORATORIES. Inc.

2001 COMMERCE DRIVE **POST OFFICE BOX 4337** MIDLAND, TEXAS 79704 (915) 694-7761

API WATER ANALYSIS REPORT FORM

Company	Mobil Producing Texas & New Mexico		Sample No. 86E33		Date Sampled				
Field			Legal D	escription			County or Parisi		State
Lease or Unit		Well			Depth		ormation	Wate	r, B / D
	Federal		E-1		1	В	one Springs	1	
Type of Water	r (Produced, Sup	ply, etc.)		Sampling Po	int			Samp	led By

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	33,130	1,441.2
Calcium, Ca	5,060	252.5
Magnesium, Mg	762	62.7
Barium, Ba		
		

ANIONS		
Chloride, Cl	61,370	1,730.6
Sulfate, SO.	1,010	21.0
Carbonate, CO,	00	0.0
Bicarbonate, HCO,	293	4.8
		
		

Total Dissolved Solids (calc.)

101,630

45 Iron, Fe (total) 0 Sulfide, as H₁S

REMARKS & RECOMMENDATIONS:

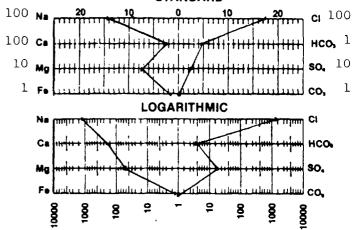
File No: C86090

OTHER PROPERTIES

pН	6.95
Specific Gravity, 60/60 F.	1.0673
Resistivity (ohm-meters) 77 °F.	0.074
Total Hardness, CaCO,	17.040
Total Alkalinity, CaCO,	_240
Supersaturation, CaCO ₃	

WATER PATTERNS-me/l

STANDARD



SCALING TENDENCY: (STIFF-DAVIS, CALCULATED)

Calcium Carbonate @ $77^{\circ}F = .332$, indicating scaling Calcium Sulfate Solubility @ $80^{\circ}F = 40.2$ me/1, indicating non-scaling

Copies - Jack Hamner

5-21-86 Received Reported 5-26-86

CORE LABORATORIES, Inc.

2001 COMMERCE DRIVE **POST OFFICE BOX 4337** MIDLAND, TEXAS 79704 (915) 694-7761

API WATER ANALYSIS REPORT FORM

Sample No.

Date Sampled

Mohi	1 Produci	ng Texas an	d New Mex	ico	85L20	12-21-85	
Fleid			escription		County or Paris	State N. Mexico	,
Lease or Unit Gov	't D	Well 3		Depth	Formation Delaware	Water, B / D	1
Type of Water (P	roduced, Supply	, etc.)	Sampling Po	int	 	Sampled By	1
			<u> </u>	·	OTHER PROPER	TIES	
DISSOLVED SOLIDS CATIONS Sodium, Na (calc.)	mg/l 47,420	me/l 2,062.9			pH Specific Gravity, 60	0/60 F	7.65 1.1054
Calcium, Ca Magnesium, Mg	4,580 1,250	228.5 102.8			Resistivity (ohm-m Total Hardness, Ca	eters) 77°F.	.0.055 17.940
Barium, Ba					Total Alkalinity, C Supersaturation, C		456
ANIONS	82,710	2,332.4			WAT	ER PATTERNS—me	a
Chloride, Cl	2 530	52.7			* ==	STANDARD	
Sulfate, SO ₄ Carbonate, CO ₃ Bicarbonate, HCO ₃	0	0.0			Na		
				10	Mo ++++ ++++		so, 10
				1	Fe <u>[rerelettionerlett</u>	OGARITHMIC	LLLLLLL CO, l
Total Dissolved Solids (cale	c.) _139,050						HCO.
Iron, Fe (total) Sulfide, as H ₂ S	23150				Mg miles miles autos		so,
	_					2 - 2 8	8 8

SCALING TENDENCY: (STIFF-DAVIS, CALCULATED)

Calcium Carbonate @ °F = , indicating

Calcium Sulfate Solubility @ °F = me/1, indicating

REMARKS & RECOMMENDATIONS:

Company

VIII. The injection zone is in the Guadalupian age Delaware sands. The sands are light gray, very fine grained, subangular to subround, moderate to well sorted with thin argillareous lamintations. The degree of induration varies from friable sands to consolidated, calcareous-cemented sandstone. Four separate injection zones in the Delaware sands are included in the plan: 3840'-3856', 3869'-3880', 3898'-3934' and 3964'-4022'.

The Rustler formation is the primary source of drinking water for this area. The base of the fresh water is \pm 400 ft. A second underground aquifer which contains low salinity water in this area, is the Capitan Reef. The base of the low salinity water in this unit is \pm 2450 ft. No fresh water aquifer underlies the injection zone.

UNICHEM INTERNATIONAL

707 NORTH LEECH

P.O.BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : MOBIL PRODUCING TX & NM

DATE : 04/18/86

FIELD. LEASE&WELL : AVALON BONE SPRINGS

SAMPLING POINT: SPEARS FRESH WATER WELL BURTON FLAT LEASE

DATE SAMPLED : 04/15/86

SPECIFIC GRAVITY = 1.001

TOTAL DISSOLVED SOLIDS = 3844

PH = 7.52

		MEZL	MG/L
CATIONS			
CALCIUM MAGNESIUM SODIUM	(CA)+2 (MG)+2 (NA),CALC.	26.4 14.4 18.7	529. 175. 430.
ANI ONS			
BICARBONATE CARBONATE HYDROXIDE SULFATE CHLORIDES	(HCO3)-1 (CO3)-2 (OH)-1 (SO4)-2 (CL)-1	1.8 0 0 43.7 14	107. 0 0 2100 5 00
DISSOLVED GASES			
CARSON DIOXIDE HYDROGEN SULFIDE GXYGEN	(CO2) (H2S) (O2)	NOT RUN NOT RUN	
IRON(TOTAL) BARIUM MANGANESE	(FE) (BA)+2 (MN)	U NOT RUN	.4 0

IONIC STRENGTH (MOLAL) = .102

SCALING INDEX	TEMP
	300 86F
CARBONATE INDEX CALCIUM CARBONATE SCALING	.508 LIKELY
CALCIUM SULFATE INDEX CALCIUM SULFATE SCALING	4.56 LIKELY

XII. MPTM has examined the available geological and engineering data and finds no evidence of open faults or any other hydrological connection between the Delaware zone and any underground source of drinking water.

P.O. BOX 633 MIDLAND, TEXAS 79702

MIDLAND DIVISION

MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
EDDY COUNTY, NEW MEXICO

This application was sent to the Surface Owner of the land on which these wells are located and to each lease operator within one-half mile radius of the well location.

OFFSET OPERATORS

Exxon Company, U.S.A. Box 2180 Houston, Texas 77001

Bass Enterprises Production Co. Box 2760 Midland, Texas 79701

SURFACE OWNER

United States Department of the Interior
Bureau of Land Management
Carlsbad Resource Area
Post Office Box 1778
Carlsbad, New Mexico 88220

May 12, 1986

P O BOX 633 MIDLAND, TEXAS 79702

CERTIFIED MAIL
RETURT RECEIPT REQUESTED

United States Department of the Interior Bureau of Land Management Carlsbad Resource Area P.O. Box 1778 Carlsbad, New Mexico 88220

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
DELAWARE, NW FENTON FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to dispose of produced water into a reservoir not productive of oil or gas in the above captioned well.

A copy of this application is furnished to you for your information.

Yours very truly,

C.a. moore

G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division (w/attach)

	The same of the sa
PS Form 3811, July 1	Put your address in the "RÉTURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.
983 447.	1. Show to whom, data and address of delivery. 2. Restricted Delivery.
	3. Article Addressed to: Vnited States Dept. of Interior Bureau of Land Management Carlsbad Resource Are a BOX1778 Carlsbad, N.M. 88220
	4. Type of Service: Article Number
	Registered Insured Cortified COD P547380 787
	Always obtain signature of addresses or agent and DATE DELIVERED.
	x Winde / Welendes
STIC	6. Signature - Agent X
RETU	7. Date of Delivery 5-14-84
2	8. Addresses's Address (ONLY if requested and fee paid)
RECEI	

May 12, 1986

P O BOX 633 MIDLAND, TEXAS 79702

CERTIFIED MAIL
RETURT RECEIPT REQUESTED

Bass Enterprises Production Co. Box 2760 Midland, Texas 79701

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
DELAWARE, NW FENTON FIELD
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G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

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The second secon	
Put your address in the "RETURN TO" space on the reverse side. Fallure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the dete of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.	
1. Show to whom, date and address of delivery. 2. Restricted Delivery.	
3. Article Addressed to: Bass Enterprises Production Col Bass Enterprises Production Col Box 2760 Midland, Tx. 79701.	1
4. Type of Service: Article Mymber Registered Insured COD Certified ICOD COD COD COD COD COD COD COD COD COD	
Always obtain signature of addressee or agent and DATE DELIVERED.	V
5. Signature - Addressee	
6. Simere - Agent	
7. Date of Delivery	
8. Addresses's Address (DNLY & reason (A) PA	
	Put your address in the "RETURN TO" space on the reverse side. Fallure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the dete of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested. 1. Show to whom, date and address of delivery. 2. Restricted Delivery. 3. Article Addressed to: Bass Entarp rises Production Co. Box 2760 Midand Tx. 79701. 4. Type of Service: Article Mymber Registered Insured Cortified Con Express Mail. Always obtain signature of addressee or agent and DATE DELIVERED. 5. Signature – Addressee X 6. Signature – Addressee X 7. Date of Delivery 7. Date of Delivery 7. Date of Delivery 8. Signature – Agent Services Services of Delivery 9861

May 12, 1986

PIO BOX 633 MIDLAND, TEXAS 79702

CERTIFIED MAIL
RETURT RECEIPT REQUESTED

Exxon company U.S.A. Box 2180 Houston, Texas 77001

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
DELAWARE, NW FENTON FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to dispose of produced water into a reservoir not productive of oil or gas in the above captioned well.

A copy of this application is furnished to you for your information.

Yours very truly,

C.a. Moore

G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division (w/attach)

May 12, 1986

P O. BOX 633 MIDLAND, TEXAS 79702

Carlsbad Current Argus Post Office Box 1629 Carlsbad, New Mexico 88220

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
FENTON, N. W. DELAWARE FIELD
EDDY COUNTY, NEW MEXICO

Gentlemen:

Mobil Producing TX & NM, Inc., is making application to the Oil Conservation Division of New Mexico for authority to inject produced water into a reservoir not productive of oil or gas through the subject well.

The Oil Conservation Division requires that a public notice of the attached information be published in the county in which the wells are located. Please publish the attached notice as soon as possible and return the completed affidavit and copy of the printed notice in the enclosed stamped envelope. Send the invoice to the attention of Mr. G. E. Tate.

Yours very truly,

C.a. moore

for G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division -

District 2 (w/attach)

bcc: Regulatory Files

APPLICATION FOR AUTHORIZATION TO INJECT

1.	Mobil Producing Tx. & N. M. Inc, P.O. Box 633, Midland, Texas 79702
	Attention: Ann Moore, (915) 688-1772
	will apply for permission to inject produced water
	into the following well/wells for the purpose of: Disposal
-	
2.	Well Name and Number: Government "D" #4
	Location: 1554' FNL; 1980' FEL
	Section: 1 ,T_21-S ,R - 27-E
	County: Eddy
3.	Formation Name: Delaware
	Injection Interval: 3849' to 4022'
	Maximum Injection Rate: 2000 BWPD
	Maximum Pressure: 770 PSI
4.	Interested parties, who can show that they are adversely affected
	by this application, must file objections or requests for hearing
	with the Energy and Minerals Department, Oil Conservation
	Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within
	15 days after this publication.

May 12, 1986

P.O. BOX 633 MIDLAND, TEXAS 79702

County Clerk Ruth A. King Post Office Box 850 Carlsbad, New Mexico 88221

7.01
NOTICE OF APPLICATION FOR
WATER DISPOSAL WELL
MOBIL PRODUCING TX & NM, INC.
GOVERNMENT "D" LEASE
WELL NO. 4
FENTON, N.W. DELAWARE FIELD
EDDY COUNTY, NEW MEXICO

Dear Ms. King:

Mobil Producing TX & NM, Inc. (MPTM), has made application to the Oil Conservation Division of New Mexico for authority to inject produced water into a reservoir not productive of oil or gas in the above captioned well.

The Oil Conservation Division requires that the enclosed application be sent to you for public information notice in the county in which the well is located. Please post the attached application as you desire. It is not necessary to record this information.

Yours very truly,

C.a. Moore

for G. E. Tate Env. & Reg. Manager

CAMoore/dwc

Attachments

cc: Oil Conservation Division
 District 2 (w/attach)

CAMPBELL & BLACK, P.A.

LAWYERS

JACK M. CAMPBELL
BRUCE D. BLACK
MICHAEL B. CAMPBELL
WILLIAM F. CARR
BRADFORD C. BERGE
J. SCOTT HALL
PETER N. IVES
JOHN H. BEMIS

GUADALUPE PLACE

SUITE I - 110 NORTH GUADALUPE

POST OFFICE BOX 2208

SANTA FE, NEW MEXICO 87504-2208

TELECOPIER: (505) 988-4421
TELECOPIER: (505) 983-6043

July 25, 1986

RECEIVED

JUL 25 1988

Ms. Florene Davidson
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

CIL CONSERVATION DIVISION

Re: Application of Mobil Producing Texas and New Mexico, Inc. for Authority to Dispose of Produced Water in Its Government "D" Lease Well No. 4 in the Delaware Pool Northwest Fenton Field, Eddy County, New Mexico.

Dear Florene:

This letter is confirm that in discussions with Dick Stamets and David Catanach on July 22, 1986, it was agreed that the above-referenced application should be amended by increasing the disposal volume from 2,000 barrels per day to 3,300 barrels per day.

Mobil Producing Texas and New Mexico, Inc. requests that this letter be included in the case file.

William F. Carr

Very truly yours,

WFC/cv

cc: Mr. Gordon Tate