

CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

624

Operator: 1 JACK ENERGY CORP. Well: MUSKEGON 16 ST COM NO. 1Contact: JOHN BROWN Title: ENG MGR Phone: 505-748-1288DATE IN 3-19-96 RELEASE DATE 4-2-96 DATE OUT 4-24-96Proposed Injection Application is for: ☐ WATERFLOOD ☐ Expansion ☐ InitialOriginal Order: R- ☐ Secondary Recovery ☐ Pressure Maintenance**SENSITIVE AREAS**☒ SALT WATER DISPOSAL ☐ Commercial Well☐ WIPP ☐ Capitan ReefData is complete for proposed well(s)? YES Additional Data Req'd _____

AREA of REVIEW WELLS

2 Total # of AOR0 # of Plugged WellsYES Tabulation CompleteN/A Schematics of P & A'sYES Cement Tops AdequateN/A AOR Repair Required

INJECTION FORMATION

Injection Formation(s) CISCO 8900-9300' Compatible Analysis YESSource of Water or Injectate AREA PRODUCTION

PROOF of NOTICE

YES Copy of Legal NoticeYES Information Printed CorrectlyYES Correct OperatorsYES Copies of Certified Mail ReceiptsNO Objection Received☐ Set to Hearing _____ Date

NOTES:

N 16-175-29E**APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL?** YES

COMMUNICATION WITH CONTACT PERSON:

1st Contact:	☐ Telephoned	☐ Letter	_____ Date	Nature of Discussion	_____
2nd Contact:	☐ Telephoned	☐ Letter	_____ Date	Nature of Discussion	_____
3rd Contact:	☐ Telephoned	☐ Letter	_____ Date	Nature of Discussion	_____

SWD 4.2.96

ARTESIA DIVISION

LAW OFFICES

LOSEE, CARSON, HAAS & CARROLL, P.A.

311 WEST QUAY AVENUE

P. O. BOX 1720

ARTESIA, NEW MEXICO 88211-1720

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MARY LYNN BOGLE
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DEAN B. CROSS
JAMES E. HAAS

OF COUNSEL
A. J. LOSEE

March 12, 1996

Mr. William J. LeMay
Oil Conservation Division
2040 S. Pacheco
Santa Fe, NM 87504

Re: Application of Mack Energy Corporation for
Authorization to Inject/Muskegon 16 State Com
#1
Unit N, Section 16, Township 17 South, Range
29 East, N.M.P.M., Eddy County, New Mexico

Dear Mr. LeMay:

I am submitting herewith the Application for Authorization to Inject of Mack Energy Corporation, as captioned above, with the request that it be considered for administrative approval. Enclosed is an original of the application and one copy, with a copy being provided to the Artesia district office. Proof of notice, both by publication and by mail, will be provided once all return receipt cards are returned and the Affidavit of Publication is received.

If you have any questions, do not hesitate to contact me.

Very truly yours,

LOSEE, CARSON, HAAS & CARROLL, P.A.



Ernest L. Carroll

ELC:kth
Encl.

xc w/enc: OCD, Artesia Division
Mr. Jim Brown, Mack Energy Corporation

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: MACK ENERGY CORPORATION
Address: P.O. Box 960, Artesia, NM 88211-0960
Contact party: Jim Brown Phone: (505) 748-1288

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

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

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

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

VII. Attach data on the proposed operation, including:

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

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

IX. Describe the proposed stimulation program, if any.

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

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

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

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

XIV. Certification

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

Name: Robert C. Chase Title: Field Supervisor
Signature: Robert C. Chase Date: 3/4/96

* 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

02/28/96

01:57 PM

REPORT.WK4

INJECTION WELL DATA SHEET

MACK ENERGY CORPORATION		Muskegon 16 State Com	
OPERATOR		LEASE	
1	660FSL 1980FWL	16	17S
WELL NO.	FOOTAGE LOCATION	SECTION	TOWNSHIP
			29E
			RANGE

Schematic

Tubular Data

Surface Casing

Size 13 3/8 " Cemented with 500 sx.

TOC Surface feet determined by

Hole size 17 1/2

Intermediate Casing

Size 9 5/8 " Cemented with 1100 sx.

TOC Circ feet determined by

Hole size 12 1/4

Long string

Size 5 1/2 " Cemented with 2600 sx.

TOC Circ feet determined by

Hole size 8 3/4

Total depth 10905

Injection interval

8900 feet to 9300 feet

(perforated or open-hole, indicate which)

Perforated

Tubing size 2 7/8 lined with Plastic coated set in a

(material)

Halliburton Trump packer at 8850 feet

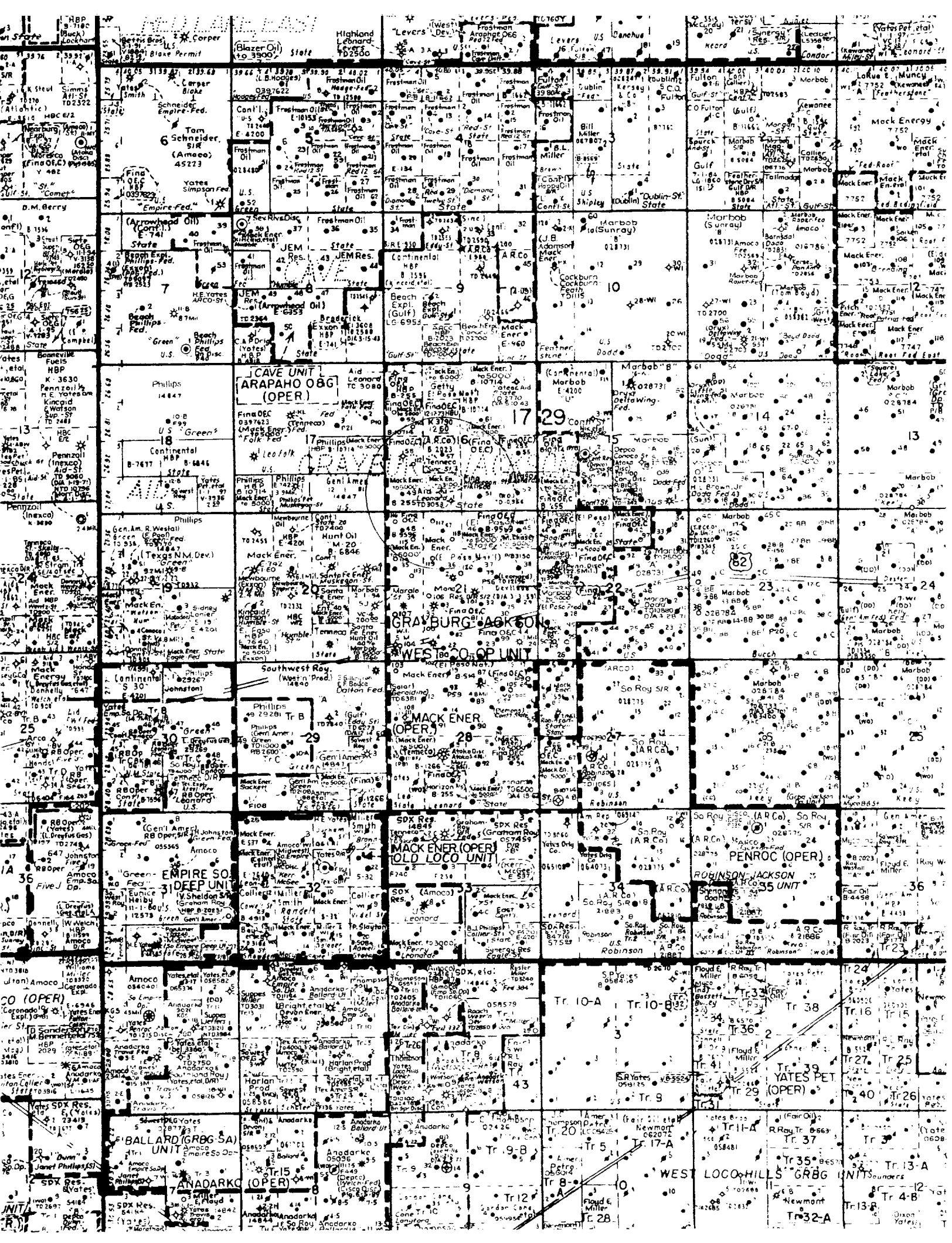
(brand and model)

(or describe any other casing-tubing seal).

Other Data

- Name of the injection formation Cisco
- Name of Field or Pool (if applicable)
- Is this a new well drilled for injection? ☐ Yes ☒ No
- If no, for what purpose was the well originally drilled? Morrow test
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) Morrow perfs 10645-10812, Will plug back to 10600 w/CIBP w/30' cmt on Top
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Grayburg Jackson Queen Grayburg San Andres, 1900-4000, Empire South Morrow & Atoka 10170-10800

V MAP ATTACHED



VI TABULATION OF DATA OF AREA OF REVIEW

WELL NAME	LOCATION	STATUS	DATE SPUDED	TOTAL DEPTH	COMPLETION INTERVAL	COMPLETION DATE
GJ WEST COOP UNIT 52	UNIT P SEC 16 T17S R29E 660FSL 660FEL	PROD	06/06/59	10967	2598-2748	07/18/67
MUSKEGON 16 STATE COM 1	UNIT N SEC 16 T17S R29E 660FSL 1980FWL	PROD	10/04/92	10905	10645-10812	12/30/92

MACK ENERGY CORPORATION

GJ WEST COOP UNIT 52
SEC 16 T17S R29E 660FSL 660FEL

WELL HISTORY

PBTD: 2850'
TD: 10,967'
SP Csg: 13 3/8" 54.5# @ 788' C/w 800sx
LS Csg: 5 1/2" 15.5# @ 2899' C/w 400sx Class C w/16% gel and 3% salt
Plus 60sx Latex. (TOC by survey 1340')
T SALT:
B SALT:
PERFS: 2598,2621,41,51,85,87,98,2706,31,48.

COMPLETION REPORT

Plug and abandon as follows:

25sx plug @ 10,962
10sx plug @ 10,850
10sx plug @ 10,156
10sx plug @ 8,794
10sx plug @ 7,156
10sx plug @ 6,004
10sx plug @ 3,853
10sx plug @ 2,398
10sx plug @ 788
Plug @ surface

6-11-66 Rigged up rotary rig. Drilled out cmt plugs to 2969'.
6-28-66 Perfed csg at 2598-2748 w/10 shots.
6-29-66 Acidized perfs w/2000 gals 15% NE acid. Fraced perfs w/25000 gals gelled wtr and 240sx 20/40 sand.
7-1-66 Ran tbg and pump and rods.
7-10-66 Pump 4 BOPD
6-28-67 Rigged up, Pulled and laid down rods and tbg.
6-29-66 Perfed csg at 2247,55,60,66,71,89,95,2306,09,19,24,51,63,74, 93,96,98,2486,93,2506. Ran in hole w/baker retr.
BP and set at 2558.
6-30-67 Frac perfs w/50000 gals gelled wtr and 750sx 20/40 sand.
7-1-67 Washed sand and pulled plug. Ran 2 3/8" tbg and landed at 2743 ran rods and pump.
7-18-67 Pumped 18 BOPD

WELL REPORT

6-17-85 Pulled rods and tbg out hole. WELL IS T.A.
5-9-90 Rigged up. Ran in hole w/2 3/8" tbg. Landed tbg at 2769'. Ran 110-3/4" rods. Put well back on pump.

MACK ENERGY CORPORATION
GJ WEST COOP UNIT #52
SEC 16 T17S R29E 660FSL 660FEL

13 3/8" 54.5# @ 788' C/w 800sx

5 1/2" 15.5# @ 2899' C/w 400sx Class C w/16% gel and 3% salt Plus 60sx Latex. (TOC BY SURVEY 1340')

10sx plug @ 3854

10sx plug @ 6004

10sx plug @ 7156

10sx plug @ 8794

10sx plug @ 10156

10sx plug @ 10850

25sx plug @ 10962

MACK ENERGY CORPORATION

MUSKEGON 16 STATE COM #1
660FSL 1980FWL SEC 16 T17S R29E

WELL HISTORY

ELEV: 3577'

PBTD: 10875'

TD: 10905'

SP Csg: 17 1/2" hole 13 3/8" 48# H-40 J-55 @ 440' C/w 500sx Class C w/2% CC 1/4# floreal & 5# Gilsonite. Top out w/10 yards ready mix.

INT Csg: 12 1/4" hole 9 5/8" 40# J-55 ST&C @ 2650' C/w 900sx Class C w/6% gel & 12# salt & 5# gilsonite, Tail in w/200sx Class C w/2% CC. (CIRC TO SURFACE)

LS Csg: 8 3/4" hole 5 1/2" 17# & 15.5# K55 & J55 LT&C @ 10915'. DV TOOL @ 8818'. Cmt 1st Stage w/365sx 50/50 Poz w/.3% CFR-3 & .5% Halid 9 & .1% HR7 & 5# gilsonite & 2% gel, tail in w/365sx 50/50 pox w/.3% CFR3, .5% Halid 9. Cmt 2nd Stage w/1870sx Haliburton Lite & 10# gilsonite, 5# salt. (CIRC 108sx)

T SALT:

B SALT:

PERFS: 10645-47,10659-61,10675-84,10738-49,10794-812.

COMPLETION REPORT

11/11/92 Drilled out DV tool and clean out to 10875. Ran CBL from TD to 9400' & 7560-7100. GOOD BOND THUR ALL PAY ZONES.

11/13/92 Perfed csg from 10794-812 w/4 SPF (76 Holes)

11/16/92 Acidized perfs w/2000 gals 7.5% HCL w/N2

11/20/92 Frac perfs 10794-812 w/8250 gals foam fluid, 2750 gals Methanol and 11,000 gals c02 w/220sx 20/40 LWC prop.

11/23/92 Perfed csg @ 10738-749 w/4 SPF, little show

12/17/92 Perfed csg 10645-84, Acidized perfs w/2500 gals 7.5% HCL.

12/21/92 Frac perfs 10645-84 w/8250 gals , 3000 gals methol and 11000 gals CO2 and 270sx sand.

12/30/92 Put well on production

MACK ENERGY CORPORATION
MUSKEGON 16 STATE COM #1
660FSL 1980FWL SEC 16 T17S R29E



13 3/8" 48# @ 440' C/w 500sx

9 5/8" 40# @ 2650 C/w 1100sx

Perfs 10645-84

Perfs 10738-49

Perfs 10794-812

5 1/2" 17# @ 10915 c/w 2600sx

V11 DATA SHEET: PROPOSED OPERATIONS

- 1 Proposed average and maximum daily rate and volume of fluids to be injected;
Respectively, 1500 BWPd and 2500 BWPd
- 2 The system is closed or open;
Closed
- 3 Proposed average and maximum injection pressure;;
Vacuum- 100#
- 4 Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water;
WE WILL BE REINJECTING PRODUCED WATER
- 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;
NOT AVAILABLE

VIII GEOLOGICAL DATA

Injection Zone:

The Proposed Disposal interval is in the Cisco Formation at a depth of 8900-9300. The Cisco formation consists of dolomitic and Lime with a thickness of about 600', There is no known aquifers overlying proposed injection area.

VIII GEOLOGICAL DATA

IX PROPOSED STIMULATION PROGRAM

TO BE TREATED WITH 1000 GALLONS 15% ACID

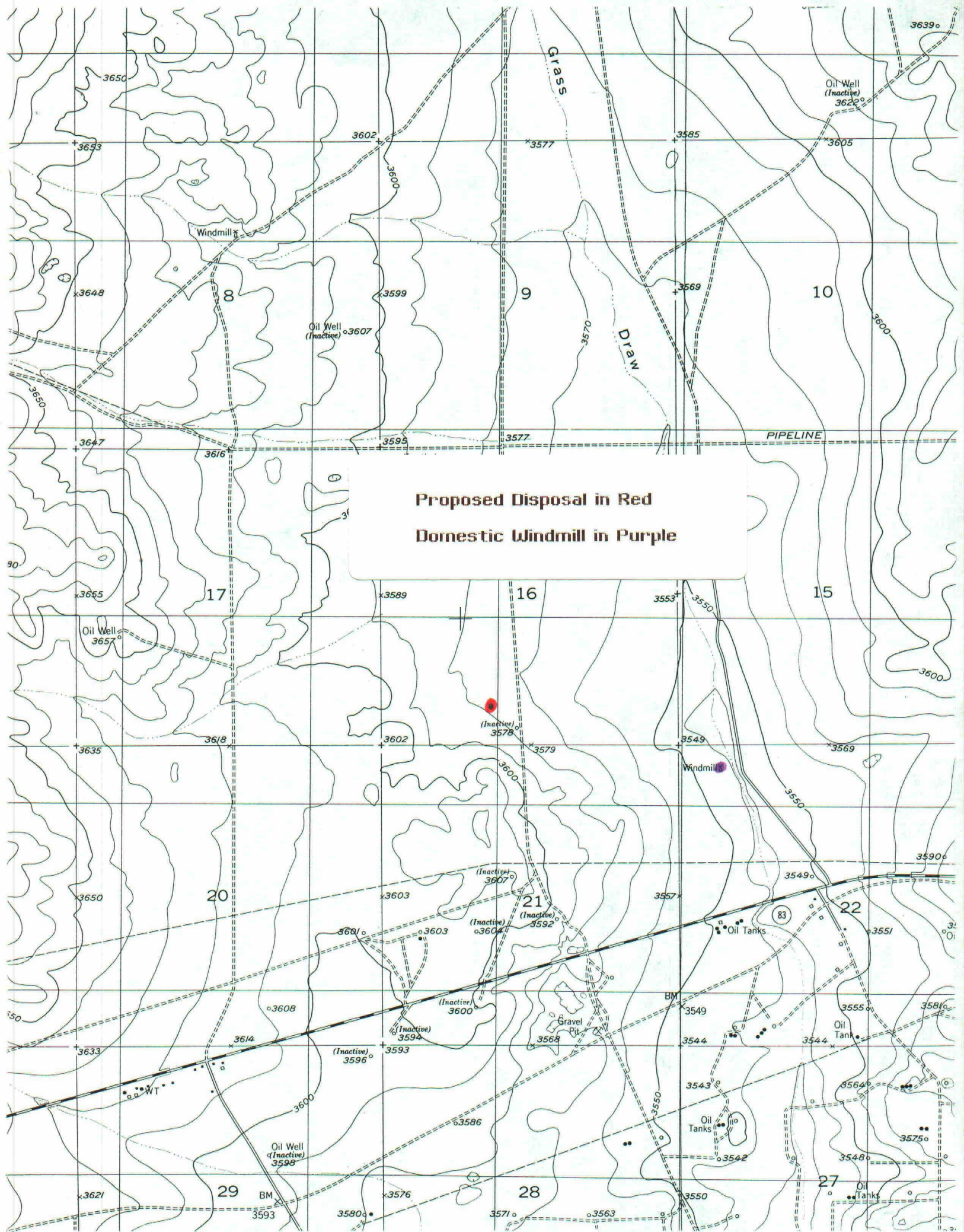
X LOGS AND TEST DATA

THIS WELL WAS NOT TESTED IN DISPOSED ZONE

XI CHEMICAL ANALYSIS OF FRESH WATER

There is a windmill located NWNW of Sec 22 T17S R29E, 4200' east of the proposed disposal well that is use only for domestic purpose.

See Attached Map & Chemical analysis of water



TRETOLITE DIVISION

 (505) 746-3588
 Fax (505) 746-3580

 Reply to:
 P.O. Box 1140
 Artesia, NM
 88211-7531

WATER ANALYSIS REPORT

 Company : MACK ENERGY
 Address : ARTESIA, NM
 Lease : WINDMILL
 Well :
 Sample Pt. :

 Date : 03/07/96
 Date Sampled : 03/07/96
 Analysis No. : 0243

ANALYSIS		mg/L	* meq/L	
-----		----	-----	
1.	pH	7.8		
2.	H ₂ S	0 PPM		
3.	Specific Gravity	1.000		
4.	Total Dissolved Solids	3098.2		
5.	Suspended Solids	NR		
6.	Dissolved Oxygen	NR		
7.	Dissolved CO ₂	NR		
8.	Oil In Water	NR		
9.	Phenolphthalein Alkalinity (CaCO ₃)			
10.	Methyl Orange Alkalinity (CaCO ₃)			
11.	Bicarbonate	HCO ₃ 134.0	HCO ₃	2.2
12.	Chloride	Cl 106.0	Cl	3.0
13.	Sulfate	SO ₄ 1925.0	SO ₄	40.1
14.	Calcium	Ca 900.0	Ca	44.9
15.	Magnesium	Mg -23.7	Mg	-1.9
16.	Sodium (calculated)	Na 53.2	Na	2.3
17.	Iron	Fe 3.8		
18.	Barium	Ba 0.0		
19.	Strontium	Sr 0.0		
20.	Total Hardness (CaCO ₃)	2150.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter				Compound				Equiv wt X meq/L		=	mg/L
+-----+				+-----+				+-----+			
45	*Ca	<-----	*HCO3	2	Ca (HCO3) 2	81.0	2.2	178			
		/----->			CaSO4	68.1	40.1	2728			
-2	*Mg	----->	*SO4	40	CaCl2	55.5	2.6	146			
		<-----/			Mg (HCO3) 2	73.2					
2	*Na	----->	*Cl	3	MgSO4	60.2					
+-----+				+-----+				+-----+			
Saturation Values Dist. Water 20 C					NaHCO3	84.0					
CaCO3 13 mg/L					Na2SO4	71.0					
CaSO4 * 2H2O 2090 mg/L					NaCl	58.4	0.4	21			
BaSO4 2.4 mg/L											

REMARKS:

----- CRAIG CULP

SCALE TENDENCY REPORT

Company	: MACK ENERGY	Date	: 03/07/96
Address	: ARTESIA, NM	Date Sampled	: 03/07/96
Lease	: WINDMILL	Analysis No.	: 0243
Well	:	Analyst	: SHAWNA MATTHEWS
Sample Pt.	:		

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

S.I. =	1.0	at	60 deg. F	or	16 deg. C
S.I. =	1.1	at	80 deg. F	or	27 deg. C
S.I. =	1.1	at	100 deg. F	or	38 deg. C
S.I. =	1.2	at	120 deg. F	or	49 deg. C
S.I. =	1.2	at	140 deg. F	or	60 deg. C

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

S =	1754	at	60 deg. F	or	16 deg C
S =	1814	at	80 deg. F	or	27 deg C
S =	1830	at	100 deg. F	or	38 deg C
S =	1822	at	120 deg. F	or	49 deg C
S =	1807	at	140 deg. F	or	60 deg C

Petrolite Oilfield Chemicals Group

Respectfully submitted,
SHAWNA MATTHEWS

XII AFFIRMATIVE STATEMENT

RE: Muskegon 16 State Com #1

We have examined the available geologic and engineering data and find no evidence of open faults or any other hydrolic connection between the disposal zone and any underground source of drinking water.

Mack Energy Corporation

Date: 3/11/96

Robert C. Chase
Robert C. Chase, Field Supervisor