

PAUL BACA PROFESSIONAL COURT REPORTERS

# **OIL CONSERVTIONS DIVISION**

**CASE #: 14178**

**EXHIBIT  
1-A**

***Mesquite SWD, Inc.***  
***Case 14178***

**October 15, 2008**

Entered May 18, 1976  
JDR

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE NO. 5681  
Order No. R-5217

APPLICATION OF A. H. RAINS FOR  
SALT WATER DISPOSAL, EDDY COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 12, 1976,  
at Santa Fe, New Mexico, before Examiner, Daniel S. Nutter.

NOW, on this 18th day of May, 1976, the Commission, a  
quorum being present, having considered the testimony, the  
record, and the recommendations of the Examiner, and being fully  
advised in the premises,

FINDS:

(1) That due public notice having been given as required  
by law, the Commission has jurisdiction of this cause and the  
subject matter thereof.

(2) That the applicant, A. H. Rains, is the operator of  
the Pure State Well No. 1, located in Unit J of Section 15,  
Township 21 South, Range 27 East, NMPM, Magruder-Yates Pool,  
Eddy County, New Mexico.

(3) That the applicant proposes to utilize said well to  
dispose of produced salt water into the Yates formation, with  
injection into the open-hole interval from approximately 540  
feet to 551 feet.

(4) That the injection should be accomplished through  
2 3/8-inch tubing installed in a packer set at approximately  
535 feet; that the casing-tubing annulus should be filled with  
an inert fluid; and that a pressure gauge or approved leak  
detection device should be attached to the annulus in order to  
determine leakage in the casing, tubing, or packer.

(5) That the operator should notify the supervisor of  
the Artesia district office of the Commission of the date  
and time of the installation of disposal equipment so that the  
same may be inspected.

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit 1-A

(6) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(7) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, A. H. Rains, is hereby authorized to utilize its Pure State Well No. 1, located in Unit J of Section 15, Township 21 South, Range 27 East, NMPM, Magruder-Yates Pool, Eddy County, New Mexico, to dispose of produced salt water into the Yates formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 535 feet, with injection into the open-hole interval from approximately 540 feet to 551 feet;

PROVIDED HOWEVER, that the casing-tubing annulus shall be filled with an inert fluid, and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the operator shall notify the supervisor of the Artesia district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.

(3) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(4) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.


(5) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

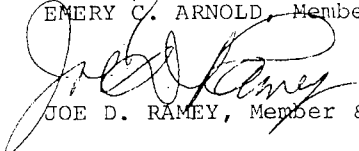
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Case No. 5681  
Order No. R-5217

DONE at Santa Fe, New Mexico, on the day and year herein-  
above designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman

  
EMERY C. ARNOLD, Member

  
JOE D. RAMEY, Member & Secretary

S E A L

dr/

Entered October 12, 1976

*JOR*

BEFORE THE OIL CONSERVATION COMMISSION  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
COMMISSION OF NEW MEXICO FOR  
THE PURPOSE OF CONSIDERING:

CASE NO. 5753  
Order No. R-5217-A

APPLICATION OF A. H. RAINS FOR  
AMENDMENT OF ORDER NO. R-5217,  
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 15, 1976, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 12th day of October, 1976, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That by Commission Order No. R-5217 dated May 18, 1976, the applicant, A. H. Rains, was granted authority to utilize his Pure State Well No. 1, located in Unit J of Section 15, Township 21 South, Range 27 East, NMPM, Magruder-Yates Pool, Eddy County, New Mexico, as a salt water disposal well for water production from said Pure State Lease.
- (3) That it now appears that said Pure State Well No. 1 may be better utilized as a producing well.
- (4) That the applicant seeks the amendment of Order No. R-5217 to provide an administrative procedure for the approval of substitute or additional salt water disposal wells on said Pure State Lease in Section 15, Township 21 South, Range 27 East, Magruder-Yates Pool, Eddy County, New Mexico.
- (5) That the applicant is the only operator in said Magruder-Yates Pool.
- (6) That approval of the application may result in greater recovery of oil from said Pure State Lease, will not cause waste, will not violate correlative rights, and will not endanger fresh waters provided that proper well construction and monitoring procedures are required.

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit 1-B

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Case No. 5753

Order No. R-5217-A

(7) That the application should be approved.

IT IS THEREFORE ORDERED:

(1) That Order (1), (2), and (3), of Commission Order No. R-5217 are hereby amended to read in their entirety as follows:

"(1) That the applicant, A. H. Rains, is hereby authorized to utilize his Pure State Well No. 1, located in Unit J of Section 15, Township 21 South, Range 27 East, NMPM, Magruder-Yates Pool, Eddy County, New Mexico, to dispose of produced salt water into the Yates formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 535 feet, with injection into the open-hole interval from approximately 540 feet to 551 feet.

"(2) The Secretary-Director of the Commission is hereby authorized to approve such additional or substitute injection wells at orthodox and unorthodox locations within the boundaries of applicant's Pure State Lease as may be necessary to handle produced water therefrom, provided said wells are located no closer than 660 feet to the outer boundary of said lease nor closer than 10 feet to any quarter-quarter section or subdivision inner boundary. To obtain such approval, the operator shall file proper application with the Commission, which application shall include the following:

(a) A plat showing the location of the proposed well, all wells within the project area, and offset operators, locating wells which offset the project area.

(b) A schematic drawing of the proposed disposal well which fully describes the casing, tubing, perforated interval, and depth.

(c) A letter stating that all offset operators to the proposed well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed well if, within 20 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval of the application upon receipt of waivers from offsetting operators.

"(3) That terms and conditions of approval of any disposal well under provisions of this order shall be as follows:

(a) That the casing-tubing annulus shall be filled with an inert fluid, and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped

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Case No. 5753  
Order No. R-5217-A

with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(b) That the operator shall notify the supervisor of the Artesia district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.


(c) That the operator shall immediately notify the supervisor of the Commission's Artesia district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

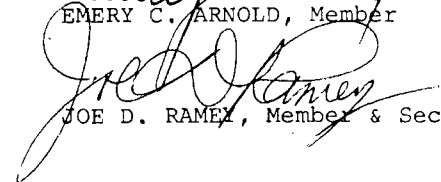
(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman

  
EMERY C. ARNOLD, Member

  
JOE D. RAMEY, Member & Secretary

S E A L

jr/



SUBJECT: SALT WATER DISPOSAL WELL

ORDER NO. SWD-180

THE APPLICATION OF A. H. RAINS FOR  
A SALT WATER DISPOSAL WELL.

ADMINISTRATIVE ORDER  
OF THE OIL CONSERVATION COMMISSION

Under the provisions of Rule 701 (C), A. H. Rains made application to the New Mexico Oil Conservation Commission on December 13, 1976, for permission to complete for salt water disposal his Exxon State Well No. 8 located in Unit O of Section 15, Township 21 South, Range 27 East, NMPM, Lea County, New Mexico.

The Secretary-Director finds:

1. That application has been duly filed under the provisions of Rule 701 (C) of the Commission Rules and Regulations;
2. That satisfactory information has been provided that all offset operators and surface owners have been duly notified;
3. That the applicant has presented satisfactory evidence that all requirements in Rule 701 (C) will be met.
4. That no objections have been received within the waiting period prescribed by said rule.

IT IS FURTHER ORDERED:

That the applicant herein, A. H. Rains, is hereby authorized to complete its Exxon State Well No. 8 located in Unit O of Section 15, Township 21 South, Range 27 East, NMPM, Eddy County, New Mexico, in such a manner as to permit the injection of salt water for disposal purposes into the Yates formation at approximately 570 feet to approximately 600 feet through 2 3/8 inch plastic lined tubing set in a packer located at approximately 565 feet.

IT IS FURTHER ORDERED:

That the operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

That the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing, or packer.

That the operator shall notify the supervisor of the Commission's Artesia District Office before injection is commenced through said well.

That the operator shall immediately notify the supervisor of the Commission's Artesia Office of the failure of the tubing, casing, or packer in said well or the leakage of water from or around said well and shall take such steps as may be timely or necessary to correct such failure or leakage.

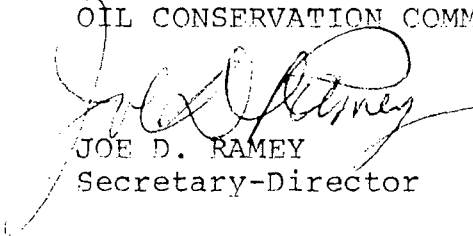
Salt Water Disposal - A. H. Rains

PROVIDED FURTHER

That jurisdiction of this cause is hereby retained by the Commission for such further order or orders as may seem necessary or convenient for the prevention of waste and/or protection of correlative rights; upon failure of applicant to comply with any requirement of this order after notice and hearing the Commission may terminate the authority hereby granted in the interest of conservation. That applicant shall submit monthly reports of the disposal operation in accordance with Rule 704 and 1120 of the Commission Rules and Regulations.

APPROVED at Santa Fe, New Mexico, on this 31st day of December.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

  
JOE D. RAMEY  
Secretary-Director

S E A L

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DISTRIBUTION	
SANTA FE	1
FILE	1
U.S.G.S.	
LAND OFFICE	1
OPERATOR	1

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NEW MEXICO OIL CONSERVATION COMMISSION

FEB 15 1977

O. C. C.  
ALBUQUERQUE OFFICE

30-015-22055

Form C-101  
Revised 1-1-65

5A. Indicate Type of Lease	
STATE <input checked="" type="checkbox"/>	FEE <input type="checkbox"/>
5. State Oil & Gas Lease No.	
E 2597	

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work		7. Unit Agreement Name	
b. Type of Well OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <u>WATER DISPOSAL</u>		<u>0</u>	
2. Name of Operator <u>A. H. RAINES</u>		8. Firm or Lease Name <u>EXADN STATE</u>	
3. Address of Operator <u>BOX 427 CARLSBAD, N.M. 88220</u>		9. Well No. <u>8</u>	
4. Location of Well UNIT LETTER <u>D</u> LOCATED <u>1268</u> FEET FROM THE <u>SOUTH</u> LINE AND <u>1032</u> FEET FROM THE <u>EAST</u> LINE OF SEC. <u>15</u> TWP. <u>21S</u> RGE. <u>29E</u> NADP		10. Field and Pool, or Wildcat <u>MAGRUDER-YATES</u>	
11. Direction of hole (whether DP, RL, etc.) <u>32.74</u>		12. County <u>EDDY</u>	
13. Kind & Weight of Blanket <u>BLANKET</u>		14. Drilling Contractor <u>R. D. RAINES</u>	
15. Proposed Depth <u>600-700</u>		16. Formation <u>LIME</u>	
17. Approx. Date Work will start <u>UNKNOWN</u>		18. History of C.T. <u>ROTARY</u>	

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
11"	8 3/4"	24	175'	CIRCULATED	
17 1/2"	5 1/2"	14	600'	"	

PROPOSED TO DRILL 11" HOLE TO A DEPTH OF 600-700'  
AND SET 5 1/2" CASING AND CIRCULATE CEMENT TO TOP OF  
SURFACE

SWD #180

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Mesquite SWD, Inc.  
OCD Exhibit 1-D

APPROVAL VALID  
FOR 90 DAYS UNLESS  
DRILLING COMMENCED,  
EXPIRES 5-18-77

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 ADEQUATE PREVENTER PROGRAM, IF ANY.

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

Signed G. H. Raines Title OPERATOR Date 2-8-77  
(This space for State Use)

APPROVED BY W. A. Gussert TITLE SUPERVISOR, DISTRICT II DATE FEB 18 1977  
CONDITIONS OF APPROVAL, IF ANY:

Notify N.M.O.C.C. in sufficient  
time to witness cementing  
the 5 1/2" casing

DISTRIBUTION		
SANTA FE	1	0
FILE	1	
U.S.G.S.	2	
LAND OFFICE	1	
OPERATOR		

RECEIVED  
NEW MEXICO OIL CONSERVATION COMMISSION  
WELL COMPLETION OR RECOMPLETION REPORT AND LOG

NOV 28 1977

O.C.C.

ARTESIA, OFFICE

5a. Indicate Type of Lease
State <input checked="" type="checkbox"/> Fee <input type="checkbox"/>
5. State Oil & Gas Lease No.
E-2597

1a. TYPE OF WELL	OIL WELL <input type="checkbox"/>	GAS WELL <input type="checkbox"/>	DRY <input type="checkbox"/>	OTHER <input checked="" type="checkbox"/> WATER DISPOSAL		
b. TYPE OF COMPLETION	NEW WELL <input checked="" type="checkbox"/>	WORK OVER <input type="checkbox"/>	DEEPEN <input type="checkbox"/>	PLUG BACK <input type="checkbox"/>	DIFF. RESVR. <input type="checkbox"/>	OTHER <input type="checkbox"/>

7. Unit Agreement Name
8. Farm or Lease Name
EXXON STATE
9. Well No.
8

2. Name of Operator
AIRL RAINES
3. Address of Operator
Box 927 Corralito NEW MEXICO 88220
4. Location of Well

10. Field and Pool, or Wildcat
magnum gates

UNIT LETTER	0	LOCATED	1268	FEET FROM THE	SOUTH	LINE AND	2032	FEET FROM
-------------	---	---------	------	---------------	-------	----------	------	-----------

12. County
ELLY

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Casinghead
6-1-77	9-9-77	9-15-77		3295

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
694				L	
24. Producing Interval(s), of this completion - Top, Bottom, Name					25. Was Directional Survey Made

26. Type Electric and Other Logs Run	27. Was Well Cored
--------------------------------------	--------------------

32. CASING RECORD (Report all strings set in well)					
CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
5 7/8	24	168' 6"	12"	110 SACKS CEMENT	168'
5 1/2	14	567' 9"	7 7/8"	110 SACKS CEMENT	567' 9"
PACKER SET AT 550'			4 3/4" hole	drill 567' 9" to 694 FEET	

33. LINER RECORD				34. TUBING RECORD			
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET	PACKER SET
					2 3/8"	550	550

31. Perforation Record (Interval, size and number)	32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
	DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
	568- 694	110 gals acid

3. PRODUCTION							
Date First Production		Production Method (Flowing, gas lift, pumping - Size and type pump)				Well Status (Prod. or Shut-in)	
						Water Disposal	
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				Bbl.	Oil Gravity - API (Corr.)

4. Disposition of Gas (Sold, used for fuel, vented, etc.)	Test Witnessed By
5. List of Attachments	

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit 1-E

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 G. J. W. Wain TITLE OPERATOR DATE 11-25-77

Form 100 is to be filed with the appropriate District Office of the Commission not later than 30 days after the completion of one newly-drilled or deepened well. It shall be accompanied by one copy of all observed and radioactivity logs run on the well and a summary of all special tests conducted, including full stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 36 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

# INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

## Southeastern New Mexico

## Northwestern New Mexico

T. Anhy <u>70</u>	T. Canyon _____	T. Ojo Alamo _____	T. Penn. "B" _____
T. Salt <u>NO SALT</u>	T. Strawn _____	T. Kirtland-Fruitland _____	T. Penn. "C" _____
T. Salt <u>NO SALT</u>	T. Atoka _____	T. Fictured Cliffs _____	T. Penn. "D" _____
T. Yates <u>694</u>	T. Miss _____	T. Cliff House _____	T. Leadville _____
T. 7 Rivers <u>694</u>	T. Devonian _____	T. Menefee _____	T. Madison _____
T. Queen _____	T. Silurian _____	T. Point Lookout _____	T. Elbert _____
T. Grayburg _____	T. Montoya _____	T. Mancos _____	T. McCracken _____
T. San Andres _____	T. Simpson _____	T. Gallup _____	T. Ignacio Qizte _____
T. Glorieta _____	T. McKee _____	Base Greenhorn _____	T. Granite _____
T. Paddock _____	T. Ellenburger _____	T. Dakota _____	T. _____
T. Blinbry _____	T. Gr. Wash _____	T. Morrison _____	T. _____
T. Tubb _____	T. Granite _____	T. Todilto _____	T. _____
T. Drinkard _____	T. Delaware Sand _____	T. Entrada _____	T. _____
T. Abo _____	T. Bone Springs _____	T. Wingate _____	T. _____
T. Wolfcamp _____	T. _____	T. Chinle _____	T. _____
T. Penn. _____	T. _____	T. Permian _____	T. _____
T. Cisco (Bough C) _____	T. _____	T. Penn. "A" _____	T. _____

## OIL OR GAS SANDS OR ZONES

No. 1, from _____ to _____	No. 4, from _____ to _____
No. 2, from _____ to _____	No. 5, from _____ to _____
No. 3, from _____ to _____	No. 6, from _____ to _____

## IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from <u>PWT 110 GALLONS OF ACID IN WELL</u>	_____
No. 2, from <u>WELL TAKING WATER UNDER VACUUM</u>	_____
No. 3, from <u>STARTED WATER IN 9-20-77</u>	_____
No. 4, from _____ to _____	_____ feet.

## FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	40		rb-sd	250	320		dolo and anh
40	75		gyp-rb	320	338		dolo 15 brn
75	80		dolo + anhy, hard gray	338	350		sand top yates
80	85		dolo + gyp, rb	350	354		dolo
85	95		anh gyp rd bd	354	385		sand
95	100		anh gyp rd bd	385	410		dolo
100	110		anh grap	410	439		sand
110	125		gray ahn	439	488		dolo
125	130		gray han, brn clay	488	491		sand
130	145		lt gray anh	491	525		dolo
145	155		anh some rd gyp + sd	525	530		dolo and green shale
155	170		hard anh 8" pipe at 170/ 110 sx amt	530	551		dolo some green shale
170	200		lite limy anh	551	556		sand
200	210		brn dolo (shale brk at 205)	556	562		dolo, porous, oil saturation
210	235		gray dolo, hard	562	568		dolo, set 5" csg/110 sax
235	237		Bl sdy shale	568	651		dolo
237	243		hard lt brn dolo	651	654		sand
				654	683		dolo
				683	684		sand
				684	694		dolo porous TD

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DISTRIBUTION	
SALEABLE	1
FILE	1
U.S.G.S.	
LAND OFFICE	
OPERATOR	1

# RECEIVED

NEW MEXICO OIL CONSERVATION COMMISSION

MAY 26 1977

O. C. C.  
ALBUQUERQUE, OFFICE

Form C-103  
Supersedes Old  
C-102 and C-103  
Effective 1-1-65

5a. Indicate Type of Lease	State <input checked="" type="checkbox"/> Fee <input type="checkbox"/>
5. State Oil & Gas Lease No.	E-2592
7. Unit Agreement Date	
8. Firm or Lease Name	EXXON STATE
9. Well No.	8
10. Field and Pool, or Vicinity	MAGRADER YATES
12. County	EDDY

## SUNDRY NOTICES AND REPORTS ON WELLS

DO NOT USE THIS FORM FOR NOTICES TO DRILL OR TO RE-ENTER OR RE-DRILL A DIFFERENT RESERVOIR.  
USE APPLICATION FOR MINOR WELL RE-ENTRY (C-101) FOR SUCH PURPOSES.

OIL WELL <input type="checkbox"/>	GAS WELL <input type="checkbox"/>	OTHER - WATER DISPOSAL WELL
1. Name of Operator A. H. RAINS		
2. Address of Operator P.O. Box 927 CARLSBAD N.M. 88220		
3. Location of Well UNIT LETTER 0 1268 FEET FROM THE SOUTH LINE AND 2032 FEET FROM THE EAST LINE, SECTION 15 TOWNSHIP 20S RANGE 28E NMPH.		

15. Elevation (Show whether DF, RT, CR, etc.)	3270
---	------

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data  
NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF:

PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPS. <input checked="" type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	
OTHER WATER DISPOSAL WELL		OTHER BEGINNING 5-23-77	

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 1502.  
spud 5-23-77  
PROPOSED TO DRILL 13 1/4" HOLE TO A DEPTH 175' AND SET 8 5/8" CASING CEMENTED OVER THE TOP. THEN DRILL 7 7/8" HOLE TO A DEPTH OF 550' TO 600'. THEN SET 5 1/2" CASING AND CEMENT OVER THE TOP. THEN WILL DRILL WITH 4 3/4" BIT TO A DEPTH APPROX. 700'

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Mesquite SWD, Inc.  
OCD Exhibit 1-F

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

SIGNED <u>A. H. Rains</u>	TITLE <u>OPERATOR</u>	DATE <u>5-24-1977</u>
SIGNED <u>W. A. Grossett</u>	TITLE <u>SUPERVISOR, DISTRICT II</u>	DATE <u>MAY 26 1977</u>

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION  
WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102  
Supercedes C-128  
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

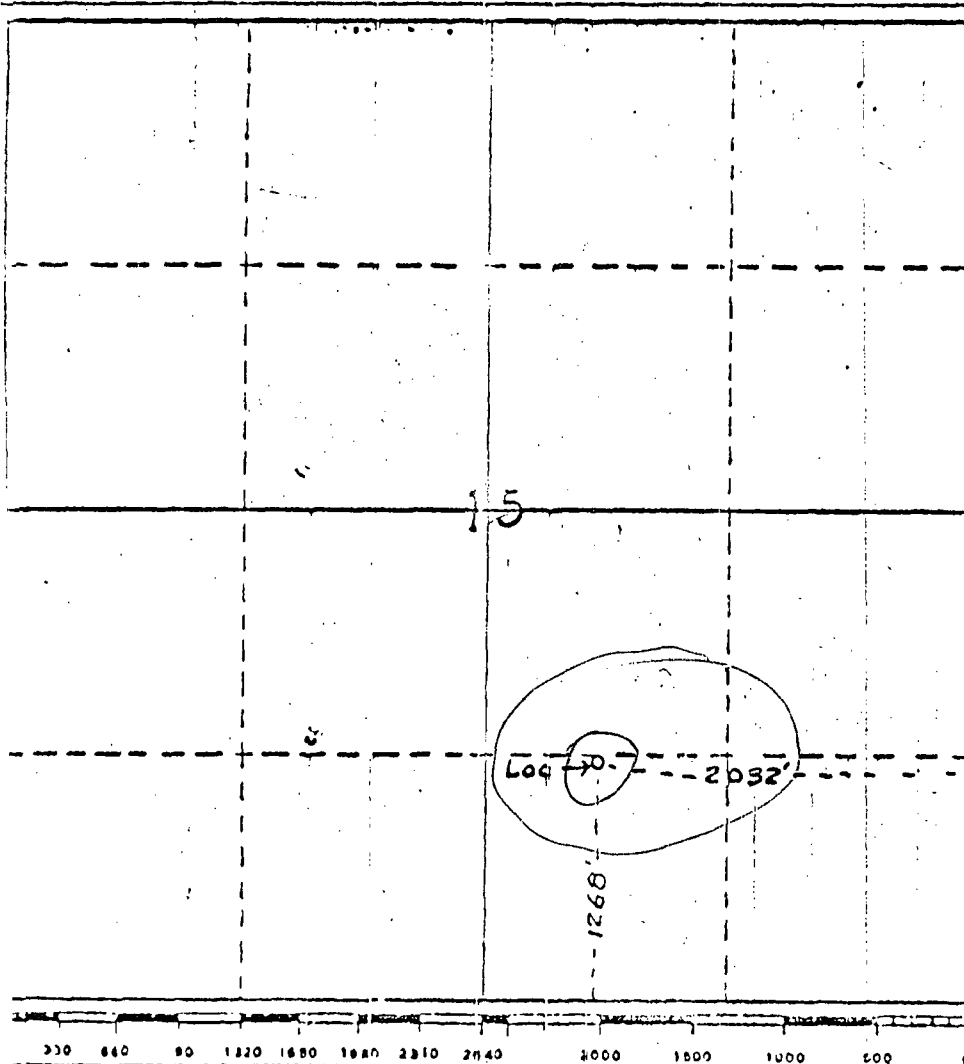
Operator <u>A. H. RAHNS</u>		Lease <u>STATE</u>		Well No. <u>8</u>
Tract Letter <u>0</u>	Section <u>15</u>	Township <u>21 S</u>	Range <u>27 E</u>	County <u>EDDY</u>
Actual Surface Location of Well <u>1268</u> feet from the <u>SOUTH</u> line and <u>2032</u> feet from the <u>EAST</u> line				
Ground Level Elev. <u>3274'</u>	Producing Formation <u>YATES</u>	Pool <u>MAGRUDER-YATES</u>	Dedicated Acreage <u>      </u> Acres	

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure 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-unitary 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.

A. H. RAHNS

Name

OPERATOR

Position

A. H. RAHNS

Company

9-13-1974

Date

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

Date Surveyed

08-29-76

Registered Professional Engineer and/or Land Surveyor

Geo. D. Riggs

Certificate No.

707

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit I-G

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT

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

IL CONSERVATION DIVISION  
P. O. BOX 2088 RECEIVED BY  
SANTA FE, NEW MEXICO 87501  
AUG 27 1984  
O. C. D.  
ARTESIA, OFFICE

Form C-103  
Revised 10-1-70

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. <input type="checkbox"/> OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER: <u>DESPECHAL</u>	5a. Indicate Type of Lease State <input checked="" type="checkbox"/> Fee <input type="checkbox"/>
2. Name of Operator <u>RAINS PRODUCTION CO.</u> ( <u>DON A. RAINS</u> )	5. State Oil & Gas Lease No.
3. Address of Operator <u>P.O. B. 2429 CARLSBAD 88221</u>	7. Unit Agreement Name
4. Location of Well UNIT LETTER <u>0</u> <u>1268</u> FEET FROM THE <u>SOUTH</u> LINE AND <u>2032</u> FEET FROM THE <u>EAST</u> LINE, SECTION <u>15</u> TOWNSHIP <u>21S</u> RANGE <u>27E</u> NMPM.	8. Farm or Lease Name <u>EXXON STATE</u>
15. Elevation (Show whether DF, RT, GR, etc.)	9. Well No. <u>8</u>
	10. Field and Pool, or Wildcat <u>Maaguder-Yales</u>
	12. County <u>EDDY</u>

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data  
NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐  
TEMPORARILY ABANDON ☐  
PULL OR ALTER CASING ☐

PLUG AND ABANDON ☐  
CHANGE PLANS ☐

OTHER REPAIR TUBING LEAK ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐  
COMMENCE DRILLING OPNS. ☐  
CASING TEST AND CEMENT JOB ☐  
ALTERING CASING ☐  
PLUG AND ABANDONMENT ☐  
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.

AT THIS TIME WE ARE WAITING FOR WORD FROM POTENTIAL BUYERS TO PURCHASE THIS LEASE, IF THEY BUY, THEY GET LEASE AS IS. IF THEY DO NOT BUY, WE WILL PUT NEW STRING OF TUBING IN WELL AND NOTIFY NMCC-ARTESIA 24 HR. PRIOR. THIS LEASE IS PRESENTLY NOT PRODUCING AND WILL NOT BE PRODUCED UNTIL TUBING IS REPLACED (AS LONG AS RAINS PRODUCTION CO. IS OPERATOR).

\* Repair work should begin within 90 days.

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit 1-H

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

SIGNED Don A. Rains TITLE GENERAL PARTNER DATE 8-24-84

APPROVED BY Mike Williams TITLE OIL AND GAS INSPECTOR DATE AUG 29 1984

CONDITIONS OF APPROVAL, IF ANY: \* As Noted Above



State of New Mexico  
Energy, Minerals and Natural Resources

Form C-104A  
Permit 1065

Oil Conservation Division

1220 S. St Francis Dr.  
Santa Fe, NM 87505

RECEIVED

JUN 07 2004

OCD-ARTESIA

Change of Operator

Previous Operator Information

OGRID: 6000  
Name: DEL TAYLOR  
Address: 1103 W Edwards  
Address: \_\_\_\_\_  
City, State, Zip: Carlsbad, NM 88220

New Operator Information

Effective Date: 6/01/2004  
OGRID: 228017  
Name: Blue Collar Oil + Gas, LLC  
Address: P.O. Box 1075  
Address: \_\_\_\_\_  
City, State, Zip: Artesia, NM 88210

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the certified list of wells is true to the best of my knowledge and belief.

Previous Operator

Signature: Del Taylor  
Printed Name: Del Taylor  
Title: owner  
Date: 6-3-04 Phone: 505-350-8199

New Operator

Signature: John Craig Huber  
Printed Name: John Craig Huber  
Title: MANAGER  
Date: 6/3/04 Phone: 432-559-8817

30-015-22055

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit 1-1

District II  
1301 W. Grand Ave., Artesia, NM 88210  
Phone: (505) 748-1283 Fax: (505) 748-9720

State of New Mexico  
Energy, Minerals and Natural Resources  
Oil Conservation Division  
1220 S. St Francis Dr.  
Santa Fe, NM 87505

Form C-104A  
Permit 19175

Change of Operator

Previous Operator Information

OGRID: 228017  
Name: BLUE COLLAR OIL & GAS LLC  
Address: PO Box 1075  
Address:  
City, State, Zip: Artesia, NM 88210

New Operator Information

Effective Date: 12/1/2005  
OGRID: 161968  
Name: MESQUITE SWD, INC  
Address: PO Box 1479  
Address:  
City, State, Zip: Carlsbad, NM 88221

I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information on this form and the certified list of wells is true to the best of my knowledge and belief.

Previous Operator

Signature: X Dennis Woods  
Printed Name: X Dennis Woods  
Title: MANAGING member -  
Blue Collar, LLC  
Date: 12-1-05 Phone: 505-390-8362

New Operator

Signature: Clay Wilson  
Printed Name: CLAY L WILSON  
Title: V.P.  
Date: 12-1-05 Phone: 885-3996

NMOCD Approval

Electronic Signature: Carmen Reno, District 2  
Date: April 25, 2006

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit 1-J

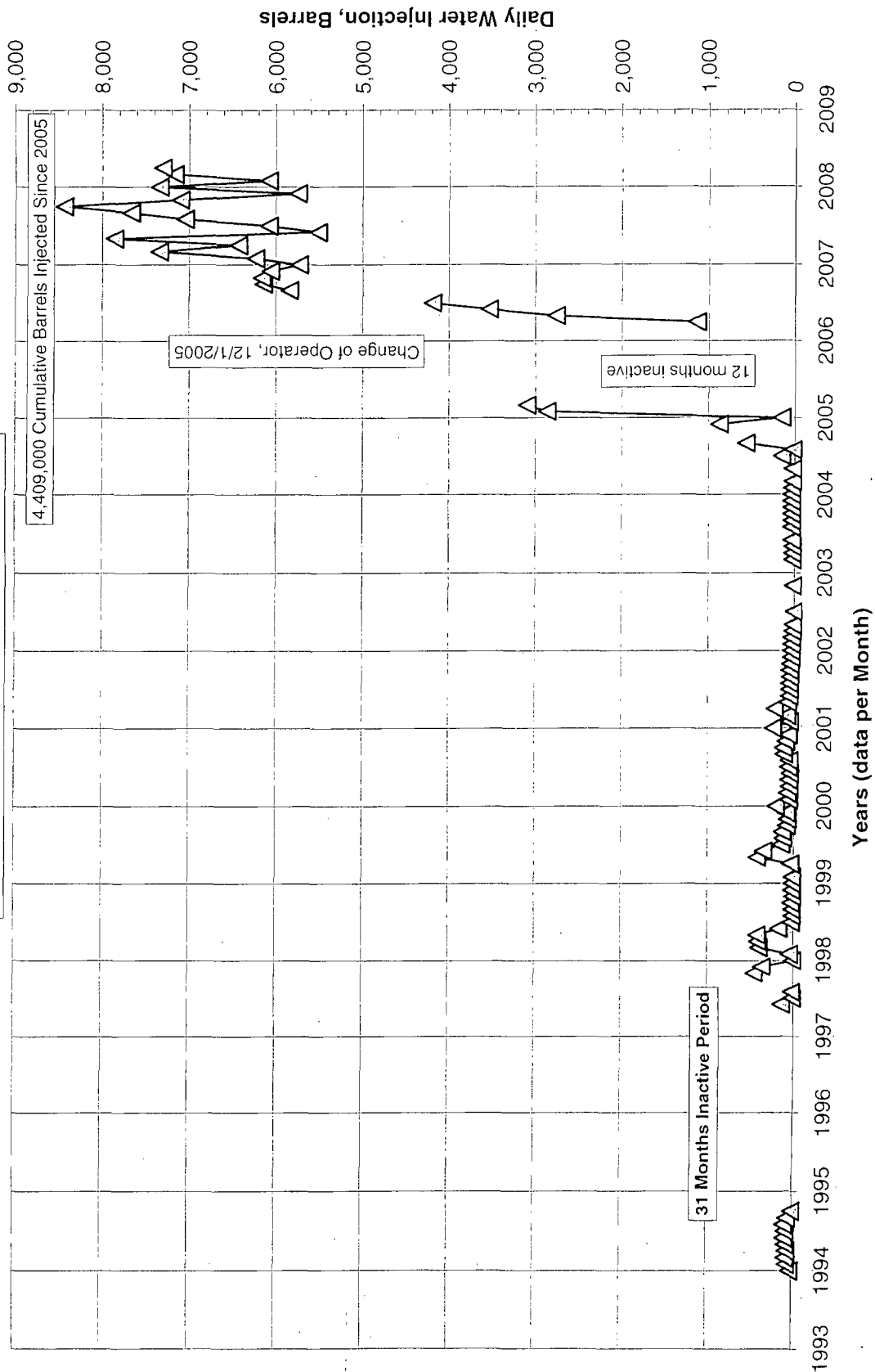
## Well List

**161968 MESQUITE SWD, INC**  
**TOTAL WELL COUNT:13**  
**PRINTED ON:THURSDAY, OCTOBER 09, 2008**

Property	Well Name	Lease Type	ULSTR	OCD UL	API	Well Type	Pool	Last Prod/Inj	Oil POD	Gas POD	In Add. Bond
300272	BIG EDDY FEDERAL #100	F	L-8 -21S-28E	L	30-015-24824	S	96100 SWD;DELAWARE	8/2008			
303114	CARTHEL FEDERAL COM #002	F	G-5 -23S-29E	G	30-015-23389	G	79865 LAGUNA SALADO;ATOKA, NORTH (GAS)	10/2005	2812161	650330	
24734	DORSTATE SWD #001	S	H-27-25S-28E	H	30-015-23728	S	96095 SWD;BONE SPRING	8/2008	2817935		9/1/2010
33262	DUNAWAY #001	P	F-23-22S-27E	F	30-015-28083	W					
	DUNAWAY #002	P	F-23-22S-27E	F	30-015-28084	I					
302443	EXXON STATE #001	S	J-15-21S-27E	J	30-015-01091	O	42750 MAGRUDER;YATES	4/2008	2458010	2458030	5/1/2010
	EXXON STATE #002	S	J-15-21S-27E	J	30-015-01092	O	42750 MAGRUDER;YATES	4/2008	2458010	2458030	5/1/2010
	EXXON STATE #003	S	O-15-21S-27E	O	30-015-01096	O	42750 MAGRUDER;YATES	4/2008	2458010	2458030	5/1/2010
	EXXON STATE #007	S	O-15-21S-27E	O	30-015-01100	O	42750 MAGRUDER;YATES	4/2008	2458010	2458030	5/1/2010
	EXXON STATE #008	S	O-15-21S-27E	O	30-015-22055	S	96090 SWD;YATES	5/2008			6/1/2010
301620	KAISER STATE #044	S	F-13-21S-34E	F	30-025-32741	O	64600 WILSON;YATES- SEVEN RIVERS (ASSOC)	3/2006	761810	2807528	4/1/2008
303012	ROHMER #001	P	F-23-22S-27E		30-015-25722	S	96100 SWD;DELAWARE	8/2008			9/1/2010
301022	WILLOW LAKE #001	F	C-22-24S-28E	C	30-015-21499	S	96095 SWD;BONE SPRING	8/2008	2826253		

*Case 14178*  
**Mesquite SWD, Inc.**  
**OCD Exhibit 1-K**

Mesquite SWD, Inc. (OGRID = 161968)  
 Exxon State #8 (30-015-22055)  
 R-5217-A and SWD-180



334  
 334  
 334



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Mark E. Fesmire, P.E.

Director

Oil Conservation Division

February 25, 2008

Mr. Clay Wilson  
Mesquite SWD, Inc.  
PO Box 1479  
Carlsbad, NM 88221

RE: SWP-180, Exxon State Well No. 8 API No. 30-015-22055

1268 FSL, 2032 FEL, Sec 15, T21S, R27E, NMPM, Eddy County, New Mexico

Dear Sir:

Please complete the following work on the above named injection well:

- 1) Run GR-CNL from the bottom of the Open Hole to the surface – or if older logs are available, send them instead.
- 2) Run an injection survey with radioactive tracer and temperature survey sensors while injecting at your normal average daily rate.
- 3) Construct a daily (preferable) or monthly injection rate and pressure vs. time plot. Put the cumulative barrel of water injection on this plot – since the well began injection.
- 4) Run memory gauge(s) in the hole and resume injection for at least 4 days at a constant rate (if possible), then shut-in the well at the surface for at least 72 hours. After the shut-in period, pull the gauges, have the pressure test professionally analyzed and send in the results and the raw data on memory disks. Record the injection rates for the entire time the gauges are in the hole and send in these observed injection rates.

Copy the requested items to myself in Santa Fe and to Mr. Tim Gum of the Artesia district office. The Division requests you complete this work prior to April 30, 2008.

Please direct questions concerning this request to myself. Please direct questions as to fall-off test details to Mr. Will Jones of the engineering bureau at 505-476-3448.

Sincerely,

J. Daniel Sanchez

Compliance and Enforcement Manager and

Director of New Mexico's Underground Injection Control

505-476-3493

cc: Oil Conservation Division – Artesia

**Case 14178**  
**Mesquite SWD, Inc.**  
**OCD Exhibit 1-M**

Submit 3 Copies To Appropriate District Office  
District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Ave., Artesia, NM 88210  
District III  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources

Form C-103  
May 27, 2004

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

WELL API NO. 30-015-22055
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Exxon State
8. Well Number #8
9. OGRID Number 161968
10. Pool name or Wildcat Magruder Yates

**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. Type of Well: Oil Well ☐ Gas Well ☐ Other ☐

2. Name of Operator  
Mesquite SWD Inc.

3. Address of Operator  
P.O. Box 1479 Carlsbad, NM 88220

4. Well Location  
Unit Letter O : \_\_\_\_\_ feet from the \_\_\_\_\_ line and \_\_\_\_\_ feet from the \_\_\_\_\_ line  
Section 15 Township 21S Range 27E NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)

Pit or Below-grade Tank Application ☐ or Closure ☐

Pit type \_\_\_\_\_ Depth to Groundwater \_\_\_\_\_ Distance from nearest fresh water well \_\_\_\_\_ Distance from nearest surface water \_\_\_\_\_

Pit Liner Thickness: \_\_\_\_\_ mil Below-Grade Tank: Volume \_\_\_\_\_ bbls; Construction Material \_\_\_\_\_

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:	SUBSEQUENT REPORT OF:
PERFORM REMEDIAL WORK <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>
PLUG AND ABANDON <input type="checkbox"/>	CASING/CEMENT JOB <input type="checkbox"/>
CHANGE PLANS <input type="checkbox"/>	P AND A <input type="checkbox"/>
MULTIPLE COMPL <input type="checkbox"/>	
OTHER: <input type="checkbox"/>	OTHER: MIT Testing <input checked="" type="checkbox"/>

13. 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. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

- 1) Run GR-CNL from bottom of open hole to the surface.
- 2) Run injection survey with radioactive tracer and temperature survey sensors while injecting at our normal, average rate.
- 3) Redress packer RIH, set packer, and run 30 min chart. Chart Attached.

Case 14178  
Mesquite SWD, Inc.  
OCD Exhibit I-N

I hereby certify that the information above is true and complete to the best of my knowledge and belief. I further certify that any pit or below-grade tank has been/will be constructed or closed according to NMOCD guidelines ☐ or a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

SIGNATURE Clay L Willson TITLE President DATE 2/5/08

Type or print name Clay L Willson E-mail address: \_\_\_\_\_ Telephone No. (575)885-3996

For State Use Only

APPROVED BY: Gerry Guye TITLE Compliance Officer DATE APR 21 2008



# INJECTION PROFILE TEMPERATURE LOG

State	New Mexico	18478
-------	------------	-------

State New Mexico

Unit Letter "O"

Section 15 Township 21S Range 27E

Permanent Datum	Ground Level	Elevation	N/A
-----------------	--------------	-----------	-----

Log Measured From Ground Level

Drilling Measured From N/A

Elevation

天田

D.F. MIA

G.L. 14/4

Date	- 05 - March - 2008
------	---------------------

Run Number

Depth Driller

Bottom Logged Interval

Total Logged Interval

Open Hole Size

Type Fluid

Density / Viscosity:

Max. Recorded Temp.

Estimated Cement 100

Time | Order on Bottom

Equipment Number

Location

Recorded By \_\_\_\_\_

Witnessed By

Borsh

Run Number	Bit
------------	-----



--	--

Casino Record	
---------------	--

Surface String	
----------------	--

Prst. string
--------------

Interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

## Comments

Injection profile indicates fluid going in open hole just below casing with majority going down hole past TD.

Tracer pass show fluid movement down hole past logged TD.

Temperature show cooling effect just below casing to TD.

### Case 14178

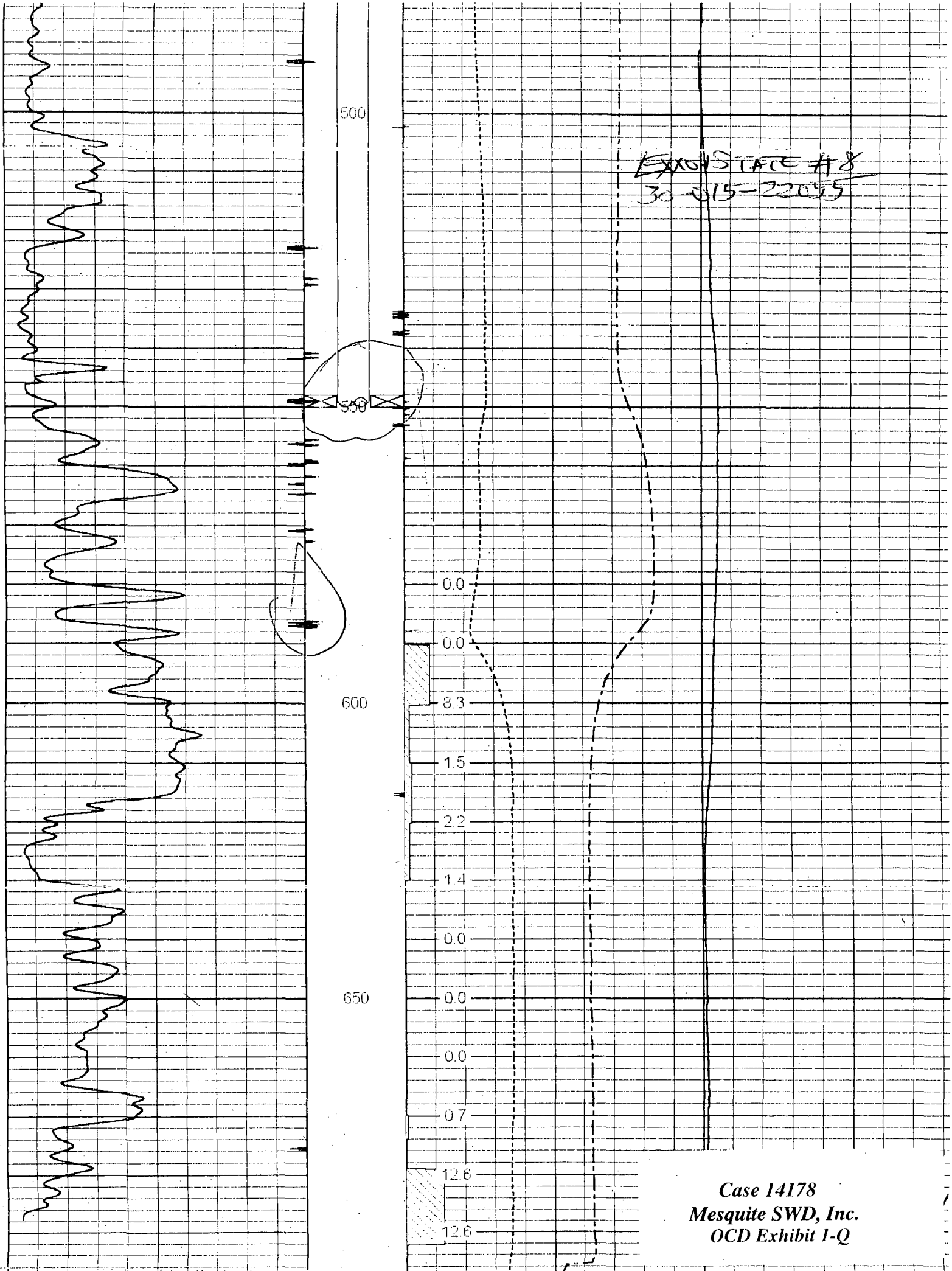
Thank you for using Black Warrior Wireline.

**Mesquite SWD, Inc.**  
**OCD Exhibit 1-0**

nsor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
HD	43.67		CHD_68	0.84	0.69	1.00
			TREJCT-Bell775 (775-001)	2.00	1.44	5.00
			TRDET-Bell710 (710-002)	3.00	1.44	5.00
ET	38.33					
VAR	37.83		1_6815	5.00	1.69	39.00
VAR	32.83					







-15	Casing Collars	0 0	col	7 50	Pump-In Temperature (degF)
0	Gamma Ray (GAPI)	100	TBGCCL	50	Base Temperature (degF)
100	BU Gamma Ray (GAPI)	200	- 1	0 50	After Pump Temperature (degF)
					DV (%)
					100 0
					FLOWVEL (%)
					0
					Tubing Collars
					50

EXXON STATE #8

**BWWC**

Black Warrior Wireline Corporation

Tracer Pass

VMATCH.XLS

Exxon State #8

STEP 1

GIVEN

INPUT

DATA

HORIZ PERMEABILITY (Kh) (md) 10000.00  
 FORMATION THICKNESS (H) (ft) 20.00  
 FORM VOL FACTOR (B) (STB/RB) 1.00  
 DRAWDOWN PRESS (Pe-Pw) (PSI) 23.00  
 FLUID VISCOSITY (Mu) (CP) 1.00  
 DRAINAGE RADIUS (Re) (FT) 12200.00  
 WELLBORE RADIUS (Rw) (FT) 0.350  
 SKIN FACTOR (DIMENSIONLESS) -5.000  
 ACTUAL INIT FLOW (Qa) (BPD) 6000.00  
 ACTUAL FLOW AT T1 (Q1) (BPD) 5950.00  
 TIME (T1) (MONTHS) 24.00  
 FORM POROSITY (PHI) (%) 35.00  
 (SOI-SOR) (%) 90.00  
**Actual Reserves; 4364712**

10 DARCIES  
PERMEABILITY

CALCULATE

T FLOW (Q FLOW (Qo) (BPD) 5973  
 ACT DECLINE CONSTANT (Ca) 0.000011  
 THEO DECLINE CONSTANT (Ct) 0.000011

TIME T1 (MONTHS)	THEO FLOW Qt (BPD)	ACTUAL FLOW Qa (BPD)	THEO CUM FLOW (MBBL)	ACTUAL CUM FLOW (MBBL)
0	5973	6000	0	0
12	5948	5975	2176	2185
24	5924	5950	4342	4362
36	5899	5925	6500	6529
48	5875	5900	8649	8687
60	5850	5876	10789	10836
72	5826	5851	12920	12977
84	5802	5827	15042	15108
96	5778	5802	17155	17230
108	5754	5778	19260	19344
120	5730	5754	21356	21448
132	5706	5730	23443	23544
144	5683	5706	25521	25631
156	5659	5682	27591	27710
168	5636	5659	29653	29780
180	5612	5635	31705	31841
192	5589	5611	33750	33893
204	5566	5588	35785	35937
216	5543	5565	37813	37973
228	5520	5541	39832	39999

DECLINE RESERVES  
 — MATCH WITH —  
 VOLUMETRIC RESERVE  
 TYPE CURVE FIT  
 (YIELDS PERM.)

Albert S. Wylie, Jr. and James R. Wood, Department of Geological & Mining Engineering and Sciences, Michigan Technological University

**Permeability and Porosity Imaging of a Niagaran Pinnacle Reef Using Log Curve Amplitude Slicing of Core Data - Bell River Mills Field, St. Clair County, Michigan**

The Bell River Mills Field was discovered in 1961 and produced over 21 BCF of gas before its conversion to a gas storage field in 1965. Thirty-five of the 54 wells in the field were continuously cored through the Niagaran pinnacle reef and the A-1 carbonate/anhydrite. The cores were analyzed to produce more than 6000 measurements of both horizontal permeability and porosity. Core permeability measurements range from zero to eight darcies with both the low and high values affected by equipment measurement limits; 50% of the permeability measurements are less than 2 millidarcies (md) while 40% range from 2 to 100 md. Core porosity ranges from zero to 33%; 15% of the porosity measurements are less than 2% while 83% range from 2 to 20%. Log curve amplitude slicing, a new technique that generates subhorizontal slices through log curves on a foot-by-foot basis, was used to create a series of amplitude slices from the core permeability and porosity curves in these wells. Animations of the core permeability and porosity slices show the detailed distribution of these important reservoir properties throughout most of the pinnacle reef. Integrating the core permeability and porosity animations and previous animations of the gamma ray curve with rock types and formation tops for the Bell River Mills field produces a series of reservoir models that can be used to visualize the likely permeability and porosity distributions for less densely drilled and cored Niagaran pinnacle reefs as well as pinnacle reefs lacking 3D seismic coverage.