



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

3/23/2000

GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

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

RE: Proposed:

MC	_____
DHC	_____
NSL	_____
NSP	_____
SWD	<u>X</u> _____
WFX	_____
PMX	_____

Gentlemen:

I have examined the application for the:

Strata Production Co Gamma 2M State #1-E, 16-75-34
Operator Lease & Well No. Unit S-T-R API # 30-041-207

and my recommendations are as follows:

OK. Chris

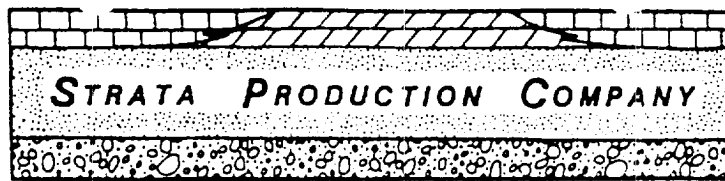
Yours very truly,

Chris Williams

Chris Williams
Supervisor, District 1

/ed

POST OFFICE DRAWER 1030
ROSWELL, NM 88202-1030



200 WEST FIRST STREET, ROSWELL PETROLEUM BUILDING, SUITE 700
ROSWELL, NEW MEXICO 88201

TELEPHONE (505) 622-1127
FACSIMILE (505) 623-3533

COPY

March 2, 2000

Oil Conservation Division
ATTN: Michael E. Stogner
2040 South Pacheco Street
Santa Fe, New Mexico 87505

Re: Proposed Salt Water Disposal Well
Yates Petroleum Gramma ZM State #1
1650' FNL & 330' FWL
Section 16-7S-34E
Roosevelt County, New Mexico

Gentlemen:

Strata Production Company proposes converting the captioned well for water disposal of produced water from the Chaveroo NE Field San Andres formation into the San Andres formation. Please find enclosed the following data pertinent to the Application:

1. Form C-108
2. Attachment "A" Well Data
3. Attachment "B" Present Wellbore Schematic
4. Attachment "C" Proposed Wellbore Schematic
5. Attachment "D" Area of Review Plat
6. Attachment "E" Area of Review Well Data
7. Attachment "F" Operation Data
8. Attachment "G" Geologic Data
9. Attachment "H" Stimulation Program
10. Attachment "I" Log of Proposed Disposal Zone
11. Attachment "J" Fresh Water Analysis
12. Attachment "K" Affirmative Statement
13. Attachment "L" Proof of Notice

Should you have any questions regarding this matter, please contact this office.

Sincerely,

STRATA PRODUCTION COMPANY

Carol J. Garcia
Production Records Manager

CJG:ms
Enclosures

DATE: _____ ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -

ADMINISTRATIVE APPLICATION COVERSHEET

THIS COVERSHEET IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS

Application Acronyms:

[NSP-Non-Standard Proration Unit] [NSL-Non-Standard Location]
[DD-Directional Drilling] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Directional Drilling
☐ NSL ☐ NSP ☐ DD ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☐ WFX ☐ PMX ☒ SWD ☐ IPI ☐ EOR ☐ PPR

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply

- [A] ☐ Working, Royalty or Overriding Royalty Interest Owners
- [B] ☒ Offset Operators, Leaseholders or Surface Owner
- [C] ☒ Application is One Which Requires Published Legal Notice
- [D] ☒ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
- [E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,
- [F] ☐ Waivers are Attached

[3] INFORMATION / DATA SUBMITTED IS COMPLETE - Statement of Understanding

I hereby certify that I, or personnel under my supervision, have read and complied with all applicable Rules and Regulations of the Oil Conservation Division. Further, I assert that the attached application for administrative approval is accurate and complete to the best of my knowledge and where applicable, verify that all interest (WI, RI, ORRI) is common. I further verify that all applicable API Numbers are included. I understand that any omission of data, information or notification is cause to have the application package returned with no action taken.

Note: Statement must be completed by an individual with supervisory capacity.

Carol J. Garcia
Print or Type Name

Carol J. Garcia
Signature

Production Records Manager 3/2/00
Title Date

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance X Disposal _____ Storage
Application qualifies for administrative approval? X Yes _____ No
- II. OPERATOR: Strata Production Company
ADDRESS: P. O. Box 1030, Roswell, New Mexico 88202-1030
CONTACT PARTY: Carol J. Garcia PHONE: 505-622-1127
- 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 X 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 geologic data on the injection zone including appropriate lithologic detail, geologic 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 sources 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 sources 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: Carol J. Garcia TITLE: Production Records Manager
SIGNATURE: Carol J. Garcia DATE: March 2, 2000
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

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 the 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, 2040 South Pacheco, Santa Fe, New Mexico 87505, 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.

FORM C-108
APPLICATION FOR AUTHORIZATION TO INJECT
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "A"

III. Well Data

Section A

1. Lease Name: Gramma ZM State #1
Location: 1650' FNL & 330' FWL, Section 16-7S-34E
Roosevelt County, New Mexico
2. Casing and Cement

EXISTING

<u>Casing Size</u>	<u>Setting Depth</u>	<u>Sacks Cement</u>	<u>Hole Size</u>	<u>Top of Cement</u>
8 5/8"	1916'	950	12 1/4"	Circ to Surface
5 1/2"	4547'	200	7 7/8"	Circ to Surface

NOTE: Cut and pulled 5 1/2" casing at 2500'.

PROPOSED

<u>Casing Size</u>	<u>Setting Depth</u>	<u>Sacks Cement</u>	<u>Hole Size</u>	<u>Top of Cement</u>
8 5/8"	1916'	950	12 1/4"	Circ to Surface
5 1/2"	4547'	200	7 7/8"	Circ to Surface

3. Tubing: 2 3/8" internally plastic coated set at 4372'.
4. Packer: Baker Model R plastic coated set at 4375'.

FORM C-108
APPLICATION FOR AUTHORIZATION TO INJECT
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "A" CONTINUED

Section B

1. Injection Formation: San Andres
Field or Pool Name: Chaveroo
2. Injection Interval: San Andres interval 4436'-4486' perforated.
3. Original Purpose of Well: Drilled to test San Andres Formation
4. Other Perforated Intervals, Bridge Plugs, Cement Plugs:
CIBP is set at 4350' with a 5 sack cement cap
Cement Plugs are set at 2550', 1980', 39' to Surface
5. Next Higher Oil and Gas Zone: None
Next Lower Oil and Gas Zone: Penn
Present and Proposed Configuration Schematics
ATTACHMENT "B" AND ATTACHMENT "C".

10 SX PLUG, SURFACE TO 39'

PRESENT CONFIGURATION

ATTACHMENT "B"

YATES PETROLEUM CORPORATION
GRAMMA "ZM" STATE #1
1650' FNL & 330' FWL
SECTION 16-T7S-R34E
ROOSEVELT COUNTY, NEW MEXICO
LEASE No.: V-2559
SPUD DATE 4/24/84

CEMENT PLUG 1795-1980', 50 SX.
85/8" @ 1916'
950 sx. Cmt.
CIRC.

CEMENT PLUG 2371-2550', 50 SX.
CASING CUT @ 2500' AND PULLED

T.O.C. @ +/- 3500'

TOP OF SAN ANDRES @ 3680'

CIBP @ 4350' W/ 5 SX. CEMENT

PERFS - 4436, 37.5, 39, 40.5, 48, 49.5, 51, 51.5, 54, 55, 56, 57.5, 66, 67.5, 69, 72, 73.5, 75, 78, 79.5, 81, 82, 83, 84.5 & 86
25 SHOTS
5 1/2" @ 4547'
CMT. W/ 200 Sx. 5 1/2" X 7 7/8" = .2019 CU. FT./FT.

PROPOSED CONFIGURATION

ATTACHMENT "C"

STRATA PRODUCTION COMPANY
GRAMMA "ZM" STATE #1
1650' FNL & 330' FWL
SECTION 16-T7S-R34E
ROOSEVELT COUNTY, NEW MEXICO
LEASE No.: V-2559
SPUD DATE 4/24/84

85/8" @ 1916'
950 sx. Cmt.
CIRC.

T.O.C. @ +/- 3500'
TOP OF SAN ANDRES @ 3680'

2 3/8" 4.7#/FT. PLASTIC COATED TUBING
BAKER MODEL "R" PACKER @ +/-4375'

PERFS - 4436, 37.5, 39, 40.5, 48, 49.5, 51, 51.5, 54, 55, 56, 57.5, 66, 67.5, 69, 72, 73.5, 75, 78, 79.5, 81, 82, 83, 84.5 & 86
25 SHOTS
5 1/2" @ 4547'
CMT. W/ 200 Sx. 5 1/2" X 7 7/8" = .2019 CU. FT./FT.

FORM C-108
APPLICATION FOR AUTHORIZATION TO INJECT
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "D"

V. LEASE AND WELL MAP

Area of Review wells within ½ mile and 2 mile radius.
ATTACHMENT "D-1"

FORM C-108

APPLICATION FOR AUTHORIZATION TO INJECT

STRATA PRODUCTION COMPANY

YATES PETROLEUM GRAMMA ZM STATE #1

1650' FNL & 330' FWL

SECTION 16-7S-34E

ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "E"

/1. AREA OF REVIEW WELL DATA

WELL NAME	OPERATOR	LOCATION	TYPE OF WELL	SPUD DATE	COMP DATE	TD PBTD	COMP INTERVAL	PROD FORM	CASING PROGRAM
Metzger #2	Permian Resources	1980' FNL & 1980' FEL Section 17-7S-34E	Oil	10/10/83	11/12/83	4382'	4230'-4248'	SA	8 5/8" at 1700', 750 sx, Circ 4 1/2" at 4382', 1450 sx, Circ
Metzger #3	Permian Resources	567' FNL & 1787' FEL Section 17-7S-34E	Oil	11/19/83	1/3/84	4390' 4347'	4223'-4263'	SA	8 5/8" at 1930', 750 sx, Circ 4 1/2" at 4390', 1580 sx, Circ
Metzger #4	Permian Resources	1980' FNL & 853' FEL Section 17-7S-34E	Oil	3/31/84	5/14/84	4518' 4469'	4366'-4386'	SA	8 5/8" at 1648', 750 sx, Circ 4 1/2" at 4518', 1525 sx, Circ
Metzger #6	Permian Resources	660' FNL & 853' FEL Section 17-7S-34E	Oil	5/13/84	7/25/84	4550' 4440'	4299'-4336'	SA	8 5/8" at 1663', 750 sx, Circ 4 1/2" at 4549', 1685 sx, Circ

FORM C-108
APPLICATION FOR AUTHORIZATION TO INJECT
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "F"

VII. OPERATION DATA

1. Proposed Average Daily Injection Volume: 100 BWPD
 Proposed Maximum Daily Injection Volume: 200 BWPD
2. The system will be closed.
3. Proposed Average Daily Injection Pressure: 200 Psi
 Proposed Maximum Daily Injection Pressure: 500 psi
4. Sources of injection water will be produced water from area San Andres wells that have been drilled and subsequent proposed well drilled on the Sunrise Federal lease.

List of Produced Water Source Wells:

Sunrise Federal Lease Section 21-7S-34E, Roosevelt County, New Mexico
Well #1 and subsequent proposed wells to be drill in
this section.

Water analysis from nearby San Andres production were taken from the water tanks adjacent to the Sunrise Federal #1 and Metzger Battery.
ATTACHMENTS "F-1" and "F-2".

5. Chlorides in all of the source wells is expected to be similar to the water analysis in ATTACHMENTS "F-1" and "F-2".

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "F-1"

Schlumberger
Dowell
Hobbs District Laboratory

Company: Strata
Lease & Well: Sec 21 Tank Btry Sunrise Federal #1
County, State: T7S-R34E, Roosevelt County, NM
Formation:
BHT (F):
Report No.: HSY2K035
Service Point: HNM LAB
Prepared by: Greg Daniel
Prepared for: Lynn Northcutt
Date: 2/7/00

Specific gravity: 1.173 75 degrees F pH 5.80

Anions						Ionic Strength			
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Chlorides	3545	20.6	0.5	146054	0.0282	4118.72	2.0448	2.0594	124513
Sulfates	20			700	0.0208	14.56	0.0147	0.0146	597
Carbonates	492			0	0.0333	0.00	0.0000	0.0000	0
Bicarbonates	1000	0.3	1	300	0.0164	4.92	0.0024	0.0025	256
Hydroxide	279			0	0.0588	0.00	0.0000	0.0000	0

Cations						Ionic Strength			
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Barium	0			0	0.0148	0.00	0.0000	0.0000	0
Calcium	1000	25.5	0.5	51000	0.0499	2544.90	2.5500	2.5449	43478
Magnesium	606	11.0	0.5	13332	0.0823	1097.22	1.0932	1.0972	11366
Iron				1500	0.0358	53.70	0.0120	0.0269	1279
Sodium	0	0	0		0.0435	442.38	#VALUE!	0.2212	#VALUE!

Total Dissolved Solids: 212886 8276.41
Total Ionic Strength: #VALUE! 5.9665

Calcium Carbonate Deposition

Stiff-Davis Equation: Stability Index(SI) = pH - pCa - pAlk - K

pH= 5.80
pCa= -0.12
pAlk= 2.80
K= 1.31

Total Ion Equivalent NaCl Concentration= #VALUE! ppm

SI= 2.01

The Stiff-Davis equation predicts this water does have a tendency toward calcium carbonate deposition.

Calcium Sulfate Deposition

CaSO4 Solubility: $S = 1000 (\text{SQRT}(X^2 + 4K) - X)$

Total Ionic Strength= #VALUE!
Solubility Constant, K= 0.00290
X= 1.2677

S= 4.57 me/l

Laboratory analysis shows that this water contains 14.56 me/l, therefore the tendency towards calcium sulfate deposition does exist.

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "F-2"

Schlumberger Dowell
Hobbs District Laboratory

Company: Strata	Report No.: F-SY2K034
Lease & Well: Sec 17 Tank Btry Metzger	Service Point: F-NM LAB
County, State: T7S-R34E, Roosevelt County, NM	Prepared by: Greg Daniel
Formation:	Prepared for: Lynn Northcutt
BHT (F):	Date: 2/7/00

Specific gravity: 1.076 75 degrees F ph 6.80

Anions					Ionic Strength				
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Chlorides	3545	11.3	1	40059	0.0282	1129.65	0.5608	0.5648	37229
Sulfates	20			1330	0.0208	27.66	0.0279	0.0277	1236
Carbonates	492			0	0.0333	0.00	0.0000	0.0000	0
Bicarbonates	1000	0.7	1	700	0.0164	11.48	0.0056	0.0057	651
Hydroxide	279			0	0.0588	0.00	0.0000	0.0000	0

Cations					Ionic Strength				
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Barium	0			0	0.0148	0.00	0.0000	0.0000	0
Calcium	1000	14.6	0.5	29200	0.0499	1457.08	1.4600	1.4571	27138
Magnesium	606	4.1	0.5	4969.2	0.0823	408.97	0.4075	0.4090	4618
Iron				0	0.0358	0.00	0.0000	0.0000	0
Sodium	0	0	0		0.0435	-697.25	#VALUE!	-0.3486	#VALUE!

Total Dissolved Solids: 76257.7 2337.59
Total Ionic Strength: #VALUE! 2.1156

Calcium Carbonate Deposition

Stiff-Davis Equation: Stability Index(SI) = pH - pCa - pAlk - K

pH= 6.80
pCa= 0.13
pAlk= 2.23
K= 1.31

Total Ion Equivalent NaCl Concentration= #VALUE! ppm

SI= 3.13

The Stiff-Davis equation predicts this water does have a tendency toward calcium carbonate deposition.

Calcium Sulfate Deposition

CaSO4 Solubility: $S = 1000 (\text{SQRT}(X^2 + 4 \cdot K) - X)$

Total Ionic Strength= #VALUE!
Solubility Constant, K= 0.00290
X= 0.7162

S= 8.05 me/l

Laboratory analysis shows that this water contains 27.66 me/l, therefore the tendency towards calcium sulfate deposition does exist.

FORM C-108
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ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "G"

VIII. GEOLOGIC DATA

A. Injection Zone:

The San Andres has a thickness in excess of 1400'. In this disposal well, the top of the formation is at 3680'. The formation is dolomite.

The zone is characterized by light brown to brown, very fine to fine crystalline, oolitic, slightly anhydritic dolomite with vugular, inter-crystalline and fracture porosity.

B. Fresh Water Sources:

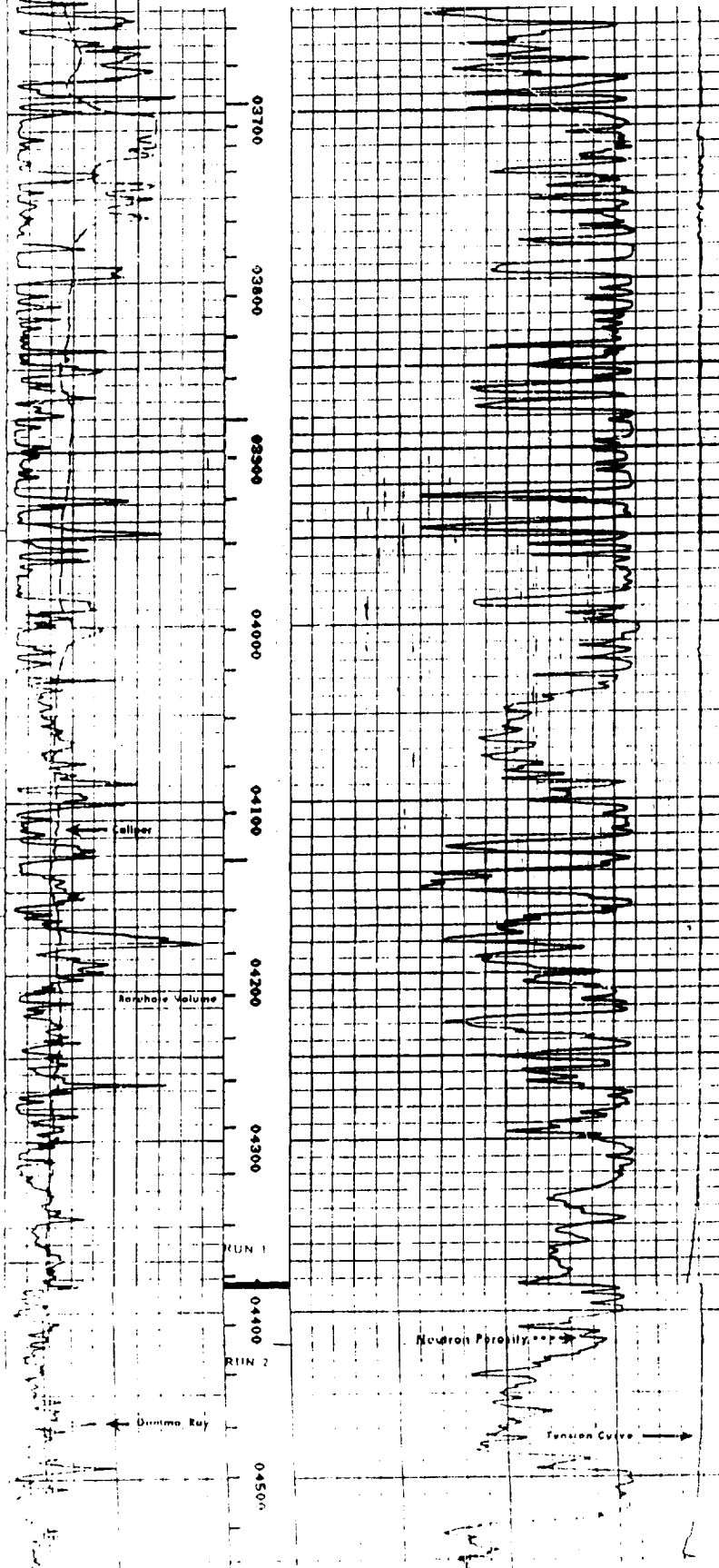
The Ogallala, Cretaceous and Alluvium Aquifers occurs between 200 and 300 feet from the surface.

FORM C-108
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STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "H"

IX. Stimulation Program

No stimulation is planned.

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "I"



STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "J"

Schlumberger
Dowell
Hobbs District Laboratory

Company: Strata Report No.: HSY2K033
Lease & Well: Fresh Water Well Service Point: HNM LAB
County, State: Sec 8-7S-34E, Roosevelt County, NM Prepared by: Greg Daniel
Formation: _____ Prepared for: Lynn Northcutt
BHT (F): _____ Date: 2/7/00

Specific gravity: 1.000 75 degrees F ph 6.70

Anions					Ionic Strength				
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Chlorides	3545	0.8	10	284	0.0282	8.00	0.0040	0.0040	284
Sulfates	20			300	0.0208	6.24	0.0063	0.0062	300
Carbonates	492			0	0.0333	0.00	0.0000	0.0000	0
Bicarbonates	1000	1.5	10	150	0.0164	2.46	0.0012	0.0012	150
Hydroxide	279			0	0.0588	0.00	0.0000	0.0000	0

Cations					Ionic Strength				
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Barium	0			0	0.0148	0.00	0.0000	0.0000	0
Calcium	1000	2	10	200	0.0499	9.98	0.0100	0.0100	200
Magnesium	606	1.3	10	78.78	0.0823	6.48	0.0065	0.0065	79
Iron				0	0.0358	0.00	0.0000	0.0000	0
Sodium	0	0	0	5	0.0435	0.23	0.0001	0.0001	5

Total Dissolved Solids: 1017.758 33.40
Total Ionic Strength: 0.0280 0.0280

Calcium Carbonate Deposition

Stiff-Davis Equation: Stability Index(SI) = pH - pCa - pAlk - K

pH= 6.70
pCa= 2.29
pAlk= 2.90
K= 1.31

Total Ion Equivalent NaCl Concentration= 827.0376 ppm

SI= 0.20

The Stiff-Davis equation predicts this water does have a tendency toward calcium carbonate deposition.

Calcium Sulfate Deposition

CaSO4 Solubility: $S = 1000 (\text{SQRT}(X^2 + 4 \cdot K) - X)$

Total Ionic Strength= 0.0280
Solubility Constant, K= 0.00290
X= 0.0019

S= 105.84 me/l

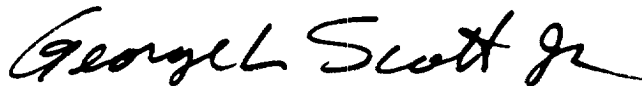
Laboratory analysis shows that this water contains 6.24 me/l, therefore the tendency towards calcium sulfate deposition does not exist.

FORM C-108
APPLICATION FOR AUTHORIZATION TO INJECT
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "K"

XII. AFFIRMATIVE STATEMENT

The Undersigned has examined all geologic and engineering data available for the Chaveroo San Andres field and finds no evidence of open faults and other hydrologic connection between the disposal zone and any underground drinking water sources.

A handwritten signature in black ink, reading "George L. Scott Jr". The signature is written in a cursive, flowing style.

George L. Scott, Jr.
Petroleum Geologist

FORM C-108
APPLICATION FOR AUTHORIZATION TO INJECT
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO

ATTACHMENT "L"

XIII. PROOF OF NOTICE

Section A

List of Surface Owners Within ½ Mile Radius:

Canaan Land and Cattle
P. O. Box 1267
Portales, New Mexico 88131-1267
ATTACHMENT "L-1"

List of Leasehold Operators Within ½ Mile Radius:

Permian Resources Inc.
P. O. Box 590
Midland, Texas 79702-0590
ATTACHMENT "L-2"

Yates Petroleum Corporation
105 S. Fourth Street
Artesia, New Mexico 88210
ATTACHMENT "L-3"

List of Mineral Owners:

New Mexico State Land Office
P. O. Box 1148
Santa Fe, New Mexico 87504-1148
ATTACHMENT "L-4"

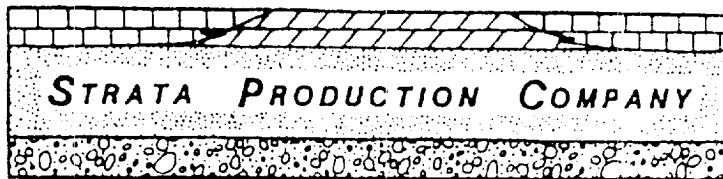
Section B

Legal Notice

Portales News Tribune
P. O. Box 848
Portales, New Mexico 88131-0848
ATTACHMENT "L-5"

NOTE: A copy of the legal advertisement will be forwarded upon receipt.

POST OFFICE DRAWER 1030
ROSWELL, NM 88202-1030



TELEPHONE (505) 622-1127
FACSIMILE (505) 623-3533

200 WEST FIRST STREET, ROSWELL PETROLEUM BUILDING, SUITE 700
ROSWELL, NEW MEXICO 88201

March 2, 2000

CERTIFIED/RETURN RECEIPT REQUESTED

Canaan Land & Cattle
P. O. Box 1267
Portales, New Mexico 88131-1267

Re: Convert to Salt Water Disposal Well
Yates Petroleum Gramma ZM State #1
1650' FNL & 330' FWL
Section 16-7S-34E
Roosevelt County, New Mexico

Gentlemen:

Strata Production Company has filed a Form C-108 Application For Authorization to Inject with the New Mexico Oil Conservation Division for authority to re-inject water produced from the Chaveroo, NE field into the San Andres formation.

As a surface owner within one-half mile of the above referenced well and pursuant to the rules and regulations of the NMOCD, enclosed please find a copy of the Application.

All interested parties opposing the Application must file objections or requests for hearing with the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505 within 15 days. Additional information can be obtained by contacting Mr. Frank Morgan, Strata Production Company, P. O. Box 1030, Roswell, New Mexico 88202-1030 or 505-622-1127.

If you have no opposition to the Application, please so indicate by executing one copy of this letter in the space provided and return it to the undersigned.

Sincerely,

STRATA PRODUCTION COMPANY

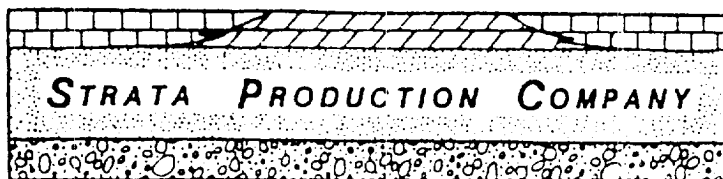

Carol J. Garcia
Production Records Manager

CANAAN LAND & CATTLE has no opposition

By: _____
Dated: _____

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "L-1"

POST OFFICE DRAWER 1030
ROSWELL, NM 88202-1030



TELEPHONE (505) 622-1127
FACSIMILE (505) 623-3533

200 WEST FIRST STREET, ROSWELL PETROLEUM BUILDING, SUITE 700
ROSWELL, NEW MEXICO 88201

March 2, 2000

CERTIFIED/RETURN RECEIPT REQUESTED

Permian Resources Inc.
P. O. Box 590
Midland, Texas 79702-0590

Re: Convert to Salt Water Disposal Well
Yates Petroleum Gramma ZM State #1
1650' FNL & 330' FWL
Section 16-7S-34E
Roosevelt County, New Mexico

Gentlemen:

Strata Production Company has filed a Form C-108 Application For Authorization to Inject with the New Mexico Oil Conservation Division for authority to re-inject water produced from the Chaveroo, NE field into the San Andres formation.

As an operator of an oil and gas lease within one-half mile of the above referenced well and pursuant to the rules and regulations of the NMOCD, enclosed please find a copy of the Application.

All interested parties opposing the Application must file objections or requests for hearing with the Oil Conservation Division, 2040 South Pacheco Street, Santa Fe, New Mexico 87505 within 15 days. Additional information can be obtained by contacting Mr. Frank Morgan, Strata Production Company, P. O. Box 1030, Roswell, New Mexico 88202-1030 or 505-622-1127.

If you have no opposition to the Application, please so indicate by executing one copy of this letter in the space provided and return it to the undersigned.

Sincerely,

STRATA PRODUCTION COMPANY

A handwritten signature in cursive script that reads "Carol J. Garcia".

Carol J. Garcia
Production Records Manager

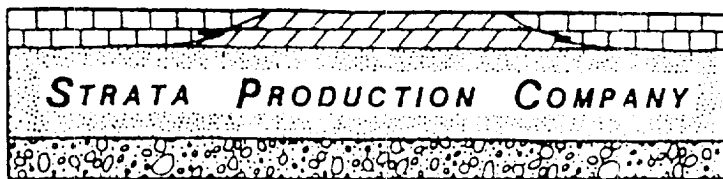
PERMIAN RESOURCES INC. has no opposition

By: _____

Dated: _____

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "L-2"

POST OFFICE DRAWER 1030
ROSWELL, NM 88202-1030



TELEPHONE (505) 622-1127
FACSIMILE (505) 623-3533

200 WEST FIRST STREET, ROSWELL PETROLEUM BUILDING SUITE 700
ROSWELL, NEW MEXICO 88201

March 2, 2000

CERTIFIED/RETURN RECEIPT REQUESTED

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

Re: Convert to Salt Water Disposal Well
Yates Petroleum Gramma ZM State #1
1650' FNL & 330' FWL
Section 16-7S-34E
Roosevelt County, New Mexico

Gentlemen:

Strata Production Company has filed a Form C-108 Application For Authorization to Inject with the New Mexico Oil Conservation Division for authority to re-inject water produced from the Chaveroo, NE field into the San Andres formation.

As an operator of an oil and gas lease within one-half mile of the above referenced well and pursuant to the rules and regulations of the NMOCD, enclosed please find a copy of the Application.

All interested parties opposing the Application must file objections or requests for hearing with the Oil Conservation Division, 2040 South Pacheco Street, Santa Fe, New Mexico 87505 within 15 days. Additional information can be obtained by contacting Mr. Frank Morgan, Strata Production Company, P. O. Box 1030, Roswell, New Mexico 88202-1030 or 505-622-1127.

If you have no opposition to the Application, please so indicate by executing one copy of this letter in the space provided and return it to the undersigned.

Sincerely,

STRATA PRODUCTION COMPANY

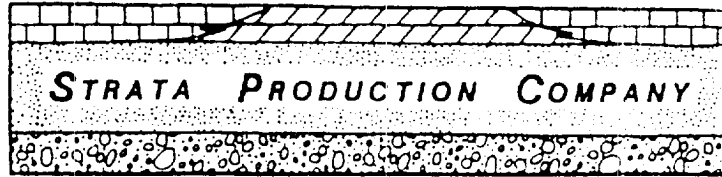

Carol J. Garcia
Production Records Manager

YATES PETROLEUM CORPORATION has no opp

By: _____
Dated: _____

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "L-3"

POST OFFICE DRAWER 1030
ROSWELL, NM 88202-1030



TELEPHONE (505) 622-1127
FACSIMILE (505) 623-3533

200 WEST FIRST STREET, ROSWELL PETROLEUM BUILDING SUITE 700
ROSWELL, NEW MEXICO 88201

March 2, 2000

CERTIFIED/RETURN RECEIPT REQUESTED

New Mexico State Land Office
P. O. Box 1148
Santa Fe, New Mexico 87504-1148

Re: Convert to Salt Water Disposal Well
Yates Petroleum Gramma ZM State #1
1650' FNL & 330' FWL
Section 16-7S-34E
Roosevelt County, New Mexico

Gentlemen:

Strata Production Company has filed a Form C-108 Application For Authorization to Inject with the New Mexico Oil Conservation Division for authority to re-inject water produced from the Chaveroo, NE field into the San Andre's formation.

As the mineral owner within one-half mile of the above referenced well and pursuant to the rules and regulations of the NMOCD, enclosed please find a copy of the Application.

All interested parties opposing the Application must file objections or requests for hearing with the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505 within 15 days. Additional information can be obtained by contacting Mr. Frank Morgan, Strata Production Company, P. O. Box 1030, Roswell, New Mexico 88202-1030 or 505-622-1127.

If you have no opposition to the Application, please so indicate by executing one copy of this letter in the space provided and return it to the undersigned.

Sincerely,

STRATA PRODUCTION COMPANY


Carol J. Garcia

Production Records Manager

NEW MEXICO STATE LAND OFFICE has no op

By: _____
Dated: _____

STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "L-4"

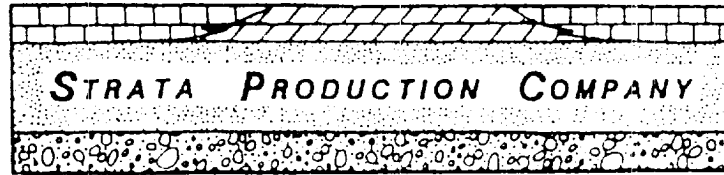
STRATA PRODUCTION COMPANY
YATES PETROLEUM GRAMMA ZM STATE #1
1650' FNL & 330' FWL
SECTION 16-7S-34E
ROOSEVELT COUNTY, NEW MEXICO
ATTACHMENT "L-5"

LEGAL NOTICE

Strata Production Company has filed Form C-108 Application For Authorization to Inject with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well is the Yates Petroleum Gramma ZM State #1 located 1650' FNL and 330' FWL, Section 16, Township 7 South, Range 34 East, NMPM, Roosevelt County, New Mexico. Disposal water will be sourced from area wells producing from the San Andres formation. The disposal water will be injected into the San Andres formation at a depth of 4436' to 4486', a maximum surface pressure of 500 PSI and a maximum rate of 200 BWPD.

All interested parties opposing the action must file objections or requests for hearing with the Oil Conservation Division, 2040 South Pacheco Street, Santa Fe, New Mexico 87505 within 15 days. Additional information can be obtained by contacting Frank Morgan, Vice President, P. O. Box 1030, Roswell, New Mexico 88202-1030 or 505-622-1127.

POST OFFICE DRAWER 1030
ROSWELL, NM 88202-1030



200 WEST FIRST STREET, ROSWELL PETROLEUM BUILDING, SUITE 700
ROSWELL, NEW MEXICO 88201

TELEPHONE (505) 622-1127
FACSIMILE (505) 623-3533

March 2, 2000

Portales News Tribune
P. O. Box 848
Portales, New Mexico 88131-0848

Re: Legal Publications

Gentlemen:

Enclosed herewith please find a Legal Notice to be published one (1) time only in your newspaper at the earliest possible date.

Please forward an Affidavit of Publication along with your invoice to:

Strata Production Company
ATTN: Carol J. Garcia
P. O. Box 1030
Roswell, New Mexico 88202-1030

Should you have any questions regarding this matter, please contact this office.
Thank you for your cooperation.

Sincerely,

STRATA PRODUCTION COMPANY

A handwritten signature in cursive script, reading "Carol J. Garcia".

Carol J. Garcia
Production Records Manager

CJG:ms
Enclosure