

APPLICATION FOR AUTHORIZATION TO INJECT

- ✓ I. PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage
Application qualifies for administrative approval? X Yes No
- ✓ II. OPERATOR: Saga Petroleum LLC
ADDRESS: 415 W. Wall, #835, Midland, TX 79701
CONTACT PARTY: Joe Clement PHONE: 915-684-4293
- ✓ 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: Joe N. Clement TITLE: New Mexico Engineer
SIGNATURE: [Signature] DATE: 3/28/00
- * 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: _____

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.

Saga Petroleum LLC

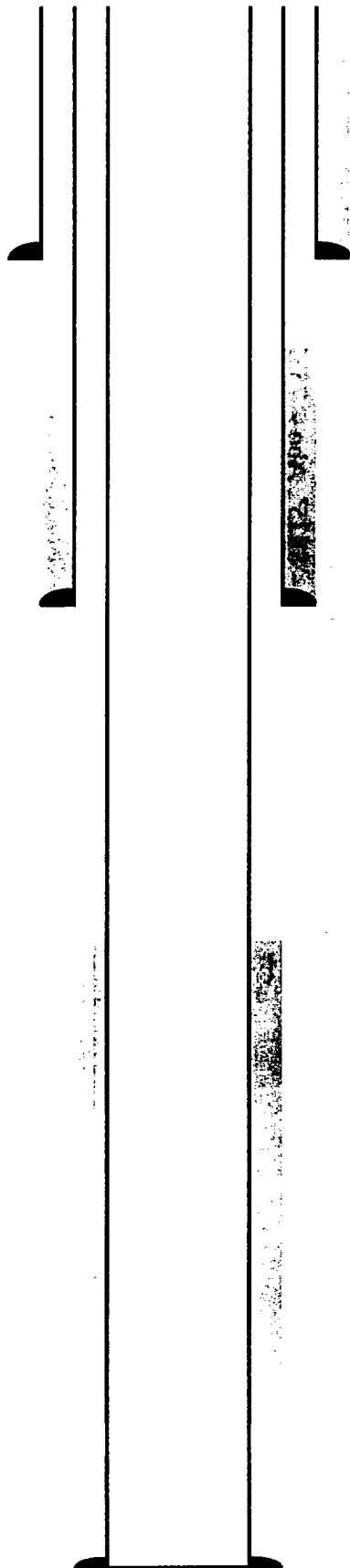
Aztec State Com #2
660' FNL & 660' FEL
Unit A, Sec. 26-T13S-R32E
Lea County, New Mexico

(30-025-22931)

Application for Authorization to Inject

- VI. Attached is a tabulation of all wells of public record that fall within the ½ mile radius of the proposed SWD well, the Aztec State Com #2. This investigation has further shown that all these wells have a good cement seal around their casing shoe and will therefore prevent the upward migration of the disposed water into any potable water zone. The Aztec State Com #2 was swab tested in October, 1999, and failed to produce any hydrocarbons.
- VII. The proposed average daily injection rate for the subject well is 1,000 BWPD; the maximum daily injection rate would be 2,000 BWPD. This will be a closed system with an average pressure of zero and a maximum pressure of 1000 psi. Only produced Bough water will be injected in the proposed well, so incompatibility will not be a problem.
- VIII. The injection zone is a limestone, a part of the Bough formation. The top of the Bough "A" in this well is at 9466', and is approximately 400' thick. The zone has been selectively perforated from 9742' - 9800', a part of the Bough "D" formation. The main source of drinking water in this area comes from the Ogallala formation, the base of which is at 140'. There are no known sources of drinking water underlying the injection interval.
- IX. After casing integrity testing, the well will be stimulated with 1000 gallons of 15% NEFE HCl and ball sealers.
- X. Log and test data is on file with the Division.
- XI. Attached is an analysis of the water from a water well approximately 1 mile east of the proposed disposal.
- XII. Saga Petroleum LLC has examined the available geologic and engineering data and can find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. The required "Proof of Notice" is attached.
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OPERATOR: Saga Petroleum	LOCATION: Sec. 26, T13S, R32E, Lea County, NM
LEASE: Aztec State Com #2	Unit A, 660' FNL & 660' FEL



13³/₈ " casing set at 380 ' with 400 sx of cement.

Hole Size: 17¹/₂ ". TOC @ surface by circ.

8⁵/₈ " casing set at 4060 ' with 200 sx of cement.

Hole Size: 11 ". TOC @ 3281' by calc.

Perfs - 9743-9799'

5¹/₂ " casing set at 10315 ' with 425 sx of cement.

Hole Size: 7⁷/₈ ". TOC @ 8725' by calc.

INJECTION WELL DATA SHEETTubing Size: 2 3/8" EUE Lining Material: PlasticType of Packer: Baker Lok-SetPacker Setting Depth: 9650'

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? Yes X No

If no, for what purpose was the well originally drilled? oil production

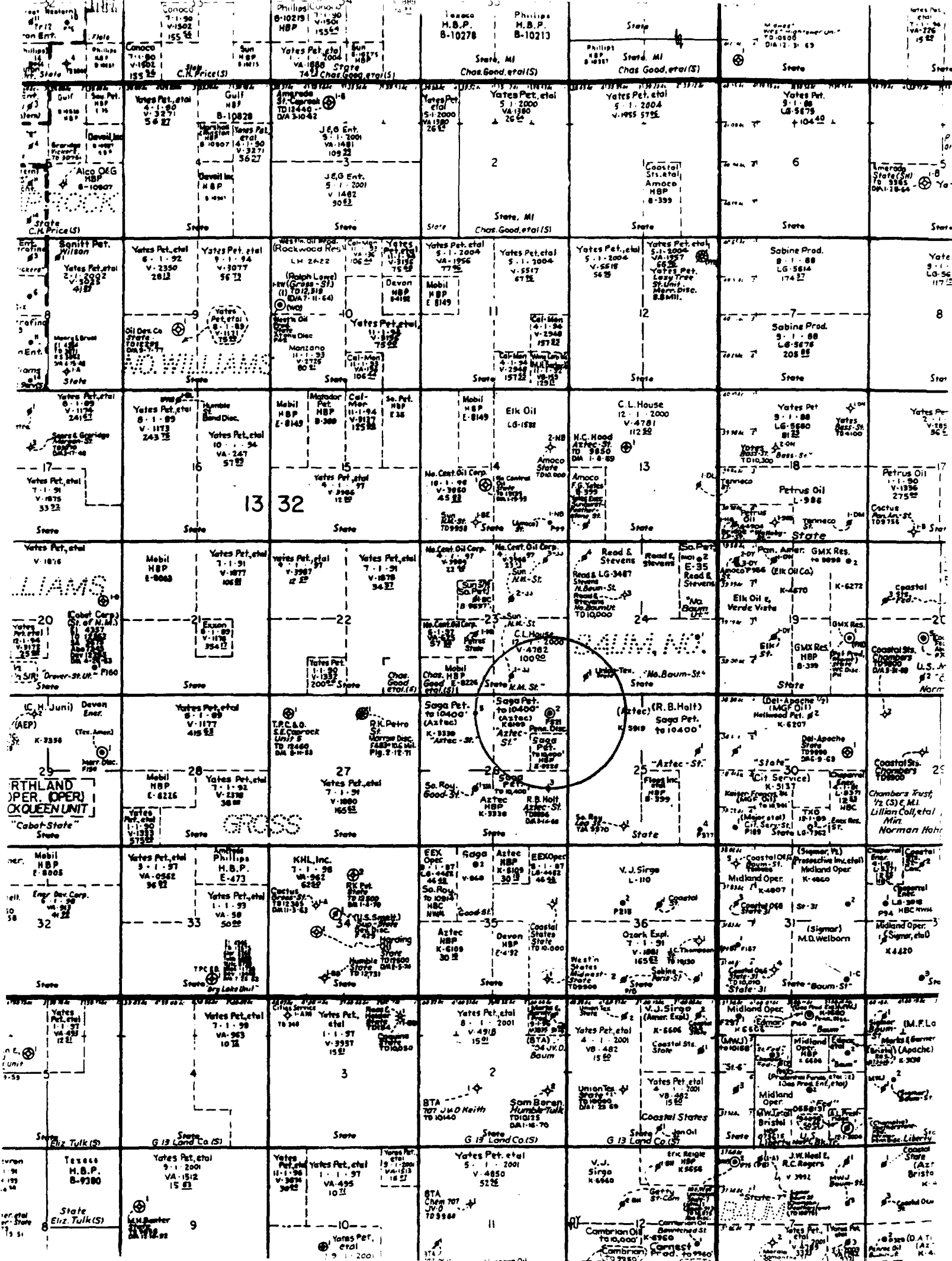
2. Name of the Injection Formation: Bough

3. Name of Field or Pool (if applicable): Bough "D"

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. N/A

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: Bough C - 9685', Wolfcamp - 8825', Abo - 7532', San Andres -

3980'



**Offset wells to the
Aztec State Com #2**

Well	Location	Surface Casing	Inter. Casing	Prod. Casing	TD	Completions	P&A
State 24 #1 Spud 3/1/69	Sec. 24-T13S-R32E Unit M 660' FSL & 660' FWL	11 3/4" @ 415' Cmt. w/ 400 sx TOC @ surf by circ.	8 5/8" @ 3960' Cmt w/ 400 sx TOC @ 2780' by TS	5 1/2" @ 10000' Cmt w/ 500 sx TOC @ 7910' by TS	10000'	9780-9789'	P/A'd Schematic Attached
NM State JJ #1 Spud 3/6/69	Sec. 23-T13S-R32E Unit O 660' FSL & 1980' FEL	13 3/8" @ 412' Cmt. w/ 375 sx TOC @ surf by circ.	8 5/8" @ 3990' Cmt w/ 920 sx TOC @ 550' by TS	5 1/2" @ 10003' Cmt w/ 250 sx TOC @ 8320' by TS	10003'	9754-9765' 9781-9796' 9798-9845'	P/A'd Schematic Attached
Aztec State Com #2 Spud 1/4/69	Sec. 26-T13S-R32E Unit A 660' FNL & 660' FEL	13 3/8" @ 380' Cmt. w/ 400 sx TOC @ surf by circ.	8 5/8" @ 4060' Cmt w/ 200 sx TOC @ 3281' by calc.	5 1/2" @ 10315' Cmt w/ 425 sx TOC @ 8725' by calc.	10315'	9743-9799'	
Aztec State #3 Spud 2/12/69	Sec. 26-T13S-R32E Unit I 1980' FSL & 660' FEL	13 3/8" @ 391' Cmt. w/ 400 sx TOC @ surf by circ.	8 5/8" @ 4050' Cmt w/ 300 sx TOC @ 2882' by calc.	N/A	9996'		P/A'd Schematic Attached
Aztec State Com #4 Spud 6/20/70	Sec. 25-T13S-R32E Unit P 554' FSL & 554' FEL	13 3/8" @ 416' Cmt. w/ 250 sx TOC @ surf by circ.	8 5/8" @ 4055' Cmt w/ 300 sx TOC @ 2769' by calc.	5 1/2" @ 10000' Cmt w/ 400 sx TOC @ 8052' by calc.	10000'	9816-9840'	
Aztec State Com #5 Spud 4/15/69	Sec. 26-T13S-R32E Unit C 660' FNL & 1980' FWL	13 3/8" @ 355' Cmt. w/ 350 sx TOC @ surf by circ.	8 5/8" @ 4060' Cmt w/ 400 sx TOC @ 2502' by calc.	5 1/2" @ 9772' Cmt w/ 350 sx TOC @ 7912' by calc.	9773'	9756-9809'	

OPERATOR: Saga Petroleum	LOCATION: Sec. 25, T13S, R32E, Lea County, NM
LEASE: Aztec State Com #4	Unit P, 554' FNL & 554' FEL

5

13 $\frac{3}{8}$ " casing set at 416 ' with 250 sx of cement.

Hole Size: 17 $\frac{1}{2}$ ". TOC @ surface by circ.

8 $\frac{5}{8}$ " casing set at 4055 ' with 300 sx of cement.

Hole Size: 11 ". TOC @ 2769' by calc.

Perfs - 9816 - 9840'

5 $\frac{1}{2}$ " casing set at 10000 ' with 400 sx of cement.

Hole Size: 7 $\frac{7}{8}$ ". TOC @ 8052' by calc.

OPERATOR: Saga Petroleum	LOCATION: Sec. 26, T13S, R32E, Lea County, NM
LEASE: Aztec State Com #5	Unit C, 660' FNL & 1980' FWL

13³/₈ " casing set at 355 ' with 350 sx of cement.

Hole Size: 17⁷/₈ ". TOC @ Surface by circ.

8⁵/₈ " casing set at 4060 ' with 400 sx of cement.

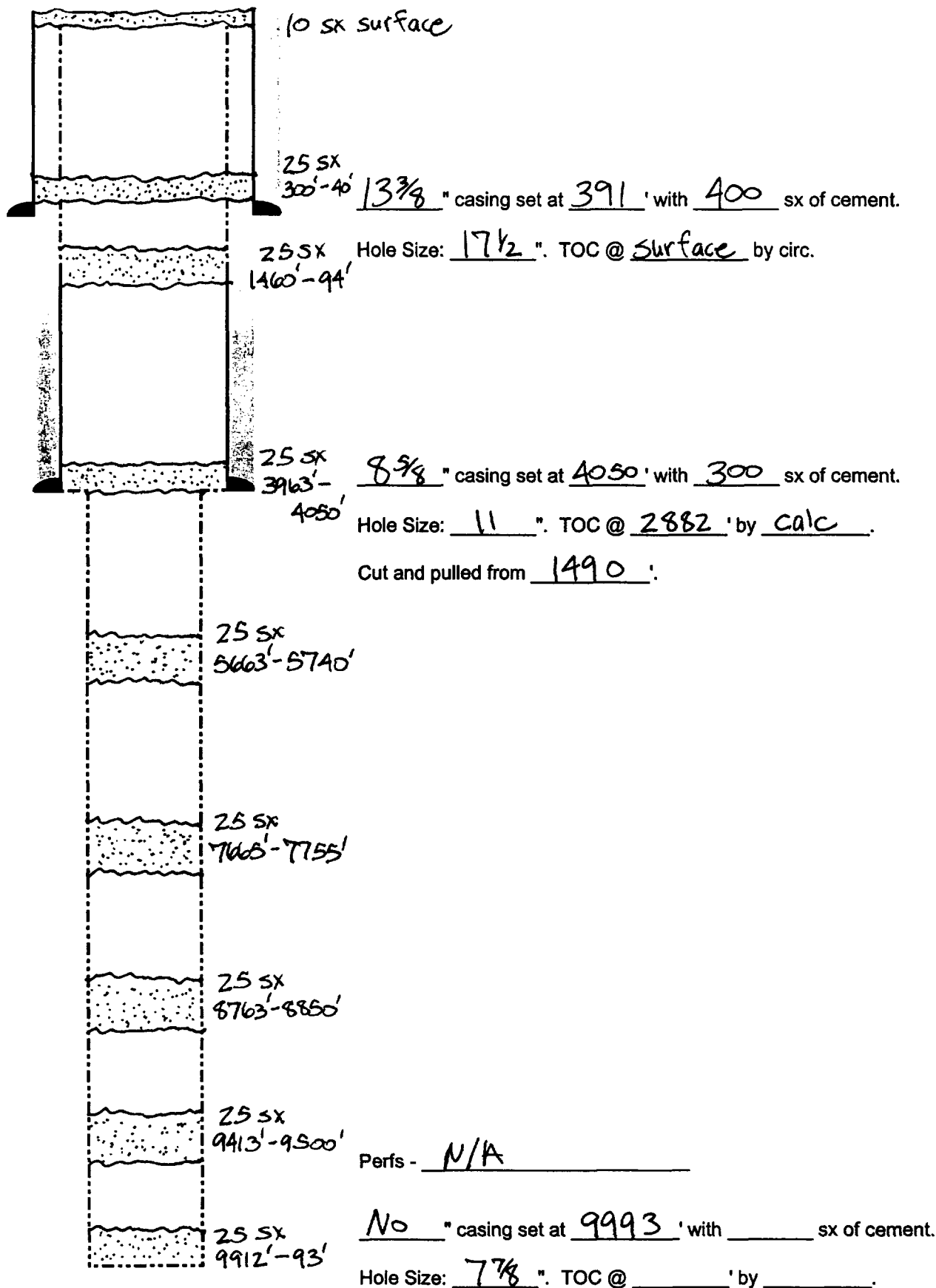
Hole Size: 11 ". TOC @ 2502' by calc.

Perfs - 9756 - 9809'

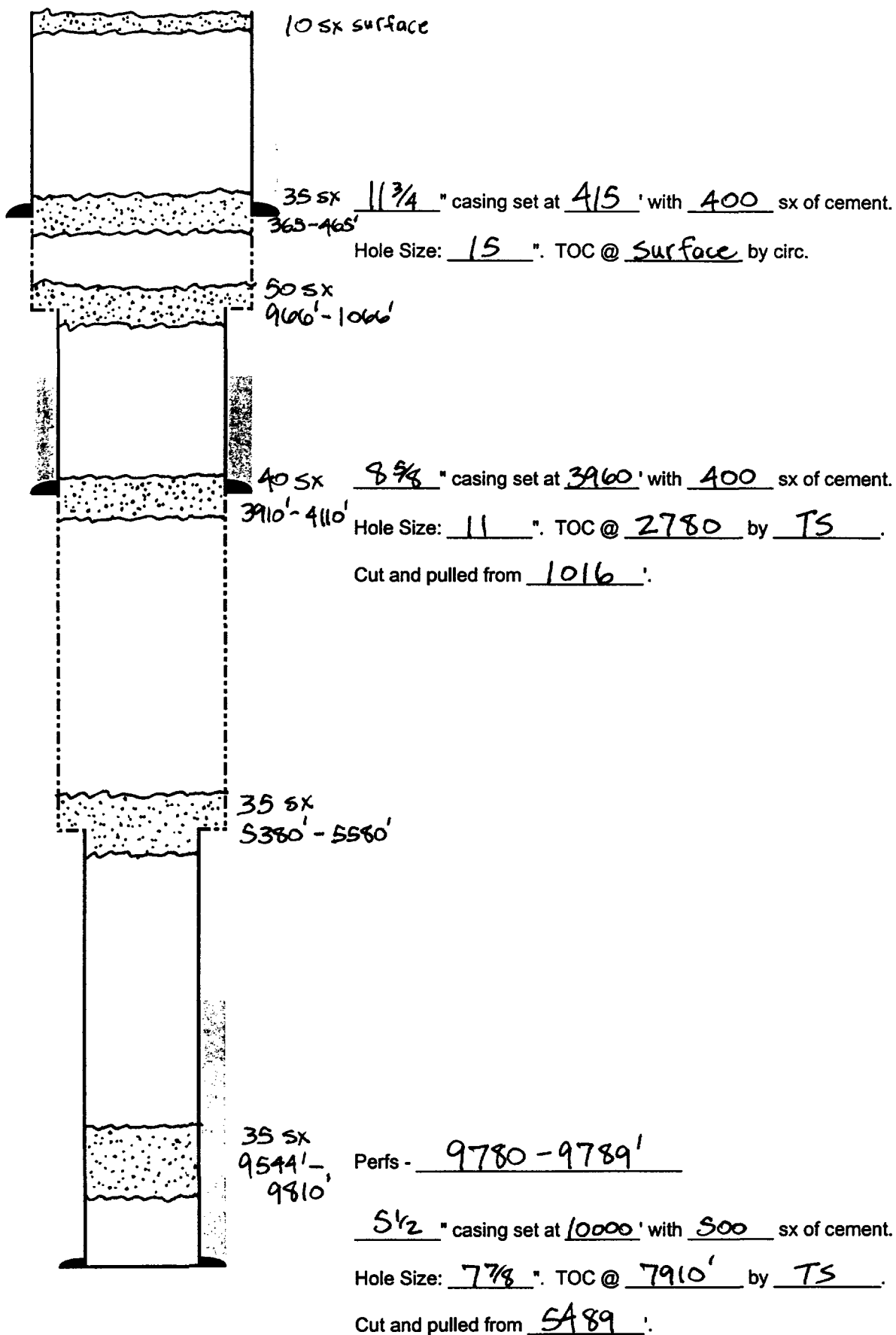
5¹/₂ " casing set at 9772 ' with 350 sx of cement.

Hole Size: 7⁷/₈ ". TOC @ 7912' by calc.

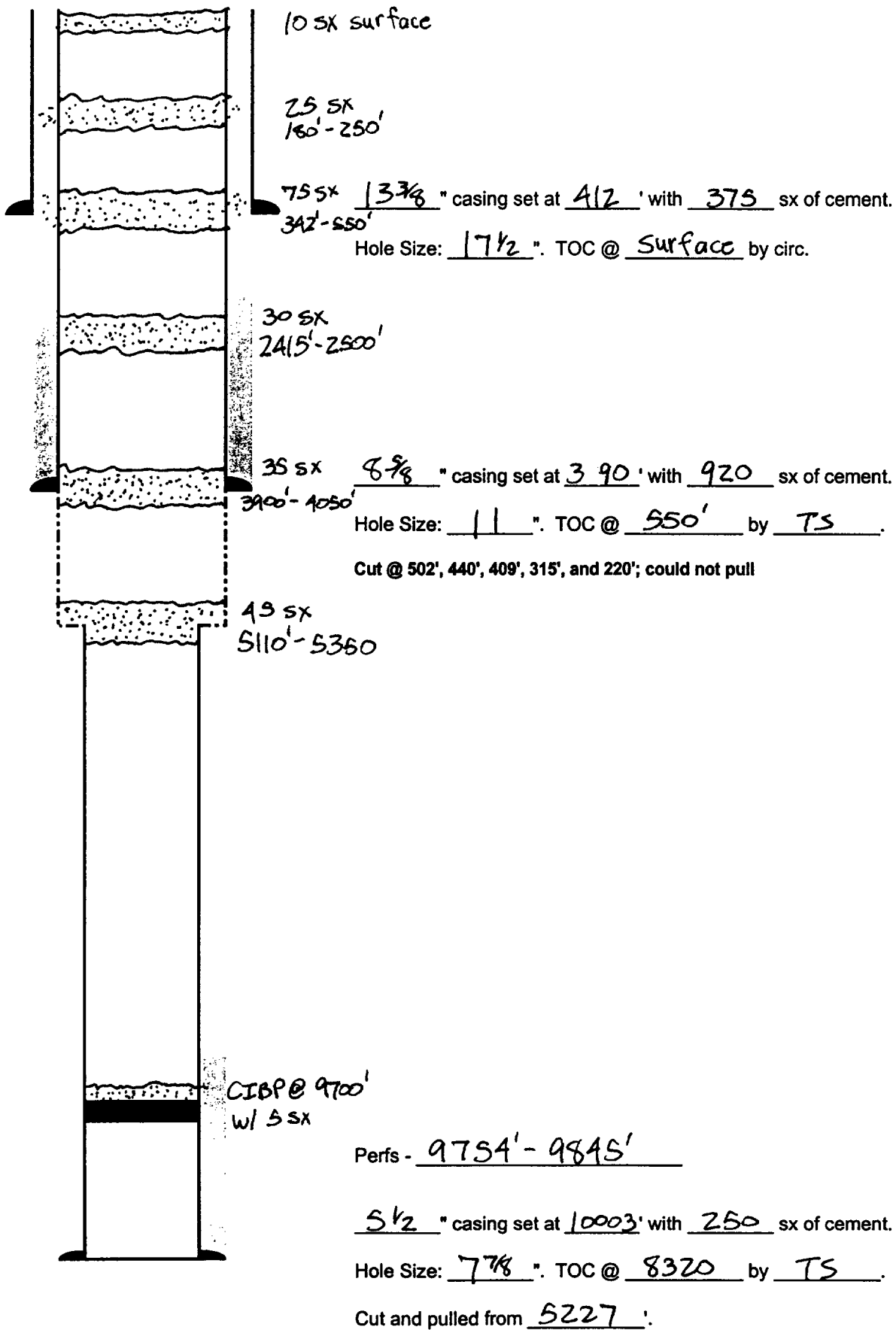
OPERATOR: Robert B. Holt	LOCATION: Sec. 26, T13S, R32E, Lea County, NM
LEASE: Aztec State #3	Unit I, 1980' FSL & 660' FEL



OPERATOR: Union Texas	LOCATION: Sec. 24, T13S, R32E, Lea County, NM
LEASE: State "24" #1	Unit M, 660' FSL & 660' FWL



OPERATOR: Sun Oil	LOCATION: Sec. 23, T13S, R32E, Lea County, NM
LEASE: New Mexico "JJ" State #1	Unit O, 660' FSL & 1980' FEL



**MILLER CHEMICALS, INC.**

Post Office Box 298
 Artesia, N.M. 88211-0298
 (505) 746-1919 Artesia Office
 (505) 393-2893 Hobbs Office
 (505) 746-1918 Fax

WATER ANALYSIS REPORT

Company : SAGA
 Address :
 Lease : EAST WATER WELL
 Well : 1
 Sample Pt. :

Date : 3-22-00
 Date Sampled : 3-21-00
 Analysis No. :

ANALYSIS		mg/L		* meq/L
1. pH	7.5			
2. H ₂ S	0			
3. Specific Gravity	1.001			
4. Total Dissolved Solids		1009.9		
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	146.0	HCO ₃	2.4
12. Chloride	Cl	380.0	Cl	10.7
13. Sulfate	SO ₄	150.0	SO ₄	3.1
14. Calcium	Ca	120.0	Ca	6.0
15. Magnesium	Mg	24.4	Mg	2.0
16. Sodium (calculated)	Na	189.5	Na	8.2
17. Iron	Fe	0.0		
18. Barium	Ba	0.0		
19. Strontium	Sr	0.0		
20. Total Hardness (CaCO ₃)		400.0		

PROBABLE MINERAL COMPOSITION

*milli equivalents per Liter		Compound	Equiv wt X meq/L	=	mg/L
+-----+	+-----+				
6 *Ca <----- *HCO ₃ 2		Ca (HCO ₃) ₂	81.0	2.4	194
----- /-----> -----		CaSO ₄	68.1	3.1	213
2 *Mg -----> *SO ₄ 3		CaCl ₂	55.5	0.5	26
----- <-----/ -----		Mg (HCO ₃) ₂	73.2		
8 *Na -----> *Cl 11		MgSO ₄	60.2		
+-----+	+-----+	MgCl ₂	47.6	2.0	95
Saturation Values Dist. Water 20 C		NaHCO ₃	84.0		
CaCO ₃ 13 mg/L		Na ₂ SO ₄	71.0		
CaSO ₄ * 2H ₂ O 2090 mg/L		NaCl	58.4	8.2	482
BaSO ₄ 2.4 mg/L					

REMARKS:

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, KATHI BEARDEN

Publisher

of the Hobbs News-Sun, a
newspaper published at
Hobbs, New Mexico, do solemnly
swear that the clipping attached
hereto was published once a
week in the regular and entire
issue of said paper, and not a
supplement thereof for a period.

of 1

weeks.

Beginning with the issue dated

March 7 2000

and ending with the issue dated

March 7 2000

Kathi Bearden

Publisher

Sworn and subscribed to before

me this 7th day of

March 2000

Jodi Benson

Notary Public.

My Commission expires
October 18, 2000
(Seal)

This newspaper is duly qualified
to publish legal notices or adver-
tisements within the meaning of
Section 3, Chapter 167, Laws of
1937, and payment of fees for
said publication has been made.

LEGAL NOTICE

March 7, 2000

NOTICE OF PRODUCED
WATER DISPOSAL WELL

Saga Petroleum Limited Li-
ability Co. of Colorado, 415 W.
Wall, Suite 835, Midland,
Texas 79701, 915-684-4293,
contact Joe N. Clement, has
made application for a pro-
duced water disposal well
with the New Mexico Oil Con-
servations Commission. The
well, known as the Aspen
State Com #2, is located on
FNL and 660 EEL, Section
T13S-R32E, Lea County,
New Mexico. Disposal well
into the Baum Upper Permian
zone through perforations
from 9,743'-9,769'. Maximum
rate and pressure is antici-
pated to be 1,000 BWEP and
1000 PSI. Interested parties
must file objections or re-
quests for hearing with the
New Mexico Oil Conservations
Division, 2040 S. Santa Fe
Santa Fe, New Mexico,
within fifteen (15) days of
notice. #17244

02101450000 02535885

Saga Petroleum
415 W. Wall St. Suite 835
Midland, TX 79701

Aztec State Com #2
660' FNL & 660' FEL
Unit A, Sec. 26-T13S-R32E
Lea County, New Mexico

Offset Operators

Mobil
PO Box 633
Midland, TX 79702

Read & Stevens
PO Box 1518
Roswell, NM 88201

C.L. House
401 W. Texas
Midland, TX 79701

Robert B. Holt
6 Desta Drive, #6400
Midland, TX 79705

Z 558 015 767

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to	Robert B. Holt
Street & Number	6 Desta Drive, #6400
Post Office, State, & ZIP Code	Midland, TX 79705
Postage	\$.99
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	\$ 1.25
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$ 3.64
Postmark or Date	

PS Form 3800, April 1995

Z 558 015 769

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to	Mobil
Street & Number	PO Box 633
Post Office, State, & ZIP Code	Midland, TX 79702
Postage	\$.99
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	\$ 1.25
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$ 3.64
Postmark or Date	

PS Form 3800, April 1995

Z 558 015 764

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to	Read and Stevens
Street & Number	P.O. Box 1518
Post Office, State, & ZIP Code	Roswell, NM 88201
Postage	\$.99
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	\$ 1.25
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$ 3.64
Postmark or Date	

PS Form 3800, April 1995

Z 558 015 765

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to	C.L. House
Street & Number	401 W. Texas
Post Office, State, & ZIP Code	Midland, TX 79701
Postage	\$.99
Certified Fee	1.40
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	\$ 1.25
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$ 3.64
Postmark or Date	

PS Form 3800, April 1995



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

4/12/00

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:

<u>Saga Petroleum LP Co</u>	<u>Aztec State Com</u>	<u>#2-A-26-135-32e</u>
Operator	Lease & Well No. Unit	S-T-R API # <u>30-025-22931</u>

and my recommendations are as follows:

OR

Yours very truly,

Chris Williams

Chris Williams
Supervisor, District 1

/ed