> BEFORE EXAMINER CATANACH
> OIL CONSERVATION DIVISION
> Anadarko EXHIBIT NO. 2
> CASE NO. 10439

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [ ] Secondary Recovery [ ] Pressure Maintenance [X] Disposal [ ] Storage
Application qualifies for administrative approval? [X] yes [ ] no

II. Operator: Anadarko Petroleum Corporation

Address: P. O. Drawer 130, Artesia, New Mexico 88210

Contact party: Jerry E. Buckles Phone: 505/748-3368

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

IX. Describe the proposed stimulation program, if any.

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

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

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

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

XIV. Certification

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

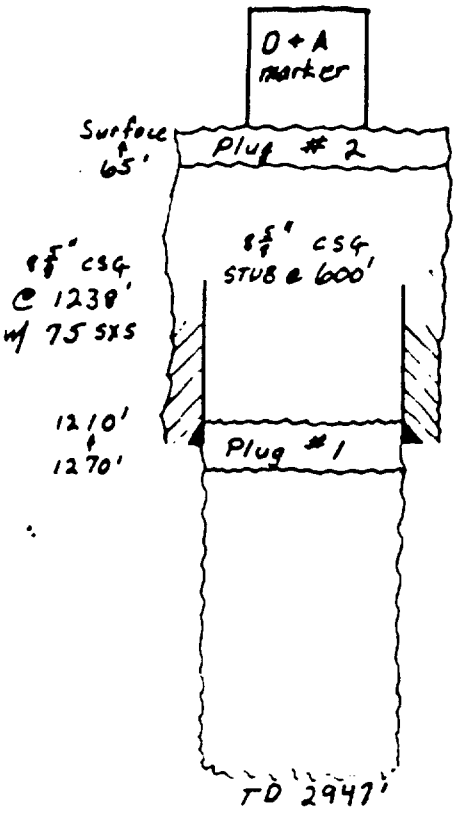
Name: George R.S. Buehler Title Staff Production Engineer

Signature: George R.S. Buehler Date: October 11, 1991

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

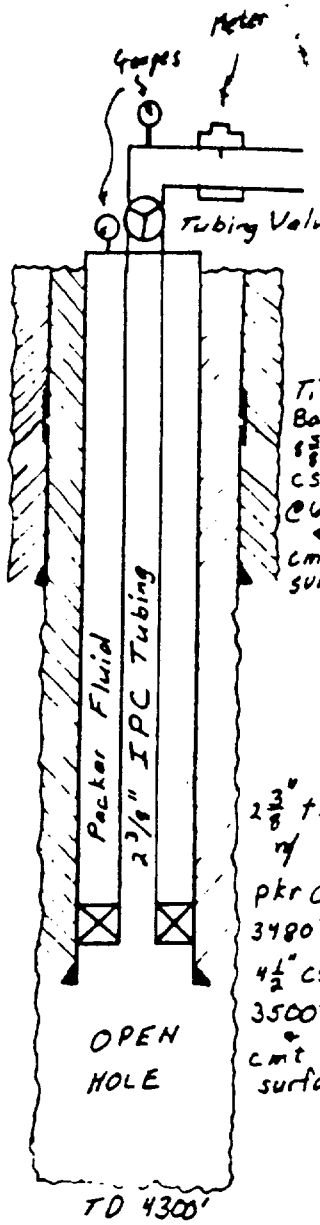
III A

WELL DATA SHEET



Before Re-entry

Date Spudded: February 24, 1957
Plugged: March 2, 1957
8-5/8" casing @ 1238' w/75 sxs
14 jts 28#
26 jts 24#
TD 2947'
Cut and pulled 600' of 8-5/8" casing plugs
#1 1270' to 1210'
#2 65' to surface



After Re-entry

8-5/8" casing 1238' to surface
1) Dress off csg stub & run fluid caliper
2) Bowl over & cement to surface
Drill new 7-7/8" hole 2947' to 4300'
Set 4-1/2 csg @ 3500' & cement to surfac
Set 2-3/8" IPC tbg @ 3485'± w/Arrow - Se
1 J-lock Injection Packer
(Injection Into Zone 3500' to 4300')
Estimated Avg. Inj 1000 BWPD
Estimated Avg Inj Pres 200 psi
Estimated Maximum Pres 700 psi

EXXON Federal SWD No. 3
660' FNL & 1980' FWL
Sec. 19, T19S, R33E

III B

1) Disposal Formation: Capitan Reef

2) Disposal Interval: 3500-4300 (Open Hole)

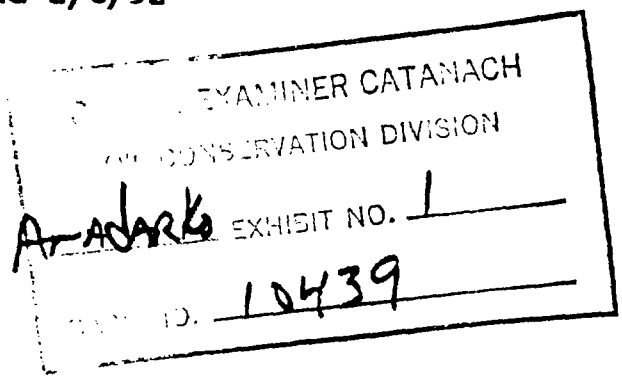
3) Well was originally drilled to a TD of 2947'
The original operator Hudson & Hudson, Inc. had filed an intent to drill to 3100' with rotary tools and then change to cable tools and drill to 4300', set 5-1/2" casing and complete an oil well with perforations. Hudson & Hudson, Inc. never finished drilling the well but instead plugged the well March 2, 1957.

4) Well was partially drilled and abandoned prior to TD.
Plug #1 1270' to 1210' (amt cmt NR)
8-5/8" csg cut & pulled @ 600'
Plug #2 65' to surface (amt cmt NR)

5) The highest possible oil zone in this area is the Yates @ 2833' to 3255'

The next lower possible oil zone in this area is the Delaware @ 4977' to 7700'

ANADARKO PETROLEUM CORPORATION
EXXON SWD NO. 3 HEARING 2/6/92



I. Why we need the disposal well.

A. Water from Exxon No. 1
   1. Options
      a. Trucking
      b. Laguna Gatuna
      c. Disposal well

II. Permits

A. BLM has been approved (OCD has copy)

B. NMOCD Permit
   1. Offset Mineral Owners contacted w/no objections
   2. Surface Owner contacted w/no objections
   3. Application made based on
      a. NMOCD Rule 701-D-1,2,3
      b. Capitan Reefs poor water quality

III. Sources of Information

A. Personal Experience
   1. Severe lost circulation
   2. Water saline & sour (H2S)

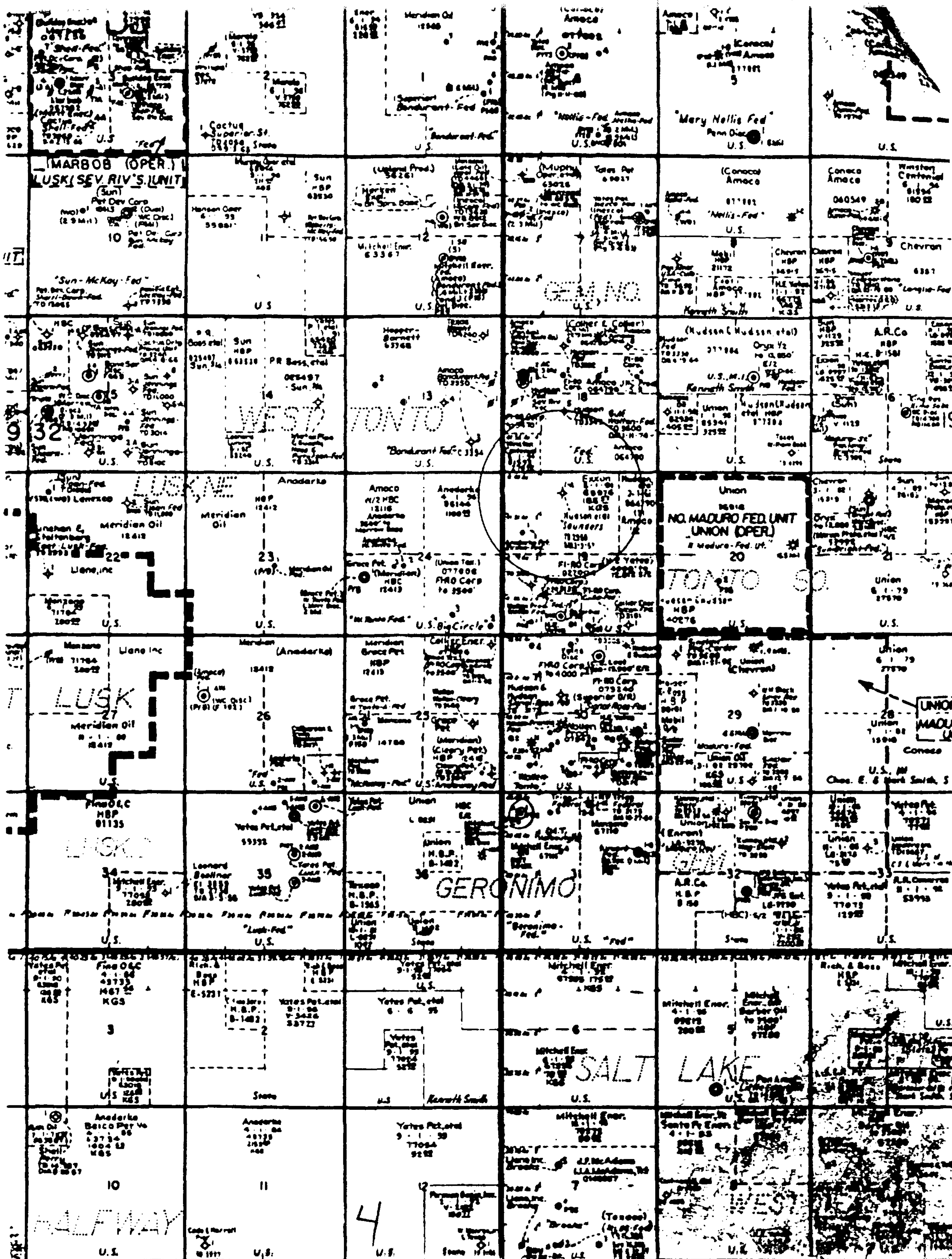
B. City of Carlsbad
   1. Max Cordova - Environmental Engineer
   2. Jim Harrison - Water Dept.

C. State Engineers Office Roswell

D. State Engineers - Technical Report #38
   (Capitan Aquifer Observation - Well Network Carlsbad to Jal New Mexico by W. L. Hiss w/cooperation of USGS)

IV. Capitan Reef

A. Put up slide #1
   1. Explain reef building on edge of Delaware Basin
      a. Point out Delaware Basin, Reef, State Lines, City of Carlsbad, Jal, Exxon #3, WSW #1
   2. Reef Today
      a. Outcrops in Mts west of Carlsbad, Pecos River, Dip of Reef east to south
   3. Water west of Pecos fresh w/source greatly dependant on local weather
   4. East of Pecos reef appears to be fractured and the saline Pecos River is source of part of eastern reef water
   5. Current use of water west of Pecos is fresh water for City of Carlsbad. I visited w/both Mr. Cordova & Mr. Harrison - they said as does the Tech Report #38 that the Capitan Reef west of Pecos is not supplied by same source.



MARBOB (OPER.)
LUSK (SEV. RIV'S.) UNIT
"Sun-McKay-Fed"
"Mary Nellis Fed"
"Nellis-Fed"
GEM NO.
WEST TONTO
"Bondurant Fed"
LUSK N.
NO. MADURO FED. UNIT
UNION (OPER.)
TONTO SO.
LUSK
Meridian Oil
Liano, Inc
"Lusk-Fed"
GERONIMO
"Geronimo-Fed."
SALT LAKE
HALFWAY
Cactus Superior St.
Kenneth Smith
Mitchell Ener.
Yates Pet., etal
Amoco
Anadarko
Chevron
Union
Conoco
U.S.
State

6. Water withdraw east of the Pecos is for refining & waterflooding in Eddy, Lea, Winkler & Ward Counties.

B. Put up slide #2
   1. Explain Tech Report #38 & observation wells, point to Exxon #3, WSW #1, Little Eddy Unit I, rest of the 16 wells monitored.

C. Slide #3 Explain
   1. West to East
   2. Increase subsea depth
   3. Flow of ground water in reef east
   4. Decrease in water level of eastern reef
      a. eg FL 6/67 to 3/76 dropped 500' to 600' during study
   5. Compare Water Analysis

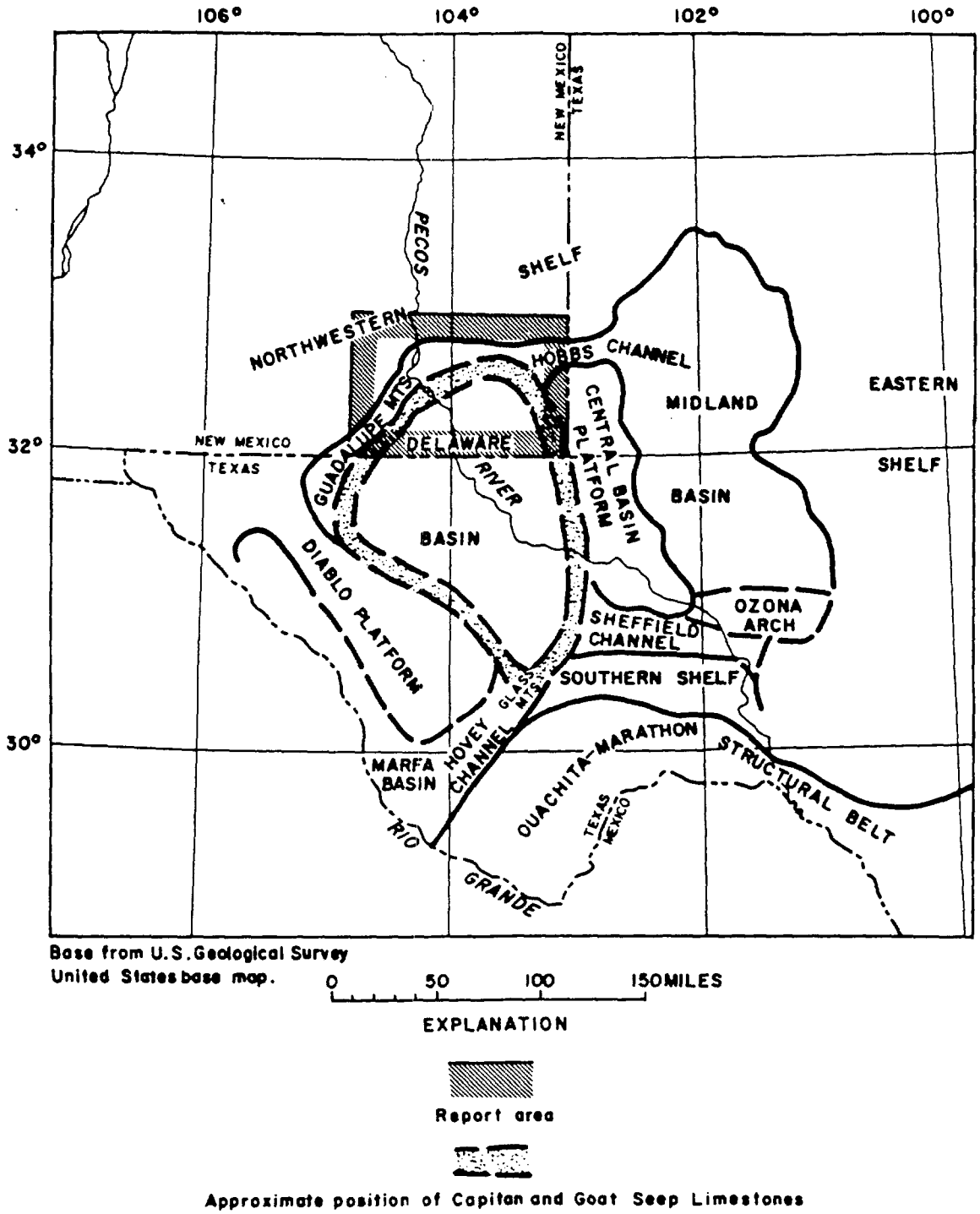
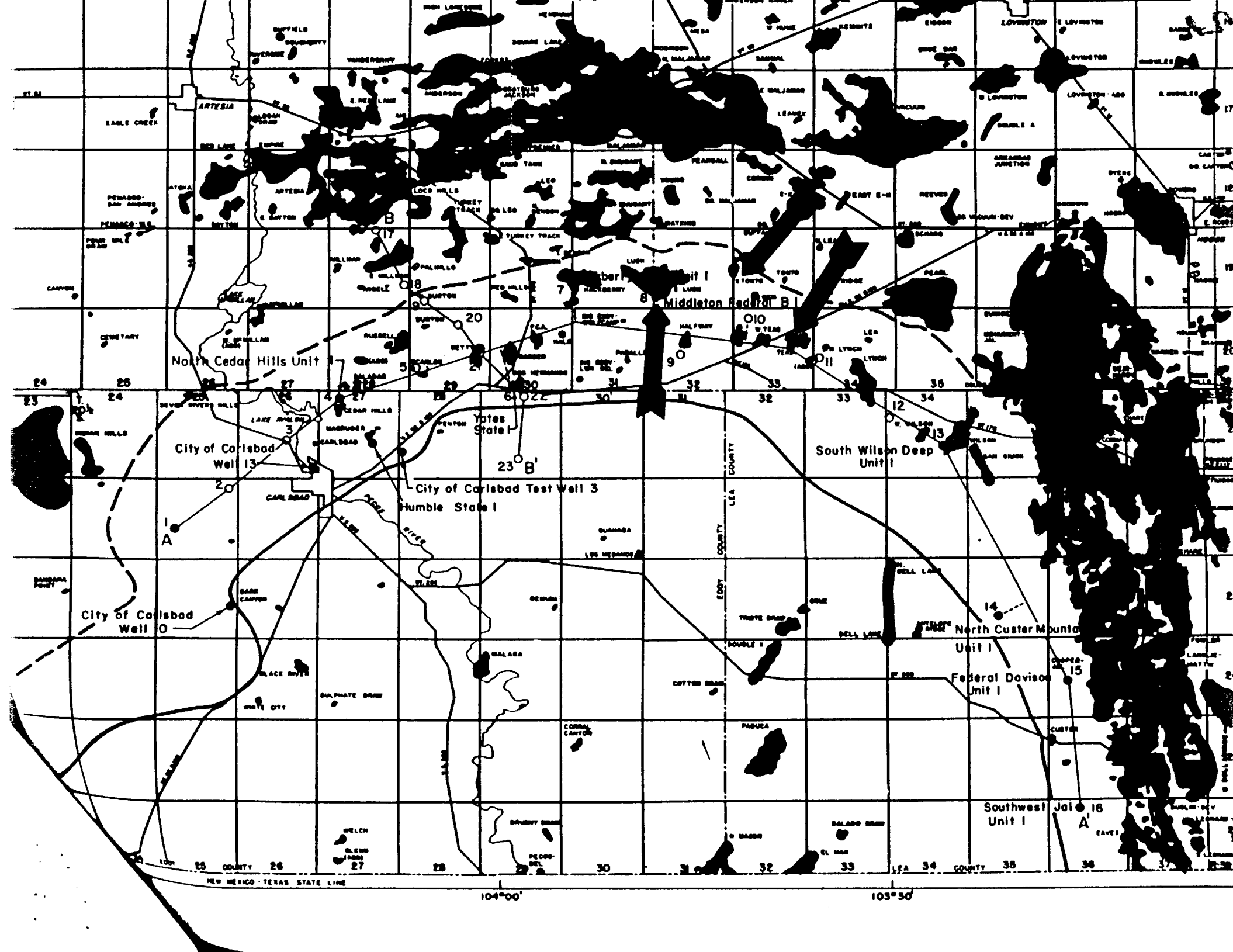


Figure 1.--Tectonic elements in the Permian basin of west Texas and southeastern New Mexico (modified after Oriel, Meyers, and Crosby, 1967).


North Cedar Hills Unit 1
City of Carlsbad Well 13
City of Carlsbad Well 10
Yates State 1
City of Carlsbad Test Well 3
Humble State 1
Middleton Federal B 1
South Wilson Deep Unit 1
North Custer Mountain Unit 1
Federal Davison Unit 1
Southwest Jal Unit 1
A
A'
B
B'
ARTESIA
CARLSBAD
PECOS RIVER
EDDY COUNTY
LEA COUNTY
NEW MEXICO - TEXAS STATE LINE
104°00'
103°30'

VII. 1) Avg inj rate 500 BWPD, Max inj rate 1000 BWPD
2) Type system - Closed system
3) 200 avg inj pres max inj pres 700 psi
4&5) a) Water Analysis of EXXON Federal No. 1 - see attached analysis by Unichem #4a
b) Compatability of two waters - see attached analysis by Unichem #4b
c) Water Analysis of Capitan Reef Water from Anadarko's Teas Yates Unit Water Supply Well No. 1 in Section 14-20S-33E - see attached analysis by Unichem #4c

VIII. a) Lithology - Limestone
b) Geological Name - Capitan Reef
c) Top/Reef-3255''
d) Base/Reef-4977'
e) Drinking Water
1) Name of drinking water zone - Triassic
2) Depth to bottom of drinking water zone - 850 feet
3) Drinking Water under disposal zone - None

IX. Proposed stimulation to disposal zone - 2000 gallons 15% HCl

X. Logs & Tests - None, well was never drilled to TD

XI. 1) Water analysis from drinking water well within 1 mile
a) Location of drinking water well - Sec. 18, T19S, R33E
b) Analysis - see attached sheet from State Engineer's Office
c) Date sample taken - 2-15-83

XII. See Exhibit XII

XIII. The following list includes the names of all parties notified of Anadarko's intention to install and operate a water disposal well (namely the EXXON Federal SWD No. 1). See attached list.