9/15/98	9/30/98	BS	MV	SWD-727

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

SEP 15 1998

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

] **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

AOR 5 TOTAL
1 P&A
0 REPAIR

[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.

Elizabeth A. Casbeer		Regulartory Compliance	Sept. 14,1998
Print or Type Name	Signature	Title	Date

ARCO Permian
600 North Marienfeld
Midland TX 79701-4373
Post Office Box 1610
Midland TX 79702-1610
Telephone 915 688 5570

Elizabeth A. Casbeer
Regulatory/Compliance Analyst

7

SEP 15 1998

OIL CONSERVATION

September 14, 1998

New Mexico Oil Conservation Division
ATTN: Ben Stone
2040 S. Pacheco Street
Santa Fe, New Mexico 87505

RE: Application for Authorization to Inject
Barclay State Well No. 2
Section 2, T23S, R31E
Eddy Co., NM

Mr. Catanach:

ARCO Permian respectfully requests approval for the enclosed Application for Authorization to Inject (Form C-108) for the Barclay State Well No. 2, located in Section 2, T23S, R31E, Eddy County, New Mexico. Enclosed are the required attachments.

If you have any questions, please contact me at 915/688-5570. Please send the permit to:

ARCO Permian
ATTN: Elizabeth A. Casbeer, Room 959-54
P. O. Box 1610
Midland, TX 79702

Yours very truly,

Elizabeth A. Casbeer
Regulatory Compliance Analyst

xc: Larry Henson - EUN
Donald Knipe - 61323/MIO
Central Files - 41/MIO
R/C Files

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 ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no

II. Operator: ARCO Permian

Address: P.O. Box 1610, Midland, TX 79702

Contact party: Elizabeth A. Casbeer Phone: (915) 688-5570

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

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

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

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

VII. Attach data on the proposed operation, including:

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

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

IX. Describe the proposed stimulation program, if any.

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

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

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

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

XIV. Certification

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

Name: Elizabeth A. Casbeer Title Regulatory Compliance Analyst

Signature: Elizabeth A. Casbeer Date: September 14,1998

* 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. _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division 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 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, P. O. Box 2088, Santa Fe, New Mexico 87501 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
ARCO Permian, Operator
Barclay State No. 2
Section 2, T23S, R31E, Eddy County, New Mexico

I. The purpose of the well is as a disposal well for area Delaware produced water.

II. Operator: ARCO Permian
P. O. Box 1610
Midland, Texas 79702-1610
Contact: Donald L. Knipe, P.E. (915) 688-5316

III. Well Data: See Attachment A, B, and C.

IV. This is not an expansion of an existing project.

V. Map of wells and leases within 2 miles and 1/2 mile radius: See Attachment D.

VI. Data on wells within 1/2 mile area of review: See Attachment E1 thru E5.

VII. 1. Proposed average daily injection volume: 4,000 BWPD
Proposed maximum daily injection volume: 10,000 BWPD
Attachment F

2. This will be a closed system.

3. Proposed average daily injection pressure: 875 psi
Proposed maximum daily injection pressure: 1200 psi
Attachment F

4. Sources of injection water will be produced water from area Delaware wells that have been drilled and that are scheduled to be drilled on the Barclay State, Barclay Federal, and Medano State leases (see list of source wells, Attachment G). A water analysis from nearby Delaware production (see Attachment H1 & H2) is attached that is taken from the Barclay Federal No. 2 and Barclay State No. 1.

5. Chlorides in all of the source well is expected to be similar to the water analysis in Attachment H1 & H2.

VIII. The proposed injection zone is the Delaware interval 4500'-6000'. The Delaware is a sandstone (containing siltstones and shale) of Permian age approximately 3850' thick found at a depth of 4500' to 5850'. Possible fresh drinking water zones overlie the proposed injection formation at depths to approximately 800'. No drinking water sources are found underlying the proposed injection zone.

IX. The proposed injection interval may be acidized with 7-1/2% HCL acid and sand fractured as needed.

X. All well logs and test data available have been previously submitted to the NMOCD, Once the well is recompleted, a copy of any additional logs run will be forwarded to the NMOCD.

XI. No fresh water wells are found within a mile of the proposed injection well.

XII. The applicant has examined geological and engineering data and find there is no evidence of open faults or other hydrologic connection between the proposed disposal zone and any underground source of drinking water. Attachment I.

XIII. Proof of Notice

A. A copy of the application has been sent by certified mail to the surface owner and offset operators of leases within 1/2 mile (see list attached - Attachment J).

B. A copy of the legal advertisement is attached (Attachment K). Proof of publication in an Eddy County newspaper will be forwarded once available.

XIV. Certification: See signature on form C-108.

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, T23S, R31E
Eddy County, New Mexico

Attachment A

III. Well Data

Section A:

1. Lease Name: Barclay State No. 2

   Location: 1980' FSL & 1980' FEL, Sec. 2, T23S, R31E, Eddy County, NM

2. Casing and Cement

EXISTING

Casing Size	Setting Depth	Sacks Cement	Hole Size	Top of Cement
13-3/8"	845'	775	17-1/2"	circ. to surface
8-5/8"	4525'	1300	12-1/4"	circ. to surface
5-1/2"	8470'	875	7-5/8"	3579' by CBL[1]

[1]CBL = Cement Bond Log

PROPOSED

Casing Size	Setting Depth	Sacks Cement	Hole Size	Top of Cement
13-3/8"	845'	775	17-1/2"	circ. to surface
8-5/8"	4525'	1300	12-1/4"	circ. to surface
5-1/2"	8470'		7-5/8"	circ. to surface

NOTE: It is proposed to plug and abandoned existing Lower Delaware perforations from 6039' to 6745' with a Cast Iron Bridge Plug (CIBP) set at ±6000' with a 35' cement cap on top of the CIBP. Perforations will be shot at the cement top behind the 5-1/2" casing ±3550' and cement circulated to surface.

3. Tubing: 3-1/2", 9.3# internally plastic coated set at 4400'.

4. Packer: Baker Lok-Set or Guiberson UNI-VI nickel plated or plastic coated set at 4400'

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, T23S, R31E
Eddy County, New Mexico

Attachment A

III. Well Data - Continued

Section B:

1. Injection Formation: Delaware Sand

   Field or Pool Name: Livingston Ridge (Delaware)

2. Injection Interval: Delaware interval 4500'-5850' (Perforated)

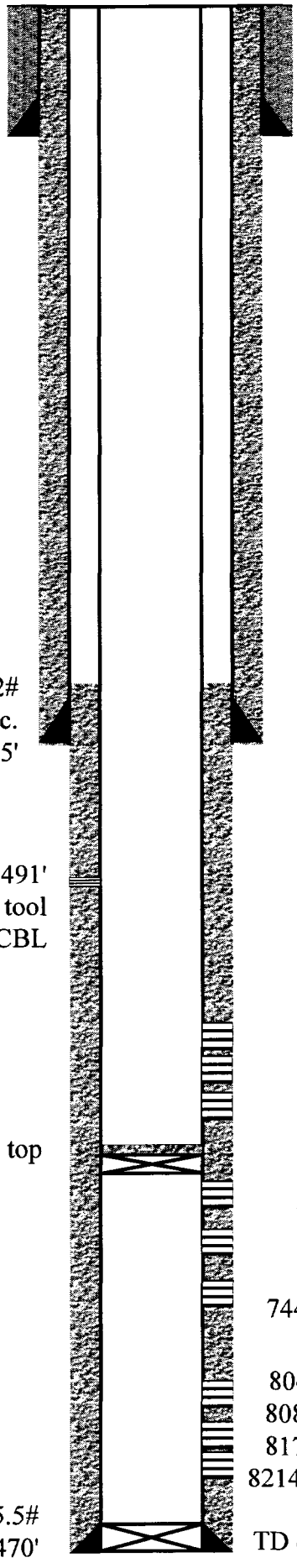
3. Original purpose of well: Drilled to test Delaware Formation

4. Other perforated intervals, bridge plugs, cement plugs:
   Perforations 7001' - 8244' CIBP at 6960' w/35' cmt

5 Next higher oil and gas zone: None
   Next lower oil and gas zone: Bone Springs

See current and proposed wellbore schematic (Attachment B and C)

CURRENT WELLBORE SCHEMATIC



BARCLAY STATE NO. 2

1980' FSL & 1980' FEL (J)
Sec. 2, T-23-S, R-31-E,
Eddy County, NM
API: 30-015-29590
Spudded 08/05/97
Completed 09/10/97

KB: 3452' **GL: 3436'**

ATTACHMENT "B"

Surface Casing 13-3/8" 48#
Cmt'd w/ 775 sx, Circ.
Shoe @ 845'

Intermediate Casing 8 5/8" 32#
Cmt'd w/ 1300 sx, Circ.
Shoe @ 4525'

DV Tool @ 5,491'
Pump 300 sx cmt thru DV tool
TOC @ 3,579' by CBL

CIBP @ 6960' w/ 35' cmt on top

Production Casing 5-1/2" 17# & 15.5#
Cement w/575 sx, Shoe @ 8470'

Upper Cherry Canyon Perfs
6039'-6050' (12 shots)
6211'-6219' (9 shots)
6656'-6745' (11 shots)

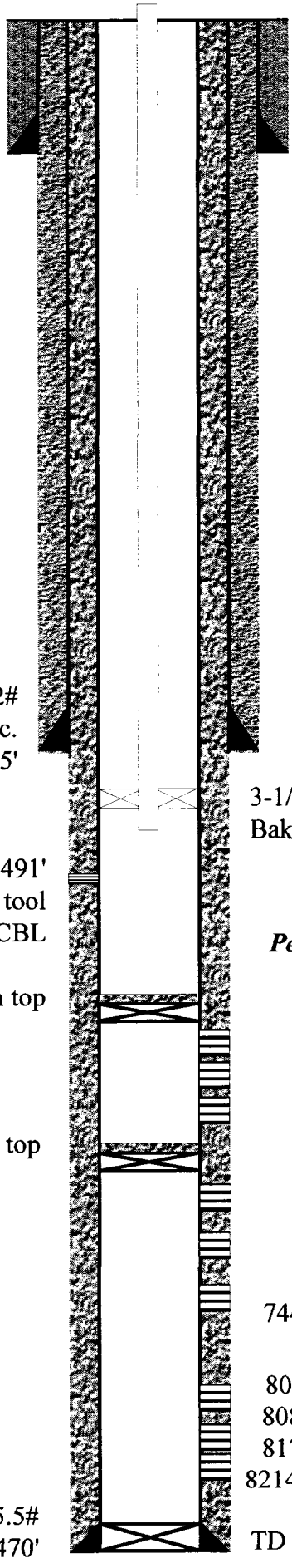
Upper Brushy Canyon Perfs (1 spf)
7001', 7005', 7029', 7034', 7041',
7047', 7094', 7098', 7108', 7114', 7017',
7124', 7128', 7217', 7220', 7224'
7429', 7430', 7431',7433', 7440',
7442', 7447', 7608', 7612', 7614', 7616', 7618'

Lower Brushy Canyon Perfs (1 spf)
8043', 8050', 8052', 8056', 8059', 8064' 8066',
8081', 8085', 8094', 8102', 8133', 8140', 8164',
8171', 8181', 8190', 8195', 8198', 8202', 8208',
8214', 8218', 8224', 8231', 8238', 8244' (27 shots)

TD @ 8474' PBTD @ 8429'

DLK 08-18-98

PROPOSED SWD WELLBORE SCHEMATIC



BARCLAY STATE NO. 2

1980' FSL & 1980' FEL (J)
Sec. 2, T-23-S, R-31-E,
Eddy County, NM
API: 30-015-29590
Spudded 08/05/97
Completed 09/10/97

KB: 3452' **GL: 3436'**

ATTACHMENT "C"

Surface Casing 13-3/8" 48#
Cmt'd w/ 775 sx, Circ.
Shoe @ 845'

Intermediate Casing 8 5/8" 32#
Cmt'd w/ 1300 sx, Circ.
Shoe @ 4525'

3-1/2" 9.5# J-55 IPC tbg
Baker Lok-Set A-3 Pkr @ +/-4400'

DV Tool @ 5,491'
Pump 300 sx cmt thru DV tool
TOC @ 3,579' by CBL

CIBP @ 6800' w/ 35' cmt on top

CIBP @ 6960' w/ 35' cmt on top

Proposed SWD
Perforations from 4,500'-5,850'

Upper Cherry Canyon Perfs
6039'-6050' (12 shots)
6211'-6219' (9 shots)
6656'-6745' (11 shots)

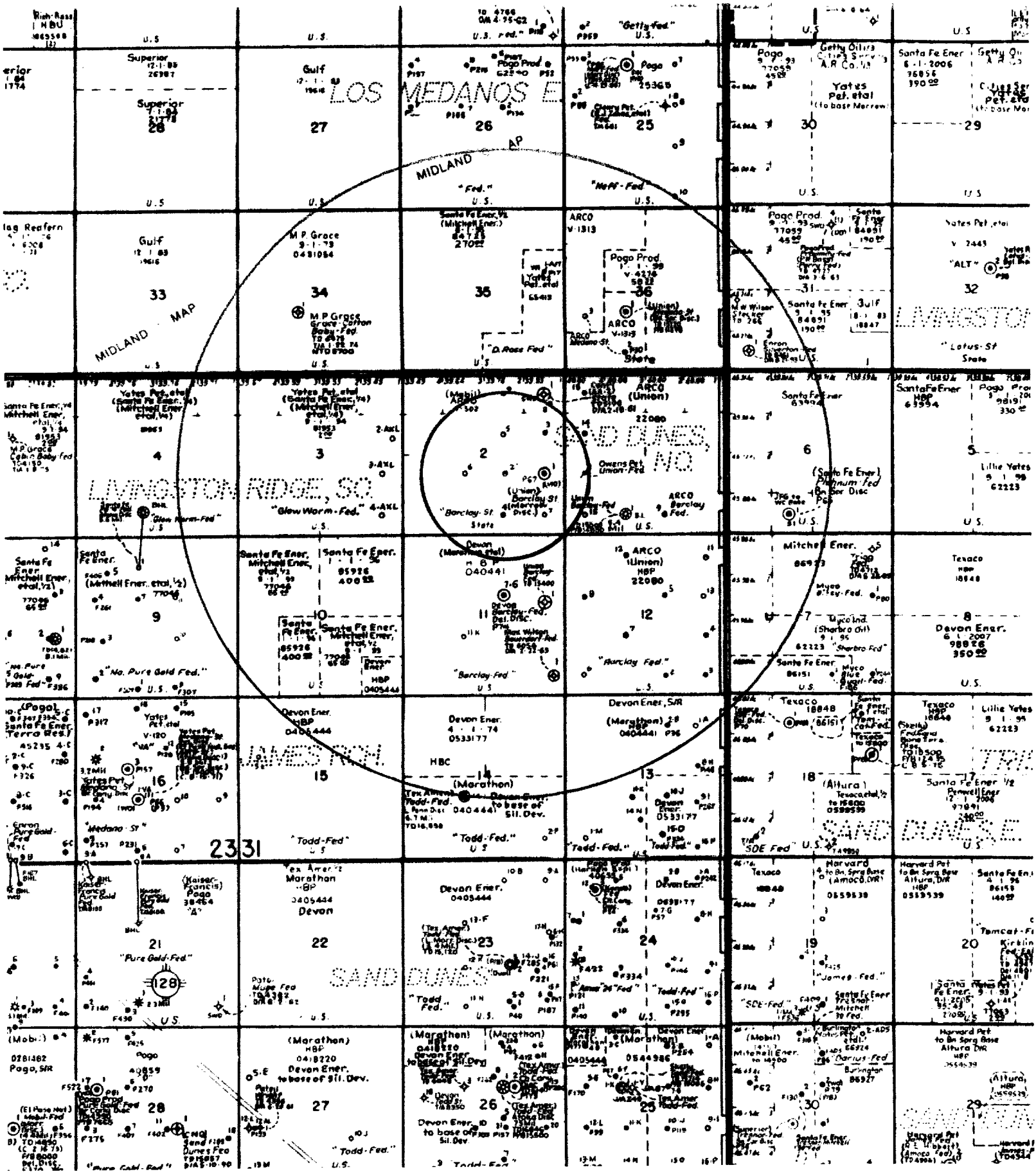
Upper Brushy Canyon Perfs (1 spf)
7001', 7005', 7029', 7034', 7041',
7047', 7094', 7098', 7108', 7114', 7017',
7124', 7128', 7217', 7220', 7224'
7429', 7430', 7431',7433', 7440',
7442', 7447', 7608', 7612', 7614', 7616', 7618'

Lower Brushy Canyon Perfs (1 spf)
8043', 8050', 8052', 8056', 8059', 8064' 8066',
8081', 8085', 8094', 8102', 8133', 8140', 8164',
8171', 8181', 8190', 8195', 8198', 8202', 8208',
8214', 8218', 8224', 8231', 8238', 8244' (27 shots)

Production Casing 5-1/2" 17# & 15.5#
Cement w/575 sx, Shoe @ 8470'

TD @ 8474' PBTD @ 8429'

DLK 08-18-98

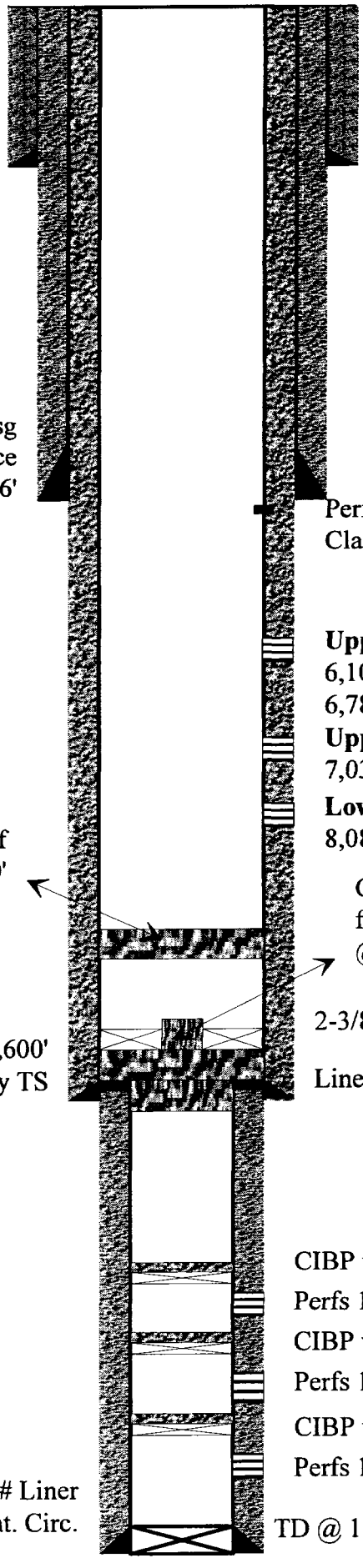


Attachment D

ARCO Permian - Barclay State No. 2

Wells within 1/2 mile and 2 mile Radius

WELLBORE SCHEMATIC



ARCO Permian
Barclay State No. 1

1980' FSL & 660' FEL
Sec. 02, T-23S, R-31-E
Eddy County, NM
API: 30-015-25534
Spudded 01\25\86
Completed 05\15\86

KB: 3485' **GL: 3459'**

13-3/8" 54.5# Surface Casing
cmt'd w/ 700 sx cmt to surface
Shoe @ 743'

10-3/4" 45.5 & 40.5# csg
cmt'd w/ 1750 sx cmt to surface
Shoe @ 4466'

Perf 4 holes @ 5,425' and sqz.w/1050 sx
Class 'C' cmt to surface

ATTACHMENT E1

Upper Cherry Canyon Perfs:
6,104'-6,138' (24 holes)
6,788'-6,980' (13 holes)
Upper Brushy Canyon Perfs:
7,039'-7,271' (23 holes)
Lower Brushy Canyon Perfs:
8,081'-8,290' (27 holes)

Cement Plug across top of
Wolcamp from 11,545' to11,650'

Cement Plug across liner top
from 12,380' to top of permanent pkr
@ 12,333'

2-3/8" tbg and Otis 'WD' Pkr @ 12,275'

7-5/8" 29.7 & 26.4# csg. Set @ 12,600'
w/2250 sx cmt. Top of cmt @ 5500' by TS

Liner top @ 12,333'

CIBP w/35'cmt @ 13,950'
Perfs 13,974'-982' (32 holes)
CIBP w/20'cmt @ 14,050'
Perfs 14,062'-466' (121 holes)
CIBP w/20'cmt @ 14,610'
Perfs 14,816'-15,068' (56 holes)

4-1/2" 13.5# Liner
Set @ 15,135' w/500 sx cmt. Circ.

TD @ 15,136' PBTD @ 14,030'

DLK 08-07-98

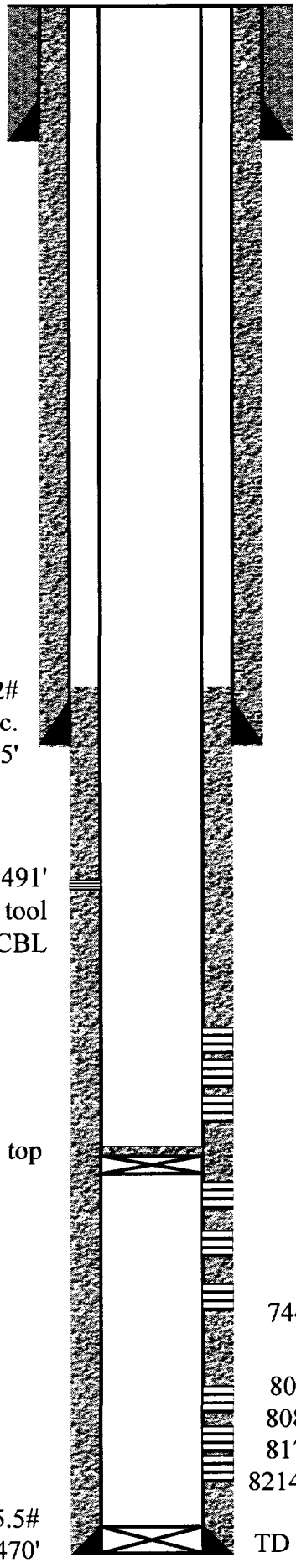
CURRENT WELLBORE SCHEMATIC

ARCO Permian
BARCLAY STATE NO. 2

1980' FSL & 1980' FEL (J)
Sec. 2, T-23-S, R-31-E,
Eddy County, NM
API: 30-015-29590
Spudded 08/05/97
Completed 09/10/97

KB: 3452' **GL: 3436'**

ATTACHMENT E2



Surface Casing 13-3/8" 48#
Cmt'd w/ 775 sx, Circ.
Shoe @ 845'

Intermediate Casing 8 5/8" 32#
Cmt'd w/ 1300 sx, Circ.
Shoe @ 4525'

DV Tool @ 5,491'
Pump 300 sx cmt thru DV tool
TOC @ 3,579' by CBL

CIBP @ 6960' w/ 35' cmt on top

Production Casing 5-1/2" 17# & 15.5#
Cement w/575 sx, Shoe @ 8470'

Upper Cherry Canyon Perfs
6039'-6050' (12 shots)
6211'-6219' (9 shots)
6656'-6745' (11 shots)

Upper Brushy Canyon Perfs (1 spf)
7001', 7005', 7029', 7034', 7041',
7047', 7094', 7098', 7108', 7114', 7017',
7124', 7128', 7217', 7220', 7224'
7429', 7430', 7431',7433', 7440',
7442', 7447', 7608', 7612', 7614', 7616', 7618'

Lower Brushy Canyon Perfs (1 spf)
8043', 8050', 8052', 8056', 8059', 8064' 8066',
8081', 8085', 8094', 8102', 8133', 8140', 8164',
8171', 8181', 8190', 8195', 8198', 8202', 8208',
8214', 8218', 8224', 8231', 8238', 8244' (27 shots)

TD @ 8474' PBTD @ 8429'

DLK 08-18-98

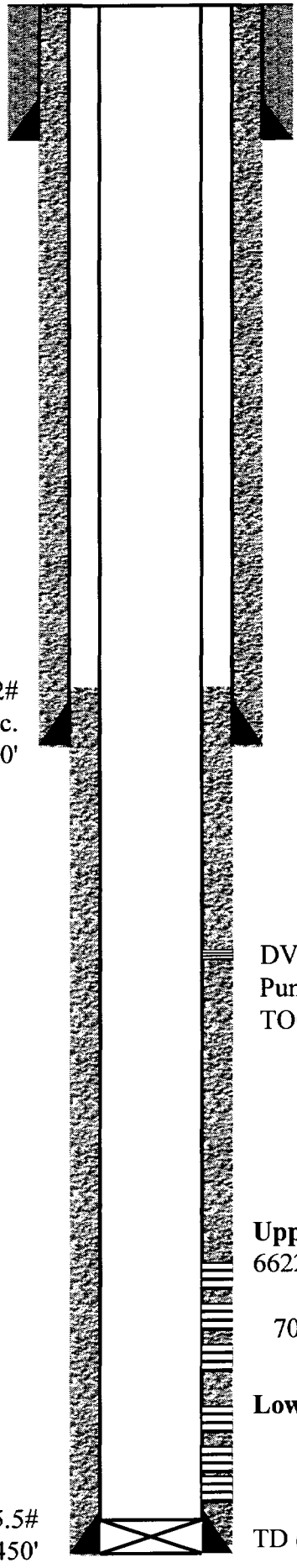
WELLBORE SCHEMATIC

ARCO Permian
BARCLAY STATE NO. 3

1980' FNL & 660' FEL (H)
Sec. 2, T-23-S, R-31-E,
Eddy County, NM
API: 30-015-29527
Spudded: 08/21/97
Completed: 09/21/97

KB: 3461' **GL: 3444'**

ATTACHMENT E3



Surface Casing 13-3/8" 48#
Cmt'd w/ 775 sx, Circ.
Shoe @ 845'

Intermediate Casing 8 5/8" 32#
Cmt'd w/ 1300 sx, Circ.
Shoe @ 4420'

DV Tool @ 5,476'
Pump 300 sx cmt thru DV tool
TOC @ 3,700' by Calc.

Upper Brushy Canyon Perfs (1 spf)
6622', 24', 26', 6707', 10', 14', 16', 20 (8 shots)
6924', 30', 34', 39', 95', 98'
7002', 06', 09', 7112', 14 (11 shots)
7195'-7205' (11 shots)

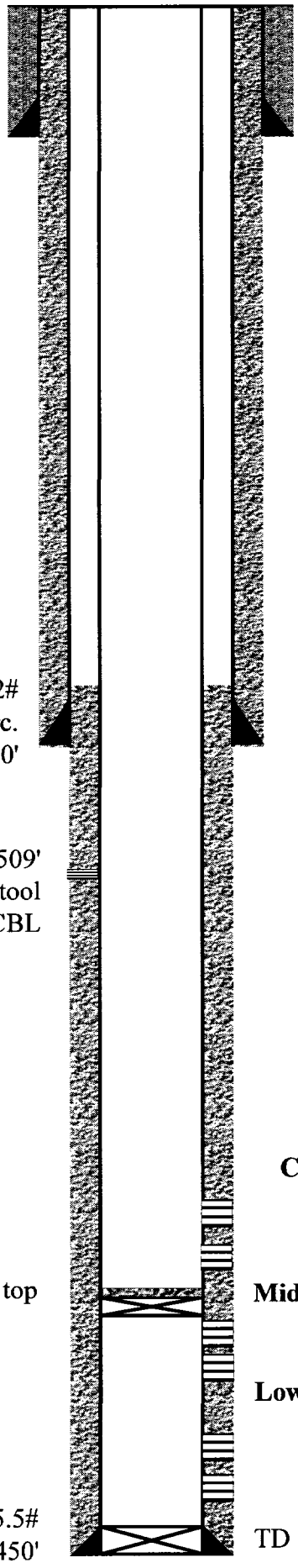
Lower Brushy Canyon Perfs (1 sp2f)
8059'-8065' (5 shots)
8090'- 8124' (18 shots)
8180'-8187' (5 shots)

TD @ 8450' PBTD @ 8403'

Production Casing 5-1/2" 17# & 15.5#
Cement w/575 sx, Shoe @ 8450'

DLK 08-18-98

CURRENT WELLBORE SCHEMATIC



BARCLAY STATE NO. 4

660' FSL & 1980' FEL (O)
Sec. 2, T-23-S, R-31-E,
Eddy County, NM
API: 30-015-29792
Spudded: 09/07/97
Completed: 10/02/97

KB: 3447' **GL: 3431'**

ATTACHMENT E4

Surface Casing 13-3/8" 48#
Cmt'd w/ 775 sx, Circ.
Shoe @ 845'

Intermediate Casing 8 5/8" 32#
Cmt'd w/ 1300 sx, Circ.
Shoe @ 4450'

DV Tool @ 5,509'
Pump 340 sx cmt thru DV tool
TOC @ 3,640' by CBL

CIBP @ 7420' w/ 35' cmt on top

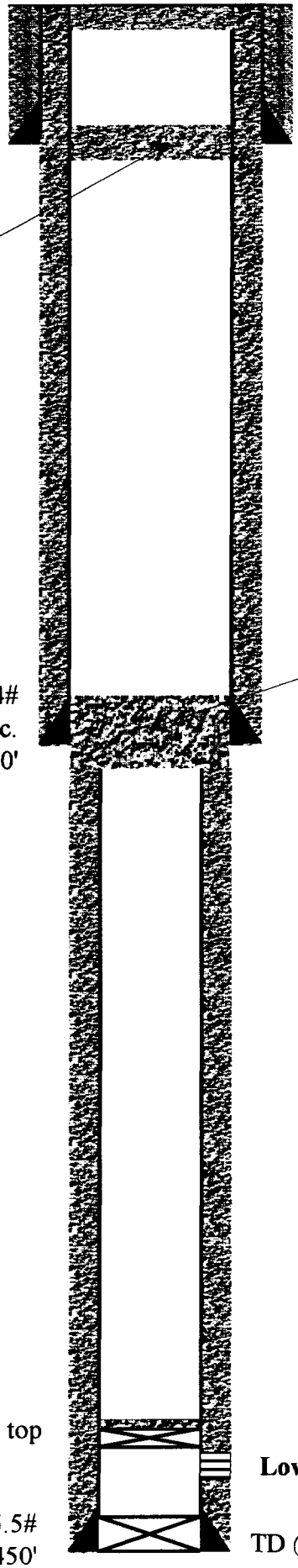
Production Casing 5-1/2" 17# & 15.5#
Cement w/605 sx, Shoe @ 8450'

Cherry Canyon Perfs (1 spf)
6825'-6829' (5 shots)
6940'-6943' (4 shots)
7015'-7019' (5 shots)
Middle Brushy Canyon Perfs (1 spf)
7440'-7447' (5 shots)
7619'-7637' (15 shots)
Lower Brushy Canyon Perfs (1 spf)
8063'-8072' (10 shots)
8091'-8096' (6 shots)
8201'-8208' (8 shots)

TD @ 8450' PBTD @ 8407'

DLK 08-18-98

WELLBORE SCHEMATIC



20 sx. cmt from 60' to surface

Surface Casing 13-3/8" 48#
Cmt'd w/ 630 sx, Circ.
Shoe @ 750'

40 sx. cmt from 800' to 646'

Owens Petroleum
Union Federal NO. 1

1980' FSL & 660' FWL (L)
Sec. 1, T-23-S, R-31-E,
Eddy County, NM
API: 30-015-27998
Spudded 06/20/94
Completed 09/02/94
Plug & Abandond: 12/12/94

KB: 3489' **GL: 3476'**

ATTACHMENT E5

40 sx. cmt from 4490' to 4350'

Intermediate Casing 8 5/8" 24#
Cmt'd w/ 1495 sx, Circ.
Shoe @ 4420'

CIBP @ 8145' w/ 35' cmt on top

Lower Brushy Canyon Perfs:
8194'-8242'

Production Casing 5-1/2" 17# & 15.5#
Cement w/750 sx, Shoe @ 8450'
Calculated TOC @ 4500'

TD @ 8450' PBTD @ 8400'

DLK 08-31-98

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, 23S, 31E
Eddy County, New Mexico

Attachment F

Proposed Operation:

1. Plans are to inject 4000 barrels of produced water per day.

2. The injection system will be a closed system.

3. The proposed injection pressure is 1200 psig.

4. The injection fluid will be Delaware produced water.

5. See attached water analysis.

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, 23S, 31E
Eddy County, New Mexico

Attachment G

VII. Item 4.

List of Produced Water Source Wells:

Barclay State Lease Section 2, T23S, R31E, Eddy County, New Mexico
Wells No. 1, 3, 8 and subsequent proposed wells to be drill in this section.

Barclay Federal Lease Section 1 & 12, T23S, R31E, Eddy County, New Mexico
Wells No. 1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 14, 17, and subsequent proposed wells to be drill in this section.

Medano State Lease Section 36, T22S, R31E, Eddy County, New Mexico
Well No. 2 and subsequent proposed wells to be drill in this section.

BAKER PETROLITE
A Baker Hughes company

Water Analysis Report from Petrolite Corporation

ARCO PERMAIN

BARCLAY STATE
WELL #1
BATTERY STOCK TANK

EUNICE, NEW MEXICO

Summary		Analysis: 35841					
Anion/Cation Ratio	1.00	Anions	mg/L	meq/L	Cations	mg/L	meq/L
		Chloride	34,800	982	Sodium	18,113	788
TDS (mg/L or g/m³)	58,744	Bicarbonate	266	4.36	Magnesium	281	23.1
Density (g/cm³ or tonne/m³)	1.030	Carbonate	0.00	0.00	Calcium	2,166	108
		Sulfate	286	5.95	Strontium	258	5.89
Chemical Treatment		Phosphate	N/A	N/A	Barium	1.90	0.03
Sample Condition		Borate	N/A	N/A	Iron	106	3.80
		Silicate	N/A	N/A	Potassium	2,466	63.1
Sampling Date	9/2/97				Aluminum	N/A	N/A
Sampled by		Hydrogen Sulfide			Chromium	N/A	N/A
Submitted by	BOB WILSON				Copper	N/A	N/A
		pH at time of sampling			Lead	N/A	N/A
Analysis Date	9/8/97	pH at time of analysis		6.80	Manganese	N/A	N/A
Sample analysis number	35841	pH used in Calculations		6.80	Nickel	N/A	N/A

Predictions of Saturation Index and Amount of Scale in lb/1000bbl

Pressure (psi)		Temp.	Calcite CaCO3		Gypsum CaSO4.2H2O		Anhydrite CaSO4		Celestite SrSO4		Barite BaSO4	
CO2	Total	°F	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
0.36	0.00	80	0.29	10.5	-0.98		-1.02		-0.10		0.88	0.95
0.47	0.00	100	0.39	14.6	-1.01		-0.99		-0.10		0.70	0.88
0.59	0.00	120	0.49	19.0	-1.04		-0.94		-0.10		0.55	0.79
0.72	0.00	140	0.60	23.7	-1.05		-0.86		-0.09		0.43	0.69

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: CO2 Pressure is absolute pressure. Total Pressure is gauge pressure.

Attachment H1

ARCO Permian - Barclay State No. 2

BAKER PETROLITE
A Baker Hughes company

Water Analysis Report from Petrolite Corporation

ARCO PERMIAN

BARCLAY FEDERAL
WELL # 2
WELL HEAD

Summary		Analysis: 55004					
Anion/Cation Ratio	1.00	Anions	mg/L	meq/L	Cations	mg/L	meq/L
		Chloride	176,400	4,976	Sodium	79,303	3,449
TDS (mg/L or g/m³)	285,952	Bicarbonate	107	1.75	Magnesium	3,824	315
Density (g/cm³ or tonne/m³)	1.188	Carbonate	0.00	0.00	Calcium	23,083	1,152
		Sulfate	405	8.43	Strontium	1,011	23.1
Chemical Treatment		Phosphate	N/A	N/A	Barium	2.50	0.04
Sample Condition		Borate	N/A	N/A	Iron	30.0	1.07
		Silicate	N/A	N/A	Potassium	1,786	45.7
Sampling Date	10/15/97				Aluminum	N/A	N/A
Sampled by		Hydrogen Sulfide		0	Chromium	N/A	N/A
Submitted by	BOB WILSON				Copper	N/A	N/A
		pH at time of sampling		5.85	Lead	N/A	N/A
Analysis Date	10/20/97	pH at time of analysis			Manganese	N/A	N/A
Sample analysis number	55004	pH used in Calculations		5.85	Nickel	N/A	N/A

Predictions of Saturation Index and Amount of Scale in lb/1000bbl											
Pressure (psi)		Temp.	Calcite CaCO3		Gypsum CaSO4.2H2O		Anhydrite CaSO4		Celestite SrSO4		Barite BaSO4	
CO2	Total	°F	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
0.73	0.00	80	0.03	0.58	-0.18		-0.11		-0.03		0.46	0.81
0.86	0.00	100	0.11	1.93	-0.26		-0.13		-0.05		0.26	0.56
0.97	0.00	120	0.19	3.27	-0.33		-0.13		-0.06		0.09	0.23
1.08	0.00	140	0.27	4.70	-0.39		-0.09		-0.06		-0.06	

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: CO2 Pressure is absolute pressure. Total Pressure is gauge pressure.

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, 23S, 31E
Eddy County, New Mexico

Attachment I

Geology and Lithology:

Injection zones are sandstone zones within the Delaware formation at an average depth of ± 4500'-5850'. Specifically they are:

Cherry Canyon

Fresh Water Zones:

Base of near surface aquifer is 800'. No fresh water zones exist below the proposed injection interval.

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, 23S, 31E
Eddy County, New Mexico

Attachment J

XIII. Item A.

Proof of Notice

List of Surface Owners within 2 Miles:

Commissioner of Public Lands
New Mexico State Land Office
P. O. Box 1148
Santa Fe, New Mexico 87504

Bureau of Land Management
Carlsbad Resource Area
P. O. Box 1778
620 East Greene
Carlsbad, New Mexico 88220

List of Lease Operators Within 1/2 Mile:

ARCO Permian
P. O. Box 1610
Midland, Texas 79702

Devon Energy Corporation
20 N. Broadway, Suite 1500
Oklahoma City, Oklahoma 73102

ARCO Permian
Barclay State No. 2
1980' FSL & 1980' FEL
Section 2, 23S, 31E
Eddy County, New Mexico

Attachment K

XIII. Item B.

Legal Notice

ARCO Permian, P. O. Box 1610, Midland, Texas 79702, 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, the Barclay State No. 2 is located 1980' FSL, 1980' FEL, Section 2, Township 23 South, Range 31 East, Eddy County, New Mexico. Disposal water will be sourced from area wells producing from the Delaware formation. The disposal water will be injected into the Delaware formation at a depth of 4500'-5850', a maximum surface pressure of 1200 psi, and a maximum rate of 10,000 bwpd.

All interested parties opposing the action must file objections or requests for hearing with the Oil Conservation Division, 2040 S. Pacheco, Santa Fe, New Mexico 87505, within 15 days. Additional information can be obtained by contacting Elizabeth A. Casbeer, Regulatory Compliance Analyst, at P. O. Box 1610, Midland, Texas 79702-1650, or (915) 688-5570.

Affidavit of Publication

№ 19216

RECEIVED
SEP 14 1998
REGULATORY

State of New Mexico,
County of Eddy, ss.

Amy McKay,

being first duly sworn, on oath says:

That she is Business Manager of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

September 5, 19 98
_____, 19____
_____, 19____
_____, 19____
_____, 19____
_____, 19____

That the cost of publication is $ 25.69, and that payment thereof has been made and will be assessed as court costs.

Amy McKay

Subscribed and sworn to before me this 10th day of September, 1998

Donna M. Crump

My commission expires 8/1/02

Notary Public

September 5, 1998

Legal Notice

ARCO Permian; P. O. Box 1610, Midland, Texas 79702, 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, the Barclay State No. 2 is located 1980' FSL, 1980' FEL, Section 2, Township 23 South, Range 31 East, Eddy County, New Mexico. Disposal water will be sourced from area wells producing from the Delaware formation. The disposal water will be injected into the Delaware formation at a depth of 4500'-5850', a maximum surface pressure of 1200 psi, and a maximum rate of 10,000 bwpd.

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STATE OF TEXAS

COUNTY OF MIDLAND

BEFORE ME, the undersigned authority on this day personally appeared Elizabeth A. Casbeer, an Regulatory Compliance Analyst with **ARCO Permian**, who being by me duly sworn, deposes and states that the persons listed on the foregoing attached list have been sent a copy on September 14, 1998, of the New Mexico Oil Conservation Division form C-108 entitled, "Application For Authorization To Inject" for the Barclay State Well No. 2, located in Section 2, T23S, R31E, Eddy County New Mexico.

ARCO Permian

Elizabeth A. Casbeer

SUBSCRIBED AND SWORN TO before me on September 14, 1998, to certify which witness my hand and seal of office.

NOTARY PUBLIC, STATE OF TEXAS

LEIGH ANN LANE
Notary Public, State of Texas
My Commission Expires: 12-12-2000

Affidavit of Publication

№ 19216

RECEIVED
SEP 14 1998
REGULATORY

State of New Mexico,
County of Eddy, ss.

Amy McKay

being first duly sworn, on oath says:

That she is Business Manager of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

September 5, 19 98
_____, 19____
_____, 19____
_____, 19____
_____, 19____
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That the cost of publication is $ 25.69, and that payment thereof has been made and will be assessed as court costs.

Amy McKay

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