

Operator: DEVON ENERGY CORP. Well: STATE 'C' No. 1

Proposed Injection Application is for: **WATERFLOOD** Expansion Initial

Original Order: R-_____ Secondary Recovery _____ Pressure Maintenance _____

~~X~~ **SALT WATER DISPOSAL** Commercial Well

WIPP Capitan Reef
SURFACE

Data is complete for proposed well(s)? 4/45 Additional Data Req'd

~~3~~ Total # of AOR

N/A # of Plugged Wells

Tabulation Complete

Schematics of P & A's

Cement Tops Adequate

AOR Repair Required

Injection Formation(s) *DELSWAKE* Compatible Analysis *YES*

Source of Water or Injectate *AREA DELAWARE PRODUCTION*

46 Copy of Legal Notice

465 Information Printed Correctly

11/2 Correct Operators

1/4 Copies of Certified Mail Receipts

Objection Received

Set to Hearing	Date

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL? *ly*

1st Contact:	___ Telephoned	___ Letter	_____ Date	Nature of Discussion _____
2nd Contact:	___ Telephoned	___ Letter	_____ Date	Nature of Discussion _____
3rd Contact:	Telephoned	Letter	_____ Date	Nature of Discussion _____

11-3-95 swd

devon

ENERGY CORPORATION

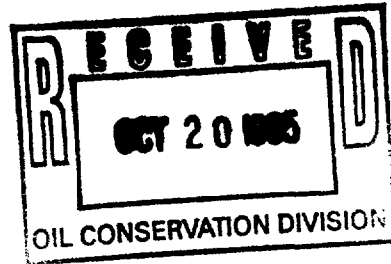
20 North Broadway, Suite 1500
Oklahoma City, Oklahoma 73102-8260

Telephone 405/235-3611
FAX 405/552-4550

October 17, 1995

Certified Mail No. Z 731 697 590

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 88505



RE: Application for Authorization to Inject
STATE L #1
Section L-10-T21S-R26E
Eddy County, New Mexico

Gentlemen:

Enclosed please find Form C-108 and attachments concerning the referenced.

Please direct inquiries concerning this matter to Tom Pepper at (405) 235-3611, X4513.

Yours truly,

DEVON ENERGY CORPORATION (NEVADA)

Candace R. Graham

Ms. Candace R. Graham
Engineering Tech

/cg

Attachments

copy: NMOCD, Artesia
Chi Operating, Inc.
TP, File

17 8 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

001 000 000

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ no
- II. Operator: Devon Energy Corporation (Nevada)
Address: 20 N. Broadway, Suite 1500, Oklahoma City, OK 73102-8260
Contact party: Tom Pepper Phone: (405) 235-3611 X4513
- 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.
(Please refer to Attachment III)
- 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.
(Please refer to Attachment V)
- * 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.
(Please refer to Attachment VI)
- 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.).
- (Please refer to Attachment VII)
- *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.
(Please refer to Attachment VIII)
- IX. Describe the proposed stimulation program, if any. Stimulation by whatever means necessary to achieve desired rate and pressure.
- * X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.) Open hole logs are on file with the NMOCD.
- * 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.
(Please refer to Attachment XI)
- 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.
(Please refer to Attachment XII)
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form. Enclosed in the application.
- 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: Gerald T. Pepper

Title: District Engineer

Signature: 

Date: October 17, 1995

- * 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. 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.

ATTACHMENT III

WELL DATA

- A. (1) State L #1
Section L-10-T21S-R26E
660' FWL & 1980' FSL
Eddy County, New Mexico
- (2) Please refer to the wellbore schematic labeled Attachment III-A(2). Cement was circulated back to surface on the 13 3/8" surface string. The 8 5/8" intermediate casing was cemented with 800 sacks at 2594'. The 5 1/2" was cemented at 11,100'. TOC was at (+/-) 7400'. 7000' of the 5 1/2" was pulled during plugging in 1983.
- (3) We will be using 2 7/8" internally coated tubing. (Tuboscope TK 70 coating) The tubing will be set at 3900' (±).
- (4) We will use a nickel plated Loc-set packer to be set at 3900' (±). The annulus will contain packer fluid.
- B. (1) The injection formation will be the Delaware in the East Catclaw Draw Delaware Field.
- (2) The injection interval will be perforated. The proposed perforated intervals are as follows (shot density = 1 spf):
- | | |
|-------------------------------|-------------------------|
| 3980' - 3992' (12', 13 holes) | |
| 4024' - 4048' (24', 25 holes) | <u>Total perfs = 79</u> |
| 4090' - 4130' (40', 41 holes) | |
- (3) This well was originally drilled as a Morrow gas well.
- (4) Please refer to the wellbore schematic labeled Attachment III-A (2). We will washdown the wellbore to approximately 4400' and cement 5 1/2" 15.5# J-55 casing back to surface in two stages.
- (5) There are several oil and gas zones above the proposed interval in the Cherry Canyon (+/- 2200' - 3200') and below it in the Permian Wolfcamp (+/- 8000').

Lease STATE - (INEXCO)
Well No. 1 Sec. 10 T. 25 R. 66
EDDY Co. N.M.

600 FWL & 1980 FLL -

ELEVATION	DATUM POINT (GRD-KB-DF)
	3272 RKB
	DATUM POINT ELEVATION
	3249 S.C.

[illegible]

10,698-941	MORROW	268 HOLES - 12 TOWHETS; NO FRAC
9692-86	STRAWN	3mm holes
9456-69	U. PENN CANYON SAND	CIBP Q 9350 @ 450' 3m - BELOW
7458-75	UPPER WOLF CAMP	2140 @ 2450 W/ 35' CM - ABOVE
7000'	CUT OFF 5 1/2" & PULL PIPE WHILE PLUGGING	

Hand-drawn stratigraphic column with labels and elevations:

- 50 SX
- AT 7000
- 7000 TOP OF 3 1/2"
- 8415 TAC
- CIBPE 8450'
- UPPER WOLF CAMP 8450-75
- CIBPE 9350'
- CANYON 9456-69
- STRAWN 9682-96
- 10,235 TAC
- 10,485
- MOOREBOW 10,698 941

APPROVED BY

R 26 E

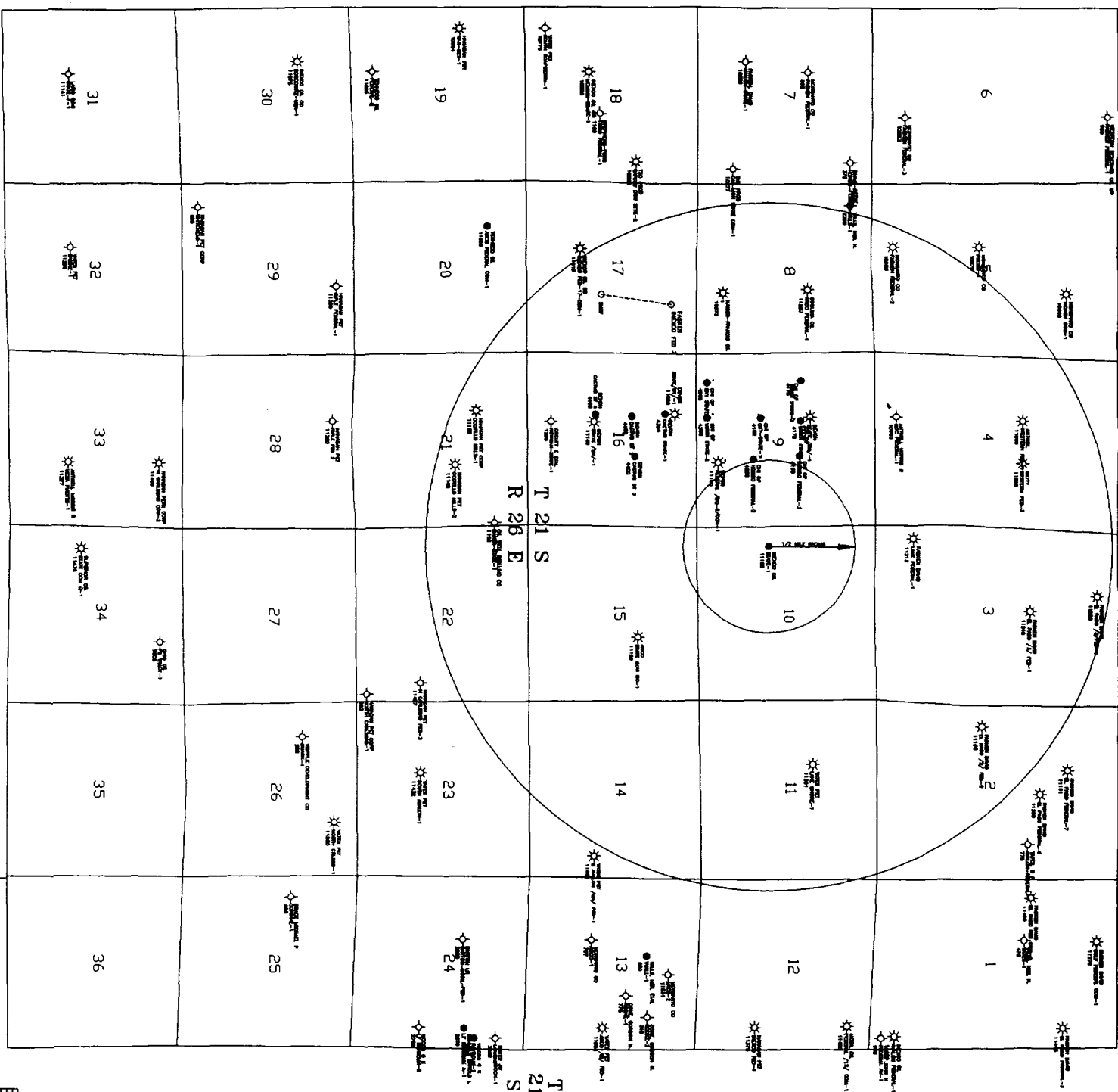
ATTACHMENT V

State L #1

Section 10-L-T21S-R26E

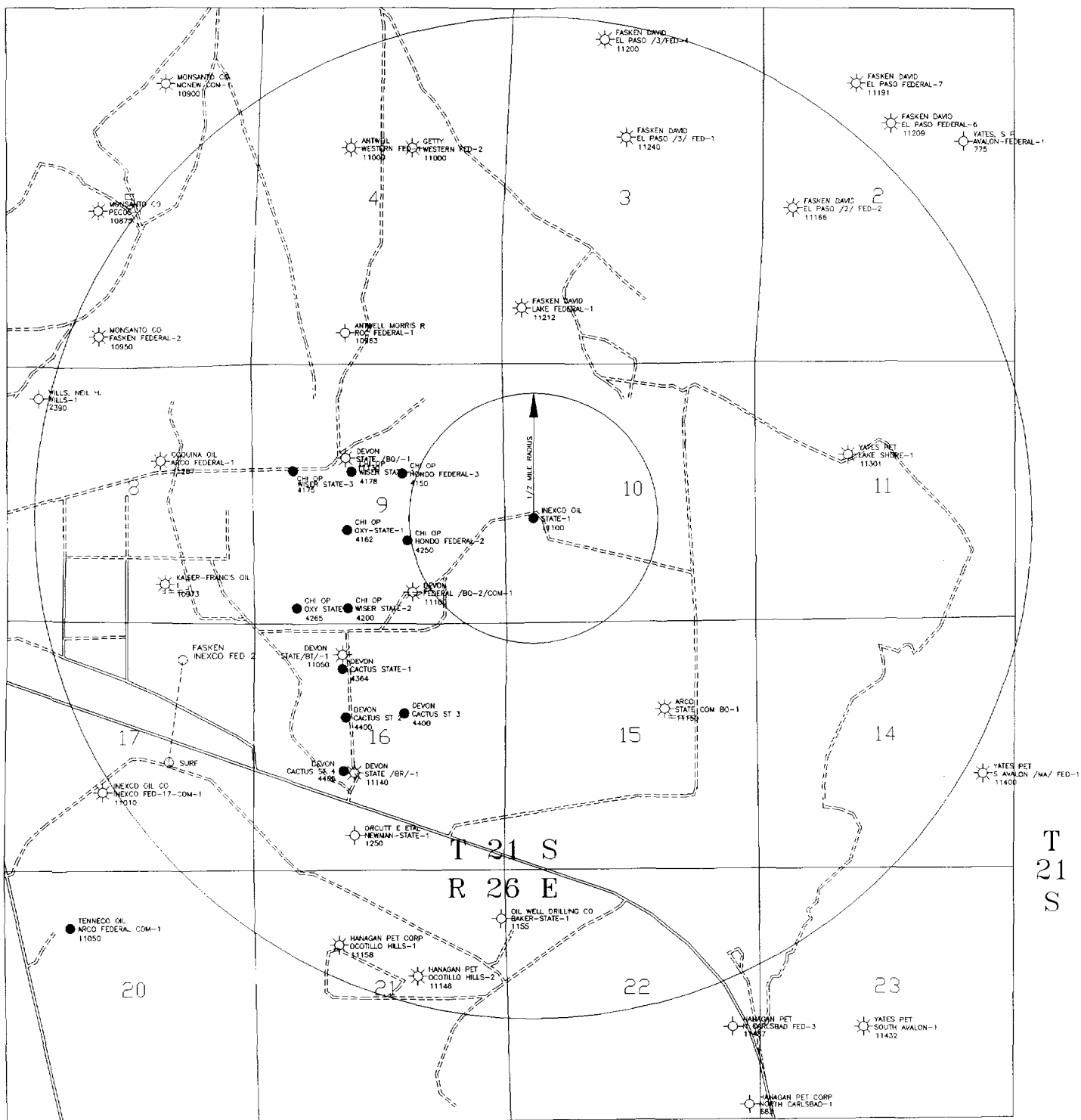
Eddy County, New Mexico

AREA OF REVIEW



N	
SCALE	
0 100 200 300	
EAST CANTON DE LA (DELAWARE) FIELD	
DATE: 10/1/10	

R 26 E



ATTACHMENT V (2)

State L #1
Section 10-T21S-R26E
Eddy County, New Mexico

Access Roads to Location

N

11101511N

devon

EAST CATCLAW DRAW (DELAWARE) FIELD

EDDY COUNTY, NEW MEXICO

Scale in Feet

1000 0 1000 2000 3000 4000

ATTACHMENT VI - WELLS WITHIN AREA OF REVIEW

<u>WELL NAME</u>	<u>LOCATION</u>	<u>SPUD DATE</u>	<u>COMPLETION DATE</u>	<u>TYPE OF WELL</u>	<u>DEPTH/PBTD</u>	<u>COMPLETION RECORD</u>
Hondo Federal #2 (Chi Operating)	Section 9-T21S-R26E 1750' FSL & 2080' FEL	2/8/91	5/12/91	Delaware Oil Well	4250'/4200'	<p>13 3/8" surface casing @ 350' (435 sx cement)</p> <p>8 5/8" intermediate casing @ 2141' (640 sx cement)</p> <p>5 1/2" production casing @ 4250' (500 sx cement)</p> <p>2 3/8" tubing @ 2375'</p> <p>perforated from 2284' - 2304' (21 holes)</p> <p>2000 gal 15% NEFE</p> <p>6000 gal gelled water + 3500# sand</p> <p>perforated from 4122' - 4155'</p> <p>2000 gal 15% acid</p> <p>16,000 gal gelled water + 38,000 # sand</p> <p>perforated from 2922' - 2993'</p> <p>2000 gal 15% acid</p> <p>12,000 gal gelled water + 24,000# sand</p>

ATTACHMENT VII

PROPOSED OPERATION

1. Plans are to inject 2000 - 3000 bbls of produced water per day.
2. The injection system will be a closed system.
3. The proposed injection pressure is 600 psig. Maximum pressure will be 1000 psig.
4. The injection fluid will be East Catclaw Draw Delaware produced water.
5. We will be disposing Delaware water into this well.



Water Analysis Report

Analysis Number : 000003383

Company.....: **Devon Energy**
Location.....:
Field.....:
Lease.....: **Cactus St.**
Sample Source....: **Battery**

Date of Sampling.....: **01/10/95**
Date of Analysis.....: **01/10/95**
Baker Representative.: **Steven Stroud**
Well#.....: **1,2,4**
Analysis by.....: **Williams**

DISSOLVED SOLIDS

CATIONS:

	mg/l	me/l
Ca++	22000.00	1100.00
Mg++	10492.00	860.00
Fe+++	50.00	2.69
Ba++	0.00	0.00
Na+	25335.88	1101.56
Mn++	0.00	0.00

ANIONS:

Cl-	108000.00	3042.25
SO4--	960.00	20.00
HCO3-	122.00	2.00
CO3--	0.00	0.00
OH-	0.00	0.00
S-	0.00	0.00

TOTAL HARDNESS.....: 1960.00

TOTAL SOLIDS (quantitative).....: 166959.90

RESIDUAL HYDROCARBONS(ppm).....: 0.00

ø = not determined

DISSOLVED GASES

Hydrogen Sulfide, H2S.....:	0.0
Carbon Dioxide, CO2.....:	39.6
Oxygen, O2.....:	0.0

PHYSICAL PROPERTIES

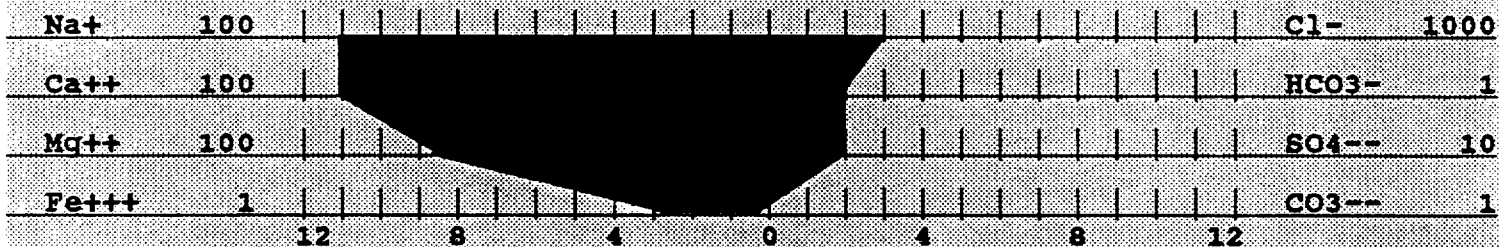
pH.....:	5.5
Specific Gravity.....:	1.125
TDS (calculated) ppm.....:	166959.9
TIS (calculated)	4.1

SCALE STABILITIES

Temp.	°C	°F	CaCO3	CaSO4	BaSO4
	20	68	-3.37	1068	1
	30	86	-3.46	1176	1
	40	104	-3.36	1443	1
Max entity, (calculated):				1432	0

WATER ANALYSIS PATTERN

(number beside ion symbol indicates me/l scale unit)



NOTES:

@20'C...CALCIUM SULFATE SCALING IS LIKELY.

@20'C...SEVERELY CORROSIVE.



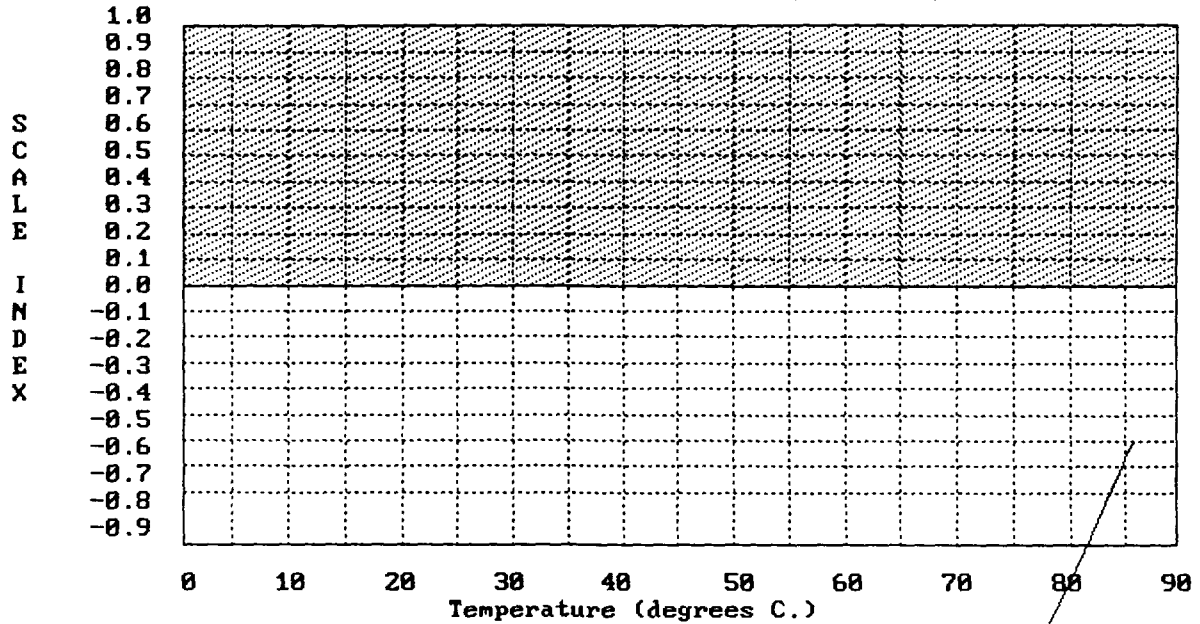
Water Analysis Report

Analysis Number : 000003383

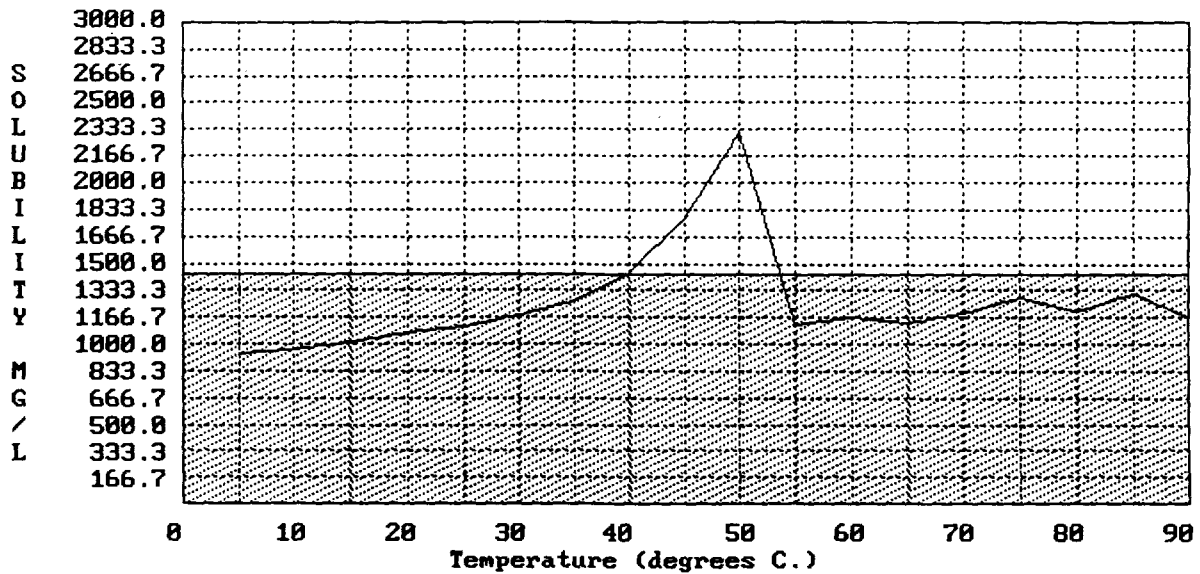
Company..... **Devon Energy**
Location.....
Field.....
Lease..... **Cactus St.**
Sample Source.... **Battery**

Date of Sampling..... **01/10/95**
Date of Analysis..... **01/10/95**
Baker Representative.: **Steven Stroud**
Well#..... **1,2,4**
Analysis by..... **Williams**

Calcium Carbonate Scaling Tendency



Calcium Sulfate Solubility



ATTACHMENT VIII

GEOLOGY AND LITHOLOGY

The depth of the local aquifer is +/- 300'. Depth to the nearest productive zone is 2184' (found in the SW SW Section 9, Township 21 South, Range 26 East in the Chi Energy Oxy State #2). The proposed interval for disposal are the siltstones and sandstones of the Upper Brushy Canyon member of the Delaware Mountain Group. The gross interval depth is 3980' to 4130'. There are no productive or prospective commercial oil or gas bearing zones within this interval in this interval in this bore hole.



**Halliburton Energy Services
Artesia District
Laboratory Report**

No. W273-94

TO: Devon Energy
1500 Mid America Tower
Oklahoma City, OK 73102

Date: November 17, 1994

This report is the property of Halliburton Energy Services and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management. It may, however, be used in the course of regular business operations by any person or persons and employees thereof receiving such report from Halliburton Energy Services.

Submitted by Dan TalleyDate Rec November 15, 1994

Well No Cactus State Depth Formation
Field County Source Fresh Water

Resistivity.....	<u>12</u>	<u> </u>	<u> </u>
Specific Gravity.	<u>1.0</u>	<u> </u>	<u> </u>
pH.....	<u>6.35</u>	<u> </u>	<u> </u>
Calcium.....	<u>100 mp1</u>	<u> </u>	<u> </u>
Magnesium.....	<u>Less than 50 mp1</u>	<u> </u>	<u> </u>
Chlorides.....	<u>Less than 100 mp1</u>	<u> </u>	<u> </u>
Sulfates.....	<u>Nil</u>	<u> </u>	<u> </u>
Bicarbonates.....	<u>300 mp1</u>	<u> </u>	<u> </u>
Soluble Iron.....	<u>Nil</u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

Remarks:

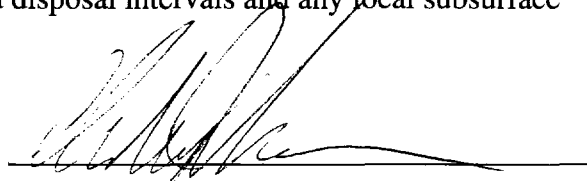
David McKenzie
Respectfully submitted

Analyst: David McKenzie -- Technical Advisor

NOTICE This report is for information only and the content is limited to the sample described. Halliburton makes no warranties, express or implied whether of fitness for a particular purpose, merchantability, or otherwise as to the accuracy of the contents or results. Any user of this report agrees Halliburton shall not be liable for any loss or damage regardless of cause, including any act or omission of Halliburton resulting from the use hereof.

ATTACHMENT XII

I have made an examination of the area encompassed by a circle with a radius of one mile, centered on the subject bore hole, and have found no geologic evidence of a hydrologic connection between the proposed disposal intervals and any local subsurface sources of drinking water.

A handwritten signature in black ink, appearing to read 'Alan W. Jackson', is written over a horizontal line.

Alan W. Jackson
District Geologist

ATTACHMENT XIII

PROOF OF NOTICE

Devon Energy Corporation (Nevada) operates all wells in Sections 15 and 16 as well as the two Morrow gas wells in Section 9. Chi Operating has been provided a copy of our application by certified mail. Proof of notice is enclosed. Chi operates the one shallow Delaware oil well (Hondo Federal #2) within the 1/2 mile radius in Section 9. The State of New Mexico is the surface owner of the forty acre tract that the State L #1 Applicant well resides on in Section 10.

PROOF OF PUBLICATION

Proof of publication from the Carlsbad Current-Argus is enclosed.

Affidavit of Publication

No 16295

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:

October 27, 1994
_____, 19____
_____, 19____
_____, 19____
_____, 19____
_____, 19____

That the cost of publication is \$ 23.36,
and that payment thereof has been made and will
be assessed as court costs.

Amy McKay

Subscribed and sworn to before me this

28th day of October, 1994

Donna Crump

My commission expires 8/01/98
Notary Public

October 27, 1994	and a maximum pressure of 1000 psig are expected.
Legal Advertisement	Interested parties must file objections or requests for hearing within 15 days to the following commission:
Notice is hereby given that Devon Energy Corporation (Nevada) is applying to the New Mexico Oil Conservation Division to convert the following well to a salt water disposal well:	Oil Conservation Division P.O. Box 2088 Santa Fe, NM 87501
State L #1 1980' FSL & 660' FEL Section 10-T21S-R26E Eddy County, NM	Charles W. Iloraman District Energy Corporation (Nevada) 20 North Broadway, Suite 1500 Oklahoma City, OK 73102 (405) 552-4508
The intended purpose of this well is to dispose produced Delaware water. Maximum injection rates of 2000 bwpd	



ENERGY CORPORATION

20 North Broadway, Suite 1500
Oklahoma City, Oklahoma 73102-8260

Telephone 405/235-3611
FAX 405/552-4550

October 6, 1995

Certified Mail No. P 080 276 356

Chi Operating, Inc.
Post Office Box 1799
Midland, Texas 79702

RE: State L #1
Salt Water Disposal Application
Section L-10-T21S-R26E
660' FWL & 1980' FSL
Eddy County, New Mexico

Gentlemen:

Enclosed is a copy of our Application for Authorization to Inject for the State L #1. As required by the Oil Conservation Division of New Mexico, we are notifying the offset operators of our intent.

Sincerely,

DEVON ENERGY CORPORATION (NEVADA)

Candace R. Graham
Engineering Tech.

/cg
Enclosures