

December 1, 1989

New Mexico Oil Conservation Commission
State Land Office Building
P.O. Box 2088
Santa Fe, New Mexico 87504

Subject: Carson Unit Well No. 21-19
660' FNL, 1980' FWL
Sec. 19, T 25N, R 11W

Dear Sir:

Enclosed for your approval is our Application for
Authorization to Inject for the above referenced well. Upon
receipt, an Affidavit of Publication will be forwarded to
you.

Very truly yours,

Bruce E. Delventhal

Bruce E. Delventhal
Vice President - Operations

BED/das

Enclosures

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Hixon Development Company
 Address: P.O. Box 2810, Farmington, New Mexico 87499
 Contact party: Bruce E. Delventhal Phone: (505) 326-3325

- 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 Notices" 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: Bruce E. Delventhal Title Vice President - Operations

Signature: Bruce E. Delventhal Date: December 1, 1989

* 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.

Hixon Development Company
Application for Authorization to Inject
Form C-108 Supplemental Information

Carson Unit Well No. 21-19
NE/4, NW/4, Section 19, T 25N, R 11W
San Juan County, New Mexico

- I. Shown on Application.
- II. Shown on Application.
- III. Well data attached.
- IV. This well is located in Federal and State approved waterflood project operational since 1959.
- V. Area of review is shown on attached map.
- VI. Information for wells located in area of review are attached as follows:

Carson Unit Well No. 14-18 ✓
Carson Unit Well No. 23-18
Carson Unit Well No. 24-18 ✓
Carson Unit Well No. 34-18 ✓
Carson Unit Well No. 11-19
Carson Unit Well No. 12-19
Carson Unit Well No. 22-19
Carson Unit Well No. 23-19
Carson Unit Well No. 31-19
Carson Unit Well No. 32-19
Carson Unit Well No. 41-19
Carson Unit Well No. 41-24
- VII.
 1. Proposed average injection rate is 600 bwpd, expected maximum injection rate is 1200 bwpd.
 2. This system will be closed.
 3. Average injection pressures are expected to be in the 800-973 psi range. Maximum injection pressure will be 973 psi.
 4. Refer to the attached water analysis report. Since the formation water to be encountered is primarily previously injected water, no problems are expected in mixing the two waters.

5. This well is part of an extensive waterflood project active in the Carson Unit since 1959. All produced water is reinjected into the oil productive Lower Gallup sand to maintain pressure. Injection into the Lower Gallup sand is for waterflooding, not disposal.

- VIII. The injection zone is the Lower Gallup sandstone. This zone is to be 51' in thickness with a top of 4860' KB as shown on the SP log previously submitted. No known sources of underground drinking water exist in this area. Water well drilling in this area has shown the Ojo Alamo to be dry.

- IX. The well will be acidized if required to maintain injection rate and pressure.

- X. Logs were previously submitted.

- XI. No known sources of drinking water exist in this area.

- XII. This well is part of the existing approved waterflood operation for the Carson Unit. It is not a disposal well.

- XIII. Proof of notification attached.

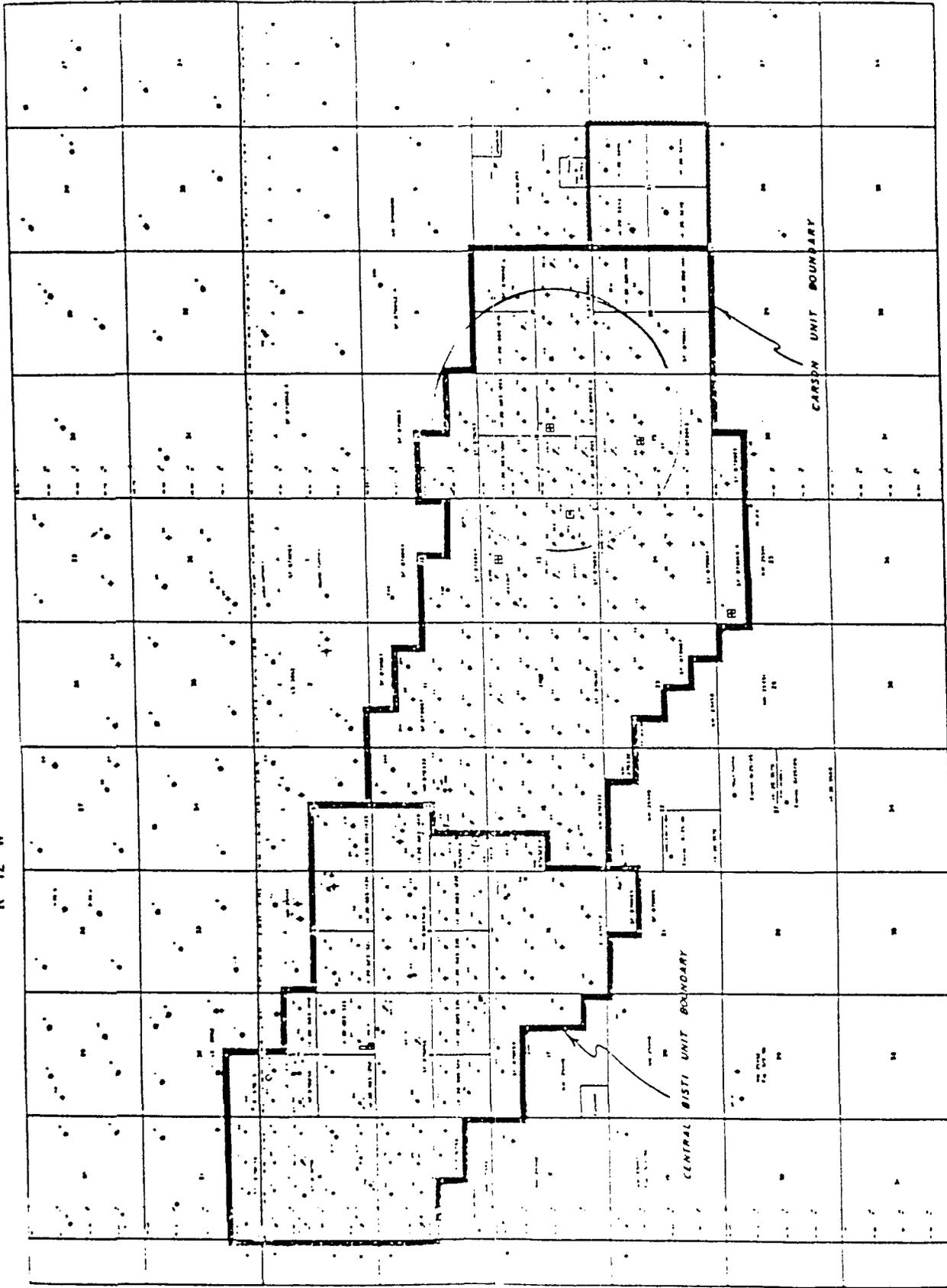
- XIV. Certification shown on Application.

R 11 W

R 12 W

T 26 N

T 25 N



HIXON DEVELOPMENT COMPANY
 CENTRAL BISTI - CARSON UNIT AREA
 San Juan County, New Mexico
 1000' 0" = 1 MILE
 1" = 100' 0"

1000' 0" = 1 MILE
 1" = 100' 0"

San. & testing labo. inc.

907 WEST APACHE • P O BOX 2079 • FARMINGTON, NEW MEXICO

PHONE
327-4966

Date June 10, 1977

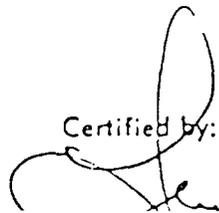
Report to Hixon Development Company
 Requested by A. Kuchera, Mgr. Sampled by Hixon Personnel
 Project CBU #5 Location NW NW Sec. 6, T25N, R12W
 Source of Material Lower Gallup Produced Water
 Lab No. 24509 Water Analysis for Petroleum Engineering

TEST RESULTS

WATER ANALYSIS FOR PETROLEUM
ENGINEERING

<u>Constituent</u>		<u>Constituents</u>		
Total Solids	2263 ppm	<u>Cations</u>	Meg/L	ppm
Resistivity	7.25	Sodium	29.3	674
Conductivity	2.94 ohms/meter @70°F	Calcium	2.3	45
	3,400 micromhos/cm @ 70°F	Magnesium	0.5	6
		Iron	neg.	3
		Barium	0	0
<u>Comments</u>		<u>Anions</u>		
Essentially this is a 0.2% sodium sulfate solution.		Chloride	4.1	145
		Bicarbonate	4.0	244
		Carbonate	0	0
		Hydroxide	0	0
		Sulfate	24.0	1150

Copies to Hixon Development Co. (3)
P.O. Box 2810
Farmington, New Mexico 87401

Certified by:






INJECTION WELL

DATA SHEET

III. WELL DATA

PART A

1. Carson Unit Well No. 21-19
660' FNL, 1980' FWL
Section 19, T 25N, R 11W
2. Surface Casing
Hole Size: 12-1/4"
Casing: 8-5/8", 24#
Setting Depth: 203'

Production Casing
Hole Size: 7-7/8"
Casing: 4-1/2"
Setting Depth: 5012'

PBD: 5022'
3. Tubing: 2-3/8"
Setting Depth: 4803'
4. Packer: Baker Model "AD-1" Packer
Set at 4665'

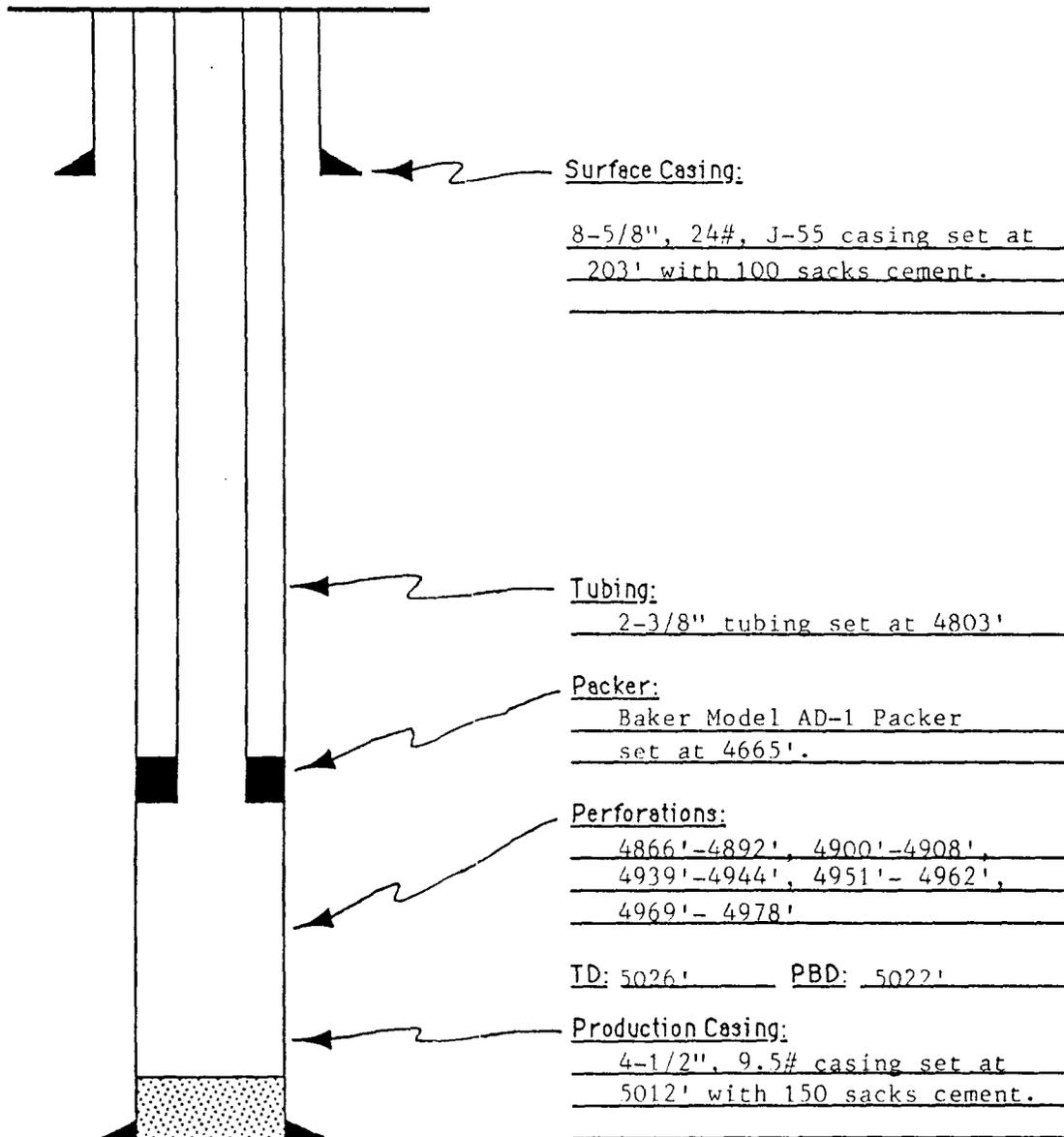
PART B

1. Injection Formation: Bisti Lower Gallup
Field or Pool Name: Bisti Lower Gallup
2. Perforated Injection Intervals: 4866'-4892', 4900'-4908',
4939'-4944', 4951'-4962',
4969'-4978'
3. Well was drilled as a producing well.
4. None
5. Next Higher Oil and Gas Zone: Pictured Cliffs at 1238'
Next Lower Oil and Gas Zone: Dakota at Unknown Depth

Hixon Development Company
Injection Well Schematic

Well Name: Carson Unit Well No. 21-19

Legal Location: 660' FNL, 1980' FWL
Section 19, T 25N, R 11W
San Juan County, New Mexico



Hixon Development Company, P.O. Box 2810, Farmington, New Mexico 87499, (505) 326-3325, whose agent is Aldrich L. Kuchera hereby notifies interested parties that the following well is to be converted to a water injection well. Maximum rate will be 1200 BWPD at less than 973 psi. Any request for information or objections should be filed with the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504 within 15 days.

Carson Unit Well #21-19, NE/4 NW/4, Sec. 19, T25N, R11W

WELL DATA SHEET

<p>Well Name: Carson Unit #14-18</p> <p>Legal Description: 660' FSL, 662.8' FWL Sec. 18, T25N-R11W San Juan County, N.M.</p> <p>Well Type: P & A</p> <p>Spud Date: 01/17/58</p> <p>Surface Casing Hole Size: 12-1/4" Surface Casing Size: 8-5/8" Surface Casing Depth: 100.5'</p> <p>Cementing Record: 100 sx. ✓</p> <p>Production Casing Hole Size: 7-7/8" Production Casing Size: 4-1/2" Production Casing Depth: 5023'</p> <p>Cementing Record: 150 sx.</p> <p>Perforations: 4877'-4904' 4911'-4923' 4951'-4957' 4962'-4976' 4980'-4997'</p> <p>Plug-Back Depth: 5020'</p> <p>Total Depth: 5025'</p>	<p>Abandonment marker</p> <p>25 sk. plug at base of surface casing (100'-15')</p> <p>35 sk. plug at 320' (380'-201')</p> <p>45 sk. plug at csg. stub (1400'-1247')</p> <p>Shot off 4-1/2" casing at 1400'</p> <p>7-7/8" hole</p> <p>25 sk. plug over perforations (4941'-4626')</p>	
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WELL DATA SHEET

Well Name:	Carson Unit #23-18
Legal Description:	1980' FSL, 1888' FWL Sec. 18, T25N-R11W San Juan County, N.M.
Well Type:	Water Injection Well (awaiting approval)
Spud Date:	02/16/58
Surface Casing Hole Size:	12-1/4"
Surface Casing Size:	8-5/8"
Surface Casing Depth:	102'
Cementing Record:	100 sx.
Production Casing Hole Size:	7-7/8"
Production Casing Size:	4-1/2"
Production Casing Depth:	5006'
Cementing Record:	150 sx.
Perforations:	4875'-4891' 4901'-4913' 4944'-4951' 4965'-4970' 4974'-4984'
Plug-Back Depth:	5006'
Total Depth:	5010'

WELL DATA SHEET

Well Name: Carson Unit #24-18

Legal Description: 660' FSL, 1930' FWL
Sec. 18, T25N-R11W
San Juan County, N.M.

Well Type: Water Injection Well
(awaiting approval)

Spud Date: 04/28/59

Surface Casing Hole Size: 12-1/4"
Surface Casing Size: 8-5/8"
Surface Casing Depth: 106'

Cementing Record: 100 sx.

Production Casing Hole Size: 7-7/8"
Production Casing Size: 4-1/2"
Production Casing Depth: 5007'

Cementing Record: 150 sx.

Perforations: 4861'-4889'
4894'-4902'
4934'-4941'
4946'-4960'
4963'-4976'

Plug-Back Depth: 5007'

Total Depth: 5010'

WELL DATA SHEET

Well Name:	Carson Unit #34-18
Legal Description:	660' FSL, 1980' FEL Sec. 18, T25N-R11W San Juan County, N.M.
Well Type:	Oil Well
Spud Date:	08/17/57
Surface Casing Hole Size:	12-1/4"
Surface Casing Size:	8-5/8"
Surface Casing Depth:	176'
Cementing Record:	100 sx.
Production Casing Hole Size:	7-7/8"
Production Casing Size:	4-1/2"
Production Casing Depth:	5010'
Cementing Record:	150 sx.
Perforations:	4869'-4886' 4900'-4908' 4952'-4958' 4971'-4978'
Plug-Back Depth:	4995'
Total Depth:	5014'

WELL DATA SHEET

Well Name: Carson Unit #11-19

Legal Description: 660' FNL, 662.8' FWL
Sec. 19, T25N-R11W
San Juan County, N.M.

Well Type: P & A

Spud Date: 06/09/59

Surface Casing Hole Size: 12-1/4"
Surface Casing Size: 8-5/8"
Surface Casing Depth: 103'

Cementing Record: 100 sx.

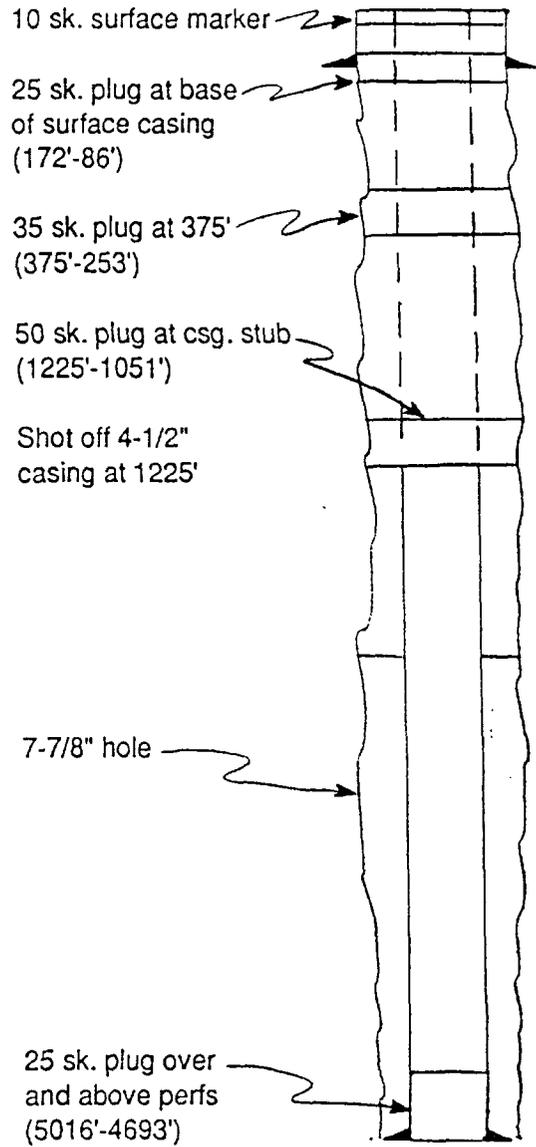
Production Casing Hole Size: 7-7/8"
Production Casing Size: 4-1/2"
Production Casing Depth: 5016'

Cementing Record: 150 sx.

Perforations:
4854'-4880'
4889'-4896'
4927'-4932'
4940'-4952'
4959'-4970'

Plug-Back Depth: 5016'

Total Depth: 5020'



WELL DATA SHEET

Well Name: Carson Unit #12-19

Legal Description: 1977' FNL, 660' FWL
Sec. 19, T25N-R11W
San Juan County, N.M.

Well Type: Oil Well

Spud Date: 08/25/57

Surface Casing Hole Size: 12-1/4"
Surface Casing Size: 8-5/8"
Surface Casing Depth: 173'

Cementing Record: 100 sx.

Production Casing Hole Size: 7-7/8"
Production Casing Size: 4-1/2"
Production Casing Depth: 5022'

Cementing Record: ✓ 150 sx.

Perforations: 4866'-4881'
4897'-4903'
4932'-4939'
4947'-4959'
4965'-4974'

Plug-Back Depth: 4980'

Total Depth: 5030'

WELL DATA SHEET

Well Name:	Carson Unit #22-19	10 sk. surface marker	
Legal Description:	1980' FNL, 1980' FWL Sec. 19, T25N-R11W San Juan County, N.M.	25 sk. plug at base of surface casing (170'-84')	
Well Type:	P & A	35 sk. plug at 400' (400'-278')	
Spud Date:	03/11/60	50 sk. plug at csg. stub (694'-520')	
Surface Casing Hole Size:	12-1/4"	Shot off 4-1/2" casing at 694'	
Surface Casing Size:	8-5/8"		
Surface Casing Depth:	108'	20 sk. plug across perfs (1300'-1041').	
Cementing Record:	100 sx.	Drilled out cmt. to 1300'.	
Production Casing Hole Size:	7-7/8"	Perf.'d csg. at 1195'. Set retainer at 1145' and pumped 75 sx. thru retainer.	
Production Casing Size:	4-1/2"		
Production Casing Depth:	5027'	Perf.'d csg. at 1325'. Set retainer at 1300' and pumped 125 sx. thru retainer.	
Cementing Record:	150 sx.		
Perforations:	4868'-4888' 4898'-4905' 4934'-4942' 4952'-4962' 4968'-4980'	Set cmt. retainer at 4782' and pumped 100 sx. cmt. thru cmt. retainer.	
	<u>January 1976</u> 1218'-1224' 1234'-1244'		
Plug-Back Depth:	5027'		
Total Depth:	5030'		

WELL DATA SHEET

Well Name:	Carson Unit #23-19
Legal Description:	1980' FSL, 1980' FWL Sec. 19, T25N-R11W San Juan County, N.M.
Well Type:	Oil Well
Spud Date:	12/12/58
Surface Casing Hole Size:	12-1/4"
Surface Casing Size:	8-5/8"
Surface Casing Depth:	101'
Cementing Record:	100 sx.
Production Casing Hole Size:	✓ 7-7/8"
Production Casing Size:	4-1/2"
Production Casing Depth:	4974'
Cementing Record:	150 sx.
Perforations:	4842'-4863' 4908'-4920' 4926'-4940' 4944'-4955'
Plug-Back Depth:	4974'
Total Depth:	4975'

WELL DATA SHEET

Well Name: Carson Unit #31-19

Legal Description: 660' FNL, 1973.5' FEL
Sec. 19, T25N-R11W
San Juan County, N.M.

Well Type: P & A

Spud Date: 12/08/59

Surface Casing Hole Size: 12-1/4"
Surface Casing Size: 8-5/8"
Surface Casing Depth: 105'

Cementing Record: 100 sx.

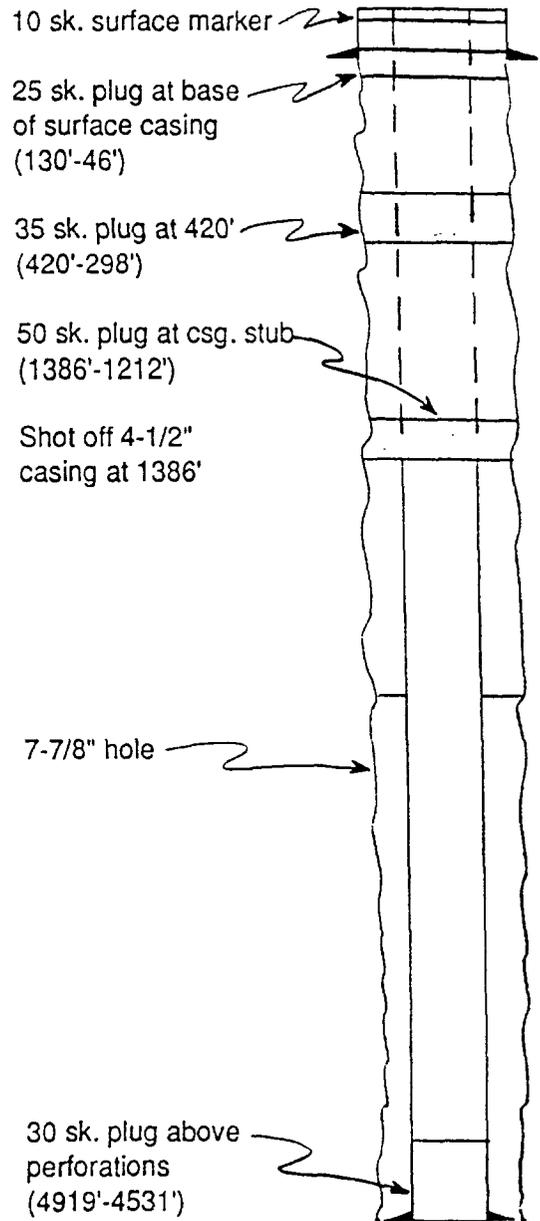
Production Casing Hole Size: 7-7/8"
Production Casing Size: 4-1/2"
Production Casing Depth: 5029'

Cementing Record: 150 sx.

Perforations:
4867'-4895'
4900'-4910'
4922'-4926'
4940'-4944'
4952'-4958'
4964'-4970'
4976'-4982'

Plug-Back Depth: 5029'

Total Depth: 5030'



WELL DATA SHEET

Well Name: Carson Unit #32-19

Legal Description: 1980' FNL, 1980' FEL
Sec. 19, T25N-R11W
San Juan County, N.M.

Well Type: P & A

Spud Date: 03/03/58

Surface Casing Hole Size: 12-1/4"
Surface Casing Size: 8-5/8"
Surface Casing Depth: 108'

Cementing Record: 100 sx.

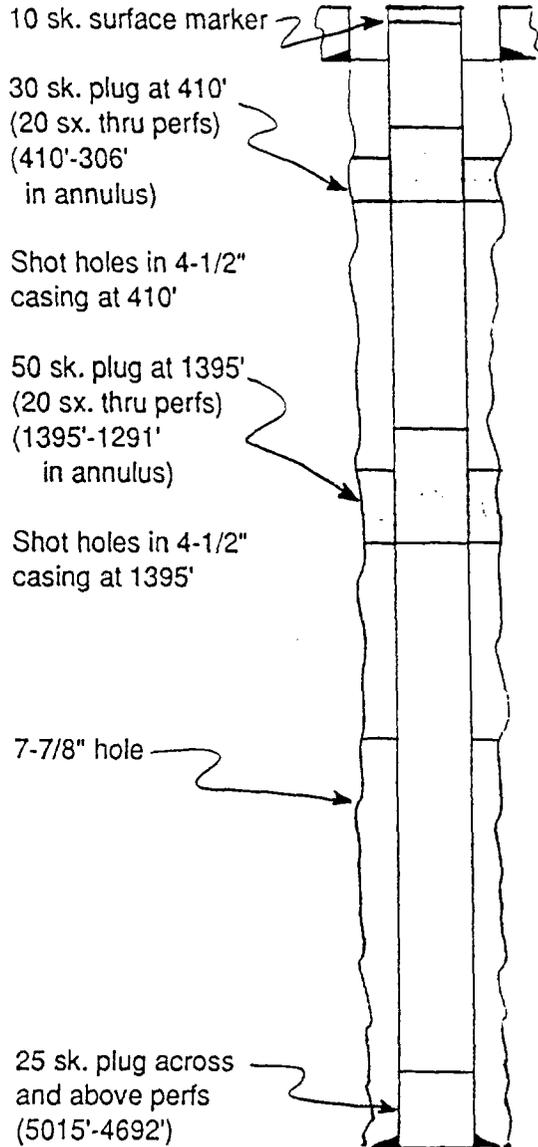
Production Casing Hole Size: 7-7/8"
Production Casing Size: 4-1/2"
Production Casing Depth: 5015'

Cementing Record: 150 sx.

Perforations:
4873'-4900'
4908'-4918'
4947'-4954'
4961'-4976'
4981'-4991'

Plug-Back Depth: 5015'

Total Depth: 5015'



WELL DATA SHEET

Well Name:	Carson Unit #41-19
Legal Description:	660' FNL, 660' FEL Sec. 19, T25N-R11W San Juan County, N.M.
Well Type:	Oil Well
Spud Date:	02/24/58
Surface Casing Hole Size:	12-1/4"
Surface Casing Size:	8-5/8"
Surface Casing Depth:	107'
Cementing Record:	100 sx.
Production Casing Hole Size:	✓ 7-7/8"
Production Casing Size:	4-1/2"
Production Casing Depth:	4986'
Cementing Record:	150 sx.
Perforations:	4865'-4880' 4885'-4892' 4900'-4910' 4941'-4946' 4951'-4968' 4972'-4982'
Plug-Back Depth:	4985'
Total Depth:	4990'

WELL DATA SHEET

Well Name: Carson Unit #41-24

Legal Description: 660' FNL, 660' FEL
Sec. 24, T25N-R12W
San Juan County, N.M.

Well Type: P & A

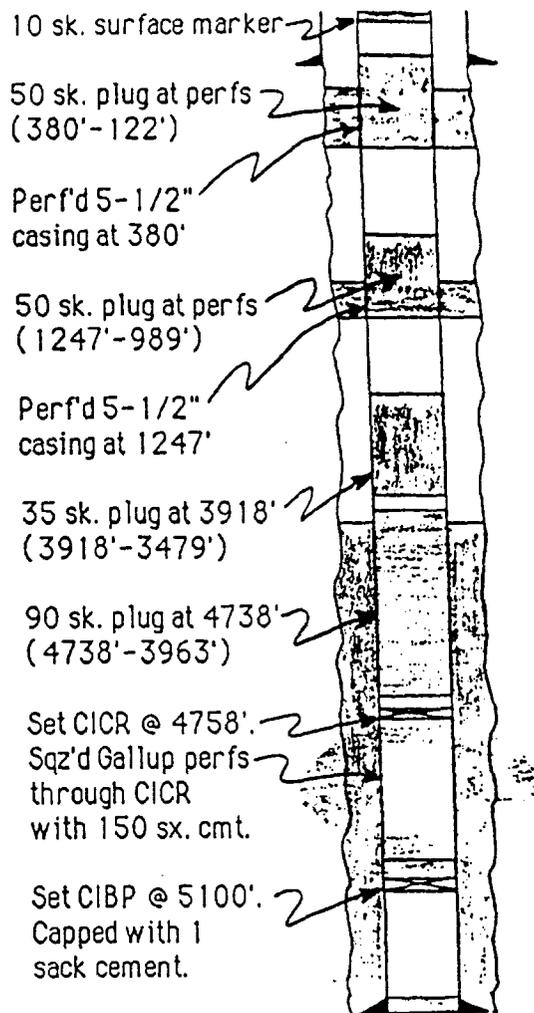
Spud Date: 07/19/56

Surface Casing Hole Size: 11"
Surface Casing Size: 8-5/8"
Surface Casing Depth: 228'
Cementing Record: 100 sx.

Production Casing Hole Size: 7-7/8"
Production Casing Size: 5-1/2" ✓
Production Casing Depth: 5967'
Cementing Record: 300 sx.

Perforations: 5585'-5587' (Dakota)
4875'-4895' (Gallup)
3860'-3900' (Mancos)

Plug-Back Depth: 5924'
Total Depth: 5983'



AFFIDAVIT OF PUBLICATION

Copy of Publication

No. 24496

STATE OF NEW MEXICO,
County of San Juan:

Betty Shipp being duly
sworn, says: That he is the National Ad Manager of
THE FARMINGTON DAILY TIMES, a daily newspaper of general circulation
published in English at Farmington, said county and state, and that the
hereto attached Legal Notice

was published in a regular and entire issue of the said FARMINGTON DAILY
TIMES, a daily newspaper duly qualified for the purpose within the
meaning of Chapter 167 of the 1937 Session Laws of the State of New
Mexico for One consecutive (days) (~~weeks~~) on the same day as
follows:

First Publication Wednesday, December 6, 1989

Second Publication _____

Third Publication _____

Fourth Publication _____

and that payment therefor in the amount of \$6.27
has been made.

Betty Shipp

Subscribed and sworn to before me this 6th day
of December, 1989.

J. Shorter
NOTARY PUBLIC, SAN JUAN COUNTY, NEW MEXICO

My Commission expires: June 23, 1990

NOTICE
Hixon Development Company,
P.O. Box 2810, Farmington, New
Mexico 87499, (505) 326-3325
whose agent is Aldrich L. Kuchera
hereby notifies interested parties
that the following well is to be con-
verted to a water injection well.
Maximum rate will be 1200 BWPD
at less than 973 psi. Any request
for information or objections
should be filed with the Oil Con-
servation Division, State Land Of-
fice Building, P.O. Box 2088, Santa
Fe, New Mexico 87504 within 15
days.
Carson Unit Well #21-19, NE/4
NW/4, Sec. 19, T25N, R11W.
Legal No. 24496 published in
the Farmington Daily Times, Farm-
ington, New Mexico on Wednes-
day, December 6, 1989.



STATE OF NEW MEXICO
 ENERGY AND MINERALS DEPARTMENT
 OIL CONSERVATION DIVISION
 AZTEC DISTRICT OFFICE AM 8 59

GARREY CARRUTHERS
 GOVERNOR

11111 RIO HIAZOS ROAD
 AZTEC, NEW MEXICO 87410
 (505) 334-6178

Date: 12-6-89

D. C. [Signature]

Oil Conservation Division
 P.O. Box 2088
 Santa Fe, NM 87504-2088

Re: Proposed MC _____
 Proposed DHC _____
 Proposed NSL _____
 Proposed SWD _____
 Proposed WFX _____
 Proposed PMX X _____

Gentlemen:

I have examined the application dated 12-4-89
 for the Hiker Development Co. Carson Unit ²¹⁻¹⁹
 Operator Lease & Well No.

K- C-19-25N-1111 and my recommendations are as follows:
 Unit, S-T-R

[Signature]

Yours truly,

[Signature]