

CASE 4786: Application of HIGH-
LAND PRODUCTION FOR SALT WATER
DISPOSAL, LEA COUNTY, NEW MEXICO.

Card 6
Aug 23.

Case Number
4786

Application

Transcripts

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
STATE LAND OFFICE
SANTA FE, NEW MEXICO

Wednesday, August 23, 1972 at 2:30 P. M.

EXAMINER HEARING

IN THE MATTER OF:)

Application of Highland)
Production Company for)
salt water disposal, Lea)
County, New Mexico.)

Case No. 4786

BEFORE: RICHARD L. STAMETS, Examiner

TRANSCRIPT OF HEARING

dearnley, meier & mc cormick

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1216 FIRST NATIONAL BANK BLDG. EAST • ALBUQUERQUE, NEW MEXICO 87108

P R O C E E D I N G S

MR. HATCH: Case 4786, Application of Highland Production Company for salt water disposal, Lea County, New Mexico.

MR. TOM KELLAHIN: Tom Kellahin, Kellahin and Fox, Santa Fe, appearing for the applicant Highland Production Company and I have one witness to be sworn.

(Whereupon, Mr. Bill J. Graham was called to the stand and sworn.)

MR. BILL J. GRAHAM

having been first duly sworn according to law, upon his oath, testified as follows:

DIRECT EXAMINATION

BY MR. TOM KELLAHIN:

Q Will you please state your name and residence?

A My name is Bill J. Graham. I live in Midland, Texas.

Q What is your occupation?

A I am a consulting petroleum engineer.

Q What is your relationship with Highland Production Company?

A They have engaged me to represent them with this application.

Q Have you previously testified before this Commission or one of its Hearing Examiners and had your qualifications

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1 as a petroleum engineer made a matter of record?

2 A Yes.

3 Q Have you examined or are you familiar with the facts
4 surrounding this particular application?

5 A yes.

6 MR. KELLAHIN: Mr. Examiner, are the witness's
7 qualifications acceptable?

8 THE EXAMINER: They are.

9 Q (By Mr. Kellahin) Will you please state briefly, Mr.
10 Graham, what the applicant seeks by this application.

11 A What Highland Production seeks to do is to convert their
12 Russell Federal Well Number 6 in the East Mason field
13 which is in Unit letter K, Section 20, Township 26 South,
14 Range 32 East, to a salt water disposal well. What they
15 propose to do is to dispose of salt water in the Bell
16 Canyon section of the Delaware from their other producing
17 wells in the Russell Federal lease.

18 Q What exhibits do you have in support of this application?

19 A Well, I have a plat.

20 Q I show you Exhibit 1 and ask you to identify it and explain
21 what information it contains.

22 A This is a copy of the map made by Midland Map Company
23 which contains the area in question and it shows there
24 are no direct offsets other than Highland Production's
25 wells to the proposed injection well. The closest

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1 producing well owned by any other operator is approximately
2 one mile away and it is owned by Continental. It is also
3 Delaware production.

4 Q Will you locate for us the wells from which this salt
5 water is derived?

6 A It would be produced from the wells in Section 20 and
7 there is two wells in Section 17, well number 5 and well
8 number 8.

9 Q Those are the Highland Production wells?

10 A Those are the Highland Production wells.

11 Q Directing your attention to Exhibit Number 2, I ask you to
12 identify it and explain what information it contains.

13 A This is a radioactive log on the Russell Federal Number 6
14 and this shows the black line and immediately below it the
15 Bell Canyon section of the Delaware which indicates it
16 has porosity and indicates the depth of the hole is
17 forty-three seventy-six feet.

18 Q I show you Exhibit Number 3 and ask you to identify it
19 and explain what information it contains.

20 A This is a drawing of the well installation. This instal-
21 lation has already been made. The well has four and a
22 half inch casing at 4372 feet. The total depth is 4418
23 feet. It is an open hole section. It has a Guiberson
24 Packer set at 4,072 feet. It has plastic coated two-inch
25 tubing in the annulus between the tubing and casing and

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1 has been filled with fresh water.

2 Q Briefly, do you know the history of this well?

3 A Yes. The well was originally completed as a gas well.

4 It is high in the reservoir and after producing a small
5 amount of gas it started producing a small amount of water
6 and very little gas. The original completion was above
7 forty-three seventy-eight between forty-three seventy-two
8 and forty-three seventy-eight. This zone was then squeeze
9 cemented and the well was deepened with cable tools to
10 forty-four eighteen and it produced no oil and very little
11 water.

12 THE EXAMINER: What was it deepened to?

13 THE WITNESS: To forty-four eighteen.

14 Q (By Mr. Kellahin) What is the volume of water you seek to
15 inject?

16 A Well, the present production is approximately 60 barrels
17 of water per day from the wells that are on the Russell
18 Federal lease. We don't anticipate a greater volume than
19 that.

20 Q What is your pressure?

21 A 250 pounds.

22 Q In your opinion, will the approval of this application
23 prevent waste and not impair correlative rights?

24 A Yes.

25 Q Were Exhibits 1 through 3 prepared by you or under your

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1 supervision?

2 A Yes.

3 MR. KELLAHIN: Mr. Examiner, I move for the introduc-
4 tion of Exhibits 1 through 3.

5 THE EXAMINER: Without objection the exhibits will be
6 admitted. Any questions of the witness?

7
8 CROSS EXAMINATION

9 BY MR. RICHARD L. STAMETS:

10 Q Mr. Graham, you said that this is the East Mason field.
11 I notice down in Section 20 it says Mason North. Is that
12 an error?

13 A Yes. This is classified as the East Mason field. The
14 map company's notation Mason North is in error but the
15 East Mason is up right above 26 and 32.

16 Q So actually we have two different pools there. The closest
17 well you refer to, I believe, is in Section 19?

18 A Right. That is in the Mason North field.

19 Q Is the water that you will be injecting going into the
20 same zone as being produced in the other wells on this
21 lease?

22 A Yes.

23 Q So there should be no problem with water. Do you propose
24 a closed system or an open system?

25 A Closed.

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- 1 Q I believe you said a maximum anticipated pressure was
2 250 pounds; is that right?
- 3 A Right.
- 4 Q What was the volume per day?
- 5 A 50 barrels.
- 6 Q I notice a packer set some 200 feet above the base of the
7 pipe. Is there any particular reason for that?
- 8 A No. There is no particular reason. I think the reason
9 is because that is where they had the well tubing and
10 they took this tubing and had it plastic-coated and hauled
11 it back and somebody didn't plan on going ahead and putting
12 in another 300 feet.
- 13 Q The well was originally a gas well and it was deepened?
- 14 A Yes.
- 15 Q What was the result of the deepening?
- 16 A It got water.
- 17 Q Is there any information as to the top of the cement on
18 the four and a half inch casing?
- 19 A Yes. The top of the cement is at thirty-nine ninety by
20 temperature survey. The four and a half inch casing was
21 cemented with 100 sacks.
- 22 Q That would be about 100 feet above the packer?
- 23 A Right.
- 24 Q And some 300 feet above the casing shoe?
- 25 A Yes, almost 400 feet above the casing shoe.

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1 Q Then the injection interval will be from forty-three
2 seventy-two to forty-four eighteen?

3 A Right.

4 Q The annulus is loaded--will you have a gauge on that or
5 will it be left open to see if there is any leakage in the
6 tubing?

7 A We don't have a gauge on it now. They have had a gauge
8 on it. We will put one on it.

9 Q The other option is to just leave it open and see if there
10 is any leakage it will run out and you can see it?

11 A I think a gauge would be preferable.

12 Q Are there any other questions of the witness?
13 We will take the case under advisement.

14 * * * * *

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209 SIMMS BLDG., P.O. BOX 1092, PHONE 243-6661, ALBUQUERQUE, NEW MEXICO 87103
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I N D E X

WITNESS

PAGE

MR. BILL J. GRAHAM

Direct Examination by Mr. Tom Kellahin 3

Cross Examination by Mr. Richard L. Stamets 7

E X H I B I T S

PAGE

Exhibit No. 1 -
Plat 7

Exhibit No. 2 -
Radioactive log on Russell Federal
Number 6 7

Exhibit No. 3 -
Drawing of the well installation 7

1
2 STATE OF NEW MEXICO)
3 : ss.
4 COUNTY OF BERNALILLO)

5 I, MARCIA J. HUGHES, Court Reporter, do hereby certify
6 that the above and foregoing pages are a true and correct
7 transcript of the proceedings had before the New Mexico Oil
8 Conservation Commission on Wednesday, August 23, 1972.

9 *Marcia J. Hughes*
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I do hereby certify that the foregoing is
a true and correct transcript of the proceedings in
the Examiner hearing of Case No. 4486
heard by me on *August 23* 19 *72*
Richard L. Stamm, Examiner
New Mexico Oil Conservation Commission

dearnley, meier & mc cormick

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
CONFERENCE ROOM, STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

August 9, 1972

EXAMINER HEARING

IN THE MATTER OF:

Application of Highland Production
Company for salt water disposal,
Lea County, New Mexico.

Case No. 4786

BEFORE: Elvis A. Utz,
Examiner.

TRANSCRIPT OF HEARING

dearnley, meier & mc cormick

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1 MR. UTZ: The hearing will come to order, please.
2 We will call the docket first, since we have one continued
3 case and two cases that will be heard by Mr. Nutter at the
4 end of the docket. So if you want to mark your docket, we
5 will call them. Case 4786.

6 MR. HATCH: Case 4786: Application of Highland
7 Production Company for salt water disposal, Lea County, New
8 Mexico. The applicant request the case be continued to
9 August 23rd, 1972.

10 MR. UTZ: Case 4786 will be continued to August 23rd.
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1 STATE OF NEW MEXICO)
 2) SS
 3 COUNTY OF BERNALILLO)

4 I, RICHARD E. McCORMICK, a Certified Shorthand
 5 Reporter, in and for the County of Bernalillo, State of
 6 New Mexico, do hereby certify that the foregoing and attached
 7 Transcript of Hearing before the New Mexico Oil Conservation
 8 Commission was reported by me; and that the same is a true
 9 and correct record of the said proceedings to the best of
 10 knowledge, skill and ability.

11
 12 *Richard E. McCormick*

13 CERTIFIED SHORTHAND REPORTER

14
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 22 I do hereby certify that the foregoing is
 23 a complete record of the proceedings in
 24 the Examiner hearing of Case No. 4786,
 25 heard by me on August 7, 1972.
[Signature], Examiner
 New Mexico Oil Conservation Commission

dearnley, meier & mc cormick

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OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

September 8, 1972

Mr. Tom Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: Case No. 4786
Order No. R-4388
Applicant:
Highland Production

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other State Engineer Office and
Bureau of Land Management

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 4786
Order No. R-4388

APPLICATION OF HIGHLAND PRODUCTION
COMPANY FOR SALT WATER DISPOSAL,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 23, 1972, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 7th day of September, 1972, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Highland Production Company, is the owner and operator of the Russell Federal Well No. 6, located in Unit K of Section 20, Township 26 South, Range 32 East, NMPM, East Mason-Delaware Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Delaware formation, with injection into the open-hole interval from approximately 4,378 feet to 4,418 feet.

(4) That the injection should be accomplished through 2-inch plastic-lined tubing installed in a packer set at approximately 4,073 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge should be attached to the annulus at the surface in order to determine leakage in the casing, tubing, or packer.

(5) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

-2-

CASE NO. 4786
Order No. R-4388

IT IS THEREFORE ORDERED:

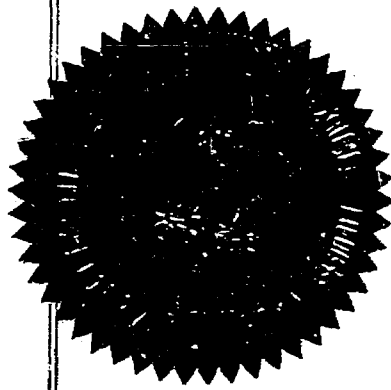
(1) That the applicant, Highland Production Company, is hereby authorized to utilize its Russell Federal Well No. 6, located in Unit K of Section 20, Township 26 South, Range 32 East, NMPM, East Mason-Delaware Pool, Lea County, New Mexico, to dispose of produced salt water into the Delaware formation, injection to be accomplished through 2-inch tubing installed in a packer set at approximately 4,073 feet, with injection into the open-hole interval from approximately 4,378 feet to 4,418 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus at the surface in order to determine leakage in the casing, tubing, or packer.

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Bruce King
BRUCE KING, Chairman

Alex J. Armijo
ALEX J. ARMJO, Member

A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

S E A L

dr/

(v continued from page 7 - Case 4806)

TOWNSHIP 8 SOUTH, RANGE 34 EAST, NMPM
SECTION 34: SE/4

(w) Extend the Vest Ranch-Queen Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 14 SOUTH, RANGE 30 EAST, NMPM
SECTION 21: SE/4

(x) Extend the Washington Ranch-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 25 SOUTH, RANGE 24 EAST, NMPM
SECTION 27: All
SECTION 35: W/2

TOWNSHIP 26 SOUTH, RANGE 24 EAST, NMPM
SECTION 3: All
SECTION 4: E/2

CASE 4786: (Continued from August 9, 1972, Examiner Hearing).

Application of Highland Production Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Delaware formation in the open-hole interval from 4378 feet to 4418 feet in its Russell Federal Well No. 6 located in Unit K of Section 20, Township 26 South, Range 32 East, East Mason-Delaware Pool, Lea County, New Mexico.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 9, 1972

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

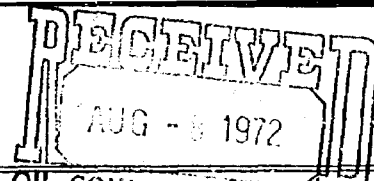
The following cases will be heard before Elvis A. Utz, Examiner, or Daniel S. Nutter, Alternate Examiner:

- CASE 4785: Application of Gulf Oil Corporation for rededication of acreage and a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of a 40-acre non-standard proration unit comprising the SE/4 NW/4 of Section 28 and an 80-acre non-standard proration unit comprising the W/2 NE/4 of Section 28; Township 21 South, Range 37 East, Blinbry Gas Pool, Lea County, New Mexico, to form a 120-acre non-standard proration unit. Applicant also seeks permission to produce the allowable assigned to said 120-acre unit from its Eunice King Wells Nos. 5 and 9 located, respectively, in Units F and G of said Section 28 in any proportion.
- CASE 4786: Application of Highland Production Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Delaware formation in the open-hole interval from 4378 feet to 4418 feet in its Russell Federal Well No. 6 located in Unit K of Section 20, Township 26 South, Range 32 East, East Mason-Delaware Pool, Lea County, New Mexico.
- CASE 4787: Application of Superior Oil Company for an unorthodox well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a gas well to test the Morrow and other formations at an unorthodox location 660 feet from the North line and 990 feet from the West line of Section 5, Township 23 South, Range 27 East, South Carlsbad Field, Eddy County, New Mexico, with the N/2 of said Section 5 to be dedicated to the well.
- CASE 4788: Application of Murphy H. Baxter for an unorthodox well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a producing well approximately in the center of the SW/4 of Section 18, Township 17 South, Range 33 East, Maljamar (Grayburg-San Andres) Pool, Lea County, New Mexico. Said well to be within the area of a waterflood project approved by Order No. R-2156.
- CASE 4789: Application of Humble Oil & Refining Company for special pool rules, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special rules for the Many Gates-Abo Pool, Chaves County, New Mexico, including provisions for 80-acre spacing units and wells to be located in the approximate center of the NE/4 or SW/4 of each quarter section.
- CASE 4790: Application of The Petroleum Corporation for special pool rules and a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules

Highland Production Company

W. NELSON REES, PRES.
MARVIN L. SMITH, V. PRES.
MRS C. O. SMITH, SEC. TREAS.

PHONES EM 2-2323 - LO 3-2088
OIL CONSERVATION COMM. BOX 6725
ODESSA, TEXAS 79660



August 7, 1972

mg

Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Att: Mr. George M. Hatch, Attorney

Re: Russell-Federal Well No. 6
Salt Water Disposal
Case #4786, Hearing of Aug. 9, 1972

Gentlemen:

It is requested that the above Case No. 4786 which was to be heard on August 9, 1972, be continued until August 23, 1972, due to our being unable to have a representative available at the hearing on August 9, 1972.

We wish to thank you for the information furnished to us during our telephone conversation of this date and are looking forward to receiving the New Mexico Rules governing our case.

Thanks again for your courtesy and help in this matter.

Very truly yours,

Highland Production Company

WNR

W. N. Rees

WNR:ww

DOCKET MAILED

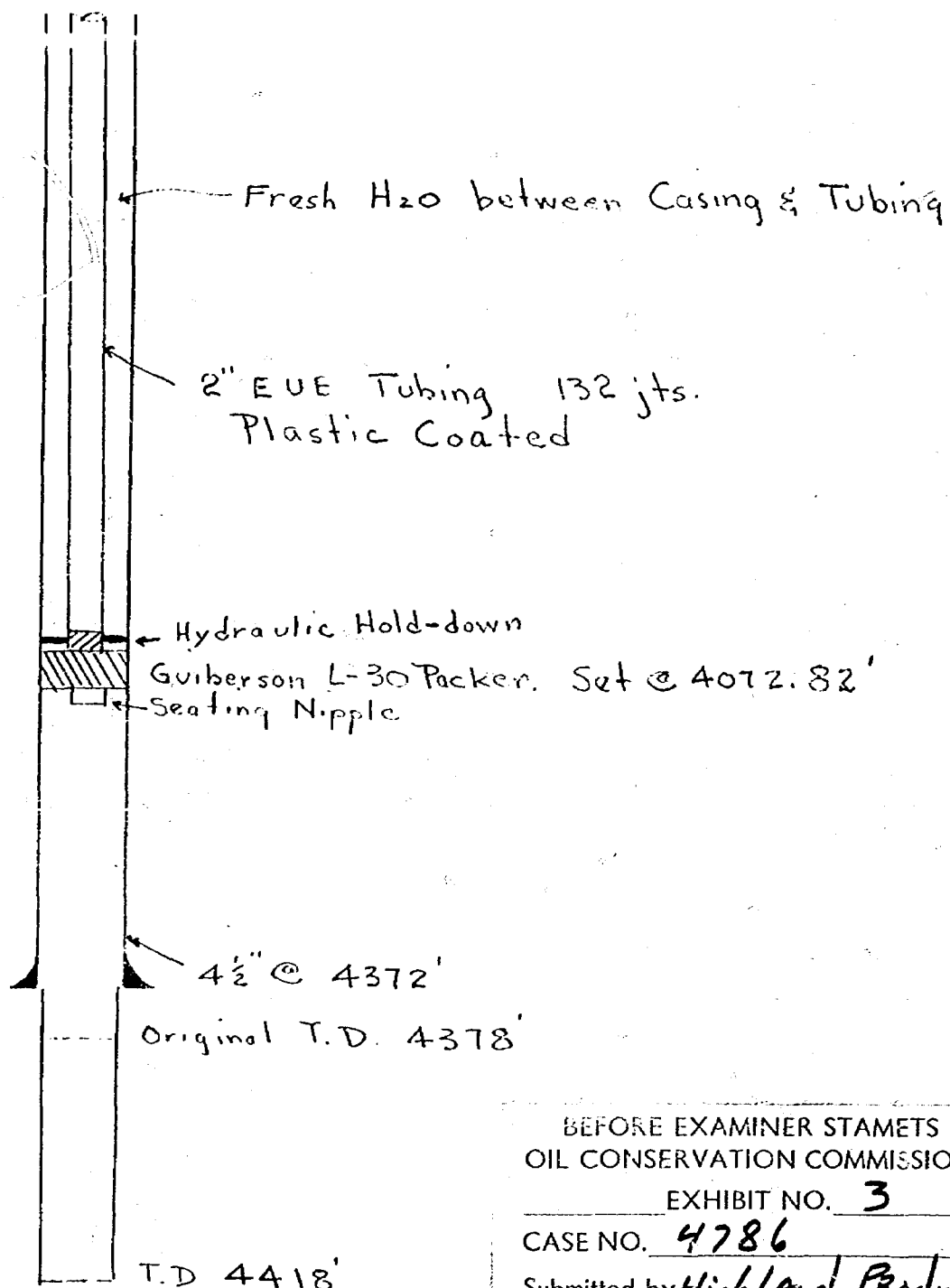
Date

HIGHLAND PRODUCTION COMPANY

RUSSELL-FEDERAL #6 K

5-27-72

INSTALLATION FOR DISPOSAL WATER



BEFORE EXAMINER STAMETS
OIL CONSERVATION COMMISSION

EXHIBIT NO. 3

CASE NO. 4786

Submitted by Highland Production

Hearing Date Aug 23, 1972

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

July 17, 1972

Case 4786

C
O
P
Y

Highland Production Company
P. O. Box 953
Midland, Texas 79701

Re: Russel Federal Well No. 6
Salt Water Disposal

Gentlemen:

As the above-described salt water disposal project cannot be granted administratively, we have set this for hearing before an examiner for August 9, 1972. A copy of the docket will be mailed to you at a later date.

Very truly yours,

GEORGE M. HATCH
Attorney

GMH/dr

DOCKET MAILED

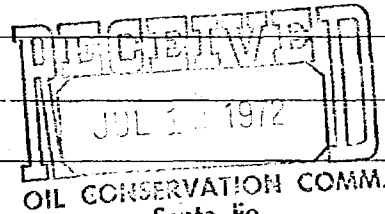
Date 7-27-72

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

Form C-108
Revised 3-1-68

OPERATOR Highland Production Company		ADDRESS Box 953, Midland, Texas 79701	
LEASE NAME Russell Federal	WELL NO. 6	FIELD East Mason	COUNTY Lea
LOCATION UNIT LETTER K WELL IS LOCATED 2431 FEET FROM THE SL LINE AND 1659 FEET FROM THE WL LINE, SECTION 20 TOWNSHIP 26S RANGE 32E NMPM. USA LC 068281-B			

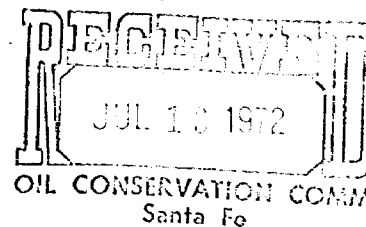
CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	10 3/4"	30'	30	circulated	visual observation
INTERMEDIATE	7"	1005'	250	circulated	visual observation
LONG STRING	4 1/2"	4372'	100	3990	Temp. survey
TUBING	2 3/8"	4072.82'	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson L-30 4072.82'		
NAME OF PROPOSED INJECTION FORMATION O.D.			TOP OF FORMATION 4378		BOTTOM OF FORMATION 4418
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing			PERFORATIONS OR OPEN HOLE? open hole		PROPOSED INTERVAL(S) OF INJECTION 4378 - 4418 R.T.
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No		IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Oil Production		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No	
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH Squeezed bottom of csg. with 50 sks cement prior to deepening.					
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA Above 1000'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA		DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA	
ANTICIPATED DAILY INJECTION VOLUME (BBLs.)	MINIMUM 40	MAXIMUM 60	OPEN OR CLOSED TYPE SYSTEM closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? pressure	APPROX. PRESSURE (PSI) 250
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - Yes			WATER TO BE DISPOSED OF Yes		NATURAL WATER IN DISPOSAL ZONE Yes
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Buck & Emma Russell - Address unknown (They have ORRI in lease.)			LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL Continental Oil Co., Box 431, Midland, Texas 79701		
					
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?		SURFACE OWNER No		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL No	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) Yes		PLAT OF AREA Yes		ELECTRICAL LOG Yes	
				DIAGRAMMATIC SKETCH OF WELL Yes	

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Lillian Jones Agent July 7, 1972
(Signature) (Title) (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

WELL DATA SHEET

[illegible]

HIGHLAND PRODUCTION CO.

WOLFGANG, et al -
Russell Federal Unit
No. 6-K

2341' FSL & 1659' FWL
Sec. 20, T-26-S, R-32-E
Lea County, New Mexico

WELL RECORD:

1. Well was drilled to 4374 with rotary tools
2. Casing record:
10 3/4" @ 30 w/30
7" @ 1005 w/250
4 1/2" @ 4372 w/100
3. Gamma ray log was run before 4 1/2" was set
4. Cable-tool rig moved in and drilled to 4378. "Heavy oil-cut-mud, then free oil, steady flow of gas @ 4369"

TREATMENT:

Tubing set OE at 4366;
100# naphthalene + 50# rock
salt; frac w/ 3,000 gal
lease crude + 3,000# 16-
20 sand; flowed back load
in 13 hrs.

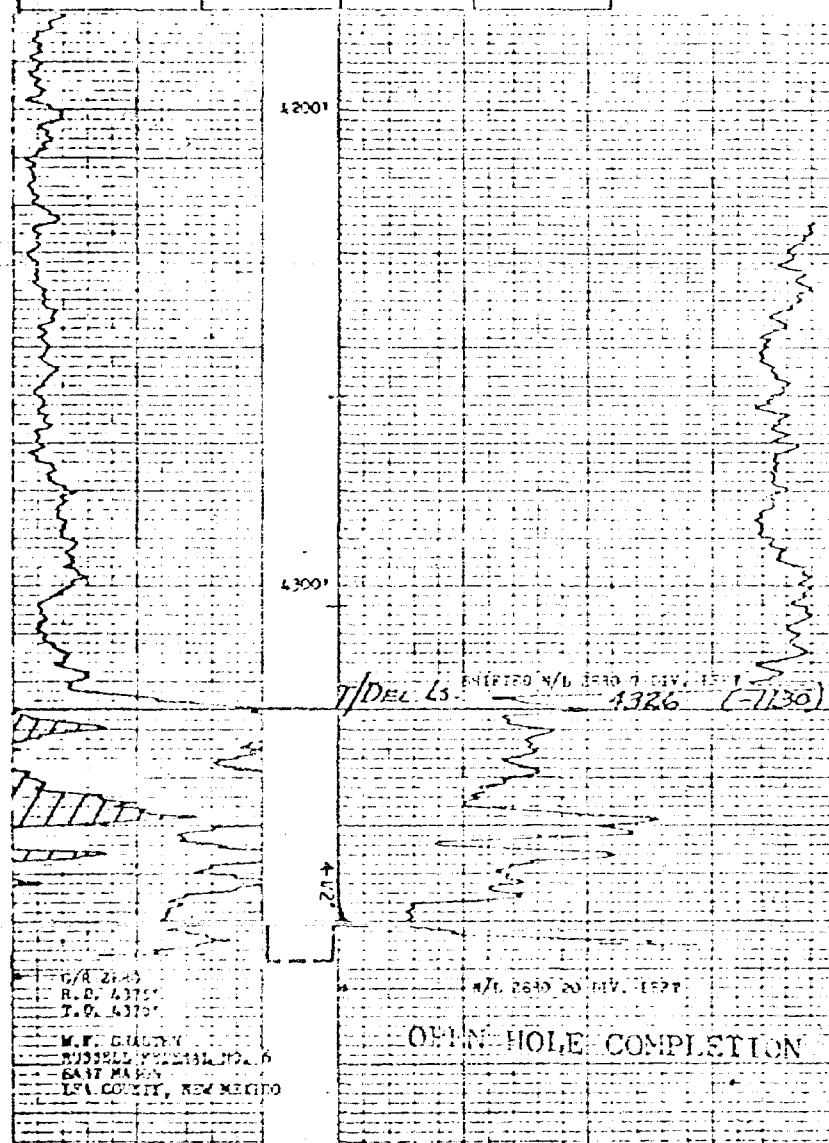
POTENTIAL:

IPF 1 BO + 1,099 MCFG PD

REMARKS:

Well was temporarily hooked up to Phillips Pipe line for testing. Ammended potential filed as:
CAOF 3.8 MM CFG PD

Original Completion.



C. ALLEN DORSEY

Petroleum Services

MIDLAND, TEXAS

Case 4786

P. O. BOX 4904

PHONE OX 4-1708

TEMPERATURE SURVEY

COMPANY WILLIAM F. GRAUTEN

LEASE RUSSELL-FEDERAL # 6

FIELD

COUNTY LEA, NEW MEXICO

SURVEY ORDERED BY: Wm. F. Grauten RUN BY: C. Allen Dorsey

SURVEY MEASURED FROM: KB ELEVATION

DRILLING MEASURED FROM: KB

DATE OF SURVEY 1-28-68 TIME 3:30 P.M.

DATE OF CEMENTING 1-28-68 TIME 3:30 A.M.

CEMENTED WITH 100 Sax Incore Neat

CASING SIZE: 4 1/2" SIZE OF HOLE 6 1/2"

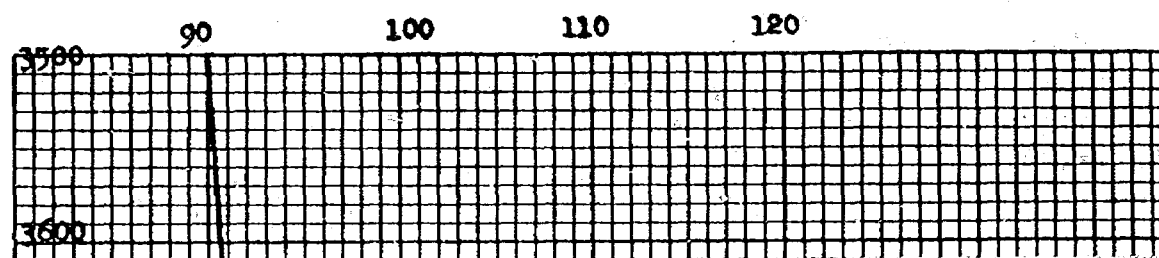
SURVEY BEGINS AT: 3500'

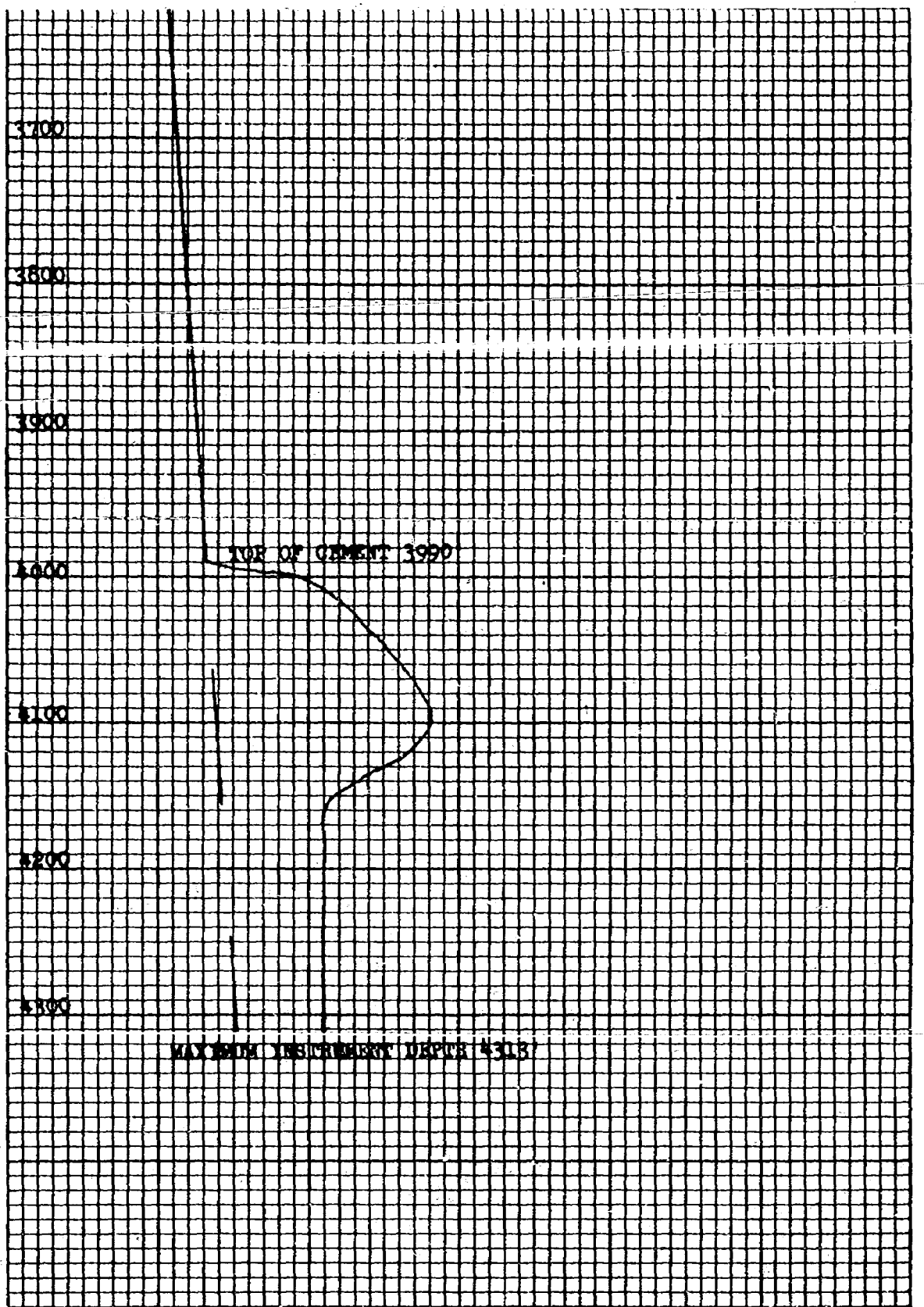
MAXIMUM INSTRUMENT DEPTH: 4313'

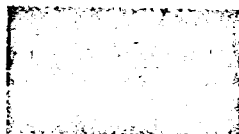
TOP CEMENT OUTSIDE CASING 3990' FROM KB

REMARKS:

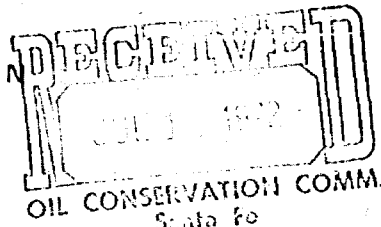
TEMPERATURE IN DEGREES FAHRENHEIT







TRETOLITE DIVISION
369 Marshall Avenue / Saint Louis, Missouri 63119
(314) WO 1-3500 / TWX 910 760-1650 / Telex 44-2417



WATER ANALYSIS REPORT

COMPANY Highland Production Co. ADDRESS LeaCo. N.M. DATE 6-5-72
SOURCE Russell-Federal Disp. Well DATE SAMPLED 5-30-72 ANALYSIS NO. 6166
Analysis Mg/L *Meq/L

1. PH 6.2
2. H₂S (Qualitative) Neg.
3. Specific Gravity 1.145
4. Dissolved Solids 201,476
5. Suspended Solids
6. Phenolphthalein Alkalinity (CaCO₃)
7. Methyl Orange Alkalinity (CaCO₃) 20
8. Bicarbonate (HCO₃) 24
9. Chlorides (Cl) 126,400
10. Sulfates (SO₄) 544
11. Calcium (Ca) 22,600
12. Magnesium (Mg) 4,787
13. Total Hardness (CaCO₃) 76,200
14. Total Iron (Fe) 26.0 ppm
15. Barium (Qualitative)
16.

HCO ₃	24	±61	0.4	HCO ₃
Cl	126,400	±35.5	3,561	Cl
SO ₄	544	±48	11	SO ₄
Ca	22,600	±29	1,130	Ca
Mg	4,787	±12.2	392	Mg
	76,200			
	26.0 ppm			

*Milli equivalents per liter

PROBABLE MINERAL COMPOSITION

1,130	Ca	←	HCO ₃	0.4
392	Mg	→	SO ₄	11
2,050	Na	→	Cl	3,561

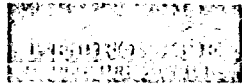
Saturation Values	Distilled Water 20°C
Ca CO ₃	13 Mg/L
Ca SO ₄ • 2H ₂ O	2,090 Mg/L
Mg CO ₃	103 Mg/L

Compound	Equiv. Wt.	X	Meq/L	Mg/L
Ca (HCO ₃) ₂	81.04		0.4	32
Ca SO ₄	68.07		11	749
Ca Cl ₂	55.50		1,119	62,105
Mg (HCO ₃) ₂	73.17			
Mg SO ₄	60.19			
Mg Cl ₂	47.62		392	18,660
Na HCO ₃	84.00			
Na ₂ SO ₄	71.03			
Na Cl	58.46		2,050	119,930

REMARKS Mr. Jim Walker - Box 6725 Odessa, Texas 79760
CC: Ligon - Worsham - Farish - file

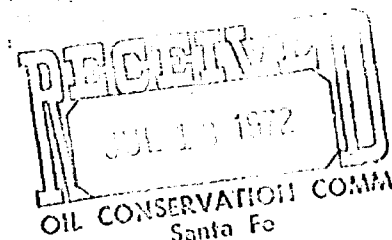
Respectfully submitted
TRETOLITE COMPANY

Ray Shaffner



TRETOLITE DIVISION

Case 4786



STABILITY INDEX CALCULATIONS

(Stiff-Davis Method)

CaCO₃ Scaling Tendency

SAMPLE

Sample Test No. #6166

Company

Sample Date

Address

Submitted by

Sample

Field

$$S. I. = pH - pCa - pAlk - K$$

where S. I. = stability index

pH = pH as measured on fresh sample

pCa = negative logarithm of calcium concentration

pAlk = negative logarithm of total alkalinity

K = constant, depends upon temperature and salt content

pH 6.2 pCa 0.60 pAlk 3.40

CALCULATION OF IONIC STRENGTH AND K VALUE

Na	(47,150)	X (2.2 X 10 ⁻⁵)	1.037
Ca	(22,600)	X (5.0 X 10 ⁻⁵)	1.130
Mg	(4,787)	X (8.2 X 10 ⁻⁵)	0.393
Cl	(126,400)	X (1.4 X 10 ⁻⁵)	1.770
HCO ₃	(24)	X (0.8 X 10 ⁻⁵)	0.000
SO ₄	(544)	X (2.1 X 10 ⁻⁵)	0.011
			4.341

TOTAL IONIC STRENGTH

K = 3.02 at 60 °F.

K = 2.54 at 100 °F.

SI at (60) °F = (6.20) - (0.60) - (3.40) - (3.02) or -0.82

SI at (100) °F = (6.20) - (0.60) - (3.40) - (2.54) or -0.34

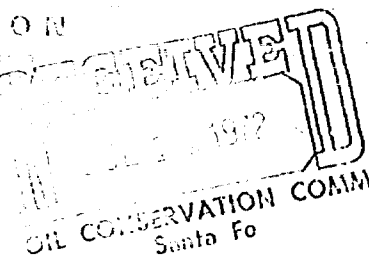
SI = 0 or water is relatively stable at °F.

Remarks: Severe scaling tendencies at 60°F

Mild scaling tendencies at 100°F

TRETOLITE DIVISION

Case 4786



ANALYTICAL REPORT

Company: Highland Production Company

City: State: Lea Co., New Mexico

Analysis Numbers: _____

Description	Date	ppm Iron	ppm Copper	pH
-------------	------	-------------	---------------	----

Sulfate Reducing Bacteria

Source

SRB Colonies/ml

Russell-Federal Disp. Well

None Detected

Remarks: _____

Report submitted to: Mr. Jim Walker Box 6725 Odessa, Texas 79760

cc: Worsham, Ligon File

Date 6/5/72

Respectfully submitted,
TRETOLITE COMPANY

Jack Perabua

Analyst/Inspector

DRAFT

GMH/dr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 4786

Order No. R-4358

APPLICATION OF HIGHLAND PRODUCTION
COMPANY FOR SALT WATER DISPOSAL,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 23, 1972,
at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this ^{September} day of August, 1972, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Highlands Production Company,
is the owner and operator of the Russell Federal Well No. 6,
located in Unit K of Section 20, Township 26 South, Range
32 East, NMPM, East Mason-Delaware Pool, Lea
County, New Mexico.

(3) That the applicant proposes to utilize said well to
dispose of produced salt water into the Delaware
formation, with injection into the open-hole interval
from approximately 4378 feet to 4418 feet.

(4) That the injection should be accomplished through
2-inch plastic-lined tubing installed in a packer set at

CASE No. _____

approximately 4043 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge should be attached to the annulus ~~or the annulus left open~~ at the surface in order to determine leakage in the casing, tubing, or packer.

(5) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Highland Production Company, is hereby authorized to utilize its Russell Federal Well No. 6, located in Unit K of Section 20, Township 26 South, Range 32 East, NMPM, East Mason-Delaware Pool, Lea County, New Mexico, to dispose of produced salt water into the Delaware formation, injection to be accomplished through 2-inch tubing installed in a packer set at approximately 4073 feet, with injection into the open-hole interval from approximately 4378 feet to 4418 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus ~~or the annulus left open~~ at the surface in order to determine leakage in the casing, tubing, or packer.

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.