

DATE IN 08/02/13	SUSPENSE	ENGINEER PG	LOGGED IN 08/05/13	TYPE IPI	APP NO. PPRG1321742150
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ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
 - Engineering Bureau -
 1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [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 - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

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

[D] Other: Specify SWD-619

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[2] **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

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[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

David Stewart
 Print or Type Name

[Signature]
 Signature

SE-Regulatory Advisor 7/30/13
 Title Date

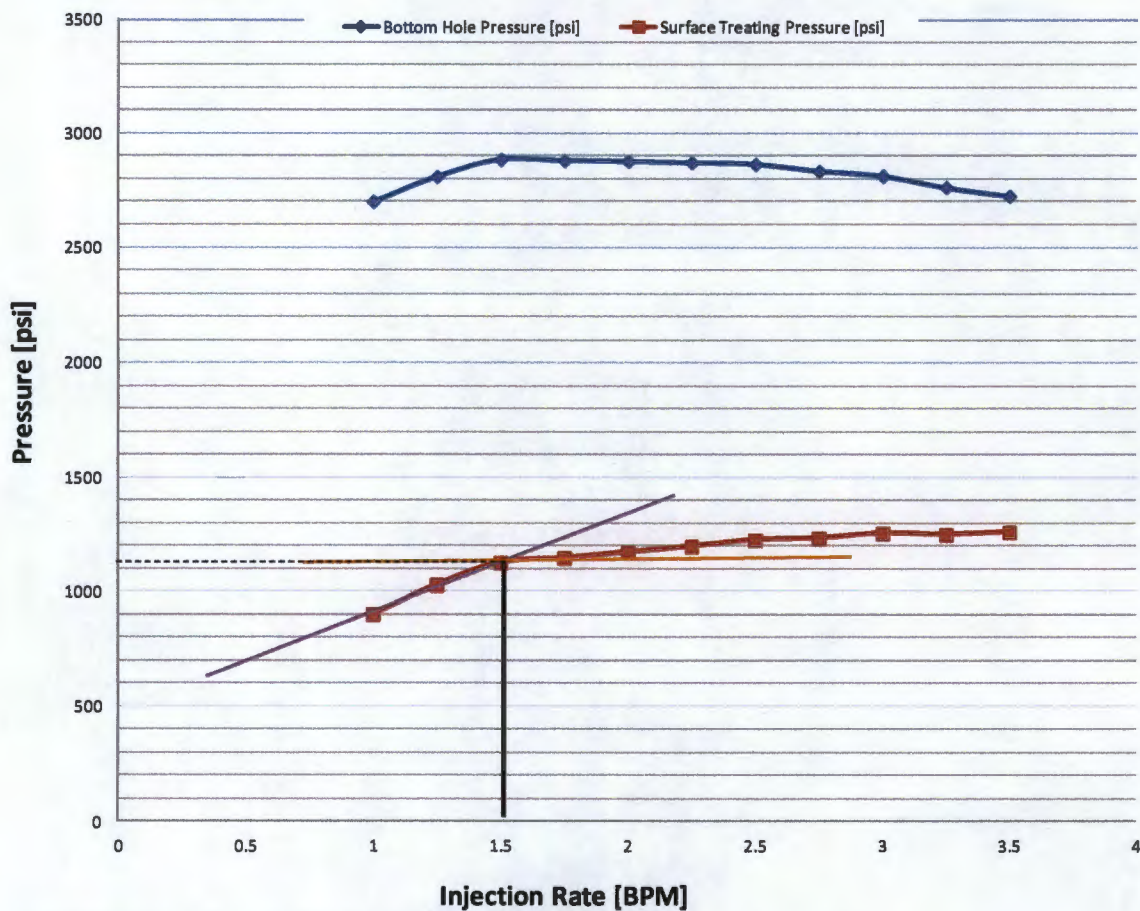
OX4 USA Inc. -16694
 Riverbend Federal #3
 30-015-28390

SWD-619

david_stewart@ox4.com
 e-mail Address 432-685-5717

RIVERBEND FEDERAL #8 (SWD-619)

The surface treating pressure plot appears to show an FPP at a rate of 1.5 bpm. The corresponding pressure is 1125 psi. Oxy would like to request an increase to 1075 psi.



Rate [bbls/min]	Tubing Head Pressure [psi]
1.00	1159
1.25	1268
1.50	1327
1.75	1392
2.00	1456
2.25	1534
2.50	1554
2.75	1630
3.00	1791
3.25	1797
3.50	1866

To: New Mexico Oil Conservation Division
Attn: Phillip R. Goetze, P.G.

OXY USA Inc (16696) formally requests an increase in maximum injection pressure to 1600 psi for the following approved SWD well. The justification will be presented herein.

Well Name: Riverbend Federal #8
API#: 30-015-28390
460 FNL 330 FWL Ut D Sec 23 T24S R29E ✓
Administrative Order SWD-619 2/9/96 – IPI-200 2/13/03-786# - IPI-225 3/29/04-887# ✓

The Riverbend Federal #8 SWD well is completed in the Bell Canyon & Upper Cherry Canyon (3070–4000') with 2.375" Duoline tubing (1.81" ID) set at a depth of 3013'. Please see Figure 1 below:

Well Name	River Bend Federal 008
API	3001528390
Location	SEC 23 T24S R29E



Hole size	14 3/4"
Surface casing	10-3/4", 40.5#, J-55
Set @	451'
Cement	Surface/ circulated

Hole size	9 7/8"
Intermediate Casing	7-5/8", 26.4#, J-55 & N-80
Set @	2900'
Cement	Surface/ circulated

Hole size	6-3/4"
Intermediate Casing	4-1/2", 11.6, J-55 & N-80
Set @	9000'
Cement	1400' (1220 exe)

Tubing String
Tubing, 2-3/8" 4.7# J-55
External Upset 1.995 ID 1.901 Drift

set @ 3013'

On-Off Tool (Tubing) 2.675" OD - N/A
Profile Nipple 1.78 F BAKER
Packer Mandrel/Packer (Retrievable)
Wireline Re-Entry Guide (Bell Collar)

set @ 3013'
set @ 3015'
set @ 3017'
set @ 3020'

Bridge Plug set @ 4217'

$\frac{1600 \text{ psi}}{3070 \text{ ft}} = 0.52$
Delaware
Bell Canyon &
Upper Cherry

3070'-3165'

3946'-4000'

4320'-4366'

4390'-4470'

PBTD: 4217'

TD 9000'

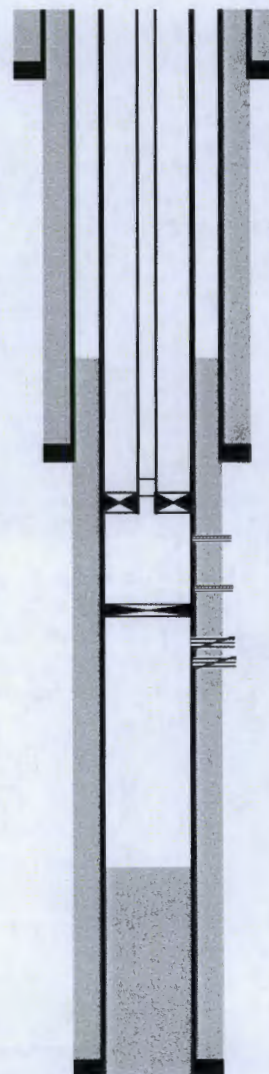


Figure 1: Riverbend Federal #8 Well Schematic.

On 06/13/2013 a planned step rate test was performed on the Riverbend Federal #8 to identify the formation parting pressure, thus determining a maximum allowable injection pressure. The well was back flowed for 4hrs, then shut-in for an additional 12 hrs to ensure the accurate testing results. The step-rate test was then conducted at the below rates utilizing 2% KCL water and a mobile pump truck. Pump rates were maintained for 15 minutes or until we achieved a stabilized injection pressure.

Rate [bbls/day]	Rate [bbls/min]	Cumulative Volume Pumped [bbls]	Tubing Head Pressure [psi]
1440	1.00	17	1159
1800	1.25	37	1268
2160	1.50	61	1327
2520	1.75	92	1392
2880	2.00	123	1456
3240	2.25	159	1534
3600	2.50	196	1554
3960	2.75	243	1630
4320	3.00	279	1791
4680	3.25	345	1797
5040	3.50	401	1866

Table 1 Riverbend Federal #8 Step Rate test data.

A clear indication of the formation parting pressure was not observed during the step-rate test. A conservative approach was taken in regards to injection rates in order to eliminate the possibility of fracture propagation into a non-disposal zone. It is important to note that historical step rate tests (2003 & 2004) did not observe a formation parting pressure as well. In both occurrences the NMOCD was able to permit a maximum permitted injection pressure increase based on the maximum surface treating pressure they obtained during the test.

Additional analysis was conducted to observe the pressure loss due to friction in 2.375" tubing. The results from the pressure drop due to friction in the 2.375" tubing prevented the bottom hole pressure from ever reaching the formation parting pressure. The friction loss results are shown in figure 2 & figure 3 below.

The calculated flowing bottom hole pressure during the test was found to have never exceeded 2580 psi with a surface treating pressure of 1791 psi. Figures 2 & 3 illustrate the results of high pressure drop in the small ID tubing as a result of friction. The requested 1600 psi surface injection pressure represents an equivalent bottom hole pressure well below the maximum pressure obtained during the test.

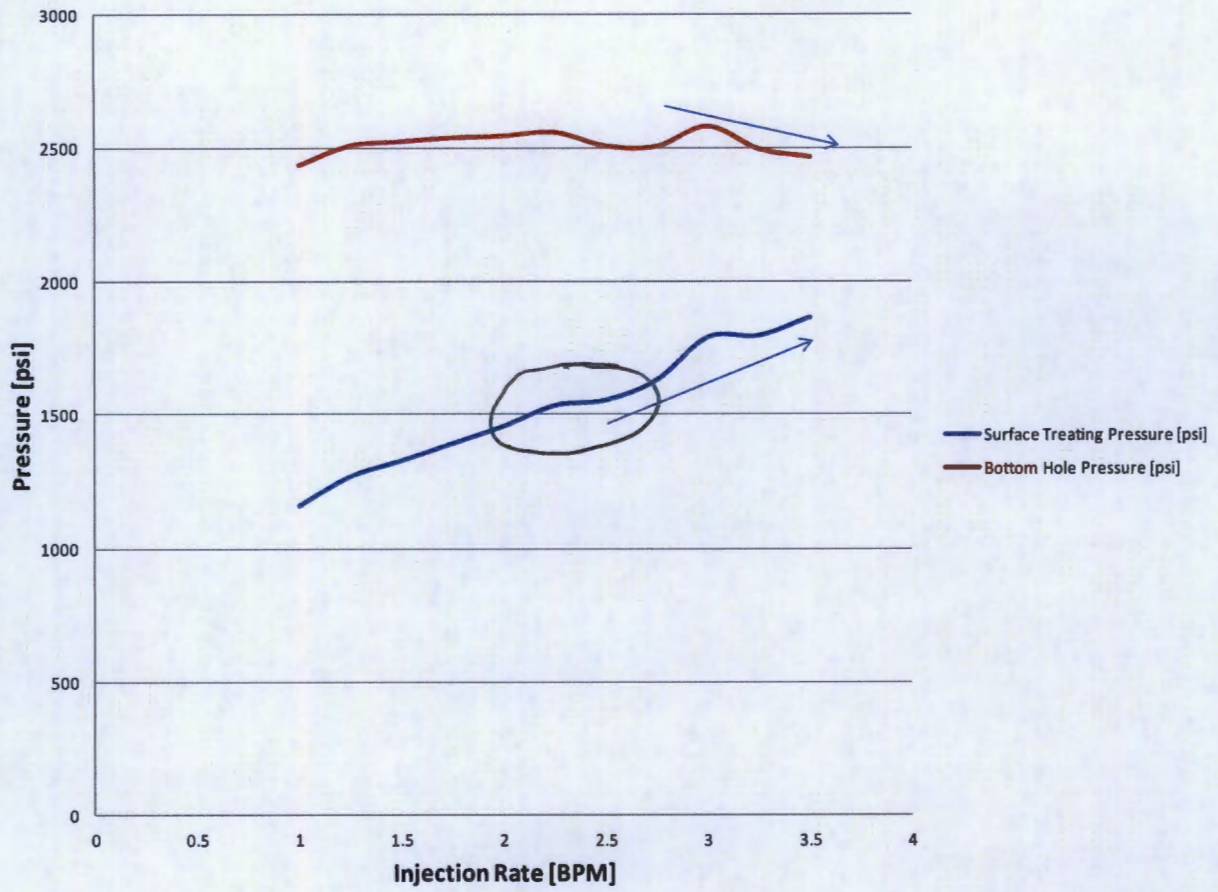


Figure 2: Surface Treating Pressure & Calculated Bottom Hole Pressure versus injection rate.

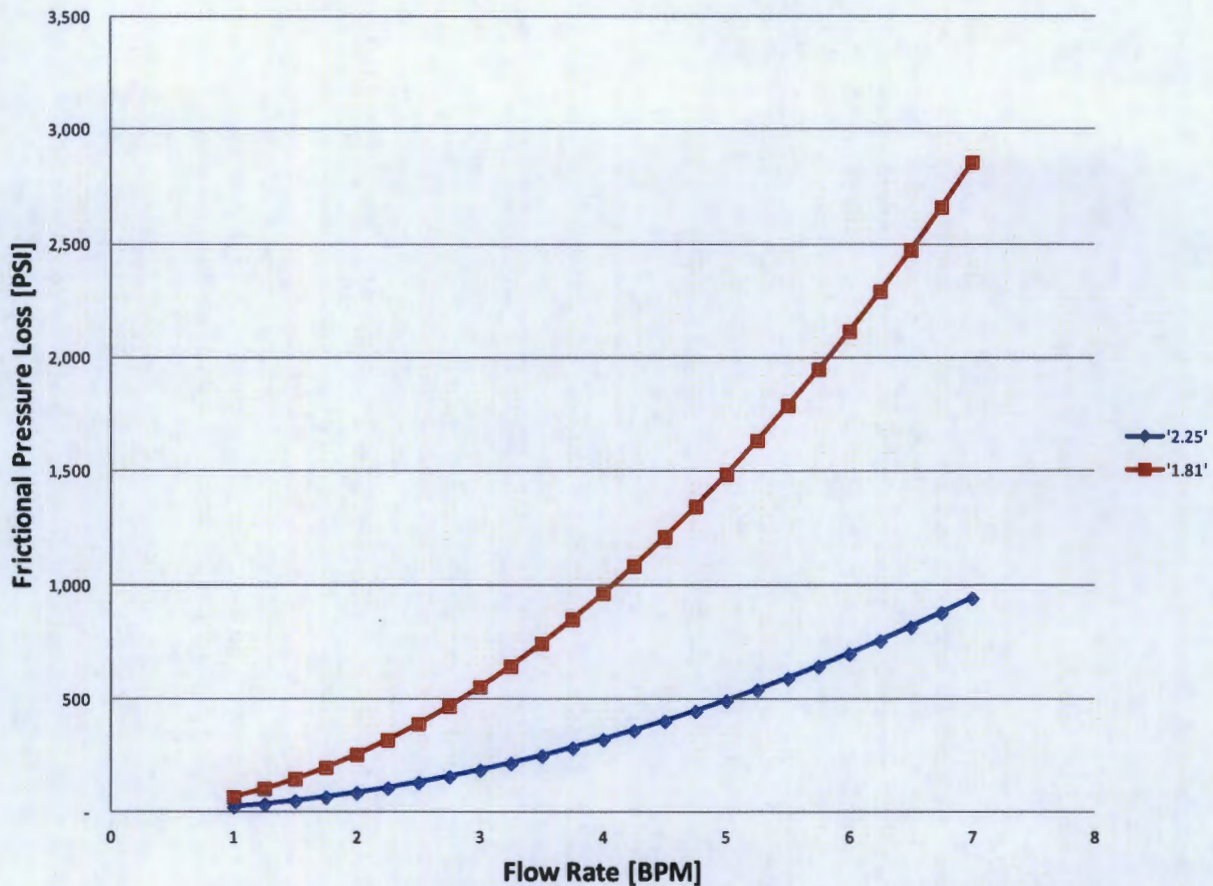


Figure 3: Frictional Pressure Loss comparison in a tubing ID of 2.25" versus 1.81".

Please advise if any additional data is required in order to make a ruling of the proposed increase in permitted injection pressure.

Best regards

Joseph M. Evans
 Production Engineer
 SE New Mexico Reservoir Management Team
 OXY Permian Primary Development.
 Office - 713-350-4640
 Cell - 713-855-0624
joseph_evans@oxy.com

cc: NMOCD-Artesia, BLM Carlsbad



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor

Joanna Prukop
Cabinet Secretary
Acting Director
Oil Conservation Division

March 29, 2004

Pogo Producing Company
P.O. Box 10340
Midland, Texas 79702-7340

Attn: Mr. Barrett L. Smith

**Re: Injection Pressure Increase
Riverbend Federal Well No. 8
API: 30-015-28390
Eddy County, New Mexico**

Dear Mr. Smith:

Reference is made to your request dated February 26, 2004, to increase the surface injection pressure on the above-referenced water disposal well. This request is based on a step rate test conducted on this well on February 23, 2004. The test results have been reviewed and we feel an increase in injection pressure is justified at this time.

Without modifying the injection interval or the tubing size or type, you are authorized to inject at or below the following surface injection pressure.

Riverbend Federal Well No. 8 API No. 30-015-28390	887 PSIG
Located in Unit D, Section 23, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON

Governor

Joanna Prukop

Cabinet Secretary

Lori Wrotenbery

Director

Oil Conservation Division

February 13, 2003

Pogo Producing Company
P.O. Box 10340
Midland, Texas 79702-7340

Attn: Mr. Barrett L. Smith

**Re: Injection Pressure Increase
Riverbend Federal Well No. 8
API: 30-015-28390
Eddy County, New Mexico**

Dear Mr. Smith:

Reference is made to your request dated January 24, 2003, to increase the surface injection pressure on the above-referenced water disposal well. This request is based on a step rate test conducted on this well on January 15, 2003. The test results have been reviewed and we feel an increase in injection pressure is justified at this time.

Without modifying the injection interval or the tubing size or type, you are authorized to inject at or below the following surface injection pressure.

Riverbend Federal Well No. 8 API No. 30-015-28390		786 PSIG
Located in Unit D, Section 23, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico.		

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

OIL CONSERVATION DIVISION

ADMINISTRATIVE ORDER SWD-619

APPLICATION OF POGO PRODUCING COMPANY FOR SALT WATER DISPOSAL, EDDY COUNTY, NEW MEXICO.

**ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION**

Under the provisions of Rule 701(B), Pogo Producing Company made application to the New Mexico Oil Conservation Division on January 17, 1996, for permission to complete for salt water disposal its Riverbend Federal Well No.8 located 460 feet from the North line and 330 feet from the West line (Unit D) of Section 23, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico.

THE DIVISION DIRECTOR FINDS THAT:

- (1) The application has been duly filed under the provisions of Rule 701(B) of the Division Rules and Regulations;
- (2) Satisfactory information has been provided that all offset operators and surface owners have been duly notified;
- (3) The applicant has presented satisfactory evidence that all requirements prescribed in Rule 701 will be met; and
- (4) No objections have been received within the waiting period prescribed by said rule.

IT IS THEREFORE ORDERED THAT:

The applicant herein, is hereby authorized to complete its Riverbend Federal Well No.8 located 460 feet from the North line and 330 feet from the West line (Unit D) of Section 23, Township 24 South, Range 29 East, NMPM, Eddy County, New Mexico, in such manner as to permit the injection of salt water for disposal purposes into the Bell Canyon and Upper Cherry Canyon formations at approximately 3070 feet to 4470 feet through 2 3/8-inch plastic-lined tubing set in a packer located at approximately 2970 feet.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

Prior to commencing injection operations into the well, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

The casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing, or packer.

The injection well or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection well to no more than 614 psi.

The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Bell Canyon and Upper Cherry Canyon formations. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to this office.

The operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment and of the mechanical integrity test so that the same may be inspected and witnessed.

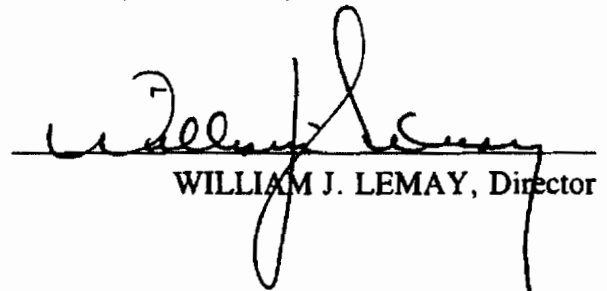
The operator shall immediately notify the supervisor of the Artesia district office of the Division of the failure of the tubing, casing, or packer in said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

PROVIDED FURTHER THAT, jurisdiction of this cause is hereby retained by the Division for the entry of such further order or orders as may be deemed necessary or convenient for the prevention of waste and/or protection of correlative rights; upon failure of the operator to conduct operations in a manner which will ensure the protection of fresh water or in a manner inconsistent with the requirements set forth in this order, the Division may, after notice and hearing, terminate the injection authority granted herein.

The operator shall submit monthly reports of the disposal operations in accordance with Rule Nos. 706 and 1120 of the Division Rules and Regulations.

The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

Approved at Santa Fe, New Mexico, on this 9th day of February, 1996.


WILLIAM J. LEMAY, Director

S E A L

WJL/BES

xc: Oil Conservation Division - Artesia
Bureau of Land Management - Carlsbad