

CHECKLIST for ADMINISTRATIVE INJECTION APPLICATIONS

Operator: BASS ENTERPRISES PROD. Well: LEGG FEDERAL Well No. 1

Contact: DAN NOTTER Title: CONSULTANT Phone: 982-0757

DATE IN 7-29-94 RELEASE DATE 8-17-94 DATE OUT 8-19-94

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

Original Order: R- ☐ Secondary Recovery ☐ Pressure Maintenance

☐ SENSITIVE AREAS

☒ SALT WATER DISPOSAL

☒ WIPP

☐ Capitan Reef

☐ Commercial Operation

Data is complete for proposed well(s)? ☒ Additional Data _____

AREA of REVIEW WELLS

☐ Total # of AOR

☐ # of Plugged Wells

N/A Tabulation Complete

N/A Schematics of P & A's

N/A Cement Tops Adequate

N/A AOR Repair Required

INJECTION INFORMATION

Injection Formation(s) BELL CANYON / UPPER CHERRY CANYON

Source of Water DELPWARE / AROKA Compatible YES

PROOF OF NOTICE

☒ Copy of Legal Notice

☒ Information Printed Correctly

☒ Correct Operators

☒ Copies of Certified Mail Receipts

☐ Objection Received

☐ Set to Hearing _____ Date

NOTES: _____

APPLICATION QUALIFIES FOR ADMINISTRATIVE APPROVAL YES

COMMUNICATION WITH CONTACT PERSON:

1st Contact:	<input type="checkbox"/> Telephoned	<input type="checkbox"/> Letter	_____	Date	_____	Nature of Discussion	_____
2nd Contact:	<input type="checkbox"/> Telephoned	<input type="checkbox"/> Letter	_____	Date	_____	Nature of Discussion	_____
3rd Contact:	<input type="checkbox"/> Telephoned	<input type="checkbox"/> Letter	_____	Date	_____	Nature of Discussion	_____

OIL CONSERVATION DIVISION
RECEIVED

'94 JUL 29 AM 8 50

FAX (915) 687-0086

BASS ENTERPRISES PRODUCTION CO.

6 DESTA DRIVE, SUITE 3700
P.O. BOX 2760
MIDLAND, TEXAS 79702

July 27, 1994

(915) 683-2277

**RE: NOTICE OF APPLICATION FOR
AUTHORIZATION TO INJECT
LEGG FEDERAL #1
QUAHADA RIDGE (DELAWARE) FIELD
EDDY COUNTY, NEW MEXICO
FILE: 400-WF: LEGGFDL1.INJ**

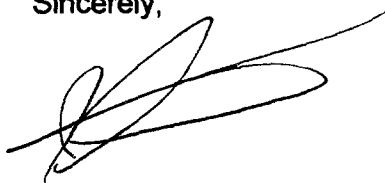
Mr. William J. LeMay
Director, Oil Conservation Division
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Dear Mr. LeMay,

Enclosed please find Bass Enterprises Production Co.'s Application for Authorization to Inject for disposal purposes into the Legg Federal #1, located in Sec. 27, T22S, R30E, Eddy County, New Mexico. Bass Enterprises Production Co. respectfully requests administrative approval as per Rule 701D.

If additional information is required, please contact Mr. Keith Bucy, Division Production Superintendent at the letterhead address.

Sincerely,



John R. Smitherman
Division Production Manager



GEG/pg

APPLICATION FOR AUTHORIZATION TO INJECT AM 8 50

- I. PURPOSE: Secondary Recovery Pressure Maintenance XX Disposal Storage
Application qualifies for administrative approval? XX Yes No
- II. OPERATOR: BASS ENTERPRISES PRODUCTION CO.
ADDRESS: P. O. BOX 2760 MIDLAND, TEXAS 79702
CONTACT PARTY: KEITH E. BUCY, DIV. PROD. SUPT. PHONE: 915-683-2277
- III. WELL DATA: Complete the data required on the reverse side of this form for each well processed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project: Yes XX 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. None exist
- 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 sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- * X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted.)
- * XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- NAME: KEITH E. BUCY TITLE: DIVISION PRODUCTION SUPT.
SIGNATURE: *Keith E. Bucz* DATE: 7/22/94
- * If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be 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, PO Box 2088, Santa Fe, NM 87504-2088 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.

INJECTION WELL DATA SHEET

OPERATOR

BASS ENTERPRISES PRODUCTION CO.

LEASE

LEGG FEDERAL

WELL NO.

1 660' FNL & 2004' FEL

FOOTAGE LOCATION

SECTION

27

TOWNSHIP

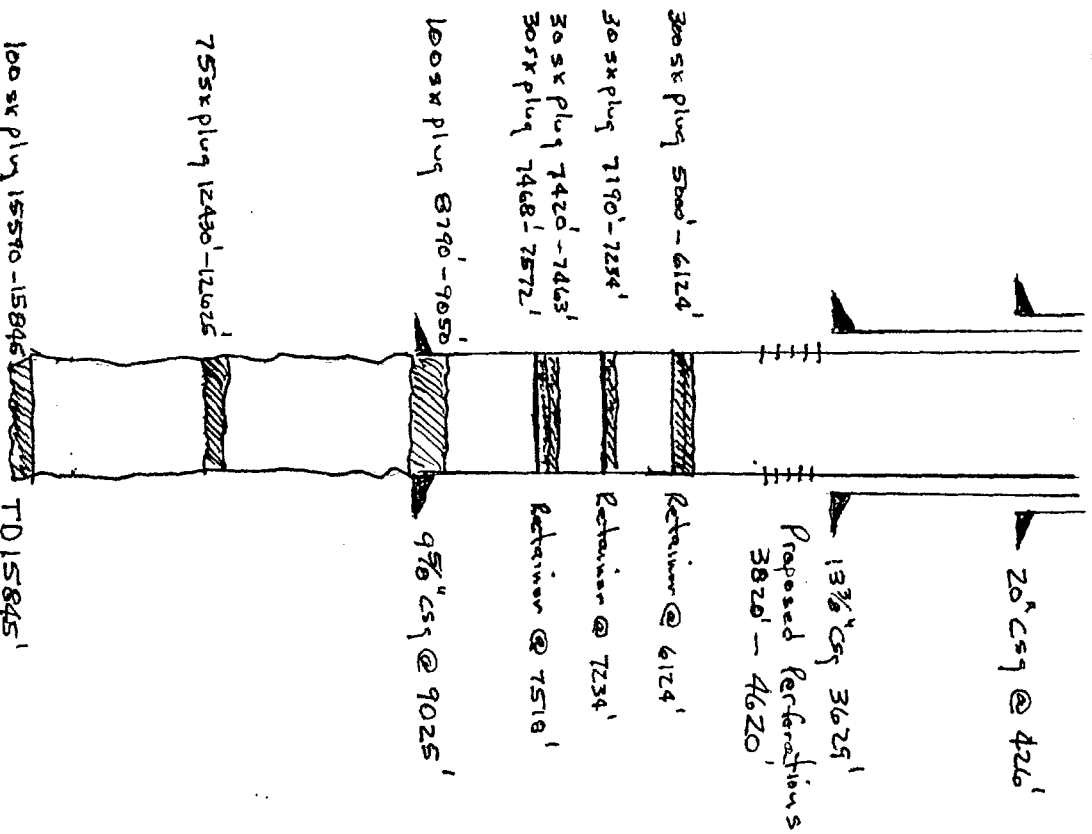
22S

RANGE

30E

Schematic

Well Construction Data



Surface Casing

Size 20" Cemented with 700 sx.

TOC Surface feet determined by circ

Hole Size 24"

Intermediate Casing

Size 13-3/8" Cemented with 3350 sx.

TOC Surface feet determined by circ

Hole Size 17-1/2"

Long String

Size 9-5/8" Cemented with 2590 sx.

TOC 2840' feet determined by Temp Survey

Hole Size 12-1/4"

Total Depth 9025'

Injection Interval (Perforated)

3820' feet to 4620' feet
(perforated or open-hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size 2 7/8" lined with internal plastic coating set in a
 Baker 9 5/8" packer at 3744 feet
 (type of internal coating)

Other type of tubing / casing seal if applicable _____

Other Data

1. Is this a new well drilled for injection? Yes XX No

If no, for what purpose was the well originally drilled? oil and gas exploration

2. Name of the injection formation Ramsey/Olds

3. Name of Field or Pool (if applicable) NA

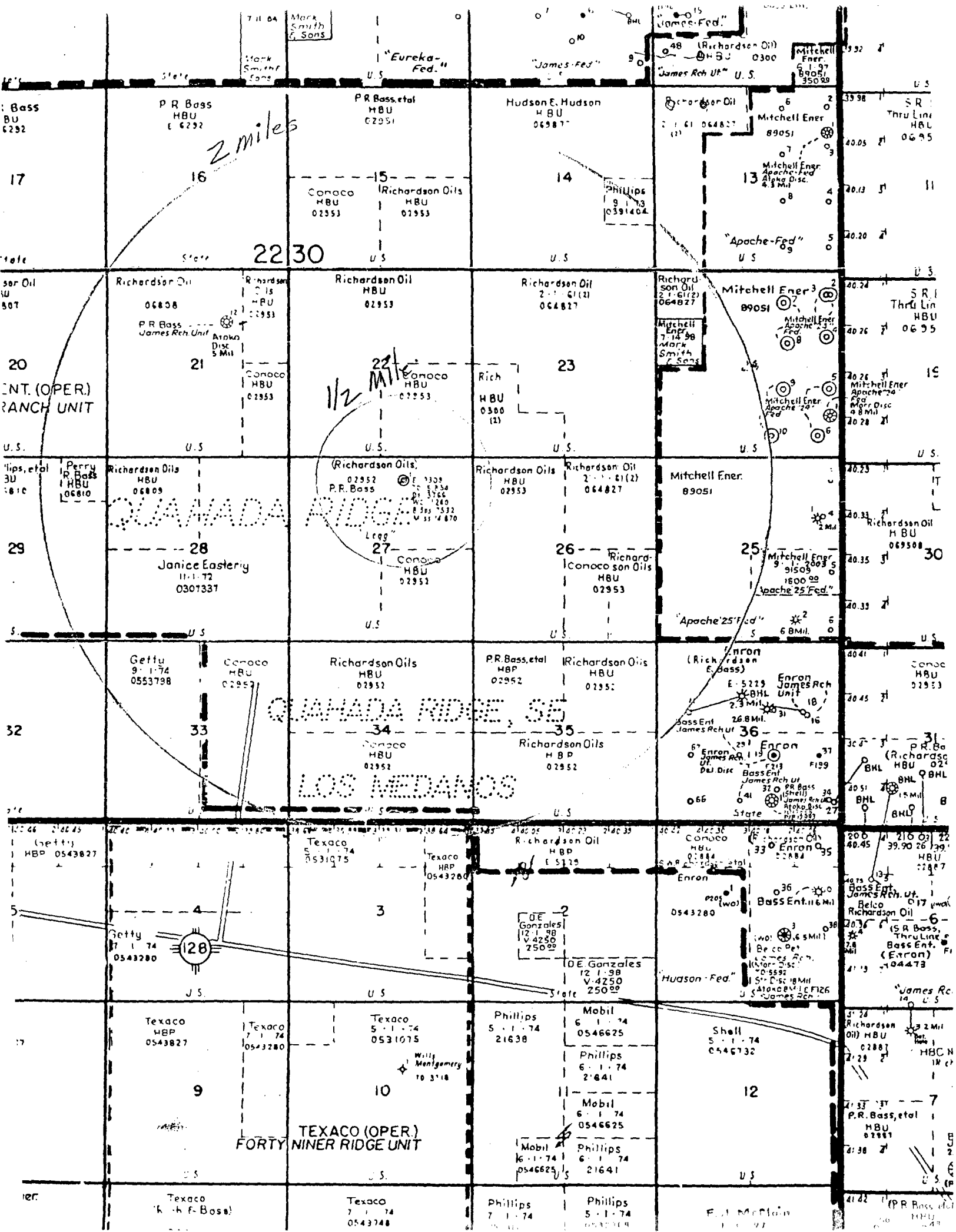
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e., sacks of cement or plug(s) used. See attached well

Sketch

5. Give the names and depths of any over or underlying oil or gas zones (pools) in this area.

James Ranch Atoka 11,900'

James Ranch Morrow 12,500'



PROPOSED OPERATION DATA

Section VII, Form C-108

Attachment "E"

1. Proposed daily rate and volume of fluids to be injected:

a. Average daily rate of injection: 2000 bbls

b. Maximum daily rate of injection: 3000 bbls

2. Type of system:

System will be closed.

3. Proposed injection pressure:

a. Average: 600

b. Maximum: 800

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than re injected produced water.

Produced water from Atoka and Delaware formations will be injected.

Chemical analysis attached hereto as Attachment "E1"

5. Chemical analysis of the disposal zone formation water:

Not Available

Martin Water Laboratories, Inc.

P. O. BOX 1468
MONAHANS, TEXAS 79756
PH. 943-3234 OR 363-1040

WATER CONSULTANTS SINCE 1953
BACTERIAL AND CHEMICAL ANALYSES

709 W. INDIANA
MIDLAND, TEXAS 79
PHONE 683-4521

March 4, 1981

Mr. Jack Gevecker
Bass Enterprises Production Co.
P. O. Box 2760
Midland, TX


Subject: Recommendations relative to analysis #38114 (3-4-81), Delaware
and Atoka waters in Eddy Co., New Mexico.

Dear Mr. Gevecker:

The attached analyses were carefully studied for possible incompatibilities between the Atoka and Delaware. It is our understanding that the objective is to inject the Atoka water into the Delaware interval, which is much less significant than attempting to combine the waters on the surface.

The only incompatibility encountered is that the Atoka water is carrying a soluble iron and the Delaware water from Big Eddy Unit #49 contains sulfide, therefore resulting in an iron sulfide precipitation. However, the water from well #49 is considered unusual and normally we would expect a "sweet" water from the Delaware such as from well #47. However, we question that this incompatibility is sufficient to prevent the injection of the Atoka water into the Delaware interval. Therefore, in general, we feel that the incompatibility suggested above is not sufficient to prevent the mixing of these two waters by injecting Atoka into the Delaware interval. We have encountered no evidence of any other condition of concern.

Yours very truly,


Waylan C. Martin

WCM/sb

Attachment E1

PHONE 943-3234 OR 963-1040

Martin Water Laboratories, Inc.

709 W. INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

to: Mr. Jack Govecker
P.O. Box 2760, Midland, Texas

LABORATORY NO. 38114
SAMPLE RECEIVED As listed
RESULTS REPORTED 3-4-81

COMPANY Bass Enterprises Production Co. LEASE As listed
FIELD OR POOL 1. & 2. Indian Flats 3. & 4. Wildcat
SECTION _____ BLOCK _____ SURVEY _____ COUNTY Eddy STATE New Mexico
SOURCE OF SAMPLE AND DATE TAKEN:

NO. 1	<u>Produced (Delaware) water - taken from Big Eddy Unit #47.</u>	<u>4-22-77</u>
NO. 2	<u>Produced (Delaware) water - taken from Big Eddy Unit #49.</u>	<u>4-22-77</u>
NO. 3	<u>Recovered (Atoka) water - taken from James Ranch Unit #12.</u>	<u>12-22-80</u>
NO. 4	<u>Recovered (Atoka) water - taken from James Ranch Unit #12.</u>	<u>12-23-80</u>

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0900	1.1022	1.0555	1.0553
pH When Sampled				
pH When Received	7.65	7.9	5.85	6.57
Bicarbonate as HCO ₃	66	246	222	322
Supersaturation as CaCO ₃	6	38		
Undersaturation as CaCO ₃	-	-		
Total Hardness as CaCO ₃	21,000	28,000	15,900	16,000
Calcium as Ca	5,280	8,000	5,200	5,200
Magnesium as Mg	1,895	1,944	705	729
Sodium and/or Potassium	46,649	51,544	23,652	22,264
Sulfate as SO ₄	2,108	1,597	43	46
Chloride as Cl	85,223	98,006	47,583	45,452
Iron as Fe	6.2	4.8	94.4	89.7
Barium as Ba			0	0
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	141,221	161,337	77,405	74,013
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	0.0	120	0.0	0.0
Resistivity, ohms/m at 77° F.	0.074	0.066	0.114	0.118
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks Letter of recommendation attached

Attachment E1a

GEOLOGICAL DATA

Section VIII, Form C-108

Attachment "F"

Lithologic Detail: **Sand, Shale, Lime sequences**

Geological name: **Bell Canyon/Upper Cherry Canyon Delaware Mountain Group**

Thickness: **800'**

Depth: **3820' - 4620'**

The Rustler formation is a known source of fresh water throughout this geographic area. Average depth of Rustler is 200-400 feet. No sources of fresh water are known to exist below the proposed disposal zone.

**LEGG FEDERAL WELL NO. 1
OFFSET OPERATORS AND INTERESTED PARTIES**

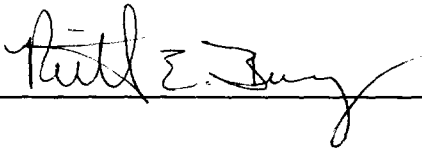
Offset Operators:

Conoco, Inc.
10 Desta Drive
Midland, Texas 79705
Attention: Mr. Jerry Hoover
SHEAR Director

Surface Leasee:

Mr. Kenneth Smith
P. O. Box 764
Carlsbad, New Mexico 88221-0764

I, Keith E Bucy, certify that copies of the application were mailed to the above affected parties.

A handwritten signature in cursive script, appearing to read "Keith E. Bucy", is written over a horizontal line.

07/26/94

PROPOSED STIMULATION PROGRAM

Section IX, Form C-108

Attachment "G"

Interval will be perforated with 1JSPF and treated with approximately 16,000 gallons 15% NEFE acid, if necessary to establish injection, a small fracture treatment will be pumped.

LOGGING AND TEST DATA

Section X, Form C-108

Attachment "H"

Logs already filed with Division.

CHEMICAL ANALYSIS OF FRESH WATER

Section XI, Form C-108

Attachment "I"

There are no fresh water wells within one mile of the proposed disposal site.

AFFIRMATIVE STATEMENT

Section XII, Form C-108

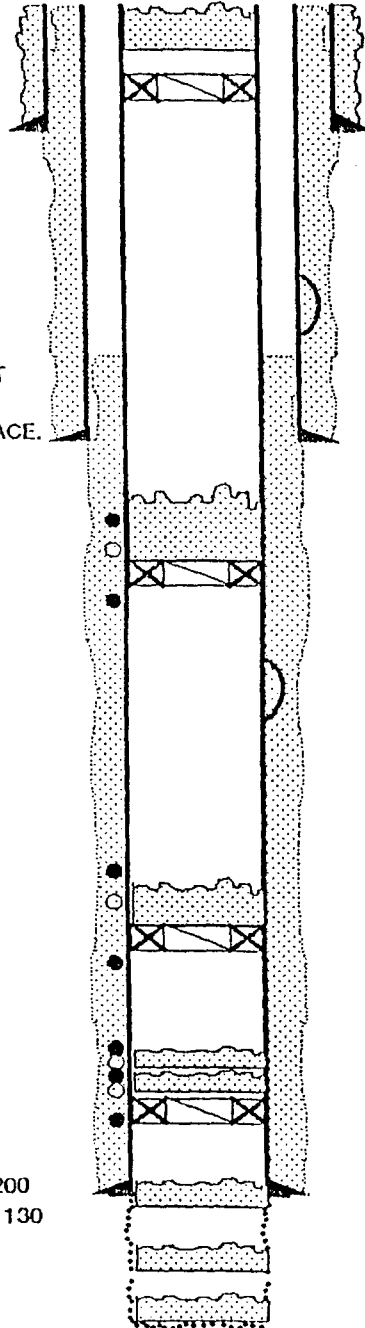
Attachment "J"

Applicant hereby affirms that he has examined the available geologic and engineering data and finds no evidence of open faults or other hydrologic connection between the disposal zone and any underground source of drinking water.

LOCATION: 660'FNL & 2003'FEL,SECT.27, T22S, R30E, UNIT B.
API NO: 30015047340000
ELEVATIONS: 3309' KB
SPUD DATE: 07-10-53

WELLBORE INFORMATION

CMT PLUG W/100 SX @ 15845' - 15590'
TD @ 15845'



50470

**LEGG FEDERAL WELL NO. 1
OFFSET OPERATORS AND INTERESTED PARTIES**

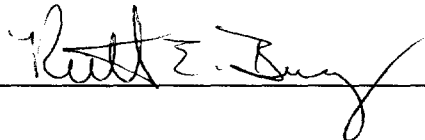
Offset Operators:

Conoco, Inc.
10 Desta Drive
Midland, Texas 79705
Attention: Mr. Jerry Hoover
SHEAR Director

Surface Leasee:

Mr. Kenneth Smith
P. O. Box 764
Carlsbad, New Mexico 88221-0764

I, Keith E Bucy, certify that copies of the application were mailed to the above affected parties.

A handwritten signature in cursive script, appearing to read "Keith E. Bucy", is written over a horizontal line.

07/22/94



Gamma Ray-Neutron

COUNTY <u>Eddy</u>	COMPANY <u>RICHARDSON & BASS</u>	Location of Well 660' f NL 2003' f EL Sec.27-22S-30E
FIELD or LOCATION <u>Wildcat</u>	WELL <u>FEDERAL LEGG # 1</u>	
WELL <u>Federal Legg # 1</u>	<u>D-P-W</u>	
COMPANY <u>Richardson & Bass</u>	FIELD <u>WILDCAT</u>	GRN (ES-ML-MLL-LL-S6)
	LOCATION <u>SEC.27-22S-30E</u>	Elevation: D.F.: <u>3309</u> K.B.: or G.L.:
	COUNTY <u>EDDY</u>	
	STATE <u>NEW MEXICO</u>	FILING No.

RUN NO.	1	2
Date	9-1-53	3-27-54
Depth Reference	RDB 23' Abv. GL	
First Reading	7683	15562
Last Reading	100	7780
Footage Measured	7583	7782
Max. Depth Reached	7684	15563
Bottom Driller	7681	15854
Maximum Temp. F.	133	202
Mud: Nature	Gel-Caustic-Obv. Lime	
" Density	9.8	12.1
" Viscosity	35	58
" Resistivity	@ °F.	.36 @ 70 °F.
Casing Size & 1	13 3/8" to 3630	13 3/8" to 3630
Weight 2	to	9 5/8" to 9030
Open Hole 1	to	8 3/4" to TD
2	to	to
Fluid Level		Surf.
Recording Speed (ft/hr)		2000
Sensitivity Tap	GR) N)	GR) 200 N) 400
Time Constant		1
Panel		GNC
Cpr. Rig Time	4 Hrs.	6 Hrs.
Sonde Size & Type		
Truck No.	1759-Hobbs	1758-Hobbs
Observer	Podgers	Tefft

FOLD HERE

REMARKS

NEUTRON

GAMMA RAY



Gamma Ray-Neutron

COUNTY <u>Eddy</u>	COMPANY <u>RICHARDSON & BASS</u>	Location of Well 660' f NL 2003' f EL Sec. 27-22S-30E
FIELD or LOCATION <u>Wildcat</u>	WELL <u>FEDERAL LEGG # 1</u>	
WELL <u>Federal Legg # 1</u>	<u>D-P-W</u>	
COMPANY <u>Richardson & Bass</u>	FIELD <u>WILDCAT</u>	GRN (ES-ML-MLL-LL- S6)
	LOCATION <u>SEC. 27-22S-30E</u>	Elevation: D.F.: <u>3309</u> K.B.: or G.L.:
	COUNTY <u>EDDY</u>	
	STATE <u>NEW MEXICO</u>	FILING No. _____

RUN NO.	1	2
Date	9-1-53	3-27-54
Depth Reference	RDB 23' Abv. GL	
First Reading	7683	15562
Last Reading	100	7780
Footage Measured	7583	7782
Max. Depth Reached	7684	15563
Bottom Driller	7681	15854
Maximum Temp. F.	133	202
Mud: Nature	Gel-Caustic-Obr. Lime	
" Density	9.8	12.1
" Viscosity	35	58
" Resistivity	@ °F.	.36 @ 70 °F.
Casing Size & 1	13 3/8" to 3630	13 3/8" to 3630
Weight 2	to	9 5/8" to 9030
Open Hole 1	to	8 3/4" to TD
2	to	to
Fluid Level		Surf.
Recording Speed (ft/hr)		2000
Sensitivity Tap	GR) N)	GR) 200 N) 400
Time Constant		1
Panel		GNC
Cpr. Rig Time	4 Hrs.	6 Hrs.
Sonde Size & Type		
Truck No.	1759-Hobbs	1758-Hobbs
Observer	Rodgers	Tefft

FOLD HERE

REMARKS

NEUTRON

GAMMA RAY