

L-16-31N-800

APPLICATION FOR AUTHORIZATION TO INJECT

OIL CON. DIV.
DIST 3

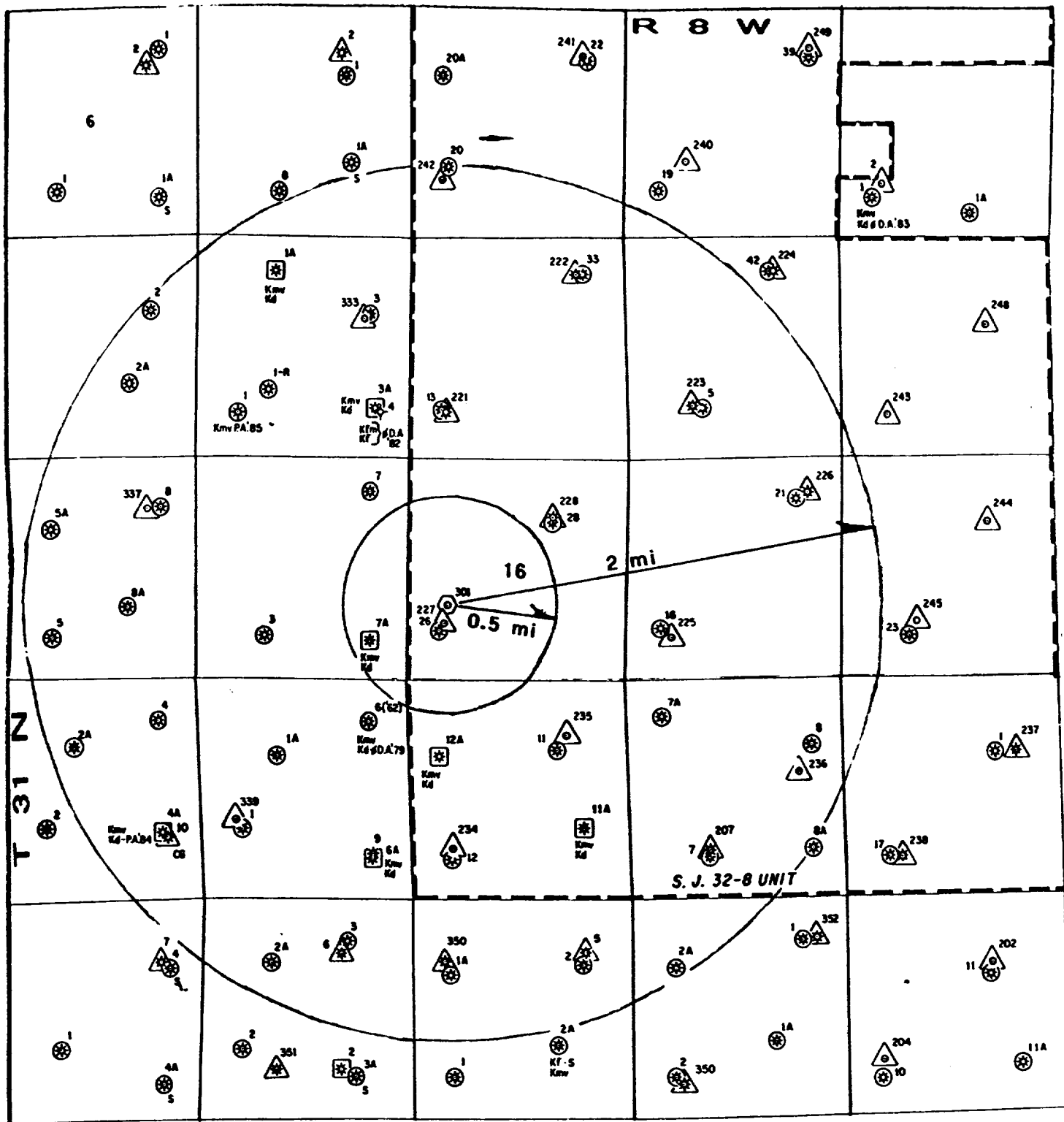
- I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no
- II. Operator: Phillips Petroleum Company
Address: 300 W. Arrington, Suite 200, Farmington, NM 87401
Contact party: Louis Robinson Phone: (505) 599-3415
- III. 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 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: L. E. Robinson Title Sr. Drilling & Production Engr.
Signature: L. E. Robinson Date: 1-11-91
- * 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. _____

**ATTACHMENT
SALTWATER DISPOSAL APPLICATION
SAN JUAN 32-8 UNIT
WELL NO. 301**

III. Well Data

- A. (1) San Juan 32-8 Unit Well No. 301, Sec 16, T31N, R8W,
1643' FSL and 1006' FWL, San Juan County, New Mexico.
- (2) See Saltwater Disposal Well Casing Design - Attachment No. 1
- (3) 3-1/2", 9.30 #/ft, 8rd, N-80, Baker Plastic Coat 571,
internal coated tubing, set at 8693'.
- (4) Baker Model "FB" permanent packer with seal assembly and
anchor latch set at 8660'.
- B. (1) Injection Formations:
- | | | |
|----------------------|-------------|----------------|
| (a) Morrison (Lower) | Top - 8372' | Bottom - 8776' |
| (b) Bluff | Top - 8776' | Bottom - 8920' |
| (c) Entrada | Top - 9031' | Bottom - 9275' |
- Field: Undesignated
- (2) The perforated interval:
- | | |
|---------------|---------------|
| 8751' - 8754' | 8805' - 8808' |
| 8757' - 8761' | 8811' - 8825' |
| 8764' - 8773' | 8828' - 8920' |
| 8776' - 8802' | 9030' - 9148' |
- (3) Drilled for saltwater disposal purposes only.
- (4) None
- (5) Dakota Sandstone - 8002'-8212' - higher
None - lower

a:\328III.SWD



PHILLIPS PETROLEUM COMPANY

Area of Review
San Juan 32-8 #301
Proposed Saltwater Disposal Well

INTERPRETATION: T R Moore DATE: 12/90 DRAFTING: FILE NO.:

VI. Wells Within the Area of Review

32-8 #301 SWD

The subject well is the only well within the area of review to penetrate the proposed receiving formations. The closest well to penetrate the proposed receiving formations is the Blackwood and Nichols Northeast Blanco Unit #1 Pump Mesa SWD (formerly NEBU #503), 990' FSL X 1600' FWL, Section 36 T31N-R8W, which was drilled to a total depth of 9130' in the Entrada Sandstone and is scheduled to be completed as a saltwater disposal well in the Entrada, Bluff and Morrison Formations.

The following is a list of all of the wells in the 0.5 mile-radius area of review of the subject well. None of the listed wells penetrate the proposed injection-receiving formations.

Pacific Northwest Pipeline 32-8 Unit #28, 1460' FNL X 1800' FEL Sec. 16-31N-8W, TD 5975' in Point Lookout Sandstone, 8/7/58, completed 5424'-5938' in Mesaverde Group.

Phillips Petroleum 32-8 Unit #228, 1343' FNL X 1781' FEL Sec. 16-31N-8W, at last report waiting on completion tools at 3247', proposed TD 3654' in Fruitland Formation.

Pacific Northwest Pipeline 32-8 Unit #26, 1150' FSL X 845' FWL Sec. 16-31N-8W, TD 5960' in Point Lookout Sandstone, 8/3/57, completed 5384'-5878' in Mesaverde Group.

Phillips Petroleum 32-8 Unit #227, 1318' FSL X 954' FWL Sec. 16-31N-8W, at last report waiting on completion tools at 3225', proposed TD 3490' in Fruitland Formation.

Supron #7A Quinn, 905' FSL X 905' FEL Sec. 17-31N-8W, TD 8100' in Dakota Sandstone, 11/14/80, completed 7946'-8035' in Dakota Sandstone and 5379'-5851' in Mesaverde Group.

VII.

- (1) Average daily rate 5,000 barrels of water per day.
Maximum daily rate 10,000 barrels of water per day.
- (2) Closed system.
- (3) Average injection pressure 1800 psi.
Maximum injection pressure 2700 psi.
- (4) Reinjection of Fruitland Coal seam produced water.
Produced water may come from the San Juan 32-7 Unit and the Non-Unit Wells. All produced water from the San Juan 32-8 Unit will come to the proposed well.
- (5) The Morrison, Bluff and Entrada Sandstones are not productive of hydrocarbons within the prescribed one-mile radius. Water samples of these formation waters are not available in the immediate vicinity. All available information from data in the deep, central portion of the San Juan Basin would suggest that the waters of these formations are certainly in excess of 10,000 ppm total dissolved solids and are likely to be in excess of 20,000 ppm total dissolved solids. Data presented by Stone, et al (1983) would also support that the waters in the proposed receiving formations are saline. Wireline log data from the subject well confirms that the interstitial waters of the proposed receiving formations are saline, although a precise estimate of the amount of total dissolved solids is not possible by this indirect method.

VIII.

The proposed saltwater receiving formations in the San Juan 32-8 #301 SWD well are the sandstones and sandy siltstones of the Morrison Formation, the sandstones of the Bluff Sandstone, and the sandstones and sandy siltstones of the Entrada Sandstone. All three of these formations are of Late Jurassic age.

The Morrison Formation was encountered in the 32-8 #301 borehole from 8212' to 8776'. The sandstones and sandy siltstones suitable for saltwater injection occur below 8372'. The sandstones may be generally described as being light brown to reddish brown to white, medium to very fine grained, moderately well to poorly sorted, silty and calcareous in part, firm to hard, and occasionally friable. The associated siltstones are generally reddish brown to tan, slightly sandy, slightly calcareous, firm to hard, and commonly producing platy fragments upon drilling. As indicated by wireline logs, the porosity of the proposed receiving zones ranges from 2% to 14%. Formation porosity, permeability and transmissivity are enhanced by natural fracturing.

The Bluff Sandstone is comprised of white to pink, medium to very fine grained, moderately well sorted calcareous, sporadically cherty, locally silty sandstones with some interbedded siltstones and silty shales. It was encountered in the 32-8 #301 borehole between 8776' and 8920'. The porosity of the proposed receiving zones in the Bluff range from 4% to 10%, as indicated by wireline logs. Naturally occurring fractures augment the formation porosity, permeability and transmissivity of this unit.

The third proposed water-receiving zone, the Entrada Sandstone, was cut in the subject well from 9031' through 9275'. It is comprised, predominantly, of white to pink, fine to very fine grained sandstones which are moderately well to poorly sorted, silty, slightly calcareous quartzose and hard. Interbedded within the Entrada Formation are reddish brown, sandy, argillaceous, slightly calcareous siltstones. Wireline log porosity of the Entrada sandstones and siltstones range from 1 to 5%. Permeability and transmissivity of this unit are enhanced by natural fracturing of the formation.

Potential freshwater aquifers overlying the proposed injection zones at this location are at depths less than 2561'. These include porous and permeable sandstones occurring in the San Jose, Nacimiento/Animas and Ojo Alamo Formations. The waters of these formations in this portion of the San Juan Basin, as indicated by data cited by Stone, et al (1983), may be characterized as follows:

San Jose Formation (0 - 886'), estimated total dissolved solids content (TDS) 550 to 2800 ppm, with dramatic variations in water quality locally;

Nacimiento/Animas Formation (886'-2392'), estimated TDS 1225 to 9100 ppm, limited quantities and highly variable quality, and;

Ojo Alamo Sandstone (2392'-2561'), estimated TDS 1325 to 6550 ppm, variable quality and slightly saline overall.

Note: The total dissolved solids contents cited above have been calculated from specific conductance values cited by Stone, et al (1983), using the general formula: $\text{TDS (ppm)} = 0.7 \times \text{specific conductance (micromhos)}$. No water samples are available from within one mile of the proposed disposal well.

Reference

Stone, W. J., F. P. Lyford, P. F. Frenzel, N. H. Mizell, and E. T. Padgett (1983) Hydrogeology and Water Resources of San Juan Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Hydrologic Report No. 6, 70 p.

- IX. The Entrada and Bluff were stimulated with 900,000 lbs of 20/40 sand at 100 BPM with instantaneous shut in pressure of 1900 psi and a maximum sand concentration.
- X. All available wireline logs on the 32-8 #301 well have previously been submitted to the Oil Conservation Division.
- XI. There are no freshwater wells available for sampling within one mile of the subject proposed disposal well.

XII. **Statement**

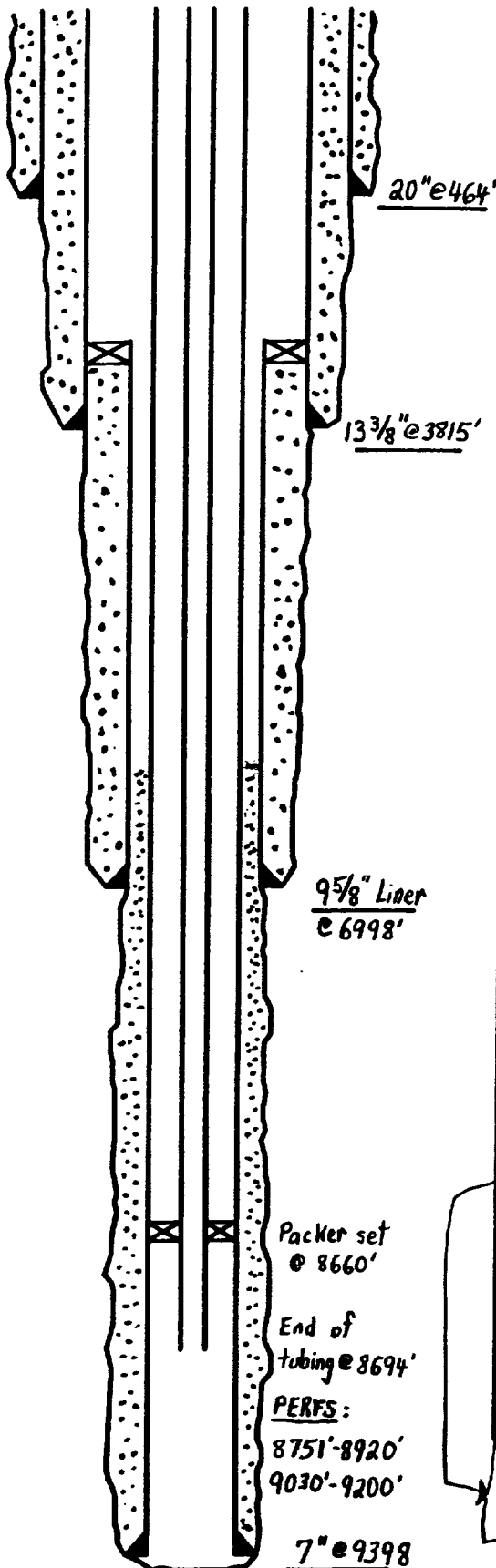
Phillips Petroleum Company geologists and engineers have examined available geologic and engineering data and can find no evidence of or reason to believe of any hydrologic connection between the proposed saltwater injection zones and any underground source of potable water.

**Phillips Petroleum Company
Farmington Area**

**Salt Water Disposal Well
Casing Design**

SJ 32-8 # 301 SWD

ATTACHMENT NO. 1



Casing/Tubulars Program

	Size (in)	Grade	Setting Depth (ft)
Conductor	20" 94#/ft	K-55 ST&C	464'
Surface	13 3/8" 68#/ft	N-80 Buft.	3097'
	13 3/8" 72#/ft	N-80 ST&C	718'
Intermediate Liner	9 5/8" 40#/ft	1191' L-80	Top 3641'
	9 5/8" 40#/ft	2146' S-95	Bottom 6998'
Production	7" 29#/ft	L-80	178'
	7" 26#/ft	N-80	212'
	7" 26#/ft	S-95	9008'
Tubing	3 1/2" 9.3#/ft	N-80	8694'

Cement Program

	Lead	Tail	Comments
Conductor	762 sxs. CL "8" @ 15.6 ppq 1.18 ft ³ /sx	100 sxs. CL "8" w/ 3% CaCl ₂ @ 15.6 ppq 1.18 ft ³ /sx	Circ. 195 sxs. to surf.
Surface	2nd Stage 1441 sxs. Light Cmt. w/ 10% Gilsa/sx @ 12.4 ppq 1.86 ft ³ /sx	200 sxs. CL "8" @ 15.6 ppq 1.18 ft ³ /sx	Circ. 1225 sxs. cmt. to surf. Stg. tool @ 2703'
Intermediate	1145 sxs. 50:50 Poz w/ 2% gel @ 13.6 ppq 1.26 ft ³ /sx	100 sxs. CL "8" w/ .8% Halad 9 @ 15.6 ppq 1.18 ft ³ /sx	Circ. cmt. to top of liner
Production	825 sxs. CL "6" @ 15.5 ppq 1.62 ft ³ /sx	None	Good circ. during cmt. job.
Surface	1st Stage 333 sxs. Light Cmt. w/ 10% Gilsa/sx @ 12.4 ppq 1.86 ft ³ /sx	500 sxs. CL "8" @ 15.6 ppq 1.18 ft ³ /sx	Circ. 120 sxs. cmt. to surf.

AFFIDAVIT OF PUBLICATION

COPY OF PUBLICATI

No. 27071

STATE OF NEW MEXICO,
County of San Juan:

CHRISTINE HILL being duly
sworn, says: "That she is the
NATIONAL AD MANAGER of
The Farmington Daily Times, a daily
newspaper of general circulation
published in English in 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 quali-
fied for the purpose within the
meaning of Chapter 167 of the 1937
Session Laws of the State of New
Mexico for ONE consecutive
(days) (/////) on the same day as
follows:

First Publication WEDNESDAY, JANUARY 9, 1991

Second Publication _____

Third Publication _____

Fourth Publication _____

and that payment therefore in the
amount of \$ 13.99 has been made.

Christine Hill

Subscribed and sworn to before me
this 9TH day of
JANUARY, 1990.

Connie Andrae
Notary Public, San Juan County,
New Mexico

My Comm expires: July 3, 1993

LEGAL NOTICE

Notice is hereby given
of the application of
Phillips Petroleum Com-
pany. Attention: K. Am,
Manager, Permian Basin
Region, 4001 Penbrook
St., Odessa, Texas
79762, telephone (915)
368-1488, to the Oil Con-
servation Division, New
Mexico Energy and Min-
erals Department, for ap-
proval of the following well
for the purpose of salt
water disposal.

Well No. 301

Unit Name:

San Juan 32-8 Unit

Location: Section 16,

T-31-N, R-8-W,

San Juan County,

New Mexico

The disposal formation
is Morrison, Bluff and En-
trada at an approximate
depth between
8761-9200 feet below the
surface of the ground. Ex-
pected maximum disposal
rate is 10,000 barrels per
day and expected max-
imum injection pressure is
2000 pounds per square
inch.

Interested parties
must file objections or
request for hearing
with the Oil Conserva-
tion Division, P.O.
Box 2088, Santa Fe,
New Mexico 87501,
within fifteen days of
this publication.

Legal No. 27071 pub-
lished in the Farmington
Daily Times, Farmington,
New Mexico on Wednes-
day, January 9, 1991.

Entrada and Bluff Step Rate Test

San Juan 22-8 Unit No. 301
 Entrada 174/89
 SAN JUAN 22-8 301

