

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

August 28, 1991

Meridian Oil Inc.
P.O. Box 4289
Farmington, New Mexico 87499

Attention: George T. Dunn

Re: Amendment of Division Order No. SWD-176

Dear Mr. Dunn:

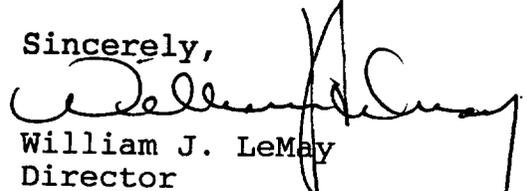
Reference is made to your request dated February 6, 1991, to amend Division Order No. SWD-176, which order authorized El Paso Natural Gas Company to utilize the Ute Well No. 1 located in Unit M of Section 11 Township 32 North, Range 14 West, NMPM, San Juan County, New Mexico, as a disposal well, injection to occur into the Bluff and Entrada formations at approximately 3765 feet to 4152 feet. It is our understanding that you wish to amend the injection interval to include the Morrison formation from a depth of approximately 3285 feet to 3575 feet.

The injection interval for the subject well is hereby amended to include the Morrison formation from a depth of approximately 3285 feet to 3575 feet subject to the following conditions:

- 1) The casing in the subject well shall be pressure tested from the surface to the proposed packer setting depth to assure the integrity of such casing;
- 2) 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 657 psi;
- 3) 2 7/8 inch plastic lined tubing shall be installed in a packer set at approximately 3237 feet;
- 4) All other provisions of Division Order No. SWD-176 shall remain in full force and effect;

In addition, Meridian shall obtain applicable Indian and/or EPA approval for such amendment prior to conducting workover operations.

Sincerely,

A handwritten signature in cursive script, appearing to read "William J. LeMay". The signature is written in black ink and is positioned above the typed name and title.

William J. LeMay
Director

xc: OCD-Aztec
R. Brown
File-SWD-176

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. Operator: Meridian Oil
Address: 3535 East 30th Street, Farmington, NM 87401
Contact party: George T. Dunn Phone: (505) 326-9837

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 SWD-176

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

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. NONE AT THIS TIME

* 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. Currently not available.
No fresh water wells in area.

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: George T. Dunn Title Regional Production Engineer

Signature: *George T. Dunn* Date: February 6, 1991

* 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.

UTE #1 SWD
Proposed Amendment to State
Authorization to Inject
February 8, 1991

Meridian Oil proposes to amend the current State order #SWD-176 for our Ute #1 water disposal well. We propose the addition of the Morrison formation to the current disposal intervals, Bluff and Entrada.

III. B.

- (1) Formation name: Morrison
- (2) Injection Intervals: 3285'-3575'
- (3) This well was originally drilled and completed as a Paradox (2nd Sour) gas producer.
- (4) 9-13-76: Spotted 50 sx cmt across 2nd Sour (8925'-9005'). Perfed 4 holes @ 4220', set cement retainer @ 4200', couldn't sting into retainer. Perfed 4 holes @ 4192'. Set packer @ 4030' & squeezed perms w/200 sx cement. Temperature survey indicated TOC @ 2600'.
- (5) The next higher producing interval is the Dakota (2842'-3046'). The next lower producing interval is the Paradox (Top @ 8295').

- VII. (1) The proposed average future injection rate is estimated at 500 BHPD. The estimated maximum is 1000 BHPD.
- (2) The system will be closed.
 - (3) The estimated maximum surface injection pressure is 700 psi. The average surface injection pressure is estimated to be 300 psi.
 - (4) The water utilized in the attached Paradox water analysis was taken from the SWD holding tanks on Ute #1 location.
 - (5) Injection is for disposal purposes into a zone not productive of oil or gas. Chemical analysis of the zone formation water will be supplied when available.

VIII. The Morrison Formation, as picked from samples, occurs from 3046 to 3554 feet. This 508 foot thick interval consists of light green, brown, waxy shales ranging from 10 to 110 feet in thickness and porous, medium grained sandstones ranging from 10 to 20 feet thick. The Cretaceous Mesaverde Formation crops out on the surface at the Ute #1 location and consequently no shallow Tertiary aquifers are present in the immediate area of the well.

XII. No evidence of open faults or hydrologic connection of the disposal zone with any underground source of drinking water exists based on inspection of all available geologic data.

III.A.

Pertinent Data Sheet - UTE #1 Bluff-Entrada SWD

Location: 560'FSL 315' FWL, SEC. 11 T32N R14W, SAN JUAN COUNTY, N.M.

Field: Barker Creek Paradox
Bluff (SWD)

Elevation: 6762'GR
12'KB

TD: 9265'
PBTD: 4161'

Completed: 5-13-47

GWI: 100.000%
NRI: 87.500%

Initial Potential:
SICP=2975 psi AOF= 74 MMCF/D

Casing Record:

Hole Size	Csg. Size	Wt. & Grade	Depth Set	Cement	Top/Cmt.
16"	13-3/8"	54.0# J-55	320'	200 sx	circ. cmt
12-1/4"	9-5/8"	25.4#	3052'	200 sx	2256' calc.
8-3/4"	7"	23# H-40	9257'	365 sx	6391' calc.

Tubing Record: 2-7/8" 6.4# J-55 (plastic lined) 3285'
Baker Loc-Set Pkr @ 3237'

* TOC above sq
perfs @ 4195'
=2600' TS

Formation Tops:

Mancos	965'	Rico	7080'
Dakota	2842'	Pennsylvanian	7146'
Morrison	3046'	Hermosa	7146'
Bluff	3554'	Paradox	8320'
Entrada	4035'	2nd Sour	8925'

Logging Record: 1/51: Electric Log, Microlog. 1/89: Cyberscan, Sonic, TDT, CBL.

Stimulation: Perfed 2nd Sour 8925'-9005'w/6 spf, total 480 shots. Acidized w/2000 gal & gauged 22 MMCF/D. Reacidized w/8000 gal & gauged 74 MMCF/D.

Workover History: 9-3-58 Casing leaks were located between 6092'-6212'. Squeezed off & csg tested to 1600#. Well temporarily abandoned.

9-13-76 Spotted 50 sx cmt across 2nd Sour (8925'-9005'). Perfed 4 holes @ 4220', set cmt ret @ 4200', couldn't sting into ret, perfed 4 holes @ 4192', set pkr @ 4030' & sq w/200 sx cmt. Temp survey indicated TOC @ 2600'. Perfed Entrada 4043'-4143' w/1 spf & Bluff @ 3919'-29', 3898'-3908' w/ 4 spf, & 3820'-70', 3690'-3740' w/1 spf. Landed 2-7/8" plastic lined tbg @ 3699' w/loc-set pkr @ 3668'. Acidized w/3000 gal 7-1/2% in 3 stages. Initial disposal rate varied from 87-325 BWPD.

11-20-90 Set Baker Loc-Set pkr @ 3651'. Pumped down csg, circ up tbg. Reset pkr @ 3455'. Pumped down csg, circ up tbg. Reset pkr @ 3237'. Pumped down csg, did not circ. & held 1000 psi. Resumed water injection.

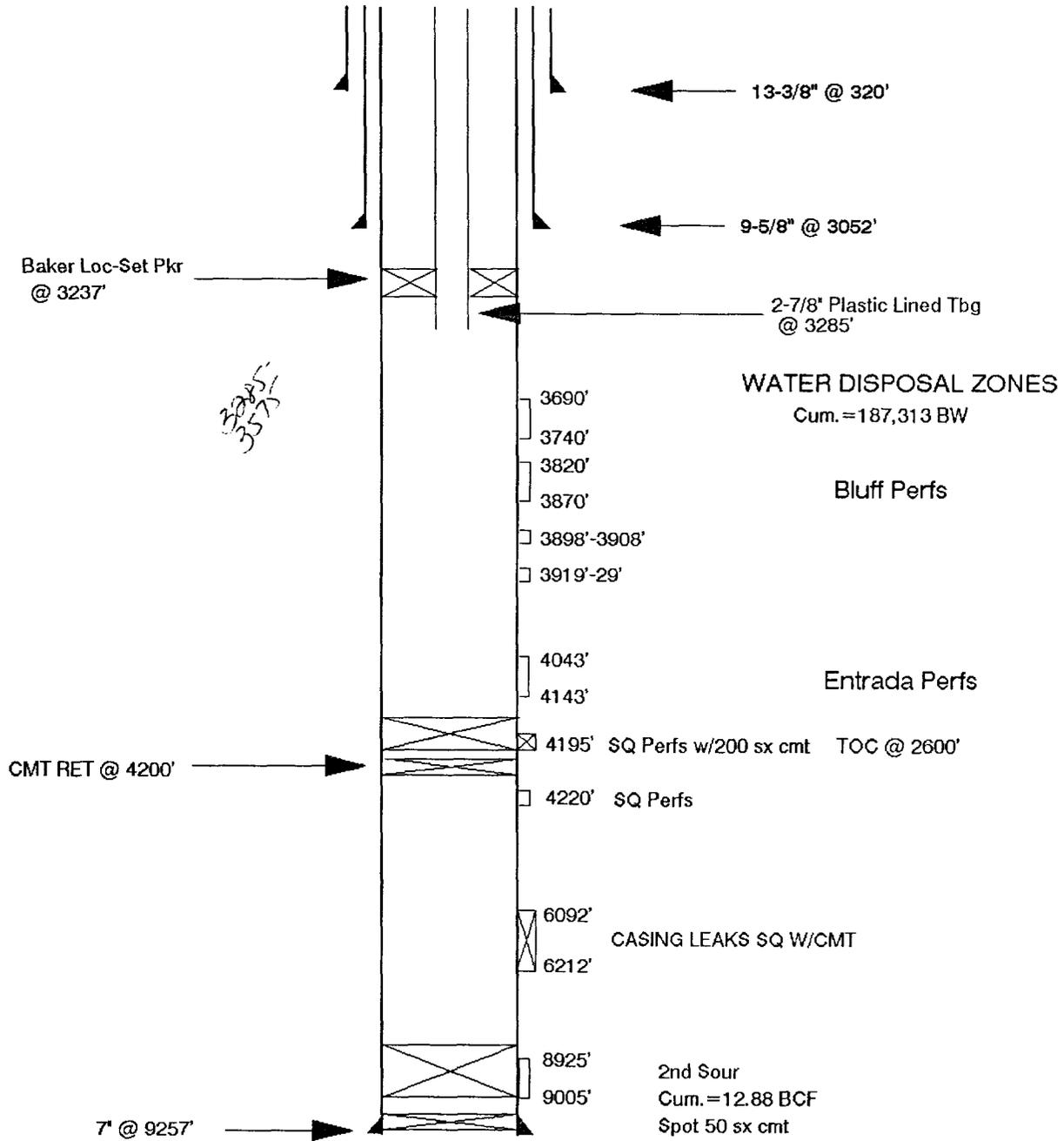
Production History: Cum. 2nd Sour= 12.88 BCF. Cum. water disposal= 178,313 BW as of 1-1-91.

UTE #1 SWD Bluff-Entrada

Barker Dome Field

UNIT M SECTION 11 T32N R14W
SAN JUAN COUNTY, NEW MEXICO

Present - January 1991

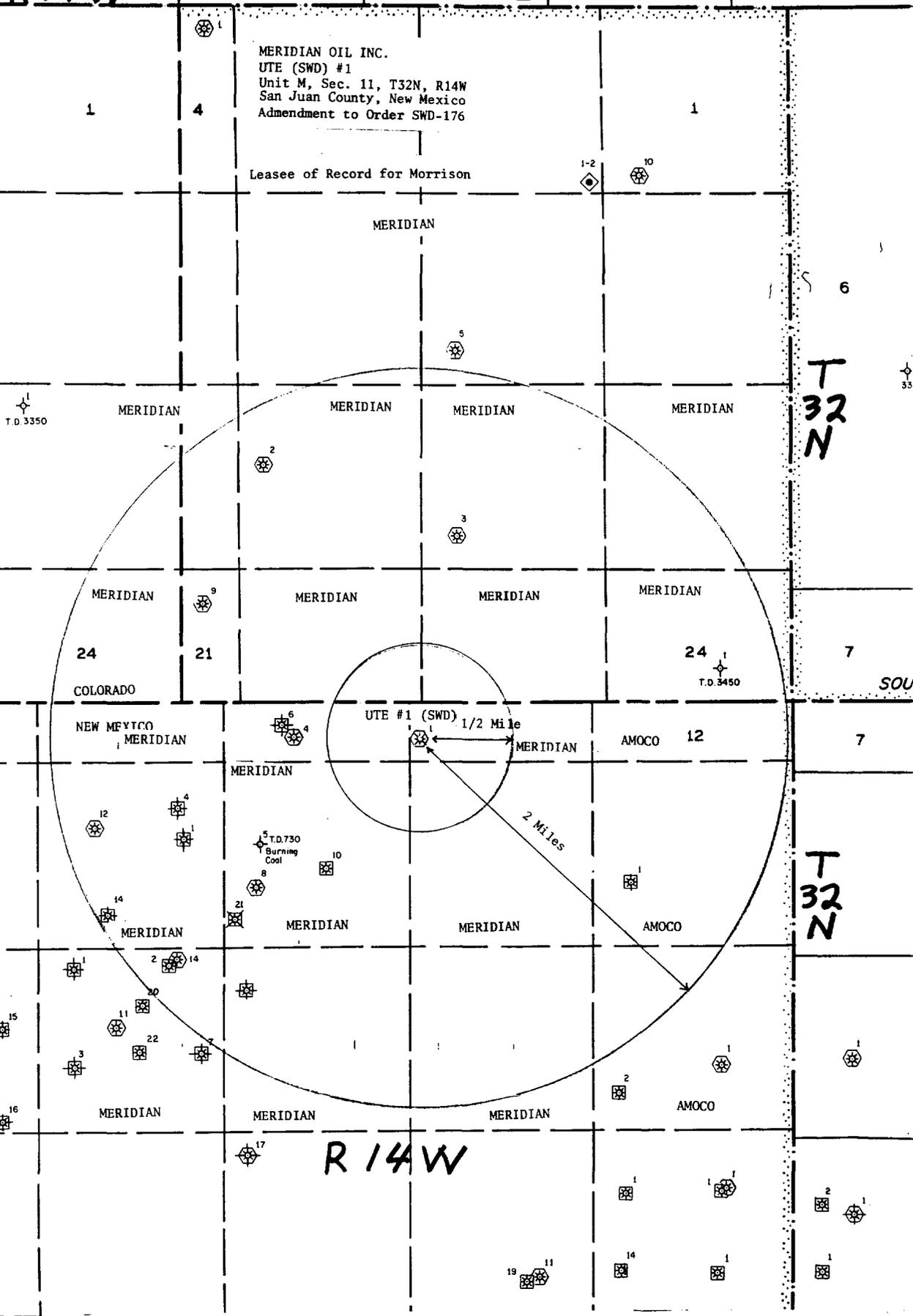


B 14 W

R-13 1/2 -W

MERIDIAN OIL INC.
UTE (SWD) #1
Unit M, Sec. 11, T32N, R14W
San Juan County, New Mexico
Admendment to Order SWD-176

Leasee of Record for Morrison



T.D. 3350

T.D. 3450

T.D. 730
Burning
Coal

T
32
N

T
32
N

R 14 W

Foreman: LYLE NATION

STRICKCO
Water Analysis Laboratories
FARMINGTON, NEW MEXICO 87401

File WA/0318/91

Company MERIDIAN OIL INC. Well Name Ute #1 SWD Sample No. One

Formation PARADOX Depth 8950' Sampled From SWD TANK

Location "M" Sec.11, 32N-14W Field Barker Creek County San Juan State N.M.

Date Sampled 1/17/91 Date Analyzed 1/21/91 Engineer W.D. Stricklin

Total Dissolved Solids 50,645 mg/L Calculated

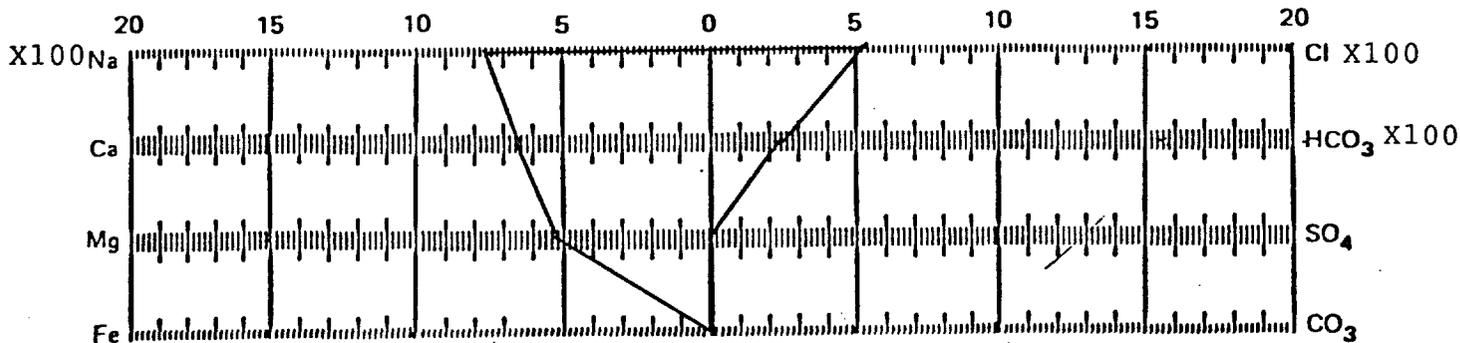
Sp. Gr. 1.020 @ 66 °F,

Resistivity 0.170 ohm-meters @ 66 °F Measured

pH 6.34 @ 66 °F Measured

Constituents	meq/L	mg/L	Constituents	meq/L	mg/L
Sodium	<u>753.1</u>	<u>17,314</u>	Chloride	<u>528.8</u>	<u>18,744</u>
Calcium	<u>6.4</u>	<u>128</u>	Bicarbonate	<u>235.9</u>	<u>14,396</u>
Magnesium	<u>5.2</u>	<u>63</u>	Sulfate	<u>-0-</u>	<u>-0-</u> (Grav.)
Iron	<u>-0-</u>	<u>-0-</u>	Carbonate	<u>-0-</u>	<u>-0-</u>
Hydrogen Sulfide	<u>Absent</u>		Hydroxide	<u>-0-</u>	<u>-0-</u>

Scale: meq/L



All analyses except iron determination performed on a filtered sample.

AFFIDAVIT OF PUBLICATION

COPY OF PUBLICATI

No. 27191 _____

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 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) (/////) on the same day as follows:

First Publication WEDNESDAY, FEBRUARY 6, 1991

Second Publication _____

Third Publication _____

Fourth Publication _____

and that payment therefore in the amount of \$ 12.56 has been made.

Christine Hill

Subscribed and sworn to before me this 6TH day of FEBRUARY, 1991.

Connie Andrae

Notary Public, San Juan County,
New Mexico

My Comm expires: JULY 3, 1993

**LEGAL NOTICE
INTENT TO
DISPOSE OF
WATER IN THE
SUBSURFACE**

Meridian Oil Company proposes to dispose of produced water in the Morrison formation. We are already disposing of produced water in the Bluff and Entrada formations. The injection well will be the Ute #1 located 560' FSL, 315' FWL Section 11 T32N R14W N.M.P.M., San Juan County, New Mexico. Depth of injection will be from 3289'-8575'. Maximum anticipated rate is 1000 BWPD at a maximum surface injection pressure of 700 psig.

Question should be addressed to Meridian Oil, Inc., Attention: G.T. Dunn, Post office Box 4289, Farmington, New Mexico 87498 or call (505) 326-9712. Objections to this proposal or request for hearing by interested parties must be filed with the New Mexico Oil Conservation Division, Post Office Box 2000, Santa Fe, New Mexico 87501 within 15 days.

Legal No. 27191 published in the Farmington Daily Times, Farmington, New Mexico on Wednesday, February 6, 1991.