

ARCO Oil and Gas Company
Permian District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 684 0100



November 24, 1986

Mr. Richard L. Stamets
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Emma Lawrence Well No. 1
Application for Authorization of Water Disposal Well
Lea County, New Mexico

Dear Mr. Stamets:

ARCO Oil and Gas Company respectfully requests administrative approval to dispose of water in the ARCO-operated Emma Lawrence No. 1. The subject well is located 1980' FSL and 660' FEL, in Section 23, Township 17 South, Range 38 East, Lea County, New Mexico. The Emma Lawrence No. 1 will be used to dispose of produced water from Wolfcamp and Devonian wells in the South Knowles Field in which ARCO owns an interest. A NMOCD Form C-108 is attached along with all of the necessary data required to complete the form. A copy of Form C-108 has been mailed to the surface owner by certified mail. ARCO Oil and Gas Company is the only leasehold operator within 1/2 mile of the Emma Lawrence No. 1.

The ARCO-operated R. F. Fort No. 1 is the only well within a 1/2 mile radius of the Emma Lawrence No. 1. The cement behind the production string in the R. F. Fort No. 1 will be raised to cover the injection interval in the Emma Lawrence No. 1.

If any additional information is needed, please contact me at (915) 688-5557 and I will be happy to provide it to you.

Yours very truly,

Jack T. Lowder

Jack T. Lowder
Senior Engineer

JTL:lu
Attachments

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no
- II. Operator: ARCO Oil and Gas Company
Address: P. O. Box 1610, Midland, Texas 79702
Contact party: Jack T. Lowder Phone: (915) 688-5557
- 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: Jack T. Lowder Title Sr. Oper./Analy. Engineer
Signature: Jack T. Lowder Date: 11-24-86
- * 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.

Attachment to Form C-108

ARCO's Emma Lawrence No. 1

Section

III. Well Data: See attached well diagram and tabular well data sheet.

V. Area of Review: See attached plat.

VI. Well Data in Area of Review:

ARCO's R. F. Fort No. 1 (see attached schematic)

Type: South Knowles Devonian Producer

Date Drilled: 1-1-85

Location: 2310' FSL, 330' FWL, Sec. 24-T17S-R38E

Depth: 12225'

Record of Completion: Perf'd Devonian 12208-12223'

w/2 JSPF (30 Holes). Acidized Perfs 12208-12223' w/175
gal 7½% NEFE HCL Acid. Reperf'd 12208-12223' w/1 JSPF
(15 holes). Perf'd Devonian 12172-184' w/2 JSPF (24 holes).
IP 2-21-85 Pumping 120 BOPD, no water and gas TSTM.

VII. Data on Proposed Operation:

- 1) Proposed Average Daily Rate: 800 BWPD
Proposed Maximum Daily Rate: 2500 BWPD
- 2) Type of System: Open
- 3) Proposed Average Injection Pressure: 500 psig
Proposed Maximum Injection Pressure: 1150 psig
- 4) Injection Water Source: South Knowles Devonian,
Southeast Knowles Wolfcamp

Compatibility Tests: See attached water analyses.

- 5) Chemical Analysis of Disposal Zone: See attached water analysis.

VIII. Geological Data on the Injection Zone:

Geological Name: San Andres Dolomite

Lithological Detail: Fine to Very Fine Grain, Dense Crystalline
Dolomite

Thickness: 919'

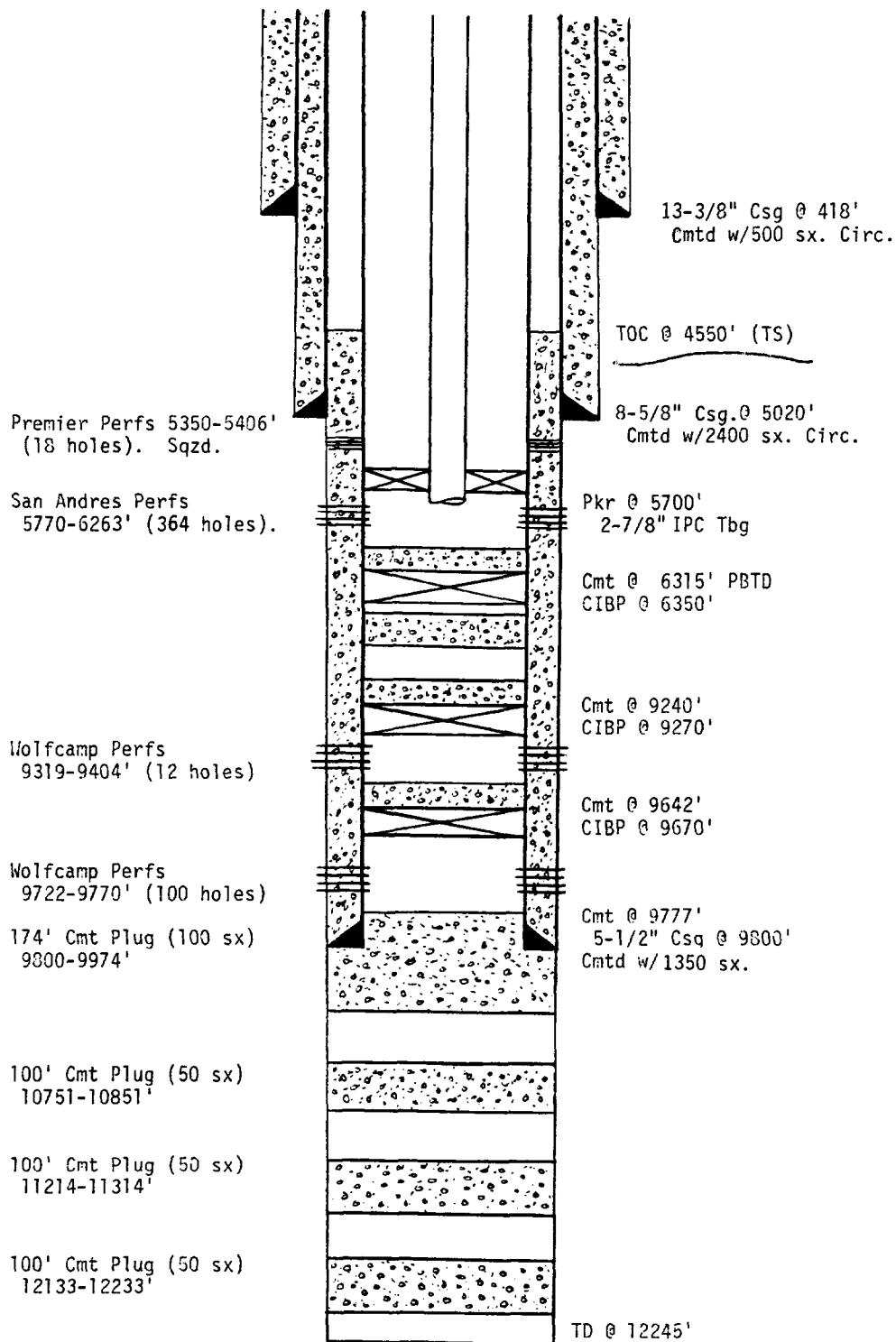
Depth: 5385' to 6304'

Geological Data of Drinking Water Zone:

The underground source of drinking water overlying the zone of disposal is the Ogallala, which occurs near the surface and is approximately 350' thick. There is no known source of drinking water below the zone of disposal.

- IX. Proposed Stimulation Program: Acidize San Andres perforations with 4100 gal 15% NEFE HCL, and if necessary, Acid Frac San Andres with 35000 gal gelled 15% NEFE HCL acid.
- X. Log and Test Data: Test Data attached. Logs enclosed.
- XI. Chemical Analysis of Fresh Water: See attached water analysis sheets dated 2-24-86 for freshwater wells shown on map.
- XII. The available geologic and engineering data have been examined, and there is no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Proof of Notice: Copy of application sent to surface owner by certified mail. Affidavit of Mailing attached. Proof of Publication to be received from Hobbs Daily News Sun.

ARCO Oil and Gas Company
 Emma Lawrence No. 1
 1980' FSL & 660' FEL
 Sec. 23-T17S-R38E
 Lea County, New Mexico



ARCO Oil and Gas Company
Emma Lawrence No. 1
1980' FSL & 660' FEL
Sec. 23-T17S-R38E
Lea County, New Mexico

Disposal Well Tabular Data

Surface Casing

Size: 13-3/8" set at 418'. Cemented with 500 sx.
TOC at surface determined by circulating.
Hole Size: 17-1/2"

Intermediate Casing

Size: 8-5/8" set at 5020'. Cemented with 2400 sx.
TOC at surface determined by circulating.
Hole Size: 11"

Long String

Size: 5-1/2" set at 9800'. Cemented with 1350 sx.
TOC at 4550' determined by temperature survey.
Hole Size: 7-7/8"

Total Depth: 12249'

Injection Interval: 5770' to 6263' (Perforated)

Tubing: Size 2-7/8" lined with internal plastic coating (PA-521) set in a Baker Lok-Set packer at 5700 feet.

Name of Injection Formation: San Andres

Is this a new well drilled for injection? No, the well was originally drilled to test the Devonian formation.

Has the well ever been perforated in any other zones? Yes

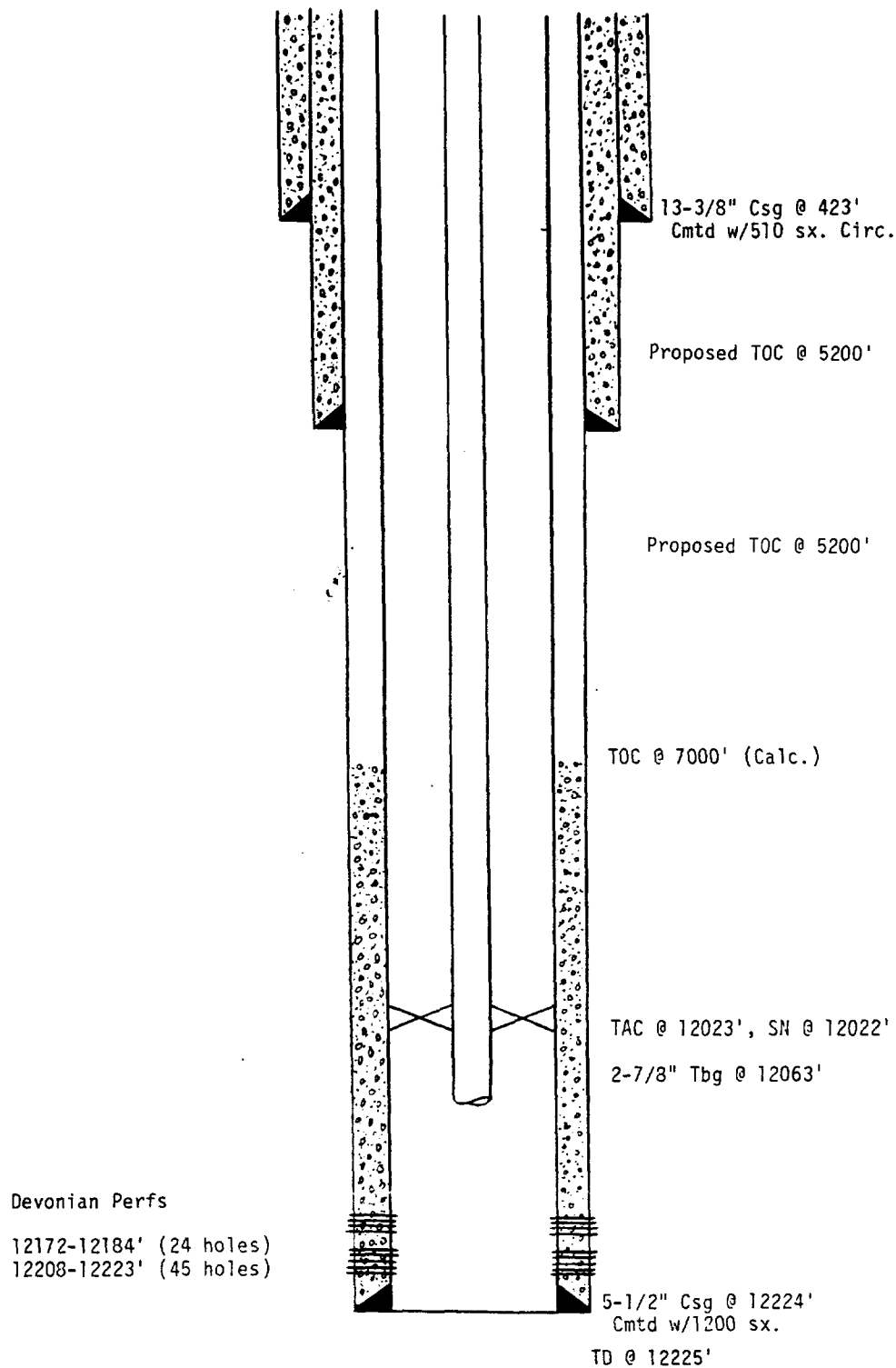
Perforated intervals and plugging detail: Spotted 100' cement plugs (50 sx/plug) at 12133-12233', 11214-11314', 10751-10851'. Spotted 200' cement plug (100 sx/plug) at 9774-9974'. Perforated 9722-9733' and 9744-9770' (100 holes). Set CIBP at 9670'. Spotted cement from 9642-9670'. Perforated 9319, 33, 35, 48, 54, 55, 62, 63, 88, 94, 9401 and 9404' (12 holes). Set CIBP at 9270'. Spotted cement from 9240-9270'. Spotted 210' cement plug (25 sx) at 7490-7700'. Perforated 5839, 90, 5920, 40, 51, 65, 76, 94, 95, 6003, 22, 33, 6105, 34, 35, 40, 57, 6216, 28, 32, 37, 40, 41 and 6242' (24 holes). Set CIBP at 5800'. Spotted cement from 5765-5800'. Perforated 5350-54, 57, 61-63, 76-78, 81, 83, 87-89 and 5406. Plan to squeeze perforations 5350-5406 with 50 sx of cement and drill out cement and CIBP at 5800'.

AOGC - Emma Lawrence No. 1
Page Two

Depth and Name of overlying and/or underlying oil or gas zones (pools) in this area:

<u>Name</u>	<u>Depth</u>
South Knowles Devonian	12170'
Southeast Knowles Wolfcamp	9644'

ARCO Oil and Gas Company
 R. F. Fort No. 1
 2310' FSL & 330' FWL
 Sec. 24-T17S-R38E
 Lea County, New Mexico



709 W INDIANA
MIDLAND TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

RESULTS REPORTED 1-17-86

SOURCE OF SAMPLE AND DATE TAKEN:

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0302	1.0242	1.0373	
pH When Sampled				
pH When Received	6.97	6.85	6.56	
Bicarbonate as HCO ₃	720	811	988	
Supersaturation as CaCO ₃	20	35	30	
Undersaturation as CaCO ₃	--	--	--	
Total Hardness as CaCO ₃	6,200	5,200	9,700	
Calcium as Ca	2,000	1,480	2,660	
Magnesium as Mg	292	365	741	
Sodium and/or Potassium	12,072	10,001	16,720	
Sulfate as SO ₄	1,501	1,676	2,095	
Chloride as Cl	21,483	17,400	30,538	
Iron as Fe	0.08	0.63	0.59	
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	38,067	31,732	53,742	
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	275	875	1,750	
Resistivity, ohms/m at 77° F.	0.206	0.247	0.151	
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Calcium Carbonate Scaling Tendency	NONE	NONE	NONE	
Calcium Sulfate Scaling Tendency	NONE	NONE	NONE	

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks

RESULT OF WATER ANALYSES

LABORATORY NO. 186169 (Page 2)
TO: Mr. Jerry Guy SAMPLE RECEIVED 1-14-86
P.O.Box 1710, Hobbs, NM RESULTS REPORTED 1-17-86

COMPANY ARCO Oil & Gas Company LEASE As listed
FIELD OR POOL Knowles, South
SECTION BLOCK SURVEY COUNTY Lea STATE NM
SOURCE OF SAMPLE AND DATE TAKEN:

- NO. 1 Produced water-taken from Belco's C.E. Brooks #1. 1-13-86
NO. 2 Produced (Devonian) water- taken from R. F. Fort. 1-13-86
NO. 3 Produced (Wolfcamp) water-taken from R. F. Fort "A". 1-13-86
NO. 4

REMARKS: Samples heated to 115°F.

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.				
pH When Sampled				
pH When Received				
Bicarbonate as HCO ₃	1,000	805	720	
Supersaturation as CaCO ₃	120	80	10	
Undersaturation as CaCO ₃	--	--	--	
Total Hardness as CaCO ₃				
Calcium as Ca				
Magnesium as Mg				
Sodium and/or Potassium				
Sulfate as SO ₄				
Chloride as Cl				
Iron as Fe				
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated				
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				
Resistivity, ohms/m at 77° F.				
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				
Calcium Carbonate Scaling Tendency	NONE	NONE	NONE	
Results Reported As Milligrams Per Liter				
Additional Determinations And Remarks <u>A careful comparison of the results herein show no implication of any potential incompatibility between any combination of the waters represented herein. We also find no implication of a compatibility problem in combining any of the above waters with San Andres. However, this should be qualified in that this is based on a comparison with San Andres records in the general area. This is to say that based on the results herein, no problem should be encountered as a result of the combination of these waters in any proportion desired. It should be added that the higher temperature showed no implication of causing any calcium carbonate scaling potential.</u>				

Martin Water Laboratories, Inc.

P. O. BOX 1468
MONAHANS, TEXAS 79756
PHONE 943-3234 OR 563-1040

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

RESULT OF WATER ANALYSES

TO: Mr. J. L. McGill
P.O. Box 2239, Midland, Texas

LABORATORY NO. 1079221
SAMPLE RECEIVED 10-24-79
RESULTS REPORTED 10-25-79

COMPANY H. L. Brown, Jr.

LEASE Indian Wells Jones
Edmonson

FIELD OR POOL _____ Edmonson
SECTION _____ BLOCK _____ SURVEY _____ COUNTY Gaines STATE Texas

SOURCE OF SAMPLE AND DATE TAKEN:

Produced water - taken from Mobil ARCO Jones. 10-23-79

NO. 2 Produced water - taken from Indian Wells Jones fl. 10-23-79

Produced water - taken from Indian Wells Jones #3. 10-23-79

NO. 4

REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0237	1.0268	1.0224	
pH When Sampled				
pH When Received	6.9	7.4	7.3	
Bicarbonate as HCO ₃	1.452	1.513	1.525	
Supersaturation as CaCO ₃				
Undersaturation as CaCO ₃				
Total Hardness as CaCO ₃	5,000	5,250	4,900	
Calcium as Ca	1,520	1,560	1,440	
Magnesium as Mg	292	328	316	
Sodium and/or Potassium	9,858	10,763	9,919	
Sulfate as SO ₄	3,538	3,726	3,542	
Chloride as Cl	15,269	16,639	15,269	
Iron as Fe	0.78	1.2	0.39	
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	31,289	34,579	32,011	
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	1,000	850	1,750	
Resistivity, ohms/m at 77° F.	0.240	0.227	0.240	
Suspended Oil				
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks **Sample from Jones #2 - all Oil.**

These analyses will be utilized as typical natural San Andres water records.

709 W INDIANA
MIDLAND, TEXAS 79701
PHONE 683-4521

RESULT OF WATER ANALYSES

LABORATORY NO. 286364
SAMPLE RECEIVED 2-24-86
RESULTS REPORTED 2-28-86

COMPANY ARCO Oil & Gas Company LEASE Emma Lawrence

FIELD OR POOL 143 - 24
SECTION 7-23 BLOCK _____ SURVEY R38E - T17S COUNTY Lea STATE Nm
SOURCE OF SAMPLE AND DATE TAKEN: _____

NO. 1 Raw water - taken from water well located 3877' Northeast of Emma Laverence. 2-24-86
 NO. 2 Raw water-taken @ ranch house - front faucet 3920' north of Emma Laverence. 2-24-86
 NO. 3 Raw water - taken from windmill located 4,224' SSE of Emma Laverence. 2-24-86
 NO. 4 _____

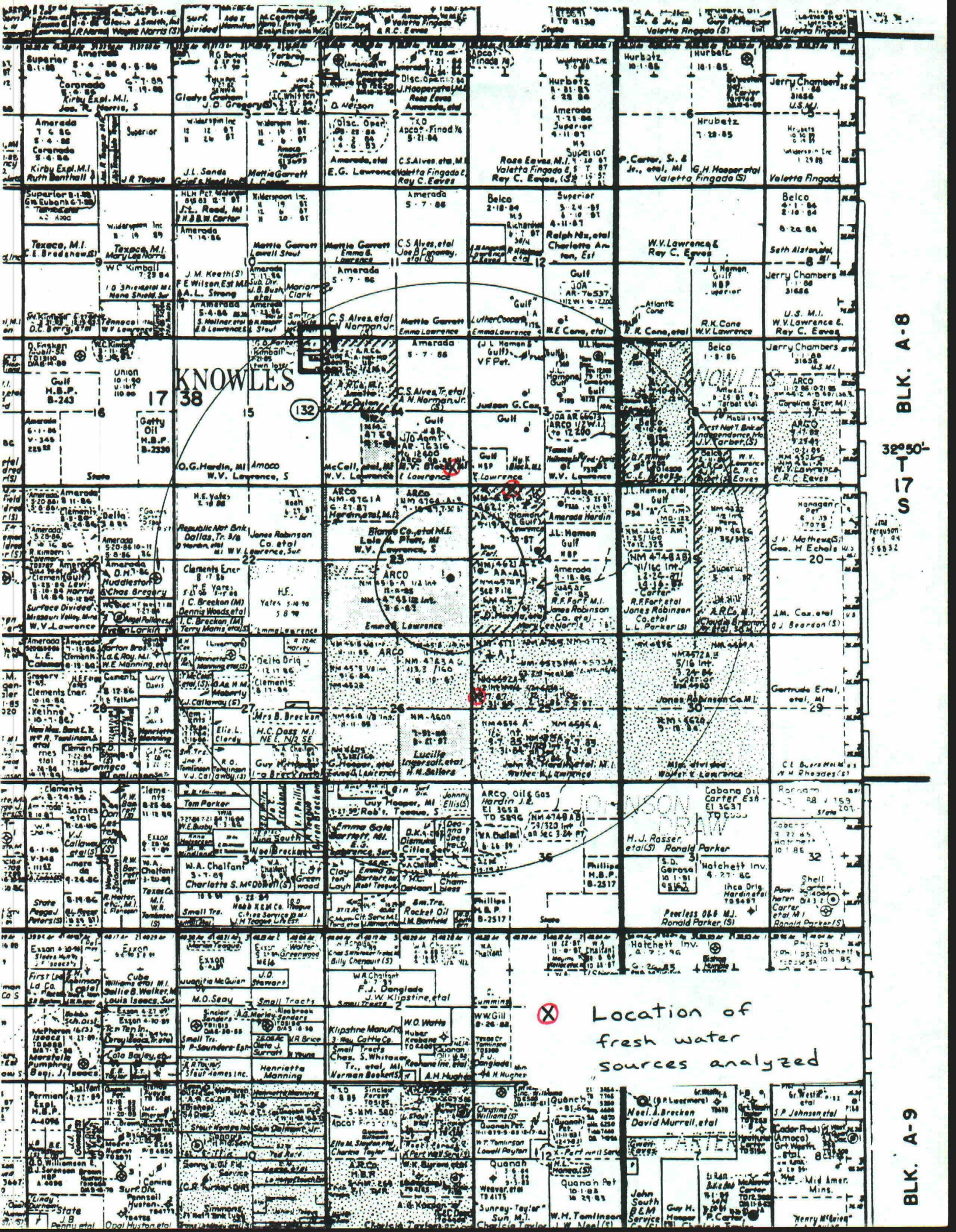
REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES				
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.	1.0014	1.0015	1.0014	
pH When Sampled				
pH When Received	8.06	7.89	8.01	
Bicarbonate as HCO ₃	229	220	229	
Supersaturation as CaCO ₃				
Undersaturation as CaCO ₃				
Total Hardness as CaCO ₃	216	252	224	
Calcium as Ca	67	74	66	
Magnesium as Mg	12	17	15	
Sodium and/or Potassium	49	34	45	
Sulfate as SO ₄	71	74	71	
Chloride as Cl	43	50	43	
Iron as Fe	0.21	0.80	0.84	
Barium as Ba				
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	470	468	468	
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				
Resistivity, ohms/m at 77° F.	0.0	0.0	0.0	
Suspended Oil	17.60	7.50	17.60	
Filtrable Solids as mg/l				
Volume Filtered, ml				

Results Reported As Milligrams Per Liter

Additional Determinations And Remarks

Additional Determinations And Remarks The undersigned certifies the above to be true and correct to the best of his knowledge and belief.



KNOWLES

X Location of fresh water sources analyzed

BLK. A-8

32°50' T 17 S

BLK. A-9

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-103
Revised 10-1-78

NO. OF COPIES RECEIVED	
DISTRIBUTION	
SANTA FE	
FILE	
U.S.G.S.	
LAND OFFICE	
OPERATOR	

5a. Indicate Type of Lease	
State <input type="checkbox"/>	Fee <input checked="" type="checkbox"/>
5. State Oil & Gas Lease No.	

SUNDRY NOTICES AND REPORTS ON WELLS

DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR.
USE "APPLICATION FOR PERMIT -" (FORM C-101) FOR SUCH PROPOSALS.

1. <input checked="" type="checkbox"/> OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER-		7. Unit Agreement Name
2. Name of Operator <u>ARCO Oil and Gas Company</u>		8. Farm or Lease Name <u>Emma Lawrence</u>
3. Address of Operator <u>P. O. Box 1710, Hobbs, New Mexico 88240</u>		9. Well No. <u>1</u>
4. Location of Well		10. Field and Pool, or Whdcat <u>Southeast Knowles Wolfcamp</u>
UNIT LETTER <u>I</u> <u>660</u> FEET FROM THE <u>East</u> LINE AND <u>1980</u> FEET FROM THE <u>South</u> LINE, SECTION <u>23</u> TOWNSHIP <u>17S</u> RANGE <u>38E</u> NMPM.		
15. Elevation (Show whether DF, RT, GR, etc.) <u>3663.3' GR</u>		12. County <u>Lea</u>

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data
NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF:

PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPS. <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input type="checkbox"/>	OTHER <u>Added Perfs & Treated Wolfcamp</u> <input checked="" type="checkbox"/>

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1703.

MIRU 9/05/85. POH w/rods & pump, NU BOP. POH w/tbg. RIH w/bit to PBD 9756'. DO FC & cmt 9756'-9777'. Perf'd Wolfcamp 9744-9770' w/2 JSPF (52 holes). RIH w/FBRC, set @ 9601'. Ran Base GR/Temp Survey 9500-9768'. Press tested csg/annulus to 500# OK. Acidized Wolfcamp 9722-9770' w/1000 gals 10# GBW carrying 1500# RS. Swbd 5 hrs, rec 22 BLW. POH w/pkr. RIH w/prod equip. Set TAC @ 9686'. In 19 hrs 9/19/85 pmpd 17' BO & 36 BW. In 24 hrs 9/22/85 pmpd 0 BO & 117 BW. Final Report.

RECEIVED
OCT 17 1985

CENTRAL FILES

Midland
Dallas
Midland

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

SIGNED W.D. McDaniel TITLE Dist Drlg. Supv. DATE 10/8/85

ORIGINAL SIGNED BY JERRY SEXTON
DISTRICT I SUPERVISOR

APPROVED BY _____ TITLE _____ DATE OCT 10 1985

CONDITIONS OF APPROVAL, IF ANY:

L CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501Form C-103
Revised 10-1-78

NO. OF COPIES RECEIVED	
DISTRIBUTION	
SANTA FE	
FILE	
U.S.O.S.	
LAND OFFICE	
OPERATOR	

5a. Indicate Type of Lease	
State <input type="checkbox"/>	Fee <input checked="" type="checkbox"/>
5. State Oil & Gas Lease No.	

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR.
USE "APPLICATION FOR PERMIT -" (FORM C-101) FOR SUCH PROPOSALS.)

1. <input checked="" type="checkbox"/> OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER-	7. Unit Agreement Name
2. Name of Operator ARCO Oil and Gas Company Division of Atlantic Richfield Company	8. Farm or Lease Name Emma Lawrence
3. Address of Operator P. O. Box 1710, Hobbs, New Mexico 88240	9. Well No. 1
4. Location of Well UNIT LETTER I 660 FEET FROM THE East LINE AND 1980 FEET FROM THE South LINE, SECTION 23 TOWNSHIP 17S RANGE 38E NMPM.	10. Field and Pool, or Wildcat Knowles Wolfcamp
15. Elevation (Show whether DF, RT, GR, etc.) 3663.3' GR	12. County Lea

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data
NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF:

PERFORM REMEDIAL WORK <input type="checkbox"/>	PLUG AND ABANDON <input type="checkbox"/>	REMEDIAL WORK <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
TEMPORARILY ABANDON <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	COMMENCE DRILLING OPNS. <input type="checkbox"/>	PLUG AND ABANDONMENT <input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	OTHER <input type="checkbox"/>	CASING TEST AND CEMENT JOB <input checked="" type="checkbox"/> Production Casing	OTHER <input checked="" type="checkbox"/> DST, Log, Perf, Treat & Complete

17. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1703.

On 4/17/85 ran DST #1 9715-65' Wolfcamp. Opened Tool @ 6:35 AM for 15 mins IFP w/weak blow, incr to strong blow. SI 60 mins. Opened for 120 mins, gas to surf in 50 mins. Max press 15# on 1/2" ck. SI for 240 mins. Rel test tools & POH to 4743', RO, rec 10 bbls gas cut oil, 20 BW, 1 bbl drlg mud in 2 1/2 hrs. Rec 39 MCFGD, 15 mins ISIP 3826#, 60 mins IFP 264#, 120 mins FFP 660#, 240 mins FSIP 3737#. BHT 156°F. Fin drlg 7-7/8" hole to 12,249' @ 12:00 noon 5/1/85. Ran GR-CDL/CN/w/Cal, GR-DLL/MLL w/Cal. DST #2 12,228-249' Devonian. TO @ 7:22 AM. IFP weak blow, incr to .5# after 30 mins, SI 1 hr. OT for 1 hr FFP, no fluid to surf. Closed tool for 2 hrs. Rel tool & POH to 4800'. Attempted to RO, dropped 3 bars, could not shear tool. POH w/tools. Rec 2270' fm wtr in DP. RIH w/DP OE & spotted 100' cmt plug across Devonian 12,233-133' w/50 sx Cl H Neat cmt. POH to 11,314' & spot 100' cmt plug 11,314-214' w/50 sx Cl H Neat cmt. Spotted 100' cmt plug 10,851-751'. POH w/DP. RIH w/2-7/8" tbg OE to 9974'. Spot 200' cmt plug 9974-9774' w/100 sx Cl H Neat cmt. Tag green cmt @ 9774'. Drld & washed cmt to 9795'. Set 45,000# wt on cmt plug, OK. DST #3 Wolfcamp, set pkrs @ 9630', OT & pkr failed. Re-set pkrs. OT & lost pkr seat. POH w/test tools. RIH w/bit, tagged PBD @ 9700'. DO cmt to 9770'. DST #4 9715-9770' Wolfcamp. OT w/weak blow, slowly incr to 2.5# in 2-3/4 hrs. Closed tool. Opened tool & RIH w/coil tbg to 5000'. Circ N₂ @ 400 SCF/min while GIH w/tbg. Circ N₂ @ 9400' for 1 1/2 hrs. No fluid to surf. Slowed pump rate to 250 SCF/min, circ 2 hrs. No fluid to surf. Pmpd total 8 hrs using 368,000 SCF N₂. POH w/coil tbg. Rel pkrs & POH w/test tools, had gas & oil w/1850' pipe in hole. Drop bar & RO 1/2 BO & 28 BW. (cont'd on back of page)

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

Signed Elizabeth Bush TITLE Drlg. Engr. DATE 5/30/85

ORIGINAL SIGNED BY DISTRICT

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

CENTRAL FILES

JUN 11 1985

Finished POH w/test tools. DO cmt to new PBTD 9800'. RIH w/2993' 5½" OD 17# L-30 csg, 6807' of 5½" OD 17# K-55 csg, set @ 9800'. FC set @ 9856'. Cmt'd 5½" OD csg w/550 sx Bl H Neat cmt. BP @ 12:20 PM 5/10/85. Inst wellhead. Temp survey indicated TOC @ 7400'. On 5/14/85 ran GR-CCL log 9755-9100'. Perf'd Wolfcamp w/4 JSPF @ 9722-9733' = 48 - .50" holes. RIH w/pkr & tbg, set pkr @ 9651' & acidized Wolfcamp perfs 9722-9733' w/1500 gals 15% HCL NEFE acid. In 3 hrs swbd 66 BLW & well kicked off flwg. In 16½ hrs rec 39 BNO & 66 BW. POH w'tbg & pkr. RIH w/compl assy, set TAC @ 9595'. RIH w/tbg & rods. On 24 hr potential test 5/30/85 pmpd 33 BO, 108 BW, 8 MCFG on 10 - 120" spm. Final Report.

RECEIVED

JUN 10 1985

RECEIVED

AFFIDAVIT OF MAILING

Jack T. Lowder, being duly sworn states that he is an engineer for ARCO Oil and Gas Company, the Applicant herein.

That on the 24th day of November, 1986, in the City of Midland, Midland County, Texas, he mailed in a sealed envelope, postage prepaid, a copy of the application and plat herein attached to the following:

Walter and Emma Lawrence
1026 E. Highland Drive
Hobbs, New Mexico 88240

Jack T. Lowder

Jack T. Lowder

State of Texas)
)
County of Midland)

Before me the undersigned, a Notary Public in and for the said County and State, on this 24th day of November, 1986, personally appeared Jack T. Lowder, to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes herein set forth.

Given under my hand and seal the day and year last above written.

My commission Expires:

5-28-90

Jane E. Hill
Notary Public

ARCO Oil and Gas Company
Permian District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 684 0100



CERTIFIED

November 24, 1986

RETURN
RECEIPT
REQUESTED

Walter and Emma Lawrence
1026 E. Highland Drive
Hobbs, New Mexico 88240

Dear Mr. and Mrs. Lawrence:

Attached is a copy of Form C-108 submitted to the New Mexico Oil Conservation Division requesting permission to dispose of water in the Emma Lawrence No. 1. For your convenience, we have included a plat indicating the location of the well covered by this application.

This letter will serve as formal notice, as required by the NMOCD, of our intention to convert the Emma Lawrence No. 1 to a water disposal well.

We will be happy to provide you with any additional information that you may require at your request. Thank you for your cooperation.

Yours very truly,

Jack T. Lowder
Senior Engineer

JTL:lu
Attachments

ARCO Oil and Gas Company
Permian District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 684 0100



November 24, 1986

Hobbs Daily News Sun
P.O. Box 860
Hobbs, New Mexico 88240

Dear Sirs:

CERTIFIED
RETURN
RECEIPT
REQUESTED

The New Mexico Oil Conservation Division requires that notice of an application to inject water be published in a newspaper of general circulation in the county in which the well is located. Please print the following notice in the Hobbs Daily News Sun as soon as possible.

"ARCO Oil and Gas Company, P.O. Box 1610, Midland, Texas, 79702, has filed an application with the New Mexico Oil Conservation Division seeking permission to dispose of salt water into a well in Lea County. The water disposal well will be located 1980' FSL, 660' FEL, Sec. 23, Township 17 South, Range 38 East. Water is to be injected into the San Andres formation at an approximate depth of 5700' to 6300'. A maximum injection rate of 2500 BWPD and a maximum injection pressure of 1150 psig is expected. Please refer questions to Jack Lowder at the above address, or call (915) 688-5557. Any requests for hearing or objections to this application must be made to the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501, within 15 days."

The notice is to run for one day. The New Mexico Oil Conservation Division also requires that proof of publication be submitted to them before our application is approved. Please send proof of publication, including a copy of the legal advertisement, to Mr. Richard L. Stamets, Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501. Please send an additional copy of the proof of publication to Mr. D. C. Douglas, ARCO Oil and Gas Company, P.O. Box 1610, Midland, Texas, 79702.

Please send the bill in care of Mr. S. D. Smith, ARCO Oil and Gas Company, P.O. Box 1710, Hobbs, New Mexico, 88240. Thank you for your help and cooperation.

Yours very truly,

Jack T. Lowder

J. T. Lowder
Senior Engineer

JTL:lu
Attachments

cc: Mr. R. L. Stamets
New Mexico Oil Conservation Division

Mr. S. D. Smith - Hobbs

ARCO Oil and Gas Company
Central District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 688 5200



RECEIVED
NEW MEXICO OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
DEC 21 1986

December 18, 1986

Mr. David R. Catanach
New Mexico Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Emma Lawrence Well No. 1
Application for SWD Authorization
Lea County, New Mexico

Dear Mr. Catanach:

Based on our conversation on December 18, 1986 regarding the SWD application for the Emma Lawrence No. 1, you indicated that the NMOCD has not received an affidavit of publication from the Hobbs Daily News-Sun. Attached is a copy of the affidavit of publication that ARCO Oil and Gas received from the newspaper. If any additional information is needed regarding the subject well's SWD application, please call me at (915) 688-5557.

Yours very truly,

J. T. Lowder
Senior Engineer

JTL:tis
Attachment

AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.

I, _____

Robert L. Summers

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of _____

One weeks.

Beginning with the issue dated

December 2, 1986

and ending with the issue dated

December 2, 1986

Robert L. Summers
Publisher.

Sworn and subscribed to before

me this 2 day of

December, 1986

Vera Murphy
Notary Public.

My Commission expires _____

Nov. 14, 1988

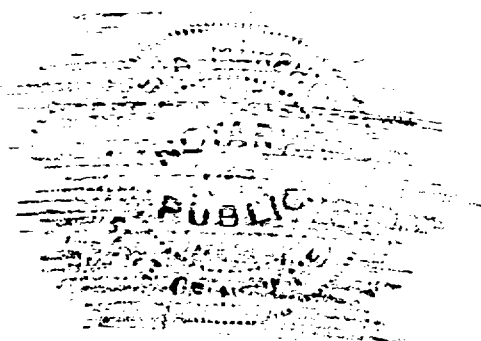
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

LEGAL NOTICE

26 **DECEMBER 2, 1986**

"ARCO Oil and Gas Company, P.O. Box 1610, Midland, Texas, 79702, has filed an application with the New Mexico Oil Conservation Division seeking permission to dispose of salt water into a well in Lea County. The water disposal well will be located 1980' FSL 660' FEL, Sec. 23, Township 17 South, Range 38 East. Water is to be injected into the San Andres formation at an approximate depth of 5700' to 6300'. A maximum injection rate of 2500 BWPD and a maximum injection pressure of 1150 psig is expected. Please refer questions to Jack Lowder at the above address, or call (915) 688-5557. Any requests for hearing or objections to this application must be made to the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501, within 15 days."



ARCO Oil and Gas Company
Permian District
Post Office Box 1610
Midland, Texas 79702
Telephone 915 684 0100



November 24, 1986

Hobbs Daily News Sun
P.O. Box 860
Hobbs, New Mexico 88240

Dear Sirs:

CERTIFIED
RETURN
RECEIPT
REQUESTED

The New Mexico Oil Conservation Division requires that notice of an application to inject water be published in a newspaper of general circulation in the county in which the well is located. Please print the following notice in the Hobbs Daily News Sun as soon as possible.

"ARCO Oil and Gas Company, P.O. Box 1610, Midland, Texas, 79702, has filed an application with the New Mexico Oil Conservation Division seeking permission to dispose of salt water into a well in Lea County. The water disposal well will be located 1980' FSL, 660' FEL, Sec. 23, Township 17 South, Range 38 East. Water is to be injected into the San Andres formation at an approximate depth of 5700' to 6300'. A maximum injection rate of 2500 BWPD and a maximum injection pressure of 1150 psig is expected. Please refer questions to Jack Lowder at the above address, or call (915) 688-5557. Any requests for hearing or objections to this application must be made to the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501, within 15 days."

The notice is to run for one day. The New Mexico Oil Conservation Division also requires that proof of publication be submitted to them before our application is approved. Please send proof of publication, including a copy of the legal advertisement, to Mr. Richard L. Stamets, Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501. Please send an additional copy of the proof of publication to Mr. D. C. Douglas, ARCO Oil and Gas Company, P.O. Box 1610, Midland, Texas, 79702.

Please send the bill in care of Mr. S. D. Smith, ARCO Oil and Gas Company, P.O. Box 1710, Hobbs, New Mexico, 88240. Thank you for your help and cooperation.

Yours very truly,

Jack J. Lowder

J. T. Lowder
Senior Engineer

JTL:lu
Attachments

cc: Mr. R. L. Stamets
New Mexico Oil Conservation Division

Mr. S. D. Smith - Hobbs



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

TONY ANAYA
GOVERNOR

Dec. 1, 1986

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88240
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RE: Proposed:

MC _____
DHC _____
NSL _____
NSP _____
SWD XX _____
WFX _____
PMX _____

Gentlemen:

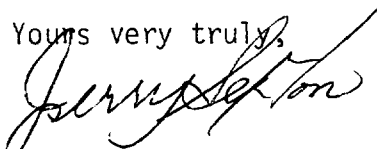
I have examined the application for the:

ARCO Oil & Gas Co. Emma Lawrence #1-I Sec. 23, T17S, R38E
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK -- Jerry Sexton

Yours very truly,


Jerry Sexton
Supervisor, District 1

/mc