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.

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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 J. Lowder

Senior Engineer

JTL:lu Attachments

OIL CONSERVATION DIVISION

POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 87501 FORM C-108 Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT Secondary Recovery Pressure Maintenance X Disposal Ι. Application qualifies for administrative approval? Xyes II. Operator: ARCO Oil and Gas Company Address: P. O. Box 1610, Midland, Texas 79702 Jack T. Lowder _ Phane: <u>(915)</u> 688-5557 Contact party: 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 X no If yes, give the Division order number authorizing the project ٧. 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: Proposed average and maximum daily rate and volume of fluids to be injected; 2. Whether the system is open or closed; Proposed average and maximum injection pressure;
 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 $10,\bar{0}00$ 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. Attach appropriate logging and test data on the well. (If well logs have been filed Χ. 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 Gack J. Lourder 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:
 - 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.

- 8. 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 rame.
 - (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 dement 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 $7\frac{1}{2}\%$ 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'

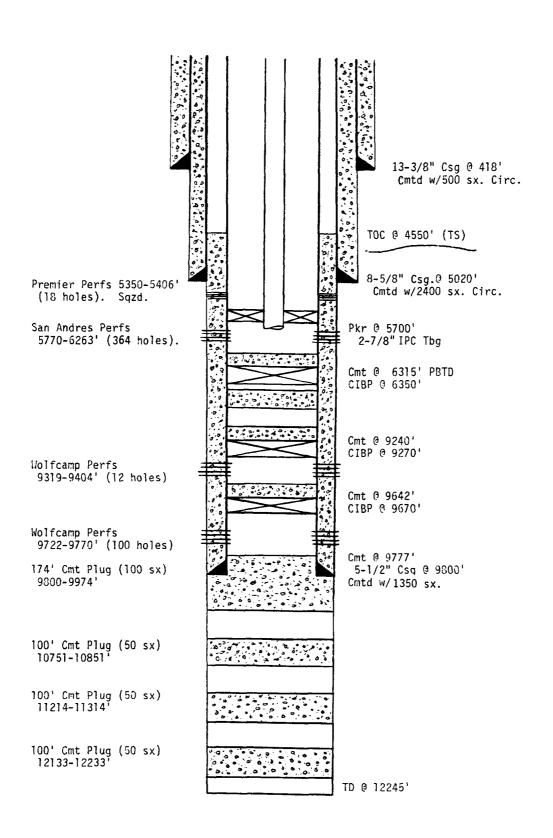
Depth: 5385' to 6304'

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 0il 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)

<u>Tubing:</u> 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

<u>Is this a new well drilled for injection?</u> 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'.

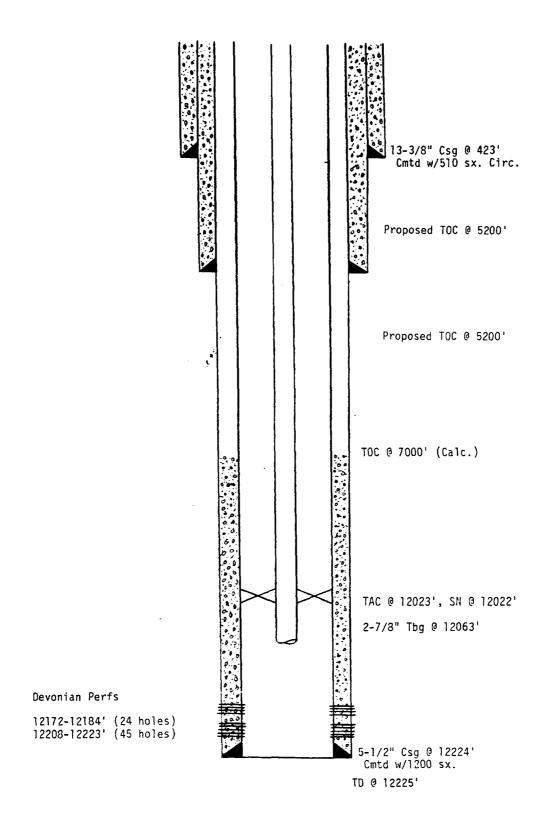
AOGC - Emma Lawrence No. 1 Page Two

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

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

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



P O BOX 1468 MONAHANS TEXAS 79756 PH 943-3234 OR 563-1040

709 W INDIANA MIDLAND TEXAS 79701 PHONE 683-4521

RESULT OF WATER ANALYSES

	LA	BORATORY NO	186169	
To: Mr. Jerry Guy	SA	MPLE RECEIVED	1-14-86	
P.O.Box 1710, Hobbs, NM		SULTS REPORTED		
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FIELD OR POOL SECTION 18 BLOCK SURVEY T-17S & R-3	COUNTY			
SECTION TO BLOCK SURVEY TO RESERVE	39E	b	TATE	
SOURCE OF SAMPLE AND DATE TAKEN.				
NO. 1 <u>Produced water-taken from Bel</u>	lco's C. E. B	<u>rooks #1. 1-1</u>	3-86	
NO. 2 <u>Produced (Devonian) water - t</u>	taken from R.	F. Fort. 1-1	3-86	
NO. 3 Produced (Wolfcamp) water-tak	ken from R. F	. Fort "A"1	-1.3-86	
				
NO. 4				
REMARKS:				
CHEMICAL A	ND PHYSICAL P	T		
<u> </u>	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 HCO3	720	811	988	
Supersaturation as CaCO3	20	35	30	
Undersaturation as CaCO3				
Total Hardness as CaCO3	6,200	5,200	9,700	
Calcium as Ca	2,000	1,480	2,660	
Magnes.um as Mg	292	365	741	
Sodium and/or Potassium	12,072	10,001	16,720	
Sulfate as SO4	1,501	1,676	2,095	
Chloride as Cl	21,483	17.400	30.538	
Iron as Fe	0.08	0.63	0.59	· · · · · · · · · · · · · · · · · · ·
Bartum as Ba			V•-/-	
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated	38.067	31.732	53,742	
Temperature °F.	10,007	 	-33,74.	
Carbon Dioxide, Calculated				
Dissolved Oxygen, Winkler				
Hydrogen Sulfide	275	875	1.750	
Resistivity, ohms/m at 77° F.	0.206	0.247	0.151	
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	NONE	230335	3,0375	
Calcium Carbonate Scaling Tendency	NONE	NONE	NONE	
Calcium Sulfate Scaling Tendency	NONE	NONE	NONE	
Paratre F	Ar Milliaram	- Par 1 : ***	<u> </u>	
	Reported As Milligrams	5 Per Liter		
Additional Determinations And Remarks				
				
				

709 W INDIANA MIDLAND TEXAS 79701 PHONE 683-4521

RESULT OF WATER ANALYSES

	L	BORATORY NO	186169 (Pag	ge 2)
то: <u>Mr. Jerry Guy</u>	SA	MPLE RECEIVED	1-14-86	· · · · · · · · · · · · · · · · · · ·
P.O.Box 1710, Hobbs, NM	RE	SULTS REPORTED	1-17-86	
COMPANY ARCO OIL & Gas Company	LEASE .	As liste	ed	
FIELD OR POOL	Know]	es, South		
SECTION BLOCK SURVEY		<u>Lea</u> s	TATE NM	
SOURCE OF SAMPLE AND DATE TAKEN:				
NO. 1 Produced water-taken from Be	lco's C.E. Bi	cooks #1. 1-13	3-86	
NO. 2 Produced (Devonian) water- to				
NO. 3 Produced (Wolfcamp) water-ta				
NO. 4				
REMARKS:Samp	les heated to	115°F.		
CHEMICAL A	ND PHYSICAL F	ROPERTIES		
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.				
pH When Sampled				
pH When Received				
Bicarbonate as HCO3	1,000	805	720	
Supersaturation as CaCO3	120	80	10	
Undersaturation as CaCO3				
Total Hardness as CaCO3				
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 Oxigen, Winkler			<u>-</u>	
Hydrogen Sulf de				
Resistivity, onms/m at 77° F.				
Suspended Oil				
Firstable Solids as mg/i				
Volume Filtered, ml				
Calcium Carbonate Scaling Tendency	NONE	NONE	NONE	
D		L		
	Reported As Milligram			
Additional Determinations And Remarks A careful				
tion of any potential incompatibil:				
sented herein. We also find no imp				
any of the above waters with San Ar				
this is based on a comparison with				
to say that based on the results he				
sult of the combination of these wa	•			
added that the higher temperature s	subwed no imp	ricarion of c	ausing any c	alclum
carbonate scaling potential				

Waylan C. Martin, M. A.

Form No. 3

cc: As per attached list.

COPY RELEASED TO JACK LOWDER, ARCO OIL & GAS @ Midland 2-17-36 (as per Mike Feagan with H. L. Brown Co.)

Martin Water Laboratories, Inc.

P. O. BOX 1468 MONAHANS, TEXAS 79756	RESULT OF WATER A	NAI VSFS		731 W. INDIANA MIDLAND, TEXAS 79
IONE 943-3234 OR 563-1040			1079221	PHONE 683-4521
o: Mr. J. L. McGill	L /	BORATORY NO		
P.O.Box 2239, Hidland, Texas	SA	MPLE RECEIVED	10-25-79	
TOTAL SESSY, INCIDENTS, ICAN	P.	SULTS REPORTE	D_14-13-13	
OMPANY H. L. Brown, Jr.	LEASE	Indian Wel	ls Jones	
FIELD OR POOL	T d man	Bon		
ECTION BLOCK SURVEY	COUNTY G	tines ,	TATE Tex	as
OURCE OF SAMPLE AND DATE TAKEN:				
NO. , Produced water - takes	a from Mobil ARCO J	mes. 10-23-7	9	
NO. 2 Produced water - taker				
No. 3 Produced water - taker				
NO. 3	TILVE TUGIEN METIE	JOHES FJ. IN		
NO. 4				·
EMARKS:				
CHE	MICAL AND PHYSICAL F	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 HCO3	1,452	1.513	1.525	
Supersaturation as CaCO3				
Undersaturation as CaCO3				
Total Hardness as CaCO3	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	9,855	10,763	9.919	
Sulfate as SO4	3,538	3,725	3,542	
Chloride as CI	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 Temperature °F.	31,989	34,579	32,011	-
Carbon Dioxide, Calculated			 	+
Dissolved Oxygen, Winkler				
Hydrogen Sulfide				-
Resistivity, ohms/m at 77° F.	1,000	856	1,750	
Suspended Oil	0.240	0.227	3.240	
Filtrable Solids as mg/1				
Volume Filtered, ml				
	Results Reported As Milligram	s Per Liter		
Additional Determinations And Remarks \$	ample from Jones #2			
. 44		242.		*
hese analyses will be utilis	sed as typical natu	ral San Andre	s water rec	ords.
	· · · · · · · · · · · · · · · · · · ·			

Form No. 3

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

709 W INDIANA MIDLAND. TEXAS 79701 PHONE 683-4521

RESULT OF WATER ANALYSES

LEASE	1 3877 Northe ucet 3920 nor 4,2241 SSE of	2-24-00 2-28-86 ce ATE Nm ast of Ema L th of Ema La Ema Laveren NO. 3 1.0014	Averence. 2-24 No. 4
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HYSICAL PE NO. 1 0014 8.06 229	NO. 2 1.0015	NO. 3 1.0014	
HYSICAL PE NO. 1 0014 8.06 229	NO. 2 1.0015	NO. 3 1.0014	
NO. 1 0014 8.06 229	NO. 2 1.0015 7.89	1.0014	NO. 4
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NO. 1 0014 8.06 229	NO. 2 1.0015 7.89	1.0014	NO. 4
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8.06	7.89		
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		229	
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470-	468	468	
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17.00	7.50	17.60	
As Milligrams	Per L₁ter		
ned certi	ties the above	ze to be true	and correct
*			
			
····			_
	0.21 470 0.0 17.60	0.21 0.80 470 468 0.0 0.0 17.60 7.50 As Milligrams Per Liter and certifies the above	0.21 0.80 0.84 470 468 468 0.0 0.0 0.0 17.60 17.60 7.50 17.60 As Milligrams Per Liter uped certifies the above to be true

Form No. 3

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Service of the control of the contro		5 · 4 · 86	3 3	1 26 67	R. b. 07	6 83	5-21-84		M 5		7 - 29 - 85	Wilderson I'm 1	
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		THEFTON	widerspoon Inc	N. & B.W. Cortor	12 6 67		3 . /	M.S	4-H-67				
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The state of the s	Field				1. 11	ARCO NM. GTELA	ARCO UM 4764.A.S	No. of the last	Adobe	J.L. Hamon, ctol,			17
The state of the s	r (\$)	5 8 86 Clements	Bella Gan		6- 27, 97	H Handin and Mr.	17×1	A Sulf	Amerada Herdin	Pa4 "A"/1 1.M3		17075 1	104
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Company Comp	יפה	Missouri Yelley, Mins	S Change Policy	Dennig Woods et al	5870	/2	6-67	F.D	Co. et a)	Jone e Robinson	1 2 DK. 41 /	AM. Com. erel US	
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The state of the s	ite M	: Clements	P.W. Cleme	Ed Contract	1 3 3 8		in Sur! Johnny		-	N. P. C. B.	Cabana Oil	- 7 88 / 159	
The state of the s	20 J.	101 - 10 1 8 1 8 W	Con 787 11 12 84	72760 721 00 716 00 W.E.Bushu 13		Lu Se Rob's.		(AL	TATABANI		E1 3637	Cope 2	
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Special and the special specia	10 SC		R. Heiter, M.I.	Charlotte S. M	00 00	Layh Real Treque	Outloan bless	Phillips			Ince Orig.	heren OA12 (0)	
Space a space of a spa	3.45	Perers (S) 18 19 11	(8)	Small Tra. C.I	Tengue, Life Est.	C.Marin Cit. Serve M.	Rocket Oil	8-2517	Same	Peer les Ronald	S OF B MJ.	etal Mil & Rangid Parker(S)	
True La Ca Ca Called South Be Welker, M. South	16 88	EXECUT 4 10-76 MIN	ELYON		Exam Warter	Part dans	Marker Harrison	WA WATER	10 EZ ST WA	Hatchett In	v. '🚱	Philips Mar	- 4
True La Ca Ca Called South Be Welker, M. South	9	. I angest			1./0	Billy Chenouit (5)	7 15 1/2 VIS	+	province of the all of the all of	S 25.45	+ Langer L	120396 SA 10 1 85	
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ONLY Sept. J. I amount 76. J.		Seecs 1 11 09.	Corey Been & ore			3 Hey Cattle Co.	Keepane + NE/4	Texas Cr Tamingon TOSPEO	fr	esh w	ater		7.00
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STATE OF NEW MEXICO ENERGY MID MINERALS DEPARTMENT

00. 00 COPIES SCEELSED	
DISTRIBUTION	
SANTA FE	
PILE	
V.1.0.8,	
LAND OFFICE	
OPERATOR	

OIL CONSERVATION DIVISION

DISTRIBUTION	, P. O.	BOX 2088	Revised 10-1-78
SANTA FE	SANTA FE, N	EW'MEXICO 87501	
PILE			Sa. Indicate Type of Lease
V.1.0.8,	ł		State Fee X
DERATOR			5. State Oil 6 Gas Lease No.
OF ENATION	,		
C. I. I.O.O.	W MOTICES AND DEDOOTS	ON WELLS	mmmmmm k
the met ust THIS FORM FOR PRO	Y NOTICES AND REPORTS	LUE BACK TO A BIFFERENT BERERVOIR.	
L. /	ION FOR PERMIT -" (FORM C-101) FOR	R SUCH PROPOSALS.)	7. Unit Agreement Name
the D			,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	and Gas Company		8. Form or Lease Name
	• •	•	· · · · · · · · · · · · · · · · · · ·
Division of Atlantic Ri	Chileld Company		Emma Lawrence
	or Monday 992/0		1
P. O. Box 1710, Hobbs, N	ew mexico 8824U		10. Field and Pool, or Wildcat
1	560		Southeast Knowles Wolfcar
WHIT LETTER	660 FEET FROM THEEas	ST LINE AND 1980 PEET	PROM POULINEAST KNOWLES WOLLCAN
THE South LINE, SECTION	38 23 TOWNSHIP 1/	7S 38E	umpu. {{}}}}}
mmmmm	15. Elevation (Show whe		
			12. County
ğımınınını	3663,3'	GR	Lea \\\\\\\
Check A	Appropriate Box To Indicar	te Nature of Notice, Report o	r Other Data
NOTICE OF IN	ITENTION TO:	SUBSEQ	JENT REPORT OF:
·].	
PERFORM REMEDIAL WORK	PLUG AND ABANDON	AEMEDIAL WORK	ALTERING CASING
TEMPORABILY ABANDON		COMMENCE DRILLING OPHS.	PLUG AND ABANDONMENT
PULL OR ALTER CASING	CHANGE PLANS	CASING TEST AND CEMENT JOB	_
	•	OTHER Added Perfs	& Treated Wolfcamp X
THER		∐ľ	
17 Peacribe Proposed or Completed Or	perations (Clearly state all persiana	t details and give pertinent dates inc	luding estimated date of starting any proposed
work) SEE RULE 1708.	enditions (overly state are persuited	temore, and give persuient bases, inc	
9777'. Perf'd Wolfcamp	9744-9770' w/2 JSPF (5 Press tested csg/annu ng 1500# RS. Swbd 5 h	52 holes). RIH w/FBRC, s llus to 500# OK. Acidiz ars, rec 22 BLW. POH w/s	BD 9756'. DO FC & cmt 9756'- set @ 9601'. Ran Base GR/ ed Wolfcamp 9722-9770' w/ pkr. RIH w/prod equip. Set 5 pmpd O BO & 117 BW.
	OCT 1 7 198 CENTRAL FI	'lidland	
18. I bereby certify that the information	above is true and complete to the b	Dict Dule Con-	DAYE 10/8/85
OBICIALL CLOSES TO			
ORIGINAL SIGNED BY			OCT 1 0 1985
DISTRICT I SUP	ERVISOR THE		DATE COLT 0 1303

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

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BISTRIBUTION		
BANTA FE		
FILE		
U,5.0.5.		
LAND OFFICE		
OPERATOR	T	

L CONSERVATION DIVISIO P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

Form C-103 Revised 10-1-78

FILE			1	to Indiana Turi	
U,S.a.s.	•			Sa. Indicate Type	
LAND OFFICE				State	Fee X
OPERATOR				5. State Oil 6 Ga	s Lease No.
SUNDRY N	NOTICES AND REPORT	S ON WELLS			
USE "APPLICATION I	FOR PERMIT -" (FORM C-101) F	PLUG BACK TO A DIFFERE OR SUCH PROPOSALS.)	NT RESERVOIR.		
1.				7. Unit Agreemen	t Name
WELL X WELL	OTHER-				
	d Gas Company			8. Form or Lease	Name
Division of Atlantic Rich	ifield Company	·		Emma Lawre	nce
3. Address of Operator	Nord on 001/0		·	9. Well No.	
P. O. Box 1710, Hobbs, Ne 4. Location of Well	W MEXICO 66240			10 Field md Bo	al de Wildon
	·	1	000	10. Field and Pool	기, gr wildedi 라고:
UNIT LETTER OOL	Ea	ST LINE AND 1	980 FEET FROM	K nowies wo	licamp
South	23	179	38E		
THE South LINE, SECTION_	TOWNSHIP	T/D RANGE	NMPM.		
mmmmm	15. Elevation (Show w	herber DE RT CR etc		12. County	HHHHH
	3663.3'		·'	Lea	
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				<u> </u>
Check App	propriate Box To Indica	ate Nature of Noti	_		
NOTICE OF INTE	INTION TO:		SUBSEQUENT	REPORT OF:	
			<b>—</b>		()
PERFORM REMEDIAL WORK	PLUG AND ABANDON	<u> </u>	=		ING CASING
TEMPORABILY ABANDON		COMMENCE DRIL	D CEMENT JOB X Prod		NO ABANDONMENT
PULL OR ALTER CABING	CHANGE PLANS		T. Log, Perf, T		
-		T STREET	1, Log, ICII, I	reac a comp	ICCC N
17. Describe Proposed or Completed Operat work) SEE NULE 1 103.	ions (Clearly state all pertine	nt details, and give per	tinent dates, including e	stimated date of s	tarting any proposed
	15-65! Walfaama C	moned Teel 0 6	.25 AM for 15 m	ing TED/.	rook bloss dans
On 4/17/85 ran DST #1 971 to strong blow. SI 60 mi	<del>_</del>	-			
ck. SI for 240 mins. Re	_				
drlg mud in 2½ hrs. Rec					
mins FSIP 3737#. BHT 156					
CN/w/Cal, GR-DLL/MLL w/Ca					
.5# after 30 mins, SI 1 h					
& POH to 4800'. Attempte		=			
fm wtr in DP. RIH w/DP (					
cmt. POH to 11,314' & sp					
plug 10,851-751'. POH w/D					
sx C1 H Neat cmt. Tag gr					
plug, OK. DST #3 Wolfcam					
POH w/test tools. RIH w/					
OT w/weak blow, slowly in					
5000'. Circ N ₂ @ 400 SCF					
Slowed pump rate to 250 S					
SCF N/2. POH w/coil tbg.			ad gas & oll w/	1820. bibe	in hole. Drop
bar & RO ½ BO & 28 BW.	(cont'd on back	of page)			
18. I hereby certify that the information about	ve is true and complete to the	best of my knowledge	ind belief.		
~			4.		
we Clabert King	w	Drlg. Engr	<i>T</i>	DATE 5/30	/85
ORIGINAL NONLE TO	Day Seaton	a		11111	1 1985
APPROVED BY DISTRICT CALL	35° 0 TITLE			DATE	± T 1000
CONDITIONS OF APPROVAL, IF ANY:	<del></del>	CENTRALF	n.2.0		

Finished POH w/test tools. DO cmt to new PBTD 9800'. RIH w/2993'  $5\frac{1}{2}$ ":0D 17# L-30 csg, 6807' of  $5\frac{1}{2}$ " OD 17# K-55 csg, set @ 9800'. FC set @ 9856'. Cmtd  $5\frac{1}{2}$ " OD csg w/550 sx :1 H Neat cmt. BP @ 12:20 PM 5/10/85. Inst wellhead. Temp survey indicated TOC @ 7400'. On  $5^{\prime}14/85$  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  $16\frac{1}{2}$  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  $5^{\prime}30/85$  pmpd 33 BO, 108 BW, 8 MCFG on 10 - 120" spm. Final Report.

SECTIVED

# 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 J. 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. Till
Notary Public

#### **ARCO Oil and Gas Company**

Permian District Post Office Box 1610 Midland, Texas 79702 Telephone 915 684 0100



CERTIFIED

RETURN RECEIPT REQUESTED November 24, 1986

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

gack J. Lowden

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,

gack J. Lowder

J. T. Lowder Senïor 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



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,

Jack J. Lowden

J. T. Lowder Senior Engineer

JTL:tis Attachment

#### AFFIDAVIT OF PUBLICATION

State of New Mexico,
County of Lea.
Ι,
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 , 19 86
and ending with the issue dated
December 2 , 19 86
Hokert L. Summen
Publisher.
Sworn and subscribed to before
me this day of
December, 1986
Vera Murphy Notary Public
Notary Public.
My Commission expires
1988 (Seal)
(Sour)
This newspaper is duly qualified to publish legal notices or adver-

tisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

Oct with

LEGAL NOTICE DECEMBER 2, 1984
"ARCO Oll 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 hear-ing 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."

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."

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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. Lowdon

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

TONEY ANAYA

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
Gentlemen:
I have examined the application for the:
ARCO Oil & Gas Co. Emma Lawrence #1-I Sec. 23, T17S, R38F Operator Lease & Well No. Unit S-T-R
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