FORM 470 2-57

PAN AMERICAN PETROLEUM CORPORATION

Post Office Box 68
Hobbs, New Mexico

November 19, 1968

File: VES-450-501.61

Subject: Water Disposal-Bough Field
Lea County, New Mexico

SWD - 89

Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Sir:

Commission Order No. R-3495, Case No. 3850, authorized on September 12, 1968, water disposal into our Bough Salt Water Disposal Well No. 1, formerly the Federal "A" No. 3 well, J-13-9-35, Permo Pennsylvanian formation, Lea County, New Mexico.

In our efforts to re-enter the Permo-Penn section for disposal operations, we found partially collapsed casing below 5711'. This has prevented running a bit into the lower part of the casing in order to drill the cement plug which isolates the Permo-Penn section.

A pressure test of the casing to 1900 psi indicated that the cement plug is still holding. In view of this, we are now requesting Administrative approval for disposal into the San Andres horizon.

Attached is a form C-108 and all other data as required by Rule 701-B.

As can be seen on the attached log and well sketch, we propose to inject into perforations below the depleted gas productive zone. Completion attempts, drill stem tests, and log characteristics indicate this to be a highly porous and water bearing interval in this area. The upper gas producing zone has been depleted as mentioned above and there is currently no San Andres production within two miles of the proposed disposal well.

Yours very truly,

V. E. Staley

V. E. Staley
Area Superintendent

DCJ/jt

cc: Mr. N. S. Whitmore

Form C-108
Revised 1-1-65

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR		ADDRESS	
Pan American Petroleum Corporation		P. O. Box 68, Hobbs, New Mexico	
LEASE NAME	**WELL NO.**	**FIELD**	**COUNTY**
Bough SWD (Formerly Federal A # 3)	1	Bough Permo Penn	Lea

LOCATION

UNIT LETTER J ; WELL IS LOCATED 1980 FEET FROM THE South LINE AND 1980 FEET FROM THE

LINE, SECTION 13 TOWNSHIP 9-S RANGE 35-E NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	10-3/4"	465	325	Cmt Circ	---
INTERMEDIATE	7-5/8"	4300	1548	Cmt Circ	---
LONG STRING	5-1/2" Liner	4188-9590	925	Cmt Circ	---
TUBING	2-3/8"	4725	NAME, MODEL AND DEPTH OF TUBING PACKER: Tension Packer set at 4300'		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION
San Andres	4020'	5440'

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION
Tubing	Perforations	5271-75', 5318-22', 5373-77', 5393-97', 5414'-18'

IS THIS A NEW WELL DRILLED FOR DISPOSAL?	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?
No	Drilled as producer in Bough "C"	Yes

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

9590'-9634' (Open Hole) sealed with 20 sx cmt. Plug at 9580-9616' x CIBP at 5540'.

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA
	None	9500 - Bough Permo Penn

ANTICIPATED DAILY INJECTION VOLUME (BBLS.) MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)
50	1000	Closed	Gravity	---

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE —	WATER TO BE DISPOSED OF	NATURAL WATER IN DISPOSAL ZONE	ARE WATER ANALYSES ATTACHED?
Yes	Yes	Yes	Yes

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

Tipp H. Barnes, Crossroads, New Mexico

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Coastal States Gas Producing Company, P. O. Box 235, Midland, Texas

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL	[illegible]
	Yes	Yes	

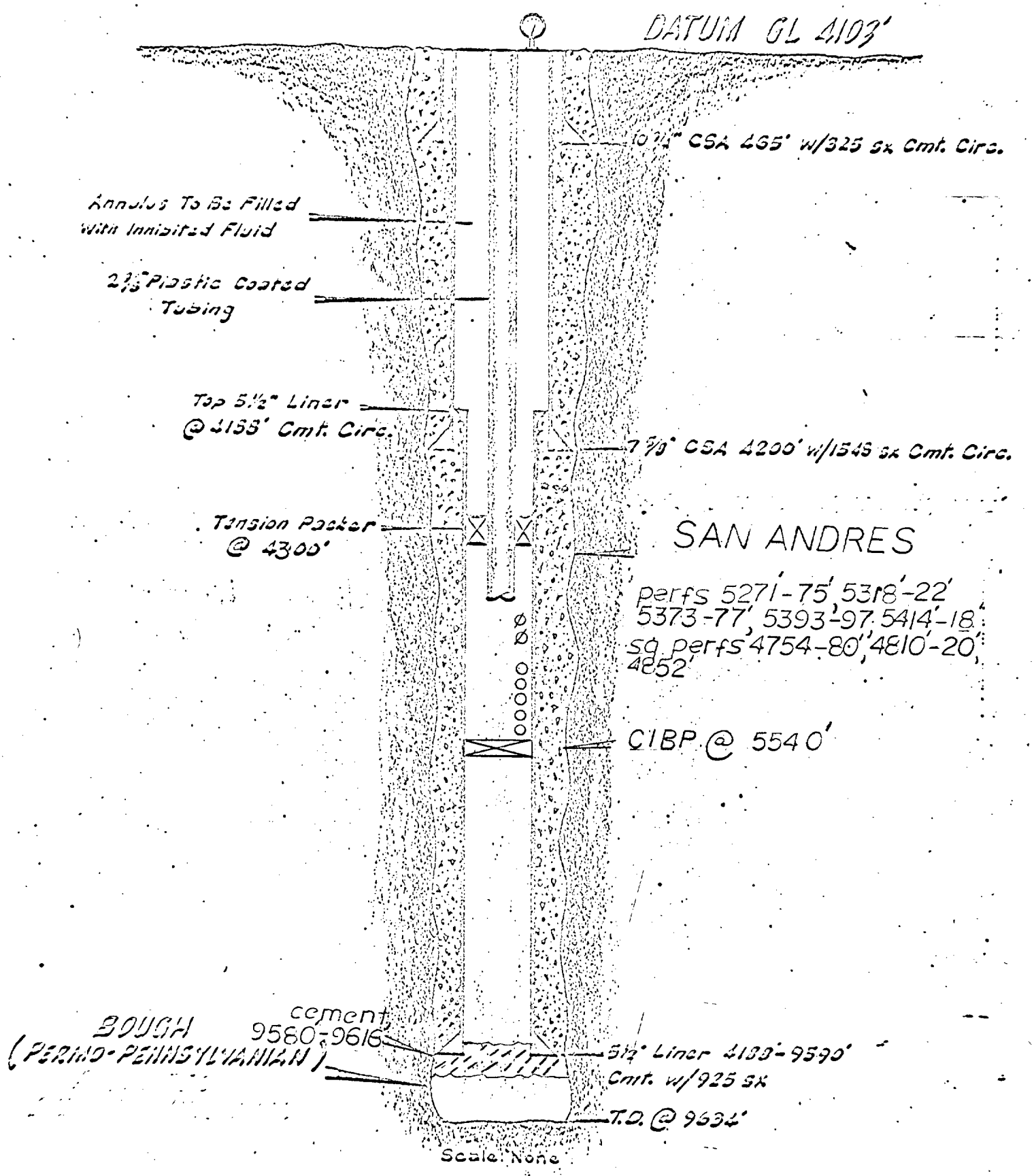
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL
	Yes	Yes	Yes

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

James E. Yorke (Signature) — Area Engineer (Title) — 11-19-68 (Date)

NOTE: Should waivers from the [illegible], the surface owner, and all operators within one-half mile of the proposed injection well. not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

BOUGH SWD WELL
NO. 1
(FED. "A" NO. 3)



HALLIBURTON DIVISION LABORATORY

HALLIBURTON COMPANY
LOVINGTON, NEW MEXICO

Bough San Andres Water Analysis File

No. W3-815-64

LABORATORY REPORT

Date November 16, 1964

To Pan American Petroleum Corp.
Box 68
Hobbs, New Mexico

Date Received

Well & Lease Federal "A" #3 Depth Formation San Andres

Location Field Bough San Andres Source

Specific gravity 60/60	°F	1.166
Color, filtrate		Bright Yellow
pH		6.8
Resistivity	° F	ND
		ppm (mpl)
Chlorides, Cl		151,600
Sulfates, SO_4		2,000
Alkalinity, HCO_3		830
Calcium, Ca		6,080
Magnesium, Mg		1,260
Iron, Fe		Nil
Sodium, Na*		90,200
Sulfides, H_2S		Nil
Chromate, CrO_4		280

Remarks

ppm equals Parts per million uncorrected or milligrams per liter.
* includes Potassium as Na.

Respectfully submitted

HALLIBURTON COMPANY

By Dave Sutton

Dave Sutton, Division Chemist

Laboratory Analyst

Brewer

FORM LR-4A

File: 535.11

BRINE OR WATER ANALYSIS DEPTH: FORMATION: Bough

Company Pan American Petroleum Corp. Farm Elaka Federal Well No. 1

Location County Lea State New Mexico Date 10/23/67

Pool Bagley "C" Samples Submitted by Jim Sims

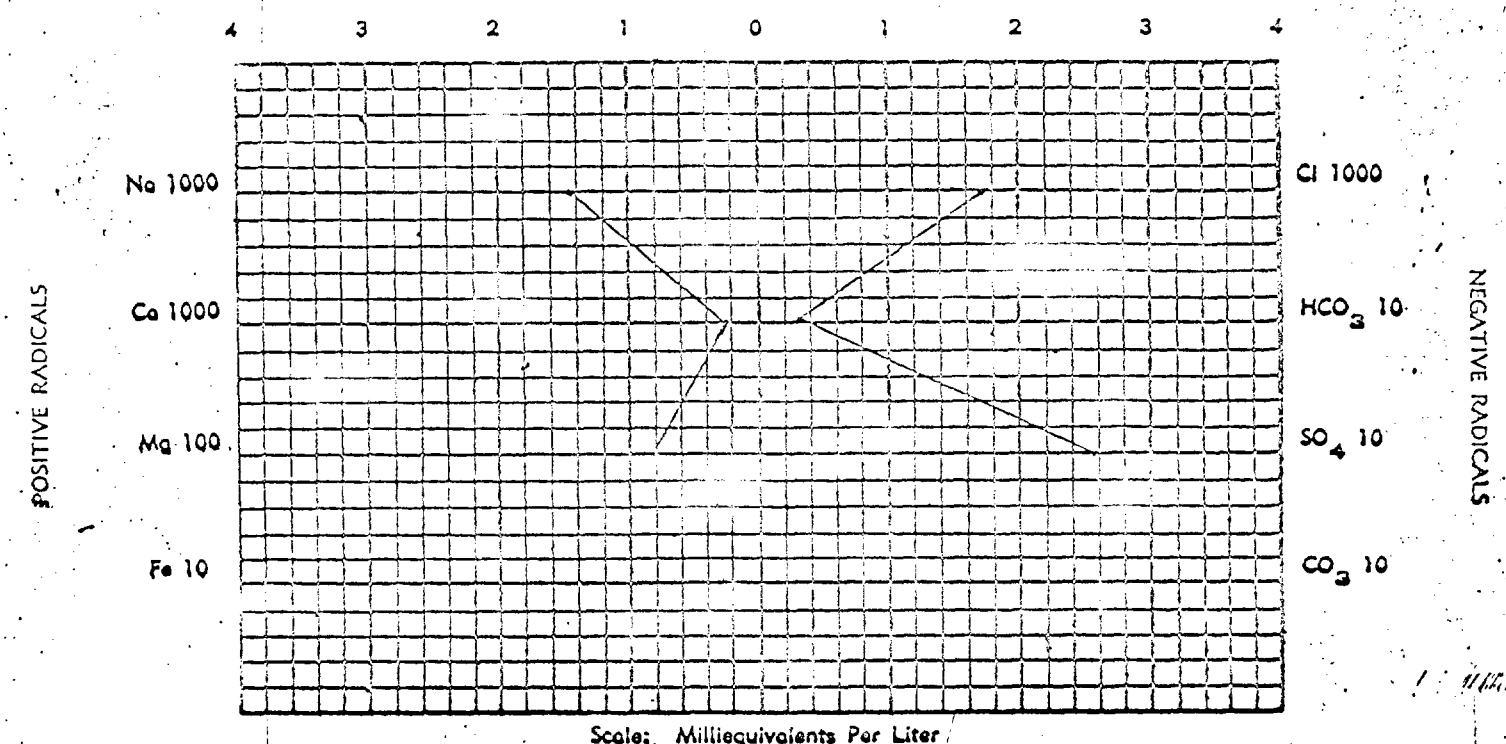
SPECIFIC GRAVITY: 1.077
pH: 6.8

PRINCIPAL CONSTITUENTS

RADICAL	PARTS PER MILLION	EQUIVALENTS PER MILLION	REACTING VALUE	PER CENT
SODIUM	32,820	32,820	1,429.28	40.18
CALCIUM	5,300	5,030	264.20	7.55
MAGNESIUM	980	1,960	80.50	2.27
CHLORIDE	61,900	61,900	1,745.00	49.18
SULPHATE	1,242	621	25.80	.73
BICARBONATE	190	51	3.18	.09

PRIMARY SALINITY: 80.36 PER CENT TOTAL REACTING VALUE
SECONDARY SALINITY: 18.46 PER CENT TOTAL REACTING VALUE
SECONDARY ALKALINITY: .18 PER CENT TOTAL REACTING VALUE

General Remarks: Date sampled 10/18/67



Scale: Milliequivalents Per Liter

LAB. NO. 973

DISTRICT Hobbs

ANALYZED BY GR

DISTRIBUTION

Signed Guinn Ferguson

Guinn Ferguson

DOWELL DIVISION OF THE DOW CHEMICAL COMPANY

WATER ANALYSIS

Date 2/2/68 Lab no. 5133

Pan American Lab. Location Hobbs S. no. 1

Hobbs, N.M.

LEA N.M.

		Pool (L. Harkmon) Bough "C"			
		Legal Description Reed 21		BHT	Depth
Source	Total Solids		pH 6.1	Specific Gravity 1.076 @ 76 °F	
Constituents	mg/L	meq/L	Constituents	mg/L	meq/L
Sodium	35700	1553	Chloride	68520	1930
Calcium	7000	350	Bicarbonate	120	2
Magnesium	600	50	Sulfate	1020	22
Iron	10	1	Carbonate	0	0

Stiff Diagram
(meq/L)

	6	5	4	3	2	1	0	1	2	3	4	5	6	
Na/1000														Cl/1000
Ca/100														HCO_3/10
Mg/100														SO_4/10
Fe/10														CO_3/10

Remarks:

Analysis Based On API Recommended Procedure