Energy Reserves Group, Inc. P.O. Box 3280 Casper, Wyoming 62602, Phone 307 265 7331



May 6, 1980

Oil Conservation Commission State of New Mexico P.O. Box 2088 Sante Fe, New Mexico 87501

RE: Application of Energy Reserves Group, Inc., for permission permitting the disposal of produced water from the Pictured Cliffs Formation into the Mesa Verde Formation, Gallegos Canyon Unit.

Gentlemen:

Energy Reserves Group, Inc., presents to the Oil Conservation Commission the following applications and requests that administrative approval be granted. The following data is submitted.

- A. Applicant is a working interest owner and the operator of the Gallegos Canyon Unit, West Kutz Pictured Cliffs Field, located in Township 27, 28 and 29 North, Ranges 11, 12, and 13 West, San Juan County, New Mexico.
- B. The applicant desires to dispose of water produced from the Pictured Cliffs formation from the Gallegos Canyon Unit into the Mesa-Verde formation into the wellbore of the following Gallegos Canyon Unit Wells:

 Number 306 located 2015' FSL, 830 FEL, Sec. 19-T29N-R12W and No. 307 located 1455' FSL, 510' FWL, Sec. 30-T29N-R12W, San Juan County, New Mexico.

Applicant presents the following in support of the application:

MAY 0 3 1980 TO SANTA FE

Exhibit A-Plat showing the location of the proposed input wells and location of all oil and gas wells including abandoned and dry holes and the names of operators within a two mile radius of the proposed input well.



Oil Conservation Commission State of New Mexico Page Two

- 2. Exhibit B Water analysis of the Pictured Cliffs water. Approximately 500 BWPD will be disposed of into well No. 306 and approximately 750 BWPD into well No. 307.
- 3. It is proposed to inject the produced Pictured Cliffs water into the Mesa Verde formation: in the Gallegos Canyon Unit Number 306 through perforations from 3022'-3600', and in the Gallegos Canyon Unit Number 307 through perforations from 2952'-3500'. Exhibits C and D are the log sections of well numbers 306 and 307 respectively.
- 4. Exhibit E Water analysis of the water contained in the Mesa Verde formation.
- 5. Exhibits F-G Schematic diagrams of the wellbores of well numbers: 306 and 307 and showing all pertinent data.
- 6. Injection will be through 2-3/8" steel tubing with an injection packer set at about 50 feet above the top of the injection zone. Anticipated maximum injection pressure will be 900 psig in the Mesa Verde wells. The tubing casing annulus will be filled with water containing a corrosion inhibitor, oxygen scavenger and bactericide.
- 7. Exhibit H Diagramatic wellbore sketches of all wells within one half mile radius that penetrate the Mesa Verde formation adjacent to the proposed Mesa Verde injection well number 306.
- 8. Exhibit I Diagramatic wellbore sketches of all wells within one half mile radius that penetrate the Mesa Verde formation adjacent to the proposed Mesa Verde injection well number 307.



Oil Conservation Commission State of New Mexico Page Three

Sincerely, ENERGY RESERVES GROUP, INC.

Curtis J. MacIntyre
Curtis J. MacIntyre
Production Engineer
Rocky Mountain District

CJM:er1



NEW MEXICO OIL CONSERVATION COMMISSION

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

Energy Reserves	Group, Inc.		P.O. E	Box 3280 - Caspe	r, Wyoming 82602
Gallegos Canyon	Unit	306	West k	(utz	San Juan
LOCATION					
UNIT LETTER	; we	LL IS LOCATED	2015 FEET FR	OM THESouthL	INE AND 830 FEET FROM THE
East LINE, SECTION	19 точ	VNSHIP 29N	RANGE 12		A STATE OF STREET
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMEN		NT TOP DETERMINED BY
SURFACE CASING 9-5/8" INTERMEDIATE	32.3#	235'	250	Surface	Circ. to surface
LONG STRING					
7"	20# & 23#	4154'	1060	Surface	Circ. to surface
			RAME, MODEL AND DI	or Toping / Acken	
NAME OF PROPOSED INJECTION FOR	MATION		TOP OF FORM	ATION	BOTTOM OF FORMATION
Mesaverde	ING, OR ANNULUS?	PERFORATIONS	OR OPEN HOLE? PR	631 OPOSED INTERVAL(S) OF INJE	4077
Tubina_		Perfora	1		
IS THIS A NEW WELL DRIELED FOR DISPOSAL?	It also		as a Fruitl	and producer	TION ZONE? It will be
This well will be			· ·		de injector
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA		DEPTH OF BOTTOM OF OIL OR GAS ZONE IN	NEXT HIGHER	DEPTH OF TO	P OF NEXT LOWER ONE IN THIS AREA
approximately 100'	I MAXIMUM	Pictured Cl	iffs @ 1463	Gallup Is injection to be by GRA	Q 5500 VITY OR APPROX. PRESSURE (PSI)
(BBLS.) 500	200	ope		Pressure Pressure	700 psi
ANSWER YES OR NO WHETHER THE F ERALIZED TO SUCH A DEGREE AS TO STOCK, IRRIGATION, OR OTHER GENE	BE UNFIT FOR DOMES	TIC, I	TO BE DISPOSED OF	NATURAL WATER IN DISPO- SAL ZONE Yes	ARE WATER ANALYSES ATTACHED?
NAME AND ADDRESS OF SURFACE ON Federal Land	•	TATE OR FEDERAL LAN	(D)		
LIST NAMES AND ADDRESSES OF AL	L OPERATORS WITHIN	=			
Amoco Produc	tion Compan	y - Security	Life Buildi	ng - Denver, Col	orado 80202
	177				
,	1)		.,	
	103200				
HAVE COPIES OF THIS APPLICATION SENT TO EACH OF THE FOLLOWING?	- W	esicu	EACH OPERAT	Yes	
ARE THE FOLLOWING ITEMS ATTACH THIS APPLICATION (SEE RULE 701-E	3)	es	ELECTRICAL I	Yes	POINT TO SET OF WELL YES
cuttes y Mac	Julyre,		_	to the best of my knowl	
Curtis J/MacIntyr	e (Produ	uction Engin	eer	5/7/80
(Signature)			(Title)		(Date)

NOTE: Should waivers from 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.

NEW MEXICO OIL CONSERVATION COMMISSION

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

Energy Reserves Gr	roup. Inc.		P.O. BO	x 3280 - Casp	ner Wyo	oming 82602
LEASE NAME	oup, Inc.	WELL NO.	FIELD DU	v 2500 - 6921	er, wyu	COUNTY
Gallegos Canyon Un	it	307	West Ku	tz		San Juan
UNIT LETTER	; we	LL IS LOCATED 14	155 FEET FROM	THE South	_ LINE AND	510 FEET FROM THE
West LINE, SECTION	30 TOW	NSHIP 29N	RANGE 12W	NMPM.		
	100		AND TUBING DATA	(IVIF M .		
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CE	MENT	TOP DETERMINED BY
9-5/8"	32.3#	236'	275	Surface		Cemented from top
7"	20# & 23#	4013'	2240	Surface		Cement to surface
TUBING			NAME, MODEL AND DEPT	TH OF TUBING PACKER		
NAME OF PROPOSED INJECTION FORMA	TION		TOP OF FORMAT	10N	воттом	OF FORMATION
Mesaverde			2	745'		3990'
IS INJECTION THROUGH TUBING, CASIN	G, OR ANNULUS?	PERFORATIONS	OR OPEN HOLE? PROP		NJECTION	
Tubing IS THIS A NEW WELL DRILLED FOR	Tie manes is	Perforat	TIONS SE WAS WELL ORIGINALL	2952'-3500'	1	
DISPOSAL? Yes	It is al	so a Pictured	d Cliffs produ	ucer	ZONE OT	HER THAN THE PROPOSED INJEC-
This well will be d				producer		
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA		DEPTH OF BOTTOM OF OIL OR GAS ZONE IN T	NEXT HIGHER	DEPTH OF OIL OR GA	TOP OF NEXT	LOWER
approximately 100'		Pictured Cl	liffe 1416'	Gall	un @ 55	00'
ANTICIPATED DAILY MINIMUM INJECTION VOLUME ! (BBLS.)	MAXIMUM	OPEN OR CLOSE	TYPE SYSTEM	S INJECTION TO BE BY ORESSURE?	GRÁVITY OR	APPROX. PRESSURE (PSI)
300	1 750	open water	TO BE DISPOSED OF N	Pressure	O- ARE WAT	700
ANSWER YES OR NO WHETHER THE FOL ERALIZED TO SUCH A DEGREE AS TO B STOCK, IRRIGATION, OR OTHER GENER,	E UNFIT FOR DOMEST AL USE	ric, 	Yes	Yes		Yes
NAME AND ADDRESS OF SURFACE OWN	ER (OR LESSEE, IF S	TATE OR FEDERAL LAN	165 1	162		162
Bolack Land & Cattl	e Company -	Farmington,	New Mexico			
Amoco Production Co	mpany, Secu	<u>rity Life Bui</u>	ilding - Denv	er, Colorado	80202	
	1 2 2 2				· · · · · · · · · · · · · · · · · · ·	
1. A. 0 3 3	00					
. CC. T W. M.C. I SANTA FE	Linusic 1					
HAVE COPIES OF THIS APPLICATION BE	EEN SURFACE OWN	ER	EACH OPERATOR	WITHIN ONE-HALF MILE	Ε	
	Y	es	1	Yes		
ARE THE FOLLOWING ITEMS ATTACHED THIS APPLICATION (SEE RULE 701-B)			ELECTRICAL LOG		DIAGRAM I	AMATIC SKETCH OF WELL
		es		Yes		Yes
Custin & Mar & I.T.	ertity that the info	ormation above is t	rue and complete to	the best of my kno	owledge an	a beliet.
Curtis J. MacIntyra	7 "	Product	ion Engineer		М	av 7 1980
(Signature)	·		(Title)		F	(Date)

NOTE: Should waivers from 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.

san juan testing laboratory, inc.

909 WEST APACHE . P. D. BOX 2079 . FARMINGTON, NEW MEXICO

327-9944

EXHIBIT B

	·	Date	euctober 6	, 1976
Report toEr	nergy Reserves Group, Inc.			
Requested by T.	•	led by Energy Rese	•	Personnel
Project	CU #123 Locat	ion Farmington, Ne	ew Mexico	<u> </u>
Source of MaterialGe	cological Formations Associat	ion, with GCU #12	23 - Pict	tured Clif
Lab No22	419 Water Analysis for Petr	oleum Engineering	<u> </u>	
	TEST RESULT	· · · · · · · · · · · · · · · · · · ·		
<u> </u>	ATER ANALYSIS FOR PETROLEUM	ENGINEERING		•
Constituent:		Constituents:		
Total Solids PH	52,745ppm or 5.3% Salt Solu. 6.8	Cations Sodium Calcium	Meq/L 831 48	<u>ppm</u> 19,113 960
Sp. Gravity Resistivity Conductivity Organic Sulfide	1.043 @ 72°F 0.113 ohms/meter @ 72° 88,472 Micromhos/cm. s Present	Magnesium F Iron Barium	24 neg. 0	287 1** 0
•	•	<i>:</i>		
Hypothetical	Combinations	3 Anions		
Constituent Sodium Chloride Calcium Chloride Magnesium Chloride Magnesium Bicarbonat	ppm 48,580 2,657 585 e 918	Chloride Bicarbonate Sulphate Carbonate Hydroxide	890 13 neg. 0	31,600 780 4 0
·		** In addition hydroxide w brown sedim	as present	of iron t as a

Energy Reserves Group, Inc. (2) Copies to_ Box 3280 Casper, Wyoming Energy Reserves Group, Inc. (1) Certified by: Box 977 Farmington, New Mexico TEST NO. 20030_

B XMIBIT W

ERG Galleges Canyon Unit Well No. 307 NE/SW Sec 30-T29N-RIZW San Juan County, New Mexico

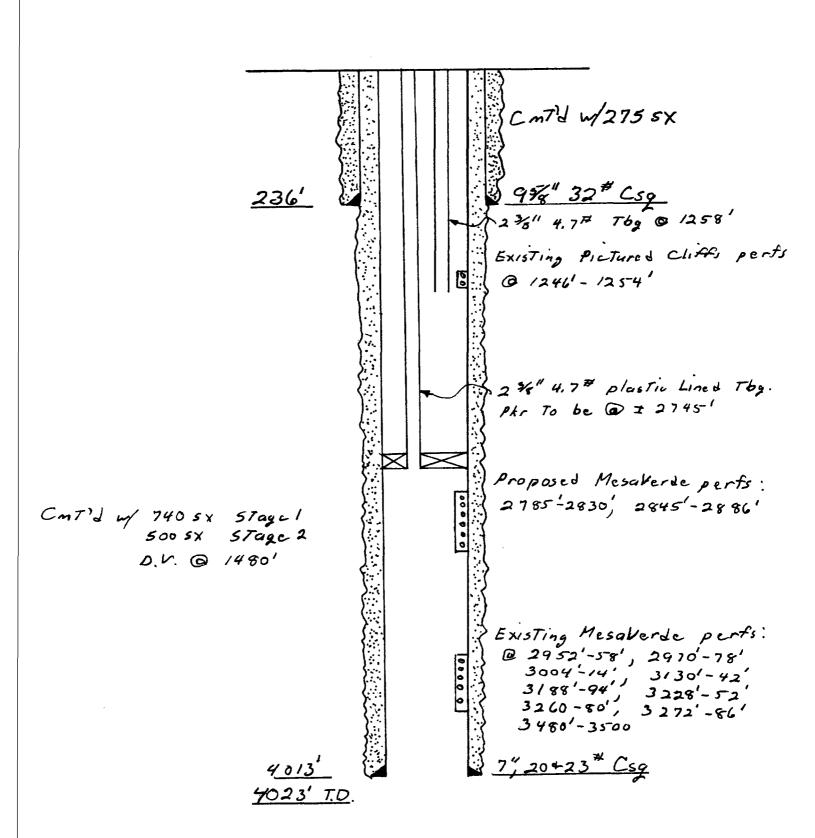
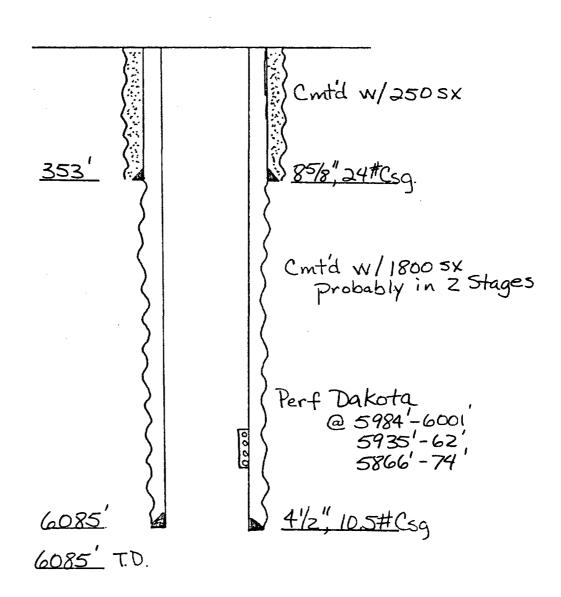


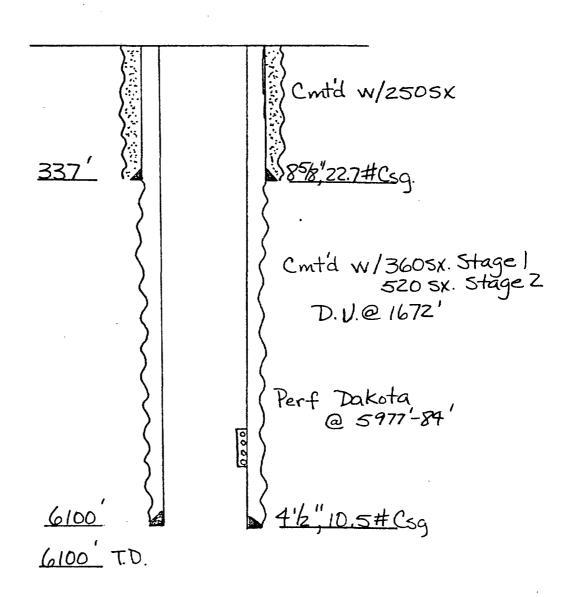
EXHIBIT H

Wellbore diagrams of wells adjacent to GCU #306

Amoco Gallegos Canyon Unit Well No. 263 NWNWSec 20 T29N-RIZW San Juan County, New Mexico



Amoco Gallegos Canyon Unit Well No. 111 NESW Sec Zo Ta9N-RIZW San Juan County, New Mexico



Amoco Gallegos Canyon Unit Well No. 110 SWNE Sec 19 T29N-RIZW San Juan County, New Mexico

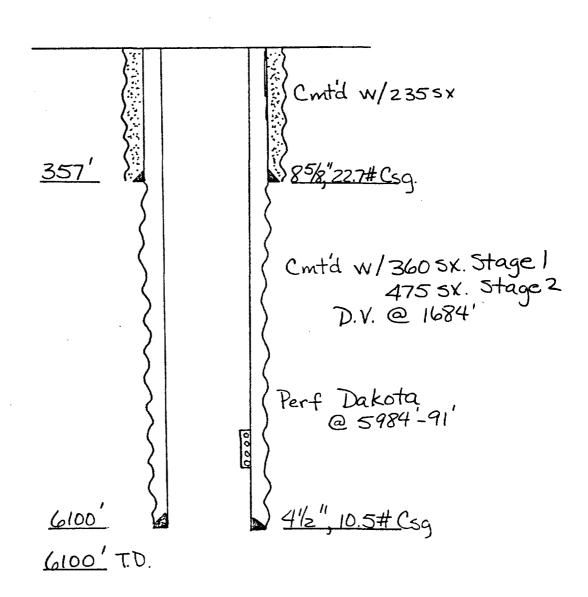
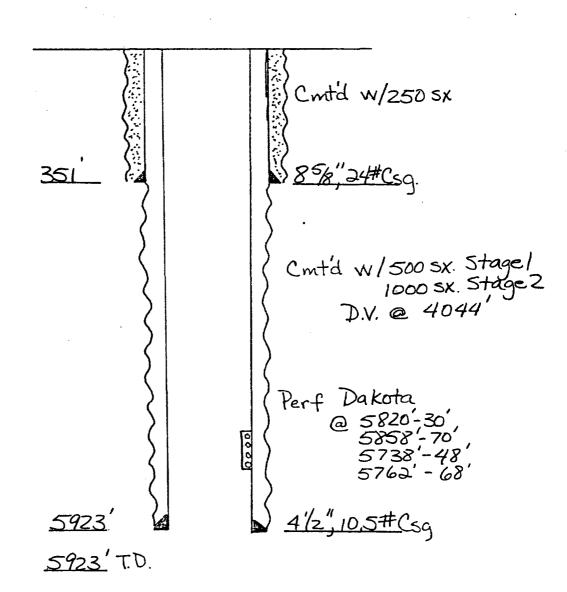


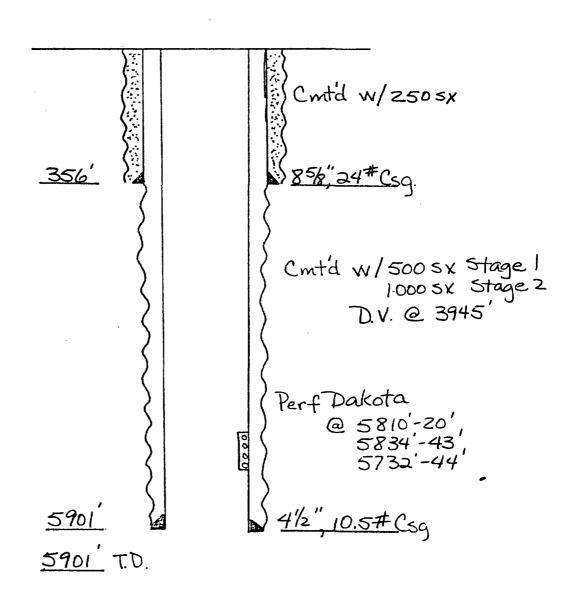
EXHIBIT I

Wellbore diagrams of wells adjacent to GCU #307

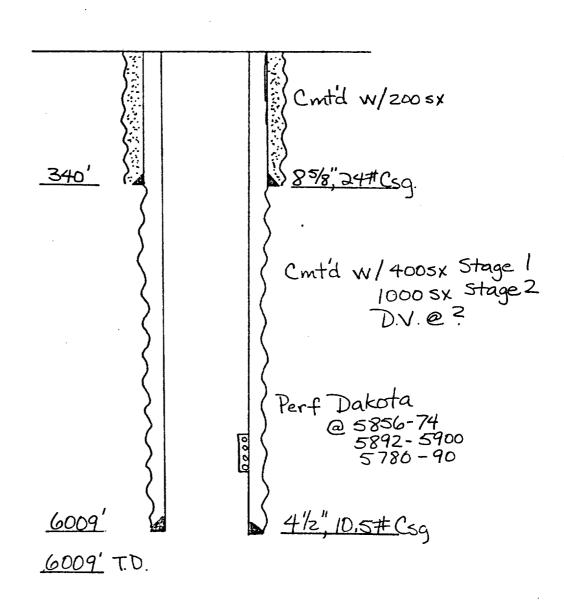
Amoco Gallegos Canyon Unit Well No. 187 SENW Sec 30 T29 N-RIZW San Juan County, New Mexico



Amoco Gallegos Canyon Unit Well No. 188 NW SE Sec 30 T29N-RIZW San Juan County, New Mexico



Amoco Gallegos Canyon Unit Well No. 172 SESE Sec 25 T29 N-R13W San Juan County, New Mexico



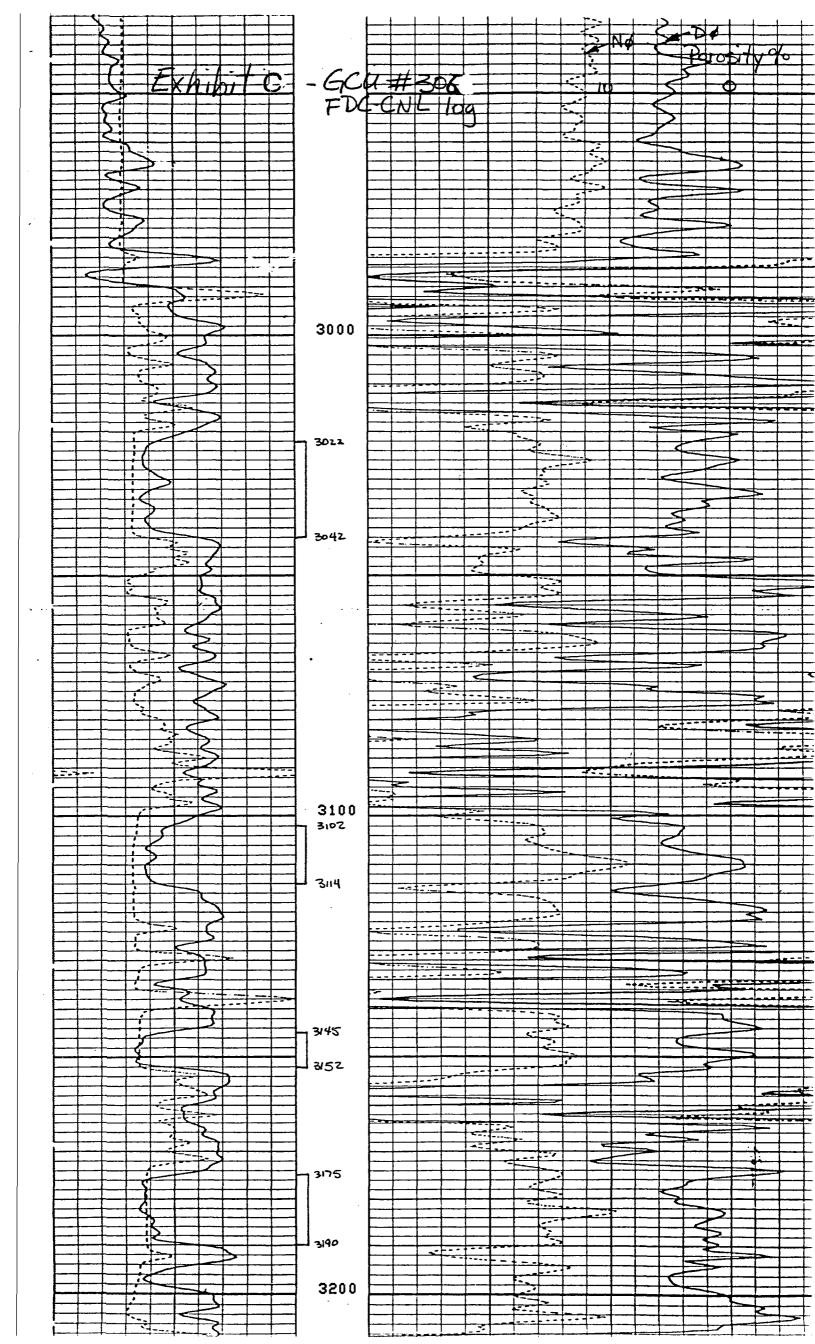
EX NIBIT F ERG Gallegos Canyon Unit Well No. 306 NESE Sec 19 T29N-RIZW San Juan County, New Mexico

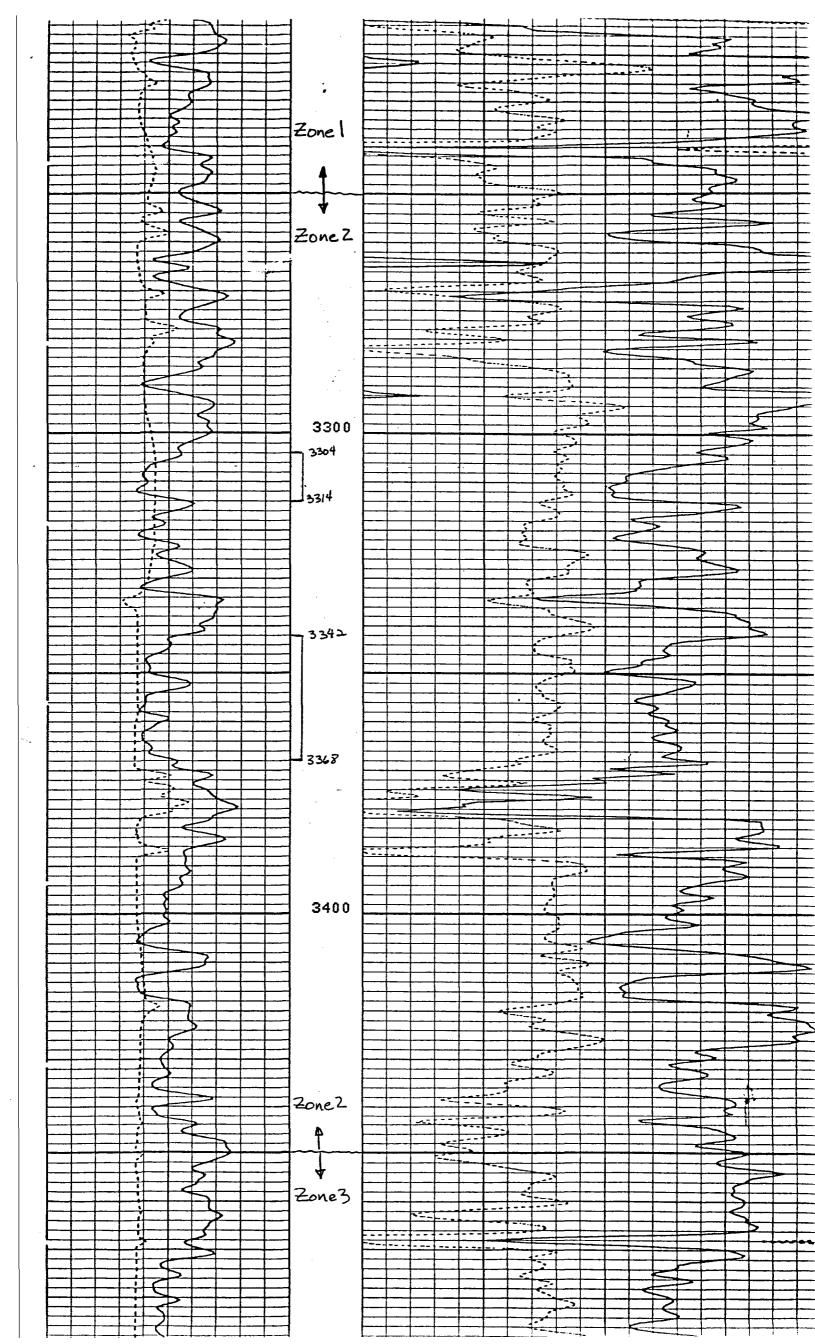
Contid w/250sx Cmtd w/690 sx. Stage 1 470 sx. Stage 2 D.V. @ 1605' Perf Mesaverde @ 3022-42, 3102-14, 3145'-52', 3175'-90', 3304'- 14', 3342'-68', 3520'-46', 3574'- 3600'. 7"20023# Csq

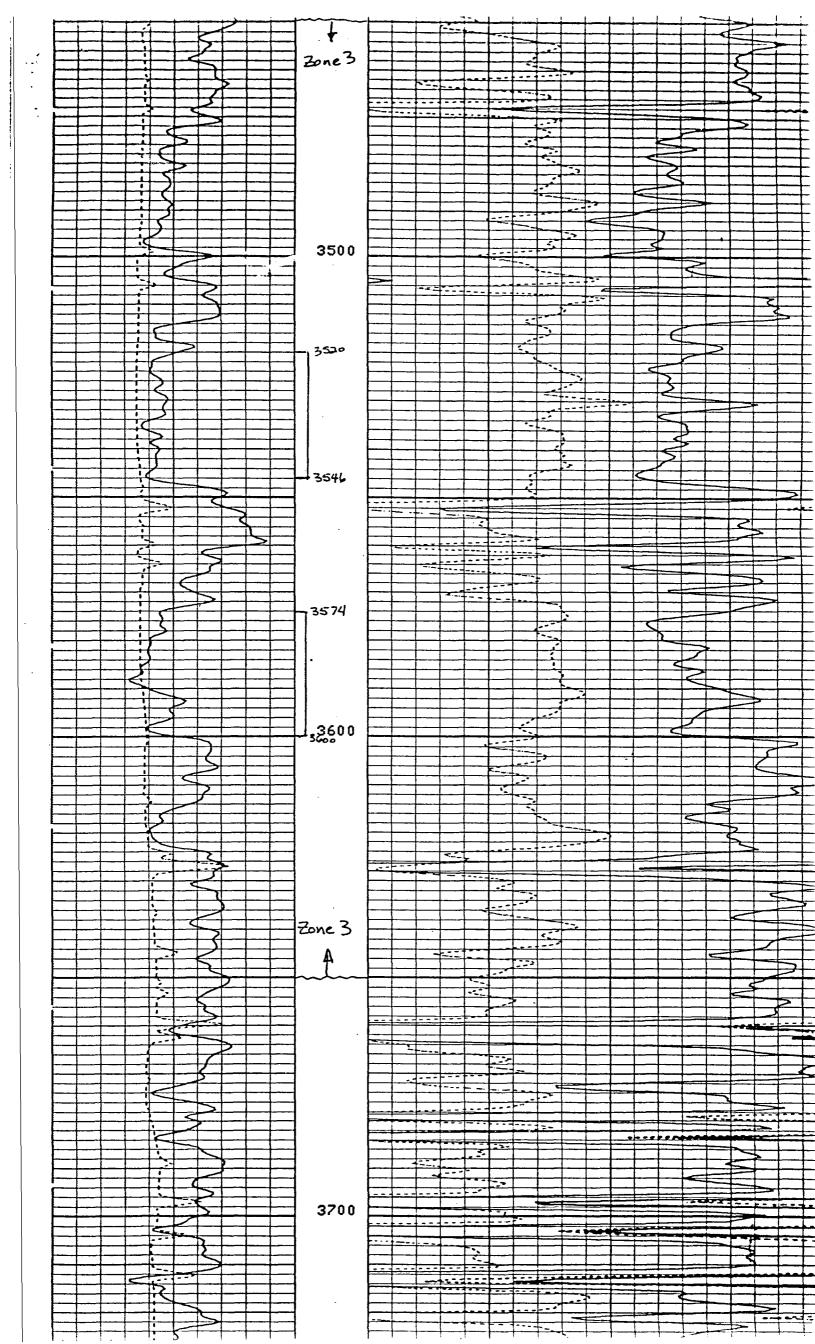
EXHIUIT LI

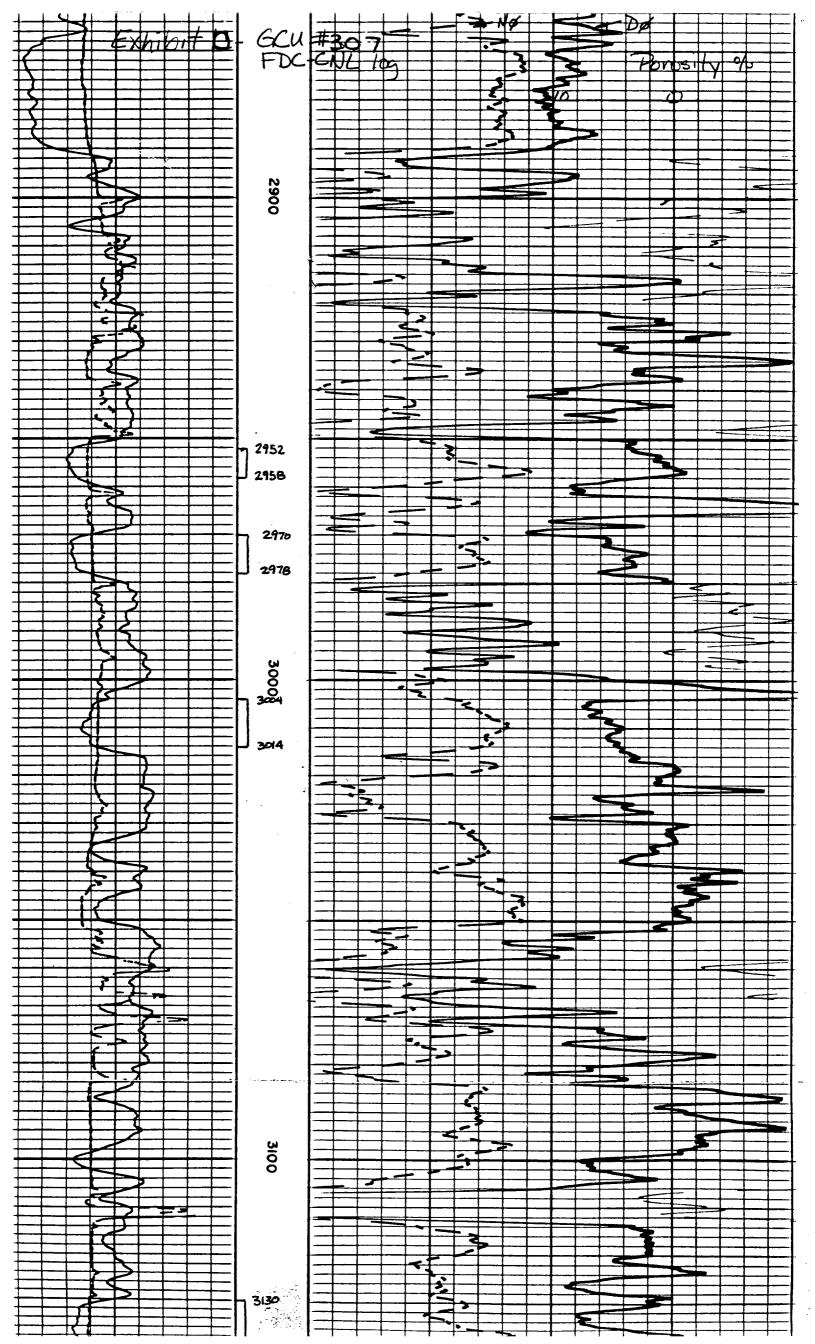
ERG Gallegos Canyon Unit Well No. 307 NE SW Sec 30 T29 N-RIZW San Juan County, New Mexico

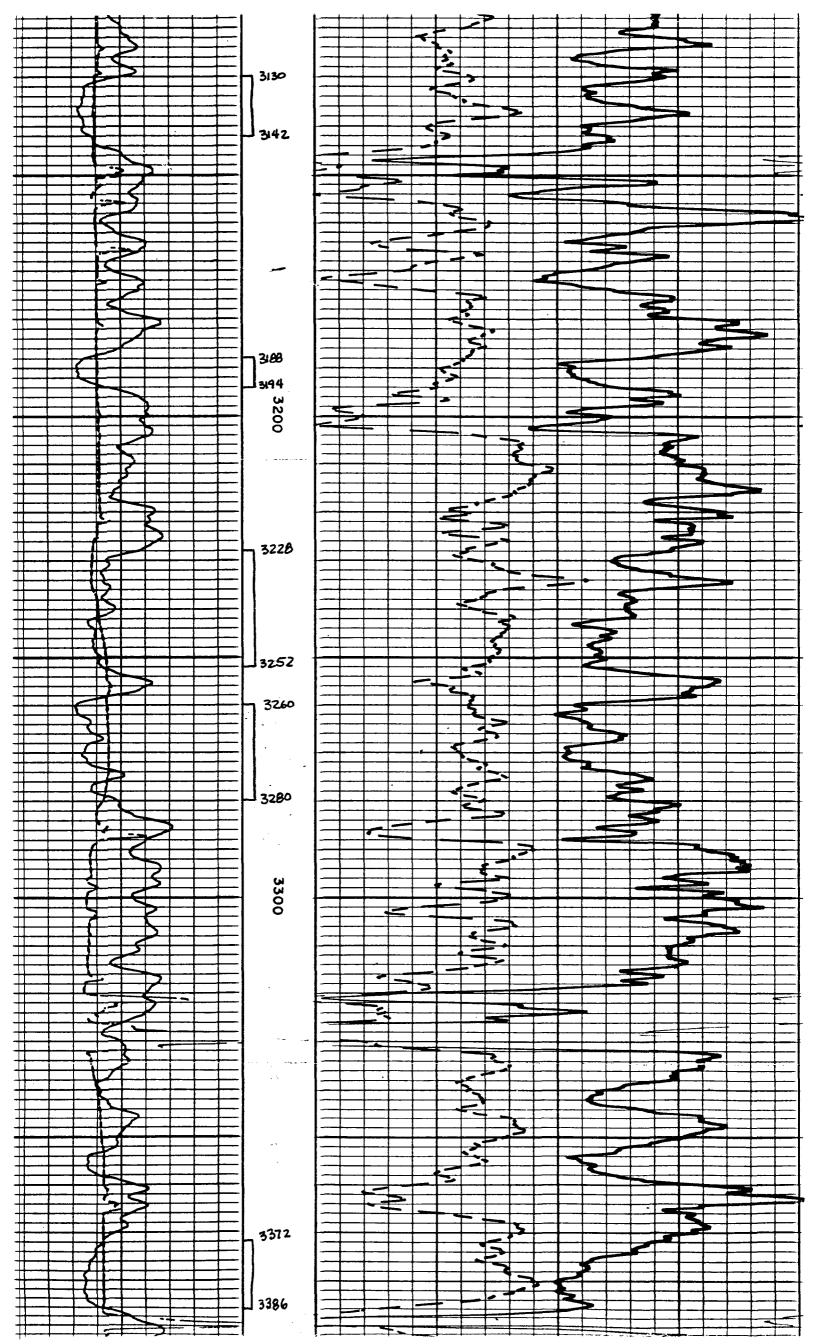
	Cmtd w/275 sx
236'	95/8,"32.3#Csq.
\$	
}	3 2 11 1 7 1 7 1 5 1 1 1
\	Cmtd w/740 sx. Stage 1 1500sx Stage 2
	D.V.@1480'
\$	
\	Perf Mesaverde
\	@ 2952-58 2970-78, 3004-14, 3130-42!
31	2952-58, 2970-78, 3004-14, 3130-42; 3188-94, 3228-52; 3260-80, 3372-86; 3480-3500
4013	3480-3500'
	7,20 £ 23# Csg
4023' T.D.	

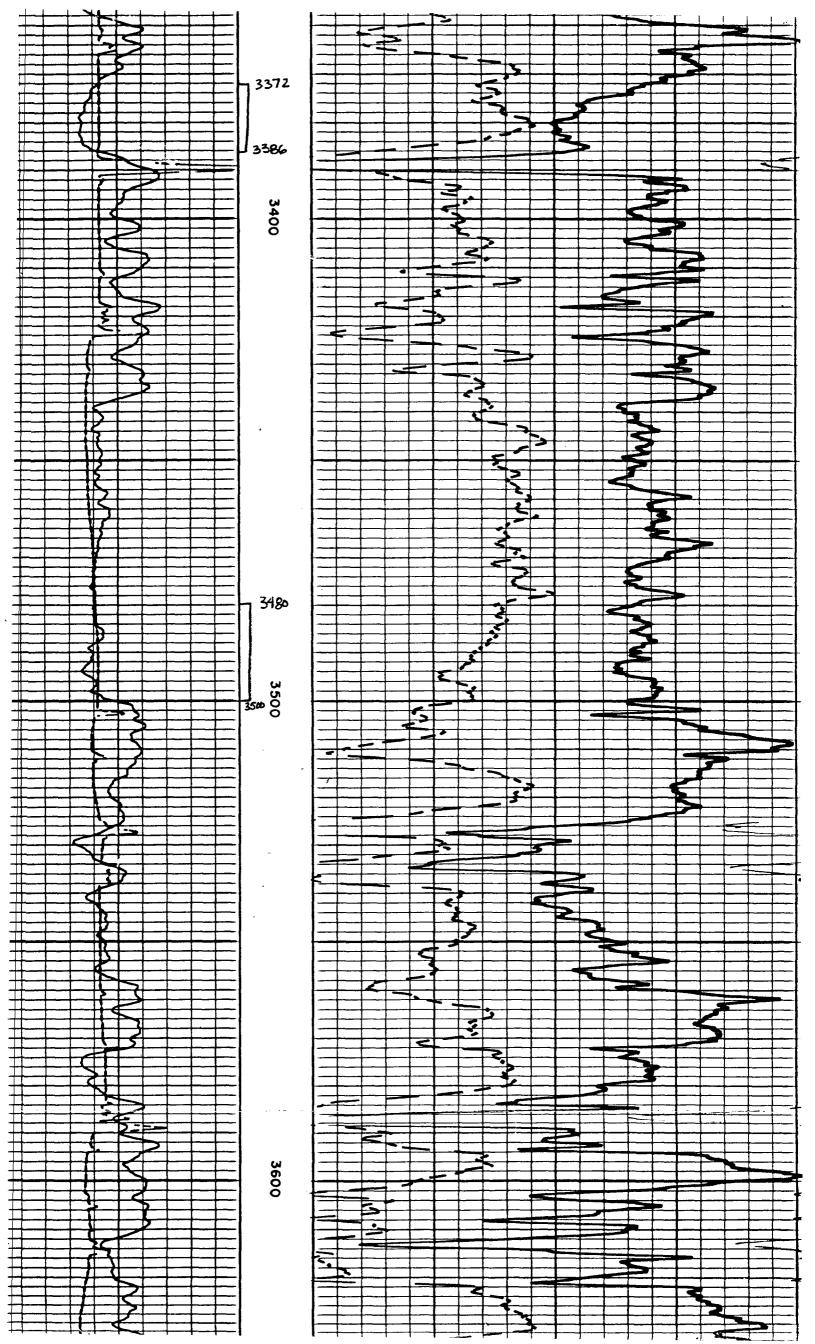












LARGE FORMAT EXHIBIT HAS BEEN REMOVED AND IS LOCATED IN THE NEXT FILE



STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING GOVERNOR LARRY KEHOE SECRETARY

January 8, 1981

POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 87501 (505) 827-2434

Energy Reserves Group P. O. Box 3280 Casper, Wyoming 82602

Re: Injection Pressures
Gallegos Canyon Unit
Wells Nos. 306 and 307
SWD-225

Gentlemen:

After reviewing the instantaneous shut down pressures for the above mentioned wells, you are hereby authorized to inject salt water at a surface injection pressure not to exceed 1200 psig.

Yours very truly,

JOE D. RAMEY Director

JDR/MH/fd

Energy Reserves Group, Inc. P.O. Box 3280 Casper, Wyoming 82602 Phone 307 265 7331



December 31, 1980

Oil Conservation Commission State of New Mexico P.O. Box 2088 Santa Fe, New Mexico 87501

Subject: Request to increase injection pressure on Gallegos Canyon Unit #306 & #307 from 1000 psi to 1200 psi.

Gentlemen:

We are now limited to a surface injection pressure of 1000 psi for the above mentioned wells, as per your letter of 8-6-80. We can not obtain sufficient injection rate at this 1000 psi limit. We hereby request that the 1000 psi limit be increased to 1200 psi surface injection pressure in light of the following data:

Gallegos Canyon Unit #306
Acid treatment - Perfs 3,022'-3,190' - ISDP 1250 psi
Acid treatment - Perfs 3,306'-3,368' - ISDP 1200 psi
Acid treatment - Perfs 3,520'-3,600' - ISDP 1300 psi
Gallegos Canyon Unit #307
Acid treatment - Perfs 2,952'-3,014' - ISDP 1350 psi

Acid treatment - Perfs 3,188'-3,280' - ISDP 1200 psi Acid treatment - Perfs 3,372'-3,500' - ISDP 1200 psi Frac treatment - entire zone - ISDP 1400 psi

Since the instantaneous shutdown pressure for the frac treatment on GCU #307 was 1400 psi, and the instantaneous shutdown pressures for the acid treatments are very similar for both wells, it is believed that the 1200 psi limit would still be below the formation fracture pressure.

We will be spudding another disposal well for the Gallegos Canyon Unit shortly after the first of the year to dispose of excess water. This well will reduce the volume injection into #307.

JAN 5 198: NOTISION

Very truly yours, ENERGY RESERVES GROUP, INC,

R.E. Schanaman Produciton Engineer Rocky Mountain District

RES:erl

6) C-SL

Energy Reserves Group, lac. P.O. Box 3280 Casper, Wyoming 82602 Phone 307 265 7331



December 31, 1980

Oil Conservation Commission State of New Mexico P.O. Box 2088 Santa Fe, New Mexico 87501

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Gallegos Canyon Unit #307

Acid treatment - Perfs 2,952'-3,014' - ISDP 1350 psi Acid treatment - Perfs 3,188'-3,280' - ISDP 1200 psi Acid treatment - Perfs 3,372'-3,500' - ISDP 1200 psi Frac treatment - entire zone - ISDP 1400 psi

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Very truly yours, ENERGY RESERVES GROUP, INC,

R.E. Schanaman

Produciton Engineer
Rocky Mountain District

RES:er1

JAN 5 1981

OIL CONSERVATION DIVISION
SANTA FE

March 11, 1991

Houston, Texas 77057

5847 San Felipe Suite 3600

101 FM 15 AR 8 45



State of New Mexico Oil Conservation Division P. O. Box 2088 Santa Fe, New Mexico 87504-2088

Mr. David Catanach Attention:

RE: Administrative Amendment Request

Order No. SWD - 225 Gallegos Canyon Unit #306 (SWD) NE1, SE1, Sec. 19, T29N, R12W San Juan County, New Mexico

Dear Mr. Catanach:

BHP Petroleum respectfully requests that the above referenced Order be administratively amended to allow disposal of water produced from the Fruitland Coal formation along with the Pictured Cliffs produced water into the Mesaverde formation.

I recently discussed with you over the phone my written request of February 28, 1991, concerning BHP Petroleum's desire to increase the perforation density in the subject well. I appreciated your verbal approval to do the requested work conditioned by reducing the surface injection pressure back to 600 psi.

It now has come to my attention that the subject well is the closest salt water disposal well to some of our recently completed Fruitland Coal wells.

I've enclosed several water analyses representative of the water produced from our coal wells. I've also enclosed representative analysis of the water from the Mesaverde formation.

As you will notice the quality of the water produced from both the Pictured Cliffs and Fruitland Coal formations are quite similar.

Your earliest review and response would be greatly appreciated.

State of New Mexico Oil Conservation Division March 11, 1991 Page 2

Please don't hesitate to call me at (713) 780-5448, if you have any questions or need any additional information.

Sincerely, Nelissa Sorbet

Chuck Williams
Administrator, Field Services

Inland Business Unit

CW:rm

Enclosures - Water analyses

Ernie Busch, NMOCD in Aztec, NM. cc:

Well file

API WATER ANALYSIS REPORT FORM

Analyzed By	Date: Analyzed		Preserved	Date Received
			NS:	REMARKS & RECOMMENDATIONS:
50 000 000 000 000 000 000 000 000 000	with a further thanks a further than the			Iron, Fe (total) Sulfide, as H ₂ S
			65863	Total Dissolved Solids (calc.)
IC CO3				
HILL HILL HILL HILL NCO,	8 C C C C C C C C C C C C C C C C C C C	11.5	702	Carbonate, CO ₃ Bicarbonate, HCO ₃
سالسالسالسار.	STANDARD 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1117	39586	Chloride, Cl Sulfate, So ₄
— me/I	WATER PATTERNS — me//			ANIONS
				Carvin, Da
		21.6	262	Magnesium, Mg
2,129	Specific Gravity, 60/60 F. Resistivity (ohm-meters) <u>66</u> F.	18.4	25035	Sodium, Na (calc.) Calcium, Ca
6,01	PH	me/I	mg/I	CATIONS
	OTHER PROPERTIES			DISSOLVED SOLIDS
Sampled By		Sampling Point		Type of Water (Produced, Supply, etc.)
+		393	GCU	
Water, B/D	Depth Formation	٦	Well	Lease or Unit
State	County or Parish	Legal Description	ري الم	Field
			CHEVENH .	THU THU
Date Sampled	Sample No.		25-910206-43	Company



TECH, Inc.
333 East Main
Farmington
New Maxico
87401
505/327-3311

API WATER ANALYSIS REPORT FORM

Company BHP Field Lease or Unit	Well Fee	Legal Description Sec 20 129N	Sample No. 2 County or Pa R P2 W Formation	Date Sampled State Water, B/D
Type of Water (Produced, Supply, etc.)	/, etc.)	Sampling Point	in Uhit	Sampled By
DISSOLVED SOLIDS			R PR	
CATIONS	mg/I	me/I	рΗ	7.55
Sodium, Na (cakc.) Calcium, Ca	14,730	21.0	Specific Gravity, 60/60 F. Resistivity (ohm-meters) $\frac{72}{}^{\circ}$ F.	0.20D
Magnesium, Mg Barium, Ba	182	i, e		
ANIONS			WATER PATTI	WATER PATTERNS — me/l
Chloride, Cl	24, 430	660	North Till Till Till Till Till Till Till Til	0 10 20 C1
Carbonate, CO ₃	0	0		HIII HIII HIII HIII HIII NCO
Bicarbonate, HCO ₃	1010	16.5	#0	
Total Dissolved Solids (calc.)	077,04			11 jump 11 jump 11 jump 11 jump 1000 11 jump 11 jump
Iron, Fe (total) Sulfide, as H ₂ S	c		100 100 100 100 100 100 100 100 100 100	10 10 10 10 10 10 10 10 10 10 10 10 10 1
REMARKS & RECOMMENDATIONS:	<i>5</i> 7			
Date Received	Preserved		Date Analyzed	Analyzed By



TECH, Inc. 333 East Main Farmington New Mexico 87401

505/327-3311

Date Received	REMARKS & RECOMMENDATIONS	Iron, Fe (total) Sulfide, as H ₂ S	Total Dissolved Solids (calc.)	Carbonate, CO ₃ Bicarbonate, HCO ₃	Chloride, Cl Sulfate, So ₄	ANONS	Sodium, Na (calc.) Calcium, Ca Magnesium, Mg Barium, Ba	DISSOLVED SOLIDS CATIONS	Type of Water (Produced, Supply, etc.)	Lease or Unit	Field	Company S A P
Preserved	IONS:		31,900		24673 69		15641 6830 170 14.0	mg/l me/l		Well 385	Legal Description	
Date Analyzed		white built a		Co	STAN Sampling STAN SAN SAN SAN SAN SAN SAN SAN SAN SAN S	WATER PATTERNS -	1 1 1 1 1 -	OTHER PROPERTIES	Sampling Point The death limit	Depth Formation	n County or Parish	Sample No.
analyzed By Schart		Cuthun Cuthun Cuthun Co	1 11 mm 1 11 mm 1 11 mm 1 11 mm 1 12 m		STANDARD O 10 20 20 Trusting in the property of the property	TERNS — me/l	1.014	7. 45	Sampled By	Water, B/D	rish State	Date Sampled

)

TECH, Inc.
333 East Main
Farmington
New Mexico
87401
505/327-3311

API WATER ANALYSIS REPORT FORM

Laboratory No. CU-110111-CS	11-65			
Company DHT T		,	Sample No.	1-9-91
		Legal Description	County or Pa	
	L	NEINE SIS.	-RISW SAN	JUAN NA
Lease of Oil	ら い い に い に い い い い い い い い い に い い に い に い い に い に い に い に い に い に い に い に	386	רובטודראיטם	***************************************
Type of Water (Produced, Supply, etc.)		Sampling Point	X	Sampled By
DISSOLVED SOLIDS	-		OTHER PROPERTIES	
CATIONS	mg/I	me/I	PH	6.6
Sodium, Na (calc.)	96821	560.7	Specific Gravity, 60/60 F.	-1.03
Calcium, Ca	637	31.8	Resistivity (ohm-meters) 4 F.	0.14
Magnesium, Mg Barium, Ba	201	17		
ANIONS			WATER PATTERNS	RNS — me/l
Chtoride, Cl	21412	404	0 10 517	10 2
Sulfate, So ₄ Carbonate CO ₂				
Bicarbonate, HCO ₃	336_	SS	E C C C C C C C C C C C C C C C C C C C	HI HI HI HITH HITH HCO3
			LOGAR	NIC
Total Dissolved Solids (calc.)	35482			THE SOLUTION OF THE PROPERTY O
Iron, Fe (total) Sulfide, as H ₂ S			100 100 100 100 100 100 100 100 100 100	1000 militar i m
REMARKS & RECOMMENDATIONS	Ň			
Date Received 1 - 11 - 91	Preserved		Date Analyzed 1 - 14 - 9 1	Analyzed By HKC



TECH, Inc.
333 East Main
Farmington
New Mexico
87401
505/327-3311

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CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794 Casper, Wyoming AUG 22 1980

RMD CASPER

WATER ANALYSIS REPORT

	uan	Inc.	DATE 8-19-8 LOCATION Pocture INTERVAL SAMPLE FROM Separa	a Cliffs	34974-2
REMARKS & CONCI	LUSIONS:		GAMP DE PROM		
Cations	mg/1	meq/1	Anions	mg/1	meq/1
Sodium Potassium	- <u>16284</u> - <u>80</u>	708.35 2.05	Sulfate Chloride	<u>27000</u>	0.00 761.40
Lithium Calcium	659	32.88 26.72	Carbonate Bicarbonate	0 525 	0.00 8.60
Iron	. present	770.00	Hydrogen sulfide		770.00
Total dissolved solids, : NaC1 equivalent, mg/1		44606 44782 6.7	Total Ani Specific resistance @ 68°F. Observed Calculated		_ ohm-meters

WATER ANALYSIS PATTERN

Scale Sample above described MEQ per Unit C1 50 C1 Na Na HCO₃ **HCO**3 5 Ca Ca SO₄ 5 Mg SO4 Mg 5 Fe СОз Fe CO₃

API WATER ANALYSIS REPORT FORM

Laboratory No. 25 - 910214 - 4A		
Company B. H. P. Petroleum	Sample No.	Date Sampled 2 - 8 - 9 /
Field Legal Description 484 Sec 7, T28N, R	R // W) County or Parish	State
Lease or Unit Well Gr.C.以、SIIb	Depth Formation Cliff	Water, B/D
Type of Water (Produced, Supply, etc.) PSI: 200 * Temp: 58°F Sampling Point	,	Sampled By
DISSOLVED SOLIDS	OTHER PROPERTIES	
CATIONS mg/l me/l	рн	6.9
Sodium, Na (calc.) 15,338 668	Specific Gravity, 60/60 F.	1.0344
331	Resistivity (ohm-meters) 11.5 F.	0.1
	WATER PATTERNS — me/I	— me/l
ANIONS	STANDARD	
Chloride, CI 26410 745 Sulfate, So. 14 0.3	«فسياسياسياسياسياسياسيا	اسىلىسلىسلىماد ،
CO ₃	c.	1111 1111 1111 1111 NCO3
Bicarbonate, HCO ₃ 428 7.02	5	CC3
Total Dissolved Solids (calc.)		TTIME TTIME TTIME SO
Sulfide, as H ₂ S	արումուրությունը է արումումումումումումումումումումումումումո	5 5 50 80 80 80 80 80 80 80 80 80 80 80 80 80
REMARKS & RECOMMENDATIONS:		
	The second of the control of the con	, , , , , , , , , , , , , , , , , , ,
Date Reverses	links from part	F1.11/160 11/

77

TECH, Inc.
333 East Main
Farmington
New Mexico
87401
505/327-3311



BAROID DIV/^'ON N L Industries, inc.

P.O. Box 1675 Houston, Texas 7,7001

WATER ANALYSIS TEST REPORT

BAROID TREATING CHEMICALS

•	- DAILO !!	- IKEATING	CHLIMICALS	The Property of	_
Exhi	bit .	Ø		HAULIVE	SHEET NUMBER
Energy Reserves				JUN Zo 167.	0ATE 6-10-77
FIELD			COUNTY OR PARISH	Mark to	STATE
BASIN DAKOTA.	ELL(S) NAME OR	.	JAN JUAN	EME CACH	N. MEXICO
King Gas Corm.	# 1	10.	WATER SOURCE (FORMA)	- CIFFHOUSE	
DEPTH, FT. BHT.F . SAMPLE SOURCE		TEMP, F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY
TYPE DE OIL API GRAVITY	TYPE OF				
TYPE OF OIL	1	ODUCED WATER	: . INJECT	; ION WATER OTHE	R
		ATER ANALYSIS			
	(HUMBER BES	IDE ION SYMBOL INDIC	ATES me/1 * SCALE UNIT	-	20
Na ⁺ 20 15 10	\cdots		, , , , , , , , , , , , , , , , , , , 	10 15	20C1-
Ca++	[<u> </u>
		- 	1 1 1 1 1 1		
Mg*+	, , , ,	, , , , , , ,			
		17111			
Fe***					co3=
DISSOLVED SOLIDS	· · · · · ·		DISSOLV	ED GASES	
		/1 *			
CATIONS Total Hardness	.m=//*/ •33	mg/1 *		Sulfide, H ₂ S <u> </u>	mg/l ** mg/l *
Sodium, Na (calc.)			Oxygen,		mg/l * = = =
Calcium, Ca ⁺⁺	6	<u>40</u> 73		_	_
Magnesium, Mg Iron (Total), Fe	 .	1.9	PHYSICA	AL PROPERTIES	····
ANIONS		. "	 pН	· _	8.4
Chloride, C1	• • • • • • • • • • • • • • • • • • •	10,600 90		× Potential)	MV
Sulfate, SO4	 ,	1,200	Specific	Gravity	
Bicarbonate, HCO 3	232	14,152	•	ssolved Solids(Calc.)	mg/l+
Hydroxyl, OH	· · · · · · · · · · · · · · · · · · ·	<u> </u>	Stability	Index 6F	
Sulfide, S = Phosphate-Meta, PO3 =		in in <u>in an an</u>	CasO 4.5	_ FF _ FF	mg/1*
Phosphate - Ortho, PO4 ⁼				ěF	mg/l*
		<u> </u>	Max. Cas	O4 Possible (Calc.)	mg/l*
Company of the compan		· • 		604 Possible (Calc.) Hydrocarbons	mg/l* ppm(Vol/V
	•*			Try droc drooms	ppin(v 01// v
SUSPENDED SOLIDS (QUALIT	ATIVE)	2 (植)	•		
Iron Sulfide Iron Oxide	Calcium	Carbonate	Acid Insoluble	* NOTE: me/l	and mg/l are com-
REMARKS AND RECOMMEND			· · · ·	monly used in	terchangeably for
	•				espectively. Where
	4.				are used, correc- made for specific
1		₽	· • •	gravity.	
			. •		
Nax boolery	DIST. NO.	Aoffarningto	n, MM	97729701	HOME PHONE
"W8dlery	% 10−7	PDISTRIBUTION	CUSTOMER	AREA OR	DISTRICT OFFICE

BTC ENGINEER OR BTC LAB

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

May 3, 1991

BHP Petroleum 5847 San Felipe Suite 3600 Houston, Texas 77057

Attention: Chuck Williams

Re: Amendment of Order No. SWD-306

Dear Mr. Williams:

Your request to utilize the Gallegos Canyon Unit Well No. 306 to dispose of produced Fruitland Coal water in addition to produced Pictured Cliff water is hereby approved.

Sincerely,

David Catanach

) and Cutant

Engineer

xc: OCD-Aztec

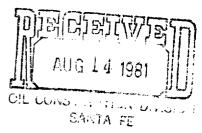
File-SWD-306

Energy Reserves Group, Inc. P.O. Box 3280 Casper, Wyoming 82602 Phone 307 265 7331



August 11, 1981

State of New Mexico
Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Maxico 87501



RE: Application of Energy Reserves Group, Inc.

For Modification of Administrative Order No. SWD-225,
To allow disposal of Pictured Cliffs water into the
Mesa Verde formation through existing perfs and additional perfs in the Cliffhouse member of the Mesa
Verde formation.

Gentlemen:

Energy Reserves Group, Inc., is currently disposing of produced Pictured Cliffs water into the lower portion of the Mesa Verde formation in Gallegos Caryon Unit 1307. This request is to allow the opening of the upper portion of the Mesa Verde formation for additional water disposal. The following explication is presented and we request that administrative approval be granted. The following data is submitted.

- A. Application is a working interest owner and the operator of the Gallegos Canyon Unit, West Kutz Pictured Cliffs Field, located in Township 27, 28, and 29 North, Ranges 11, 12, and 13 West, San Juan County, New Mexico.
- B. The applicant desires to dispose of water produced from the Pictured Cliffs formation from the Gallegos Canyon Unit into the Mesa Verde formation via the Wellbore of Gallegos Canyon Unit Well #307, located 1455' ESL, 510' FML, Sec. 30-T29N-R12W, San Juan County, New Mexico.

Applicant presents the following in support of the application:

- Exhibit A Plat showing the location of the proposed input well and location of all oil and gas wells, including abandoned and dry holes, and the names of operators within a two mile radias of the proposed input well.
- 2. Exhibit B Water analysis of the Pictured Cliffs water. Approximately 1075 BWPD will be disposed of into well No. 307.
- 3. It is proposed to inject the produced Pictured Cliffs water into the Mesa Verde Formation in the Gallegos Canyon Unit No. 307 through existing perforating from 2.952'-3,500', and additional perforations from 2,785'-2,886'. Exhibit C is the log section of well No. 307.



Page 2 - Continued

- 4. Exhibit D = Water analysis of the water contained in the Mesa Verde formation.
- 5. Exhibit E Schematic diagrams of the wellbore of well No. 307 and showing all particent data.
- 6. Injection will be through 2-3/8" plastic lined steel tubing with an injection packer set at approximately 50 feet above the top of the injection zero. Well No. 307 produces from the Pictured Cliffs zone. (Dual Completion).
- 7. Exhibit F Diagramtic wellbore sketches of all wells within one half mile radias that Depetrate the Mesa Verde formation adjacent to the proposed Mesa Verde injection well No. 307.

Sincerely, ENERGY RESERVES GROUP, INC.

Ron E. Schanaman

Production Engineer

Rocky Mountain District

RES:erl

enclosures .



BAROID DIVISION

N L Industries, Inc. P.O. Box 1675 Houston, Texas 7,7001

WATER ANALYSIS TEST REPORT

BAI	ROI	D 1	RFA	TING	CHEM	ICAIS
			1/ -/-	11110		

			DIKLAIN	CHEMICALS	TIPAPH	
Ex	hibi	ナ	D		HALVETYCE	SHEET NUMBER
Energy Reserves			•		: Jun Zo 187.	6-10-77
BASIN DAKOTA.			· .i	SAN JUAN	ride caero	N MEXICO
LEASE OR UNIT	WELL(S)	NAME OF		WATER SOURCE (FORMA	TION)	
King Gae Corina	SOURCE	<i>‡</i> 1	TEMP, F	MESAUERDE WATER, BBL/DAY	- CLIFFHOUSE	1
DEPTH, FT. BHT, F SAMPLE		2	IEMP, P	WATER, BOLTDAY	OIL, BBL/DAY	GAS, MMCF/DAY
TYPE OF OIL API GRAY		l .	WATER	1	<u> </u>	
Aller Control of the	•	⊠ p	RODUCED WATER	TOBLMI	ION WATER OTHER	·
	(NI		ATER ANALYSIS	PATTERN LATES me/I* SCALE UNIT	<u>n</u> of the second	
Na ⁺ 20 15	10	5	0	5	10 15	20C1-
		1 1	11111		-	
Ca++		44				НС03
	' '	1 !		1 1 1 1 1 1	111111	
Mg ⁺⁺						
		1 1		1111111		
Fe***	1 1 1 1					
DISSOLVED SOLIDS				DISSOLV	ED GASES	
			41.4		· · ·	
CATIONS	me/	1*	.mg/l *		Sulfide, H ₂ S _	mg/l *
Total Hardness Sodium, Na (calc.)				Carbon D	ioxide, CO ₂	mg/l *
Calcium, Ca ⁺⁺			40	Oxygen,	-	mg/l *
Magnesium, Mg ++ Iron (Total), Fe +++		· ·	73 1•9	PHYSICA	AL PROPERTIES	·
ANIONS				pH .		8.4
Chloride, C1		No.	10,600		× Potential)	MV
Sulfate, SO4	<u></u>	<u> </u>	90 1,200	Specific		
Carbonate, CO3	232	,	14,152		JTU Units	// •
Bicarbonate, HCO3 Hydroxyl, OH			-U-	Stability	ssolved Solids(Calc.) Index @F	mg/l *
Bulfide, S =			A. 6	Jiddiiiiy	6 F	
Phosphate-Meta, PO3	1.00			CaSO 4 S	folubility@F	mg/l*
Phosphate - Ortho, PO4 =			er elemente en elemente e La companya de la co	<u> </u>	ėF	mg/l*
		,			O4 Possible (Calc.)	mg/l*
and the second s			* ·		60 4 Possible (Calc.) _ Hydrocarbons	mg/l*
	* * *	40		Kezidudi	Trydrocarbons	ppm(Vol/Vo
SUSPENDED SOLIDS (QU.	ALITATI	/E)	3	,		
					· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
Iron Sulfide Iron Oxid	l•∐ C	alcium	Carbonate	Acid Insoluble		nd mg/1 are com-
REMARKS AND RECOMM	ENDATIO	<u>NS</u> :				erchangeably for spectively. Where
	•			_		are used, correc-
		: .				made for specific
- 1			•	o.•	gravity.	
BTC ENGINEER MAX BOOLERY	DIST.	но.	**Parningto	on, NM	979329701	HOME PHONE
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"Ectery	00,1	10-7	7DISTRIBUTION	CUSTOMER BTC ENGINEER OR	BTC LAB	DISTRICT OFFICE BTC SALES SUPERVISOR

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-108

(Date)

		1000
APPLICATION TO DISPOSE OF SA	LIT WATED BY INDECTION	いてつ メ ロヘロへいら ほかばり
ALLECATION TO DISTUSE OF SA	ILI MALLE DI MOLCHON	NIO A FUKUUS KWA

OPERATOR			ADDRESS		JH 1990 LI TON HO		
Energy Reserves Group	, Inc.	WELL NO.	P.O. B	lox 3280 - Casp	er, Wyoming 82602		
Gallegos Canyon Unit		307	West K	utz	San Juan		
LOCATION					1		
UNIT LETTER	<u>L</u> ; well	IS LOCATED 14	55 FEET FR	OM THE South	LINE AND 510 FEET FROM THE		
West LINE, SECTION	30 TOWN		RANGE 12W	NMPM.			
NAME OF STRING	SIZE S	CASING	SACKS CEMEN		MENT TOP DETERMINED BY		
SURFACE CASING							
9-5/8"	32.3#	236'	2 7 5	Surface	Cement to surface		
INTERMEDIATE							
LONG STRING							
7"	20# & 23#	4,013'	1.240	Surface	Cement to surface		
TUBING				PTH OF TUBING PACKER	Concile to ballage		
					1.7		
NAME OF PROPOSED INJECTION FORMAT	ION		TOP OF FORM	ATION	BOTTOM OF FORMATION		
Mesa Verde	OR ANNULUS?	PERFORATIONS	OR OPEN HOLE? PR	OPOSED INTERVAL(S) OF IN	3,990'		
Tubing		Perfora	tions	2,788'-3,500'			
IS THIS A NEW WELL DRILLED FOR DISPOSAL?	1	•	SE WAS WELL ORIGINA	ALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN AN ZONE OTHER THAN THE PROPOSED INJECTION ZONE?		
Yes	l l		d Cliffs pro		Yes - Pictured Cliffs		
Pictured Cliffs prod							
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA		EPTH OF BOTTOM OF	NEXT HIGHER	DEPTH OF	TOP OF NEXT LOWER 5 ZONE IN THIS AREA		
Approximately 100'			iffs 1,416'		Gallup @ 5,500'		
ANTICIPATED DAILY MINIMUM INJECTION VOLUME 1 (BBLS.)	MAXIMUM	_	ED TYPE SYSTEM	IS INJECTION TO BE BY G			
300	1075	Open	TO BE DISPOSED OF	Pressure	1200 psi		
ANSWER YES OR NO WHETHER THE FOLL ERALIZED TO SUCH A DEGREE AS TO BE STOCK, IRRIGATION, OR OTHER GENERAL	c, l	Yes	SAL ZONE Yes	Yes			
NAME AND ADDRESS OF SURFACE OWNER	(OR LESSEE, IF STA	ATE OR FEDERAL LAN		L			
Bolack Land & Cattle							
LIST NAMES AND ADDRESSES OF ALL OF		E-HALF (1) MILE OF	THIS INJECTION WEL	Ļ			
Amoco Production Com	ipany						
Security Life Buildi	ng						
Denver, Colorado 80	202		_				
HAVE CODIES OF THIS APPLICATION BES	N SURFACE OWNER		FACH OPERAT	OR WITHIN ONE-HALF MILE			
HAVE COPIES OF THIS APPLICATION BEEN SURFACE SENT TO EACH OF THE FOLLOWING?		•	OF THIS WELL	es			
ARE THE FOLLOWING ITEMS ATTACHED THIS APPLICATION (SEE RULE 701-B)	TO PLAT OF AREA		ELECTRICAL L	OG	DIAGRAMMATIC SKETCH OF WELL		
	Yes		Y	es	Yes		
I hereby cer	tify that the infor	mation above is	true and complete	to the best of my kno	wledge and belief.		
		Product	tion Enginee	r	Angust 11 1981		

NOTE: Should waivers from 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.

(Signature)

(Title)

Exhibit A

Location of GCU#307 and all wells within a 2 mi radius of GCU#307. San Juan County, New Mexico

RIIW		R	12W	
	12	7 Pc •	8	9
14	13 Amoco 108E D	Ameco 96E 0 18 Gmoco Amoco 101 0 o F EAG- 77	Amoco 1332 Amoco 1332 Omoco 0 0 133 0 0 17 Amoco 134E 134 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	amoco 144 30
amocu amocu 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	9moco 1065 1066 0 D ERG 202 202 202 203 204	Amoco ERL 75 ERL O Amoco PC 288 PC 1100 ERL 1 9 ERG ERG PC PC 900 Compace 110 E	260 Omoco 2636 200 E84	2 1 Gmoto 152 D Gmoto 152
2 6 E46 9000 25 1000 PPC 00	Como LO 171 6 D ERL 26 8PC	Omoco 188E 1870 CRL PC 292 684 210 PC 188 684 210 PC 188 684 2307 PCHYGmoco 284 284 284 287 6 PC	29 ERG 74 Grace 2006 Omoco 2006	729N 28
amore am		210E 322 0 pc 210E 322 0 pc 221 0 0 Amoro 210 ERG 0 0 285 0 pc 0 pc 221E	3 2 211 00 PC QIMOCO 212 00 ERG ERG 324 324 0PC	3 3
97000 00 E	21 ERG 32 9 12 0 PC	ERF 30 8 ERF 289 EPC	309	10
/3	E96 900 130 130 130 130 130 130 130 130 130 1	Eqt 319 °C 319 17	16	15

RECEIVED

CHEMICAL & GEOLOGICAL LABORATORIES

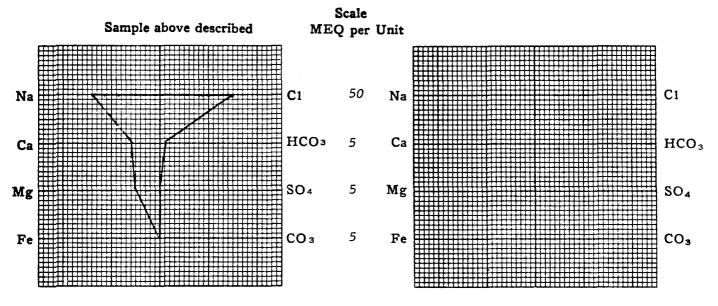
P. O. Box 2794 Casper, Wyoming AUG 22 1980

RMD CASPER

WATER ANALYSIS REPORT

OPERATOR_E	Energy Reserv	es Group,	Inc.	DATE	8-19-80	_ LAB NO	34974-2
WELL NO.	Vell No. 288			LOCATION			
	Kutz-PC			FORMATION			
	San Juan			INTERVAL			
	lew Mexico	· · · · · · · · · · · · · · · · · · ·		SAMPLE FROM	(7-30-80)		
STATE				SAMPLE FRUM_			
REMARKS & (CONCLUSIONS:						
							
							
				·	 		
Cations	m	g/1	meq/1	Anions		mg/1	meq/1
		284	708.35			0	0.00
Sodium	<u></u>	80		Sulfate	—		761.40
Potassium -	• • • •	<u>-</u>	2.05	Chloride			
Lithium	· · · · 			Our Donate		0	0.00
Calcium		<u>659 </u>	32.88	Bicarbonate		<u>525</u>	8.60
Magnesium -		<u> 325 </u>	26.72	Hydroxide	· · ·		
Iron	<u>pr</u>	<u>esent</u>		Hydrogen sulfide			
	Total Cations	·	770.00	1	otal Anions		770.00
Total dissolved	rolide mall		44606	Sifii	O 600T		*******
				Specific resistance	_	0.764	_
NaC1 equivalent, mg/1 <u>44782</u> Observed pH <u>6.7</u>				Observed			ohm-meters
Observed pH		· • • <u> </u>	6.7	Calculated	1	0.155	ohm-meters

WATER ANALYSIS PATTERN



Unit # 501 Exhibit C Galleges Cangen School Tagn-San Juan County Fan Juan County, New Mexico Proposed perfs-2785-2830'; 2845'-2846' W/2 JSPF (174 perfs 86' met 101' gr-su)

Exhibit E

ERG Gallegos Canyon Unit Well No. 307

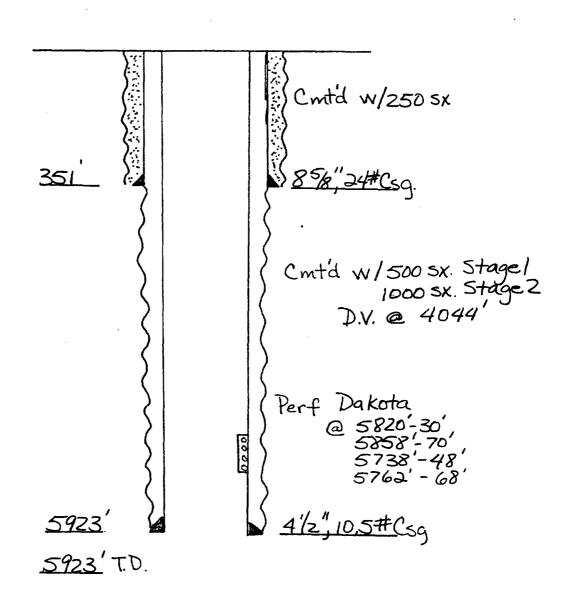
NE/SW Sec 30-T29N-R12W

San Juan County, New Mexico

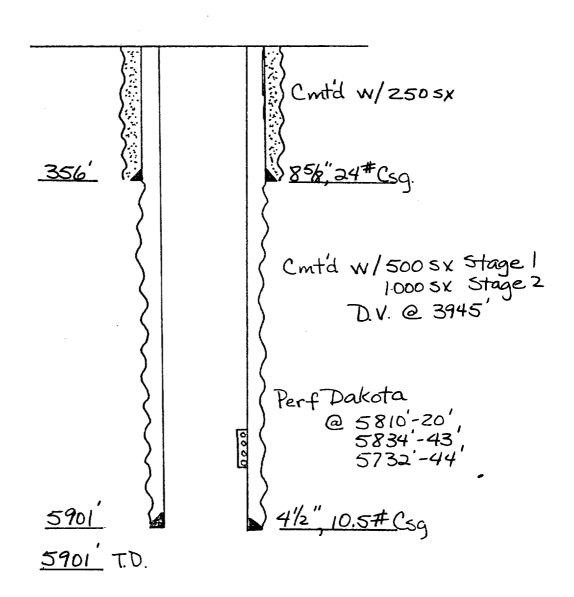
CMTY W/275 5X 9 98 " 32 # Csq 236" 4.7 Tbg @ 1258' Existing Pictured Cliffs perts @ 1246'-1254' 2 3/8" 4.7# plastic Lined Tbg. Phr To be @ \$ 2745-1 Proposed Mesakerde perfs: 2785-2830, 2845-2886' CmT'd wy 740 sx Stage 1 500 SX STage 2 D.V. @ 1480' Existing MesaVerde perfs: @ 2952'-58', 2910'-78' 3004'-14', 3130'-42' 3188'-94', 3228'-52' 3260-80', 3272'-86' 34801-3500 7,20+23 Csq

EXHIBIT F
Wellbore diagrams of wells adjacent to GCU #307

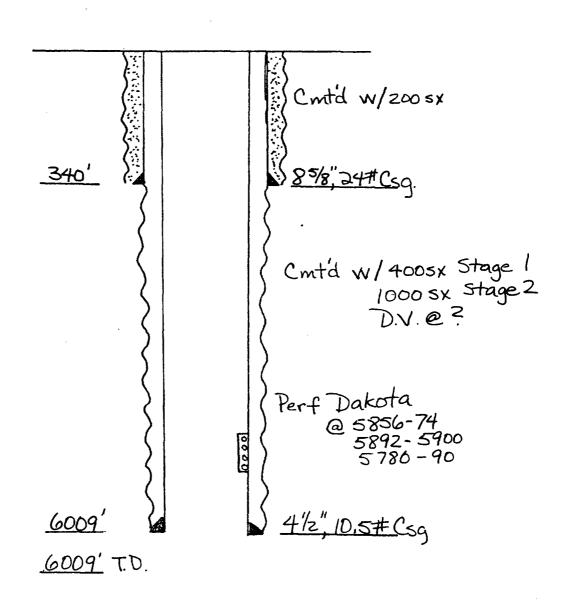
Amoco Gallegos Canyon Unit Well No. 187 SENW Sec 30 T29 N-RIZW San Juan County, New Mexico



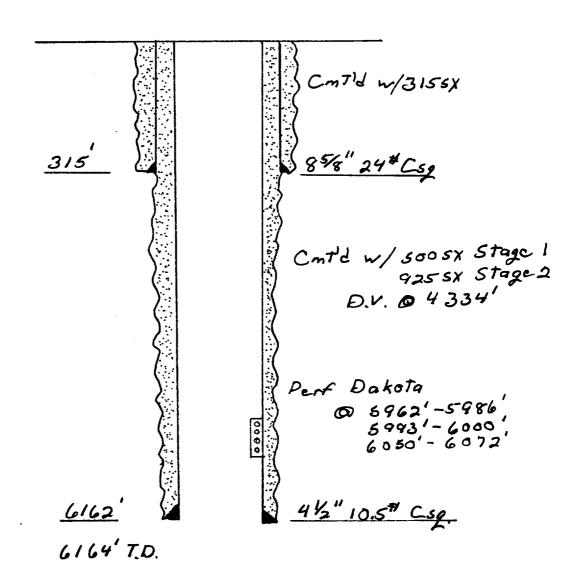
Amoco Gallegos Canyon Unit Well No. 188 NW SE Sec 30 T29N-RIZW San Juan County, New Mexico



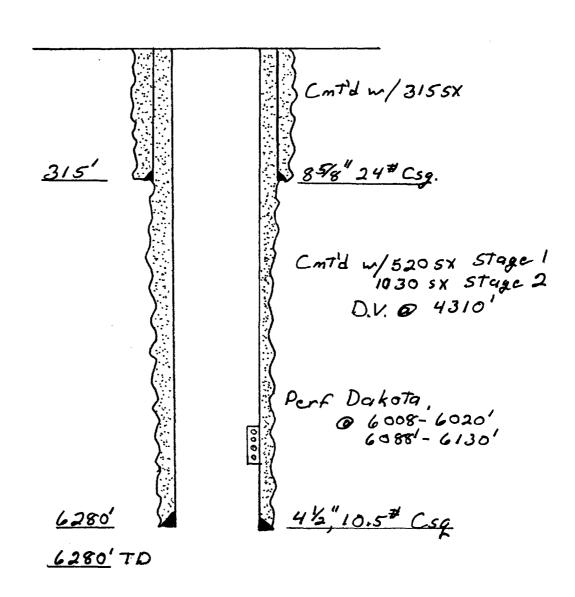
Amoco Gallegos Canyon Unit Well No. 172 SESE Sec 25 T29 N-R13W San Juan County, New Mexico

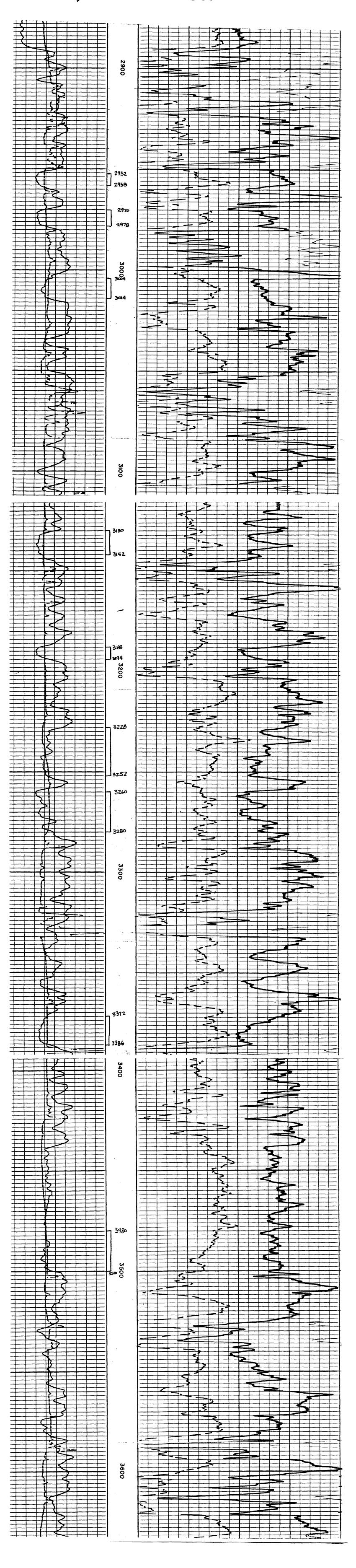


amoco Gallegos Canyon Unit Well No 187 E 5E/SW Scc 30, T29N-R12W San Juan County, New Mexico



amoco Gallegos Canyon Unit Well No. 210E NE/NW Scc. 31, T29N-R12W San Juan County, New Mexico







STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

POST OFFICE BOX 2088 STATE LAND OFFICE BUILDING SANTA FE, NEW MEXICO 87501 (505) 827-2434

September 11, 1981

Energy Reserves Group Inc. P. O. Box 3280 Casper, Wyoming 82602

Attention: Ron E. Schonaman

Re: Modification of SWD 225

Dear Mr. Schonaman:

Pursuant to Energy Reserves Group, Inc. letter of August 11, 1981 asking for a modification of Administrative Order No. SWD-225, your request is hereby granted.

The modification requested additional perforation from 2785' to 2886' to be placed in the easing of well #307 in the upper portion of the Mesa Verde formation.

Yours very truly,

JOE D. RAMEY Division Director

JDR/jc

cc: Aztec Distric Office 1000 Rio Brazo Rd. Aztec, New Mexico 87410