KELLAHIN and KELLAHIN
Attorneys at Law

El Patio - 117 North Guadalupe Post Office Box 2265 Santa Fe. New Mexico 87504-2265 Telephone 982-4285 Area Code 505

RECEIVED

March 4, 1985

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OIL CONSERVATION DIVISION

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

"Certified Mail-Return Receipt"

Re: Hicks Oil & Gas, Inc.
Salt Water Disposal
Section 17, T28N, R13W, NMPM
San Juan County, New Mexico

Case 8546

Dear Mr. Stamets:

Jason Kellahin

Karen Aubrey

W. Thomas Kellahin

On February 18, 1985, on behalf of Hicks Oil & Gas Inc. I filed an application which is set for hearing on March 27, 1985, for approval of the SE Cha Cha Well 16, located in Unit H of the referenced Section 17 for use of the Gallup formation for disposal.

Please find enclosed two copeis of the required Division Form C-108 and attachments. By copy of this letter we are sending Form C-108 by certified mail-return receipt to the surface owner, the OCD District Office, and all operators within a one-half mile radius.

7. Thomas Ke

WTK:sg Enc.

cc: Mr. Frank Chavez
Oil Conservation Div.
1000 Rio Brazos Road
Aztec, NM 87410

Mr. Mike Hicks Hicks Oil & Gas Inc. P. O. Drawer 3307 Farmington, NM 87499 Southland Royalty Co. P. O. Drawer 570 Farmington, NM 87499 Attn: Mr. Robert Fielder

Bureau of Indian Affairs Navajo Indian Irrigation Pro. 3539 E. 30th Street N.W. Energy Bldg., Rm 103 Farmington, NM 87401

STATE OF NEW HEXTOD ENERGY AND MINERALS DEPARTMENT

DIL CONSERVATION DIVISION

POS! DEFICE BOX POOR STATE LAND DEFICE BUILDING SANTA FE NEW NO SIZE #7501 Case 8546Ferise0 7-1-11

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1.	Purpose: Secondary Recovery Pressure Maintenance Disposal Storage Application qualifies for administrative approval?
11.	Offerstor: Hicks Oil & Gas, Inc. OIL CONSERVATION DIVISION
	Accress: P.O. Drawer 3307, Farmington, New Mexico 87499
	Contact party: Mike Hicks Phone: 505/327-4902
111.	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.
1 V .	Is this an expansion of an existing project? \square yes \square no If yes, give the Division order number authorizing the project \square .
٧.	Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile rodius circle drawn around each procesed 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; Whather the system is dpen 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 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 chamical analysis of the disposal zone formation water (may be measured or inferred from exicting literature, studies, nearby wells, etc.).
VIII.	Attach appropriate geological data on the injection zone including appropriate lithologic cetail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with

- injection zone as well as any such source known to be immediately underlying the injection interval.
- V Ittook proposite landing and test data on the call (16 call land have

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.)

total dissolved solids concentrations of 10,000 mg/1 or less) overlying the proposed

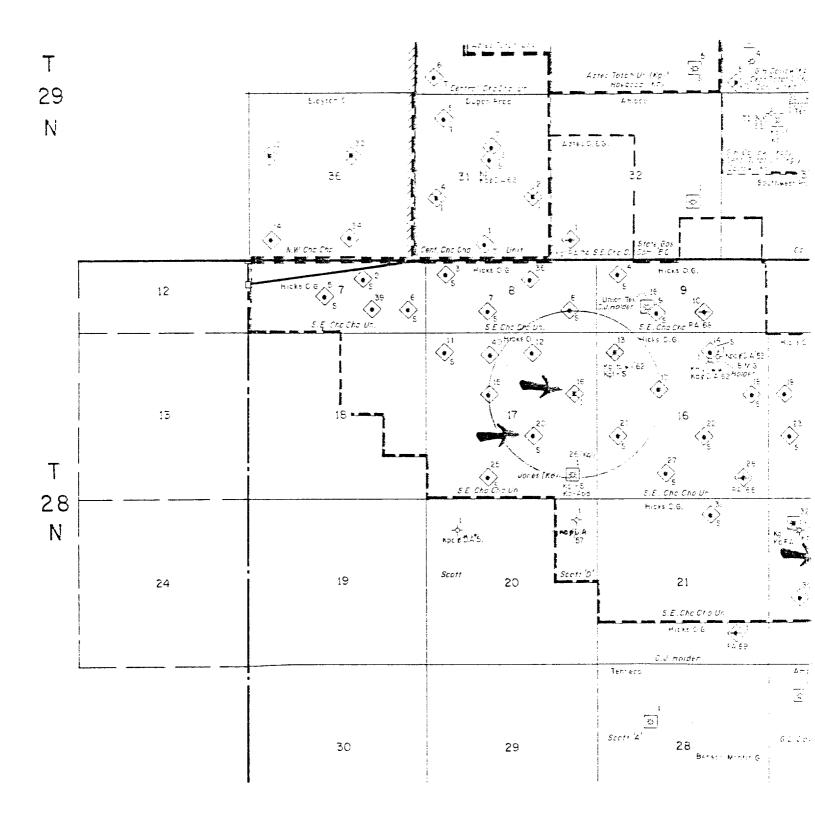
- XI. Attach a chemical analysis of frosh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have 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 dranking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification

IX.

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name:	Mike Hicks		Title	President	
Signature:	Make	Thicke	Date:		

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.



INJECTION WELL DATA SHEET Case 8546 Hicks Oil & Gas, Inc. S.E. Cha Cha Unit 1980' FNL & 660' FEL TUUTAGE LUCATION 28N 13W 17 SECTION TUNNSHIP RANGE Schematic Tabular Data Surface Casing Size 8 5/8" - 24# " Cemented with 225' TOC Surface feet determined by Circulation Hole size 124" Intermediate Casing Size ____ Cemented with ____sx. D 85/8"-24# Casing @ 238 feet determined by W/225 SX. Cement Hale size Long string Size $4\frac{1}{2}$ " - 9.5# " Cemented with 175 JOC 4350' feet determined by temperature Survey Hole size 7 7/8" Total depth 5825' - Proposed 21/8 plastic coated Injection interval Steel tubing 5684' feat to 5706' feet (perforated or open-hole, indicate which) or fiberglass tubing. Proposed Baker Model'D' Packer @ 5600' Perforations 5684-5706 Gallup C.I.B.P. @ 5725 Perforations 5748-64 Gallup 4/2'-9:5# casing at 5824 with 175 sx. Cement Tubing size 2 3/8" lined with plastic or fiberglass (muterial) packer at 5600' feet. Baker Model D (brand and model) (or describe any other casing-tubing seal). Other Data 1. Name of the injection formation Gallup 2. Name of Field or Pool (if applicable) S.E. Cha Cha 3. Is this a new well drilled for injection? /7 Yes XX No If no, for what purpose was the well originally drilled? Oil Production, converted

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) Gallup 5748-64'

Cast iron bridge plug at 5725'.

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. Picture cluff gas zone approximately 3800' above. Dakota gas zone approximately 1500' below.

to injection well for pressure maintenance project.

Hicks Oil & Gas, Inc.

P. O. DRAWER 3307 FARMINGTON, NM 87499 505-327-4902

APPLICATION FOR SALT WATER DISPOSAL S.E. CHA CHA UNIT WELL #16

VII

- 1. Lease production currently averages 90 BWPD and this volume would be split between other injection wells. Also, we are planning to operate the injection well for commercial salt water disposal. At this time, it is estimated that we will be disposing of 100 bbls of water per day from wells off the lease. We do anticipate this volume to increase as the NMOCD revises it's rules concerning disposal of produced water in unlined pits. From injection records of wells in the field when the unit was actively water flooded it is estimated that 750 BWPD could be injected at 1000 psi.
- 2. The system will be an open system.
- 3. Average injection pressure 500 psi. Maximum injection pressure 1000 psi.
- 4. Sources of injected water.
 - 1. Produced water from the lease. Water analysis attatched.
 - Produced water from San Juan Basin oil and gas wells.
 Typical water analysis attatched.
- Stimulation treatment will consist of 500-1000 gallons of 15% Iron Sequestering HCL acid. If necessary the well may be frac treated with approximately 30,000 gallons of gelled water and 30,000# of 20/40 sand.
- \underline{X} Well logs on file with NMOCD.
- XI S.E. Cha Cha water supply well #1, 910' FNL & 1850' FEL, S16, T28N, R13W

 Completed in Mesa Verde 2630'-4383'

 Completed in Morrison 6573'-7122'

 Well is not producing and no water samples are available. Well bore schematic attatched.

Hicks Oil & Gas. Inc.

P. O. DRAWER 3307 FARMINGTON, NM 87499 505-327-4902

XII Affirmative Statement

I, Mike Hicks, 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.

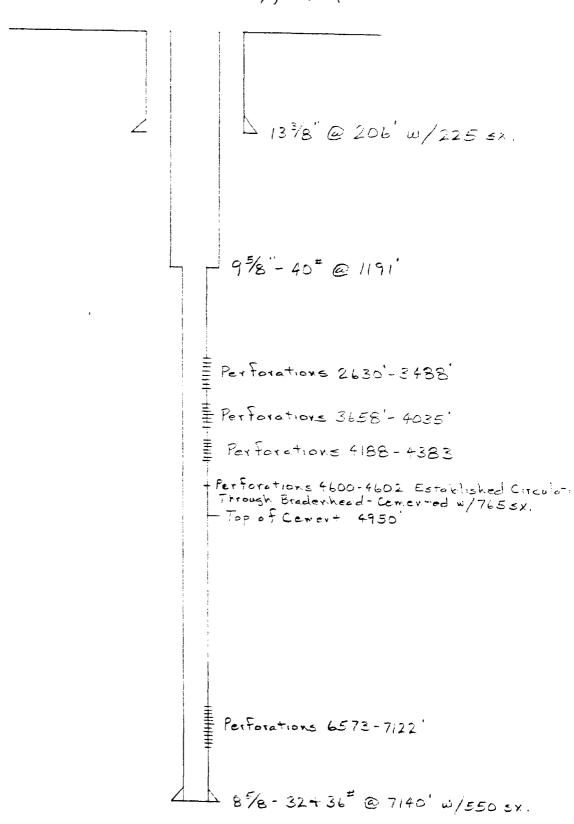
Mike Hicks President

Hicks Oil & Gas, Inc.

TABULATION OF WELLS WITHIN 1/2 MILE RADIUS OF PROPOSED SALT WATER DISPOSAL WELL S.E. CHA CHA UNIT WELL # 16

S.E. Cha	S.E. Cha	S.E. Cha	S.E. Cha	S.E. Cha	S.E. Cha	S.E. Cha Cha	WELL
Cha #21	Cha #20	Cha #17	Cha #15	Cha #13	Cha #12	Cha #8	
L-16-28-13	J-17-28-13	F-16-28-13	F-17-28-13	D-16-28-13	B-17-28-13	P-8-28-13	LOCATION
8 5/8 @214	8 5/8 @229	8 5/8 @208	8 5/8 @254 '	8 5/8 @224	8 5/8 @272	8 5/8 @202'	SURFACE CASING
175sx	200sx	135 sx	200sx	175 sx	235sx	200sx	CEMENT
surface	surface	surface	surface	surface	surface	surface	T.O.C.
4½ @5856	5½ @5721'	4½ @5884	4½ @5748	4½ @5866	4½ @5821	4½ @5819'	PRODUCTION CASING
225sx	175sx	200sx	175sx sq200sx	200sx	175sx sq.600sx	225sx	CEMENT
unknown	unknown	unknown	4450' 3650'	unknown	4260° 2750°	unknown	T.O.C.
Gallup 5683-90	Gallup 5623-5676	Gallup 5729-5796	Gallup 5618-26	Gallup 5707-5779	Gallup 5684-5754	Gallup 5678-5750	PRODUCING INTERVAL
5860	5772	5886	5748	5875	5824	5824	TD
			3½ @4502 w/115sx toc-surface		3½@4582 w/75sx toc-unk.		LINER

S.E. Cha Cha Water Supply Well #1 910'FNL + 1850' FEL, S16, T28N, R13W San Juan County, NM



CHA CHA GALLUP

Producing sandstone of the Cha Cha Gallup Oil Pool are the result of the transition of the regressive Carlile Seas, leaving the Gallup sandstones and the transgressive Niobrara Seas. The advancing seas caused truncation of the Gallup and deposition of new sands, silts and muds. The lower sands are cleaner and generally thought to be offshore bars deposited by currents parallel to the shore line. These basal Niobrara sandstones are oil bearing as are some of the cleaner Gallup sandstones.

The entire complex of upper Carlile-lower Niobrara sandstones has: been known as "the Gallup" since the late nineteen fifties when production began along the Bisti-Hourseshoe Canyon trend.

Several of the basal Niobrara sandstones are present in the Cha Cha Gallup Pool.

These sandstones have been described as follows:

Light-gray to gray-brown, fine to coarse grained quartz sandstone with minor chert, feldspar and rock fragments. Traces of glauconite and mica are present. Cement is primarily calcite with some secondary quartz. There is perosity present and oil staining is evident.

DRINKING WATER SOURCES

Considerable effort was made to obtain chemical analyses of the water bearing rocks in Township 28 North, Range 13 West, San Juan County, N.M. These efforts failed but analyses were observed of waters taken from sources outside the township which had similar ages and depositional histories.

The analyses showed the following:

- 1. There is no known source of potable* water immediately below the Cha Cha Gallup producing zones.
- 2. The only potable water aquifers found above the injection zones (Cha Cha Gallup) are:
 - a. the Cretaceous Kirtland (Farmington Sandstone) at depths of 630-815' in section 21. (This information obtained from Ed Welder, U.S.G.S., Albuquerque.

ROY L. PRITCHARD - PETROLEUM GEOLOGIST

Petroleum Club Plaza Suite 103 • P.O. Box 2372 • Farmington, New Mexico 87499 • Telephone: (505) 325-2209

DRINKING WATER SOURCES cont.

b. the Ojo Alamo (Tertiary Period) has water with very low solids (350-850 mg/1). This is found to a depth of 350-450' in the area of interest.

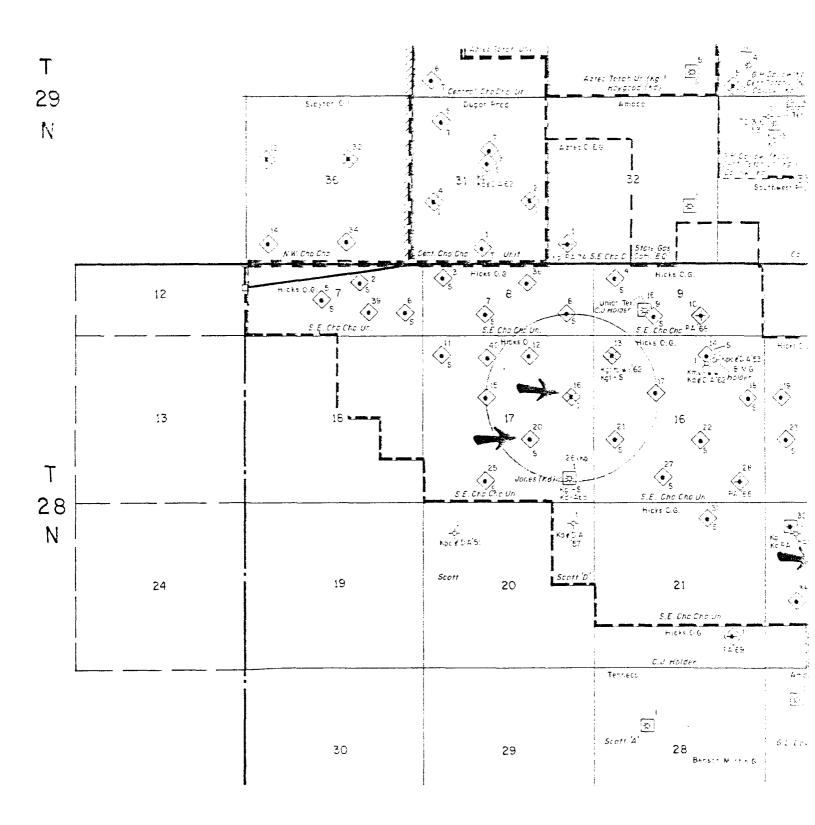
*All references herein to potable or drinking water are based on dissolved solids of 10,000 mg/l or less as found in item VIII of Application for Authorization to Inject.

of the earlier submittal.

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FERNISED 7-1-81

ī.	Purpose:	Secondary 1	Recovery Pres	sure Haintenance	₩ Di-pounl	□ Storage
			for administrativ	e approval?) es [] no	
11.	•	Hicks Oil				
	Address: _	P.O. Drawe	er 3307, Farmingto			
	Contact par	ty: Mike	Hicks	Phor	se: <u>505/327-4</u>	1902
III.	Well data:		data required on injection. Addit			
IV.	is this an If yes, giv	expansion of a e the Division	an existing project n order number aut!	t? Yes horizing the proj	X no	
V.	injection w	ell with a one	fies all wells and e-half mile radius ifies the well's a	circle drawn are		
VI.	penetrate t well's type	he proposed in , construction	ata on all wells of njection zone. Suc n, date drilled, lo ed well illustration	ch data shall incocation, depth, r	clude a descript record of comple	tion of each
VII.	Attach data	on the propos	sed operation, incl	luding:		
	2. Whe 3. Pro 4. Sou t 5. If	ther the syste posed average roes and an aphe receiving finjection is for within or he disposal zo	and maximum daily em is dpen or close and maximum inject propriete analysis formation if other for disposal purpose mile of the propose formation water udies, nearby wells	ed; tion prassure; s of injection fl than reinjected ses into a zone n posed well, attac r (may be measure	uid end compati produced water: not productive c ch a chemical ar	ibility with ; and of cil or gas nalysis of
VIII.	detail, ceo bottom of a total disso	logical name, ll underground lved solids co one as well as	gical data on the inthickness, and dep d sources of drinking oncentrations of 10 s any such source k	oth. Give the ge ing water (aquife D,000 mg/1 or les	clogic name, and respecting to a containing to the containing the	nd depth to saters with the proposed
IX.	Describe th	e proposed sti	imulation program,	if any.		
х.			ng and test data or eed not be resubnit		well logs have	been filed
XI.	available a	nd producino)	is of fresh water f within one mile of tes samples were ta	f any injection o		
XII.	examined avor and an and an and an any othe	ailable geolog	wells must make an gic and engineering connection between	g data and find <mark>n</mark>	is evidence of c	open faults
XIII.	Applicants	must complete	the "Proof of Noti	ice" section on t	he reverse side	e of this form.
XIV.	Cortificati	on				
	to the best	of my knowled	e information subma			true and correc
	Name: 1	11ke Hicks	Theles	Title	President	and a second section of the second of the se



INJECTION WELL DATA SHEET

Schemble Surface Couling Size 8.5/8" - 248 " Counted with 225' 100 Surface feet determined by Circulation Hale size 122" Intermediate Cosing Size Adm - 9.58 " Cemented with 225' Hole size "connect with 175		Hicks Oil & Gas, Inc 1980' FNL & 660' FEL TUDIACE LUCATION			13W RANGE
Size 8.5/8" 748" Counted with 225' 10C Surface feet deterained by Circulation Male size 122" Interestdiate Casing Size "Cemented with 175 Interestdiate Casing Size "Cemented with 175 Interestdiate Casing Size "Cemented with 175 JOC 4350' feet determined by temperature Rule size 7.7/8" Proposed 23/8" Total depth 5825' Plustuc conted Size Injunction interval Size 1 tubing or fiberglass [Injunction interval] Frequency Baler, Model D' Packer @ 5600' Perforations 5788-6 Gallup C.I.B.P. @ 5725 Perforations 5788-6 Gallup A 1/2" -9.5" Casing "1 5824' with 175 5x. Cement Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 1 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass wet in a Baker Model D packer at 5600' feet Tubing size 2 3/8" lined with plastic or fiberglass with a second or fib	Sche	matic _			
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Hole size 124"					
Intermediate Coving Size					Circulation
See			Hole size 12½"		
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W/2255x. Coment Hole wire Long string	•	Casing @ 238	TOC	feet determined by	
Size 445" - 9.58 " Cemented with 175 JOC 4350" feet determined by temperature Hole size 7.7/8" Proposed 23/8" Total depth 5825' plastic coated Injection interval Size 1 to may or fiberglass 5684' feet to 5706' Tubing or fiberglass 5684' feet to 5706' Ferforations 5684' 5706' Gallap C.I.B.P. © 5725 Perforations 5748-64 Gallap 4/2"-9.5* Casing at 5824 with 175 sx. Comount Tubing size 2 3/8" Tined with plastic or fiberglass set in a (outerial) Gurand and model or gazeer at 5600' feet. Tubing size 3/8" Tined with plastic or fiberglass set in a (outerial) Gurand and model or gazeer at 5600' feet. Tubing size 2 1/8" Tined with plastic or fiberglass set in a (outerial) Gurand and model or fiberglass set in a (outerial) There of the injection formation Gallap There of field or Pool (if applicable) S.E. Cha Cha The size of what purpose was the well originally drilled? Oil Production, converted to injection well for pressure maintenance project. The size of the engage of coment or bridge plug(s) used) Callap 5748-64' Callap 5748-64' Callap 5748-64'		W/225 sx. Cement			
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	4. Has the	well over been perforated	d in any other zone(s)	? List all such perf	
Cast iron bridge plug at 5725!	_			ug(s) used) <u>Gallup</u>	5748-64 '
Sade from Dirage prag at 3723 .	Cast	iron bridge plug at 5	725'.		

approximately 1500' below.

Hicks Oil & Gas, Inc.

P. O. DRAWER 3307 FARMINGTON, NM 87499 505-327-4902

APPLICATION FOR SALT WATER DISPOSAL S.E. CHA CHA UNIT WELL #16

VII

- 1. Lease production currently averages 90 BWPD and this volume would be split between other injection wells. Also, we are planning to operate the injection well for commercial salt water disposal. At this time, it is estimated that we will be disposing of 100 bbls of water per day from wells off the lease. We do anticipate this volume to increase as the NMOCD revises it's rules concerning disposal of produced water in unlined pits. From injection records of wells in the field when the unit was actively water flooded it is estimated that 750 BWPD could be injected at 1000 psi.
- 2. The system will be an open system.
- 3. Average injection pressure 500 psi. Maximum injection pressure 1000 psi.
- 4. Sources of injected water.
 - 1. Produced water from the lease. Water analysis attatched.
 - 2. Produced water from San Juan Basin oil and gas wells. Typical water analysis attatched.
- Stimulation treatment will consist of 500-1000 gallons of 15% Iron Sequestering HCL acid. If necessary the well may be frac treated with approximately 30,000 gallons of gelled water and 30,000# of 20/40 sand.
- \underline{X} Well logs on file with NMOCD.
- XI S.E. Cha Cha water supply well #1, 910' FNL & 1850' FEL, S16, T28N, R13W

 Completed in Mesa Verde 2630'-4383'

 Completed in Morrison 6573'-7122'

 Well is not producing and no water samples are available. Well bore schematic attatched.

Hicks Oil & Gas. Inc.
P. O. DRAWER 3307
FARMINGTON, NM 87499

505-327-4902

XII Affirmative Statement

I, Mike Hicks, 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.

Mike Hicks President

Hicks Oil & Gas, Inc.

TABULATION OF WELLS
WITHIN 1/2 MILE RADIUS
OF PROPOSED SALT WATER DISPOSAL WELL
S.E. CHA CHA UNIT WELL # 16

S.E. Cha Cha #21	S.E. Cha Cha #20	S.E. Cha Cha #17	S.E. Cha Cha #15	S.E. Cha Cha #13	S.E. Cha Cha #12	S.E. Cha Cha #8	WELL
L-16-28-13	J-17-28-13	F-16-28-13	F-17-28-13	D-16-28-13	B-17-28-13	P-8-28-13	LOCATION
8 5/8 @214	8 5/8 @229	8 5/8 @208	8 5/8 @254	8 5/8 @224'	8 5/8 @272'	8 5/8 @202'	SURFACE CASING
175sx	200sx	135 sx	200sx	175 sx	235sx	200sx	CEMENT
surface	surface	surface	surface	surface	surface	surface	T.O.C.
4½ @5856	5½ @5721'	4½ @5884	4½ @5748	4½ @5866	4½ @5821	4½ @5819'	PRODUCTION CASING
225sx	175sx	200sx	175sx sq200sx	200sx	175sx sq.600sx	225sx	CEMENT
unknown	unknown	unknown	4450 ' 3650'	unknown	4260' 2750'	unknown	T.O.C.
Gallup 5683-90	Gallup 5623-5676	Gallup 5729-5796	Gallup 5618-26	Gallup 5707-5779	Gallup 5684-5754	Gallup 5678-5750	PRODUCING
5860	5772	5886	5748	5875	5824	5824	TD
			3½ @4502 w/115sx toc-surface		3½@4582 w/75sx toc-unk.		LINER

INJECTION WELL DATA SHEET

	1980' FNL & 660' FEL FUUTACE LUCATION	17 SECTION	28N Tuhnsiiti	13W NANGE
Schema	tic .	· · · · · · · · · · · · · · · · · · ·	Tobular Data	
		Surface Casing		
		Size 8 5/8" - 24#		
		TOC Surface		Circulation
		Hole size 12 ¹ / ₄ "		
		Intermediate Casing		
.4	85/8-24#	Size		
	Casing @ 238 W/225 sx. Cement	YOC		
		Hole size		
		Long string	B 6 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	175
		Size $4\frac{1}{2}$ " - 9.5#		
		Hole size 7 7/8"	- -	·
	Proposed 23/8"	Total depth 5825		
	plastic coated steel tubing	Injection interval		
	Steel tubing	5684' feet (perforated or open-h	to 5706'	feet
	tubing.	(perforated or open-h	ole, indicate which)	_
	Proposed Baker Mi Perforations 56	odel D'Packer @ 56 84-5706 Gallup	500'	
	C.I.B.P. @ 572			
	Pertorations 5/4	8-64 Gallup using at 5824' with 1	75 44 64 4	
ZI	△ 4/2 -9,5 Ca	ising a SOZY with I	19 2x. Cemer	
Tubing size	2 3/8" lined	withplastic_or_f	iberglass	set in a
		(mute	erial) at5600'	
	Model D and model) ny other casing-tubing			•
	, spine couring couring			
(or describe an				
(or describe an Other Data	e injection formation	Gallup		
(or describe an Other Data 1. Name of the	e injection formation _ eld or Pool (if applica	Gallup		
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Other Data 1. Name of the 2. Name of fic 3. Is this a control of the control o	eld or Pool (if applications well drilled for in what purpose was the i	njection? // Yes	水 No 17Oil Productio	n, converted
Other Data 1. Name of the 2. Name of file 3. Is this a re If no, for to inject a. Has the we and give p	eld or Pool (if applications well drilled for in what purpose was the strong well for pressured to the pressure of the pressure of the perforate of the perfora	s.E. Cha Cha njection? // Yes well originally drilled re maintenance projec d in any other zonc(s)? of cement or bridge pla	水図 No Oil Productio t. Publish all such perf	orated intervals

S. E. Cha Cha Water Supply Well #1 910'FNL + 1850' FEL, S16, T28N, R13W San Juan County, NM

95/8"-40"@1191" Perforations 2630-3488 Perforations 3658'- 4025'

Perforations 4188-4383 Perforations 4600-4602 Established Circulation Through Bradenhead-Cemented W/7655x.

Top of Cement 4950 Perforations 6573-7122' 8 % - 32 + 36 @ 7140' w/550 sx.

mak

CHA CHA GALLUP

Producing sandstone of the Cha Cha Gallup Oil Pool are the result of the transition of the regressive Carlile Seas, leaving the Gallup sandstones and the transgressive Niobrara Seas. The advancing seas caused truncation of the Gallup and deposition of new sands, silts and muds. The lower sands are cleaner and generally thought to be offshore bars deposited by currents parallel to the shore line. These basal Niobrara sandstones are oil bearing as are some of the cleaner Gallup sandstones.

The entire complex of upper Carlile-lower Niobrara sandstones has: been known as "the Gallup" since the late nineteen fifties when production began along the Bisti-Hourseshoe Canyon trend.

Several of the basal Niobrara sandstones are present in the Cha Cha Gallup Pool.

These sandstones have been described as follows:

Light-gray to gray-brown, fine to coarse grained quartz sandstone with minor chert, feldspar and rock fragments. Traces of glauconite and mica are present. Cement is primarily calcite with

some secondary quartz. There is porosity present and oil staining is evident.

DRINKING WATER SOURCES

Considerable effort was made to obtain chemical analyses of the water bearing rocks in Township 28 North, Range 13 West, San Juan County, N.M. These efforts failed but analyses were observed of waters taken from sources outside the township which had similar ages and depositional histories.

The analyses showed the following:

- 1. There is no known source of potable* water immediately below the Cha Cha Gallup producing zones.
- The only potable water aquifers found above the injection zones (Cha Cha Gallup) are:
 - a. the Cretaceous Kirtland (Farmington Sandstone) at depths of 630-815' in section 21. (This information obtained from Ed Welder, U.S.G.S., Albuquerque.

Petroleum Club Plaza Suite 103 • P.O. Box 2372 • Farmington, New Mexico 87499 • Telephone: (505) 325-2209

DRINKING WATER SOURCES cont.

b. the Ojo Alamo (Tertiary Period) has water with very low solids (350-850 mg/1). This is found to a depth of 350-450' in the area of interest.

*All references herein to potable or drinking water are based on dissolved solids of 10,000 mg/l or less as found in item VIII of Application for Authorization to Inject.



STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD AZTEC, NEW MEXICO 87410 (505) 334-6178

OIL CONSERVATION DIVISION BOX 2088 SANTA FE, NEW MEXICO 87501 DATE 3-20-85 RE: Proposed MC Proposed DHC Proposed NSL Proposed SWD Proposed WFX Proposed PMX Gentlemen: I have examined the application dated 2-5-25 SE CHA CHA UNITALE
Lease and Well No. <u>Н-17-28Ды13и</u> Unit, S-T-R Operator and my recommendations are as follows: Yours truly,