230453192 SWD 11/12/02

NEELEY CONSULTING SERVICE
1305 E. 33rd Street
FARMINGTON, NEW MEXICO 87401
(505) 486-0211

OCT 28

New Mexico Oil Conservation Division
1220 South Francis Drive
Santa Fe, New Mexico 87505

Attention: Mr. David Catanach

October 25, 2002

Certified Mail RRR # 7002 0510 0002 9439 4884

Re: Application for Administrative Approval - Authorization to Inject:
Richardson Operating Company
Salty Dog SWD No. 6

Dear Mr. Catanach:

Enclosed is an application from Richardson Operating Company for administrative approval to inject into the Salty Dog SWD No. 6. The application and information is arranged in the order specified by form C-108.

If you have any questions or concerns regarding the application, please feel free to contact me at 505-486-0211. Your consideration of this application is greatly appreciated.

Sincerely,

Charles Neeley, PE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised 4-1-98

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: _____Secondary Recovery _____Pressure Maintenance __X__ Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: **Richardson Operating Company**

ADDRESS: **3100 La Plata Highway, Farmington, NM 87401**

CONTACT PARTY: **Drew Carnes** PHONE: **505-564-3100**

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. **See Appendix A**

IV. Is this an expansion of an existing project? _____Yes __X__ No
If yes, give the Division order number authorizing the project: _____

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review. **See Appendix B**

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. **See Supplemental Data**

VII. Attach data on the proposed operation, including: **See Supplemental Data**

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval. **See Supplemental Data**

IX. Describe the proposed stimulation program, if any. **See Supplemental Data**

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
See Supplemental Data

*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. **See Supplemental Data**

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 sources of drinking water. **See Supplemental Data**

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: **Charles Neeley** TITLE: **Agent**

SIGNATURE: _____ DATE: 10/28/02

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the 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, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, 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.

APPLICATION FOR AUTHORIZATION TO INJECT
FORM C-108 SUPPLEMENTAL DATA

Salty Dog SWD No.6
990' FNL & 940' FWL
SEC 31, T30N, R14W
SAN JUAN COUNTY, NEW MEXICO

I. Purpose to inject: Produced water disposal.

II. Operator: Richardson Operating Company
3100 La Plata Highway
Farmington, New Mexico 87401
Contact person: Drew Carnes 505-564-3100

III. Well data sheet is attached in Appendix A.

IV. This is not an expansion of an existing project.

V. See attached map that identifies all wells and leases within two miles of the proposed SWD showing the well's area of review. See Appendix B.

VI. There is one well within the area of review that penetrated the proposed Mesa Verde injection zone. This well is the Kelly No.1 located 990' FSL & 880' FEL, Sec 25, T30N, R15W, NMPM, San Juan County, New Mexico; originally drilled by Jerome P. McHugh the well is currently operated by Redwolf Production, Inc.

Tabulation of Data

Well Type	Construction	Date Drilled	Depth	Record of Completion
Gas & Oil	Cased Hole	7/31/85	5634'	Form C-105 Attached

There are no known plugged wells of public record within the area of review which penetrated the proposed Mesa Verde injection zone.

VII. Data on proposed injection operations are as follows:

1. Mesa Verde Formation
   Average Injection Rate: 1500 bwpd
   Maximum Injection Rate: 2000 bwpd

2. Closed system. Water would be trucked or piped into tanks on location.

3. Mesa Verde Formation
   Average injection pressure: 350 psi.
   Maximum injection pressure: 2000 psi.

4. Produced Fruitland Coal and Pictured Cliffs water with TDS of 20000 ppm to 40000 ppm will be injected into the Mesa Verde zone in the Salty Dog No.6 well. Representative analyses of produced water from the Basin Fruitland Coal and Pictured Cliffs Formations that is to be disposed are enclosed in Appendix D.

VII. Data on proposed injection operations (Continued).

5. Chemical analysis of water obtained from a Mesa Verde well in the area is attached in Appendix D.

VIII. Geologic and Lithologic data on the injection zone.

1. The proposed zone of injection is in the MesaVerde Formation – Upper Cretaceous (includes Cliff House Ss, Menefee Fm and Pt Lookout Ss). The Mesa Verde Formation extends form 1719' to 3514'. This zone will be perforated in porous sands estimated between 2255' and 3340'. The Salty Dog No.6 (Mesa Twin Mounds 31 No.1) was originally drilled to produce the Dakota and Gallup formations; later it was to be P&A. The Salty Dog No.6 will be reentered and the 5 1/2" casing will be cleaned out to 3450'. A cast iron bridge plug set above the exiting DV tool (3698') and a casing integrity test run.

2. Lithology: Mesa Verde Formation including sands in the Cliff House, Menefee and Pt Lookout members with porosity's ranging from 6% - 20%.

3. There are no known sources of drinking water overlying or immediately underlying the proposed injection zones.

IX. No stimulation procedures have been planned. At the time of completion, the zone may be acidized, a step rate test will be performed to determine if the desired injection rates and pressures can be achieved without the need for stimulation.

X. Open hole logs that cover the well down through the Dakota Formation have been previously submitted to the NMOCD; when the well was originally drilled.

XI. A search of New Mexico State Engineers records indicates there are two and possibly three known water wells within a 1 mile radius of the proposed injection well. Field investigation reveled: 2 of these wells, the SJ00917 and the SJ00971 drilled by Jestern Coal Co, located in the SW/SE/NW Sec 36, T30N, R15W - have no pumps, are locked and not producing; the third possible well permitted as SJ01218 (no completion filed) by William Otte in the NW/NE Sec 6, T29N, R14W, lot #32 of the Sunset Hills No.2 subdivision, may be on this property now owned by Monty Lambson - he stated he did not currently have a water well on his property, however, he said there is an old plugged well he did not know the history of.

XII. At the present time, geologic studies of the area do not indicate fault communication between the proposed injection zone and any underground potential sources of drinking water.

XIII. "Proof of Notice" is attached. See Appendix D.

5 NMOCD 1 DE 1 File

Form C-105
Revised 10-1-78

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

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

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5a. Indicate Type of Lease: State [ ] Fee [X]
5. State Oil & Gas Lease No.:

1a. TYPE OF WELL: OIL WELL [XX] GAS WELL [ ] DRY [ ] OTHER
b. TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] OTHER
7. Unit Agreement Name:
8. Farm or Lease Name: Kelly
2. Name of Operator: JEROME P. McHUGH
9. Well No.: 1
3. Address of Operator: P O Box 809, Farmington, NM 87499
10. Field and Pool, or Wildcat: Undes. Gallup
4. Location of Well: UNIT LETTER P LOCATED 990 FEET FROM THE South LINE AND 880 FEET FROM THE East LINE OF SEC. 25 TWP. 30N RGE. 15W NMPM
12. County: San Juan

15. Date Spudded	16. Date T.D. Reached	17. Date Compl. (Ready to Prod.)	18. Elevations (DF, RKB, RT, GR, etc.)	19. Elev. Casinghead
7/31/85	8/7/85	9-23-85**	5365' GL; 5380' KB	5365' GL

20. Total Depth	21. Plug Back T.D.	22. If Multiple Compl., How Many	23. Intervals Drilled By	Rotary Tools	Cable Tools
5634'	5330'	DK is TA. Only GA completed.	→	TD	

24. Producing Interval(s), of this completion — Top, Bottom, Name: 4524-4968, Gallup
25. Was Directional Survey Made: No
26. Type Electric and Other Logs Run: FDC. DIL, GR-CCL
27. Was Well Cored: No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
9-5/8"	36#	272' KB	12-1/4"	177 cf Class B 2% $CaCl_2$	---
4-1/2"	10.5#	5631' KB	7-7/8"	1st stg 595 cf (50/50 poz w/ 2% gel, 6¼#/sk gilsonite & ¼#/sk flocele); 2nd stg 1255 cf (480 sx 65/35 poz w/ 12% gel & ¼#/ flocele & 75 sx class B). TOTAL SLURRY 1784 CF	---

29. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
None				

30. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-3/8"	4966' KB	See reverse

31. Perforation Record (Interval, size and number): See reverse.

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
4524-4968	500 gal. 10% MSA acid;
	65,000 gal 30# gel water;
	100,000# 20/40 sand

33. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping — Size and type pump)	Well Status (Prod. or Shut-in)
9-23-85**	flowing	SI W.O. gas PL

Date of Test	Hours Tested	Choke Size	Prod'n. For Test Period →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Gas — Oil Ratio
1-16-86	12	16/64"		33	48	1 (frac water)	1455

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate →	Oil — Bbl.	Gas — MCF	Water — Bbl.	Oil Gravity — API (Corr.)
65 psi	630 psi SI		66 BOPD	96 MCFD	2 BWPD (frac)	45°

34. Disposition of Gas (Sold, used for fuel, vented, etc.): Vented during test; to be sold.
Test Witnessed By: Hazen

35. List of Attachments: ** 1st new oil swabbed to tank during completion operations.

36. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNED James S. Hazen TITLE Field Supt. DATE 1/24/86

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo	455	T. Penn. "B"	
T. Salt		T. Strawn		T. Kirtland-Fruitland	595/645	T. Penn. "C"	
B. Salt		T. Atoka		T. Pictured Cliffs	* 735	T. Penn. "D"	
T. Yates		T. Miss		T. Cliff House	2427	T. Leadville	
T. 7 Rivers		T. Devonian		T. Menefee	2650	T. Madison	
T. Queen		T. Silurian		T. Point Lookout	3400	T. Elbert	
T. Grayburg		T. Montoya		T. Mancos	3600	T. McCracken	
T. San Andres		T. Simpson		T. Gallup	4400	T. Ignacio Qtzte	
T. Glorieta		T. McKee		Base Greenhorn	**5363	T. Granite	
T. Paddock		T. Ellenburger		T. Dakota	5420	T.	
T. Blinebry		T. Gr. Wash		T. Morrison		T.	* Lewis 850
T. Tubb		T. Granite		T. Todilto		T.	**Sanoste 4950
T. Drinkard		T. Delaware Sand		T. Entrada		T.	Carlile 5060
T. Abo		T. Bone Springs		T. Wingate		T.	T of Greenhorn 5290
T. Wolfcamp		T.		T. Chinle		T.	
T. Penn.		T.		T. Permian		T.	
T. Cisco (Bough C)		T.		T. Penn. "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from _____ to _____ No. 4, from _____ to _____

No. 2, from _____ to _____ No. 5, from _____ to _____

No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from _____ to _____ feet. _____

No. 2, from _____ to _____ feet. _____

No. 3, from _____ to _____ feet. _____

No. 4, from _____ to _____ feet. _____

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
			ITEM #24 and ITEM #31 - Perforations Dakota 5434, 36, 38, 48, 62, 70, 78, 80, 82, 97, 98; 5500, 01, 11, 14, 15, 16, 17, 18, 22, 30, 35, 49, 52, 55. Total of 25 holes. Temporarily Abandoned Dakota perfs 5434-5555' by setting Baker Model "S" drillable bridge plug at 5330' KB. Tested to 4000 psi. Test good.				

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 30 through 34 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico				Northwestern New Mexico			
T. Anhy		T. Canyon		T. Ojo Alamo	455	T. Penn. "B"	
T. Salt		T. Strawn		T. Kirtland-Fruitland	595/645	T. Penn. "C"	
B. Salt		T. Atoka		T. Pictured Cliffs	* 735	T. Penn. "D"	
T. Yates		T. Miss		T. Cliff House	2427	T. Leadville	
T. 7 Rivers		T. Devonian		T. Menefee	2650	T. Madison	
T. Queen		T. Silurian		T. Point Lookout	3400	T. Elbert	
T. Grayburg		T. Montoya		T. Mancos	3600	T. McCracken	
T. San Andres		T. Simpson		T. Gallup	4400	T. Ignacio Qtzte	
T. Glorieta		T. McKee		Base Greenhorn	** 5363	T. Granite	
T. Paddock		T. Ellenburger		T. Dakota	5420	T. * Lewis	850
T. Blinebry		T. Gr. Wash		T. Morrison		T. **Sanoste	4950
T. Tubb		T. Granite		T. Todilto		T. Carlile	5060
T. Drinkard		T. Delaware Sand		T. Entrada		T. T of Greenhorn	5290
T. Abo		T. Bone Springs		T. Wingate		T.	
T. Wolfcamp		T.		T. Chinle		T.	
T. Penn.		T.		T. Permian		T.	
T. Cisco (Bough C)		T.		T. Penn. "A"		T.	

OIL OR GAS SANDS OR ZONES

No. 1, from _____ to _____ No. 4, from _____ to _____

No. 2, from _____ to _____ No. 5, from _____ to _____

No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from _____ to _____ feet. _____

No. 2, from _____ to _____ feet. _____

No. 3, from _____ to _____ feet. _____

No. 4, from _____ to _____ feet. _____

FORMATION RECORD (Attach additional sheets if necessary)

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
			ITEM #30 - Abandoned Dakota perfs by setting Baker Model "S" drillable bridge plug at 5330' KB.				
			ITEM #31 - Perforations Gallup 4524, 30, 34, 56, 60, 66, 90, 98; 4600; 02, 04, 06, 26, 34; 4786, 87, 92, 93, 99; 4800, 08, 11, 22, 24, 34, 36, 38, 45, 58, 67, 73, 76; 4948, 50, 68. Total of 35 holes.				

RICHARDSON OPERATING COMPANY
SALTY DOG NO. 6

APPLICATION FOR AUTHORIZATION TO INJECT

LIST OF APPENDIXES

APPENDIX A

INJECTION WELL DATA

The following section contains the NMOCD Injection Well Data Sheets

Side 1

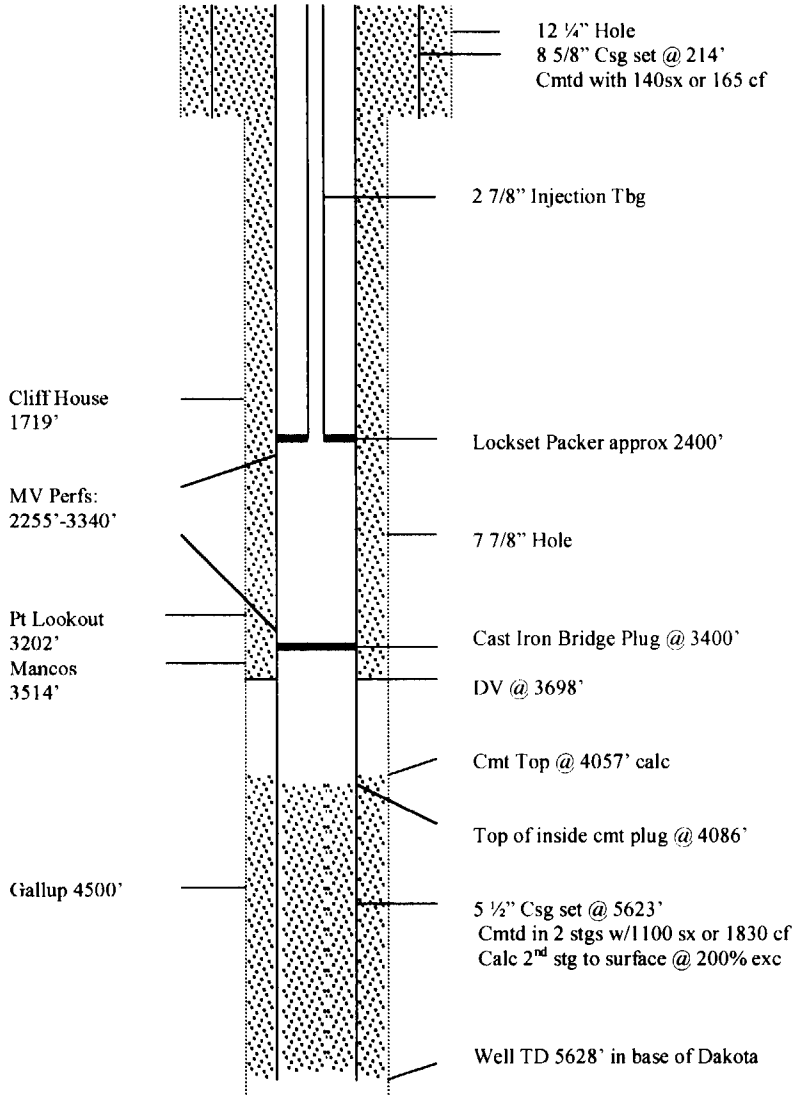
INJECTION WELL DATA SHEET

OPERATOR: Richardson Operating Company

WELL NAME & NUMBER: Salty Dog SWD No.6

WELL LOCATION:	990' FNL & 940' FWL	D	31	30N	14W
	FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: **12 ¼" to 218'** Casing Size: **8 5/8" set at 214'**

Cemented with: **140** sx. ***or*** **165** ft^3

Top of Cement: **Surface** Method Determined: **Circulated**

Intermediate Casing – **N/A**

Hole Size: **N/A** Casing Size: _____

Cemented with: _____ sx. ***or*** _____ ft^3

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: **7 7/8" to 5628'** Casing Size: **5 ½" set at 5623'**

Cemented with: **1st stg 400 sx** ***or*** **544 cf**
2nd stg 700 sx ***or*** **1286** cf

Top of Cement: **1 st stg: 4057'** **Calc @ 200%**
2 nd stg: surface Method Determined: **Calc @ 200%**

Total Depth: **5628'**

Injection Interval

2255 feet To **3340** feet

(**Perforated** or Open Hole; indicate which)

INJECTION WELL DATA SHEET

Tubing Size: **2 7/8"** Lining Material: **Plastic, if any**

Type of Packer: **Lockset type**

Packer Setting Depth: **approx 2200'**

Other Type of Tubing/Casing Seal (if applicable): _____

Additional Data

1. Is this a new well drilled for injection? _____Yes **X** No

   If no, for what purpose was the well originally drilled? **This well was originally drilled as a Gallup & Basin Dakota Test. Completed in the Gallup/Dakota, the well was approved P&A, Sept 1995**

2. Name of the Injection Formation: **Mesa Verde**

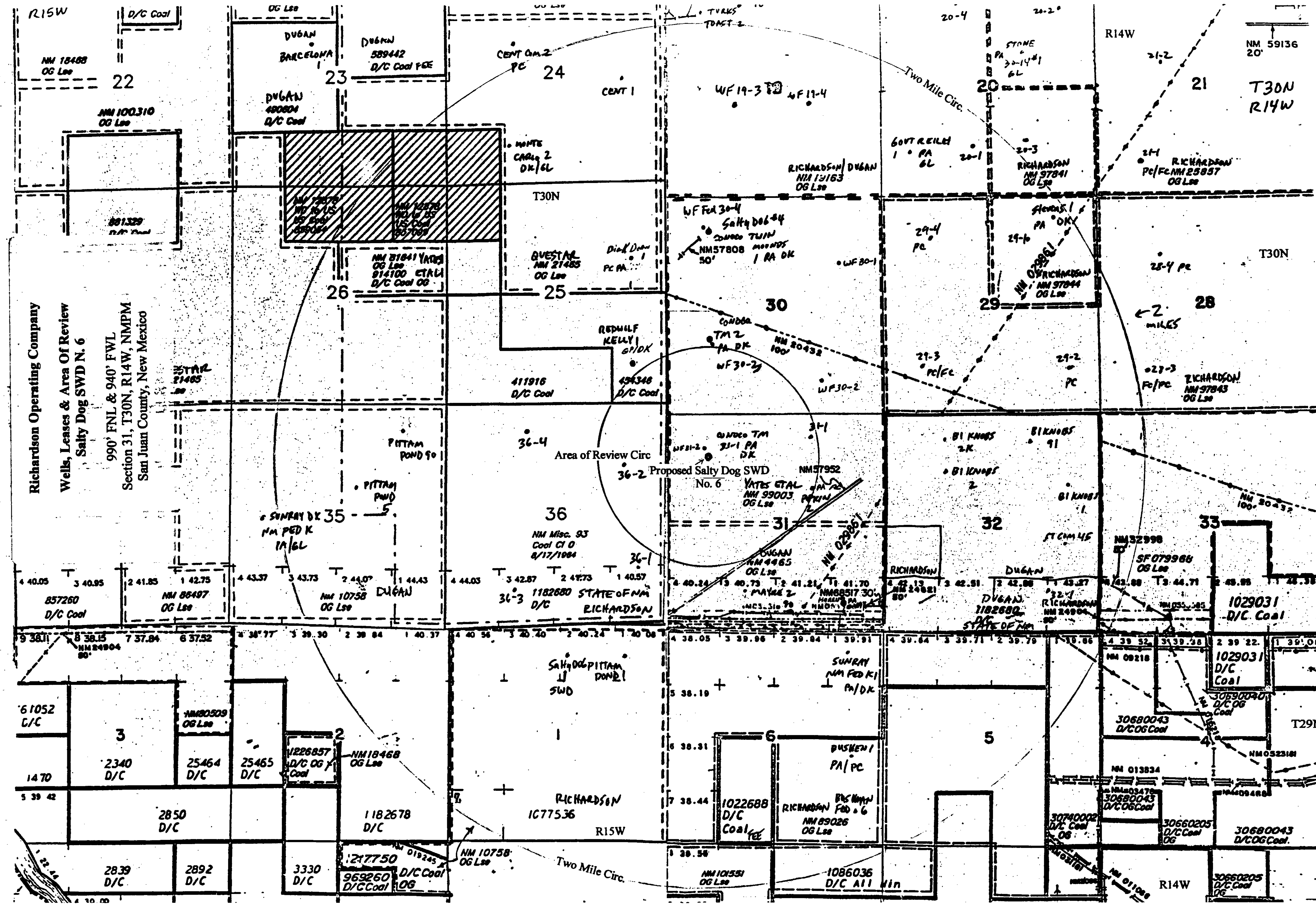
3. Name of Field or Pool (if applicable): **N/A**

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. **The Dakota was perforated with 34 holes: 5402' – 5423', 5440' – 5444', 5478' – 5484', 5492' – 5496'; the Gallup perforated with 43 select holes: 4508' – 4949'. A 151 sx cement inside plug was set from 5449' to 4086' over Gallup perforations. A 17 sx cement inside plug was set from 3256' to 3152' to cover Pt Lookout top, a17sx cement inside plug was set from 1753' to 1603' to cover Mesa Verde top, a 17sx cement inside plug was set from 782' to 632' to cover Pictured Cliffs top, a 17sx cement inside plug was set from 471' to 321' to cover Fruitland top and a 31 sx cement inside plug was set from 264' to surface.**

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: **Overlying tops: Pictured Cliffs 720', Fruitland 405'. Underlying tops: Gallup 4500' and Dakota 5393'.**

APPENDIX B

MAP – OFFSET WELLS, LEASES & AREA OF REVIEW


Richardson Operating Company
Wells, Leases & Area Of Review
Salty Dog SWD N. 6
990' FNL & 940' FWL
Section 31, T30N, R14W, NMPM
San Juan County, New Mexico
Two Mile Circ.
Area of Review Circ
Proposed Salty Dog SWD
No. 6
T30N
R14W
R15W
T29N
Two Mile Circ.

APPENDIX C

PRODUCED WATER ANALYSIS

The following water analysis are intended to be representative samples of the Basin Fruitland Coal and Pictured Cliffs formation waters that will be disposed.

Also, enclosed is an analysis of water swabbed from the Mesa Verde Formation out of the STELLA NEEDS A COM #1E well, located NE/SW, Sec 36, T30N, R14W, NMPM, San Juan County, New Mexico.

Dugan Production Corp.
Stella Needs A Com No. 1 – Conversio: SWD

API W A T E R A N A L Y S I S

Company: DUGAN PROD.
Field:
Well: STELLA NEEDS A COM #1E
Depth:
rmation: POINT LOOKOUT/MESA VERDE
State: N.M.
County:

W.C.N.A. Sample No.: S106695
Legal Description:
Lease or Unit:
Water.B/D:
Sampling Point: SWAB
Sampled By: J. ALEXANDER
Date Sampled: 04/24/95
Type of Water(Produced,Supply, ect.):

PROPERTIES

pH:	6.30
Specific Gravity:	1.050
Resistivity (ohm-meter):	.13
Tempature:	78F
Iron, Fe(total):	250
Sulfide as H2S:	0
Total Hardness: (see below)	

D I S S O L V E D SOLIDS

CATIONS	mg/l		me/l			
Sodium, Na:	20470	:	890			
Calcium, Ca:	2084	:	104	Sample(ml):	1.0 ml of EDTA:	5.20
Magnesium, Mg:	170	:	14	Sample(ml):	1.0 ml of EDTA:	.70
Barium, Ba:	N/A	:	N/A			
Potassium, K:		:				

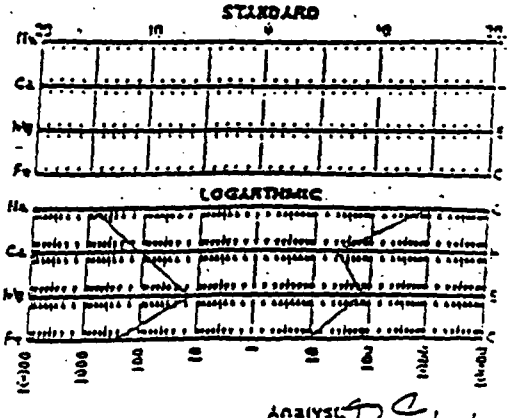
ANIONS	mg/l		me/l			
.5000Chloride, Cl:	31905	:	900	Sample(ml):	1.0 ml of AgNO3:	1.80
Sulfate, SO4:	3750	:	78			
Carbonate, CO3:		:		Sample(ml):	1.0 ml of H2SO4:	
Bicarbonate, HCO3:	1830	:	30	Sample(ml):	1.0 ml of H2SO4:	.30

otal Dissolved
olids (calculated): 60209
Total Hardness: 5900

Sample(ml): 1.0 ml of EDTA:

REMARKS AND RECOMMENDATIONS:

WATER PATTERNS-me/l



Analyst: C
Date Analyzed: 4/24/95

FW01W266

BJ SERVICES COMPANY

WATER ANALYSIS #FW01W266

FARMINGTON LAB

GENERAL INFORMATION

OPERATOR:	RICHARDSON OPERATING	DEPTH:	
WELL:	BUSHMAN FEDERAL 6-1	DATE SAMPLED:	10/19/98
FIELD:	SEC06/T29N/R14W	DATE RECEIVED:	10/20/98
SUBMITTED BY:	BRAD SALZMAN	COUNTY:	SAN JUAN STATE: NM
WORKED BY :	D. SHEPHERD	FORMATION:	FC/PC
PHONE NUMBER:			

SAMPLE DESCRIPTION

SAMPLE FOR ANALYSIS

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY: 1.015 @ 74°F PH: 7.49

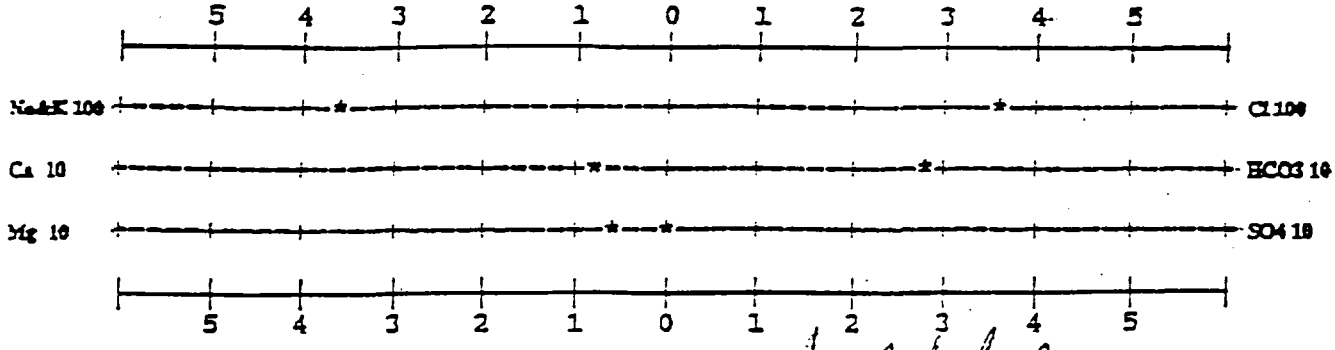
RESISTIVITY (MEASURED): 0.280 ohms @ 76°F

IRON (FE++) :	0 ppm	SULFATE:	39 ppm
CALCIUM:	158 ppm	TOTAL HARDNESS	710 ppm
MAGNESIUM:	77 ppm	BICARBONATE:	1,719 ppm
CHLORIDE:	12,574 ppm	SODIUM CHLORIDE(Calc)	20,685 ppm
SODIUM+POTASS:	8,493 ppm	TOT. DISSOLVED SOLIDS:	23,536 ppm
H2S: NO TRACE		POTASSIUM (PPM):	110 PPM

REMARKS

SAMPLED FROM SEPERATOR

STIFF TYPE PLOT (IN MEQ/L)



ANALYST D. SHEPHERD

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Richardson Operating	Project #:	98094-001
Sample ID:	Ropco 9-3 FC/PC	Date Reported:	08-30-02
Laboratory Number:	23689	Date Sampled:	08-29-02
Sample Matrix:	Water	Date Received:	08-29-02
Preservative:	Cool	Date Analyzed:	08-30-02
Condition:	Cool & Intact	Chain of Custody:	10205

Parameter	Analytical Result	Units
Total Dissolved Solids @ 180C	**34,600**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Ropco Wells.**

Christine M Walters
Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Richardson Operating	Project #:	98094-001
Sample ID:	Ropco 8-4 PC	Date Reported:	08-30-02
Laboratory Number:	23690	Date Sampled:	08-29-02
Sample Matrix:	Water	Date Received:	08-29-02
Preservative:	Cool	Date Analyzed:	08-30-02
Condition:	Cool & Intact	Chain of Custody:	10205

Parameter	Analytical Result	Units
Total Dissolved Solids @ 180C	**31,500**	mg/L

Reference: U.S.E.P.A., 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", 1983.
Standard Methods For The Examination of Water And Waste Water", 18th ed., 1992.

Comments: **Ropco Wells.**

Christine M Walters
Analyst

Review

5796 U.S. Highway 64 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

APPENDIX D

PROOF OF NOTIFICATION

The following section contains proof of notification of the surface owner - BLM, proof of notifications of the 7 lease owners within the area of review and an affidavit of newspaper publication of legal notice.

AFFIDAVIT OF PUBLICATION

Ad No. 46953

STATE OF NEW MEXICO
County of San Juan:

CONNIE PRUITT, being duly sworn says: That she is the Advertising Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meeting of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Thursday, October 24, 2002.

And the cost of the publication is $32.61.

Connie Pruitt

ON 10-24-02 CONNIE PRUITT appeared before me, whom I know personally to be the person who signed the above document.

Ginny Beck

My Commission Expires April 2, 2004.

COPY OF PUBLICATION

918 Legals

LEGAL NOTICE

Richardson Operating Company proposes to reenter and convert the Mesa Twin Mounds 31 No. 1 from P&A status into a produced water disposal well, Salty Dog SWD No. 6. The well is located: 990' FNL & 940' FWL, Sec 31, T30N, R14W, San Juan County, NM. Pictured Cliffs and Basin Fruitland Coal produced water is to be disposed of into the Mesa Verde Formation: 1719'-3514' at a maximum rate of 2000 bwpd and a maximum pressure of 1200 psi.

Questions concerning this proposal can be sent to Drew Carnes, Richardson Operating Company, 3100 La Plata Highway, Farmington, NM 87401 (505) 564-3100.

Interested parties should file comments or objections and requests for hearing with the New Mexico Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, NM 87505, within 15 days.

Legal No. 46953, published in The Daily Times, Farmington, New Mexico, Thursday, October 24, 2002.

Salty Dog 5W0 #6

Land Owner

7002 0510 0002 9439 4990

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

FARMINGTON, NM 87401

Postage	$ 1.29	UNIT ID: 04014
Certified Fee	2.30	
Return Receipt Fee (Endorsement Required)	1.75	Postmark Here
Restricted Delivery Fee (Endorsement Required)		Clerk: KK0C6Y
Total Postage & Fees	$ 5.34	10/25/02

FARMINGTON NM 87401

Sent To: Bureau of Land Management
Street, Apt. or PO Box: 1235 LaPlata Highway
City, State: Farmington, New Mexico 87401

PS Form 3... ...ctions

Salty Dog 320 #6

Lease Owners

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7002 0510 0002 9439 5065

FARMINGTON, NM 87499

Postage	$ 1.29
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.34

UNIT ID: 0401
Postmark Here
OCT 25 2002
Clerk: KKOCGY
10/25/02

Sent To: Redwolf Production Inc.
Street, Apt or PO Box: P.O. Box 5382
City, State: Farmington, New Mexico 87499

PS Form 3800

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7002 0510 0002 9439 5058

FARMINGTON, NM 87499

Postage	$ 1.29
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.34

UNIT ID: 0401
Postmark Here
OCT 25 2002
Clerk: KKOCGY
10/25/02

Sent To: Dugan Production Corp.
Street, Apt or PO Box: P.O. Box 420
City, State: Farmington, New Mexico 87499

PS Form 3800

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7002 0510 0002 9439 5041

ARTESIA, NM 88210

Postage	$ 1.29
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.34

UNIT ID: 0401
Postmark Here
OCT 25 2002
Clerk: KKOCGY
10/25/02

Sent To: Abo Petroleum Corp.
Street, Apt or PO Box: 105 South 4th Street
City, State: Artesia, New Mexico 88210

PS Form 3800

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7002 0510 0002 9439 5034

ARTESIA, NM 88210

Postage	$ 1.29
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.34

UNIT ID: 0401
Postmark Here
OCT 25 2002
Clerk: KKOCGY
10/25/02

Sent To: Myco Industries Inc.
Street, Apt or PO Box: 105 South 4th Street
City, State: Artesia, New Mexico 88210

PS Form 3800

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7002 0510 0002 9439 5027

ARTESIA, NM 88210

Postage	$ 1.29
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.34

UNIT ID: 0401
Postmark Here
OCT 25 2002
Clerk: KKOCGY
10/25/02

Sent To: Yates Drilling Co.
Street, Apt or PO Box: 105 South 4th Street
City, State: Artesia, New Mexico 88210

PS Form 3800

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

7002 0510 0002 9439 5003

FARMINGTON, NM 87499

Postage	$ 1.29
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	1.75
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.34

UNIT ID: 0401
Postmark Here
OCT 25 2002
Clerk: KKOCGY
10/25/02

Sent To: Burlington Resources O&G Co LP
Street, Apt or PO Box: P.O. Box 4289
City, State: Farmington, New Mexico 87499

PS Form 3800

Salty Dog SWD # C

Page 2

Lease Owners

7002 0510 0002 9439 5010

U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

ARTESIA, NM 88210

Postage	$ 1.29	UNIT ID: 0401
Certified Fee	2.30	
Return Receipt Fee (Endorsement Required)	1.75	Postmark Here
Restricted Delivery Fee (Endorsement Required)		Clerk: KKOCGY
Total Postage & Fees	$ 5.34	10/25/02

Sent To: Yates Petroleum Corp.
Street, Apt. or PO Box: 105 South 4th Street
City, State: Artesia, New Mexico 88210

PS Form 38