

230453073 SWD

11/12/02

NEELEY CONSULTING SERVICE

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

3) x 25 P/B
File

OCT 28 2002

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 4891

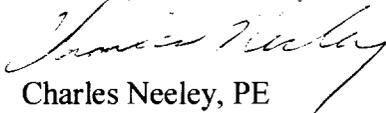
Re: Application for Administrative Approval - Authorization to Inject:
Richardson Operating Company
Salty Dog SWD No. 5

Dear Mr. Catanach:

Enclosed is an application from Richardson Operating Company for administrative approval to inject into the Salty Dog SWD No. 5. 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

APPLICATION FOR AUTHORIZATION TO INJECT

- I. PURPOSE: _____ Secondary Recovery _____ Pressure Maintenance 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 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. **There are no known water wells within 1 mile.**
- 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: *Charles Neeley* DATE: 12/20/02

* 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: _____

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.

APPLICATION FOR AUTHORIZATION TO INJECT
FORM C-108 SUPPLEMENTAL DATA

Salty Dog SWD No.5
1825' FSL & 990' FWL
SEC 30, T30N, R14W
SAN JUAN COUNTY, NEW MEXICO

Page 1

- 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

<u>Well Type</u>	<u>Construction</u>	<u>Date Drilled</u>	<u>Depth</u>	<u>Record of Completion</u>
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.5 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.

FORM C-108 SUPPLEMENTAL DATA (Continued)

Richardson Operating Company

Salty Dog SWD No. 5

Page 2

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 Mesa Verde Formation – Upper Cretaceous (includes Cliff House Ss, Menefee Fm and Pt Lookout Ss). The Mesa Verde Formation extends from 1890' to 3614'. This zone will be perforated in porous sands estimated between 2430' and 3375'. The Salty Dog No.5 (Mesa Twin Mounds No.2) was originally drilled to produce the Dakota and Gallup formations; later it was to be P&A. The Salty Dog No.5 will be reentered and the 5 1/2" casing will be cleaned out to 3500'. A cast iron bridge plug set above the existing DV tool (3665') 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% - 15%.
 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 the State Engineers records indicates there are no known water wells within a one mile radius of the proposed Salty Dog SWD No.5 well.
- 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.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

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

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

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

5a. Indicate Type of Lease
State Fee

5. State Oil & Gas Lease No.

1. TYPE OF WELL
OIL WELL GAS WELL DRY OTHER _____

2. TYPE OF COMPLETION
NEW WELL RE-DRILL OVER DEEPEN PLUG BACK DIFF. RESVR. OTHER _____

7. Unit Agreement Name

8. Farm or Lease Name
Kelly

9. Well No.
1

10. Field and Pool, or wildcat
Undes. Gallup

3. Name of Operator
JEROME P. McHUGH

4. Address of Operator
P O Box 809, Farmington, NM 87499

6. Location of well
UNIT LETTER P LOCATED 990 FEET FROM THE South LINE AND 880 FEET FROM East LINE OF SEC. 25 TWP. 30N RGE. 15W

12. County
San Juan

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

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

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 Cased
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, 6#/# sk gilsonite & #/# sk flocele); 2nd stg 1255 cf (480 sx 65/35 poz w/ 12% gel & #/# 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 9-23-85** Production Method (Flowing, gas lift, pumping - Size and type pump) flowing Well Status (Prod. or Shut-in, 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 (Spm.)
65 psi	630 psi SI		66 BOPD	96 MCFD	2 BHPD (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.

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 reopened 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. Elinebry _____	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 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.				Dakota
			Temporarily Abandoned Dakota perms 5434-5555' by setting Baker Model "S" drillable bridge plug at 5330' KB. Tested to 4000 psi. Test good.				

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-dilled 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 filled 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" _____
T. 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 Qtzite _____
T. Glorieta _____	T. McKee _____	Base Greenhorn _____ 5363	T. Granite _____
T. Paddock _____	T. Ellenburger _____	T. Dakota _____ 5420	T. * Lewis 850
T. Elinebry _____	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 perms 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. 5

APPLICATION FOR AUTHORIZATION TO INJECT

LIST OF APPENDIXES

INJECTION WELL DATA	APPENDIX A
OFFSET WELLS, LEASES & AREA OF REVIEW	APPENDIX B
PRODUCED WATER ANALYSIS	APPENDIX C
PROOF OF NOTIFICATION	APPENDIX D

APPENDIX A

INJECTION WELL DATA

The following section contains the NMOCD Injection Well Data Sheets

INJECTION WELL DATA SHEET

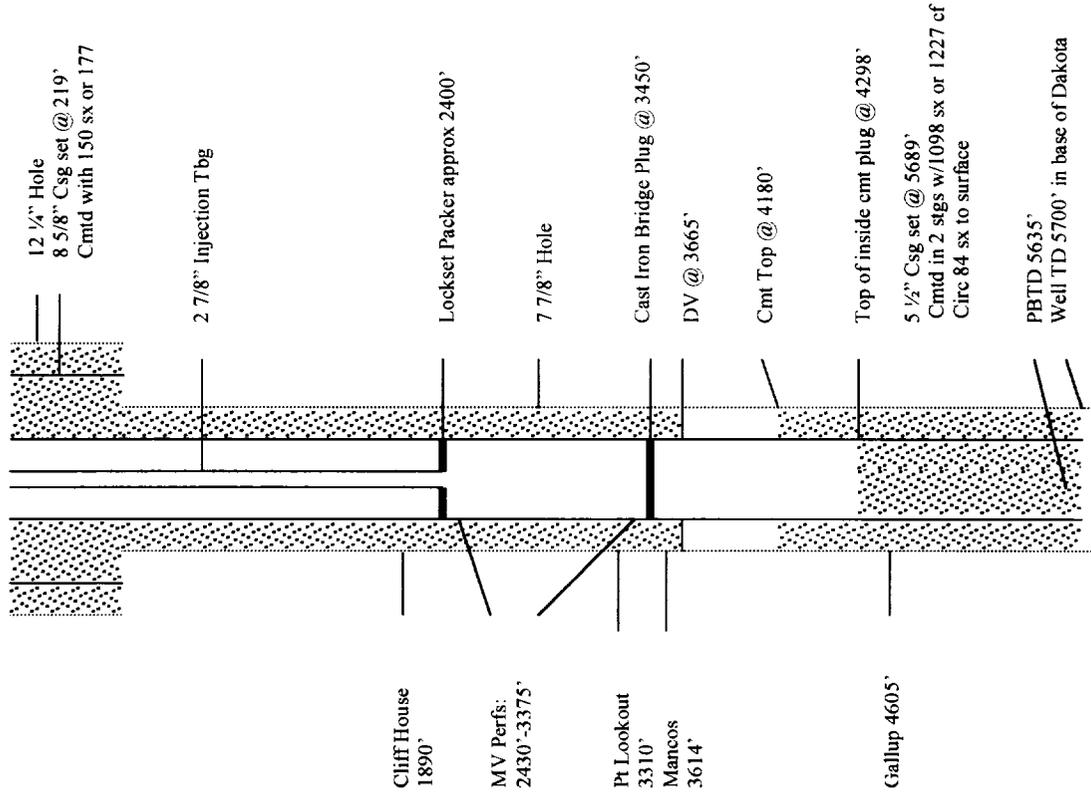
OPERATOR: Richardson Operating Company

WELL NAME & NUMBER: 1825' FSL & 990' FWL

WELL LOCATION: 1825' FSL & 990' FWL
FOOTAGE LOCATION

L UNIT LETTER 30 SECTION 30N TOWNSHIP 14W RANGE

WELLBORE SCHEMATIC



WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12 1/4" to 220' Casing Size: 8 5/8" set at 219'

Cemented with: 150 sx. or 177 ft³

Top of Cement: Surface Method Determined: Circulated

Intermediate Casing - N/A

Hole Size: N/A Casing Size: _____

Cemented with: _____ sx. or _____ ft³

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: 7 7/8" Casing Size: 5 1/2" set at 5689'

Cemented with: 1st stg 200 sx or 320 cf

2nd stg 450 sx or 907 cf

Top of Cement: 1st stg: 4180' Reported

2nd stg: surface Method Determined: Circ 84 sx

Total Depth: 5700'

Injection Interval

2430 feet To 3375 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 2400'

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, Oct 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 23 holes, 5504' – 5597' the Gallup perforated with 34 holes, 4850' – 5044' and 39 holes, 4607' – 4772'. A 138 sx cement inside plug was set from 5635' (PBD) to 4298' over Gallup perforations. A 17 sx cement inside plug was set from 3365' to 3215' to cover Pt Lookout top, a 17sx cement inside plug was set from 1882' to 1732' to cover Mesa Verde top, a 17sx cement inside plug was set from 892 to 742' to cover Pictured Cliffs top, a 17sx cement inside plug was set from 561' to 411' to cover Fruitland top and a 41 sx cement inside plug was set from 297' 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 825', Fruitland 530'. Underlying tops: Gallup 4605' and Dakota 5500'.

APPENDIX B

MAP – OFFSET WELLS, LEASES & AREA OF REVIEW

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.

API WATER ANALYSIS

Company: DUGAN PROD.

Field:

Well: STELLA NEEDS A COM #1E

Depth:

Location: 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
 Temperature: 78F

Iron, Fe(total): 250
 Sulfide as H2S: 0
 Total Hardness:
 (see below)

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na:	20470	: 890
Calcium, Ca:	2084	: 104
Magnesium, Mg:	170	: 14
Barium, Ba:	N/A	: N/A
Potassium, K:		:

Sample(ml): 1.0 ml of EDTA: 5.20
 Sample(ml): 1.0 ml of EDTA: .70

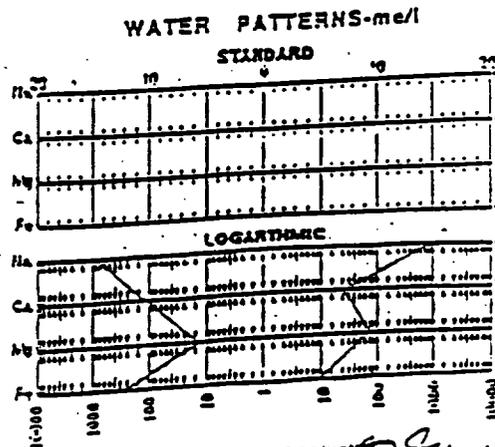
ANIONS	mg/l	me/l
Chloride, Cl:	31905	: 900
Sulfate, SO4:	3750	: 78
Carbonate, CO3:		:
Bicarbonate, HCO3:	1830	: 30

Sample(ml): 1.0 ml of AgNO3: 1.80
 Sample(ml): 1.0 ml of H2SO4:
 Sample(ml): 1.0 ml of H2SO4: .30

Total Dissolved Solids (calculated): 60209
 Total Hardness: 5900

Sample(ml): 1.0 ml of EDTA:

REMARKS AND RECOMMENDATIONS:



Analyst: DC
 Date Analyzed: 4/24/95

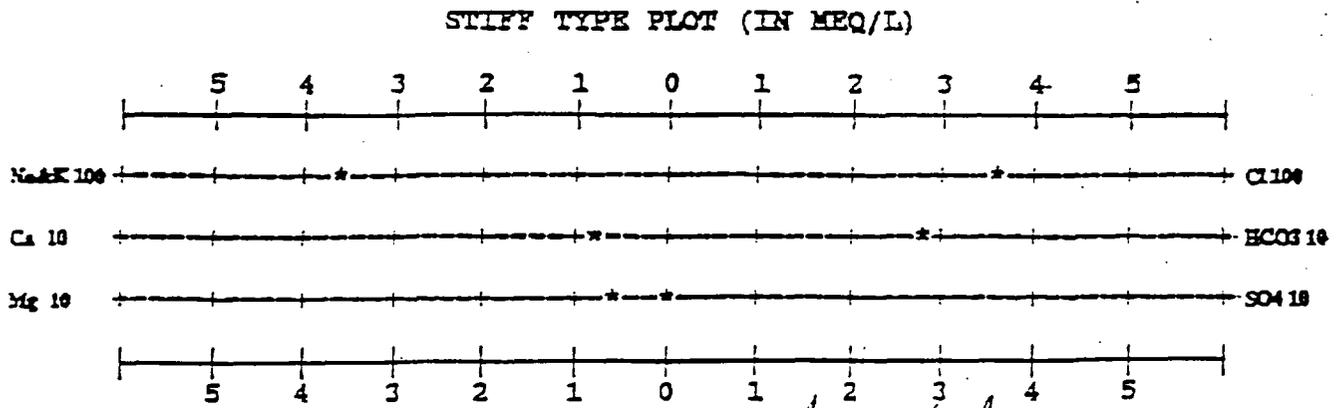
BJ SERVICES COMPANY
WATER ANALYSIS #FW01W266
FARMINGTON LAB

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:	PC/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 SEPRATOR



ANALYST David Shepherd
 D. SHEPHERD

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

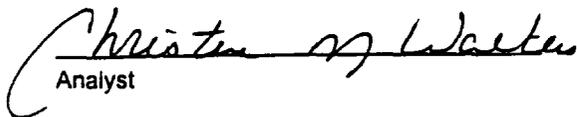
Water Analysis

Client:	Richardson Operating	Project #:	98094-001
Sample ID:	Ropco 9-3 <i>FC/PC</i>	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.


Analyst


Review

ENVIROTECH LABS

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

Water Analysis

Client:	Richardson Operating	Project #:	98094-001
Sample ID:	Ropco 8-4 <i>PC</i>	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.

Christina M. Walters
Analyst

Q.C.G. FOS
Review

APPENDIX D

PROOF OF NOTIFICATION

The following section contains proof of notification of the surface owner - BLM, proof of notifications of the 8 lease owners within the area of review and an affidavit of newspaper publication of legal notice.

AFFIDAVIT OF PUBLICATION

Ad No. 46954

**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.

Gerrit 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 No. 2 from P&A status into a produced water disposal well, Salty Dog SWD No. 5. The well is located: 1825' FSL & 990' FWL, Sec 30, T30N, R14W, San Juan County, NM. Pictured Cliffs and Basin Fruitland Coal produced water is to be disposed of into the Mesa Verde Formation: 1819'-3614' 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. 46954, published in The Daily Times, Farmington, New Mexico, Thursday, October 24, 2002.

Sally Dog 54311 #5
Land Owner

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

7002 0510 0002 9439 4907

FARMINGTON, NM 87401	
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
FARMINGTON NM 87401
OCT 25 2002
Postmark Here
Clerk: RKOCGY
USPS

10/25/02

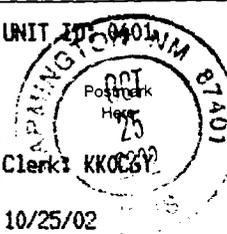
Sent To	Bureau of Land Management
Street, Apt. or PO Box	1235 LaPlata Highway
City, State	Farmington, New Mexico 87401

PS Form 3800, October 2002 Edition Instructions

7002 0510 0000 9439 4921

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	
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$ 5.34	

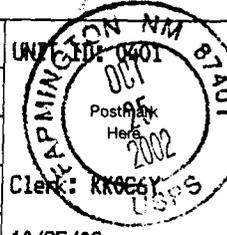
Sent To: **Yates Petroleum Corp**
 105 South 4th Street
 Artesia, New Mexico 88210

PS Form 3800

7002 0510 0000 9439 4946

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	
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$ 5.34	

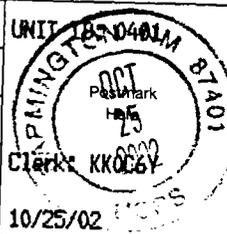
Sent To: **Myco Industries Inc**
 105 South 4th Street
 Artesia, New Mexico 88210

PS Form 3800

7002 0510 0000 9439 4914

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

FARMINGTON, NM 87499

Postage	\$ 1.29	UNIT ID: 0401 
Certified Fee	2.30	
Return Receipt Fee (Endorsement Required)	1.75	
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$ 5.34	

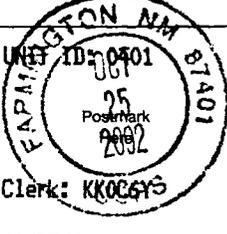
Sent To: **Burlington Resources O&G Co LP**
 P.O. Box 4289
 Farmington, New Mexico 87499

PS Form 3800

7002 0510 0000 9439 4966

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	
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$ 5.34	

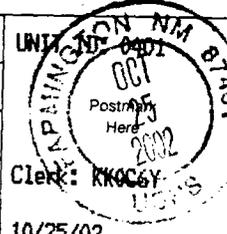
Sent To: **Yates Drilling Co.**
 105 South 4th Street
 Artesia, New Mexico 88210

PS Form 3800

7002 0510 0000 9439 4964

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

FARMINGTON, NM 87499

Postage	\$ 1.29	UNIT ID: 0401 
Certified Fee	2.30	
Return Receipt Fee (Endorsement Required)	1.75	
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$ 5.34	

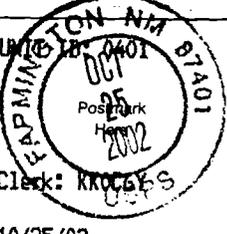
Sent To: **Redwolf Production Inc.**
 P.O. Box 5382
 Farmington, New Mexico 87499

PS Form 3800

7002 0510 0000 9439 4952

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	
Restricted Delivery Fee (Endorsement Required)		
Total Postage & Fees	\$ 5.34	

Sent To: **Abo Petroleum Corp**
 105 South 4th Street
 Artesia, New Mexico 88210

PS Form 3800

Salty Dog 5017 #5

Lease Owners

Page 2

7002 0510 0002 9439 4969

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

FARMINGTON, NH 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	

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

PS Form 3841, October 2002

7002 0510 0002 9439 4976

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

DENVER, CO 80202

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

Sent To **Questar Exploration and Prod Co**
 Street, Apt or PO Box **1331 17th St, Suite 800**
 City, State **Denver, Colorado 80202**

PS Form 3841, October 2002