SWD 10/21/99

758

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 SOUTH PACHECO
SANTA FE, NEW MEXICO 87505

FORM C-108
Revised 4-1-98

OCT 6 1999

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: ____ Secondary Recovery ____ Pressure Maintenance __X__ Disposal ____ Storage
Application qualifies for administrative approval? __X__ Yes ____ No

II. OPERATOR: Williams Production Company

ADDRESS: One Williams Cener, MS 37-4, Tulsa, OK 74172

CONTACT PARTY: Michael Coker PHONE: 918-573-6881

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 attached

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 attached

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 attached

VII. Attach data on the proposed operation, including: See attached

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 attached

IX. Describe the proposed stimulation program, if any. See attached

*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 attached

*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 attached

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 attached

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: Michael Coker TITLE: Williams Contract Engineer

SIGNATURE: Michael Coker DATE: 9-22-99

* 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: N/A

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

Side 2

III. WELL DATA See attached

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, 2040 South Pacheco, 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.

Side 1

INJECTION WELL DATA SHEET

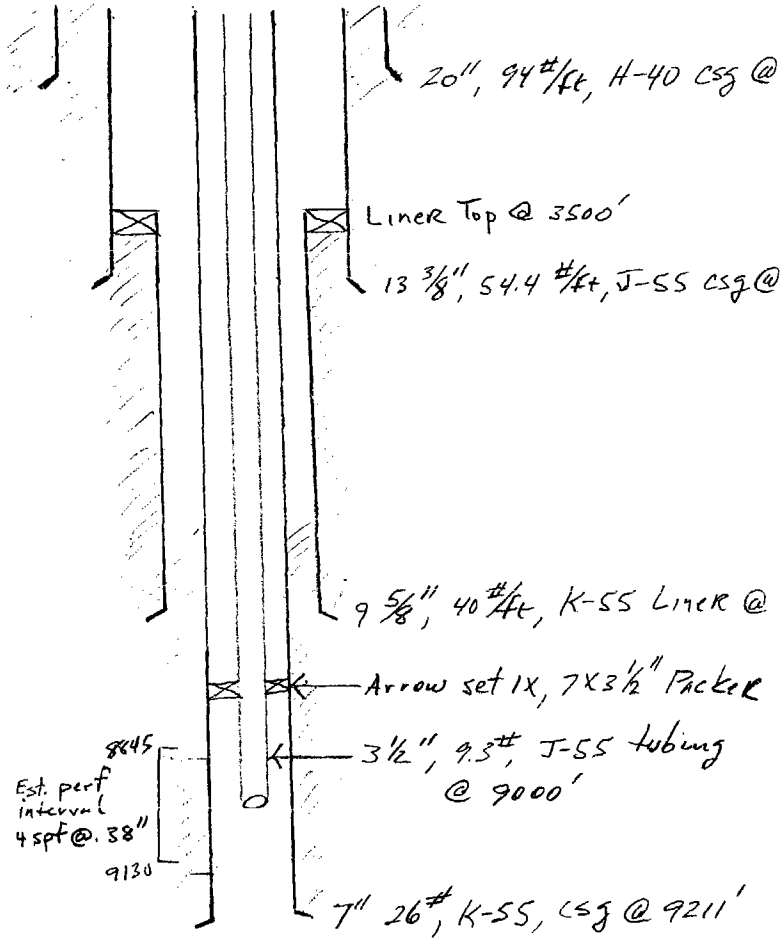
OPERATOR: Williams Production Company

WELL NAME & NUMBER: Rosa Unit SWD #1

WELL LOCATION: 2420' FSL, 1210 FEL, I Section 23-T31N-R6W, Rio Arriba, New Mexico

FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE

WELLBORE SCHEMATIC



SEE LINER CASING ON BACK (over)

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 26" **Casing Size:** 20"

Cemented with: 980 **sx.** *or* 1570 **ft³**

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

Intermediate Casing

Hole Size: 17-1/2" **Casing Size:** 13-3/8"

Cemented with: 2600 **sx.** *or* 4670 **ft³**

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

Production Casing

Hole Size: 8-3/4" **Casing Size:** 7"

Cemented with: 440 **sx.** *or* 635 **ft³**

Top of Cement: 5985 **Method Determined:** Calculation

Total Depth: 9211

Injection Interval

8845' **feet to** 9130'

(Perforated or Open Hole; indicate which)

LINER CASING

Hole Size:	12-1/4"	Liner Size: 9-5/8"
Cemented with:	855 sx. or	1375 ft^3
Top of Cement:	3500	Method Determined: Calculation

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 3-1/2" 93#/ft. Lining Material: Plastic coated

Type of Packer: Arrow Set 1 X, 7" x 3-1/2" (nickel coated)

Packer Setting Depth: 8650

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

Additional Data

1. Is this a new well drilled for injection? X Yes ____ No

   If no, for what purpose was the well originally drilled? ____

2. Name of the Injection Formation: Entrada

3. Name of Field or Pool (if applicable): Wildcat

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.

   No

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: There are no oil and gas zone below the Entrada. The oil and gas zones above are the Dakota (8806), Point Lookout (5586), Menefee (5376), Cliff HOuse (5231), Lewis Shale (3421), PC (3126), & Fruitland Coal (2891).

Application For Authorization To Inject

I. Purpose – Administrative approval for water disposal well.

II. Williams Production Company
One Williams Center MS37-4
Tulsa OK 74101
Attention: Michael Coker (918/573-6881)

III. A. Proposed Disposal Well Data:

1) Lease Name: Rosa Unit SWD #1

Location: 2420' FSL & 1210 FEL
NESE4 Section 23,T31N,R06W
Rio Arriba Co., NM

2) Wellbore Casing Configuration (See wellbore diagram attached)

CASING TYPE	HOLE SIZE	DEPTH	CASING SIZE	WT. & GRADE	Cement Vol(sxs)	TOC (Ft)
Conductor	26"	500'	20"	94 #/ft K-55	980	surface (Calc)
Surface	17-1/2"	3600	13-3/8"	54.4 #/ft J-55	2600	surface (Calc)
Intermediate	12-1/4"	6085'	9-5/8"	40#/ft K-55	855	3500 (Calc)
Longstring	8-3/4"	surface-9211	7"	26# /ft K-55	440	5985 (Calc)

3) Injection Tubing: Tubing size 3-1/2" O.D., 9.3#/ft, J-55, EUE, internal plastic coating, set at +/- 9,000'.

4) Isolation Packer: Arrow Set 1X , 7" X 3-1/2" (nickel coated) , set @ +/- ~~8650~~ 8795'.

B. Proposed Well Data:

1) Formation Name: Entrada Field Name: Wildcat

2) Injection Interval: Entrada, cased hole, estimated perfed interval 8845'-9130'.

3) The original purpose for drilling this well is for the injection and disposal of produced water.

4) There are currently no additional perforated intervals in the proposed wellbore.

5) There is no lower hydrocarbon producing zones, and the next higher producing interval is the, yet to be proven, Dakota located 1035 ft above, from 7806'-8056'.

IV. Expansion of existing project: No.

V. See attached map

VI. There are no wells penetrating the proposed depth interval for injection within the area of review.

VII. Proposed Operation Data

1) The proposed average injection rate is estimated at 3000 bbls/day. The estimated maximum injection
rate is estimated at 4320 bbls/day.

2) The system will be closed.

3) The estimated maximum injection pressure will be determined by "injection step-rate test" per OCD guidelines, or will be maintained at less than ~~1842~~ 1769 psi. or 0.2 psi/ft.

4) The source of injection fluid will be produced water from Fruitland Coal formation. (see attached typical water analysis). If Entrada formation water is attainable after completion, a compatibility test with Fruitland Coal formation water will be submitted.

5) The injection is for disposal purposes into a zone not productive of oil or gas. There is no production from the Entrada within one mile of the proposed location.

VIII. The proposed injection zone is the Entrada sandstone. The Entrada interval has an estimated thickness of 295' from 8841'-9136' below G.L. (6299'). There are no formations located immediately below the Entrada which contain drinking water. The Ojo Alamo sandstone is the only known drinking water aquifer overlying the Entrada. The base depth of the Ojo is 2386' below G.L.

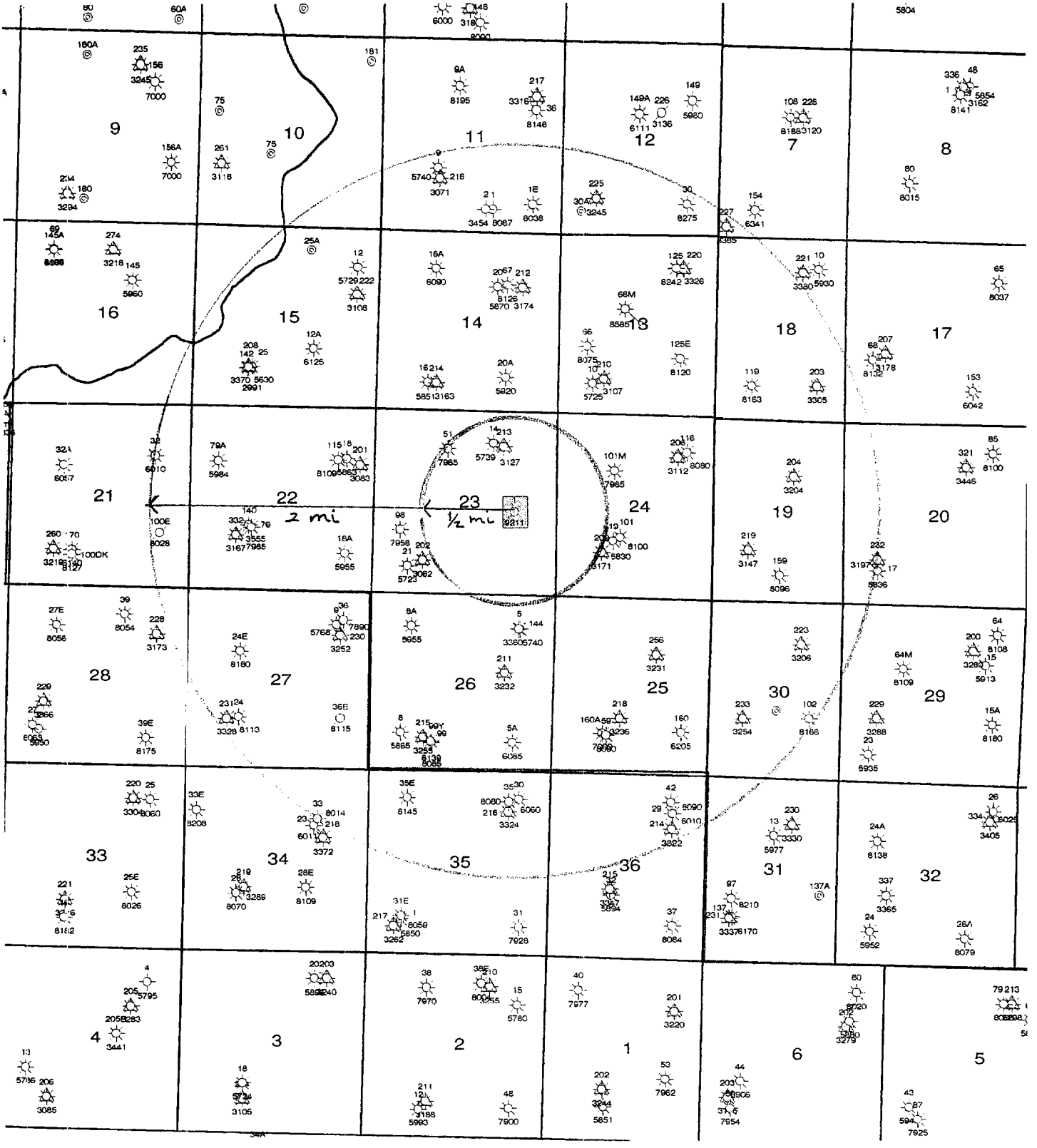
IX. The proposed stimulation program will consist of an acid/ballout breakdown and a hydraulic sand frac. The fracture treatment will be a 30# Borate fluid system carrying approximately 300000 lbs 20/40 proppant. The proppant will be ramped from 1-8 ppg.

X. No logs or test data available at present time.

XI. There are no fresh water wells within one mile of proposed injection well. There is only one fresh water well in the same township and range, located approximately two miles away in Sec 32, T31N, R6. The well was drilled in 1952 by EL Paso Natural Gas. The well is not active and has a plate welded over casing.

XII. An examination of geologic and engineering data indicates no evidence of open faults or any other hydrologic connection between the disposal zone (Entrada) and the drinking water zone. (Ojo Alamo).

XIII. Proof of Notice, BLM has surface rights and will be notified by registered mail, there are no other leasehold operators within one-half mile. Proof of publication will be submitted to NMOCD.



N

Williams

Williams E & P		
WPX Rosa unit SWD #1 NWNESE 23-31N-6W, Rio Arriba, NM		
		9/8/99
	1"=4,000'	

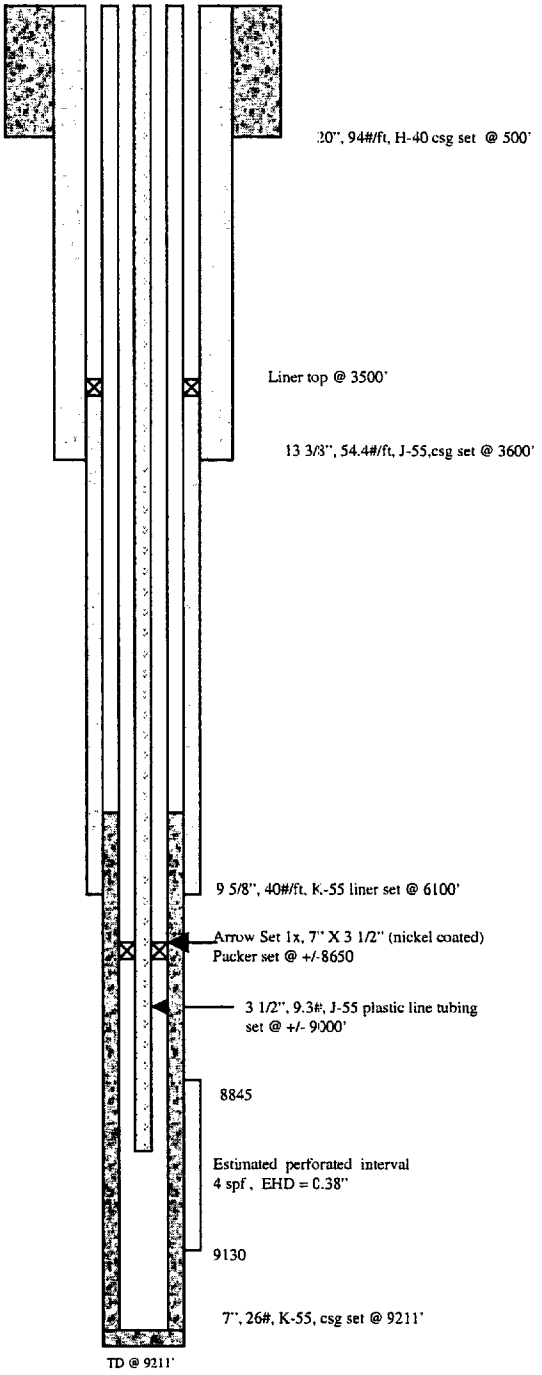
PROPOSED

ROSA UNIT SWD #1
Disposal Injection Well

Location: 2420' FSL. 1210' FEL
NE/4 SE/4 Sec.23, T31N, R06W
Rio Arriba Co., NM

Elevation: 6299' GR

Tops	Depths
Ojo	2386
Kirtland	2491
Fruitland	2891
PC	3126
Lewis Sh.	3421
Cliff House	5331
Menefee	5376
Point Lookout	5586
Mancos Sh.	5896
Gallup	6916
Greenhorn	7636
Graneros	7696
Dakota	7806
Morrison	8056
Bluff	8556
Summerville	8726
Todilto	8796
Entrada	8841
Chinle	9136



HOLE SIZE	CSG. SIZE	DEPTH	CEMENT VOL.	CMT TYPE	CMT WGT.	CMT YIELD	TOC
(IN.)	(IN.)	(FT)	(SXS)		(PPG)	(CF/SX)	(FT)
26	20	500	680	35:65 Poz B	12.7	1.78	Surface
			300	Class B	15.6	1.2	
17 1/2	13 3/8	3600	1740	35:65 Poz B	12.1	2.09	Surface
			860	Class B	15.6	1.2	
12 1/4	9 5/8	6085	755	35:65 Poz B	13	1.66	3500
			100	Class H	15.6	1.2	
8 3/4	7	9211	340	50:50 Poz H	13.2	1.42	5985
			100	Class H	15.9	1.5	

FW01W340

BJ SERVICES COMPANY

WATER ANALYSIS #FW01W340

FARMINGTON LAB

GENERAL INFORMATION

OPERATOR:	WILLIAMS PRODUCTION	DEPTH:	
WELL:	ROSA #339	DATE SAMPLED:	01/08/99
FIELD:		DATE RECEIVED:	01/11/99
SUBMITTED BY:	RON COCHRAN	COUNTY:	RIO ARRIBA STATE: NM
WORKED BY	D. SHEPHERD	FORMATION:	produced water
PHONE NUMBER:			

SAMPLE DESCRIPTION

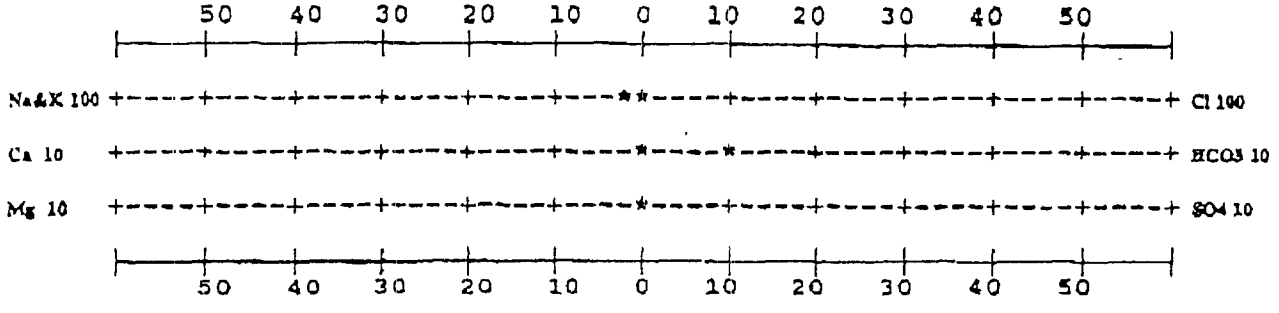
sampled from tank

PHYSICAL AND CHEMICAL DETERMINATIONS

SPECIFIC GRAVITY:	1.002 @ 77°F	PH:	7.67
RESISTIVITY (MEASURED):	0.800 ohms @ 78°F		
IRON (FE++) :	0 ppm	SULFATE:	0 ppm
CALCIUM:	40 ppm	TOTAL HARDNESS	160 ppm
MAGNESIUM:	15 ppm	BICARBONATE:	5,844 ppm
CHLORIDE:	1,415 ppm	SODIUM CHLORIDE(Calc)	2,328 ppm
SODIUM+POTASS:	3,048 ppm	TOT. DISSOLVED SOLIDS:	10,467 ppm
H2S: NO TRACE		POTASSIUM (PPM): 10	

REMARKS

STIFF TYPE PLOT (IN MEQ/L)



ANALYST D. SHEPHERD

WILLIAMS FIELD SERVICES
ONE OF THE WILLIAMS COMPANIES

Date:
To:
Co.
Fax #

# of pages ▶
From
Co. Williams Field Services
Phone #
Fax #

** TOTAL PAGE.02 **

District I
PO Box 1980, Hobbs, NM 88241-1980

District II
PO Drawer DD, Artesia, NM 88211-0719

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
PO Box 2088, Santa Fe, NM 87504-2088

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
PO Box 2088
Santa Fe, NM 87504-2088

Form C-102
Revised February 21, 1994
Instructions on back
Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name

4 Property Code	5 Property Name	6 Well Number
	ROSA UNIT SWD	1

7 OGRID No.	8 Operator Name	9 Elevation
	WILLIAMS PRODUCTION COMPANY	6243'

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	23	31N	6W		2420	SOUTH	1210	EAST	RIO ARRIBA

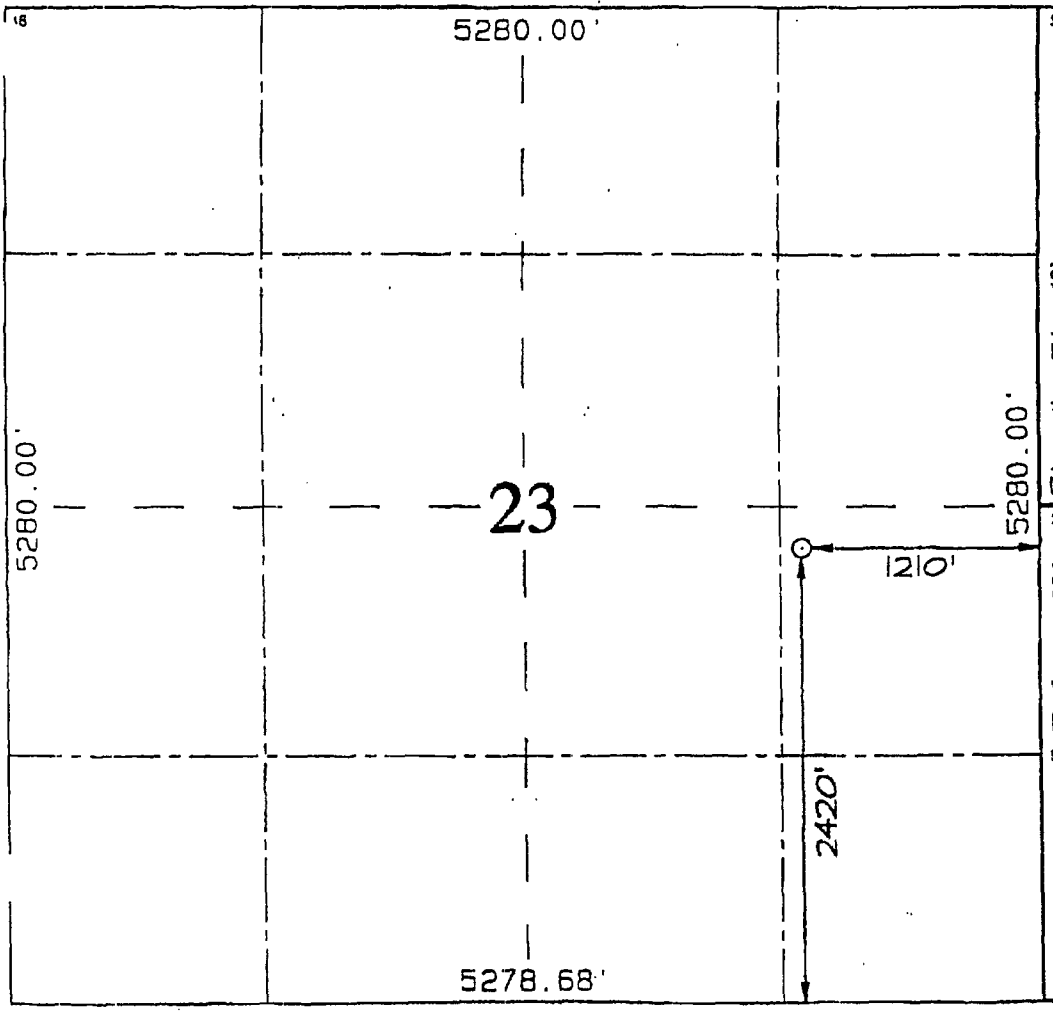
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

16



17 OPERATOR CERTIFICATION

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

Signature

Printed Name

Title

Date

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

JUNE 2, 1999

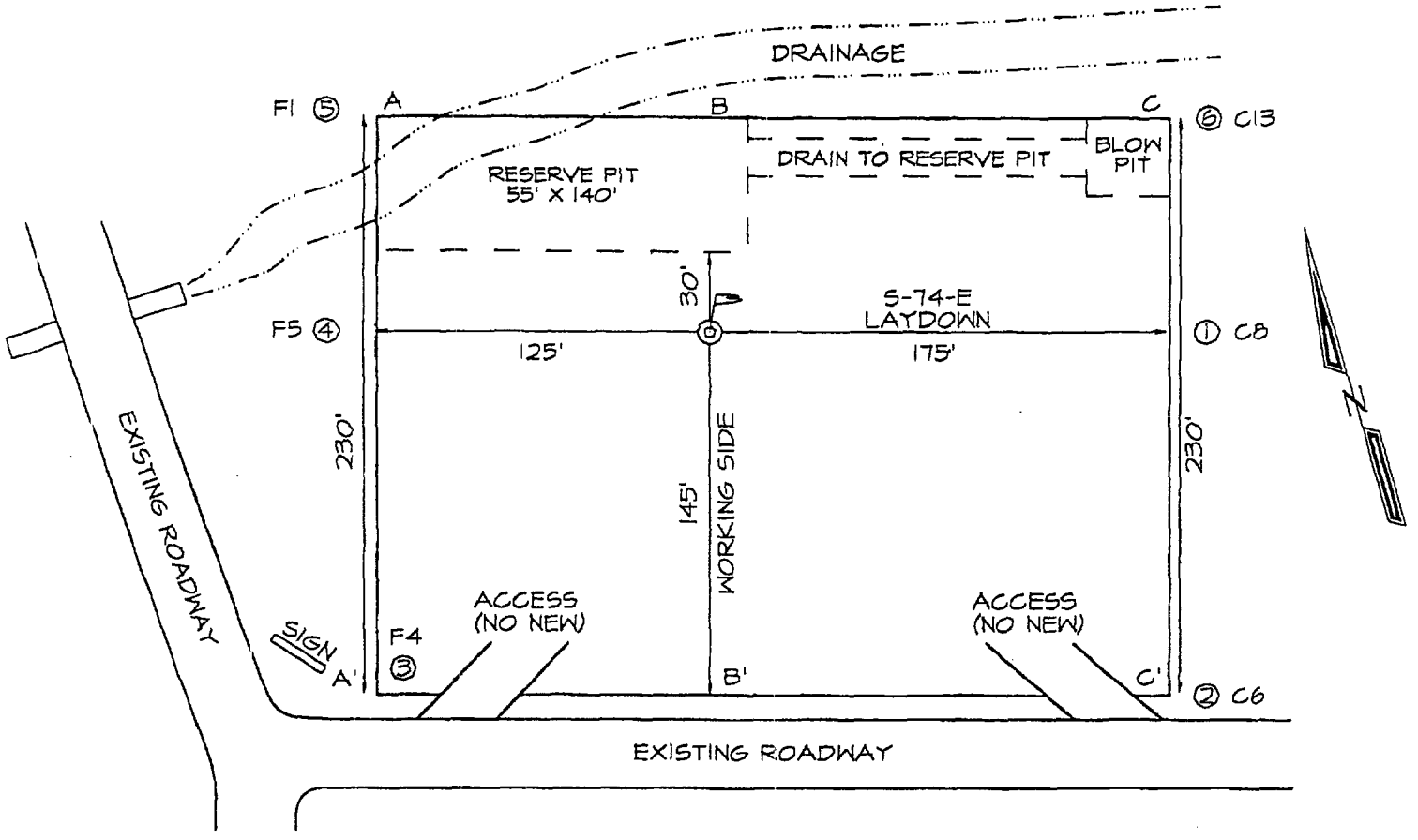
Date of Survey

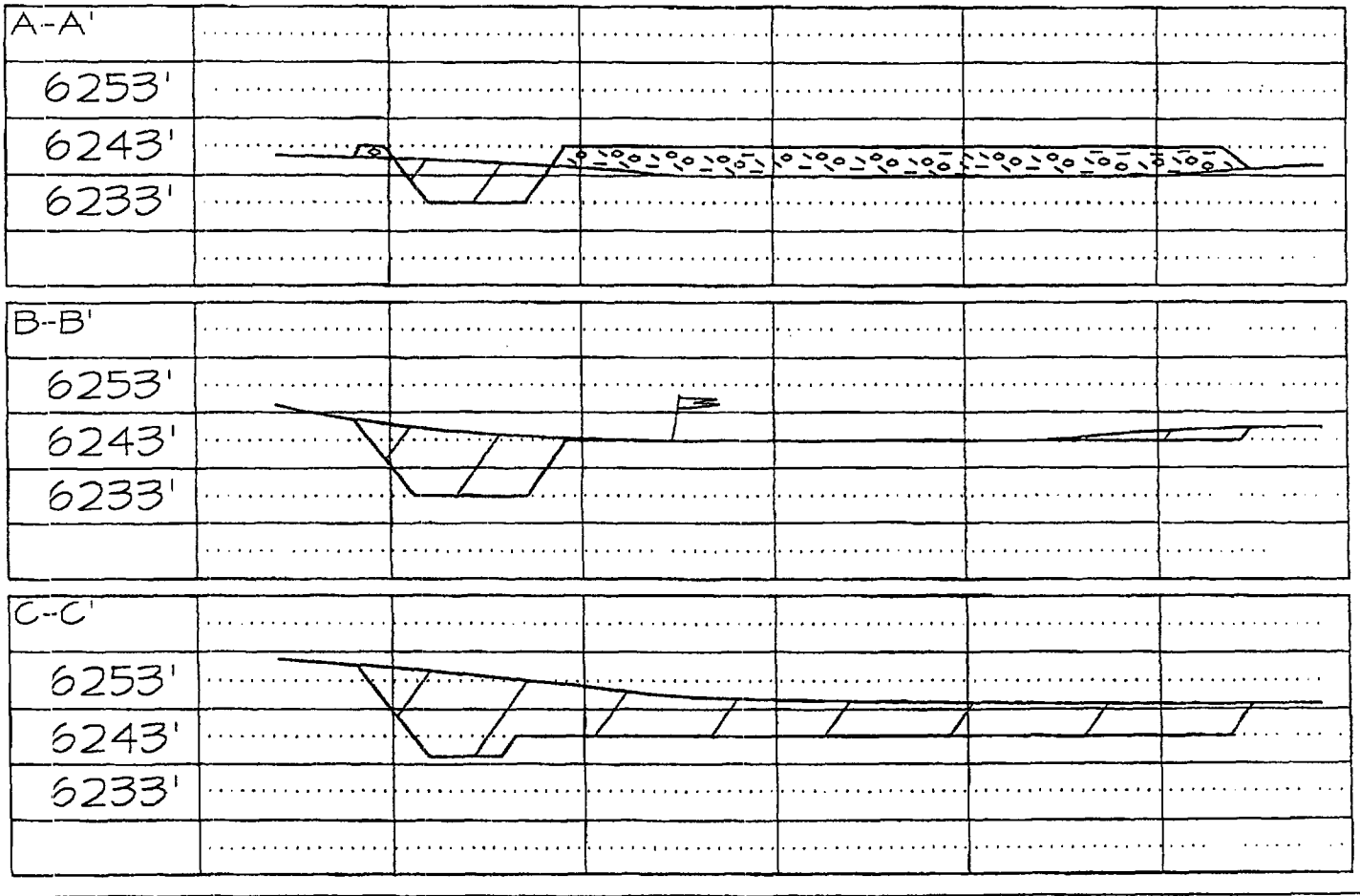
Signature and Seal of Professional Surveyor

NEALE C. EDWARDS
NEW MEXICO
6857
REGISTERED PROFESSIONAL SURVEYOR

Certificate Number 6857

WILLIAMS PRODUCTION COMPANY ROSA UNIT SWD #1
2420' FSL & 1210' FEL, SECTION 23, T31N, R6W, NMPM
RIO ARRIBA COUNTY, NEW MEXICO GROUND ELEVATION: 6243'





FILENAME: 31623IT	SHEET 2 OF 2	NCE SURVEYS, INC.	DRAWN BY: SLE	CHECKED BY: NCE

PUBLIC NOTICE

Williams Production Company will file an application on October 11, 1999, for approval to inject water produced from other oil and gas wells, into the Entrada formation in the Rosa Unit SWD #1 located in the north half of the southeast quarter of Section 23, Township 32 North, Range 6 West, Rio Arriba County, New Mexico, at a depth from 8840 feet to 9140 feet with surface injection pressure up to 1840 pounds per square inch, and injection rates up to 4320 barrels per day.

Surface owners and offset operators must file any objections or request for public hearing with the New Mexico Oil Conservation Division 2040 South Pacheco Street, Santa Fe, New Mexico 87505 within 15 days of the date of this notice. The Williams Production Company contact person is Michael Coker, One Williams Center, MS 37-4, Tulsa, OK 74172, telephone 918-573-6881.

Legal No. 41780 published in The Daily Times, Farmington, New Mexico,Tuesday, October 5, 1999.

Post-it® Fax Note 7671	Date 9/22	# of pages ▶ 1
To Mike Cocker	From Melanie Sanders	
Co./Dept. Williams	Co. Daily Times	
Phone # 918-573-6881	Phone # 505-564-4568	
Fax # 918-573-1298	Fax # 505-564-4567	

Ashley, Mark

From: Busch, Ernie
Sent: Friday, October 22, 1999 2:42 PM
To: Ashley, Mark
Subject: Williams SWD
Importance: High

Rosa Unit SWD #1
2420'FSL;1210'FEL
I-23-31N-06W
Recommend: Approval