

864

APPLICATION FOR AUTHORIZATION TO INJECT

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

II. OPERATOR: RAY WESTALL

ADDRESS: P.O. Box 4, Loco Hills, NEW MEXICO 88255

CONTACT PARTY: RANDALL HARRIS PHONE: 505 677 2370

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.

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.

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:  
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.).

DEC - 2 2002

\*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.

IX. 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).

\*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.

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.

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: RANDALL HARRIS TITLE: GEOLOGIST

SIGNATURE: [Signature] DATE: 11/21/02

\* 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.

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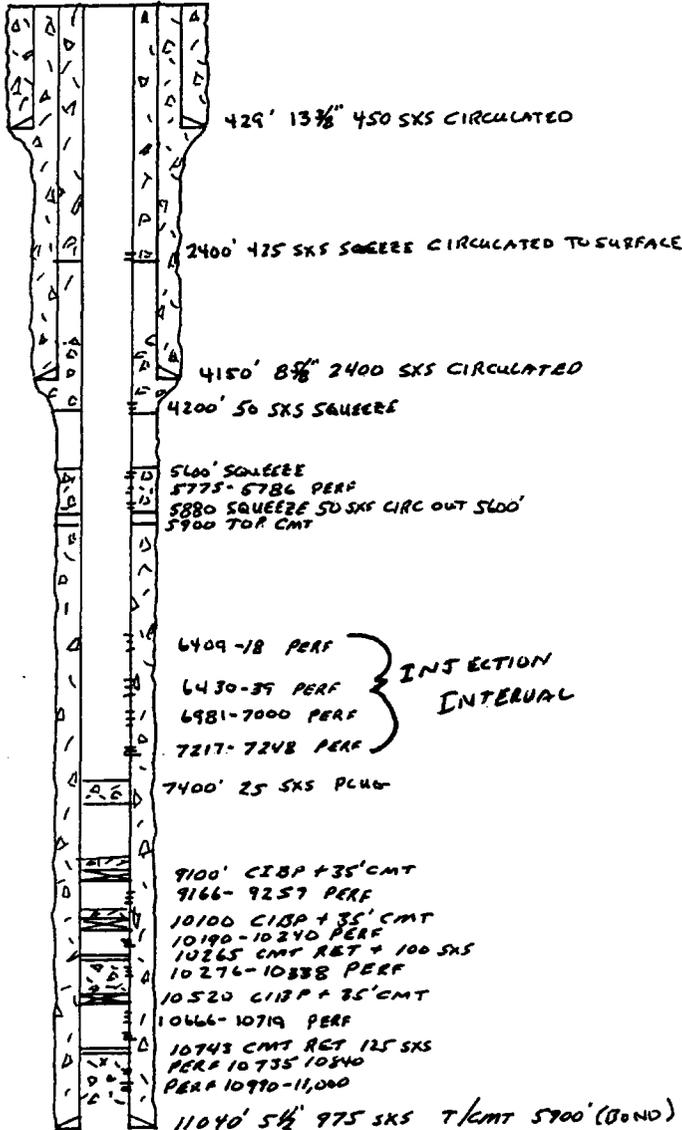
NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

# INJECTION WELL DATA SHEET

RAY WESTALL  
STATE NO #1  
1980' FNL & 660' FWL SEC 7 T19S-R36E

(30-025-28468)

## Schematic



## Tubular Data

### Surface Casing

Size 13 3/8" 48 & 72# Set @  
429" Cemented with 450 sxs Circulated  
Hole size 17 1/2"

### Intermediate Casing

Size 8 5/8" 32 & 24# set @ 4140 Cemented  
with 2400 sxs Circulated Hole size 11"

### Long String

Size 5 1/2" 17 & 15.5# set @ 11040 Cemented  
with 975 sxs TOC 5900' (temp  
survey) Squeeze 50 sxs 5880'-5600'  
Squeeze 25sxs 4202' Squeeze 425 sxs 2101'  
Circulate to surface Hole size 7 7/8"

### Injection interval

6409' to 7248' feet Perforated

Tubing size 2 7/8" lined with Plastic set in a Baker Loc-set packer at 6300 feet.

## Other Data

1. Name of the injection formation. DELAWARE
2. Name of field or pool. WILDCAT
3. Is this a new well drilled for injection? No  
If no, for what purpose was the well originally drilled? Oil & Gas production
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. See Schematic
5. Give the depth to and name of any overlying or underlying oil or gas zones in this area.  
None

## **ATTACHMENT V**

**Maps that identifies all wells of public record within two miles of each proposed injection well, and the area of review one-half mile radius around each proposed injection well.**

<p>22 (An. Rich) Caponez Oper. (Yates Ener. et al) L-4853</p> <p>Mobily State</p>	<p>David Reeves et al, MI</p> <p>Spiral Inc. 5-37-84</p> <p>Yates Pet. et al</p>	<p>24 72 32</p> <p>Adobe Lawson St</p> <p>Yates Pet. et al</p>	<p>19 Chevron H.B.P. B-243</p> <p>State</p>	<p>20</p> <p>Westbrook Oil</p> <p>Westbrook Oil (E.L. Latham, Jr.)</p>	<p>21</p> <p>Westbrook Oil</p> <p>Westbrook Oil (E.L. Latham, Jr.)</p>
<p>18</p> <p>Paladin Ener. 06140</p> <p>Yates Pet. et al</p>	<p>Yates Pet. et al</p> <p>Yates Pet. et al</p>	<p>25</p> <p>Cities Service H.B.P. B-1482</p> <p>State</p>	<p>30</p> <p>Devon Ener HBP E-1635</p> <p>King Res. Arkansas Jet</p>	<p>29</p> <p>Chevron H.B.P. B-243</p> <p>State</p>	<p>28</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>
<p>34</p> <p>D.J. Schutz 12-1-2005</p> <p>OXY, et al</p>	<p>35</p> <p>Paladin Ener. E-1479</p> <p>Paladin Ener. E-1533</p>	<p>36</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>	<p>31</p> <p>Chevron H.B.P. B-243</p> <p>State</p>	<p>32</p> <p>Phillips H.B.P. B-1608</p> <p>State</p>	<p>33</p> <p>Chevron H.B.P. B-218</p> <p>State</p>
<p>32</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>	<p>2</p> <p>Atlantic State</p> <p>State</p>	<p>37</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>	<p>38</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>	<p>39</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>	<p>40</p> <p>Yates Pet. et al</p> <p>Yates Pet. et al</p>
<p>35</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>36</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>37</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>38</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>39</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>40</p> <p>Melrose (E) 7262</p> <p>State</p>
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<p>35</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>36</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>37</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>38</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>39</p> <p>Melrose (E) 7262</p> <p>State</p>	<p>40</p> <p>Melrose (E) 7262</p> <p>State</p>

ARI JUN 18

19 36 F

W. G. EAST



## **ATTACHMENT VI**

Data on all wells of public record within the area of review. Included are schematics of the plugged wells that penetrated the proposed injection zone within the area of review.

No wells within area of review.

## ATTACHMENT VII

1. Proposed average of 150 bbls per day and maximum of 300 bbls per day of injected fluids. At a rate of one bbl per minuet.
2. System will be closed.
3. Average anticipated pressure of 450 psi and a maximum of 800 psi.
4. Source of produced water is produced water from the surrounding area.
5. Typical water analysis attached.

Data prepared by: Donald A. Beaudry  
 Affiliation: Shell Oil Company  
 Date: Aug. 15, 1960

Field Name: Pearl Queen  
 Location: T. 19 S., R. 35 E.  
 County & State: Lea Co., N. Mex.

DISCOVERY WELL: Shell Oil Co. #1 Hooper  
 PAY ZONE: Queen-Penrose thin sandstone beds.

COMPLETION DATE: Sept. 12, 1955

TYPICAL CORE ANALYSIS OF A PAY INTERVAL IN THIS FIELD:

Perm. in millidarcys		% Porosity	Liquid Saturation (% of pore space)	
Horizontal	Vertical		Water	Oil
2-62	NA	18	35.0	6.4

OTHER SHOWS ENCOUNTERED IN THIS FIELD:

Seven Rivers, San Andres, Bone Spring, Pennsylvanian (Atoka)

TRAP TYPE: Stratigraphic

NATURE OF OIL: 36° Gravity API

NATURE OF GAS:

NATURE OF PRODUCING ZONE WATER:

ppm	Total Solids	Na+K	Ca	Mg	Fe	Resistivity:		CO <sub>2</sub>	HCO <sub>3</sub>	OH	H <sub>2</sub> S
						SO <sub>4</sub>	Cl				
	234,000	66,000	14,000	7,000	X	500	146,000	X	150	X	X

INITIAL FIELD PRESSURE: 1750 psig

TYPE OF DRIVE: Solution Gas

NORMAL COMPLETION PRACTICES: Casing through pay zone. Perforation of selected intervals followed by sandfrac.

PRODUCTION DATA:

Year	Type	No. of wells @ yr. end		Production Oil in barrels Gas in MMCF	
		Producing	Shut in or Abnd.	Annual	Cumulative
	gas			.291	.291
1957	oil	8		44,184	45,138
	gas			28,067	28,358
1958	oil	40		319,534	368,907
	gas			158,357	186,715
1959	oil	69	1	629,250	1,007,446
	gas			427,311	614,026
1960*	oil	91		362,566	1,370,012
	gas			316,478	930,504

\* 1960 Figure is production to July 1, 1960.

ROSWELL GEOLOGICAL SOCIETY SYMPOSIUM

Author: G. J. Savage  
 Affiliation: Gulf Energy & Minerals Co.-US  
 Date: August 1976  
 Field Name: Arkansas Junction (San Andres)  
 Location: T-18-S, R-36-E  
 County & State: Lea County, New Mexico

Discovery Well: Aztec Oil & Gas Co. #1 Amerada State, NE/4 NW/4 12-T-18-S, R-36-E.  
 Completed 6-12-66. P 20 BOPD and 20 BW

Exploration Method Leading to Discovery:

Recognition of possible pay zone from data obtained in drilling of deep test north of this discovery.

Pay Zone: San Andres dolomite

Formation Name: San Andres Depth & Datum Discovery Well: Top of perms 4952 (-1169)

Lithology Description:

Dolomite, tan to white finely crystalline partly anhydritic with thin interbeds of sandstone, gray, very fine to fine-grained, subangular, fairly well sorted.

Approximate average pay: 160 gross 24 net Productive Area 560 acres

Type Trap: Structural, with partial stratigraphic influence; i.e., with variable porosity and permeability.

Reservoir Data:

6-12 % Porosity, 0.2 Md Permeability, 32 % Sw, \_\_\_\_\_ % So

Oil: 37.3° Gravity API

Gas:

Water: \_\_\_\_\_ Na+K, 2880 Ca, \_\_\_\_\_ Mg, 25900 Cl, 2500 SO<sub>4</sub>, \_\_\_\_\_ CO<sub>2</sub>, or HCO<sub>3</sub>, \_\_\_\_\_ Fe

Specific Gravity 1.015 Resistivity 0.21 ohms @ 84 °F

Initial Field Pressure: 1610 psi @ -1293 datum Reservoir Temp. 112 °F

Type of Drive:

Solution gas and water

Normal Completion Practices:

Drill through pay zone, set casing, perforate, and wash with acid before sandfrac.

Type completion:

Pumping

Normal Well Spacing 40 Acres

Deepest Horizon Penetrated & Depth:

Devonian at 10,600 feet (-6,805)

Other Producing Formations in Field:

Penrose member of Queen formation

Production Data:

YEAR	TYPE	No. of wells @ yr. end		PRODUCTION OIL IN BARRELS GAS IN MMCF		YEAR	TYPE	No. of wells @ yr. end		PRODUCTION OIL IN BARRELS GAS IN MMCF	
		Prod.	S.I. or Abd.	ANNUAL	CUMULATIVE			Prod.	S.I. or Abd.	ANNUAL	CUMULATIVE
68	OIL	5		16,426	30,577	72	OIL	1	9	2,232	83,188
	GAS						GAS				
69	OIL	9		27,494	58,071	73	OIL	2	8	2,687	85,875
	GAS						GAS				
70	OIL	9	1	17,076	75,147	74	OIL	2	8	3,496	89,371
	GAS						GAS				
71	OIL	3	7	5,809	80,956	75	OIL	3	7	5,595	94,966
	GAS						GAS				

## **ATTACHMENT VIII**

The proposed injection zone is a fine grained sand in the Delaware Formation. It has several sands with varying thickness. There is possible drinking water overlying the injection in the surface sands at a depth of 0-450'. There is no known source underlying the injection interval.

## **ATTACHMENT IX**

No proposed stimulation.

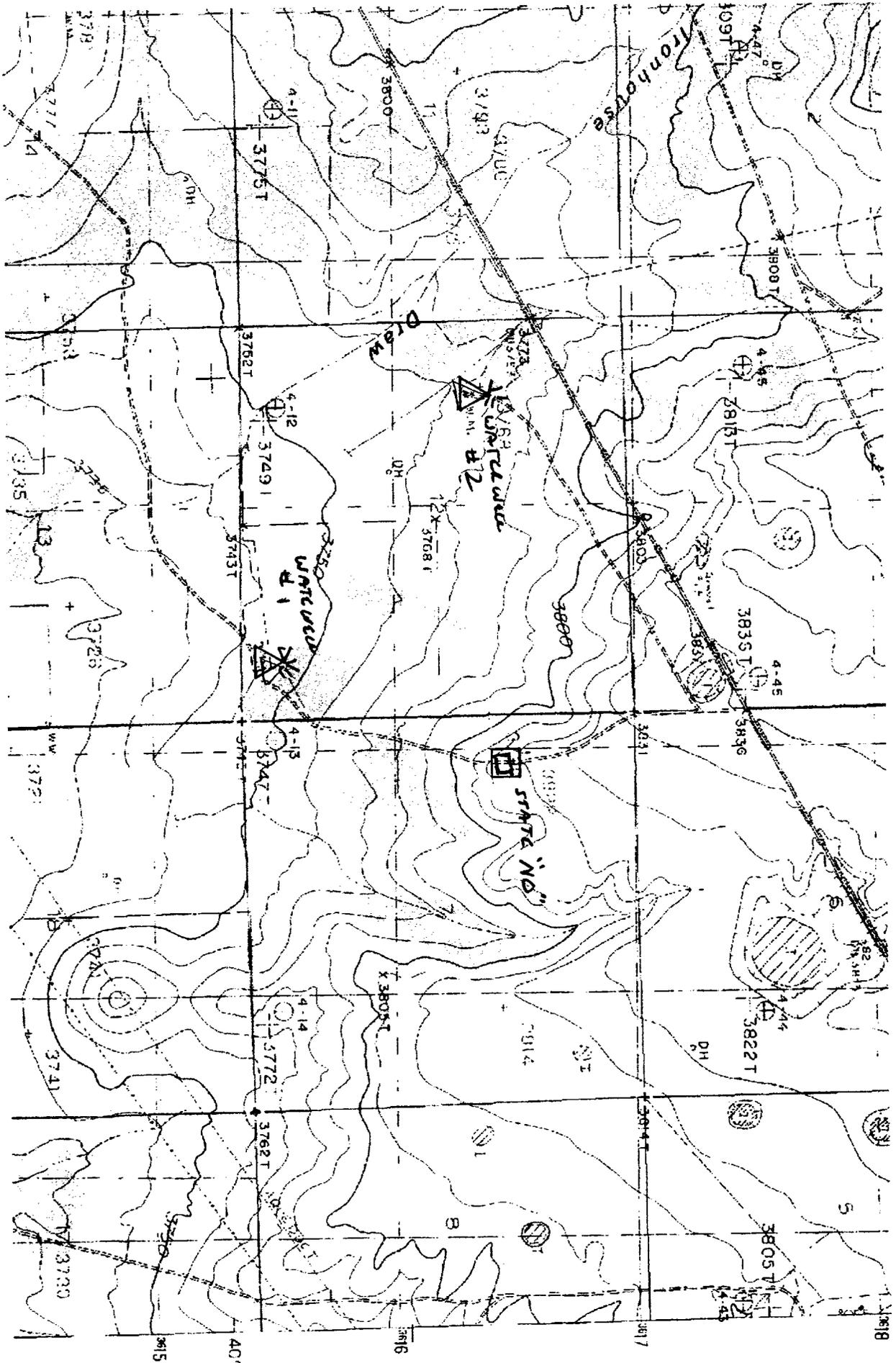
## **ATTACHMENT XI**

There are two active livestock water wells within one mile.

Well #1 UL P Section 12, T19S-R35E

Well #2 UL E Section 12, T19S-R35E

Analysis Attached



Ironhouse Draw, NM; Scale: 1" = 0.356MI 574M; 1.882Ft. 1 MI = 2.805", 1 cm = 226M

## B J Services Water Analysis

Artesia District Laboratory  
(505) 746-3140

Date: 22-Nov-02	Test #: <i>U-E SEC 12</i>
Company: Ray Westall	Well #: #2 <i>T 195 - R 35E</i>
Lease: "NO" Water Well	County: Lea
State: New Mexico	Formation:
Depth:	Source:

pH:	7.45	Temp (F):	62.6
Specific Gravity	1.005		

<u>CATIONS</u>	mg/l	me/l	ppm
Sodium (calc.)	711	30.9	707
Calcium	80	4.0	80
Magnesium	49	4.0	48
Barium	< 25	---	---
Potassium	< 10	---	---
Iron	1	0.0	1

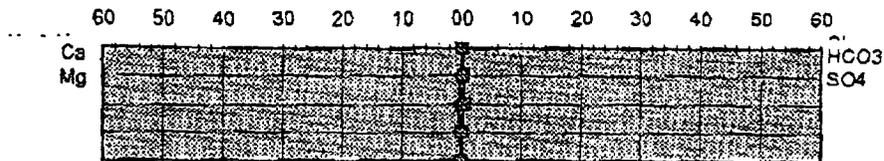
<u>ANIONS</u>	mg/l	me/l	ppm
Chloride	1200	33.9	1194
Sulfate	30	0.6	30
Carbonate	< 1	---	---
Bicarbonate	281	4.6	279
<b>Total Dissolved Solids(calc.)</b>	<b>2351</b>		<b>2339</b>
<b>Total Hardness as CaCO3</b>	<b>400</b>	<b>8.0</b>	<b>398</b>

**COMMENTS:** Sample of solids appears to be Iron Sulfide

**SCALE ANALYSIS:**

CaCO3 Factor	22504.12 Calcium Carbonate Scale Probability->	Remote
CaSO4 Factor	2406 Calcium Sulfate Scale Probability -->	Remote

**Stiff Plot**



# B J Services Water Analysis

Artesia District Laboratory  
(505) 746-3140

Date: 22-Nov-02 Test #: *UL-P SEC 12*  
 Company: Ray Westall Well #: #1 *T 195 - R 35 E*  
 Lease: "NO" Water Well County: Lea  
 State: New Mexico Formation:  
 Depth: Source:

pH:	8.26	Temp (F):	63
Specific Gravity	1.01		

CATIONS	mg/l	me/l	ppm
Sodium (calc.)	1150	50.0	1139
Calcium	80	4.0	79
Magnesium	73	6.0	72
Barium	< 25	---	---
Potassium	< 10	---	---
Iron	1	0.0	1

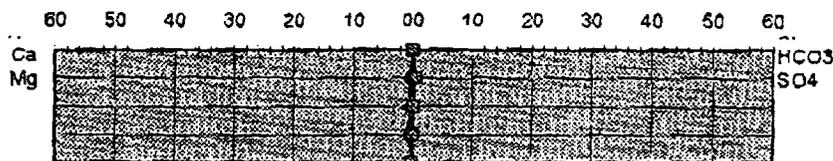
ANIONS	mg/l	me/l	ppm
Chloride	2000	56.4	1980
Sulfate	69	1.4	69
Carbonate	< 1	---	---
Bicarbonate	146	2.4	145
Total Dissolved Solids(calc.)	3520		3485
Total Hardness as CaCO3	500	10.0	495

**COMMENTS:** Sample of solids appears to be Iron Sulfide

### SCALE ANALYSIS:

CaCO3 Factor 11741.28 Calcium Carbonate Scale Probability-> Remote  
 CaSO4 Factor 5614 Calcium Sulfate Scale Probability --> Remote

Stiff Plot



## **ATTACHMENT XII**

All available geologic and engineering data have been examined and there is no evidence of open faults or any other hydrologic connection between the disposal zone and any source of drinking water.

## ATTACHMENT XIV

### PROOF OF NOTICE

Leasehold operators within one-half mile of the well location are: Yates Petroleum and BP/Arco. Each of the operators were provided a copy of our application by certified mail. Proof of notice is enclosed. The surface owner is the State of New Mexico.

### PROOF OF PUBLICATION

Proof of publication is from the Hobbs Daily Sun and attached..

#### Certified Mail

Yates Petroleum  
105 S. 4<sup>th</sup> St.  
Artesia, NM 88210

7000 0600 0024 2324 1650

BP  
501 Westlake Park Blvd  
Houston, Tx 77079

7000 0600 0024 2324 1667

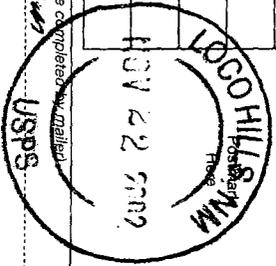


**U.S. Postal Service**  
**CERTIFIED MAIL RECEIPT**  
*(Domestic Mail Only; No Insurance Coverage Provided)*

7000 0600 0024 2324 1650

Postage	\$ 1.06
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$ 3.36</b>

Recipient's Name (Please Print Clearly) (to be completed by mailer)  
**JAMES PETRACIUM**  
 Street, Apt. No., or PO Box No. **105 S 9th St**  
 City, State, ZIP+4 **ALBUQUERQUE, NM 87255**



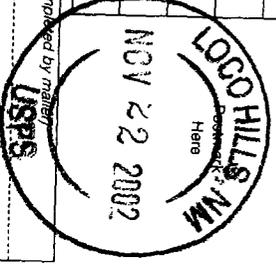
PS Form 3800, February 2000 See Reverse for Instructions

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

7000 0600 0024 2324 1667

Postage	\$ 1.06
Certified Fee	2.30
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
<b>Total Postage &amp; Fees</b>	<b>\$ 3.36</b>

Recipient's Name (Please Print Clearly) (to be completed by mailer)  
**R P Byrne**  
 Street, Apt. No., or PO Box No. **501 Westlake**  
 City, State, ZIP+4 **HOUSTON, TX 77079**



PS Form 3800, February 2000 See Reverse for Instructions