

**EXXON** COMPANY, U.S.A.

POST OFFICE BOX 1600 • MIDLAND, TEXAS 79702-1600

REGISTRATION DIVISION  
REG-170

1993 APR 1 10 8 58

PRODUCTION DEPARTMENT  
SOUTHWESTERN DIVISION

ENVIRONMENTAL AND REGULATORY AFFAIRS

March 30, 1993

Injection of Off Lease Water  
Yates Federal C, Well No. 2  
Eddy County, New Mexico

New Mexico Oil and Gas Commission  
Energy and Minerals Dept.  
P.O. Box 2088  
Santa Fe, New Mexico 87501

Attention: Ben Stone

This letter is a follow-up to our phone conversation of March 15, 1993, concerning the disposal of off lease water into the Yates Federal C, Well No. 2. I am submitting water analysis from the leases water will come from. The water will come from the Gourley Federal, Laguna Grande Federal, NM State EU, S. Carlsbad Gas Com 2-1 and 4-1, NM State CW, Burton Flat E leases, and Burton Flat B leases. It is our understanding that there is no necessary permitting required for off lease disposal of produced water going to well no. 2.

Unless you indicate otherwise, we will go ahead with the injection of off lease water into well no. 2.

If there are any questions concerning this information, please call me at (915) 688-7871.

Sincerely,

*Marsha Wilson*

Marsha Wilson  
Environmental and Regulatory Affairs

\mw  
Attachments





Laboratory Services  
1331 Tasker Drive  
Hobbs, New Mexico 88240  
(505) 397-3713

### WATER ANALYSIS

COMPANY Exxon Company USA

SAMPLE Burton Flat Fed. E #2

SAMPLED BY \_\_\_\_\_

DATE TAKEN 3-17-93

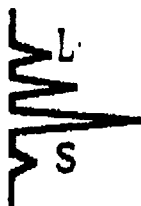
REMARKS \_\_\_\_\_

Nitrate	15		
Barium as Ba	0		
Carbonate alkalinity PPM	0		
Bicarbonate alkalinity PPM	492		
pH At Lab	7.05		
Specific Gravity @ 60 F	1.100		
Magnesium as Mg	7.946		
Total Hardness as CaCO <sub>3</sub>	13.700		
Chlorides as CL	79.072		
Sulfate as SO <sub>4</sub>	2.750		
Iron as Fe	1.0		
Potassium	18.75		
Hydrogen Sulfide	0		
Resistivity Ohms	0.085	@	22.0 C
Total Dissolved Solids	112.000		
Carbonate as CO <sub>3</sub> G/L	0		
Calcium as CA	5.754		

Results reported as Parts Per Million Unless Stated.

Langelier Saturation Index + 1.35

Analysis By: Rolland Perry  
Date: 3/20/93



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### WATER ANALYSIS

COMPANY	Exxon Company USA		
SAMPLE	South Carlsbad 4-1		
SAMPLED BY			
DATE TAKEN	3-17-93		
REMARKS			
Nitrate	0		
Barium as Ba	87.5		
Carbonate alkalinity PPM	0		
Bicarbonate alkalinity PPM	128		
pH At Lab	7.53		
Specific Gravity @ 60 F	1.006		
Magnesium as Mg	284		
Total Hardness as CaCO <sub>3</sub>	490		
Chlorides as CL	1.046		
Sulfate as SO <sub>4</sub>	0		
Iron as Fe	28.25		
Potassium	3.75		
Hydrogen Sulfide	0		
Resistivity Ohms	5.10	@	22.1 C
Total Dissolved Solids	2.500		
Carbonate as CO <sub>3</sub> G/L	0.04		
Calcium as CA	206		
<u>Results reported as Parts Per Million Unless Stated.</u>			

Langelier Saturation Index - 0.17

Analysis By: Rolland Perry  
Date: 3/20/93



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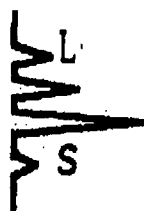
### WATER ANALYSIS

<b>COMPANY</b>	Exxon Company USA		
<b>SAMPLE</b>	Burton Flat Fed. B #2		
<b>SAMPLED BY</b>			
<b>DATE TAKEN</b>	3-17-93		
<b>REMARKS</b>			
<b>Nitrate</b>	0		
<b>Barium as Ba</b>	0		
<b>Carbonate alkalinity PPM</b>	0		
<b>Bicarbonate alkalinity PPM</b>	548		
<b>pH At Lab</b>	7.45		
<b>Specific Gravity @ 60 F</b>	1.012		
<b>Magnesium as Mg</b>	1.566		
<b>Total Hardness as CaCO<sub>3</sub></b>	2.700		
<b>Chlorides as CL</b>	9.531		
<b>Sulfate as SO<sub>4</sub></b>	0		
<b>Iron as Fe</b>	1.5		
<b>Potassium</b>	26.25		
<b>Hydrogen Sulfide</b>	0		
<b>Resistivity Ohms</b>	5.750	@	22.1 C
<b>Total Dissolved Solids</b>	15.250		
<b>Carbonate as CO<sub>3</sub> G/L</b>	0		
<b>Calcium as CA</b>	1.134		

**Results reported as Parts Per Million Unless Stated.**

**Langelier Saturation Index** + 1.28

**Analysis By:** Rolland Perry  
**Date:** 3/20/93

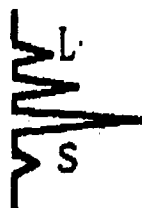


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### WATER ANALYSIS

<b>COMPANY</b>	Exxon Company USA		
<b>SAMPLE</b>	Burton Flat Fed. B #1		
<b>SAMPLED BY</b>			
<b>DATE TAKEN</b>	3-17-93		
<b>REMARKS</b>			
<b>Nitrate</b>	27.5		
<b>Barium as Ba</b>	100		
<b>Carbonate alkalinity PPM</b>	0		
<b>Bicarbonate alkalinity PPM</b>	720		
<b>pH At Lab</b>	6.73		
<b>Specific Gravity @ 60 F</b>	1.065		
<b>Magnesium as Mg</b>	3.596		
<b>Total Hardness as CaCO<sub>3</sub></b>	6.200		
<b>Chlorides as CL</b>	49.420		
<b>Sulfate as SO<sub>4</sub></b>	250		
<b>Iron as Fe</b>	0.5		
<b>Potassium</b>	65.625		
<b>Hydrogen Sulfide</b>	117.9		
<b>Resistivity Ohms</b>	0.140	@	22.3 C
<b>Total Dissolved Solids</b>	84.250		
<b>Carbonate as CO<sub>3</sub> GL</b>	1.10		
<b>Calcium as CA</b>	2.604		
<b>Results reported as Parts Per Million Unless Stated.</b>			
<b>Langelier Saturation Index</b>	+ 0.93		

**Analysis By:** Rolland Perry  
**Date:** 3/20/93



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### WATER ANALYSIS

**COMPANY** Exxon Company USA

**SAMPLE** New Mexico St. CW

**SAMPLED BY** \_\_\_\_\_

**DATE TAKEN** 3-17-93

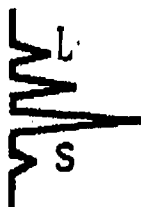
**REMARKS** \_\_\_\_\_

Nitrate	0		
Barium as Ba	62.5		
Carbonate alkalinity PPM	0		
Bicarbonate alkilinity PPM	440		
pH At Lab	6.99		
Specific Gravity @ 60 F	1.033		
Magnesium as Mg	2.146		
Total Hardness as CaCO <sub>3</sub>	3.700		
Clorides as CL	22.945		
Sulfate as SO <sub>4</sub>	425		
Iron as Fe	19.25		
Potassium	1.65		
Hydrogen Sulfide	0		
Resistivity Ohms	0.280	@	22.5 C
Total Dissolved Solids	37.750		
Carbonate as CO <sub>3</sub> G/L	0		
Calcium as CA	1.554		

Results reported as Parts Per Million Unless Stated.

Langelier Saturation Index + 0.74

Analysis By: Rolland Perry  
Date: 3/20/93



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WATER ANALYSIS

COMPANY Exxon Company USA

SAMPLE New Mexico St. EU

SAMPLED BY

DATE TAKEN 3-17-93

REMARKS

Nitrate	0
Barium as Ba	25
Carbonate alkalinity PPM	0
Bicarbonate alkalinity PPM	120
pH At Lab	6.07
Specific Gravity @ 60 F	1.005
Magnesium as Mg	290
Total Hardness as CaCO3	500
Chlorides as Cl	1.059
Sulfate as SO4	0
Iron as Fe	47.5
Potassium	0.825
Hydrogen Sulfide	0
Resistivity Ohms	5.500 @ 22.1 C
Total Dissolved Solids	2.250
Carbonate as CO3 G/L	0.13
Calcium as CA	210

Results reported as Parts Per Million Unless Stated.

Langelier Saturation Index - 1.67

Analysis By: Rolland Perry

Date: 3/20/93



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WATER ANALYSIS

COMPANY Exxon Company USA

SAMPLE South Calrsbad 2-1

SAMPLED BY

DATE TAKEN 3-17-93

REMARKS

Nitrate	0
Barium as Ba	50
Carbonate alkalinity PPM	0
Bicarbonate alkilinity PPM	132
pH At Lab	6.44
Specific Gravity @ 60 F	1.051
Magnesium as Mg	9.164
Total Hardness as CaCO3	15.800
Clorides as CL	49.948
Sulfate as SO4	0
Iron as Fe	70.0
Potassium	2.3
Hydrogen Sulfide	0
Resistivity Ohms	0.180 @ 22.0 C
Total Dissolved Solids	61.000
Carbonate as CO3 G/L	0.28
Calcium as CA	6.636

Results reported as Parts Per Million Unless Stated.

Langeller Saturation Index +0.24

Analysis By: Rolland Perry

Date: 3/20/93





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WATER ANALYSIS

COMPANY Exxon Company USA  
Attention: Mr. Jimmy McBee  
SAMPLE Laguna Granda Fed. #3  
SAMPLED BY Rolland Perry

DATE TAKEN 1/31/92 3:25PM

REMARKS

Barium as Ba	15
Carbonate alkalinity PPM	48
Bicarbonate alkilinity PPM	326
pH At Lab	8.22
Specific Gravity @ 60 F	1.055
Magnesium as Mg	1,712
Total Hardness as CaCO <sub>3</sub>	3,004
Clorides as CL	2,118
Sulfate as SO <sub>4</sub>	180
Iron as Fe	29.5
Potassium	4.90
Hydrogen Sulfide	0
Resistance Mmhoes	6.990
Total Disolved Solids	3,000
Carbonate as CO <sub>3</sub> G/L	0.14
Calcium as CA	1,292

Results reported as Parts Per Million Unless Stated.

Langelier Saturation Index +0.93

Analysis By Rolland Perry  
Date: 2/2/92

UNICHEM INTERNATIONAL

601 NORTH LEECH

P.O. BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : EXXON USA  
DATE : 4-29-81  
FIELD LEASE & WELL : GOURLEY FEDERAL #1  
SAMPLING POINT :  
DATE SAMPLED : 4-20-81

SPECIFIC GRAVITY = 1.009  
TOTAL DISSOLVED SOLIDS = 13995  
PH = 6.12

		ME/L	MG/L
CATIONS			
CALCIUM	(CA)+2	5.2	104.
MAGNESIUM	(MG)+2	6.1	74.5
SODIUM	(NA).CALC.	226.	5199.
ANIONS			
BICARBONATE	(HCO3)-1	5.4	329.
CARBONATE	(CO3)-2	0	0
HYDROXIDE	(OH)-1	0	0
SULFATE	(SO4)-2	4.6	222.
CHLORIDES	(CL)-1	227.	8064.
DISSOLVED GASES			
CARBON DIOXIDE	(CO2)	NOT RUN	
HYDROGEN SULFIDE	(H2S)	NOT RUN	
OXYGEN	(O2)	NOT RUN	
IRON(TOTAL)	(FE)		104.
BARIUM	(BA)+2	NOT RUN	
STRONTIUM	(SR)+2	NOT RUN	

SCALING INDEX	TEMP
	30C
	86F
CARBONATE INDEX	-1.5
CALCIUM CARBONATE SCALING	UNLIKELY
SULFATE INDEX	-8.9
CALCIUM SULFATE SCALING	UNLIKELY