

CASE NO. 4021

and

CASE NO. 4022

APPLICATIONS OF ERNEST A. HANSON AND CHARLES B. READ FOR AN  
EXCEPTION TO ORDER NO. R-3221, AS AMENDED,  
LEA COUNTY, NEW MEXICO

Applicants, in the above-styled cause, seek an exception to the provisions of Oil Conservation Commission Order No. R-3221, as amended, to permit the continued use of unlined surface pits for disposal of produced water in the West Teas-Yates-Seven Rivers Pool, Lea County, New Mexico.

THE FOLLOWING EXHIBITS ARE IN SUPPORT OF THIS APPLICATION.

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R-33-E

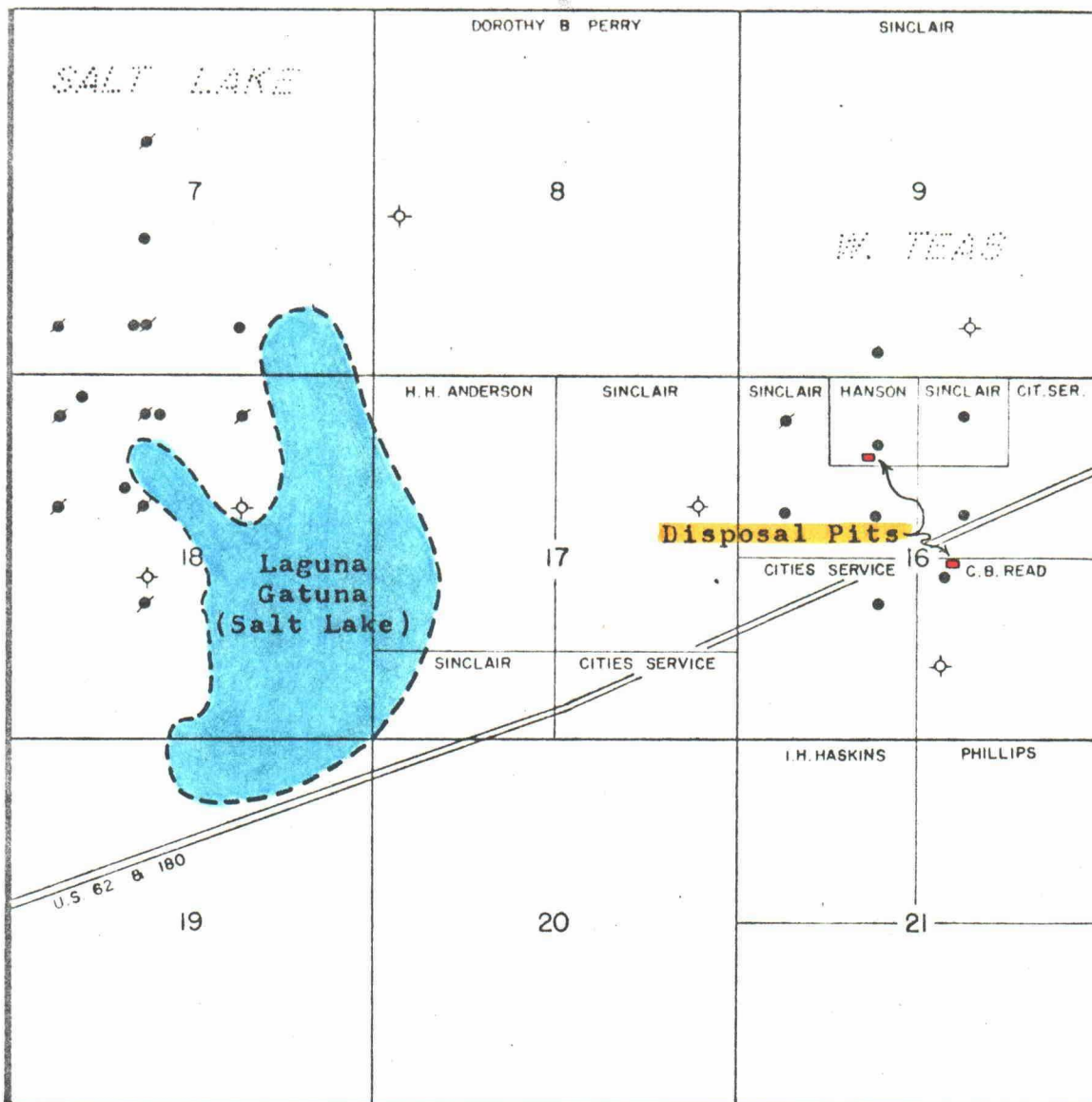


EXHIBIT NO. 1

West Teas Pool  
T-20-S, R-33-E, N.M.P.M.  
Lea County, New Mexico

LOCATION MAP

Scale: 2 Inches = 1 Mile  
Date: January, 1969

R-33-E

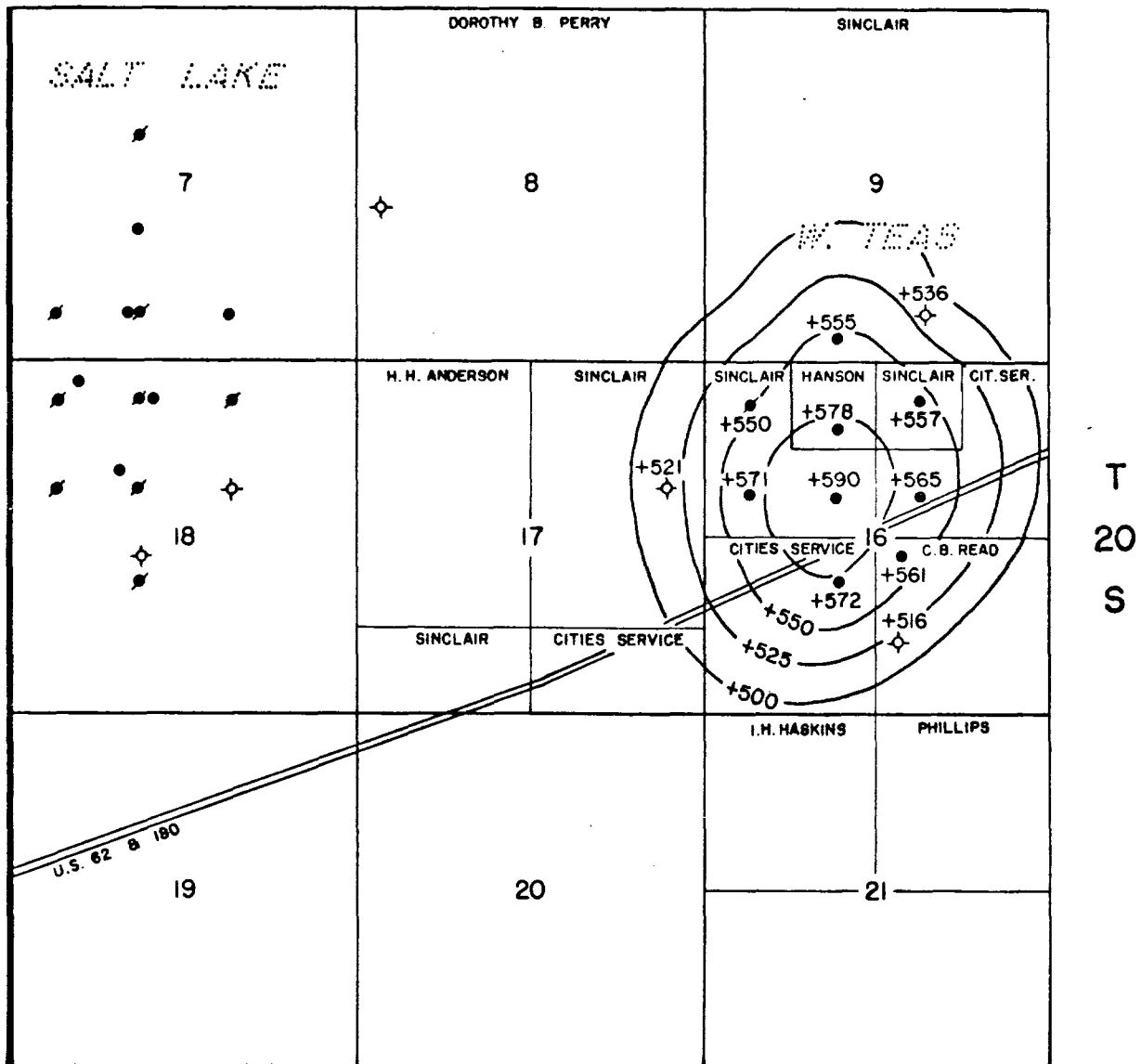


EXHIBIT NO. 2

STRUCTURE CONTOUR MAP

West Teas Pool  
T-20-S, R-33-E, N.M.P.M.  
Lea County, New Mexico

Contour Datum: Top of Yates Fm.  
Contour Interval: 25 Feet  
Scale: 2 Inches = 1 Mile  
Date: January, 1969

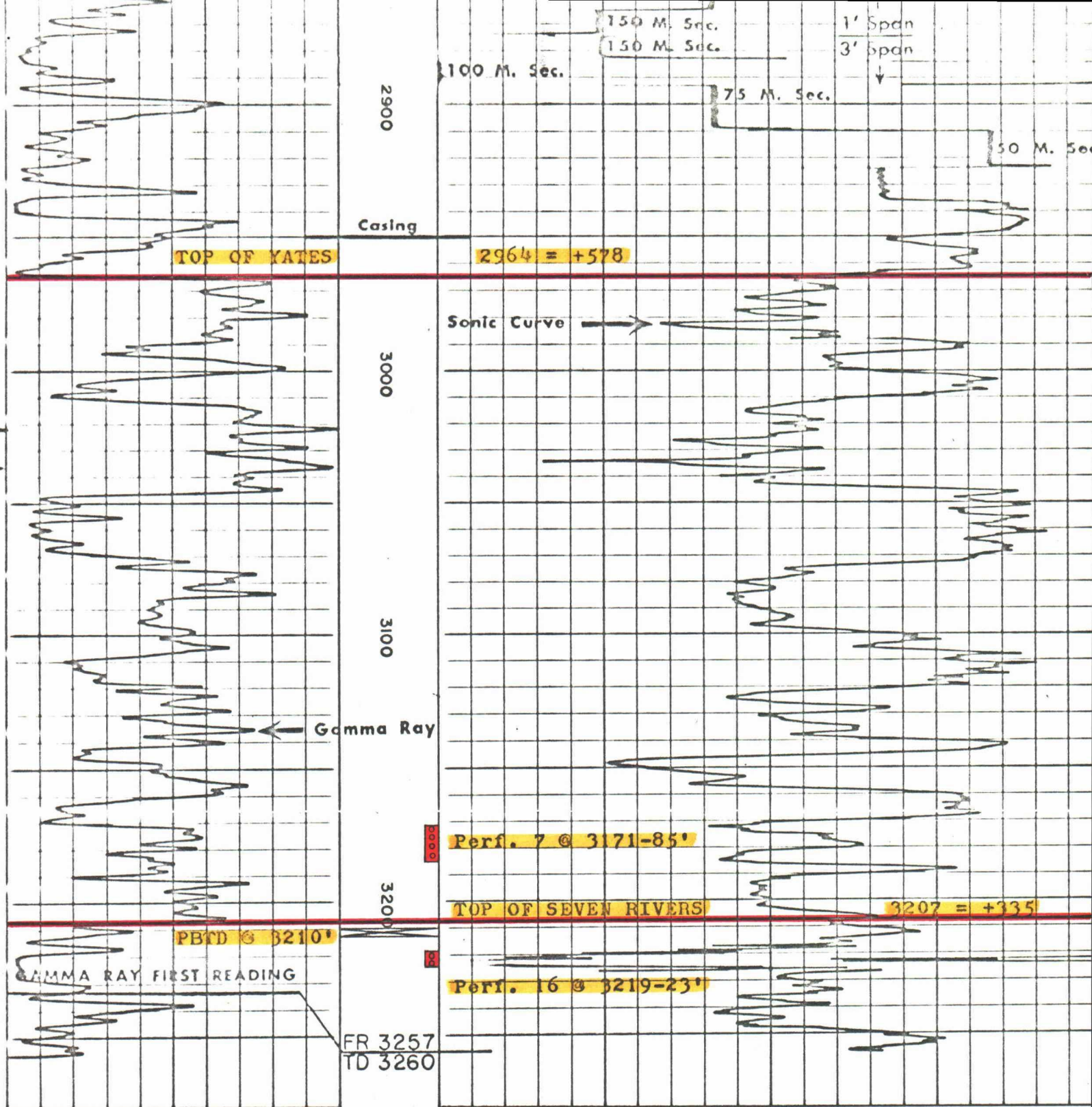


EXHIBIT NO. 3

Gamma Ray - Sonic Log  
 Ernest A. Hanson - #1 Atlantic State  
 990' FNL & 1980' FWL  
 Sec. 16, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico

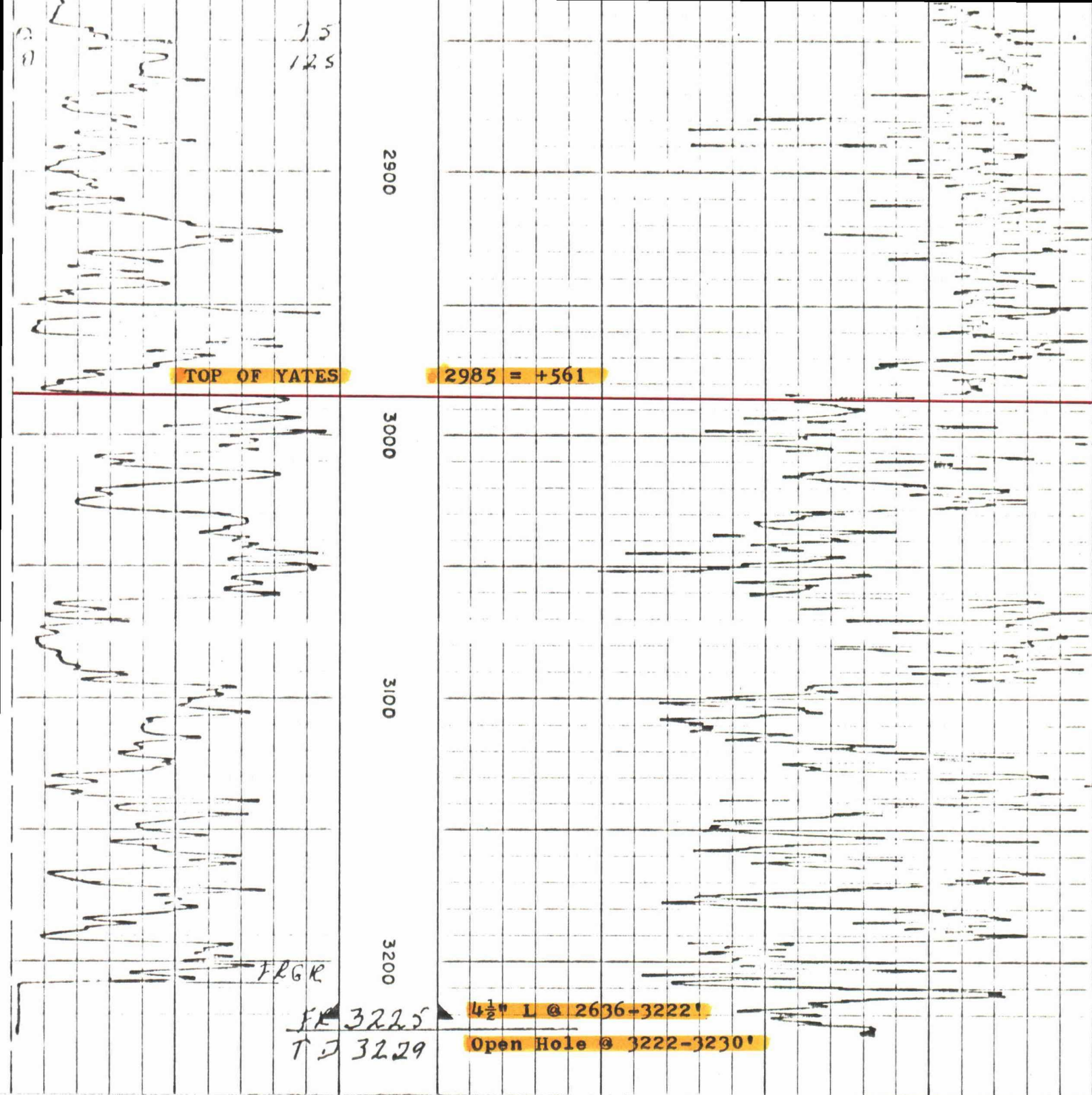


EXHIBIT NO. 3-A

Gamma Ray - Sonic Log  
Charles B. Read - #1 Snyder  
2310' FSL & FEL  
Sec. 16, T-20-S, R-33-E, N.M.P.M.  
Lea County, New Mexico

EXHIBIT NO. 4

WELL DATA

West Teas Pool  
T-20-S, R-33-E, N.M.P.M.  
Lea County, New Mexico

| NAME                       | LOCATION   | COMPLETE | DEPTH             | CASING                    | PROD.<br>FM. | PROD.<br>DEPTH | TREATMENT  | I.P.P.          | P&A     | ACCUM.<br>PROD. |
|----------------------------|------------|----------|-------------------|---------------------------|--------------|----------------|------------|-----------------|---------|-----------------|
| Sinclair #1 Federal Lea    | O- 9-20-33 | 5- 6-60  | 3300'             | 5" L @ 2974-<br>3300'     | P&A          |                | SCF 7,000  | Dry             | 5- 6-60 |                 |
| Sinclair #2 Federal Lea    | N- 9-20-33 | 8-16-63  | 3350'<br>PB 3310' | 5" L @ 2875-<br>3350'     | Yates        | 3180-3196'     | SCF 10,000 | 58 BO + 2 BWPD  |         | 84,937          |
| Cities Service #1 State EF | G-16-20-33 | 7-25-60  | 3278'<br>PB 3203' | 5" L @ 2925-<br>3275'     | Yates        | 3166-3208'     | SCF 29,000 | 51 BO + 39 BWPD |         | 103,242         |
| Cities Service #2 State EF | K-16-20-33 | 1-31-61  | 3225'<br>PB 3224' | 5" L @ 2898-<br>3225'     | Yates        | 3094-3208'     | SCF 10,000 | 20 BO + 5 BWPD  |         | 22,770          |
| Hanson #1 Atlantic State   | C-16-20-33 | 3- 1-61  | 3260'             | 4½" @ 3260'               | Yates        | 3171-3185'     | SCF 20,000 | 58 BO + 0 BWPD  |         | 78,641          |
| Read #1 Snyder             | J-16-20-33 | 11- 2-64 | 3230'             | 4½" L @ 2636-<br>3222'    | 7-R          | 3222-3230'     | Natural    | 42 BOHD         |         | 67,404          |
| Read #2 Snyder             | O-16-20-33 | 5-17-65  | 3295'             | 10-3/4" @ 365'            | P&A          |                |            | Dry             | 5-17-65 |                 |
| Sinclair #1 St. Lea 886    | F-16-20-33 | 12- 5-59 | 3325'<br>PB 3315' | 5½" @ 3325'               | 7-R          | 3220-3232'     | Acid 500   | 586 BOHD        |         | 130,417         |
| Sinclair #2 St. Lea 886    | B-16-20-33 | 4- 4-60  | 3360'<br>PB 3220' | 5" L @ 2895-<br>3274'     | Yates        | 3182-3206'     | SCF 4,000  | 92 BOHD         |         | 126,069         |
| Sinclair #3 St. Lea 886    | E-16-20-33 | 4- 8-60  | 3260'<br>PB 3226' | 5" L @ 2901-<br>3260'     | Yates        | 3166-3195'     | Acid 500   | 1632 BOHD       |         | 125,516         |
| Sinclair #2 St. Lea 6019   | D-16-20-33 | 5-21-60  | 3297'<br>PB 3263' | 2-7/8" L @ 1028-<br>3297' | Yates        | 3194-3199'     | SCF 1500   | 47 BO + 31 BWPD | 1965    | 11,861          |
| Dyrom #1 Federal 17        | H-17-20-33 | 7-30-62  | 3286'             | 7" @ 2944'                | P&A          |                |            | Dry             | 7-30-62 |                 |

SAMPLE NO. \_\_\_\_\_

THE WESTERN COMPANY  
Service Laboratory

WATER ANALYSIS

|           |                    |                   |                |
|-----------|--------------------|-------------------|----------------|
| Operator  | Hanson Oil Company | Date Sampled      | 5-10-68        |
| Well      | Atlantic State #1  | Date Received     | 5-14-68        |
| Field     | Salt Lake          | Submitted by      | Hobbs District |
| Formation | Yates              | Worked by         | Jones          |
| Depth     | 3171 ~ 3185'       | Other Description |                |
| County    | Lea, New Mexico    |                   |                |

CHEMICAL DETERMINATIONS

|                      |                  |                    |                   |
|----------------------|------------------|--------------------|-------------------|
| Density              | 1.010 @ 76°F     | pH                 | 7.0               |
| Iron                 | Very Faint Trace | Hydrogen Sulfide   | Very Strong Trace |
| Sodium and Potassium | 4,540 ppm        | Bicarbonate        | 1,086 ppm         |
| Calcium              | 800 ppm          | Sulfate            | 2,840 ppm         |
| Magnesium            | 316 ppm          | Phosphate          | ppm               |
| Chloride             | 6,800 ppm        | as Sodium Chloride | ppm               |

Remarks:

for Stiff type plot (in meq./l.)

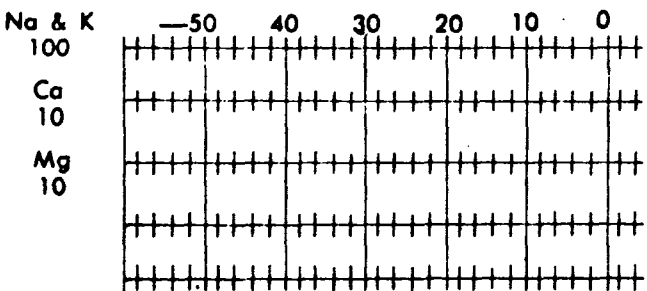


EXHIBIT NO. 5-A

WATER ANALYSIS

Hanson - #1 Atlantic State  
Sec. 16, T-20-S, R-33-E, N.M.P.M.  
Lea County, New Mexico

Per

**HALLIBURTON DIVISION LABORATORY**  
**HALLIBURTON COMPANY**  
**MIDLAND DIVISION**

**LABORATORY WATER ANALYSIS**No. W1-354-68To Charles B. ReadDate September 5, 1968Box 2126Roswell, New Mexico 88201

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by \_\_\_\_\_ Date Rec. 8-30-68

Well No. \_\_\_\_\_ Depth \_\_\_\_\_ Formation \_\_\_\_\_

County \_\_\_\_\_ Field Lynch Source \_\_\_\_\_

|                                        | Humble St. #1 | Sinclair St. #1 | Snyder #1   |
|----------------------------------------|---------------|-----------------|-------------|
| Resistivity .....                      | .642 @ 71 F   | .510 @ 71 F     | .644 @ 76 F |
| Specific Gravity .....                 | 1.005         | 1.006           | 1.004       |
| pH .....                               | 6.0           | 6.7             | 6.2         |
| Calcium (Ca) .....                     |               |                 | *MPL        |
| Magnesium (Mg) .....                   |               |                 |             |
| Chlorides (Cl) .....                   | 5,500         | 7,000           | 5,500       |
| Sulfates (SO <sub>4</sub> ) .....      | 1,750         | 1,400           | 1,340       |
| Bicarbonates (HCO <sub>3</sub> ) ..... |               |                 |             |
| Soluble Iron (Fe) .....                |               |                 |             |
| cc: <u>Mr. Gene Snow</u>               |               |                 |             |
| <u>606 South 13.</u>                   |               |                 |             |
| <u>Lovington, N M</u>                  |               |                 |             |

Remarks:

\*Milligrams per liter

Respectfull

Analyst: Frank Whitfield

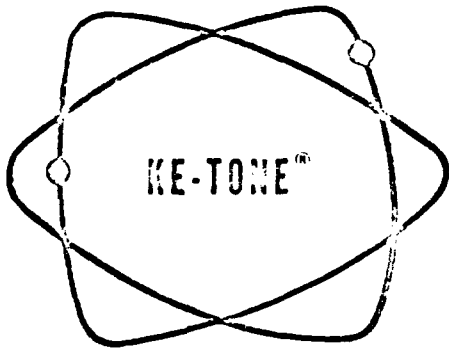
cc:

**EXHIBIT NO. 5-B****WATER ANALYSIS**

**Read - #1 Snyder**  
**Sec. 16, T-20-S, R-33-E, N.M.P.M.**  
**Lea County, New Mexico**

**NO-**

This report is limited to the described sample tested. Any use for any loss or damage, whether it be to act or omission, is



# UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company R. F. Montgomery, et al

Field \_\_\_\_\_

Lease Brooks T-7-3 Sampling Date 9/19/68Type of Sample Wellhead

## WATER ANALYSIS

*Unit 0 7-20-33*

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 45.91  | 920    |
| Magnesium (Mg++)                                        | 32.24  | 392    |
| Sodium (Na+) (cal.)                                     | 184.81 | 4249   |
|                                                         |        |        |
|                                                         |        |        |
| Bicarbonate (HCO <sub>3</sub> )                         | 7.40   | 451    |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH-)                                         | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 66.62  | 3200   |
| Chloride (Cl-)                                          | 188.94 | 6700   |
|                                                         |        |        |
|                                                         |        |        |
|                                                         |        |        |
| 7.8ph c @ 68 °F                                         |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 78.15  | 3908   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 7.40   | 370    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 70.75  | 3538   |
| Alkalinity as CaCO <sub>3</sub>                         | 7.40   | 370    |
| Specific Gravity c 68° F                                | 1.010  |        |

\* mg/l = milligrams per Liter

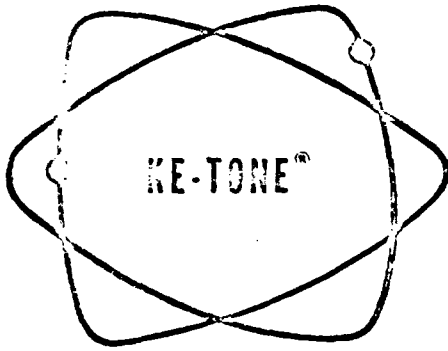
\* me/l = milliequivalents per Liter

EXHIBIT NO. 5-C

## WATER ANALYSIS

Minerals, Inc. - #1 Bass  
 Sec. 18, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico

*Notes: 5/1*



## UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, Incorporated

Field \_\_\_\_\_

Lease Bass #2Sampling Date 9/19/68Type of Sample Wellhead

## WATER ANALYSIS

*F 18-20.33*

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 51.90  | 1040   |
| Magnesium (Mg++)                                        | 32.24  | 392    |
| Sodium (Na+) (cal.)                                     | 177.10 | 4072   |
| Bicarbonate (HCO <sub>3</sub> -)                        | 13.40  | 817    |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH-)                                         | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 64.54  | 3100   |
| Chloride (Cl-)                                          | 183.30 | 6500   |
| 6.9 pH c @ 68 °F                                        |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 84.14  | 4207   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 13.40  | 670    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 70.74  | 3537   |
| Alkalinity as CaCO <sub>3</sub>                         | 13.40  | 670    |
| Specific Gravity c 68° F                                | 1.010  |        |

\* mg/l = milligrams per Liter

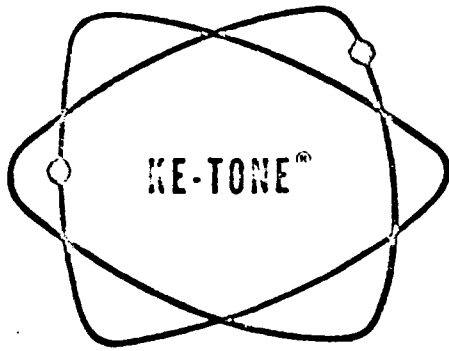
\* me/l = milliequivalents per Liter

EXHIBIT NO. 5-D

## WATER ANALYSIS

Minerals, Inc. - #2 Bass  
 Sec. 18, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico

////////// *Minerals, Inc.*



# UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, Incorporated

Field \_\_\_\_\_

Lease Bass #1 Sampling Date 9/19/88Type of Sample Wellhead

## WATER ANALYSIS

C 18-20-33

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 43.91  | 880    |
| Magnesium (Mg++)                                        | 32.24  | 392    |
| Sodium (Na+) (cal.)                                     | 180.70 | 4154   |
| Bicarbonate (HCO <sub>3</sub> -)                        | 16.60  | 1012   |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH-)                                         | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 54.13  | 2600   |
| Chloride (Cl-)                                          | 186.12 | 6600   |
| 6.9 pH @ 68 °F                                          |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 76.15  | 3808   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 16.60  | 830    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 59.55  | 2978   |
| Alkalinity as CaCO <sub>3</sub>                         | 16.60  | 830    |
| Specific Gravity @ 68° F                                | 1.010  |        |

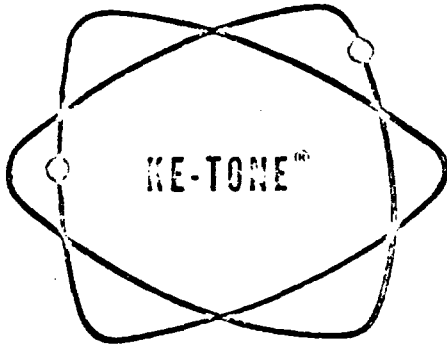
\* mg/l = milligrams per Liter

\* me/l = milliequivalents per Liter

**EXHIBIT NO. 5-E****WATER ANALYSIS**

Minerals, Inc. - #3 Bass  
 Sec. 18, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico

Maheba Wa



# UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, IncorporatedField Salt Lake FieldLease Bass #3 Sampling Date 10/24/68

Type of Sample \_\_\_\_\_

## WATER ANALYSIS

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 65.77  | 1318   |
| Magnesium (Mg++)                                        | 53.13  | 646    |
| Sodium (Na+) (cal.)                                     | 728.10 | 16,739 |
| Bicarbonate (HCO <sub>3</sub> )                         | 19.57  | 1194   |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH-)                                         | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 115.80 | 5562   |
| Chloride (Cl-)                                          | 711.63 | 25,235 |
| 6.7 ph c @ 68 °F                                        |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 118.90 | 5945   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 19.57  | 979    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 99.33  | 4967   |
| Alkalinity as CaCO <sub>3</sub>                         | 19.57  | 979    |
| Specific Gravity c 68° F                                | 1.030  |        |

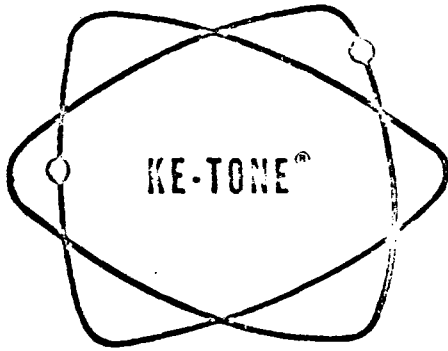
\* mg/l = milligrams per Liter

\* me/l = milliequivalents per Liter

## EXHIBIT NO. 5-F

## WATER ANALYSIS

R. F. Montgomery - #3 Brooks "7"  
 Sec. 7, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico



# UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company R. F. Montgomery, et al

Field \_\_\_\_\_

Lease Brooks T-7-4Sampling Date 9/19/68Type of Sample Wellhead

## WATER ANALYSIS

*K - 7-20-33*

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 36.93  | 740    |
| Magnesium (Mg++)                                        | 27.63  | 336    |
| Sodium (Na+) (cal.)                                     | 169.67 | 3901   |
| Bicarbonate (HCO <sub>3</sub> )                         | 21.00  | 1281   |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH -)                                        | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 46.85  | 2250   |
| Chloride (Cl -)                                         | 166.38 | 5900   |
| 6.6 me/l @ 68° F                                        |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 64.56  | 3228   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 21.00  | 1050   |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 43.56  | 2178   |
| Alkalinity as CaCO <sub>3</sub>                         | 21.00  | 1050   |
| Specific Gravity @ 68° F                                | 1.005  |        |

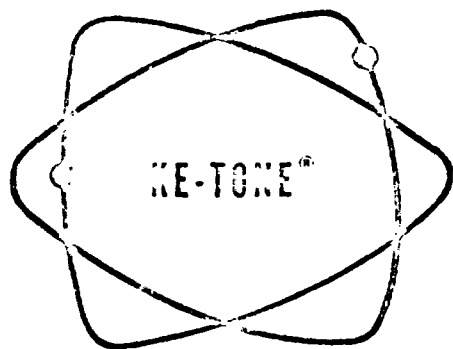
\* mg/l = milligrams per Liter

\* me/l = milliequivalents per Liter

EXHIBIT NO. 5-G

## WATER ANALYSIS

R. F. Montgomery - #4 Brooks "7"  
 Sec. 7, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico



## UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company R. F. Montgomery, et al

Field \_\_\_\_\_

Lease Brooks T-7-6Sampling Date 9/19/68Type of Sample WellheadWATER ANALYSIS Unit N 7-20-33

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 34.93  | 700    |
| Magnesium (Mg++)                                        | 27.63  | 336    |
| Sodium (Na+) (cal.)                                     | 163.29 | 3754   |
| Bicarbonate (HCO <sub>3</sub> -)                        | 26.59  | 1622   |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH-)                                         | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 38.52  | 1850   |
| Chloride (Cl-)                                          | 160.74 | 5700   |
| 6.7 <sup>ph</sup> c @ 68 °F                             |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 62.56  | 3128   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 26.56  | 1330   |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 36.00  | 1800   |
| Alkalinity as CaCO <sub>3</sub>                         | 26.56  | 1330   |
| Specific Gravity c 68° F                                | 1.005  |        |

\* mg/l = milligrams per Liter

\* me/l = milliequivalents per Liter

EXHIBIT NO. 5-H

## WATER ANALYSIS

R. F. Montgomery - #6 Brooks "7"  
 Sec. 7, T-20-S, R-33-E, N.M.P.M.  
 Lea County, New Mexico

*Notes: 1/1*

EXHIBIT NO. 6-A

WATER WELL INFORMATION

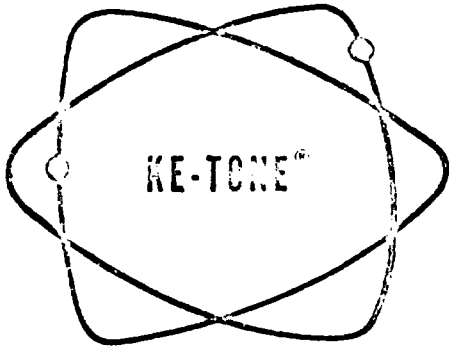
T-20-S, R-33-E, N.M.P.M.  
Lea County, New Mexico

Township-20-South, Range-33-East

- Sec. 4  $SW\frac{1}{4}NW\frac{1}{4}SE\frac{1}{4}$  Quaternary  
T. D. 58'. ABANDONED STOCK. Rancher states water was gyp and cattle would walk greater distance to another water source.
- Sec. 5  $SW\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$  Triassic  
T. D. 680'. COMMERCIAL - was used for oil well drilling.
- Sec. 18  $NE\frac{1}{4}NW\frac{1}{4}$  Triassic  
T. D. 450' (approx). ABANDONED. Well was reportedly drilled in 1942 and water was not potable. Used only for washing in old oil field camp.
- Sec. 21  $NW\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$  Quaternary  
T. D. 52'. ABANDONED STOCK.
- Sec. 24  $SE\frac{1}{4}NE\frac{1}{4}NW\frac{1}{4}$  Triassic  
T. D. 676'. STOCK.

Township-20-South, Range-32-East

- Sec. 1  $SW\frac{1}{4}NW\frac{1}{4}SW\frac{1}{4}$  Quaternary  
No T. D. recorded. NON-PRODUCING. Rancher states well was too salty for cattle to drink.
- Sec. 23  $SW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$  Quaternary (2 wells)  
T. D. DOMESTIC AND STOCK. These wells are approx. 2 miles from salt lake being used for surface disposal.
- Sec. 25  $NW\frac{1}{4}NW\frac{1}{4}NW\frac{1}{4}$  Quaternary (2 wells)  
T. D. 65' (2 wells) Both STOCK.
- Sec. 36  $SW\frac{1}{4}NE\frac{1}{4}NE\frac{1}{4}$  Quaternary (3 wells)  
T. D. 50'. STOCK AND DOMESTIC.  
T. D. 65'. ABANDONED.  
T. D. 80'. NON-PRODUCING.



# UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, Incorporated

Field \_\_\_\_\_

Lease Salt LakeSampling Date 9/19/68

Type of Sample \_\_\_\_\_

## WATER ANALYSIS

*Sec. 7, 18 20-33*

| IONIC FORM                                              | me/l *  | mg/l *  |
|---------------------------------------------------------|---------|---------|
| Calcium (Ca++)                                          | 9.98    | 200     |
| Magnesium (Mg++)                                        | 1667.17 | 20,272  |
| Sodium (Na+) (cal.)                                     | 5395.75 | 124,048 |
| Bicarbonate (HCO <sub>3</sub> -)                        | 14.80   | 902     |
| Carbonate (CO <sub>3</sub> ++)                          | NOT     | FOUND   |
| Hydroxide (OH-)                                         | NOT     | FOUND   |
| Sulphate (SO <sub>4</sub> -)                            | 2602.50 | 125,000 |
| Chloride (Cl-)                                          | 4455.60 | 158,000 |
| 7.7 pH @ 68 °F                                          |         |         |
| Dissolved Solids on Evap. at 103° - 105° C              |         |         |
| Hardness as Ca CO <sub>3</sub>                          | 1677.15 | 83,858  |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 14.80   | 740     |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 1662.35 | 83,118  |
| Alkalinity as CaCO <sub>3</sub>                         | 14.80   | 740     |
| Specific Gravity @ 68° F                                | 1.250+  |         |

\* mg/l = milligrams per liter

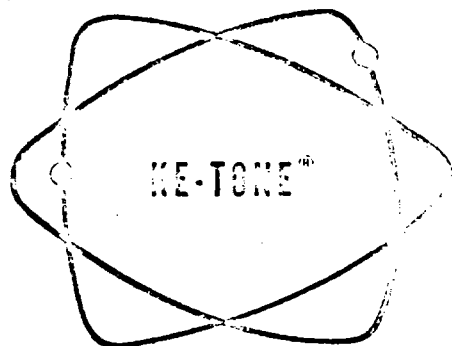
\* me/l = milliequivalents per liter

EXHIBIT NO. 6-B

## LAGUNA GATUNA WATER ANALYSIS

Sec. 7 & 18, T-20-S, R-33-E  
Lea County, New Mexico

////////////////////// *12-10-68*



# UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, IncorporatedField Salt Lake FieldLease Salt Springs Sampling Date 10/24/68

Type of Sample \_\_\_\_\_

## WATER ANALYSIS

SUN NE 10-20-73

| IONIC FORM                                              | meq/l * | mg/l * |
|---------------------------------------------------------|---------|--------|
| Calcium (Ca++)                                          | 27.59   | 553    |
| Magnesium (Mg++)                                        | 586.62  | 7133   |
| Sodium (Na+) (cal.)                                     | 2389.29 | 54,930 |
| Bicarbonate (HCO <sub>3</sub> -)                        | 4.80    | 292    |
| Carbonate (CO <sub>3</sub> -)                           | 7.60    | 228    |
| Hydroxide (OH-)                                         | NOT     | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 1532.14 | 73,590 |
| Chloride (Cl-)                                          | 1458.96 | 51,736 |
| Dissolved Solids on Evap. at 103° - 105° C              |         |        |
| Hardness as CaCO <sub>3</sub>                           | 614.21  | 30,711 |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 12.40   | 620    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 601.81  | 30,091 |
| Alkalinity as CaCO <sub>3</sub>                         | 12.40   | 620    |
| Specific Gravity @ 68° F                                | 1.115   |        |

8.4 ph c @ 68 °F

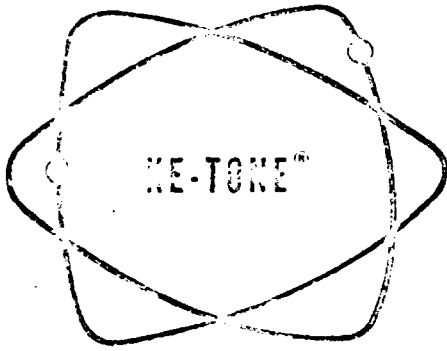
\* mg/l = milligrams per Liter

\* meq/l = milliequivalents per Liter

EXHIBIT NO. 6-C

## SALT SPRINGS WATER ANALYSIS

SW $\frac{1}{4}$ NE $\frac{1}{4}$ , Sec. 19, T-20-S, R-33-E  
Lea County, New Mexico



## UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, Incorporated

Field Salt Lake Field

Lease Bingham Well Sampling Date 10/24/68

Type of Sample NW 1/4 NW 1/4 Sec. 21 - T-20-S

## WATER ANALYSIS

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 19.86  | 398    |
| Magnesium (Mg++)                                        | 17.19  | 209    |
| Sodium (Na+) (cal.)                                     | 84.21  | 1936   |
| Bicarbonate (HCO <sub>3</sub> -)                        | 3.21   | 196    |
| Carbonate (CO <sub>3</sub> -)                           | NOT    | FOUND  |
| Hydroxide (OH-)                                         | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> -)                            | 18.84  | 905    |
| Chloride (Cl-)                                          | 99.21  | 3518   |
| 7.5 ph c @ 68 °F                                        |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 37.05  | 1853   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 3.21   | 161    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 33.84  | 1692   |
| Alkalinity as CaCO <sub>3</sub>                         | 3.21   | 161    |
| Specific Gravity @ 68° F                                | 1.005  |        |

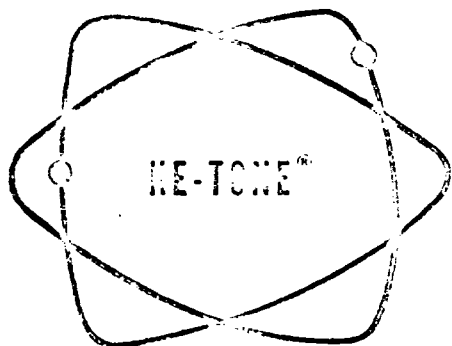
\* mg/l = milligrams per Liter

\* me/l = milliequivalents per Liter

EXHIBIT NO. 6-D

## BINGHAM WELL WATER ANALYSIS

NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ , Sec. 21, T-20-S, R-33-E  
Lea County, New Mexico



## UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, IncorporatedField Salt Lake FieldLease Well #3 Wells Sampling Date 10/24/68

Type of Sample \_\_\_\_\_

## WATER ANALYSIS, WISE 4-20-77

| IONIC FORM                                              | me/l * | mg/l * |
|---------------------------------------------------------|--------|--------|
| Calcium (Ca++)                                          | 21.61  | 433    |
| Magnesium (Mg++)                                        | 122.37 | 1488   |
| Sodium (Na+) (cal.)                                     | 561.94 | 12,919 |
| Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )            | 4.60   | 286    |
| Carbonate (CO <sub>3</sub> <sup>-2</sup> )              | 0.80   | 24     |
| Hydroxide (OH <sup>-</sup> )                            | NOT    | FOUND  |
| Sulphate (SO <sub>4</sub> <sup>-2</sup> )               | 334.54 | 16,068 |
| Chloride (Cl <sup>-</sup> )                             | 365.98 | 12,978 |
| 8.3 ph c @ 68 °F                                        |        |        |
| Dissolved Solids on Evap. at 103° - 105° C              |        |        |
| Hardness as Ca CO <sub>3</sub>                          | 143.98 | 7122   |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 5.40   | 270    |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 138.58 | 6922   |
| Alkalinity as CaCO <sub>3</sub>                         | 5.40   | 270    |
| Specific Gravity c 68° F                                | 1.030  |        |

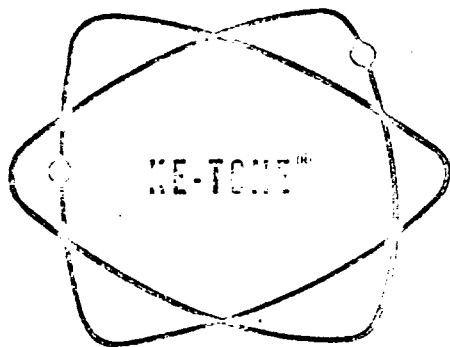
\* mg/l = milligrams per Liter

\* me/l = milliequivalents per Liter

EXHIBIT NO. 6-E

## THREE WELLS WATER ANALYSIS

NW<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub>, Sec. 4, T-20-S, R-33-E  
Lea County, New Mexico



## UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Minerals, IncorporatedField Salt LakeLease Bass #1 Water Well Sampling Date 11/4/68Type of Sample 18-20S-33E

## WATER ANALYSIS

| IONIC FORM                                              | me/l * | mg/l *    |
|---------------------------------------------------------|--------|-----------|
| Calcium (Ca++)                                          | 59.33  | 1189      |
| Magnesium (Mg++)                                        | 105.68 | 1285      |
| Sodium (Na+) (calculated)                               | 508.85 | 11.698    |
| Iron                                                    |        | 212       |
| Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )            | 0.20   | 12        |
| Carbonate (CO <sub>3</sub> <sup>-2</sup> )              |        | Not Found |
| Hydroxide (OH <sup>-</sup> )                            |        | Not Found |
| Sulphate (SO <sub>4</sub> <sup>-2</sup> )               | 81.09  | 3895      |
| Chloride (Cl <sup>-</sup> )                             | 592.57 | 21,013    |
| 5.9 pH @ 68 °F                                          |        |           |
| Dissolved Solids on Evap. at 103° - 105° C              |        |           |
| Hardness as CaCO <sub>3</sub>                           | 165.01 | 8251      |
| Carbonate Hardness as CaCO <sub>3</sub> (temporary)     | 0.20   | 10        |
| Non-Carbonate Hardness as CaCO <sub>3</sub> (permanent) | 164.81 | 8241      |
| Alkalinity as CaCO <sub>3</sub>                         | 0.20   | 10        |
| Specific Gravity @ 68° F                                | 1.025  |           |

\* me/l = milligrams per Liter

\* mg/l = milliequivalents per Liter

Calcium Carbonate Scaling Index - Negative at 86°F  
 Calcium Sulfate Scaling Index - Negative

EXHIBIT NO. 6-F

BASS WATER WELLS  
 WATER ANALYSIS

Sec. 18, T-20-S, R-33-E  
 Lea County, New Mexico

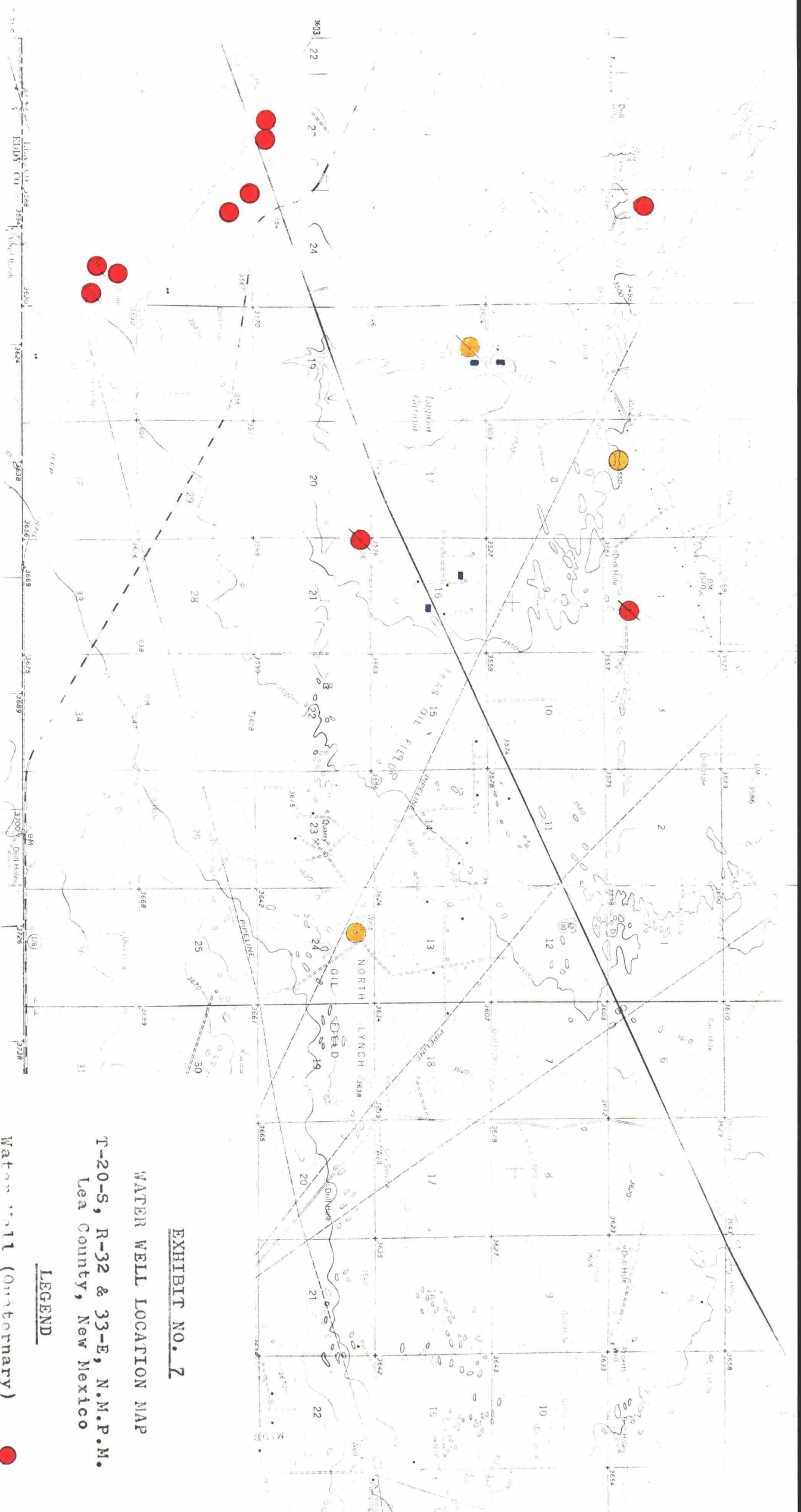


EXHIBIT NO. 7

WATER WELL LOCATION MAP  
T-20-S, R-32 & 33-E, N.M.P.M.  
Lea County, New Mexico

LEGEND

- Water Well (Oreoternary) ●
- Water Well (Triassic) ●
- Disposal Pit ●
- At ... 11 ●