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William F. Carr

wcarr@hollandhart.com

March 15, 2002

**VIA HAND DELIVERY**

David R. Catanach  
Hearing Examiner  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

CE: HND 19 MAR 02  
10:00 AM

**Re: New Mexico Oil Conservation Division Case No. 12812:  
Application of Agave Energy Company for Approval of  
a Salt Water Disposal Well, Eddy County, New Mexico.**

Dear Mr. Catanach:

In response to your request at the March 7, 2002 examiner hearing on the above-referenced application, enclosed are five recent analyses of water samples from wells in the area of the Metropolis "AZL" State Com. Well No. 1. Two of the samples are fresh water well samples and three are from salt water disposal wells in the Dagger Draw Field which are representative of the water which Agave proposes to dispose in this well. The locations of the wells are as follows:

**Fresh Water Samples:**

|                            |                                                                      |
|----------------------------|----------------------------------------------------------------------|
| Yates Wilkinson water well | SE/4 SE/4 SE/4 , Section 26, Township 18 South, Range 25 East, NMPM. |
| Agave Water Well           | SE/4 SE/4 SE/4, Section 26, Township 18 South, Range 25 East, NMPM.  |

**Salt Water Disposal Samples:**

|                     |                                                            |
|---------------------|------------------------------------------------------------|
| Monsanto Foster SWD | Unit D, Section 5, Township 20 South, Range 25 East, NMPM. |
| Roy AET # 3 SWD     | Unit P, Section 7, Township 19 South, Range 25 East, NMPM. |

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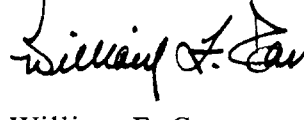
March 15, 2002

Page 2

Routh NU Deep Com # 2 SWD    Unit B, Section 14, Township 19  
South, Range 24 East, NMPM.

If you need additional information from Agave Energy Company to  
proceed with your consideration of this application, please advise.

Sincerely yours,

A handwritten signature in black ink, appearing to read "William F. Carr". The signature is fluid and cursive, with a large initial "W" and a stylized "C".

William F. Carr

cc:    Mr. George Freeman  
      Yates Petroleum Corporation  
      105 South Fourth Street  
      Artesia, New Mexico 87210

Stuart R. Butzier, Esq. (w/ enclosures)  
Modrall Sperling Roehl Harris & Sisk, P.A.  
Post Office Box 2168  
Albuquerque, New Mexico 87103-2168



## Baker Petrolite

422 W. Main  
P.O. Box 1140  
Artesia, NM 88210 USA  
Tel 505-746-3588  
Fax 505-746-3580  
www.bakerhughes.com/bapt

## WATER ANALYSIS REPORT

Company : Yates Petroleum Date : 14 Mar 02  
Address : Artesia, NM Date Sampled : 14 Mar 02  
Lease : ~~Wilkinson~~ Wilkinson Analysis No. :  
Well : Fresh Water  
Sample Pt. : Well Head

| ANALYSIS                              |       | mg/L  |      | * meq/L |
|---------------------------------------|-------|-------|------|---------|
| 1. pH                                 | 7.5   |       |      |         |
| 2. H2S                                | 0     |       |      |         |
| 3. Specific Gravity                   | 1.001 |       |      |         |
| 4. Total Dissolved Solids             |       | 975.1 |      |         |
| 5. Suspended Solids                   |       | N/R   |      |         |
| 6. Dissolved Oxygen                   |       | N/R   |      |         |
| 7. Dissolved CO2                      |       | 15    |      |         |
| 8. Oil In Water                       |       | N/R   |      |         |
| 9. Phenolphthalein Alkalinity (CaCO3) |       |       |      |         |
| 10. Methyl Orange Alkalinity (CaCO3)  |       |       |      |         |
| 11. Bicarbonate                       | HCO3  | 124.4 | HCO3 | 2.0     |
| 12. Chloride                          | Cl    | 213.0 | Cl   | 6.0     |
| 13. Sulfate                           | SO4   | 340.0 | SO4  | 7.1     |
| 14. Calcium                           | Ca    | 120.0 | Ca   | 6.0     |
| 15. Magnesium                         | Mg    | 37.7  | Mg   | 3.1     |
| 16. Sodium (calculated)               | Na    | 138.8 | Na   | 6.0     |
| 17. Iron                              | Fe    | 1.2   |      |         |
| 18. Barium                            | Ba    | N/R   |      |         |
| 19. Strontium                         | Sr    | N/R   |      |         |
| 20. Total Hardness (CaCO3)            |       | 455.0 |      |         |

## PROBABLE MINERAL COMPOSITION

| *milli equivalents per Liter       |         | Compound    | Equiv wt X meq/L | = mg/L |
|------------------------------------|---------|-------------|------------------|--------|
| +-----+                            | +-----+ |             |                  |        |
| 6   *Ca <----- *HCO3               | 2       | Ca (HCO3) 2 | 81.0             | 165    |
| -----  /----->                     | -----   | CaSO4       | 68.1             | 269    |
| 3   *Mg -----> *SO4                | 7       | CaCl2       | 55.5             |        |
| -----  <-----/                     | -----   | Mg (HCO3) 2 | 73.2             |        |
| 6   *Na -----> *Cl                 | 6       | MgSO4       | 60.2             | 187    |
| +-----+                            | +-----+ | MgCl2       | 47.6             |        |
| Saturation Values Dist. Water 20 C |         | NaHCO3      | 84.0             |        |
| CaCO3 13 mg/L                      |         | Na2SO4      | 71.0             | 2      |
| CaSO4 * 2H2O 2090 mg/L             |         | NaCl        | 58.4             | 351    |
| BasO4 2.4 mg/L                     |         |             |                  |        |

REMARKS: Sampled by George Freeman at 2:35 PM

Baker Petrolite

Respectfully submitted,  
Mike Harrison

**Baker Petrolite**

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SCALE TENDENCY REPORT  
-----

|            |                   |              |                 |
|------------|-------------------|--------------|-----------------|
| Company    | : Yates Petroleum | Date         | : 14 Mar 02     |
| Address    | : Artesia, NM     | Date Sampled | : 14 Mar 02     |
| Lease      | : Wilkerson       | Analysis No. | :               |
| Well       | : Fresh Water     | Analyst      | : Mike Harrison |
| Sample Pt. | : Well Head       |              |                 |

STABILITY INDEX CALCULATIONS  
(Stiff-Davis Method)  
CaCO<sub>3</sub> Scaling Tendency

|        |      |    |          |      |         |   |
|--------|------|----|----------|------|---------|---|
| S.I. = | -0.0 | at | 50 deg.  | F or | 10 deg. | C |
| S.I. = | 0.1  | at | 70 deg.  | F or | 21 deg. | C |
| S.I. = | 0.1  | at | 90 deg.  | F or | 32 deg. | C |
| S.I. = | 0.2  | at | 110 deg. | F or | 43 deg. | C |
| S.I. = | 0.3  | at | 130 deg. | F or | 54 deg. | C |

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CALCIUM SULFATE SCALING TENDENCY CALCULATIONS  
(Skillman-McDonald-Stiff Method)  
Calcium Sulfate

|     |      |    |          |      |        |   |
|-----|------|----|----------|------|--------|---|
| S = | 1168 | at | 50 deg.  | F or | 10 deg | C |
| S = | 1187 | at | 70 deg.  | F or | 21 deg | C |
| S = | 1183 | at | 90 deg.  | F or | 32 deg | C |
| S = | 1172 | at | 110 deg. | F or | 43 deg | C |
| S = | 1164 | at | 130 deg. | F or | 54 deg | C |

Baker Petrolite

Respectfully submitted,  
Mike Harrison



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## WATER ANALYSIS REPORT

Company : Yates Petroleum Date : 14 Mar 02  
Address : Artesia, NM Date Sampled : 14 Mar 02  
Lease : Agave Analysis No. :  
Well : Fresh Water  
Sample Pt. : Well Head

| ANALYSIS                              |       | mg/L  | * meq/L  |
|---------------------------------------|-------|-------|----------|
| -----                                 |       | ----  | -----    |
| 1. pH                                 | 7.3   |       |          |
| 2. H2S                                | 0     |       |          |
| 3. Specific Gravity                   | 1.002 |       |          |
| 4. Total Dissolved Solids             |       | 987.4 |          |
| 5. Suspended Solids                   |       | N/R   |          |
| 6. Dissolved Oxygen                   |       | N/R   |          |
| 7. Dissolved CO2                      |       | 10    |          |
| 8. Oil In Water                       |       | N/R   |          |
| 9. Phenolphthalein Alkalinity (CaCO3) |       |       |          |
| 10. Methyl Orange Alkalinity (CaCO3)  |       |       |          |
| 11. Bicarbonate                       | HCO3  | 103.7 | HCO3 1.7 |
| 12. Chloride                          | Cl    | 234.3 | Cl 6.6   |
| 13. Sulfate                           | SO4   | 340.0 | SO4 7.1  |
| 14. Calcium                           | Ca    | 128.0 | Ca 6.4   |
| 15. Magnesium                         | Mg    | 29.2  | Mg 2.4   |
| 16. Sodium (calculated)               | Na    | 151.7 | Na 6.6   |
| 17. Iron                              | Fe    | 0.5   |          |
| 18. Barium                            | Ba    | N/R   |          |
| 19. Strontium                         | Sr    | N/R   |          |
| 20. Total Hardness (CaCO3)            |       | 440.0 |          |

## PROBABLE MINERAL COMPOSITION

| *milli equivalents per Liter       | Compound  | Equiv wt X meq/L | = mg/L  |
|------------------------------------|-----------|------------------|---------|
| +-----+                            |           |                  |         |
| 6   *Ca <----- *HCO3   2           | Ca(HCO3)2 | 81.0             | 1.7 138 |
| -----   /----->   -----            | CaSO4     | 68.1             | 4.7 319 |
| 2   *Mg -----> *SO4   7            | CaCl2     | 55.5             |         |
| -----   <-----/   -----            | Mg(HCO3)2 | 73.2             |         |
| 7   *Na -----> *Cl   7             | MgSO4     | 60.2             | 2.4 144 |
| +-----+                            | MgCl2     | 47.6             | 0.0 1   |
| Saturation Values Dist. Water 20 C | NaHCO3    | 84.0             |         |
| CaCO3 13 mg/L                      | Na2SO4    | 71.0             |         |
| CaSO4 * 2H2O 2090 mg/L             | NaCl      | 58.4             | 6.6 386 |
| BaSO4 2.4 mg/L                     |           |                  |         |

REMARKS: Sampled by George Freeman at 2:30 PM

Baker Petrolite

Respectfully submitted,  
Mike Harrison

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**SCALE TENDENCY REPORT**  
-----

|            |                   |              |                 |
|------------|-------------------|--------------|-----------------|
| Company    | : Yates Petroleum | Date         | : 14 Mar 02     |
| Address    | : Artesia, NM     | Date Sampled | : 14 Mar 02     |
| Lease      | : Agave           | Analysis No. | :               |
| Well       | : Fresh Water     | Analyst      | : Mike Harrison |
| Sample Pt. | : Well Head       |              |                 |

**STABILITY INDEX CALCULATIONS**  
(Stiff-Davis Method)  
CaCO3 Scaling Tendency

|      |   |      |    |          |      |         |   |
|------|---|------|----|----------|------|---------|---|
| S.I. | = | -0.3 | at | 50 deg.  | F or | 10 deg. | C |
| S.I. | = | -0.2 | at | 70 deg.  | F or | 21 deg. | C |
| S.I. | = | -0.1 | at | 90 deg.  | F or | 32 deg. | C |
| S.I. | = | -0.0 | at | 110 deg. | F or | 43 deg. | C |
| S.I. | = | 0.0  | at | 130 deg. | F or | 54 deg. | C |

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**CALCIUM SULFATE SCALING TENDENCY CALCULATIONS**  
(Skillman-McDonald-Stiff Method)  
Calcium Sulfate

|   |   |      |    |          |      |        |   |
|---|---|------|----|----------|------|--------|---|
| S | = | 1182 | at | 50 deg.  | F or | 10 deg | C |
| S | = | 1201 | at | 70 deg.  | F or | 21 deg | C |
| S | = | 1197 | at | 90 deg.  | F or | 32 deg | C |
| S | = | 1186 | at | 110 deg. | F or | 43 deg | C |
| S | = | 1178 | at | 130 deg. | F or | 54 deg | C |

Baker Petrolite

Respectfully submitted,  
Mike Harrison

TraceAnalysis, Inc.

6701 Aberdeen Ave., Suite 9

Lubbock, TX 79424-1515

(806) 794-1296

Report Date: December 24, 2001 Order Number: A01121202  
Penasco Water Project N/APage Number: 1 of 3  
Dagger Draw

## Summary Report

Jerry Fanning Jr.  
Yates Petroleum Corp.  
105 S. 4th  
Artesia, MN 88210

Report Date: December 24, 2001

Order ID Number: A01121202

Project Number: Penasco Water Project  
Project Name: N/A  
Project Location: Dagger Draw

| Sample | Description    | Matrix | Date Taken | Time Taken | Date Received |
|--------|----------------|--------|------------|------------|---------------|
| 186849 | Foster-Set-3   | Water  | 12/11/01   | 12:40      | 12/11/01      |
| 186850 | Roy-Set-2      | Water  | 12/11/01   | 12:10      | 12/11/01      |
| 186851 | Routh NU-Set-1 | Water  | 12/11/01   | 11:15      | 12/11/01      |

This report consists of a total of 3 page(s) and is intended only as a summary of results for the sample(s) listed above.

| Sample - Field Code     | BTEX          |               |                    |                    |                  |
|-------------------------|---------------|---------------|--------------------|--------------------|------------------|
|                         | Benzene (ppm) | Toluene (ppm) | Ethylbenzene (ppm) | M,P,O-Xylene (ppm) | Total BTEX (ppm) |
| 186849 - Foster-Set-3   | 3.76          | 4.45          | <0.500             | 1.36               | 9.57             |
| 186850 - Roy-Set-2      | 3.66          | 5.28          | 0.226              | 1.99               | 11.2             |
| 186851 - Routh NU-Set-1 | 2.50          | 2.49          | <0.200             | 0.762              | 5.75             |

## Sample: 186849 - Foster-Set-3

| Param                  | Flag | Result  | Units         |
|------------------------|------|---------|---------------|
| Hydroxide Alkalinity   |      | <1.0    | mg/L as CaCo3 |
| Carbonate Alkalinity   |      | 64      | mg/L as CaCo3 |
| Bicarbonate Alkalinity |      | 786     | mg/L as CaCo3 |
| Total Alkalinity       |      | 850     | mg/L as CaCo3 |
| Specific Conductance   |      | 10200   | µMHOS/cm      |
| Total Mercury          |      | <0.0002 | mg/L          |
| Chloride               | 1    | 2090    | mg/L          |
| Fluoride               |      | 4.49    | mg/L          |
| Nitrate-N              |      | <1.00   | mg/L          |
| Sulfate                | 2    | 2120    | mg/L          |
| Dissolved Calcium      |      | 474     | mg/L          |
| Dissolved Magnesium    |      | 107     | mg/L          |
| Dissolved Potassium    |      | 89.3    | mg/L          |
| Dissolved Sodium       |      | 1505    | mg/L          |
| Total Dissolved Solids |      | 7120    | mg/L          |
| Total Aluminum         |      | <0.100  | mg/L          |
| Total Arsenic          |      | <0.010  | mg/L          |
| Total Barium           |      | <0.100  | mg/L          |

Continued on next page ...

<sup>1</sup>Chloride re-run on IC121301-1.sch. ICV %IA = 90; CCV %IA = 90; matrix spikes RPD = 1, %EA = 86; LCS RPD = 2, %EA = 92.<sup>2</sup>Sulfate re-run on IC121301-1.sch. ICV %IA = 93; CCV %IA = 92; matrix spikes RPD = 0, %EA = 88; LCS RPD = 1, %EA = 91.

TraceAnalysis, Inc.

6701 Aberdeen Ave., Suite 9

Lubbock, TX 79424-1515

(806) 794-1296

Report Date: December 24, 2001 Order Number: A01121202

Page Number: 2 of 3

Penasco Water Project

N/A

Dagger Draw

~~Sample 186849 continued ...~~

| Param             | Flag | Result  | Units |
|-------------------|------|---------|-------|
| Total Boron       |      | 2.60    | mg/L  |
| Total Cadmium     |      | <0.005  | mg/L  |
| Total Chromium    |      | <0.010  | mg/L  |
| Total Cobalt      |      | <0.025  | mg/L  |
| Total Copper      |      | <0.0125 | mg/L  |
| Total Iron        |      | 0.838   | mg/L  |
| Total Lead        |      | <0.010  | mg/L  |
| Total Manganese   |      | 0.172   | mg/L  |
| Total Molybdenum  |      | <0.050  | mg/L  |
| Total Nickel      |      | <0.025  | mg/L  |
| Total Phosphorous |      | 0.745   | mg/L  |
| Total Selenium    |      | <0.050  | mg/L  |
| Total Silver      |      | <0.0125 | mg/L  |
| Total Strontium   |      | 14.4    | mg/L  |
| Total Zinc        |      | 0.0283  | mg/L  |
| pH                | 3    | 7.3     | s.u.  |

## Sample: 186850 - Roy-Set-2

| Param                  | Flag | Result  | Units                     |
|------------------------|------|---------|---------------------------|
| Hydroxide Alkalinity   |      | <1.0    | mg/L as CaCO <sub>3</sub> |
| Carbonate Alkalinity   |      | 84      | mg/L as CaCO <sub>3</sub> |
| Bicarbonate Alkalinity |      | 758     | mg/L as CaCO <sub>3</sub> |
| Total Alkalinity       |      | 842     | mg/L as CaCO <sub>3</sub> |
| Specific Conductance   |      | 10500   | µMHOS/cm                  |
| Total Mercury          |      | <0.0002 | mg/L                      |
| Chloride               | 4    | 2060    | mg/L                      |
| Fluoride               |      | 4.39    | mg/L                      |
| Nitrate-N              |      | <1.00   | mg/L                      |
| Sulfate                | 5    | 2320    | mg/L                      |
| Dissolved Calcium      |      | 484     | mg/L                      |
| Dissolved Magnesium    |      | 109     | mg/L                      |
| Dissolved Potassium    |      | 72.2    | mg/L                      |
| Dissolved Sodium       |      | 1601    | mg/L                      |
| Total Dissolved Solids |      | 7440    | mg/L                      |
| Total Aluminum         |      | <0.100  | mg/L                      |
| Total Arsenic          |      | <0.010  | mg/L                      |
| Total Barium           |      | <0.100  | mg/L                      |
| Total Boron            |      | 2.75    | mg/L                      |
| Total Cadmium          |      | <0.005  | mg/L                      |
| Total Chromium         |      | <0.010  | mg/L                      |
| Total Cobalt           |      | <0.025  | mg/L                      |
| Total Copper           |      | <0.0125 | mg/L                      |
| Total Iron             |      | 0.088   | mg/L                      |
| Total Lead             |      | <0.010  | mg/L                      |
| Total Manganese        |      | 0.0385  | mg/L                      |
| Total Molybdenum       |      | <0.050  | mg/L                      |
| Total Nickel           |      | <0.025  | mg/L                      |
| Total Phosphorous      |      | 0.408   | mg/L                      |

Continued on next page ...

<sup>3</sup>received out of holding time<sup>4</sup>Chloride re-ran on IC121301-1 sch. IGV %IA = 90; CCV %IA = 90; matrix spikes RPD = 1, %EA = 86; LCS RPD = 2, %EA = 89<sup>5</sup>Sulfate re-ran on IC121301-1 sch. IGV %IA = 93; CCV %IA = 92; matrix spikes RPD = 1, %EA = 86; LCS RPD = 2, %EA = 89

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Report Date: December 24, 2001 Order Number: A01121202

Page Number: 3 of 3

Penasco Water Project

N/A

Dagger Draw

~~Sample 180850 continued ...~~

| Param           | Flag | Result  | Units |
|-----------------|------|---------|-------|
| Total Selenium  |      | <0.050  | mg/L  |
| Total Silver    |      | <0.0125 | mg/L  |
| Total Strontium |      | 13.8    | mg/L  |
| Total Zinc      |      | <0.025  | mg/L  |
| pH              | 6    | 7.3     | s.u.  |

## Sample: 186851 - Routh NU-Set-1

| Param                  | Flag | Result  | Units         |
|------------------------|------|---------|---------------|
| Hydroxide Alkalinity   |      | <1.0    | mg/L as CaCo3 |
| Carbonate Alkalinity   |      | 84      | mg/L as CaCo3 |
| Bicarbonate Alkalinity |      | 804     | mg/L as CaCo3 |
| Total Alkalinity       |      | 888     | mg/L as CaCo3 |
| Specific Conductance   |      | 10600   | μMHOS/cm      |
| Total Mercury          |      | <0.0002 | mg/L          |
| Chloride               | 7    | 1900    | mg/L          |
| Fluoride               |      | 4.62    | mg/L          |
| Nitrate-N              |      | <1.00   | mg/L          |
| Sulfate                | 8    | 1840    | mg/L          |
| Dissolved Calcium      |      | 488     | mg/L          |
| Dissolved Magnesium    |      | 114     | mg/L          |
| Dissolved Potassium    |      | 103     | mg/L          |
| Dissolved Sodium       |      | 1607    | mg/L          |
| Total Dissolved Solids |      | 7290    | mg/L          |
| Total Aluminum         |      | <0.100  | mg/L          |
| Total Arsenic          |      | 0.0133  | mg/L          |
| Total Barium           |      | <0.100  | mg/L          |
| Total Boron            |      | 2.50    | mg/L          |
| Total Cadmium          |      | <0.005  | mg/L          |
| Total Chromium         |      | <0.010  | mg/L          |
| Total Cobalt           |      | <0.025  | mg/L          |
| Total Copper           |      | <0.0125 | mg/L          |
| Total Iron             |      | 0.154   | mg/L          |
| Total Lead             |      | <0.010  | mg/L          |
| Total Manganese        |      | 0.171   | mg/L          |
| Total Molybdenum       |      | <0.050  | mg/L          |
| Total Nickel           |      | <0.025  | mg/L          |
| Total Phosphorous      |      | 0.263   | mg/L          |
| Total Selenium         |      | <0.050  | mg/L          |
| Total Silver           |      | <0.0125 | mg/L          |
| Total Strontium        |      | 14.3    | mg/L          |
| Total Zinc             |      | <0.025  | mg/L          |
| pH                     | 9    | 7.3     | s.u.          |

<sup>6</sup>received out of holding time<sup>7</sup>Chloride re-ran on IC121301-1.sch. ICV %IA = 90; CCV %IA = 90; matrix spikes RPD = 1, %EA = 86; LCS RPD = 2, %EA = 92.<sup>8</sup>Sulfate re-ran on IC121301-1.sch. ICV %IA = 93; CCV %IA = 92; matrix spikes RPD = 0, %EA = 86; LCS RPD = 1, %EA = 91.<sup>9</sup>received out of holding time