ANACONDA Minerals Company
New Mexico Operations
P.O. Box 638
Grants, New Mexico 87020
Telephone 505 876 2211

ALBUQUERQUE DISTRICT MINING
RECEIVED
NOV 22 1982
MINERALS MANAGEMENT SERVICE
ALBUQUERQUE, NEW MEXICO

November 15, 1982

ROUTE
Date Dist. Supv. Surname
11/22 Asst. Supv.
11/22 Mining Eng.
11/22 Mining Eng.
11/22 Env. Scien.
11/22 Safety
Note:

Mr. Dale C. Jones
District Mining Supervisor
Minerals Management Service
500 Gold Avenue, S.W.
Federal Building, Room 116
Albuquerque, N.M. 87102

Dear Mr. Jones:

The following information is being submitted in accordance with the Jackpile-Paguate Minesite Sampling Program for the Third Quarter of 1982.

1. Radiological Analysis of Ground and Surface Water.

2. Chemical Analysis of Ground and Surface Water.

3. Maps showing Ground and Surface Water Sampling Locations.

4. Results of the Air Monitoring Program.

5. Results of the Ambient Radon Monitoring Study.

6. Map showing location of Air and Radon Monitoring Stations.

Sincerely,

Meade A. Stirland

Meade A. Stirland, Manager
Environment, Health & Safety

mls
Enclosures
cc: R. D. Lynn/W. C. Norem
D. L. Roberts
C. E. Sanchez
File

## AIR QUALITY MONITORING PROGRAM

One 168-hour sample is taken each month at each of the four locations specified by Marc Nelson. They are collected about three meters above the ground on GF/A Glass Microfibre filter paper, using an RAC Heavy-duty Sampler.

## AMBIENT RADON STUDY

Radon-222 is monitored continuously at each of the air sampling locations specified by Marc Nelson. The samples are monitored by the use of the Model RGM-2 Radon Gas Monitor. Normal data output is printed hourly and a 24-hour average is printed at the end of a 24-hour period.

JACKPILE - WATER RADIOLOGICAL ANALYSIS

(THIRD QUARTER, 1982)

| DESCRIPTIVE LOCATION | Radium-226 pCi/L | | | Uranium-Natural ppm | | |
|---|---|---|---|---|---|---|
| | July | Aug. | Sept. | July | Aug. | Sept. |
| Rio Paguate Upstream | 0.20 | 0.37 | 0.46 | 0.003 | 0.003 | 0.006 |
| Rio Moquino Upstream | 0.20 | 0.20 | 0.36 | 0.011 | 0.006 | 0.006 |
| Rio Paguate Above the Confluence | 0.42 | 1.77 | 0.82 | 0.016 | 0.176 | 0.085 |
| Rio Moquino Above the Confluence | 0.76 | 3.84 | 1.74 | 0.030 | 0.179 | 0.130 |
| Rio Paguate Ford Crossing | 0.38 | 1.43 | 1.93 | 0.150 | 0.330 | 0.261 |
| Paguate Reservoir | 1.27 | 1.16 | 1.15 | 0.058 | 0.254 | 0.056 |
| Jackpile Well #4 | 0.65 | 1.08 | 0.84 | 0.003 | 0.001 | 0.006 |
| Jackpile New Shop | 1.49 | 0.80 | 1.86 | 0.003 | 0.001 | 0.001 |
| Jackpile Old Shop | 3.29 | 1.97 | 2.16 | 0.234 | 0.202 | 0.242 |
| Mouth of Oak Canyon Wash | * | * | * | * | * | * |

* No sample because the Mouth of Oak Canyon Wash was dry.

ANACONDA MINERALS COMPANY
NEW MEXICO OPERATIONS

FOR THE MONTH OF: July 1982

| DESCRIPTION | DATE | pH | TDS ppm | Cond umhos | $HCO_3^-$ ppm | $Cl^-$ ppm | $SO_4^=$ ppm | $Na^+$ ppm | $K^+$ ppm | $Ca^{++}$ ppm | $Mg^{++}$ ppm | $NO_3^-$ ppm | $F^-$ ppm | $SiO_2$ ppm | $Mn^{++}$ ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Paguate Upstream | 7-1-82 | 8.4 | 655 | 800 | 305 | 8.7 | 180 | 35 | 5.5 | 84.8 | 35 | 0.75 | 0.21 | 27 | 0.029 |
| Rio Moquino Upstream | 7-1-82 | 8.3 | 2075 | 2600 | 264 | 19 | 1236 | 241 | 10.5 | 151 | 152 | 0.90 | 0.13 | 11.6 | <0.005 |
| Rio Paguate Above the Confluence | 7-1-82 | 8.4 | 686 | 890 | 256 | 10 | 251 | 48 | 6.6 | 69 | 44 | 0.75 | 0.19 | 23.5 | <0.005 |
| Rio Moquino Above the Confluence | 7-1-82 | 8.2 | 2523 | 2600 | 268 | 20 | 1554 | 277 | 9.3 | 186 | 207 | 1.10 | 0.50 | 13.5 | 0.008 |
| Rio Paguate Ford Crossing | 7-1-82 | 8.2 | 1670 | 2000 | 268 | 18 | 942 | 182 | 8.3 | 126 | 124 | 0.82 | 0.35 | 16.9 | 0.011 |
| Paguate Reservoir | 7-1-82 | 7.3 | 2614 | 3000 | 183 | 37 | 1675 | 299 | 20.2 | 199 | 199 | 1.20 | 0.35 | 2.4 | 0.410 |
| Jackpile #4 | 7-1-82 | 8.5 | 1022 | 900 | 393 | 16 | 321 | 292 | 1.3 | 5.6 | 0.5 | 1.10 | 0.82 | 8.8 | 0.007 |
| Jackpile New Shop | 7-1-82 | 8.2 | 1582 | 1800 | 403 | 36 | 662 | 459 | 2.7 | 15.8 | 1.4 | 1.10 | 0.82 | 11.1 | 0.026 |
| Jackpile Old Shop | 7-1-82 | 7.7 | 3854 | 4100 | 266 | 95 | 2378 | 512 | 9.2 | 302 | 235 | 55 | 0.35 | 9.6 | 0.014 |

| | | As ppm | Ba ppm | Cd ppm | Cr ppm | Pb ppm | Hg ppm | Se ppm | Cu ppm | Fe ppm | Zn ppm | Mo ppm | Ni ppm | V ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Paguate Upstream | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.003 | 0.042 | 0.001 | <0.01 | <0.005 | <0.05 |
| Rio Moquino Upstream | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.003 | <0.005 | 0.003 | <0.01 | <0.005 | <0.05 |
| Rio Paguate Above the Confluence | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.004 | 0.024 | 0.001 | <0.01 | <0.005 | <0.05 |
| Rio Moquino Above the Confluence | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.003 | 0.006 | <0.001 | <0.01 | <0.005 | <0.05 |
| Rio Paguate Ford Crossing | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.004 | 0.008 | 0.005 | <0.01 | <0.005 | <0.05 |
| Paguate Reservoir | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.007 | 0.057 | 0.006 | <0.01 | 0.005 | <0.05 |
| Jackpile #4 | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.002 | 0.044 | <0.001 | 0.01 | <0.005 | <0.05 |
| Jackpile New Shop | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.002 | 0.044 | 0.001 | <0.01 | <0.005 | <0.05 |
| Jackpile Old Shop | 7-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | 0.036 | 0.004 | 0.007 | 0.80 | <0.01 | <0.005 | <0.05 |

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ANACONDA MINERALS COMPANY
NEW MEXICO OPERATIONS

FOR THE MONTH OF: August 1982

| DESCRIPTION | DATE | pH | TDS ppm | Cond umhos | $HCO_3^-$ ppm | $Cl^-$ ppm | $SO_4^=$ ppm | $Na^+$ ppm | $K^+$ ppm | $Ca^{++}$ ppm | $Mg^{++}$ ppm | $NO_3^-$ ppm | $F^-$ ppm | $SiO_2$ ppm | $Mn^{++}$ ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Paguate Upstream | 8-2-82 | 8.1 | 785 | 1000 | 349 | 11.7 | 237 | 42.9 | 7.6 | 83 | 52 | 0.74 | 0.52 | 31.7 | 0.15 |
| Rio Moquino Upstream | 8-2-82 | 8.3 | 2127 | 2500 | 244 | 20.5 | 1306 | 225 | 12.3 | 158 | 159 | 0.94 | 0.78 | 20.1 | 0.007 |
| Rio Paguate Above the Confluence | 8-2-82 | 7.9 | 1164 | 1400 | 315 | 16.0 | 541 | 84 | 9.0 | 108 | 89 | 0.68 | 0.68 | 26.3 | 0.045 |
| Rio Moquino Above the Confluence | 8-2-82 | 8.1 | 1814 | 2250 | 222 | 20.0 | 1089 | 204 | 11.2 | 144 | 122 | 0.66 | 0.82 | 13.7 | 0.035 |
| Rio Paguate Ford Crossing | 8-2-82 | 8.1 | 1901 | 2280 | 251 | 20.3 | 1126 | 205 | 10.9 | 148 | 138 | 0.92 | 0.82 | 19.3 | 0.025 |
| Paguate Reservoir | 8-2-82 | 8.4 | 1762 | 2150 | 12.2 | 21.0 | 1241 | 181 | 17.8 | 172 | 115 | 1.10 | 0.92 | 9.8 | 0.270 |
| Jackpile #4 | 8-2-82 | 8.4 | 1012 | 1800 | 378 | 18.2 | 319 | 289 | 1.3 | 3.9 | 0.6 | 0.80 | 1.20 | 10.7 | 0.008 |
| Jackpile New Shop | 8-2-82 | 8.3 | 1531 | 1800 | 368 | 27.1 | 657 | 448 | 2.7 | 10.2 | 1.5 | 0.94 | 1.30 | 11.6 | 0.026 |
| Jackpile Old Shop | 8-2-82 | 7.6 | 3900 | 3500 | 261 | 107 | 2417 | 560 | 9.4 | 2.44 | 251 | 47 | 0.70 | 10.9 | 0.013 |

| | | As ppm | Ba ppm | Cd ppm | Cr ppm | Pb ppm | Hg ppm | Se ppm | Cu ppm | Fe ppm | Zn ppm | Mo ppm | Ni ppm | V ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Paguate Upstream | 8-2-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.009 | 0.008 | 0.014 | <0.01 | <0.005 | <0.05 |
| Rio Moquino Upstream | 8-2-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.006 | <0.005 | 0.003 | <0.01 | <0.005 | <0.05 |
| Rio Paguate Above the Confluence | 8-2-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | 0.0005 | <0.005 | 0.004 | 0.009 | 0.002 | <0.01 | <0.005 | <0.05 |
| Rio Moquino Above the Confluence | 8-2-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.006 | 0.007 | 0.002 | <0.01 | <0.005 | <0.05 |
| Rio Paguate Ford Crossing | 8-2-82 | <0.005 | <0.05 | 0.004 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.003 | 0.008 | 0.010 | <0.01 | <0.005 | <0.05 |
| Paguate Reservoir | 8-2-82 | <0.005 | <0.05 | 0.001 | <0.005 | <0.01 | <0.0005 | 0.019 | 0.005 | 0.009 | 0.021 | <0.01 | <0.005 | <0.05 |
| Jackpile #4 | 8-2-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.014 | 0.041 | 0.005 | 0.01 | <0.005 | <0.05 |
| Jackpile New Shop | 8-2-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.022 | 0.065 | 0.004 | <0.01 | <0.005 | <0.05 |
| | 8-2-82 | <0.005 | <0.05 | 0.002 | <0.005 | <0.01 | <.0005 | 0.37 | 0.018 | 0.013 | 2.90 | <0.01 | | |

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ANACONDA MINERALS COMPANY
NEW MEXICO OPERATIONS

FOR THE MONTH OF: September 1982

| DESCRIPTION | DATE | pH | TDS ppm | Cond umhos | $HCO_3^-$ ppm | $Cl^-$ ppm | $SO_4^=$ ppm | $Na^+$ ppm | $K^+$ ppm | $Ca^{++}$ ppm | $Mg^{++}$ ppm | $NO_3^-$ ppm | $F^-$ ppm | $SiO_2$ ppm | $Mn^{++}$ ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Paguate Upstream | 9-1-82 | 7.9 | 843 | 1000 | 329 | 9.9 | 288 | 43.2 | 8.0 | 119 | 45 | 0.31 | 0.49 | 30.8 | 0.082 |
| Rio Moquino Upstream | 9-1-82 | 8.2 | 2340 | 2550 | 256 | 20 | 1428 | 224 | 14.2 | 270 | 127 | 0.37 | 0.78 | 17.9 | <0.005 |
| Rio Paguate Above the Confluence | 9-1-82 | 7.9 | 1260 | 1400 | 246 | 11.3 | 655 | 74 | 10.4 | 201 | 61 | 0.37 | 0.70 | 16.7 | 0.051 |
| Rio Moquino Above the Confluence | 9-1-82 | 7.9 | 2389 | 2550 | 268 | 18.3 | 1442 | 235 | 12.8 | 271 | 140 | 0.94 | 0.94 | 15.0 | 0.210 |
| Rio Paguate Ford Crossing | 9-1-82 | 7.9 | 2181 | 2100 | 281 | 18.4 | 1286 | 190 | 12.4 | 274 | 118 | 0.43 | 0.80 | 12.4 | 0.038 |
| Paguate Reservoir | 9-1-82 | 6.9 | 719 | 750 | 130 | 7.8 | 368 | 49 | 7.8 | 120 | 25.7 | 0.23 | 0.80 | 4.7 | 0.024 |
| Jackpile #4 | 9-1-82 | 8.3 | 1007 | 1100 | 373 | 16 | 321 | 285 | 2.2 | 7.1 | 1.1 | 0.43 | 1.20 | 11.6 | 0.008 |
| Jackpile New Shop | 9-1-82 | 7.8 | 1526 | 1750 | 370 | 25.4 | 662 | 442 | 4.4 | 18.2 | 1.6 | 0.62 | 1.30 | 15.4 | 0.016 |
| Jackpile Old Shop | 9-3-82 | 7.5 | 3858 | 3620 | 220 | 97.5 | 2412 | 538 | 11.9 | 251 | 245 | 64 | 0.70 | 12.4 | 0.016 |

| | | As ppm | Ba ppm | Cd ppm | Cr ppm | Pb ppm | Hg ppm | Se ppm | Cu ppm | Fe ppm | Zn ppm | Mo ppm | Ni ppm | V ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Paguate Upstream | 9-1-82 | <0.005 | 0.06 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.042 | 0.005 | 0.026 | 0.01 | <0.005 | 0.05 |
| Rio Moquino Upstream | 9-1-82 | <0.005 | 0.06 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.033 | 0.006 | 0.005 | 0.01 | 0.006 | <0.05 |
| Rio Paguate Above the Confluence | 9-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.034 | <0.005 | 0.009 | <0.01 | 0.006 | <0.05 |
| Rio Moquino Above the Confluence | 9-1-82 | <0.005 | 0.06 | <0.001 | <0.005 | <0.01 | <0.0005 | 0.020 | 0.038 | 0.006 | 0.028 | 0.01 | 0.017 | <0.05 |
| Rio Paguate Ford Crossing | 9-1-82 | <0.005 | 0.07 | <0.001 | <0.005 | <0.01 | <0.0005 | 0.009 | 0.022 | 0.007 | 0.005 | 0.01 | 0.008 | <0.05 |
| Paguate Reservoir | 9-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.028 | 0.015 | 0.005 | <0.01 | <0.005 | <0.05 |
| Jackpile #4 | 9-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.021 | 0.018 | 0.005 | <0.01 | <0.005 | 0.05 |
| Jackpile New Shop | 9-1-82 | <0.005 | <0.05 | <0.001 | <0.005 | <0.01 | <0.0005 | <0.005 | 0.012 | 0.019 | 0.011 | <0.01 | <0.005 | <0.05 |
| | 2 | <0.005 | <0.05 | 0.001 | <0.005 | <0.01 | <0.0005 | 0.033 | 0.020 | 0.011 | 0.870 | <0.01 | 0.01 | |

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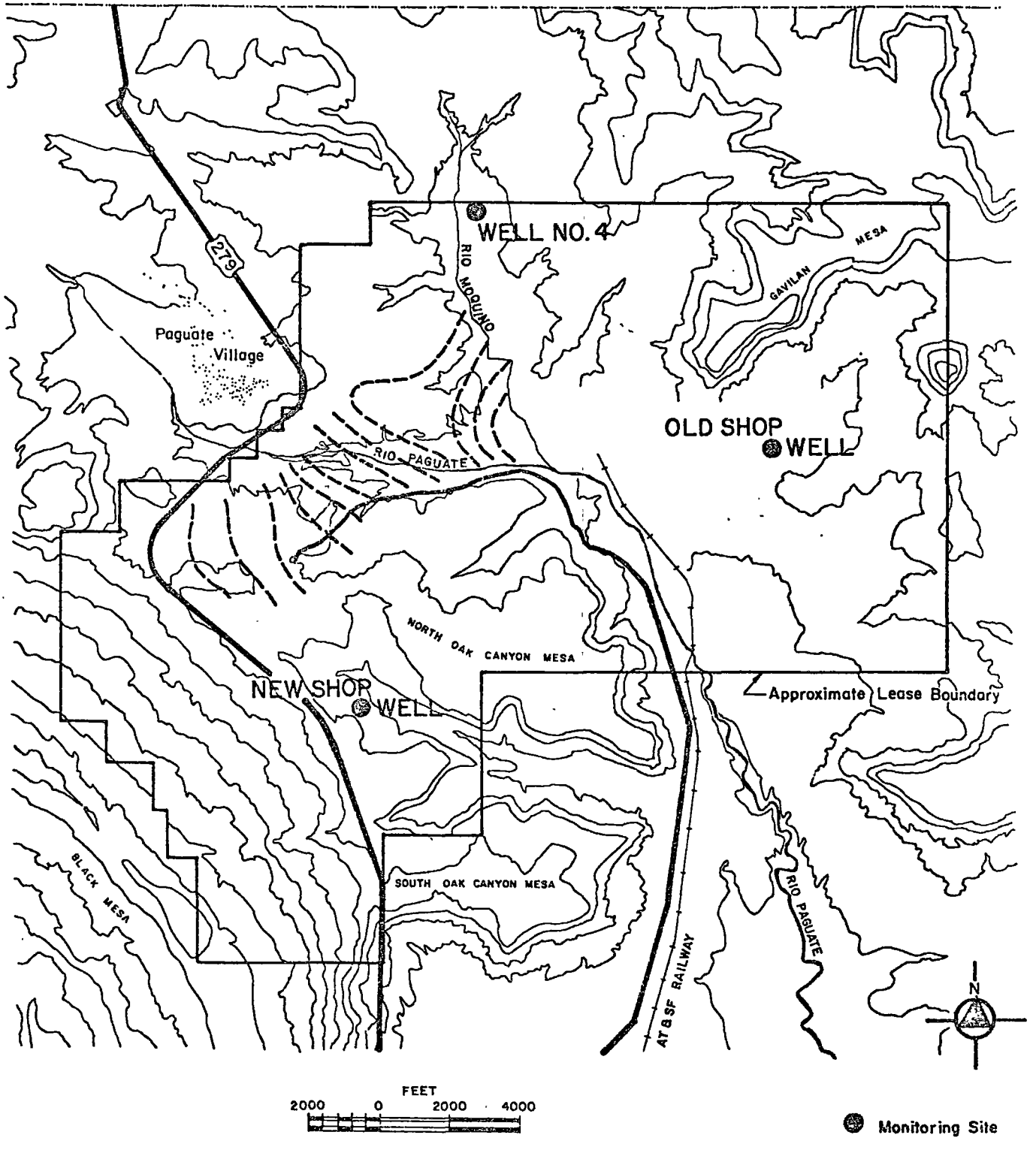
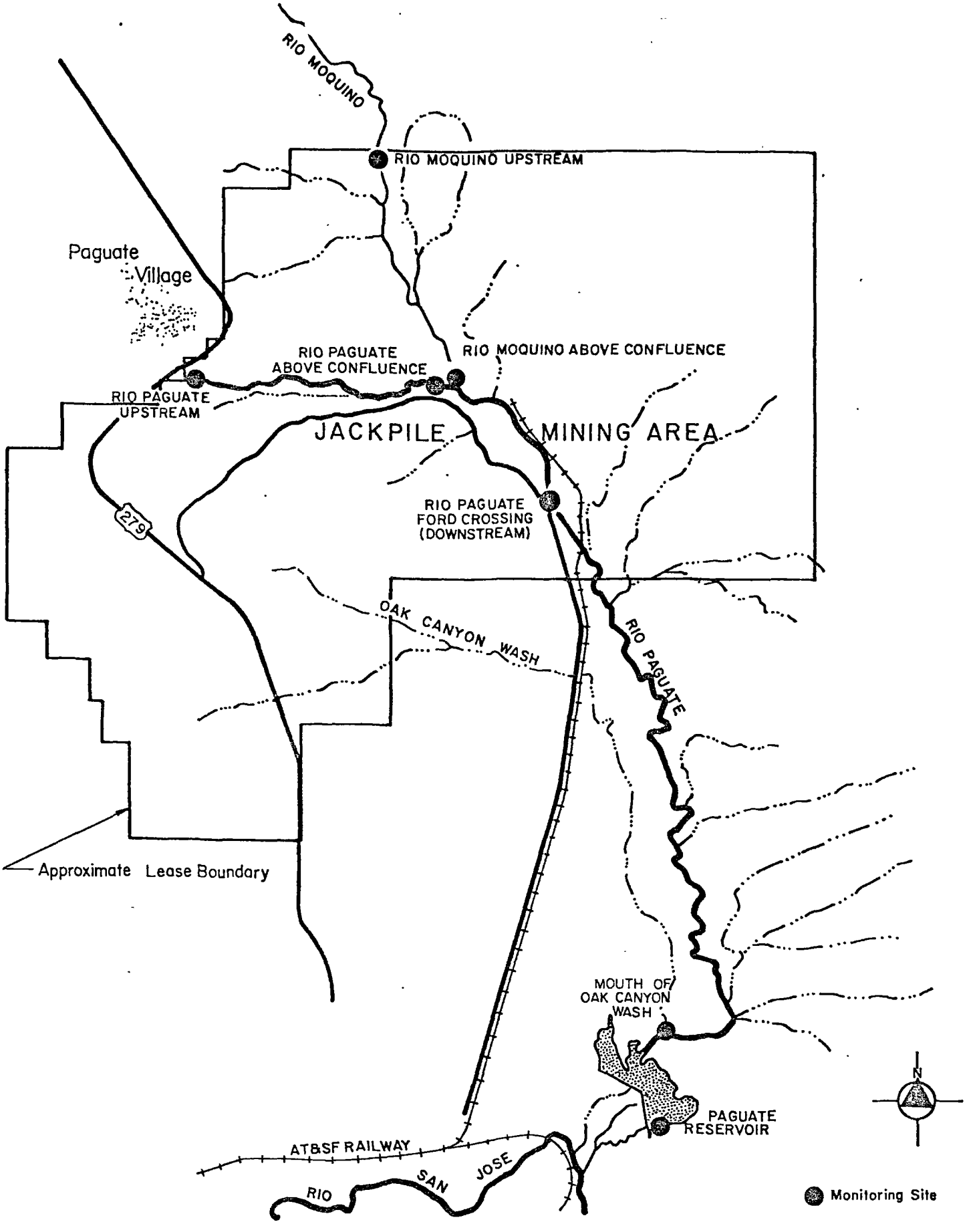
# LOCATION OF GROUND WATER MONITORING STATIONS






LOCATION OF
SURFACE WATER MONITORING STATIONS

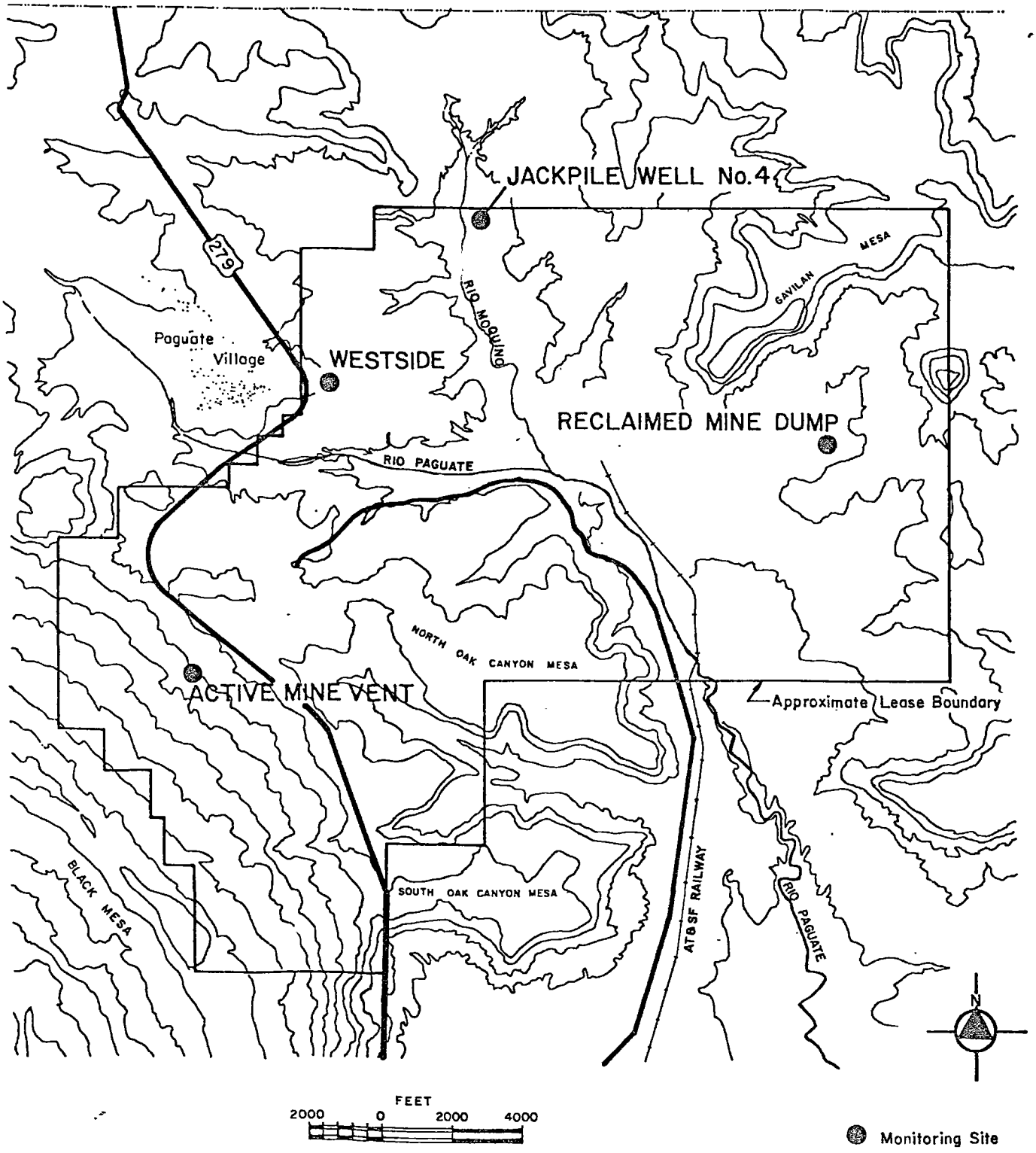
JACKPILE - AIR SAMPLING SURVEY

THIRD QUARTER, 1982

| LOCATION | DATE | TOTAL PARTICULATE µgm/M$^3$ | U-Nat. µCi/mlx10-15 | Ra-226 µCi/mlx10-15 | Th-230 µCi/mlx10-15 | Pb-210 µCi/mlx10-15 |
|---|---|---|---|---|---|---|
| 1. Dump F | 7/82 | 15.46 | 4.06 | 0.20 | 0.53 | 16.91 |
| | 8/82 | 11.44 | 5.67 | 0.44 | 2.93 | 30.35 |
| | 9/82 | 17.96 | 0.73 | 0.20 | 2.43 | 26.21 |
| 2. Mine Vent | 7/82 | 16.83 | 1.56 | 0.10 | 0.30 | 26.63 |
| | 8/82 | 13.89 | 3.84 | 0.28 | 2.12 | 28.79 |
| | 9/82 | 17.59 | 1.31 | 0.19 | 3.01 | 27.64 |
| 3. West Gate | 7/82 | 25.00 | 13.68 | 0.32 | 0.31 | 16.84 |
| | 8/82 | 20.05 | 1.98 | 0.22 | 1.04 | 22.40 |
| | 9/82 | 24.49 | 0.77 | 0.12 | 3.06 | 29.59 |
| 4. Well #4 | 7/82 | 21.86 | 4.15 | 0.14 | 0.44 | 15.84 |
| | 8/82 | 15.73 | 2.19 | 0.13 | 2.36 | 24.16 |
| | 9/82 | 19.78 | 2.09 | 0.38 | 2.75 | 35.16 |

## JACKPILE-AMBIENT RADON SURVEY

### THIRD QUARTER, 1982

| LOCATION | DATE | Rn-222 pCi/L |
|---|---|---|
| 1. Dump F | 7/82 | 1.41 |
| | 8/82 | 1.52 |
| | 9/82 | 1.44 |
| 2. Mine Vent | 7/82 | 1.62 |
| | 8/82 | 1.62 |
| | 9/82 | 1.66 |
| 3. Well #4 | 7/82 | 1.83 |
| | 8/82 | 1.83 |
| | 9/82 | 1.89 |
| 4. Westgate | 7/82 | 0.26 |
| | 8/82 | 0.86 |
| | 9/82 | 0.65 |

# LOCATION OF
# AIR QUALITY MONITORING STATIONS