Environmental Monitoring Files; Anaconda Jackpile/Paguate Mine, Cooperative Site

MINERALS
ANACONDA Copper Company
New Mexico Operations
P.O. Box 638
Grants New Mexico 87020
505/876-2211

February 12, 1982

ALBUQUERQUE DISTRICT MINING
RECEIVED
FEB 25 1982
U.S. GEOLOGICAL SURVEY
ALBUQUERQUE, NEW MEXICO

Mr. Dale Jones
District Mining Supervisor
UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY
P.O. Box 26124
Albuquerque, New Mexico 87125

Dear Sir:

The following information is being submitted in accordance with the Jackpile-Paguate Minesite Reclamation Sampling Program for the Fourth Quarter of 1981.

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,

Dean L. Robert for

Meade A. Stirland, Manager
ENVIRONMENT, HEALTH & SAFETY

Enclosures

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

(FOURTH QUARTER, 1981)

DESCRIPTIVE LOCATION	Radium-226 pCi/L			Uranium-Natural ppm		
	October	November	December	October	November	December
Rio Paguate Upstream	0.06	0.16	0.28	0.015	0.004	0.007
Rio Moquino Upstream	0.36	0.04	0.20	0.013	0.007	0.006
Rio Paguate Above the Confluence	0.51	0.46	0.32	0.115	0.084	0.056
Rio Moquino Above the Confluence	0.36	0.48	0.65	0.049	0.041	0.056
Rio Paguate Ford Crossing	0.88	1.52	0.50	0.230	0.183	0.164
Paguate Reservoir	0.55	0.58	0.05	0.120	0.119	0.141
Jackpile Well #4	0.12	0.80	0.54	0.003	0.013	0.006
Jackpile New Shop	1.95	3.03	1.50	0.004	0.005	0.010
Jackpile Old Shop	4.02	4.22	2.75	0.214	0.195	0.246
Mouth of Oak Canyon Wash	*	*	*	*	*	*

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

THE ANACONDA MINERALS COMPANY
New Mexico Operations

FOR THE MONTH OF: OCTOBER 1981

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	10-8-81	8.2	811	890	353	13.1	248	42	6.5	97	49.0	0.45	0.47	27	<.005		
Rio Moquino Upstream	10-8-81	8.3	1919	2030	268	17.0	1105	186	11.0	214	116.0	0.55	0.76	16	<.005		
Rio Paguate Above the Confluence	10-8-81	8.2	1066	1140	305	16.0	460	73	7.6	139	64.0	0.31	0.58	27	<.005		
Rio Moquino Above the Confluence	10-8-81	8.3	2054	2150	290	18.2	1153	216	10.3	230	120.0	0.34	0.76	12	0.010		
Rio Paguate Ford Crossing	10-8-81	8.2	2148	2230	280	30.0	1235	218	10.2	247	125.0	0.48	0.76	14	0.012		
Paguate Reservoir	10-8-81	7.9	934	1020	130	20.7	511	63	7.8	164	35.3	0.26	0.57	6	<.005		
Jackpile #4	10-8-81	8.4	1037	1220	373	18.0	324	297	1.4	5	0.5	0.51	1.30	10	0.011		
Jackpile New Shop	10-8-81	8.2	1583	1930	414	28.0	654	461	2.9	18	1.4	0.59	1.30	12	0.017		
Jackpile Old Shop	10-8-81	8.1	3932	4000	268	107.0	2439	496	10.6	356	214.0	37.00	0.73	7	0.022		
		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	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	<0.005	0.004	0.017	0.002	<0.01	<0.005	<0.05			
Rio Moquino Upstream	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	<0.005	0.005	0.031	0.005	<0.01	<0.005	<0.05			
Rio Paguate Above the Confluence	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	<0.005	0.009	0.043	0.006	<0.01	<0.005	<0.05			
Rio Moquino Above the Confluence	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	0.006	0.004	0.013	0.003	<0.01	<0.005	<0.05			
Rio Paguate Ford Crossing	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	0.10	0.003	0.023	0.005	<0.01	<0.005	<0.05			
Paguate Reservoir	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	<0.005	0.005	0.019	0.006	<0.01	<0.005	<0.05			
Jackpile #4	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	<0.005	0.004	0.064	0.004	<0.01	<0.005	<0.05			
Jackpile New Shop	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	<0.005	0.003	0.018	0.027	<0.01	<0.005	<0.05			
	10-8-81	<.005	<.05	< .001	< .005	< .01	<0.0005	0.28	0.004	0.031	1.47	<0.01					

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THE ANACONDA MINERALS COMPANY
New Mexico Operations

FOR THE MONTH OF: NOVEMBER 1981

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	11-4-8	8.2	725	790	331	10.0	195	39	7.3	96	42.7	0.58	0.37	32.0	<.005		
Rio Moquino Upstream	11-4-81	8.1	1902	1900	290	15.5	1077	200	13.1	193	111.0	0.74	0.62	15.0	<.005		
Rio Paguate Above the Confluence	11-4-81	8.2	874	910	341	11.5	289	60	7.3	115	48.0	0.47	0.48	27.0	<.005		
Rio Moquino Above the Confluence	11-4-81	8.1	2173	2200	292	18.1	1258	225	11.6	230	135.0	0.50	0.76	13.0	0.04		
Rio Paguate Ford Crossing	11-4-81	8.1	1978	2000	324	20.2	1097	210	11.2	203	107.0	.0.94	0.63	17.0	0.03		
Paguate Reservoir	11-4-81	8.1	957	1020	138	10.3	531	65	9.7	165	35.8	0.52	0.60	3.4	<.005		
Jackpile #4	11-1-81	8.3	1048	1800	353	17.7	365	300	1.6	6	0.6	0.79	1.10	7.3	0.01		
Jackpile New Shop	11-4-81	8.2	1588	1790	390	26.7	687	453	3.1	21	1.6	0.81	1.20	12.0	0.02		
Jackpile Old Shop	11-4-81	8.0	3990	3890	256	105.0	2439	516	12.6	386	205.0	53.00	0.57	8.1	0.02		
		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	11-4-81	<0.005	<0.05	<0.001	<0.005	<.01	<0.0005	<0.005	0.004	0.23	0.003	<0.05	<0.005	<0.05			
Rio Moquino Upstream	11-4-81	<0.005	<0.05	<0.001	<0.005	< .01	<0.0005	<0.005	0.005	0.03	0.005	<0.05	0.011	<0.05			
Rio Paguate Above the Confluence	11-4-81	<0.005	<0.05	<0.001	<0.005	< .01	<0.0005	<0.005	0.003	0.04	0.003	<0.05	<0.005	<0.05			
Rio Moquino Above the Confluence	11-4-81	<0.005	<0.05	<0.001	<0.005	< .01	0.0007	<0.005	0.002	0.04	0.005	<0.05	<0.005	<0.05			
Rio Paguate Ford Crossing	11-4-81	<0.005	<0.05	<0.001	<0.005	< .01	<0.0005	<0.005	0.003	3.12	0.003	<0.05	<0.005	<0.05			
Paguate Reservoir	11-4-81	<0.005	<0.05	<0.001	<0.005	0.02	<0.0005	<0.005	0.005	0.08	0.010	<0.05	0.013	<0.05			
Jackpile #4	11-1-81	<0.005	<0.05	<0.001	<0.005	< .01	0.0011	<0.005	0.002	0.02	0.004	<0.05	<0.005	<0.05			
Jackpile New Shop	11-4-81	<0.005	<0.05	<0.001	<0.005	< .01	<0.0005	<0.005	0.003	0.16	0.030	<0.05	<0.005	<0.05			
Jackpile Old Shop	11-4-81	<0.005	<0.05	<0.001	<0.005	< .01	<0.0005	0.14	0.003	0.05	1.500	<0.05					

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THE ANACONDA MINERALS COMPANY
New Mexico Operations

FOR THE MONTH OF: DECEMBER 198.

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	12-9-81	8.0	822	865	351	11.5	255	45	5.9	99	53.5	0.33	0.40	29.2	.055		
Rio Moquino Upstream	12-9-81	8.1	1614	1690	326	13.8	841	143	9.3	174	104.0	0.52	0.58	16.9	.006		
Rio Paguate Above the Confluence	12-9-81	8.2	1017	1070	361	12.8	385	69	5.4	115	68.0	0.33	0.43	22.5	.076		
Rio Moquino Above the Confluence	12-9-81	8.1	2455	2430	409	18.5	1369	255	9.4	240	152.0	0.33	0.74	12.4	.130		
Rio Paguate Ford Crossing	12-9-81	8.0	2123	2190	351	19.5	1178	226	9.3	196	141.0	0.52	0.64	14.7	.113		
Paguate Reservoir	12-9-81	8.0	1008	1100	146	12.1	562	68	12.3	167	38.7	0.33	0.50	2.7	.007		
Jackpile #4	12-9-81	8.3	1021	1320	366	16.2	338	290	1.7	5	55.0	0.52	1.10	10.1	.009		
Jackpile New Shop	12-9-81	8.3	1567	1870	348	25.5	681	458	3.8	17	1.3	2.10	1.20	12.3	.027		
Jackpile Old Shop	12-9-81	8.1	3998	3990	251	100.0	2480	510	11.1	364	236.0	43.00	0.64	11.3	.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	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	<.001	.03	0.002	<.01	<.005	<.05			
Rio Moquino Upstream	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	<.001	.02	0.003	<.01	<.005	<.05			
Rio Paguate Above the Confluence	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	0.004	.02	0.003	<.01	<.005	<.05			
Rio Moquino Above the Confluence	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	0.002	.03	0.004	<.01	<.005	<.05			
Rio Paguate Ford Crossing	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	<.001	.02	0.003	<.01	<.005	<.05			
Paguate Reservoir	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	<.001	.03	0.003	<.01	<.005	<.05			
Jackpile #4	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	<.001	.06	0.005	<.01	<.005	<.05			
Jackpile New Shop	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	<.005	0.003	.05	0.014	<.01	<.005	<.05			
	12-9-81	<.005	<.05	<.001	<.005	<.01	<.0005	0.21	<.001	.02	.77	<.01					

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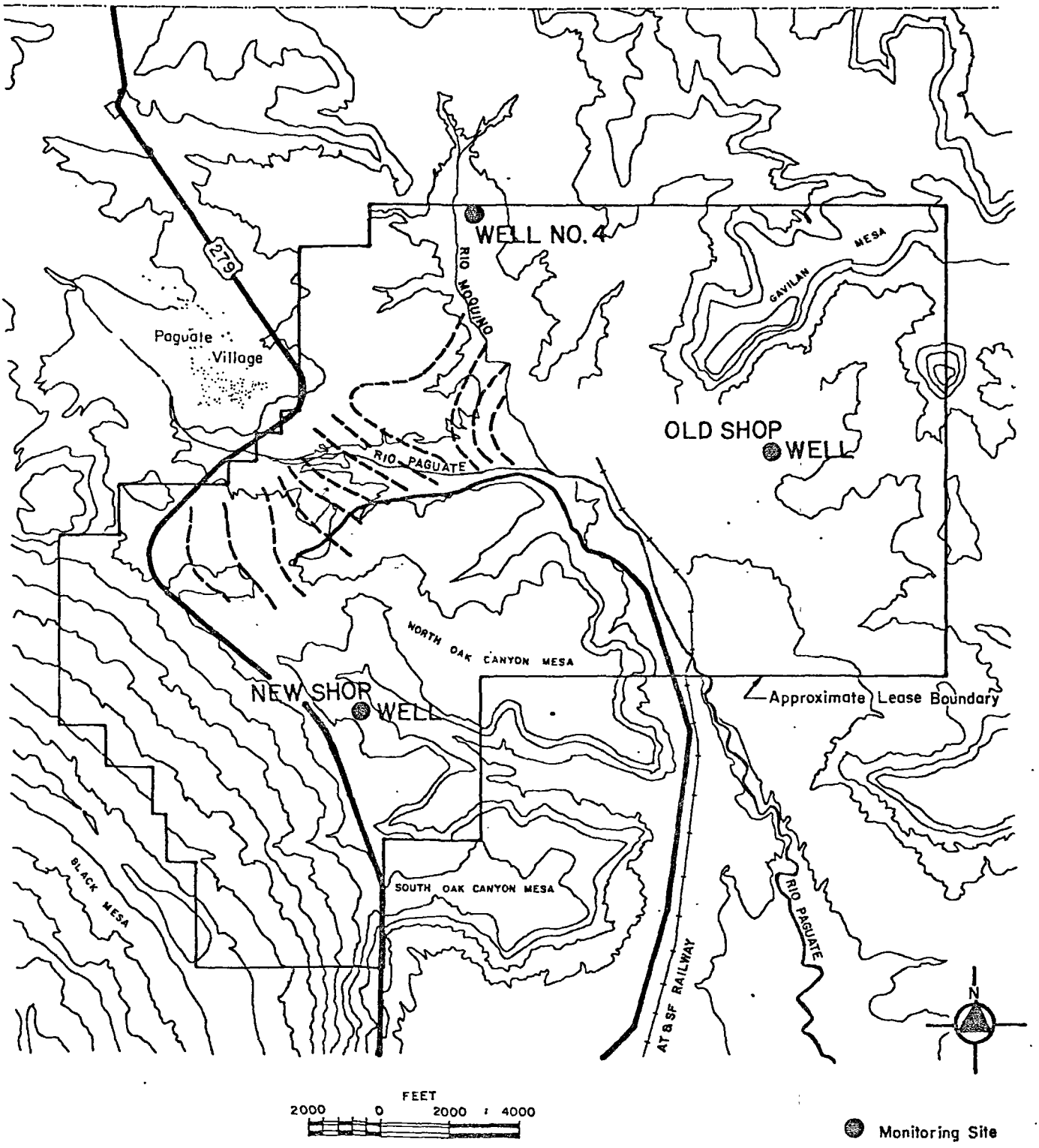
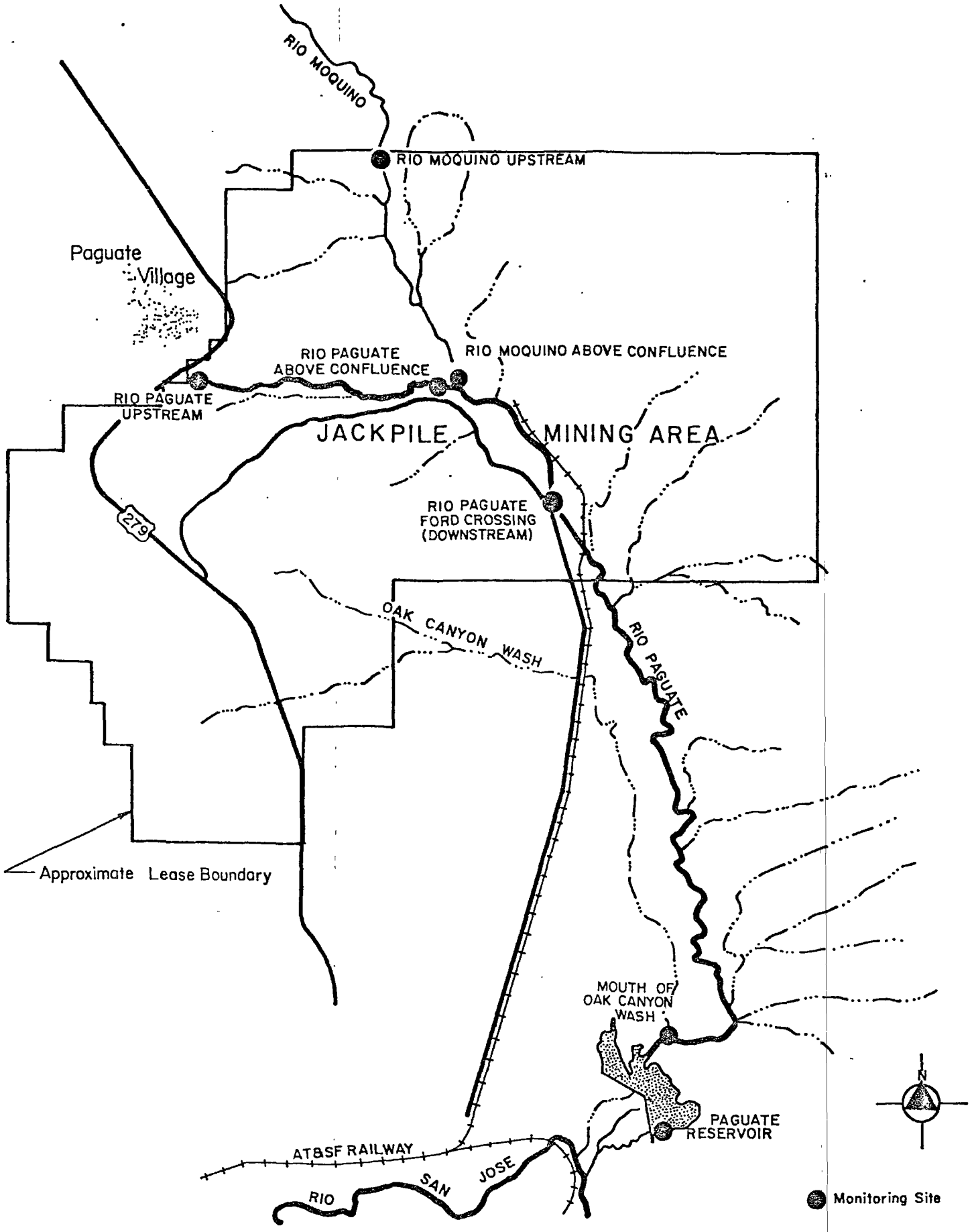
LOCATION OF GROUND WATER MONITORING STATIONS





LOCATION OF
SURFACE WATER MONITORING STATIONS

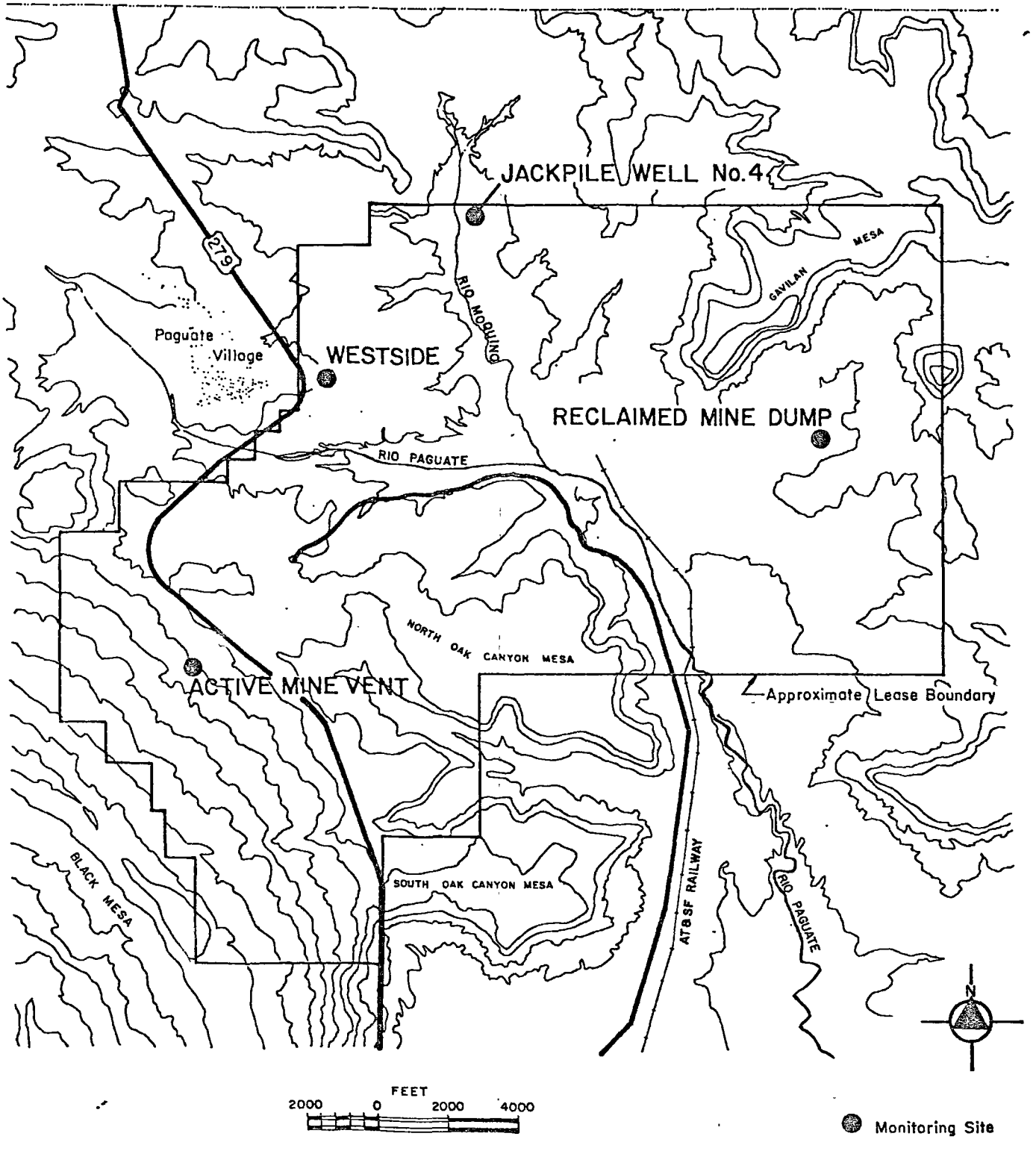
JACKPILE - AIR SAMPLING SURVEY

FOURTH QUARTER, 1981

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	10/81	16.9	2.48	1.58	1.70	17.54
	11/81	19.7	0.75	1.26	1.26	33.96
	12/81	15.0	2.38	0.81	0.92	34.59
2. Mine Vent	10/81	10.8	0.09	0.33	0.85	14.22
	11/81	19.3	0.06	0.06	0.15	34.59
	12/81	11.3	2.17	0.18	0.81	28.05
3. West Gate	10/81	19.0	0.62	0.26	1.24	36.08
	11/81	23.7	1.64	0.31	0.61	29.74
	12/81	25.3	2.14	0.35	0.90	37.50
4. Well #4	10/81	24.2	1.89	0.79	1.69	13.76
	11/81	39.9	1.93	0.83	1.00	31.49
	12/81	29.2	0.71	0.43	1.38	29.05

JACKPILE-AMBIENT RADON SURVEY

FOURTH QUARTER, 1981

LOCATION	DATE	Rn-222 pCi/l
1. Dump F	10/81	2.11
	11/81	2.70
	12/81	2.70
2. Mine Vent	10/81	1.94
	11/81	2.19
	12/81	2.22
3. Well #4	10/81	2.41
	11/81	2.78
	12/81	2.72
4. Westgate	10/81	1.13
	11/81	1.25
	12/81	1.24

LOCATION OF
AIR QUALITY MONITORING STATIONS