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

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JUN 25 1980
U.S. GEOLOGICAL SURVEY
ALBUQUERQUE, NEW MEXICO

June 24, 1980

Area Mining Supervisor
UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY
P.O. Box 26124
Albuquerque, New Mexico 87125

RE: Jackpile Mine Reclamation Plan
Report - First Quarter, 1980

Dear Sir:

In accordance with the Jackpile Mine Reclamation Plan, we submit the following data for the First Quarter of 1980.

1. Radiological Analysis of Ground and Surface Water.

2. Chemical Analysis of Ground and Surface Water.

3. Results of the Air Monitoring Program.

4. Results of the Ambient Radon Study.

Sincerely,

Meade A. Stirland, Manager
ERVIRONMENT, HEALTH & SAFETY

js

Enclosures

AIR QUALITY MONITORING PROGRAM

One 48-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

One 48-hour sample is collected at each of the air sampling locations as specified by Marc Nelson. These samples are collected about one meter above the ground in 30-liter Tedlar bags, using a modified acquarium pump. The samples are transported to the Environmental Laboratory, transferred to a scintillation cell, and counted.

JACKPILE - WATER RADIOLOGICAL ANALYSIS

(FIRST QUARTER, 1980)

DESCRIPTIVE LOCATION	Radium-226 pCi/L			Uranium-Natural ppm		
	Jan.	Feb.	March	Jan.	Feb.	March
Rio Paguate Upstream	0.22	0.02	0.58	0.007	0.002	0.003
Rio Moquino Upstream	0.10	0.11	0.18	0.010	0.004	0.005
Rio Paguate Above the Confluence	2.18	5.32	3.51	0.052	0.060	0.075
Rio Moquino Above the Confluence	0.68	0.28	0.61	0.016	0.033	0.010
Rio Paguate Ford Crossing	5.09	12.79	3.66	0.079	0.278	0.060
Paguate Reservoir	0.80	0.91	0.77	0.361	0.451	0.417
Jackpile Well #4	0.31	0.37	0.93	0.005	0.005	0.004
Jackpile New Shop	2.34	2.80	2.61	0.021	0.005	0.006
Jackpile Old Shop	2.47	1.32	2.98	0.120	0.077	0.052

JACKPILE
WATER CHEMICAL ANALYSIS

DATE: January, 1980

DESCRIPTIVE LOCATION	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)	1-7-80	8.2	500	735	320	9	127	44	6	86	39	<1	0.40	30	<0.10		
Rio Moquino (Upstream)	1-7-80	8.1	1109	1700	288	13	690	1	13	145	83	<1	0.54	20	<0.10		
Rio Paguate (Above the Confluence)	1-7-80	8.2	608	825	283	14	227	58	7	77	50	<1	0.40	34	<0.10		
Rio Moquino (Above the Confluence)	1-7-80	8.2	1440	1950	266	20	843	165	15	150	97	<1	0.60	17	<0.10		
Rio Paguate (Ford Crossing)	1-7-80	8.2	1367	1850	247	21	808	155	15	135	93	<1	0.55	17	<0.10		
Paguate Reservoir	1-7-80	8.1	2034	2500	261	32	1228	235	40	243	120	<1	0.68	6	<0.10		
Jackpile #4	1-7-80	8.4	878	1450	364	17	327	335	4	5	1	<1	1.20	8	<0.10		
Jackpile New Shop	1-7-80	8.5	1477	2150	392	26	657	560	9	16	3	2	1.25	10	<0.10		
Jackpile Old Shop	1-7-80	8.1	1982	2600	317	46	1077	445	15	115	78	36	1.05	13	<0.10		

		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)	1-7-80	<0.005	0.56	<0.001	<0.005	0.02	<.0005	<0.01	0.003	<0.10	0.008	<0.01	<0.005	<0.05			
Rio Moquino (Upstream)	1-7-80	<0.005	0.72	<0.001	<0.005	0.02	<.0005	<0.01	0.003	<0.10	0.030	<0.01	<0.005	<0.05			
Rio Paguate (Above the Confluence)	1-7-80	<0.005	0.60	<0.001	<0.005	0.06	<.0005	<0.01	0.005	<0.10	0.007	<0.01	<0.005	<0.05			
Rio Moquino (Above the Confluence)	1-7-80	<0.005	0.64	<0.001	<0.005	0.04	<.0005	0.01	0.004	<0.10	0.005	<0.01	<0.005	<0.05			
Rio Paguate (Ford Crossing)	1-7-80	<0.005	0.64	<0.001	<0.005	0.05	<.0005	0.01	0.003	<0.10	0.012	<0.01	<0.005	<0.05			
Paguate Reservoir	1-7-80	<0.005	0.44	<0.001	<0.005	0.02	<.0005	0.01	0.007	<0.10	0.008	<0.01	<0.005	<0.05			
Jackpile #4	1-7-80	<0.005	0.60	<0.001	<0.005	0.02	<.0005	<0.01	0.006	<0.10	0.008	<0.01	<0.005	<0.05			
Jackpile New Shop	1-7-80	<0.005	0.60	<0.001	<0.005	0.02	<.0005	<0.01	0.003	<0.10	0.115	<0.01	<0.005	<0.05			
Jackpile Old Shop	1-7-80	<0.005	0.66	0.008	<0.005	0.03	<.0005	0.35	0.006	<0.10	0.62	<0.01	<0.005	<0.05			

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JACKPILE
WATER CHEMICAL ANALYSIS

DATE: February, 1980

DESCRIPTIVE LOCATION	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)	2-5-80	8.1	534	845	358	11	153	30	4	89	39	1	0.37	30	<0.10		
Rio Moquino (Upstream)	2-5-80	8.1	1088	1600	297	12	581	104	8	138	74	1	0.46	23	<0.10		
Rio Paguate (Above the Confluence)	2-5-80	8.2	563	830	304	12	203	37	5	76	46	1	0.53	33	<0.10		
Rio Moquino (Above the Confluence)	2-5-80	7.9	1244	1800	273	13	703	132	11	132	88	1	0.52	29	<0.10		
Rio Paguate (Ford Crossing)	2-5-80	8.0	1460	2000	293	16	853	164	12	145	100	1	0.55	24	<0.10		
Paguate Reservoir	2-5-80	8.1	1722	2400	273	22	1047	210	21	178	102	1	0.60	30	<0.10		
Jackpile #4	2-5-80	8.7	763	1500	346	17	337	220	3	4	1	1	1.18	10	<0.10		
Jackpile New Shop	2-5-80	8.5	1277	2200	382	26	659	360	7	13	2	2	1.25	19	<0.10		
Jackpile Old Shop	2-5-80	8.4	1598	2400	309	38	902	300	9	81	61	15	1.10	39	<0.10		
		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)	2-5-80	0.008	0.14	<0.001	<0.005	<0.01	<.0005	< 0.005	0.001	<0.10	0.008	<0.01	<0.005	< 0.05			
Rio Moquino (Upstream)	2-5-80	0.005	<0.05	<0.001	<0.005	<0.01	<.0005	< 0.005	0.002	<0.10	0.012	<0.01	<0.005	< 0.05			
Rio Paguate (Above the Confluence)	2-5-80	0.007	0.10	<0.001	<0.005	<0.01	<.0005	< 0.005	0.002	<0.10	0.011	<0.01	<0.005	< 0.05			
Rio Moquino (Above the Confluence)	2-5-80	0.009	<0.05	<0.001	<0.005	<0.01	<.0005	< 0.005	0.004	0.26	0.018	<0.01	<0.005	< 0.05			
Rio Paguate (Ford Crossing)	2-5-80	0.008	0.12	<0.001	<0.005	<0.01	<.0005	< 0.005	0.002	<0.10	0.016	<0.01	<0.005	< 0.05			
Paguate Reservoir	2-5-80	0.008	0.12	<0.001	<0.005	<0.01	<.0005	< 0.005	0.004	<0.10	0.009	<0.01	<0.005	< 0.05			
Jackpile #4	2-5-80	0.005	0.06	<0.001	<0.005	<0.01	<.0005	< 0.005	0.006	<0.10	0.008	<0.01	<0.005	< 0.05			
Jackpile New Shop	2-5-80	0.008	<0.05	<0.001	<0.005	<0.01	<.0005	< 0.005	0.001	0.15	0.046	<0.01	<0.005	< 0.05			
Jackpile Old Shop	2-5-80	0.005	<0.05	<0.001	<0.005	<0.01	<.0005	0.32	0.006	0.19	0.250	<0.01	<0.005	< 0.05			

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JACKPILE
WATER CHEMICAL ANALYSIS

DATE: March, 1980

DESCRIPTIVE LOCATION	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)	3-6-80	8.3	521	740	357	10	148	28	5	88	38	< 1	0.38	27	< 0.10
Rio Moquino (Upstream)	3-6-80	8.3	1067	1400	270	8	633	88	8	110	60	< 1	0.50	25	< 0.10
Rio Paguate (Above the Confluence)	3-6-80	8.2	534	870	311	10	212	38	6	37	45	< 1	0.46	31	< 0.10
Rio Moquino (Above the Confluence)	3-6-80	8.1	1014	1575	285	10	542	100	9	117	71	< 1	0.51	23	< 0.10
Rio Paguate (Ford Crossing)	3-6-80	8.2	1095	1500	288	11	602	109	11	120	76	< 1	0.55	23	< 0.10
Paguate Reservoir	3-6-80	8.2	1559	2100	271	22	981	115	21	162	102	< 1	0.62	21	< 0.10
Jackpile #4	3-6-80	8.7	793	1400	370	17	304	268	4	4	2	< 1	1.22	10	< 0.10
Jackpile New Shop	3-6-80	8.4	1414	2200	404	27	678	464	9	12	2	< 1	1.28	21	< 0.10
Jackpile Old Shop	3-6-80	8.2	1407	1900	347	26	622	328	8	36	26	5	1.21	12	0.10

		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)	3-6-80	0.006	0.12	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.004	< 0.10	0.007	< 0.01	< 0.005	< 0.05
Rio Moquino (Upstream)	3-6-80	0.006	< 0.05	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.006	< 0.10	0.016	< 0.01	< 0.005	< 0.05
Rio Paguate (Above the Confluence)	3-6-80	0.006	< 0.05	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.008	< 0.10	0.080	< 0.01	< 0.005	< 0.05
Rio Moquino (Above the Confluence)	3-6-80	0.006	< 0.05	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.008	< 0.10	0.010	< 0.01	< 0.005	< 0.05
Rio Paguate (Ford Crossing)	3-6-80	0.007	< 0.05	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.005	< 0.10	0.011	< 0.01	< 0.005	< 0.05
Paguate Reservoir	3-6-80	0.006	< 0.05	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.006	< 0.10	0.009	< 0.01	< 0.005	< 0.05
Jackpile #4	3-6-80	0.007	0.06	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.004	< 0.10	0.010	< 0.01	< 0.005	< 0.05
Jackpile New Shop	3-6-80	0.007	< 0.05	< 0.001	< 0.005	< 0.01	< .0005	< 0.005	0.010	< 0.20	0.120	< 0.01	< 0.005	< 0.05
Jackpile Old Shop	3-6-80	0.008	0.08	< 0.001	< 0.005	< 0.01	< .0005	0.11	0.006	< 0.10	0.080	< 0.01	< 0.005	< 0.05

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JACKPILE - AIR SAMPLING SURVEY

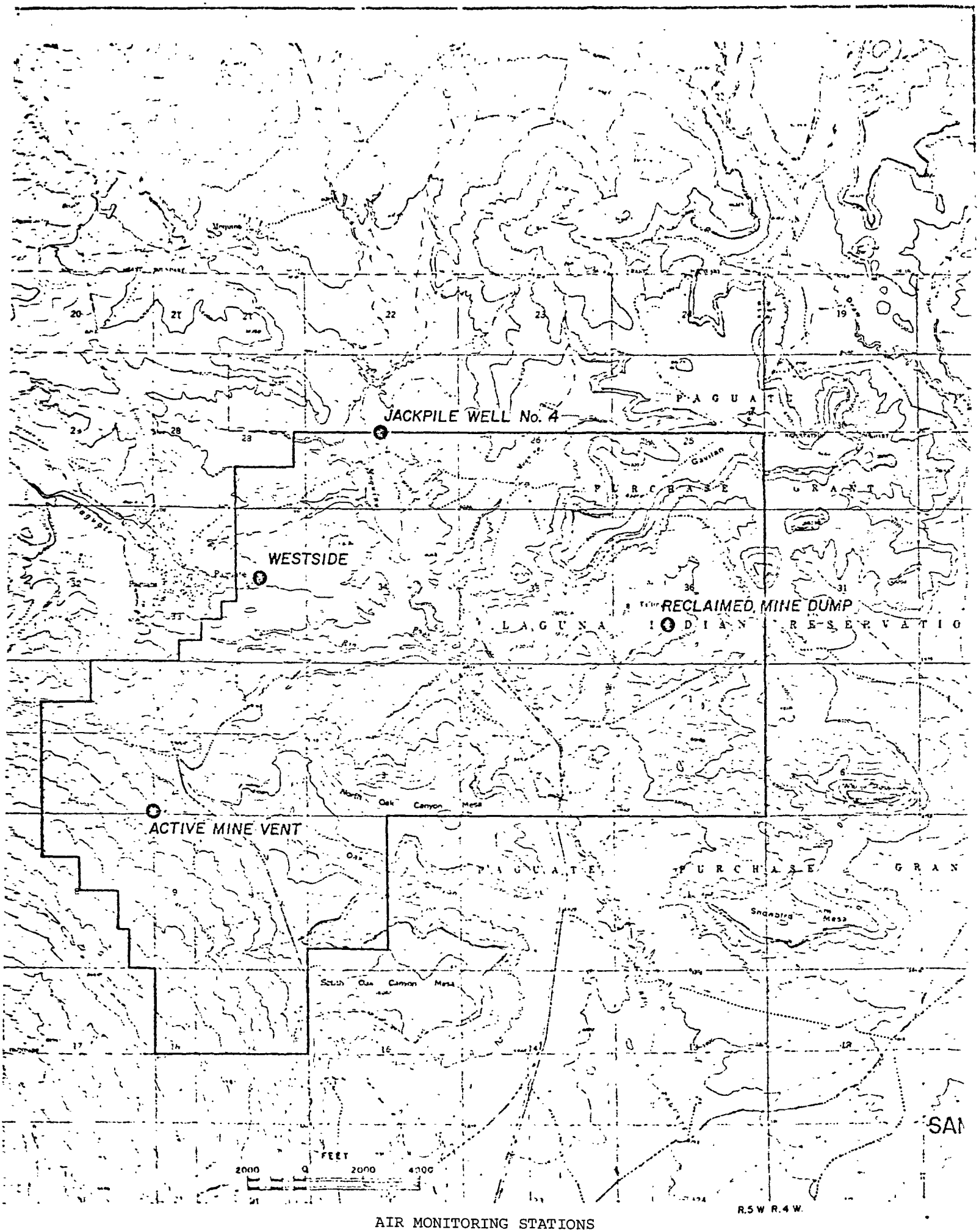
FIRST QUARTER, 1980

LOCATION	DATE	Total Particulate $mg/M^3 \times 10^{-8}$	U-Nat. $uci/ml \times 10^{-15}$	Ra-226 $uci/ml \times 10^{-15}$	Th-230 $uci/ml \times 10^{-15}$	Pb-210 $uci/ml \times 10^{-15}$
1. Dump F	1/80	0.33	1.25	1.25	6.56	57.81
	2/80	1.16	0.58	0.06	0.12	1.16
	3/80	0.42	2.67	3.24	1.71	14.01
2. Mine Vent	1/80	1.68	1.51	0.50	2.02	16.81
	2/80	1.67	0.14	0.05	0.10	0.48
	3/80	0.79	0.20	4.22	1.87	11.30
3. West Gate	1/80	0.85	1.39	1.08	3.08	132.51
	2/80	0.32	2.19	0.04	0.13	0.42
	3/80	0.20	1.62	1.58	1.75	11.38
4. Well #4	1/80	1.91	10.56	0.85	2.21	161.84
	2/80	2.76	10.61	0.41	0.41	8.16
	3/80	0.20	1.94	1.14	0.99	7.57

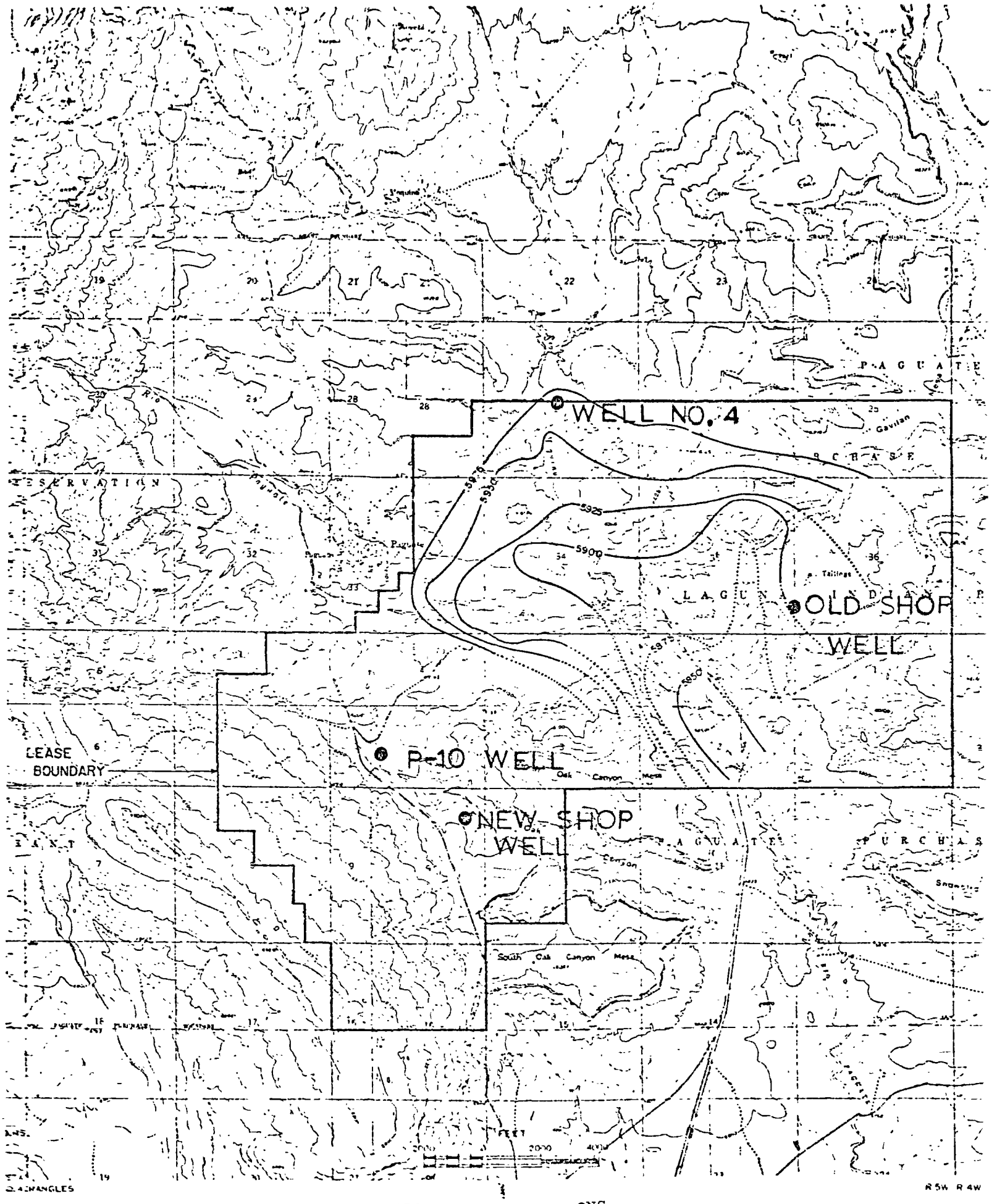
JACKPILE - AMBIENT RADON STUDY

FIRST QUARTER, 1980

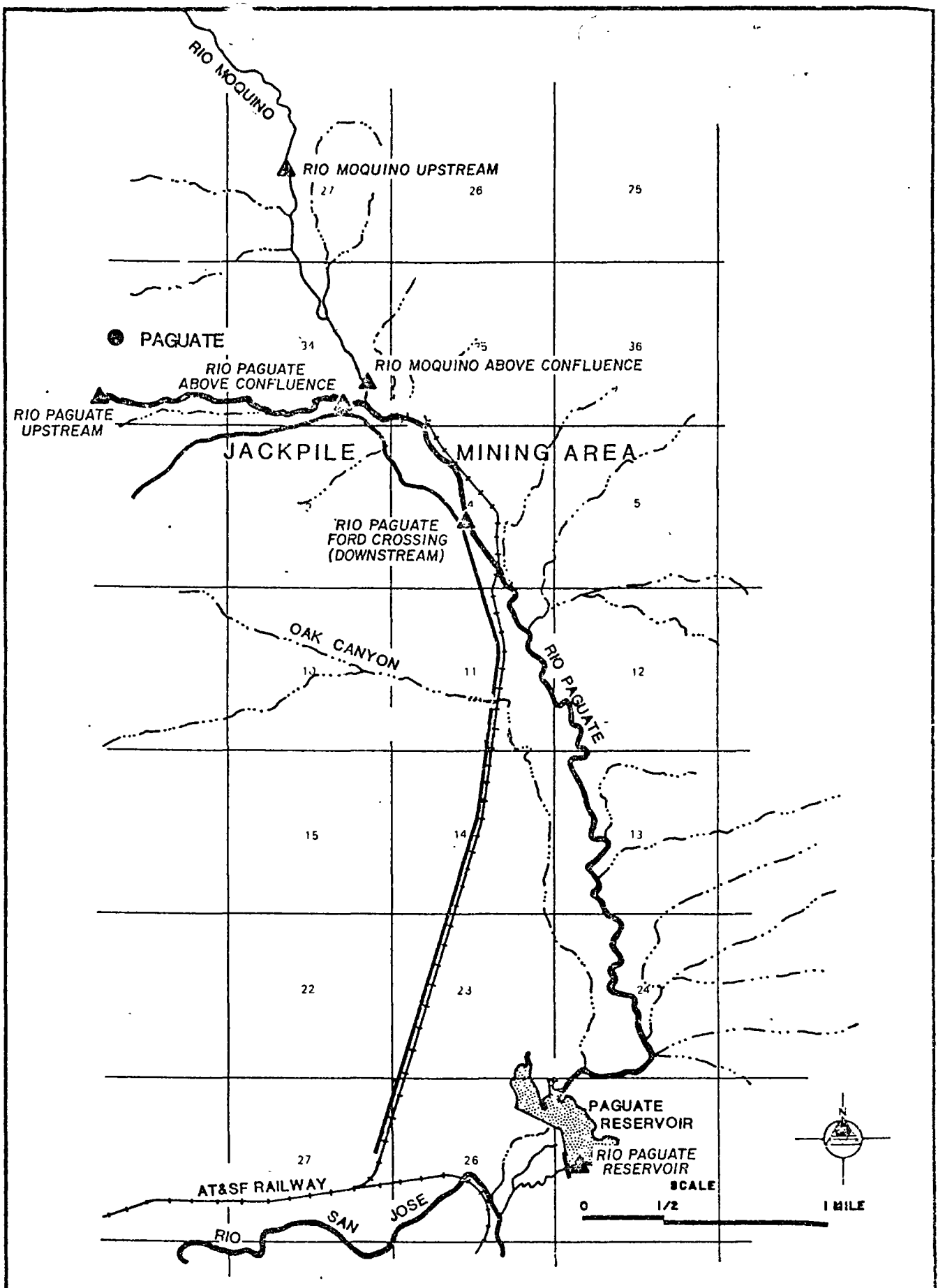
LOCATION	DATE	Rn-222 pCi/l
1. Dump F	1/80	0.32
	2/80	0.43
	3/80	< 0.10
2. Mine Vent	1/80	< 0.10
	2/80	0.85
	3/80	0.62
3. Well #4	1/80	0.57
	2/80	0.41
	3/80	< 0.10
4. Westgate	1/80	0.17
	2/80	0.21
	3/80	0.18



AIR MONITORING STATIONS



GROUND WATER LOCATIONS



LOCATION OF
SURFACE WATER MONITORING STATIONS

DAMES & MOORE