

PATHFINDER MINES CORPORATION
 Lucky Mc Mine
 Source Material License SUA-672

SEMI-ANNUAL EFFLUENT MONITORING REPORT
 Monitor Well Samples
 3rd and 4th Quarters, 1980

Attachment 1
 (03.010.00)

Parameter ¹	Q ²	Well T1-1	Well T1-3	Well T1-6	Well T2-1	Well T4-1
Sample	3	9-19-80	9-24-80	N/S	9-25-80	9-30-80
Date	4	12-19-80	12-12-80	12-17-80	12-17-80	12-22-80
Static	3	23.66	20.66	N/S	Dry Hole	60.66
Water Level	4	50.88	21.22	19.46	Dry Hole	60.96
Conductivity	3	14,273	8,464	N/A	-	7,595
(umhos/cm @ 25°C)	4	19,147	7,529	4,408	-	7,132
pH	3	3.60	3.58	N/A	-	7.06
	4	2.30	3.72	6.88	-	6.75
U natural	3	1.957	.0018	N/S	-	.0203
(uCi x 10 ⁻⁵ /ml)	4	1.354	.0017	.0209	-	.0122
Ra-226	3	-.40±.45	.00±.17	N/S	-	.00±.04
(uCi x 10 ⁻⁸ /ml)	4	2.5±5.0	.35±.19	.19±.15	-	.05±.12
Th-230	3	.15±.005	.0024±.0008	N/S	-	-.0002±.0003
(uCi x 10 ⁻⁶ /ml)	4	11.7±0.10	.0028±.0008	.0093±.0014	-	.0103±.0015
Pb-210	3	N/A	N/A	N/S	-	N/A
(uCi x 10 ⁻⁷ /ml)	4	1.75±.20	-.006±.1170	.021±.039	-	.049±.054
Nitrate - nitrite	3	1.70	13.00	N/S	-	.75
(mg/l)	4	0.50	0.93	0.37	-	<.05
Sulfate	3	7,300	7,200	N/S	-	7,500
(mg/l)	4	14,800	7,490	2,230	-	3,330
Chloride	3	850	260	N/S	-	260
(mg/l)	4	730	239	60	-	260
Arsenic	3	0.37	0.80	N/S	-	.010
(mg/l)	4	1.10	0.76	.006	-	.017
Selenium	3	0.89	0.09	N/S	-	.026
(mg/l)	4	0.50	0.07	0.08	-	.041
Iron	3	1,600	35	N/S	-	7.8
(mg/l)	4	2,100	105	.12	-	.29
Manganese	3	174	46	N/S	-	1.9
(mg/l)	4	130	54	.50	-	.68
Potassium	3	28	23	N/S	-	18
(mg/l)	4	44	24	29	-	16

1 Analyses for soluble component
 2 Sampling quarter

N/S - Not Sampled
 N/A - Not Analyzed For

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SEMI-ANNUAL EFFLUENT MONITORING REPORT
Monitor Well Samples
3rd and 4th Quarters, 1980

Attachment 1 (continued)
(03.010.00)

Parameter ¹	Q ²	Well C-1	Well C-3	Well C-5	Well C-6	Well R-2	Well R-4	Well MW-2	Well MW-3
Sample Date	3 4	9-25-80 12-17-80	9-23-80 12-05-80	9-23-80 12-05-80	9-26-80 12-22-80	9-22-80 12-05-80	9-23-80 12-08-80	9-30-80 12-17-80	9-25-80 12-15-80
Static Water Level	3 4	34.33 32.55	50.10 50.10	48.60 48.55	Dry Hole Dry Hole	25.50 25.33	46.50 46.05	44.33 44.17	37.17 37.46
Conductivity (µmhos/cm @ 25°C)	3 4	11,794 11,556	9,821 9,848	9,166 8,480	- -	6,030 5,469	7,581 7,160	4,389 4,733	5,485 5,553
pH	3 4	7.24 7.31	7.00 6.98	7.50 7.85	- -	7.06 7.22	7.36 7.44	6.01 6.61	6.83 6.84
U natural (µCi x 10 ⁻⁵ /ml)	3 4	.0102 .0217	.0021 .0017	.0019 .0019	- -	.0018 .0026	.0023 .0047	.0019 .0022	.2302 .3114
Pa-226 (µCi x 10 ⁻⁸ /ml)	3 4	.04±.03 N/A	.02±.03 -.01±.03	.02±.03 .04±.04	- -	.07±.04 .01±.02	.08±.05 0.0±.02	.02±.03 .07±.04	.03±.03 .07±.04
Po-210 (µCi x 10 ⁻⁶ /ml)	3 4	-.0001±.0003 N/A	.0004±.0005 -.0001±.0004	0.0±.0003 -.0002±.0004	- -	.0004±.0005 .0004±.0003	0.0±.0004 .0011±.0005	-.0002±.0003 .0002±.0003	.0055±.0005 .0016±.0005
Pb-210 (µCi x 10 ⁻⁷ /ml)	3 4	N/A N/A	N/A .022±.12	N/A -.005±.041	- -	N/A .025±.051	N/A .018±.041	N/A -.022±.101	N/A .56±.07
Nitrate - nitrite (mg/l)	3 4	.10 <.05	<.05 <.05	<.05 <.05	- -	<.05 <.05	.19 <.05	<.05 <.05	62 31.4
Sulfate (mg/l)	3 4	5,900 6,120	4,100 4,450	4,100 4,070	- -	3,000 2,930	4,600 3,840	2,400 2,490	2,400 2,390
Chloride (mg/l)	3 4	78 130	250 240	230 220	- -	66 88	110 100	35 36	200 210
Arsenic (mg/l)	3 4	.026 N/A	.033 .016	.027 .015	- -	.005 .012	.005 .017	.016 .005	.022 .037
Selenium (mg/l)	3 4	.067 N/A	.045 .039	.030 .054	- -	.019 .037	.025 .058	.005 .008	.39 .28
Iron (mg/l)	3 4	.11 N/A	.07 .15	.06 .25	- -	.06 .15	.06 .12	.200 250	6.9 1.12
Manganese (mg/l)	3 4	.25 N/A	.15 .11	.13 .11	- -	.30 .20	.23 .09	1.34 1.35	.28 .25
Potassium (mg/l)	3 4	22 21	13 12	7.7 6.9	- -	14 12	14 15	12 13	14 14

1 Analyses for soluble component
2 Sampling quarter

N/S - Not Sampled
N/A - Not Analyzed For

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Semi-Annual Effluent Monitoring Report

Ambient Radon Gas Samples
 (quarterly average)

Station Number	3rd Quarter		4th Quarter	
	pCi/l $\pm 2\sigma$	%MPCIIA $\pm 2\sigma$	pCi/l $\pm 2\sigma$	%MPCIIA $\pm 2\sigma$
R-1	One year background sampling complete.			
R-2	.85 \pm .36	28.3 \pm 12.0	.93 \pm .13	31.0 \pm 4.3
R-3	1.29 \pm .42	43.0 \pm 14.0	1.21 \pm .12	40.3 \pm 4.0
R-4	1.23 \pm .34	41.0 \pm 11.3	1.92 \pm .15	64.0 \pm 5.0
R-5	.76 \pm .34	25.3 \pm 11.3	1.45 \pm .14	48.3 \pm 4.6
R-6	.71 \pm .31	23.6 \pm 10.3	.73 \pm .10	24.3 \pm 3.3

Calculations:

$$\sigma = \pm \sqrt{\frac{n \sum x^2 - (\sum x)^2}{n(n-1)}}$$

$$\text{pCi/l} = \text{uCi} \times 10^{-9} / \text{ml}$$

Sample Type:

Continuous for one week per month with samples collected and analyzed every 48 hours.

Location of Sample Points:

Radon samplers are located adjacent to ambient air samplers.

Pathfinder Mines Corporation
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Semi-Annual Effluent Monitoring Report

Ambient Radiation (External)

Sample Date: July 1, 1980 - September 30, 1980

Quarter: 3

Badge Number	mRem Per Quarter						
	Control	ER-1	ER-2	ER-3	ER-4	ER-5	ER-6
1		Lost	60	80	260	30	15
2	0	Lost	35	75	240	35	0
3	0	Lost	45	80	260	35	0
Average	0.0		46.6	78.3	253.3	33.3	5.0
Average Dose Rate uR/hr*	0.0		21.1	35.5	114.7	15.1	2.3

Sample Date: October 1, 1980 - December 31, 1980

Quarter: 4

Badge Number	mRem Per Quarter						
	Control	ER-1	ER-2	ER-3	ER-4	ER-5	ER-6
1		30	50	75	230	40	30
2	25	35	55	75	210	45	30
3	25	35	55	75	210	45	25
Average	25.0	33.3	53.3	75.0	216.6	43.3	28.3
Average Dose Rate uR/hr*	11.3	15.1	24.1	34.0	98.1	19.6	12.8

Sample Type: TLD badges analyzed quarterly.

Location of Sample Points: Three TLD badges are located adjacent to each ambient air monitoring station.

*Exposure rate calculated from Dose Equivalent = QFxD
where QF = quality factor (approximately 1)
D = dose -RAD and assuming D approximately equals exposure.

Pathfinder Mines Corporation
 Turkey Hill Mine
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Semi-Annual Effluent Monitoring Report

Unrestricted Airborne Samples
 (Average Daily Concentration from Quarterly Composite)

Sample Date: _____ Quarter: 3rd 1980

	Station Number					
	A-1	A-2	A-3	A-4	A-5	A-6
U Natural uCi x 10 ⁻¹² /ml	.008	.027	.030	.011	.006	.004
Ra-226 uCi x 10 ⁻¹² /ml	.0006	.036	.064	.033	.010	.006
Th-230 uCi x 10 ⁻¹⁴ /ml	0.00	NR	NR	NR	NR	NR
Pb-210 uCi x 10 ⁻¹² /ml	.015	NR	NR	NR	NR	NR
TSP ug/m ³	22.6	39.3	133.6	87.3	60.7	52.2

Sample Date: _____ Quarter: 4th 1980

	Station Number					
	A-1	A-2	A-3	A-4	A-5	A-6
U Natural uCi x 10 ⁻¹² /ml	.001	.017	.021	.013	.007	.007
Ra-226 uCi x 10 ⁻¹² /ml	.0005	.012	.046	.020	.003	.007
Th-230 uCi x 10 ⁻¹⁴ /ml	.0388	NR	NR	NR	NR	NR
Pb-210 uCi x 10 ⁻¹² /ml	.027	NR	NR	NR	NR	NR
TSP ug/m ³	16.6	27.1	71.6	46.3	65.2	36.7

Sample Type: Station A-1 is Hi-Vol, all others Low-Vol.

Location of Sample Points: A-1 Approximately 5 miles upwind of mill; NW 1/4 Sec 17, T32N R39W

A-2 Upwind of mill on site

A-3 Between mill and camp near restricted area fence

A-4 Downwind of tailing pond

A-5 South end of camp

A-6 North end of camp