

SUB-WATERSHED 4R
(WELLS CREEK)

Sub-watershed 4R (Wells Creek)

General Discussion

This sub-watershed encompasses 17.6 square miles or 11,232 acres of land area, approximately 12.7% of the total study area. The basin is drained by 27.8 miles of tributaries (16.45% of the total length of all the watershed tributaries), and contains 10.1 acres in small lakes and ponds (.09% of the total sub-watershed area). Commonwealth records indicate 36 surface mines and 44 deep mines in this area. Our field investigations find 34 surface mines with 8 having flows and 96 deep mine openings with 33 having flows.

The following information gives the averages of the sampling station designated as SC4R1, located at the mouth of Wells Creek and shown on drawing 7119-6. The percentages that this station contributes in pollution load and flow to the total pollution load and flow as measured at Monitoring Station SC1 on Stony Creek is also included.

	<u>Averages</u>	<u>Percent of Total Watershed</u>
pH	4.6	
Net Cold Acidity	1,552.85 PPD	4.97%
Net Hot Acidity	190.85 PPD	.18%
Ferrous Iron	48.10 PPD	6.27%
Total Iron	159.52 PPD	3.57%
Sulfate	26,831 PPD	13.93%
Hardness	22,065 PPD	10.72%
Flow	23,675,040 GPD	14.83%

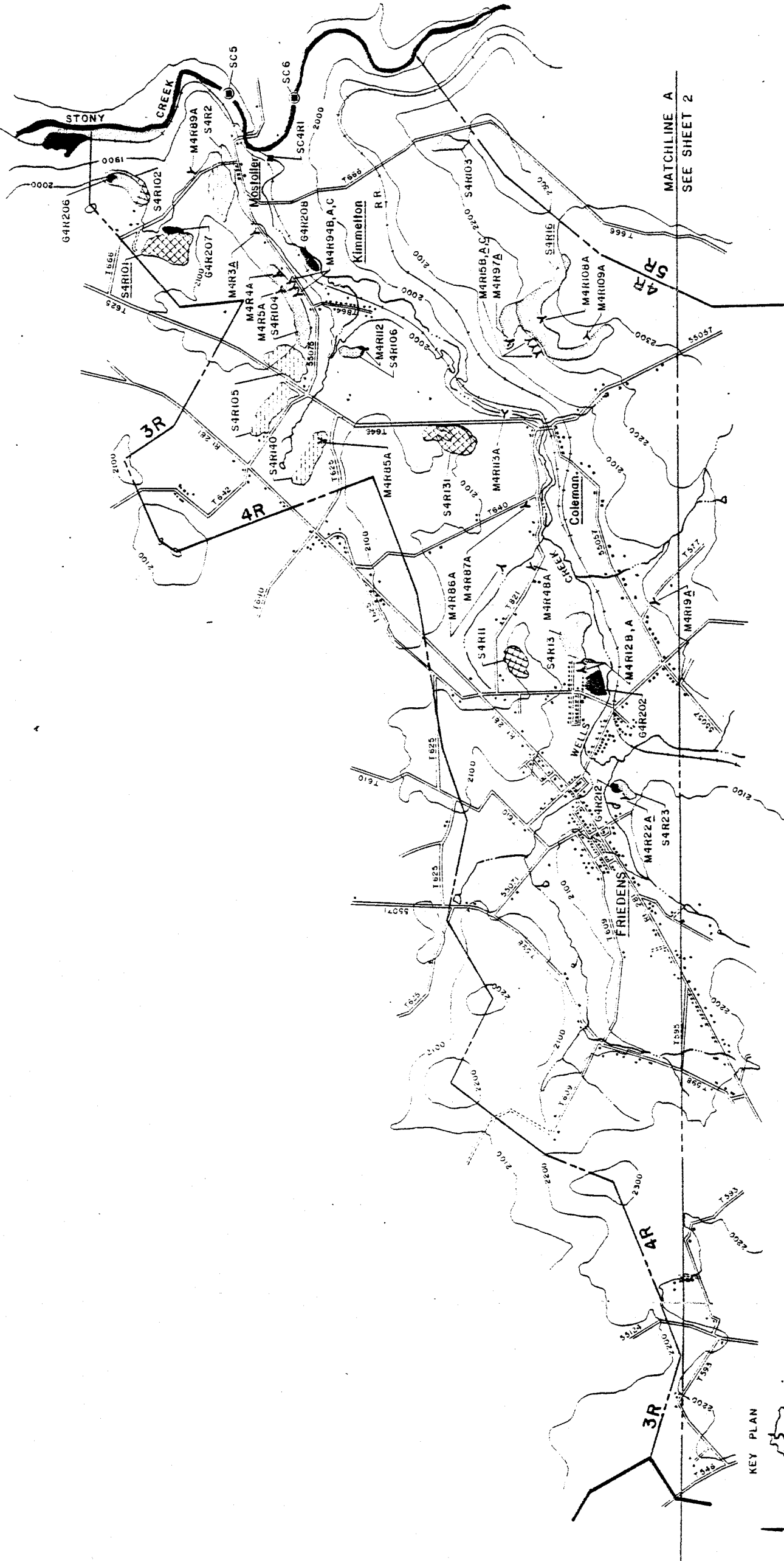
The following plates show the locations of all deep mine openings and strip mines where they exist within this sub-watershed, as well as the locations of all sampling stations.

Deep Mines

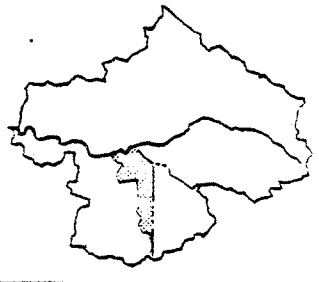
The Commonwealth records indicate that there are 44 deep mines in this sub-watershed. Our field investigations locate 96 deep mine openings of which 33 are flowing. Table 65 lists the abandoned deep mines within the sub-watershed with the following information: name of mine or operator if known, available mine maps, acres and seam mined, mine opening designation, openings with flows, estimated elevation of the openings, and head in feet, which is the difference in coal elevations on an up-dip mine.

Table 66 gives the averages of the abandoned deep mine flows. Directly under the averages are the percentages of flows and pollution loads that each contributes to the pollution load of the sub-watershed as measured at the mouth of Wells Creek at Sampling Station SC4R1. The averages, taken at the mine openings, are added together where more than one opening of a mine complex has a flow.

MAP OF SUB-WATERSHED 4R (WELLS CREEK) SHEET 1 of 2



KEY PLAN



MAP OF SUB-WATERSHED 4R (WELLS CREEK) SHEET 2 of 2

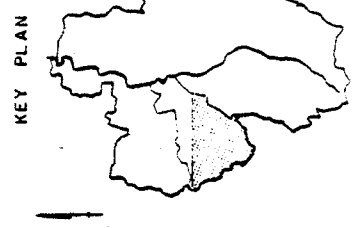
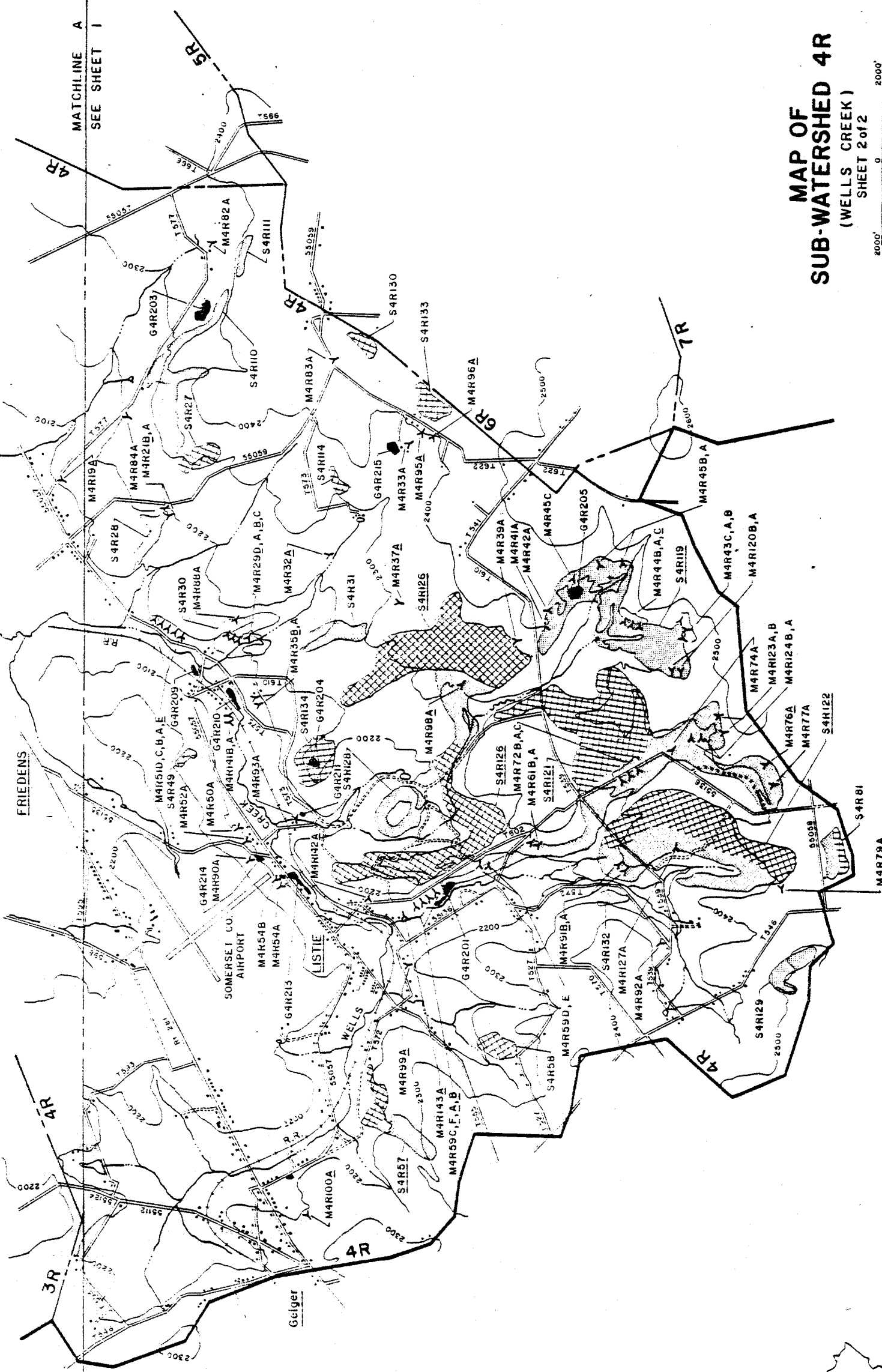
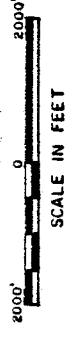


TABLE 65

Abandoned Deep Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening	Flow	Head (Feet)
M4R3	Russell & Ruth Pyle	No	-	C'*	M4R3A	2010'	Yes	Down Dip
M4R4	McClemens Bros.	No	-	E*	M4R4A	2050'	No	-
M4R5	Kimmelton	No	-	E*	M4R5A	2100'	No	-
M4R12	V. Smithing Coal Co.	Yes	960	D	M4R12A	2040'	No	Down Dip
M4R15	Unknown	No	-	D	M4R12B	2040'	No	Down Dip
M4R19	R. Smithing Coal Co.	No	-	C'*	M4R15A	2100'	Yes	150'*
M4R21	Ray E. Bruening	No	-	C'*	M4R15B	2100'	No	-
M4R22	Stauffer Mine #1 & Boswell Branch	Yes	24.3	C'*	M4R15C	2100'	Yes	-
M4R29	Buterbaugh & Adams Mining Co.	Yes	165	C'*	M4R19A	2100'	Yes	75*
M4R32	Unknown	No	-	C'*	M4R21A	2200'	Yes	-
M4R33	Trent Coal Co.	Yes	169	E*	M4R21B	2200'	Yes	-
M4R22	Stauffer Mine #1 & Boswell Branch	Yes	24.3	E	M4R22A	2060'	Yes	145'
M4R29	Buterbaugh & Adams Mining Co.	Yes	165	C'	M4R29A	2100'	Yes	220'
M4R29	Buterbaugh & Adams Mining Co.	Yes	165	C'	M4R29B	2100'	Yes	220'
M4R29	Buterbaugh & Adams Mining Co.	Yes	165	C'	M4R29C	2100'	Yes	220'
M4R29	Buterbaugh & Adams Mining Co.	Yes	165	C'	M4R29D	2100'	Yes	220'
M4R32	Unknown	No	-	C'*	M4R32A	2200'	Yes	50'
M4R33	Trent Coal Co.	Yes	169	C'	M4R33A	2370'	No	-

TABLE 65 (contd.)

Abandoned Deep Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening	Flow	Head (Feet)
M4R35	Meyersdale Coal Co.	Yes	221	C	M4R35A	2090'	Yes	183'
M4R37	Walter Stutzman	No	-	E*	M4R35B	2090'	Yes	183'
M4R39	Unknown	No	-	D*	M4R37A	2330'	Yes	20'
M4R41	Gilbert Spangler	No	-	D*	M4R39A	2380'	No	-
M4R42	Pike Run Coal Co. Inc.	No	-	E*	M4R41A	2400'	No	-
M4R43	Rice & Schrock Coal Co.	No	-	E*	M4R42A	2400'	No	-
M4R44	Unknown	No	-	E*	M4R43A	2440'	No	-
				E*	M4R43B	2440'	No	-
				E*	M4R43C	2440'	No	-
				D*	M4R44A	2400'	Yes	50'
				D*	M4R44B	2400'	Yes	-
				D*	M4R44C	2400'	Yes	-
M4R45	Eldora Land Co.	Yes	13.3	D	M4R45A	2440'	No	-
				D	M4R45B	2440'	No	-
				D	M4R45C	2400'	No	-
M4R48	(See M4R12)	-	-	D	M4R48A	2030'	No	-
M4R50	Olin E. Hendrick	No	-	E*	M4R50A	2100'	No	-
					M4R50B	2090'	No	-
M4R51	Unknown	No	-	E*	M4R51A	2070'	No	150'
				E*	M4R51B	2070'	No	-
				E*	M4R51C	2070'	No	-
				E*	M4R51D	2070'	No	-
				E*	M4R51E	2070'	Yes	-

TABLE 65 (contd.)

Abandoned Deep Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening	Flow	Head (Feet)
M4R52	Ira R. Barron	No	-	E*	M4R52A	2100'	No	-
M4R54	Stauffer Coal Co.	Yes	440	E	M4R54A	2140'	No	-
†M4R59	Listie Coal Co.	Yes	456	E	M4R54B	2140'	No	-
				C'	M4R59A	2120'	Yes	240'
				C'	M4R59B	2120'	Yes	
				C'	M4R59C	2120'	No	
				C'	M4R59D	2170'	No	
				C'	M4R59E	2170'	No	
				C'	M4R59F	2120'	Yes	
‡M4R61	Barrows Coal Co.	Yes	7.6	D	M4R61A	2220'	No	-
				D	M4R61B	2220'	No	-
‡M4R72	City Coal Co.	Yes	49	C'	M4R72A	2330'	No	-
				C'	M4R72B	2330'	No	
				C'	M4R72C	2330'	No	
‡M4R74	Svonack Coal Co.	No	-	C**	M4R74A	2370'	No	-
‡M4R76	Guy E. Spoerlin	No	-	C*	M4R76A	2440'	Yes	50'
‡M4R77	Listie Coal Co.	No	-	C*	M4R77A	2440'	No	-
M4R79	Gilmore & Jones Coal Co.	Yes	48.7	C'	M4R79A	2430'	No	-
M4R82	Adams Mine No. 2 & No. 3, & Roy Mine No. 1	Yes	378	D	M4R82A	2350'	No	200'

TABLE 65 (contd.)

Abandoned Deep Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening	Flow	Head (Feet)
M4R83	Unknown	No	-	D*	M4R83A	2440'	No	200'
M4R84	(See M4R82)	-	-	D	M4R84A	2220'	No	-
M4R85	Unknown	No	-	D*	M4R85A	2060'	No	-
M4R86	Unknown	No	-	D*	M4R86A	2030'	No	-
M4R87	Unknown	No	-	C'*	M4R87A	2030'	No	-
+M4R88	City Coal Co.	No	-	E*	M4R88A	2170'	No	-
M4R89	Unknown	No	-	C'*	M4R89A	2000'	No	-
M4R90	(See M4R54)	-	-	E	M4R90A	2150'	No	-
ØM4R91	Louise #1 and #2 & Bingler Mine	Yes	198	C'	M4R91A	2220'	Yes	140'
M4R92	Unknown	No	-	C'	M4R91B	2220'	Yes	-
M4R93	Unknown	No	-	E*	M4R92A	2340'	No	-
ØM4R94	Reading Iron Co., Mine #3	Yes	835	C'*	M4R93A	2060'	No	-
**M4R95	Unknown	No	-	C'	M4R94A	2050'	No	-
M4R96	Unknown	No	-	C'	M4R94B	2050'	No	-
M4R97	Unknown	No	-	C'	M4R94C	2050'	No	-
				C'*	M4R95A	2400'	Yes	50'
				C'*	M4R96A	2400'	Yes	50'
				C'*	M4R97A	2250'	Yes	150'

TABLE 65 (contd.)

Abandoned Deep Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening	Flow	Head (Feet)
M4R98	Stauffer Quemahoning Coal Co. Mine #3	Yes	46.4	D	M4R98A	2300'	Yes	50'
M4R99	Unknown	No	-	E*	M4R99A	2150'	Yes	50'
M4R100	Unknown	No	-	E*	M4R100A	2210'	Yes	40'
**M4R108	Unknown	No	-	C'*	M4R108A	2250'	No	-
M4R109	Unknown	No	-	C'*	M4R109A	2280'	No	-
M4R112	Unknown	No	-	C'*	M4R112A	2040'	No	-
M4R113	Unknown	No	-	C'*	M4R113A	2010'	No	-
≡M4R120	Unknown	No	-	D*	M4R120A	2460'	No	-
≡M4R123	Unknown	No	-	D*	M4R120B	2460'	No	-
≡M4R124	Unknown	No	-	C'*	M4R123A	2420'	No	-
				C'*	M4R123B	2420'	No	-
				C'*	M4R124A	2370'	No	-
				C'*	M4R124B	2370'	No	-
M4R125	(See M4R98)	-	-	D*	M4R125A	2380'	No	-
∅M4R127	Unknown	No	-	C'*	M4R127A	2340'	No	-
M4R141	Somerset & Cambria Smokeless Coal Mining Co.	Yes	15.74	C'	M4R141A	2071'	No	Down Dip
				C'	M4R141B	2071'	No	

TABLE 65 (contd.)

Abandoned Deep Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening	Flow	Head (Feet)
M4R142	Unknown	No	-	D*	M4R142A	2190'	Yes	-
M4R143	Unknown	No	-	C*	M4R143B	2150'	Yes	-

*Indicates assumed.

†Possible connection with Strip Mine S4R13.

‡Possible connection with Strip Mine S4R28.

@Possible connection with Strip Mine S4R23.

‡Possible connection with Strip Mine S4R30.

‡Possible connection with Strip Mine S4R126.

‡Possible connection with Strip Mine S4R119.

‡Possible connection with Strip Mine S4R121.

‡Possible connection with Strip Mine S4R140

‡Possible connection with Strip Mine S4R122.

‡Possible connection with Strip Mine S4R104.

**Possible connection with Strip Mine S4R116.

TABLE 66

Abandoned Deep Mine Average Water Quality Data

Sub-watershed 4R

Mine No.	pH	Net Cold Acid ppd	Net Hot Acid ppd	Ferrous Iron ppd	Total Iron ppd	Sulfate ppd	Hardness ppd	Flow gpd
M4R3	5.7	.91 .1%	1.16 .6%	0 -	.05 -	1.18 -	2.3 -	5,760 -
M4R15	3.6	95.18 6.1%	31.0 16.2%	.20 .4%	1.32 .8%	292.4 1.1%	312.0 1.4%	139,680 .6%
M4R19	5.5	.27 -	0 -	0 -	.01 -	1.03 -	2.8 -	4,320 -
M4R21	5.3	11.56 .7%	91.7 48.1%	.06 .1%	4.84 3%	176.4 .7%	426.0 1.9%	152,640 .6%
M4R22	6.1	0 -	0 -	.04 .1%	.56 .4%	75.5 .3%	133.2 .6%	72,000 .3%
M4R29	4.6	819.44 52.8%	1,564.6 819.8%	9.03 18.8%	81.11 50.9%	1,379.14 5.1%	1,650.3 7.5%	469,440 2%
M4R32	6.0	0 -	0 -	.01 -	.10 .1%	5.3 -	24.3 .1%	37,440 .2%
M4R35	3.5	661.3 42.6%	347.5 182.1%	5.8 12.1%	22.4 14%	1,551.0 5.8%	1,574.0 7.1%	1,009,440 4.3%
M4R37	5.6	2.28 .2%	0 -	.01 -	.28 .2%	5.7 -	29.6 .1%	27,360 .1%

TABLE 66 (contd.)

Abandoned Deep Mine Average Water Quality Data
Sub-watershed 4R

Mine No.	pH	Net Cold Acid ppd	Net Hot Acid ppd	Ferrous Iron ppd	Total Iron ppd	Sulfate ppd	Hardness ppd	Flow gpd
M4R44	3.7	61.4 4%	88.4 46.3%	.11 .2%	2.40 1.5%	296.7 1.1%	361.7 1.6%	158,400 .7%
M4R51	6.4	0 -	0 -	.02 -	.64 .4%	46.2 .2%	67.3 .3%	28,800 .1%
M4R59	3.4	2,514.76 161.9%	551.49 289%	9.53 19.8%	35.89 22.5%	7,402.4 27.6%	9,896.20 44.9%	2,534,840 10.7%
M4R76	6.9	0 -	* -	0 -	0 -	.73 -	1.45 -	1,440 -
M4R91	3.1	155.5 10%	60.9 31.9%	.9 1.9%	4.8 3%	515.9 1.9%	731.4 3.3%	161,280 .7%
M4R95	3.2	235.62 15.2%	86.78 45.5%	.63 1.3%	8.08 5.1%	188.61 .7%	266.25 1.2%	48,960 .2%
M4R96	4.9	2.16 .1%	.26 .1%	.02 -	.04 -	4.53 -	19.12 .1%	23,040 .1%
M4R97	7.3	0 -	* -	0 -	.03 -	7.36 -	10.84 .1%	7,200 -
M4R98	3.7	1.44 .1%	4.36 2.3%	.01 -	.10 .1%	2.96 -	3.26 -	7,200 -

TABLE 66 (contd.)

Abandoned Deep Mine Average Water Quality Data
Sub-watershed 4R

Mine No.	pH	Net Cold Acid ppd	Net Hot Acid ppd	Ferrous Iron ppd	Total Iron ppd	Sulfate ppd	Hardness ppd	Flow gpd
M4R99	6.7	0	*	0	.01	.86	1.26	4,320
M4R100	6.0	.10	*	0	.05	.72	.68	7,200
M4R142	6.8	0	*	.08	.34	27.47	*	5,760
M4R143	6.4	0	*	.18	.27	2.19	*	7,200
		-		.4%	.2%	-		-

*Not analyzed.

Strip Mines

The Commonwealth records indicate there are 36 strip mines in this sub-watershed. Our field investigations locate 34 surface mines with 8 having flows. Table 67 lists the abandoned strip mines within the sub-watershed with the following information: the name of the mine or operator if known, the acres of area mined and which seam was mined, the designation we give the mine, and whether or not there is a flow.

The total acreage of abandoned surface mines in sub-watershed 4R is 1,176.88 acres or 10.48% of the total land area.

Table 68 gives the averages of the abandoned surface mine flows. Directly under the averages are the percentages of flows and pollution loads that each contributes to the pollution load of the sub-watershed as measured at the mouth of Wells Creek at Sampling Station SC4R1.

Where a single surface mine has more than one flow, the averages of the flows are added together.

Following Table 68 are the descriptions of the flowing strip mines along with abatement recommendations.

TABLE 67
Abandoned Surface Mines
Sub-watershed 4R

Mine Number	Name of Mine or Operator	Area Mined (Acres)	Seam Mined	Flowing	Connection w/Deep Mine
S4R2	Alumbaugh Coal Co.	19.28	E & D	No	No
S4R11	H. E. Goden	8.26	E & D	No	No
S4R13	Alumbaugh Coal Co.	17.44	D	No	M4R12
S4R16	Alumbaugh Coal Co.	41.31	D	Yes	M4R97, M4R108
S4R23	Dunlo Coal Co. Inc.	2.75	E	No	M4R22
S4R27	Dunlo Coal Co. Inc.	10.10	D	No	No
S4R28	Thermal Coal Mine Co.	10.10	E & D	No	M4R21
S4R30	Glosser Coal Co.	23.87	E & D	No	M4R29, M4R88
S4R31	Topper Coal Co.	15.61	E & D	No	No
S4R49	Ira R. Barron	2.75	E,D, & C'	No	No
S4R57	Svonavec Coal Co.	24.79	E	Yes	No
S4R58	Thermal Coal Mine Co.	11.93	C'	No	No
S4R81	H. Clay Stickel	11.01	E & D	No	No
S4R101	Unknown	13.77	E	Yes	No
S4R102	Unknown	11.93	E	No	No
S4R103	Unknown	3.67	B	No	No
S4R104	Unknown	13.77	E	No	M4R94, M4R5
S4R105	Unknown	27.54	E & C'	No	No
S4R106	Unknown	2.75	E & C'	No	No
S4R110	Unknown	33.97	C'	No	No
S4R111	Unknown	6.43	E	No	No

TABLE 67 (Contd.)

Abandoned Surface Mines

Sub-watershed 4R

Mine Number	Name of Mine or Operator	Area Mined (Acres)	Seam Mined	Flowing	Connection w/Deep Mine
S4R114	Unknown	8.26	E	No	No
S4R119	Unknown	91.80	E	Yes	M4R41, M4R42, M4R43, M4R44, M4R45, M4R120
S4R121	Unknown	215.73	E	Yes	M4R56, M4R61, H4R72, M4R74, M4R76, M4R77, M4R123, M4R124
S4R122	Unknown	143.21	C' & E	Yes	M4R91, M4R127
S4R126	Unknown	304.78	E	Yes	M4R59, M4R98, M4R125
S4R128	Unknown	20.20	D	No	No
S4R129	Unknown	12.85	E	No	No
S4R130	Unknown	4.59	C'	No	No
S4R131	Unknown	13.77	E & C'	No	No
S4R132	Unknown	5.51	C'	Yes	No
S4R133	Unknown	9.18	C'	No	No
S4R134	Unknown	21.11	E	No	No
S4R140	Unknown	12.85	E	No	M4R85

TABLE 68

Abandoned Surface Mine Average Water Quality Data
Sub-watershed 4R

Mine No.	pH	Net Cold Acid ppd	Net Hot Acid ppd	Ferrous Iron ppd	Total Iron ppd	Sulfate ppd	Hardness ppd	Flow gpd
S4R16	5.3	0	*	.04	.09	1.82	*	18,720
		-		.1%	.1%	-		.1%
S4R57	4.2	6.0	*	.03	.03	24.73	*	36,000
		.4%		.1%	-	.1%		.2%
S4R101	5.9	0	16.69	.84	4.62	57.07	673.12	302,400
		-	8.8%	1.8%	2.9%	.2%	3.1%	1.3%
S4R119	4.3	16.18	544.98	.45	17.63	510.35	4,604	570,240
		1%	285.6%	.9%	11.1%	1.9%	20.9%	2.4%
S4R121	6.8	0	0	.13	1.46	36.12	42.07	11,520
		-	-	.3%	.9%	.1%	.2%	.1%
S4R122	5.1	0	136.66	3.04	99.20	834.50	18,475	944,640
		-	71.6%	6.3%	62.2%	3.1%	83.7%	4%
S4R126	6.7	0	83.37	17.42	30.28	152.06	1,099	269,280
		-	43.7%	36.2%	19%	.6%	5%	1.1%
S4R132	6.2	0	0	.13	.76	12.25	271.65	89,280
		-	-	.3%	.5%	.1%	1.2%	.4%

*Not analyzed.

Strip Mine: S4R16

Area: 41.31 acres

Location: West of T.R. T 666

Status: Abandoned

Owned by: Alumbaugh Coal Co.

Seam mined: D

Connection with deep mines: M4R97 and M4R108

Flowing: One leaching area

General Description:

Highwalls are located to the northwest, east and southeast corners of this strip. Thick natural vegetation prevails. This plus only a foot path leading to the highwalls makes access difficult. There is a surface flow onto this strip as well as springs, or possible deep mine flow, within the strip area.

Recommendation:

The water from this strip mine is of such a quality that it creates no pollution threat. Therefore there is no recommendation at this time.

Strip Mine: S4R57

Area: 24.79 acres

Location: South of Wells Creek

Status: Abandoned and partly reclaimed

Owned by: Svonavec Coal Company

Seam mined: E

Connection with deep mine: None

Flowing: One leaching area

General Description:

There is a great deal of thick vegetation along this strip. The only erosion is over the 20 to 25' highwall.

Recommendation:

Some clearing and grubbing for ditches above and below the highwall which would then enable the flow to follow the natural drainage and eliminate leaching through the spoil piles.

Cost:

Ditch	2500'	\$2,500
Clearing and grubbing		<u>1,500</u>
	Total	\$4,000

Strip Mine: S4R101

Area: 13.77 acres

Location: SW of T.R. T 666

Status: Reclaimed

Owned by: Unknown

Seam mined: E

Connection with deep mines: None

Flowing: Two leaching areas

General Description:

This partly reclaimed terraced strip is stil having surface flow onto the area causing leaching and erosion.

Recommendation:

The water from this strip mine is of such a quality that it creates no pollution threat. Therefore there is no recommendation at this time.

Strip Mine: S4R119

Area: 91.80 acres

Location: South of T. Rts. T 539 and T 610

Status: Abandoned

Owned by: Unknown

Seam mined: E

Connection with deep mines: M4R41, M4R42, M4R43, M4R44, M4R45, and M4R120

Flowing: One leaching area

General Description:

A complex of both deep and strip mines, mostly vegetated with medium growth. Leaching and erosion is everywhere caused primarily by the deep mines. The highwalls are mostly on the east side of the strip. Ponds, depressions, pits, and gob piles are throughout the area.

Recommendation:

More detailed study is necessary for an accurate estimation of the cost, however generally 50% of the strip would have to be regraded and/or backfilled after the deep mines were sealed. Two or three miles of ditching would have to be done as well as 40% of the area revegetated.

Cost:

Ditches	16,000'	\$ 16,000
Grading 50% or 50 acres @ \$1800/acre		90,000
Clearing and grubbing		3,000
Backfilling		2,000
Revegetation 40%		<u>24,000</u>
	Total	\$135,000

Strip Mine: S4R121

Area: 215.73 acres

Location: Intersected by L. R. 55136 and south of T.R. T 539

Status: Abandoned and partly reclaimed

Owned by: Unknown

Seam mined: E

Connection with deep mines: M4R56, M4R61, M4R72, M4R74 M4R76, M4R77, M4R123,
M4R124

Flowing: One leaching area

General Description:

The greater part of this strip mine is reclaimed, however leaching and erosion is present. There is much vegetation of grasses and trees, but it is only partly graded with gob slopes both toward and away from highwalls that vary in height.

Recommendation:

The water from this strip mine is of such a quality that it creates no pollution threat. Therefore there is no recommendation at this time.

Strip Mine: S4R122

Area: 143.21 acres

Location: Intersected by T.R. T 539

Status: Abandoned and partly reclaimed

Owned by: Unknown

Seams mined: C' and E

Connection with deep mine: M4R91 and M4R127

Flowing: Four leaching areas

General Description:

The south and east sections have been reclaimed; however, leaching occurs on the east end. There is a new deep mine on the west side of the strip and an old one to the north which are focal points for ponds, spoil piles, and leaching.

Recommendation:

The water from this strip mine is of such a quality that it creates no pollution threat. Therefore there is no recommendations at this time.

Strip Mine: S4R126

Area: 304.78 acres located

Located: N.W. pf TRts. T 539 and T 610, extending west to TR. T602 and east of the town of Listie

Status: Abandoned and partly reclaimed

Owned by: Unknown

Seam mined: E

Connection with deep mines: M4R59, M4R98, and M4R125

Flowing: Two leaching areas

General Description:

A small part of this area has been graded as sanitary landfill. Almost half of the strip has medium natural vegetation; but leaching, erosion, and gouged areas exist along, or as a result of, the highwall areas.

Recommendation:

The water from this strip mine is of such a quality that it creates no pollution threat. Therefore there is no recommendation at this time.

Strip Mine: S4R132

Area: 5.51 acres

Location: west of TR. T 572

Status: Abandoned

Owned by: Unknown

Seam mined: C'

Connection with deep mine: None

Flowing: One leaching area

General Description:

A 35' highwall exists along the western part of this strip creating a flow along its base and between the spoil pile. Erosion is in evidence on the highwall and spoil piles. Natural vegetation covers a large portion of this area.

Recommendation:

The water from this strip mine is of such a quality that it creates no pollution threat. Therefore there is no recommendation at this time.

Recommendations

Table 69 gives the recommendations for the polluting deep and strip mines, along with the costs associated with each recommendation.

An estimated effectiveness of 60% reduction of pollution load is assigned for each recommendation.

Table 70 lists the sources abated, the amount of beneficiation, and the costs associated with each plan.

The distance from Sampling Station SC4R1, Wells Creek, to the next polluting tributary downstream, SC5L3, is 1.7 miles. However, SC5L3 does not feed into the main channel of Stony Creek, which means the distance from SC4R1 to the next polluting tributary on Stony Creek, SCSL2, would be 3.03 miles. This is the minimum distance on Stony Creek that would benefit from Wells Creek becoming a clean stream.

TABLE 69

Recommended Abatement Procedures - Cost Benefication

Sub-watershed 4R

RANK	Number	Recommended Abatement		Total Costs		Cost \$/Pound Acid Removal		Total Acid	Total Iron	Percent of Total Sub-watershed	
		Known Sources	Poten- tial Sources	Known Sources	Poten- tial Sources	Known Sources	Poten- tial Sources	Abate- ment ppd	Abate- ment ppd	Acid	Iron
1	M4R59	6 Seals	300'GC 3 AS 4 BH	\$120,000	\$218,000	\$ 80	\$ 145	1,508.86	21.53	97.17	13.50
2	M4R35	2 Seals	200'GC 9 BH	40,000	140,000	101	353	396.78	13.44	25.55	8.43
3	M4R95	1 Seal	1 Seal	25,000	50,000	177	354	141.37	4.85	9.10	3.04
4	M4R29	1 AS 4 Seals	600'GC	88,000	172,000	179	350	491.63	48.67	31.66	30.51
5	M4R91	2 Seals	2 Seals	40,000	80,000	429	858	93.29	2.88	6.01	1.81
6	M4R15	2 Seals	-	50,000	50,000	875	875	57.11	.79	3.68	.50
7	S4R57	24.19 Acres	-	4,000	4,000	1,111	1,111	3.60	.02	.23	.01
8	M4R44	3 Seals	100'GC	60,000	74,000	1,630	2,010	36.82	1.44	2.37	.90
9	M4R21	1 Seal	-	25,000	25,000	3,608	3,608	6.93	2.90	.45	1.82
10	S4R119	91.80 Acres	3 Seals	135,000	195,000	13,903	20,082	9.71	10.58	.63	6.63
11	M4R37	1 Seal	-	25,000	25,000	18,248	18,248	1.37	.17	.09	.11
12	M4R96	1 Seal	-	25,000	25,000	19,231	19,231	1.30	.02	.08	.01
13	M4R98	1 Seal	-	25,000	25,000	29,070	29,070	.86	.06	.06	.04
14	M4R19	1 Seal	-	25,000	25,000	156,250	156,250	.16	-	.01	-
15	M4R100	1 Seal	-	25,000	25,000	416,667	416,667	.06	.03	-	.02

NOTE: The potential costs above include known costs.

TABLE 70
 Benefication - Recommended Plans
 Sub-watershed 4R

Plan	Above Sources Abated	Acid		Iron		Total Construction Costs	
		ppd	% of Total Sub-water- shed	ppd	% of Total Sub-water- shed	Flowing Sources	Potential Sources
A	1 thru 15	2,750	177%	108	68%	\$712,000	\$1,133,000
B	1 thru 6	2,689	173%	93	58%	363,000	710,000
C	1 thru 5	2,632	170%	92	58%	313,000	660,000
D	1 thru 4	2,539	164%	89	56%	273,000	580,000

It is recommended that Plan "C" be initiated for this sub-watershed.