

Sub-watershed 8L (Un-named)

General Discussion

This sub-watershed encompasses 2.35 square miles or 1500.93 acres of land area, approximately 3.63% of the total study area. The basin is drained by 10.46 miles of tributaries (3.88% of the total length of all watershed tributaries) and contains 1 acre of lakes and ponds (0.07% of the total sub-watershed area). Commonwealth records show 7 surface mines and 1 deep mine. Our field investigations have pin-pointed 6 surface mines, 5 flowing, and 3 deep mines with 3 openings, 2 of which are flowing.

The following information gives the combined averages of the sampling stations designated as CC8L1, GC8L2, and GC8L3, all un-named. Their location is shown on Drawing 7316-7, while their individual averages are shown in Table 92. In the case where more than one tributary contributes to a sub-watershed, the values have been combined. The percentages of pollution load and flow that this sub-watershed contributes to Monitoring Station GC8 on Georges Creek are also shown.

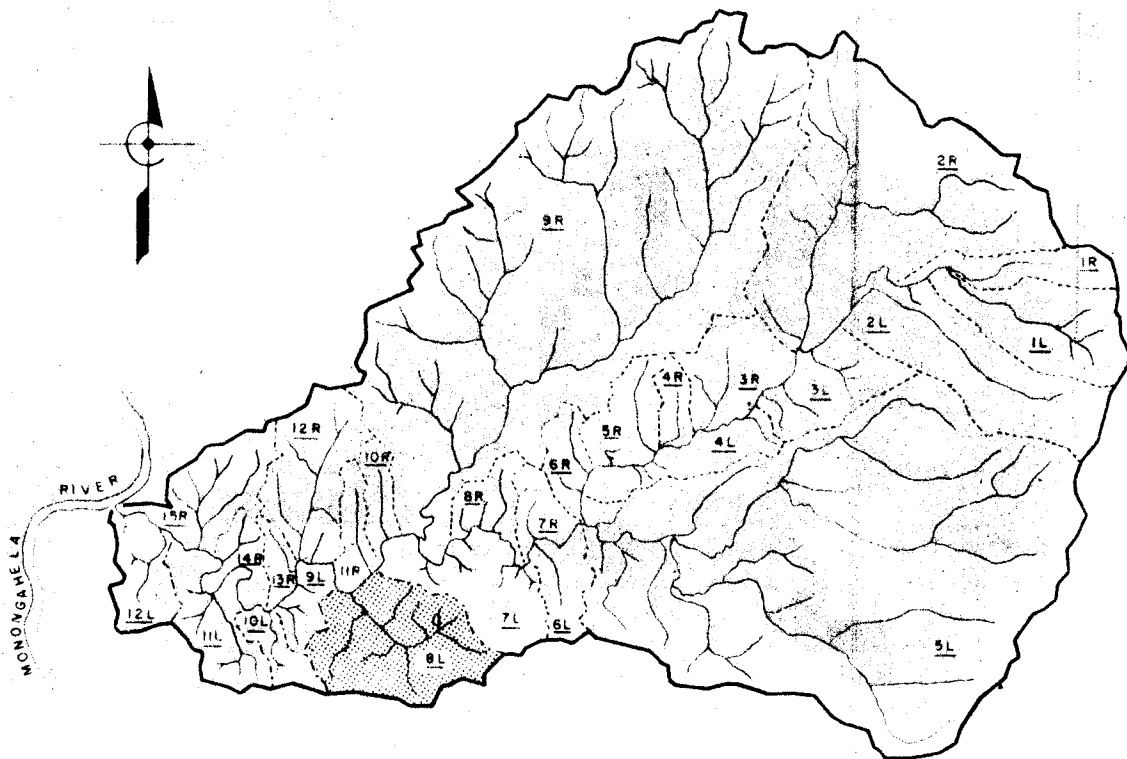
	<u>Averages</u>		<u>Percent of Total Watershed</u>
pH	6.3		
Net Hot Acidity	0	PPD	1.22%
Ferrous Iron	1	PPD	37.50%
Total Iron	183	PPD	6.58%
Sulfate	3,703	PPD	5.40%
Flow	3,745,440	GPD	6.31%

TABLE 92
 TRIBUTARY AVERAGE WATER QUALITY DATA
 Sub-watershed
 8L





Station	pH	Hot Acid		Alkalinity		Net Hot Acid		Ferrous Iron		Iron as Fe		Sulfate		Flow	
		PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	GPM	G.P.D.
GC8L1	7.0	0	0	52.67	2.53	0	0	0	0	.65	.03	38.00	1.83	3	4,320
GC8L2	6.9	2.00	.76	76.67	2.03	0	0	.07	0	.41	.02	44.33	1.18	2	2,880
GC8L3	4.9	84.00	814.09	6.00	516.36	78.00	297.73	.06	.12	4.39	182.20	315.57	3699.11	2596	3,738,240

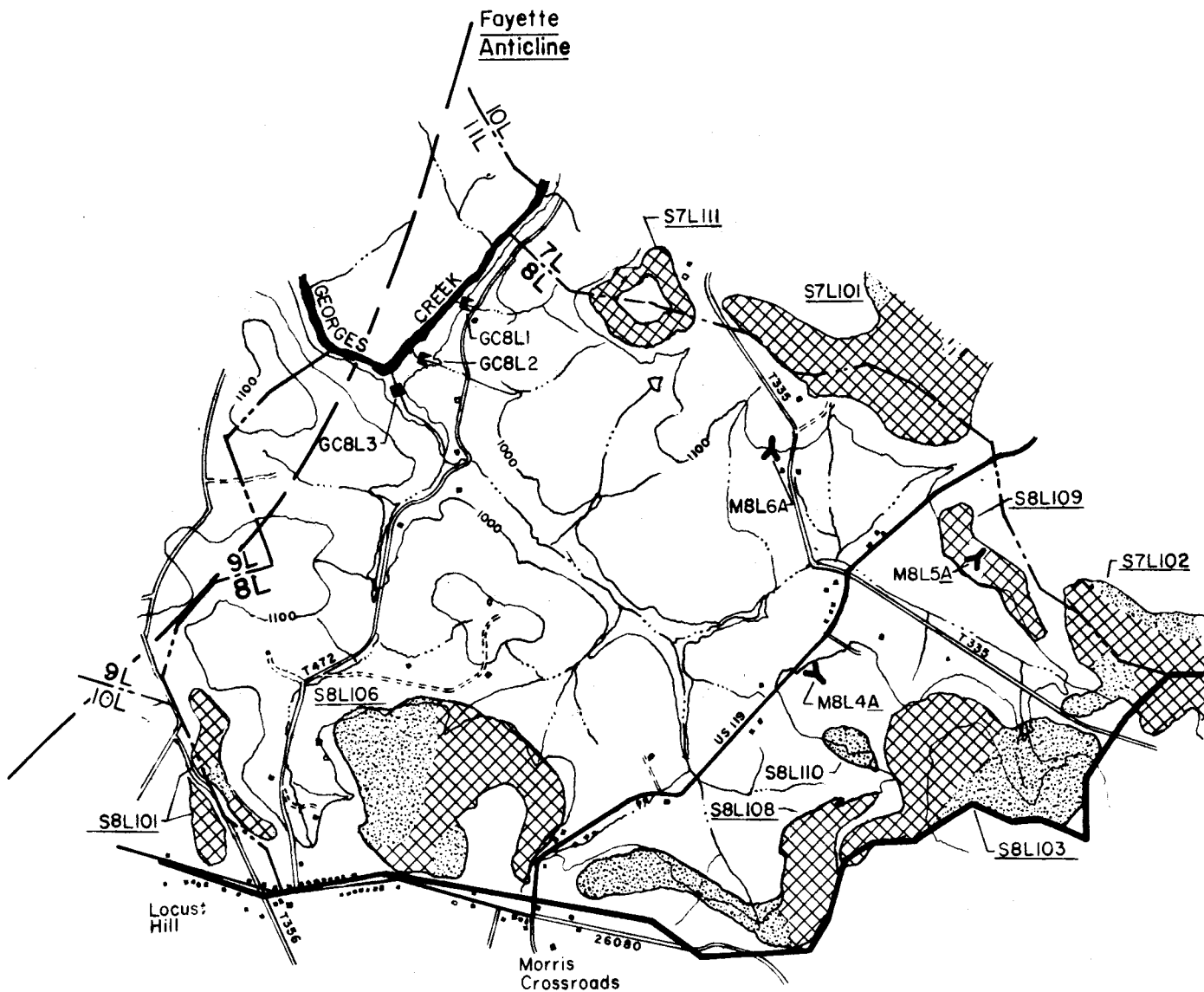
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Location Plan

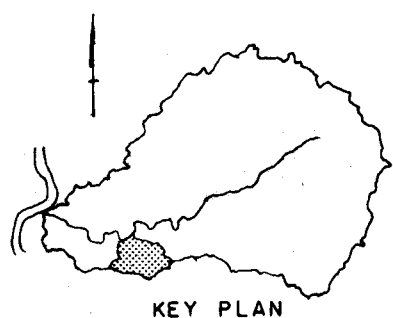


LEGEND FOR THE FOLLOWING PLATES

- Y DEEP MINE OPENING (M9R59A)
- ▲ DEEP MINE PIPE (SAMPLE STATIONS - MP5L2A, or BH9R2)
- ▼ WEIR (TRIBUTARY SAMPLE STATION - GC7L1)
- CROSS-SECTION (TRIBUTARY SAMPLE STATION - GC9R1)
- ⊙ GEORGES CREEK CROSS-SECTION (SAMPLE STATION - GC5)
-  STRIP MINE (ABANDONED-UNRECLAIMED - S11L102)
-  STRIP MINE (ACTIVE - S4R107)
-  STRIP MINE (ABANDONED-RECLAIMED - S7L106)
-  GOB PILE (G9R301)
- A, B, C UNDERLINED SUFFIX
INDICATES FLOWING DEEP MINE SAMPLE STATIONS - M9R74A, B, C
- S7L101 UNDERLINE - INDICATES FLOWING STRIP MINE, GOB PILE, OR
BORE HOLE SAMPLE STATION



CHEAT RIVER
WATERSHED



KEY PLAN

MAP OF
SUB-WATERSHED 8L
(UN-NAMED)
SCALE: 1" = 2000'

Deep Mines

The Commonwealth records indicate that there is 1 deep mine in this sub-watershed. Our field investigations located 3 deep mines with 3 openings, of which 2 are flowing. Table 93 lists the abandoned deep mines within the sub-watershed with the following information: mine number, name of mine or operator if known, strip mine connection, available mine maps, permit numbers, acres and seam mine mine opening designation, openings with flows, and estimated elevation of the openings.

Table 94 gives the averages of the abandoned deep mine flows. Directly under the averages are the percentages of flows and pollution loads that each complex contributes to the pollution load of the sub-watershed as measured at the following sampling stations: GC8L1, GC8L2, and GC8L3, all unnamed. When more than one major tributary drains a sub-watershed, the averages of each are combined. Similarly, when more than one deep mine opening of the same complex is flowing, the averages are also combined.

TABLE 93
 ABANDONED DEEP MINES
 Sub-Watershed
 8L

Mine Number	Name of Mine or Operator	Strip Mine Connection	Line Map Obtained	Area Mined (Acres)	Seam Mined	Opening No.	Elev. of Opening Flow	Permit Number
M8L4	Unknown	-	-	-	PGH *	M8L4A	1120'	Yes -
M8L5	Harah Mine * Harah Coal & Coke Co.	S8L109	WPA	-	PGH *	M8L5A	1130'	Yes -
M8L6	Springfield Coke * Co.	-	WPA	-	PGH *	M8L6A	1100'	No -

TABLE 94
 ABANDONED DEEP MINE AVERAGE WATER QUALITY DATA
 Sub-Watershed
 8L

Station	pH	Hot Acid		Alkalinity		Net Hot Acid		Ferrous Iron		Iron as Fe		Sulfate		Flow	
		PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	GPM	G.P.D.
M8L4	2.3	3328.57	40.01	0	0	3328.57	40.01	7.87	.09	623.54	7.49	3182.14	38.25	2	2,880
%	-	-	-	-	-	-	13.61%	-	75%	-	4.11%	-	1.03%	-	.08%
M8L5	2.3	4824.29	57.99	0	0	4824.29	57.99	434.90	5.23	1009.58	12.14	4982.29	58.89	1	1,440
%	-	-	-	-	-	-	19.73%	-	4358%	-	6.66%	-	1.62%	-	.04%

* Assumed

Deep Mine M8L4

General Description:

This complex of the Pittsburgh seam is located about 75 feet southeast of Route 119 on the knoll of a hill which is 4,500 feet north of Morris Crossroads and 1,200 feet south of the intersection of T 335 and Route 119. Only one opening was found and it was flowing. It is situated in a wooded area and its location is shown on the map of Sub watershed 8L.

Recommendations:

The flowing opening requires a hydraulic seal to eliminate the discharge. By inundating the mine, the pollution-producing capability will be drastically reduced.

Costs:

Known	1 seal	\$25,000
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Strip Mines

The Commonwealth records indicate there are 7 strip mines in this sub-watershed. Our field investigations located 6 surface mines with 5 having flows. Table 95 lists the abandoned strip mines within the sub-watershed with the following information: the name of the mine or operator if known, permit numbers, the acres of area mined and which seam was mined, the designation we give the mine, whether or not there is a flow, and whether there are any deep mine connections.

The total acreage of abandoned surface mines in sub-watershed 8L is 262.54 acres or 17.49% of the total sub-watershed land area.

Table 96 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 following sampling stations: GC8L1, GC8L2, and GC8L3.

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

When more than one major tributary drains a sub-watershed, the averages of each are also combined.

Following Table 96 are the descriptions of the flowing strip mines along with abatement recommendations.

TABLE 95
Abandoned Surface Mines
Sub-watershed
8L

Mine Number	Name of Mine or Operator	Permit No.	Area Mined (Acres)	Seam Mined	Flowing	Connection w/Deep Mine
S8L101	Valentine & Tessone Coal Co.	16413	22.03	PGH	Yes	--
S8L103	Unknown	--	78.03	PGH*	Yes	--
S8L106	Bridgeview Coal Co. Sabatine Coal Co.	15333 1664BSM2	95.47	PGH PGH	Yes	--
S8L108	Harvey Gaskill J. R. Lancaster	17880 15836	45.90	RED SEW & RED	Yes	--
S8L109	Fry Coal & Stone Co. Smith & Wise	461M133 18732	17.44	SEW & RED RED	Yes	M8L5A
S8L110	Unknown	--	3.67	PGH*	No	--

*Assumed

TABLE 96
 ABANDONED SURFACE MINE AVERAGE WATER QUALITY DATA
 Sub-watershed
 8L

Station	pH	Hot Acid		Alkalinity		Net Hot Acid		Ferrous Iron		Iron as Fe		Sulfate		Flow	
		PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	GPM	G.P.D.
S8L101	2.8	16,341	2030	0	0	16,341	2030	235.7	46.26	3432	485.5	14,919	1565	53	76,320
%	-	-	-	-	-	-	690.64%	-	38,550%	-	266.4%	-	42.27%	-	2.04%
S8L103	3.5	4,308	357	14	1.66	4,294	355.3	137.2	5.93	2023	129.4	4,773	374.6	37	53,280
%	-	-	-	-	-	-	120.88%	-	4,942%	-	71.00%	-	10.12%	-	1.42%
S8L106	3.6	2,510	345.8	6	.22	2,504	345.6	48.16	2.48	96.11	18.73	6,075	846.1	45	64,800
%	-	-	-	-	-	-	117.58%	-	2067%	-	10.28%	-	22.85%	-	1.73%
S8L108	2.8	1,225	48.08	0	0	1,225	48.08	6.72	.17	97.23	3.38	2,050	75.80	4	5,760
%	-	-	-	-	-	-	16.36%	-	141.67%	-	1.85%	-	2.05%	-	.15%
S8L109	2.7	1,110	13.34	0	0	1,110	13.34	0	0	178.3	2.14	1,519	18.26	2	2,880
%	-	-	-	-	-	-	4.54%	-	0%	-	1.17%	-	.49%	-	.08%

Strip Mine S8L101

General Description:

This strip mine is split by T 356 just north of Locust Hill. It is 95% reclaimed through grading and 30% of the strip is vegetated naturally with trees and grasses. On the northern side of the eastern part of the strip a 25 foot high-wall exists. Numerous spoil piles and depressions exist here. Four leaches were found, two on the southern side of the eastern portion and two on the southern side of the western portion. This 22.03 acre strip mined the Pittsburgh coal seam and is shown on the map of Sub-watershed 8L.

Recommendations:

An apparent mine fire exists here and until further investigations by others are made, no recommendations are given.

Strip Mine S8LI03

General Description:

This strip mine is located 2,000 feet southeast of the intersection between T 335 and U.S. Route 119. It lies on the south side of T 335. It is about 60% reclaimed through grading and revegetation, chiefly grasses. A long highwall, 50 to 75 feet high, remains on the abandoned portion. Four leaches originate on the northeastern edge of the strip. There are large depressions and spoil piles along the highwall. It is assumed that the Pittsburgh coal seam was recently mined here. The strip is shown on the map of Sub-watershed 8L.

Recommendations:

This mine seems to be under permit by the Whyel Coal Company. Therefore, no recommendations are given at this time.

Strip Mine S8L106 (priority mine #419)

General Description:

This strip mine is located northeast Locust Hill and northwest of Morris Crossroads. It is approximately 1,500 northwest of the intersection of U.S. Route 119 and L.R. 26080. It is a large (95.47 acres), unreclaimed strip with six leaches. There is no visible highwall, but the area is covered with gob piles and depressions. Approximately 10% of the mine is vegetated. No deep mine connection has been established. Erosion is predominant over the entire area. Two of the leaches are on the eastern side, two on the southern side, and two on the western side. The strip, which is shown on the map of Sub-watershed 8L, mined the Pittsburgh coal seam.

Recommendations:

The entire strip mine actually needs to be reclaimed. However, a minimum of 50% would probably eliminate or reduce the pollution. This would consist of flattening spoil piles, filling depressions, and revegetating and ditching.

Costs:

Grading	48 acres @ \$1,800/acre	\$ 86,400
Vegetation	49 acres @ \$600/acre	28,800
Ditches	4000 feet @ \$1/foot	<u>4,000</u>
		\$119,200

Strip Mine S8LI08 (Permit Number 17880 and 158036)

General Description:

This mine is located 1,000 feet northeast of Morris Crossroads and the intersection of L.R. 26080 and u.s. Route 119. The strip is 50% reclaimed through grading and re-vegetation. The natural and planted vegetation consisting of grasses and trees cover 85% of the area. The mine is 45.9 acres and has no deep mine connections. The existing highwall is 20 feet high and about 4,000 feet long. A leach originates from two small spoil piles and depressions along the highwall. The seams mined here were the Redstone and Sewickley. The strip is shown on the map of Sub-watershed 8L.

Recommendations:

The two smaller spoil piles should be graded to a good drainage slope and preferably toward the highwall to fill in the depressions. Then a diversion ditch at the base of the highwall would expedite the removal of water from the strip.

Costs:

Grading	10 acres @ \$1,800/acre	\$18,000
Vegetation	10 acres @ \$600/acre	6,000
Ditches	3,000 feet @ \$1/foot	<u>3,000</u>
		\$27,000

Strip Mine S8L109 (permit number 461M133 and 18732)

General Description:

This strip mine is located 1,500 feet directly east of the intersection between U.S. Route 119 and T 335. It contains 17.44 acres and exploited the Sewickley and Redstone coal seams. It is 95% reclaimed through grading and revegetation. The vegetation, produced by nature and man, covers the entire strip and consists of both grasses and trees. A 20 foot highwall is present as well as gob piles and a pond. A connection with deep mine M8L5 has been determined. The strip is shown on the map of Sub-watershed 8L.

Recommendations:

It is felt that M8L5 is contributing to the leachate from the strip. Therefore, further study at this site is required before any recommendations can be made.

Recommendations

Table 97 gives the recommendations for the polluting deep and strip mines, along with the costs associated with each recommendation. The order in which they are placed is determined by the cost per pound of acid removal.

An estimated effectiveness of 75% reduction of pollution load is assigned for each recommendation.

Table 98 lists the sources abated, the amount of beneficiation, and the costs associated with each plan.

The distance from Sampling Station GC8L3 to the next polluting tributary downstream, GC11L3, is 3.13 miles. This is the minimum distance on Georges Creek that would benefit from the recommended work.

TABLE 97
 RECOMMENDED ABATEMENT PROCEDURES - COST BENEFICATION
 SUB - WATERSHED
 8L

Rank	Mine No.	TOTAL COSTS		COST \$/POUND ACID REMOVAL		Total Acid Abated	Total Iron Abated	% OF TOTAL SUB-WATERSHED	
		Known Sources	Potential Sources	Known Sources	Potential Sources	Ppd	Ppd	Acid	Iron
1	S8L106	\$119,200	\$119,200	\$ 459.88	\$ 459.88	259.2	14.05	-	8%
2	S8L108	27,000	27,000	748.75	748.75	36.06	2.53	-	1%
3	M8L4	25,000	25,000	833.33	833.33	30	5.62	-	3%
4	M8L5	See Harah Mine, Table 75				43.49	9.11	-	5%

TABLE 98
 BENEFICATION - RECOMMENDED PLANS
 SUB-WATERSHED
 8L

Plan	Sources Abated	ACID		IRON		SULFATE		TOTAL CONS'T COSTS	
		Ppd	% of Total Sub-Watershed	Ppd	% of Total Sub-Watershed	Ppd	% of Total Sub-Watershed	Known Sources	Potential Sources
A	3	325.26	-	22.2	12%	720.12	20%	\$171,200	\$171,200
B	2	295.26	-	16.58	9%	691.43	19%	146,200	146,200
C	1	259.2	-	14.05	8%	634.58	17%	119,200	119,200

It is recommended Plan "C" be initiated for this Sub-Watershed