

Sub-watershed 4L (Un-named)

General Discussion

This sub-watershed encompasses 0.98 square miles or 626.99 acres of land area, approximately 1.52% of the total study area. The basin is drained by 4.96 miles of tributaries (1.84% of the total length of all watershed tributaries) and contains 1 acre of small lakes and ponds (.16% of, the total sub-watershed area). Commonwealth records show 1 surface mine and no deep mines in this area. Our field survey found the 1 surface mine, flowing and substantiated that no deep mining was done.

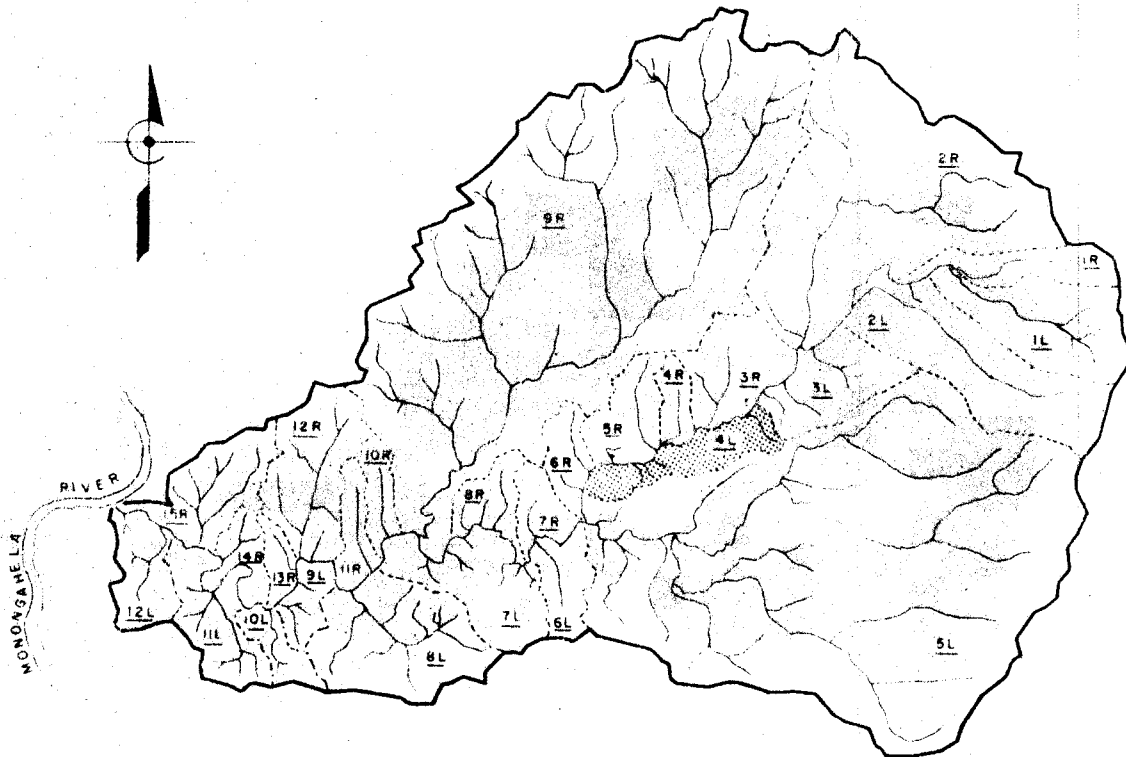
The following information gives the combined averages of the sampling stations designated as GC4L1A, GC4L2, GC4L3, GC4L4, GC4L5A, GC4L5B, GC4L6, GC4L7, GC4L8, GC4L9, GC4L10, GC4L11, GC4L12, and GC4L13, all un-named and located on Drawing 7316-7. Their individual averages can be found in Table 28. In the case where more than one tributary contributes to a sub-watershed, the values have been combined. The percentages of pollution load and flow this sub-watershed contributes to Monitoring Station GC8 near the mouth of Georges Creek are also shown.

	<u>Averages</u>		<u>Percent Total Watershed</u>	
pH 5.8				
Net Hot Acidity	0	PPD	0	%
Ferrous Iron	1	PPD	25.00%	
Total Iron	345	PPD	12.43%	
Sulfate	511	PPD	0.74%	
Flow	951,840	GPD	1.60%	





TABLE 28
 TRIBUTARY AVERAGE WATER QUALITY DATA
 Sub-watershed
 4L

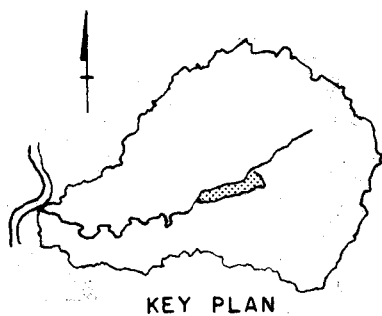
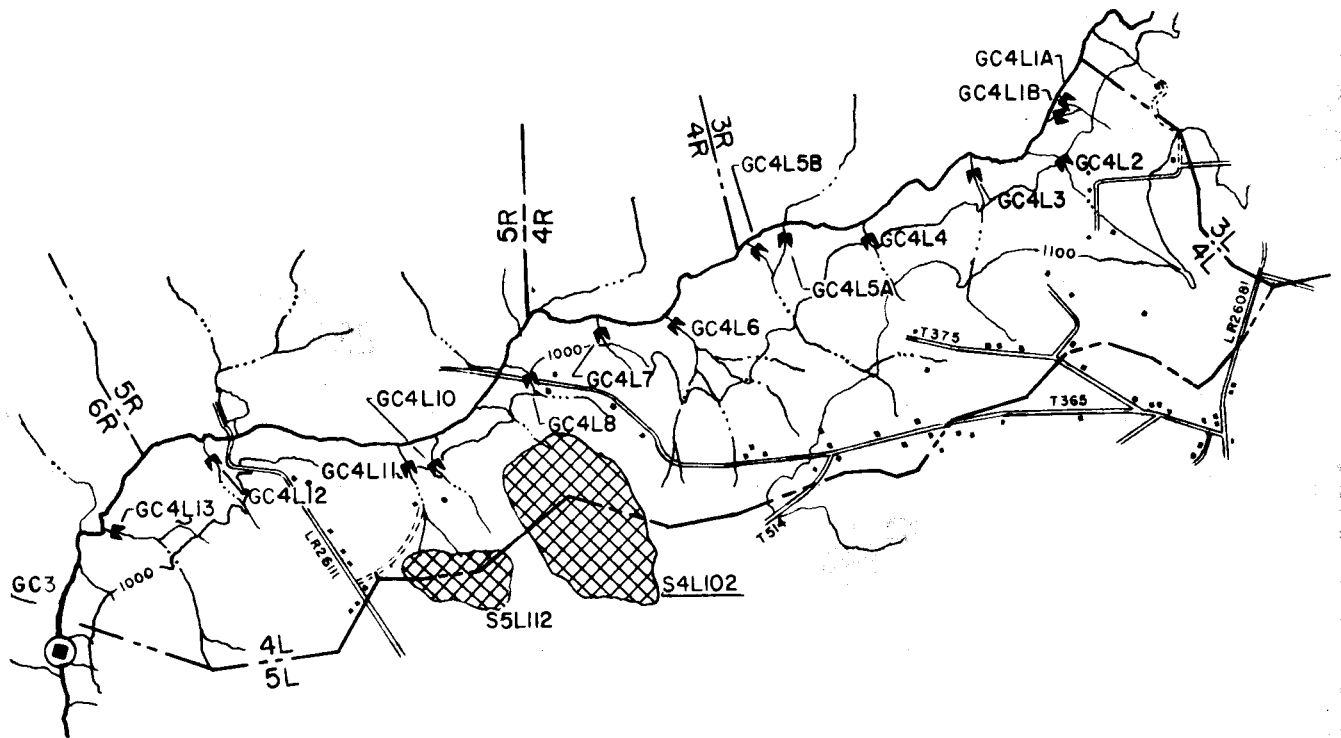
Station	pH	Hot Acid		Alkalinity		Net Hot Acid		Ferrous Iron		Iron as Fe		Sulfate		Flow	
		PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	GPM	G.P.D.
GC4L1A	6.6	2.33	2.57	91.00	255.84	0	0	0	0	25.35	339.06	74.17	137.65	250	360,000
GC4L2	6.4	10.00	1.93	42.00	8.08	0	0	0	0	.15	.03	21.50	4.14	8	11,520
GC4L3	6.4	9.00	2.16	58.00	13.40	0	0	0	0	.22	.05	39.50	6.14	16	23,040
GC4L4	6.5	6.00	1.59	34.00	8.99	0	0	0	0	.22	.06	14.00	3.70	11	15,840
GC4L5A	6.7	8.00	.29	59.00	2.13	0	0	.56	.02	.68	.03	18.00	.65	2	2,880
GC4L5B	6.4	10.67	9.10	29.33	23.40	0	0	0	0	.65	.58	62.67	57.51	46	66,240
GC4L6	6.1	6.67	1.38	21.33	3.37	0	0	0	0	2.15	.17	56.83	7.28	14	20,160
GC4L7	6.8	3.00	6.17	50.00	92.39	0	0	0	0	.29	.51	47.00	82.01	144	207,360
GC4L8	6.6	3.67	.40	84.33	6.84	0	0	0	0	1.90	.15	98.17	10.13	7	10,080
GC4L10	3.4	175.67	76.86	0	0	175.67	76.86	.19	.08	7.24	3.07	300.83	132.62	37	53,280
GC4L11	7.1	0	0	114.00	2.16	0	0	0	0	.52	.01	38.50	.75	2	2,880
GC4L12	6.8	10.00	6.55	66.00	43.83	0	0	0	0	.60	.39	48.50	31.92	55	79,200
GC4L13	6.8	4.00	5.00	28.00	35.00	0	0	0	0	.19	.24	28.67	35.83	69	99,360

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



KEY PLAN

**MAP OF
SUB-WATERSHED 4L
(UN-NAMED)
SCALE: 1" = 2000'**

Strip Mines

The Commonwealth records indicate there is 1 strip mine in this sub-watershed. Our field investigations located the surface mine which was flowing. Table 29 shows the abandoned strip mine and the following information: the name of the mine or operator if known, permit number, 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 it has any deep mine connections.

The total acreage of this abandoned surface mine is 42.22 acres or 6.73% of the total sub-watershed land area.

Table 30 gives the averages of the abandoned surface mine flow. Directly under the averages are the percentages of flows and pollution loads that it contributes to the pollution load of the sub-watershed as measured at the following sampling stations: GC4L1A, GC4L1B, GC4L2, GC4L3, GC4L4, GC4L5A, GC4L5B, GC4L6, GC4L7, GC4L8, GC4L10, GC4L11, and GC4L12.

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

When more than one tributary drains a sub-watershed, the averages are also added together.

Following Table 30 is the description of the flowing strip mine along with abatement recommendations.

TABLE 29
 ABANDONED SURFACE MINES
 Sub-Watershed
 4L

Mine Number	Name of Mine or Operator	Permit No.	Area Mined (Acres)	Seam Mined	Flowing	Connection w/Leas Mine
S4L102	Lewis Murphy	461M67	42.22	PGH	Yes	--

TABLE 30
 ABANDONED SURFACE MINE AVERAGE WATER QUALITY DATA
 Sub-Watershed
 4L

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.
S4L102	2.8	900	112.99	0	0	900	112.99	0	0	49.33	7.74	1125	165.3	22	31,680
%	-	-	-	-	-	-	-	-	0%	-	2.25%	-	32.39%	-	3.33%

Strip Mine S4L102 (permit number 461M67)

General Description:

This strip mine, containing 42.22 acres, is located approximately 2,500 feet west of the intersection between T 365 and T 514. Actually, half of this strip lies in sub-watershed 5L. It is about 95% reclaimed thru grading and vegetating. There are 2 areas that are leaching on the western side. However, upon discussion with a local land owner, it was learned that deep mining quite possibly could have been done here and then stripped out. Therefore, the only recommendation that can be made at this time is that further investigation is warranted.

Recommendations

Table 31 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 32 lists the sources abated, the amount of beneficiation, and the costs associated with each plan.

Although this sub-watershed is, by the Commonwealth's standards, a non-polluting tributary, there is one mine that should be given attention due to the amount of AMD that it places in this otherwise clean stream.

TABLE 31
 RECOMMENDED ABATEMENT PROCEDURES - COST BENEFCATION
 SUB-WATERSHED
 4L

Rank	Mine No.	TOTAL COSTS		COST \$/POUND ACID REMOVAL		Total Acid Abated PPD	Total Iron Abated PPD	% of Total Sub-Watershed	
		Known Sources	Potential Sources	Known Sources	Potential Sources			Acid	Iron

TABLE 32
 BENEFCATION - RECOMMENDED PLANS
 SUB-WATERSHED
 4L

PLAN	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