

Sub-watershed 7L (Un-named)

General Discussion

This sub-watershed encompasses 1.62 square miles or 1,039.18 acres of land area, approximately 2.52% of the total study area. The basin is drained by 5.54 miles of tributaries (2.06% of total length of all watershed tributaries) and contains 1 acre of lakes and ponds (.10% of the total sub-watershed land area). Commonwealth records show 2 surface mines and 5 deep mines in the area. Our field investigation has located 8 surface mines, 6 flowing and 9 deep mines with 18 total openings, 10 of which are flowing.

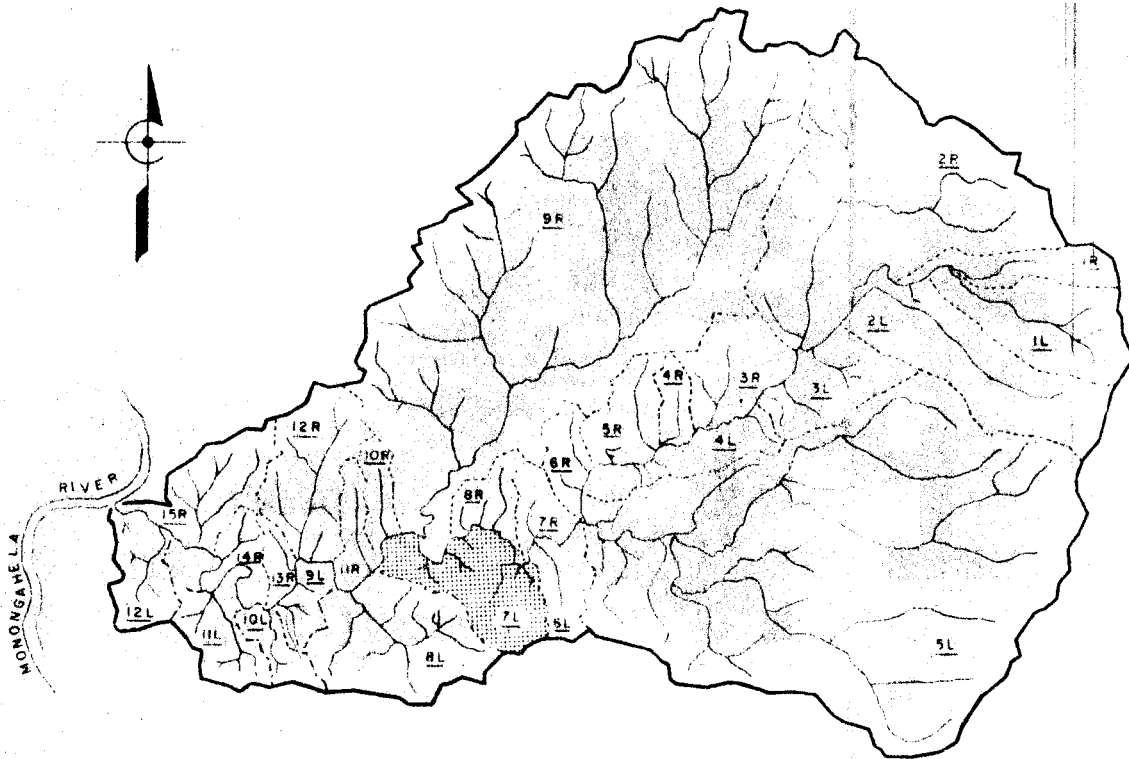
The following information gives the combined averages of the sampling stations designated as GC7L1, GC7L3, GC7L4, GC7L5, GC7L6, GC7L7, GC7L8, GC7L9, GC7L10, and GC7L11, all un-named. Their locations are shown on Drawing 7316-7, while their individual averages can be found in Table 70. In the case where 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 near the mouth of Georges Creek are also shown.

	<u>Averages</u>		<u>Percent of Total Watershed</u>
pH	4.5		
Net Hot Acidity	6,820	PPD	28.36%
Ferrous Iron	1	PPD	178.13%
Total Iron	1,038	PPD	37.45%
Sulfate	8,842	PPD	12.91%
Flow	1,333,440	GPD	2.2





TABLE 70  
 TRIBUTARY AVERAGE WATER QUALITY DATA  
 Sub-watershed  
 7L

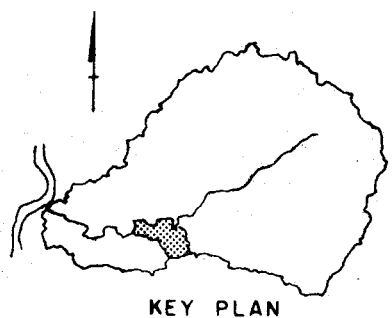
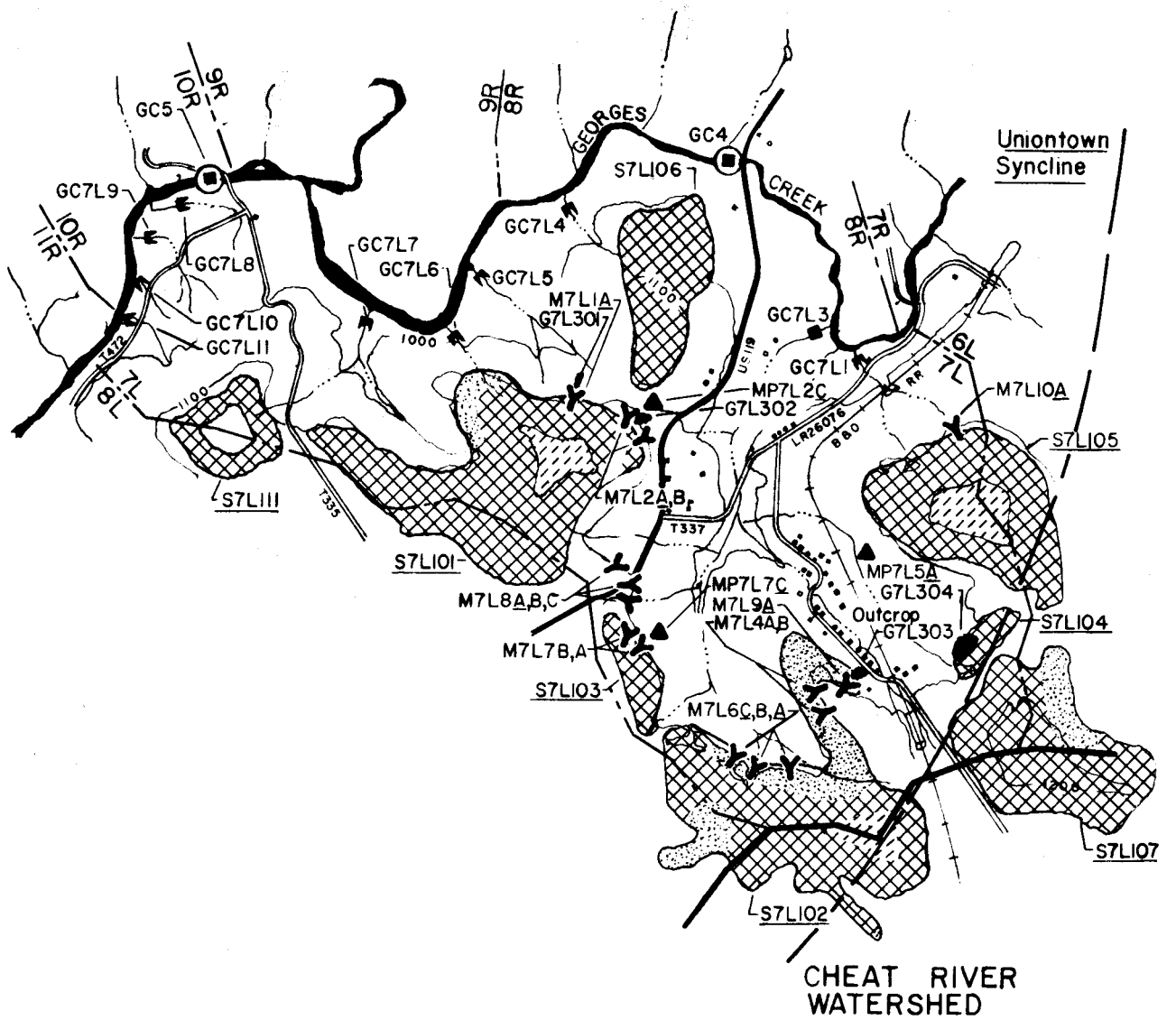
Station	pH	Hot Acid		Alkalinity		Net Hot Acid		Ferrous Iron		Iron as Fe		Sulfate		Flow	
		PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	PPM	#/Day	GPM	G.F.D.
GC7L1	5.4	17.67	13.50	28.67	3.87	0	9.63	0	0	1.08	.41	226.86	109.76	42	60,480
GC7L3	2.7	616.67	6068.53	8.77	38.65	607.90	6029.88	0	0	135.20	883.57	692.33	7144.98	763	1,098,720
GC7L4	7.3	0	0	135.33	7.28	0	0	.1	0	.50	.02	87.00	4.96	5	7,200
GC7L5	2.7	1008.86	638.85	0	0	1008.86	638.85	1.12	.57	185.40	141.44	1702.29	1012.94	59	84,960
GC7L6	6.9	1.33	.05	55.33	2.34	0	0	0	0	.35	.01	139.33	5.88	2	2,880
GC7L7	3.9	360.29	152.02	.67	.61	359.62	151.41	0	0	22.46	11.97	1040.71	562.78	54	77,760
GC7L8	No	Flow													
GC7L9	No	Flow													
GC7L10	7.0	0	0	23.33	.84	0	0	0	0	.05	.0	18.33	.66	1	1,440
GC7L11	No	Flow													

# 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



**MAP OF  
SUB-WATERSHED 7L**  
(UN-NAMED)  
SCALE: 1" = 2000'

## Deep Mines

The Commonwealth records indicate that there are 5 deep mines in this sub-watershed. Our field investigations located 9 deep mines with 18 openings, of which 10 are flowing. Table 71 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 mined, mine opening designation, openings with flows, and estimated elevation of the openings.

Table 72 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: GC7L1, GC7L3, GC7L4, GC7L5, GC7L6, GC7L8, GC7L9, GC7L10 and GC7L11, all un-named. 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 71  
 ABANDONED DEEP MINES  
 Sub-watershed  
 7L

Mine Number	Name of Mine or Operator	Strip Mine Connection	Mine Map Obtained	Area Mined (Acres)	Seam Mined	Mine Opening No.	Elev. of Opening Flow	Permit Number	
M7L1	Franks & Weakland Coal Co.	S7L101	-	-	PGH	M7L1A	1080'	Yes	17471
M7L2	McCusker Bros.	S7L101	-	-	PGH	M7L2A M7L2B MP7L2C	1100' 1100' 1080'	Yes No Yes	11145
M7L4	Sackett Mine	S7L102	-	-	PGH	M7L4A M7L4B	1100' 1100'	No No	-
M7L5	Outcrop Mine	S7L105	-	-	PGH	MP7L5A	1080'	Yes	-
M7L6	Unknown	S7L102	-	-	PGH*	M7L6A M7L6B M7L6C	1100' 1100' 1100'	Yes No Yes	-
M7L7	Unknown	S7L103	-	-	PGH*	M7L7A M7L7B M7L7C	1120' 1120' 1080'	No No Yes	-
M7L8	Unknown	-	-	-	PGH*	M7L8A M7L8B M7L8C	1100' 1100' 1120'	Yes No No	-
M7L9	McClatchy Coal Co.	S7L102	Yes	6.43	PGH	M7L9A	1080'	Yes	-
M7L10	Rich Hill Coal* Co.	S7L105	-	-	PGH*	M7L10A	1100'	Yes	-

\*Assumed.

TABLE 72  
 ABANDONED DEEP MINE AVERAGE WATER QUALITY DATA  
 Sub-watershed  
 7L

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.
M7L1	2.6	1620	274.22	0	0	1620	274.22	88.30	17.00	242.81	45.73	1979.33	327.07	14	20,160
%	-	-	-	-	-	-	4.02%	-	2982%	-	4.41%	-	3.7%	-	1.52%
M7L2	2.6	3558	3942.67	0	0	3558	3942.67	243.11	49.86	513.12	130.12	4431.9	1200.46	43	61,920
%	-	-	-	-	-	-	57.82%	-	8747%	-	12.54%	-	13.58%	-	4.64%
M7L5	2.8	643.33	422.66	0	0	643.33	422.66	.66	.28	41.10	29.42	1379.5	955.66	55	79,200
%	-	-	-	-	-	-	6.20%	-	49.12%	-	2.84%	-	10.81%	-	5.94%
M7L6	2.3	7950	488.20	0	0	7950	488.20	253.07	7.32	1276.04	60.67	9615.3	590.96	10	14,400
%	-	-	-	-	-	-	7.16%	-	1284%	-	5.85%	-	6.68%	-	1.08%
M7L7	2.3	4200	2227.6	0	0	4200	2227.6	18.14	3.15	560.17	195.91	4879.4	2484.9	40	57,600
%	-	-	-	-	-	-	32.67%	-	552%	-	18.88%	-	28.10%	-	4.32%
M7L8	2.5	916.67	27.44	0	0	916.67	27.44	0	0	119.24	3.06	912.50	28.15	2	2,880
%	-	-	-	-	-	-	.40%	-	0%	-	.30%	-	.32%	-	.22%
M7L9	2.3	3820	378	0	0	3820	378	193.50	22.50	2699.81	208.0	4332.29	458.23	8	11,520
%	-	-	-	-	-	-	5.54%	-	3947%	-	20.05%	-	5.18%	-	.86%
M7L10	3.1	800	96.16	0	0	800	96.16	7.84	.94	12.39	1.49	975	117.2	10	14,400
%	-	-	-	-	-	-	1.41%	-	164.9%	-	.14%	-	1.32%	-	1.08%

Deep Mine M7L1 (Permit No. 17471)

General Description:

This complex is located approximately 1400 feet northwest from the intersection of Route 119 and T 337 near Morris Crossroads. It is situated west of Route 119 and the one opening, which happens to be flowing, is on the northern edge of an active strip mine, S7L101. An old mine shack and tipple are still standing. The Pittsburgh coal seam was mined here. The opening is caved in and the flow seeps up through the ground near the shack. The opening can be seen on the map of Sub-watershed 7L.

Recommendations:

It is unknown what the effect of a good reclamation program on the active surface mine will have on the flow from the deep mine opening since they seem to be connected. Regardless, an hydraulic seal will probably need to be placed in the portal.

Costs:

Known	1 seal	\$25,000
-------	--------	----------



Deep Mine M7L2 (Permit Number 11145)

General Description:

This complex is west of Route 119 and 1200 feet + - north of the intersection of Route 119 and T 337 at Morris Crossroads. It is situated on the northeast side of an active strip mine, S7LIO1. The Pittsburgh coal seam was mined here. Two openings and a 30" diameter mine pipe were field located near a smoldering gob pile. Both of the openings are caved in and all three of the appurtenances are flowing. They are shown on the map of Sub-watershed 7L.

Recommendations:

It is unknown what effect a sound reclamation program at the active surface mine will have on the flows from this complex since they seem to be connected. However, the two openings will probably still need to be hydraulically-sealed. An air seal is assumed to have been placed on a portal from which the mine pipe extrudes. This would also have to be replaced by an hydraulic seal.

Costs:

Known	3 seals	\$75,000
-------	---------	----------

Deep Mine M7L5

General Description:

This mine complex is located northeast of Outcrop. The Pittsburgh coal seam was mined here. Its only opening, a 12 inch horizontal pipe leading to a 24 inch vertical pipe, is approximately 300 feet east of the northern end of the coke ovens on Strip Mine S7L10S. A very good flow is being discharged. This pipe is spotted on the map of Sub-watershed 7L.

Recommendations:

This mine pipe is assumed to be discharging flow from a portal which has been air-sealed and covered over. Therefore, this portal must be located and the air seal replaced with an hydraulic seal.

Cost:

Known	1 seal	\$25,000
-------	--------	----------

Deep Mine M7L8

General Description:

This complex is located approximately 900 feet south of the intersection of Route 119 and T 337 long Route 119. The three openings are immediately adjacent to the western side of Route 119. Two of the openings are caved in and one of the three has a flow. The opening which is not caved in periodically flows and has a gate at its entrance. The coal seam which has been mined is assumed to have been the Pittsburgh seam. The openings are shown on the map of Sub-watershed 7L.

Recommendations:

The one flowing opening will require a hydraulic or wet seal to eliminate the flow and, consequently, withstand the hydrostatic pressure.

Costs:

Known	1 seal	\$25,000
Potential	2 seals	<u>50,000</u>
	Total	\$75,000

Deep Mine M7LI0

General Description:

This complex is located 2500 feet - northeast of Outcrop,  
1200 feet + - east of L.R. 26076, and 1500 feet + - south of T  
339. Its only opening is on the northern edge of Strip Mine S7L105  
in a wooded area. It is caved in and is presently flowing.  
The Pittsburgh coal seam is assumed to have been mined. The  
opening is shown on the map of Sub-watershed 7L.

Recommendations:

A hydraulic seal should be placed in the portal to  
eliminate the flow. This should be accomplished before possi-  
ble reclamation of S7LI05 is initiated.

Costs:

Known	1 seal	\$25,000
-------	--------	----------

Deep Mine - Harah Mine  
(includes M8L5, M7L7, M7L9, M7L4, M7L6)

General Description:

The above mentioned sub-complexes of the Pittsburgh seam are all part of a much larger complex which is called the Harah Mine. They are all inter-connected and, therefore, dependent on each other as far as abatement is concerned. A separate description is made for each sub-complex to aid in comprehension and presentation.

The M8L5 complex is situated about 1.5 miles northeast of Morris Crossroads off the southeast side of Route 119. Access is provided by an old trail originating on T 335 about 1,000 feet from its intersection with Route 119. Only one opening was found and it is caved in and flowing. It was found on Strip Mine S8L109 near some heavy brush. It is shown on the map of Sub-watershed 8L.

The M7L7 complex is located approximately 1,700 feet southwest of the T 337 and Route 119 intersection and 700 feet south of Route 119. This is about 0.5 miles west of Outcrop. Access to the area is provided by a trail which meets Route 119 1,000 feet south from its intersection with T 337. Two openings and one mine pipe were found with only the pipe flowing. The mine pipe is associated with one of the openings. These apertures are all located on Strip Mine S7LI03, and are shown on the map of Sub-watershed 7L.

Deep mine M7L9 is located on the west side of L.R.26076 at the south end of Outcrop. The only opening is located on the northeastern edge of Strip Mine S7LI02. A tibble and a gob pile are distinguishing features of this location. The opening is flowing and is shown on the map of Sub-watershed 7L.

Deep Mine M7L4 is located about 700 feet southwest of

Deep Mine - Harah Mine (cont'd.)

Outcrop on Strip Mine S7L102. Two openings were found along a highwall and both seemed to be sheared off deep mine rooms. Both were caved in and neither were flowing. Access to these two openings is provided by an old strip mine road which originates on L.R. 26076 at the south end of Outcrop. They are shown on the map of Sub-watershed 7L.

The M7L6 mine complex is situated about 1,500 feet southwest of Outcrop on Strip Mine S7LI02. Three openings were found along a highwall and they seem to be deep mine rooms that have been sheared off by the stripping. Each opening is caved in and 2 are flowing. The rooms seem to lead toward the active portion of S7LI02. They are shown on the map of Sub-watershed 7L.

Recommendations:

In general, all of the flowing openings and mine pipes will require a hydraulic seal to contain the flow. Any that are not flowing shall be considered as potential. In the case where an air seal has been placed with discharge through a mine pipe, a hydraulic seal should replace the existing air seal. The hydraulic seal should be designed to withstand heads caused by hydrostatic pressure. A breakdown of the number of seals to each sub-complex appears in the cost section.

Deep Mine - Harah Mine (cont'd.)

Costs:

	<u>KNOWN</u>	
Designation	# of seals	Costs
M8L5	1	\$ 20,000
M7L6	2	50,000
M7L7	1	25,000
M7L9	<u>1</u>	<u>20,000</u>
	5	\$115,000

	<u>POTENTIAL</u>	
M7L4	2	\$ 50,000
M7L6	1	25,000
M7L7	1	25,000
Not Designated	<u>1</u>	<u>20,000</u>
	5	\$120,000

Summary of Costs:

Known	5 seals	\$115,000
Potential	<u>5 seals</u>	<u>120,000</u>
	10 seals	\$235,000

NOTE: Only 3 of the openings to this complex are shown on the W.P.A. mine map. However, existing evidence shows that the other 7 openings located are also a part of the Harah complex although not shown on the mine map. Therefore, for the 3 openings, a cost of \$20,000 per seal per opening was used, while for the remaining 7, a cost of \$25,000 per seal per opening was used.

## strip Mines

The Commonwealth records indicate there are 2 strip mines in this sub-watershed. Our field investigations located 8 surface mines with 6 having flows. Table 73 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 7L is 396.57 acres or 38.16% of the total sub-watershed land area.

Table 74 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: GC7L1, GC7L3, GC7L4, GC7L5, GC7L6, GC7L7, GC7L8, GC7L9, GC7L10 and GC7L11.

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 74 are the descriptions of the flowing strip mines along with abatement recommendations.



TABLE 73  
Abandoned Surface Mines  
Sub-watershed  
7L

Mine Number	Name of Mine or Operator	Permit No.	Area Mined (Acres)	Seam Mined	Flowing	Connection w/Deep Mine
S7L101	Springhill Coal Co.	17455	94.55	RED & PGH	Yes	M7L1A M7L2A, B
S7L102	Unknown	--	97.31	PGH*	Yes	M7L6A, B, C M7L4, A, B M7L9A
S7L103	Unknown	--	9.18	PGH*	Yes	M7L7A, B, C
S7L104	Unknown	--	5.51	PGH*	Yes	--
S7L105	Unknown	--	59.67	PGH*	Yes	MP7L5A M7L10A
S7L106	Smith & Wise	17415	40.39	RED	No	--
S7L107	Unknown	--	71.60	PGH*	Yes	--
S7L111	Unknown	--	18.36	PGH*	Yes	--

TABLE 74  
 ABANDONED SURFACE MINE AVERAGE WATER QUALITY DATA  
 Sub-watershed  
 7L

Location	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.
S7L101	3.6	5480	173.9	54	1.95	5426	172	11.48	.53	472	15.22	7588	247.5	15	21,600
%	-	-	-	-	-	-	2.52%	-	92.98%	-	1.47%	-	2.80%	-	1.62%
S7L102	3.5	7407	552.8	53	1.25	7354	551.6	29.87	1.36	1163	107.8	9546	652.1	31	44,640
%	-	-	-	-	-	-	8.09%	-	238.6%	-	10.39%	-	7.38%	-	3.35%
S7L103	2.4	1730	63.47	0	0	1730	63.47	82	5.94	770.2	31.40	3075	177.1	6	8,640
%	-	-	-	-	-	-	.93%	-	1042%	-	3.03%	-	2.00%	-	.65%
S7L104	2.8	382	34.95	0	0	382	34.95	1.68	.18	52.93	4.97	743.8	67.91	8	11,520
%	-	-	-	-	-	-	.51%	-	31.58%	-	.48%	-	.77%	-	.86%
S7L105	3.1	1620	157.6	0	0	1620	157.6	3.45	.14	125.1	14.3	2250	187.8	26	37,440
%	-	-	-	-	-	-	2.31%	-	24.56%	-	1.38%	-	2.12%	-	2.81%
S7L107	2.9	2373	688	0	0	2373	688	.56	.13	265	107.3	2937	450.4	72	103,680
%	-	-	-	-	-	-	10.09%	-	22.81%	-	10.34%	-	5.09%	-	7.78%
S7L111	5.3	600	28.85	172	12.40	428	16.45	0	0	98.81	4.76	875	48.67	10	14,400
%	-	-	-	-	-	-	.24%	-	0%	-	.46%	-	.55%	-	1.08%

Strip Mine S7L101 (permit number 17455)

General Description:

This strip mine is located 2,000 feet north of the Route 119 and T 335 intersection. It contains 94.55 acres and has three leaches, A, B, and D located on the north, east and south sides respectively. The central portion of the mine is active while the remainder is about 80% reclaimed thru grading and revegetation. The major highwall on the unreclaimed portion is located on the northeastern side of the strip and is 5 feet to 8 feet in height. About 70% of the strip is heavily vegetated with trees and grasses, both natural and planted. Two deep mine complexes, M7L1 and M7L2, are connected with this mine. The Pittsburgh and Redstone coal seams were mined here. The strip is shown on the map of Sub-watershed 7L.

Recommendations:

The north and south leaching areas should both be graded and vegetated and diversion ditches should be placed up-slope from each. Leach B (on the south side) can be controlled with only a ditch system. It is felt that neither the active portion of the strip mine nor the deep mines are affecting the leaches. However, if applicable, the reclamation of the strip mine should be coordinated with the sealing of the deep mines to avoid conflicts.

Costs:

Ditches	3,100 ft. @ \$1/lin. ft.	= \$ 3,100
Grading	10 acres @ \$1,800 acre	= 18,000
Vegetation	10 acres @ \$600 acre	= <u>6,000</u>
		\$27,100

## Strip Mine S7L102

### General Description:

This strip mine is located about 1,000 feet north of the intersection between T 335 and L.R. 26083 and approximately 4,000 feet south of the T 337 and L.R. 260 intersection. The strip is directly southwest of Outcrop. It contains 97.31 acres and mined the Pittsburgh coal seam. Thirty percent of the strip was reclaimed by revegetation only. However, about 60% of the mine has a vegetative cover. The southeastern portion, which is out of the watershed, is still active with two exposed highwalls. The abandoned northern section has a 2,000 foot long highwall, 50 feet in height. Seven leaches were found, 4 on the northwestern edge along the highwall, 2 on the western side, and 1 which is adjacent to the eastern edge near a railroad cut. The strip is shown on the map of Sub-watershed 7L.

### Recommendations:

Two of the 4 leaches on the northwestern edge are chiefly coming from gob piles. These gob piles should be graded, planted, and then protected by a ditch system. The remaining 2 on the northwestern edge (in the reclaimed area) can be controlled by a ditch system. Depressions that lie east of the western leaches should be filled, vegetated, and then a ditch system installed. The final leach, which is off the strip, but determined to be originating from the strip, can be controlled by minimal grading, vegetating, and ditching.

### Costs :

Ditches	5,500 ft. @ \$1/lin.ft.	= \$ 5,500
Grading	20 acres @ \$1,800/acre	36,000
Vegetation	20 acres @ \$600/acre	= <u>12,000</u>
		\$53,500

Strip Mine S7L103

General Description:

This strip mine is located approximately 1,500 feet south of the intersection between U.S. Route 119 and T 337. It encompasses 9.18 acres and is assumed to have mined the Pittsburgh coal seam. The strip is completely reclaimed and vegetated with grasses and trees. No highwall or any spoil piles remain unreclaimed. One leach was found which seems to be caused by surface runoff. Deep Mine M7L7 has openings on the strip, which is shown on the map of Sub-watershed 7L.

Recommendations:

A ditch system to divert surface runoff around the strip and to also control runoff on the strip is the only reclamation required. This should not interfere with any deep mine sealing program at the strip mine.

Cost:

Ditches	2,000 feet @ \$1/foot	\$2,000
---------	-----------------------	---------

Strip Mine S7L104

General Description:

This strip mine is located about 1,000 feet directly east of Outcrop and L.R. 26076. It contains 5.51 acres and has no deep mine connections. It is approximately 95% vegetated with grasses and trees, both natural and planted. No grading has been done. The highwall, which extends along the southern edge, is 15 feet in height. A gob pile, G7L304, is on the southwestern side. There is only one leach and it comes from the gob and along the highwall. This strip is assumed to have mined the Pittsburgh coal seam and is shown on the map of Sub-watershed 7L.

Recommendations:

A combination of backfilling and compacting, cutting down the highwall, and grading is the earth-moving activity recommended. Then the area should be planted and a surface water diversion ditch placed upslope. The ditch should be clay-lined due to soil conditions.

Costs:

Grading, compacting, and backfilling		
	5 acres @ \$1,400/acre	\$ 7,000
Vegetation	5 acres @ 600	3,000
Ditch	1,300 feet @ \$7/foot	<u>9,100</u>
		\$19,100

## Strip Mine S7L105

### General Description:

This strip mine is located northeast of Outcrop and is approximately 1,500 feet east of the intersection between L.R.26076 and T 337. The strip mine is about 80% reclaimed through grading, revegetation, and ditching and the central portion is still being mined. Sixty percent of the strip is vegetated with grasses and trees, both natural and planted. Four leaches were found, 2 on the eastern side and 2 on the western side near the coke ovens and tipple. The abandoned highwall is on the northern edge and is about 10 feet high and 408 feet in length. Two deep mine apertures were found on the strip. One is a mine pipe, MP7L5A, and the other is an opening, M7L10A. The Pittsburgh coal seam is assumed to have been mined here. The strip mine is shown on the map of Sub-watershed 7L.

### Recommendations:

The eastern leaches can be eliminated with minor grading, revegetation, and a ditch system. The western leaches can be stopped by grading of the gob piles, revegetation, and a ditch system. It is not known what effect the active portion of the strip mine or the deep mining has upon the flowing leaches.

### Costs:

Ditches	2500 ft. @ \$1/ft.	= \$ 2,500
Grading	10 acres @ \$1,800/acre	= 18,000
Vegetation	10 acre @ \$600/acre	= <u>6,000</u>
		\$24,500

## Strip Mine S7L107

### General Description:

This strip mine of 71.6 acres is located about 1,500 feet southeast of Outcrop along L.R. 26076. The strip lies immediately adjacent to L.R. 26076 on the northeastern side. Approximately 50% of the mine lies outside the Georges Creek Watershed. Seventy-five percent of the strip is reclaimed through grading and revegetation. Fifty percent of the strip is actually vegetated with both grasses and trees. The existing highwall is situated on the eastern side of the strip and two leaches originate just east of it. The leaches are caused by a water-collecting depression between the highwall and gob, which was simply pushed downslope. No deep mines were located in this area. The strip is assumed to have mined the Pittsburgh coal seam and is shown on the map of Sub-watershed 7L.

### Recommendations:

No recommendations at this time since the strip seems to be under permit to Rondell Strip Mine.



Strip Mine S7L111

General Description:

This mine of 18.36 acres is located 2,000 feet south of the intersection between T 472 and T335. It is split by the 7L and 8L sub-watershed line. It is 95% reclaimed by grading and revegetation and 100% of the vegetation is grasses and trees. The central portion of the strip mine is wooded and does not seem to have been mined. The two leaches are on the eastern side of the strip and seem to be originating from small spoil piles. No deep mining was done in this area. The strip is assumed to have mined the Pittsburgh coal seam and it is shown on the map of Sub-watershed 7L.

Recommendation:

The spoil pile should be graded to a good slope and re-vegetated. A diversion ditch on the upslope side will prevent surface water from entering the regraded area.

Costs:

Grading	3 acres @ \$1,800/acre	\$5,400
Vegetation	3 acres @ \$600/acre	1,800
Ditches	700 feet @ \$1/foot	<u>700</u>
		\$7,900

## Recommendations

Table 75 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 76 lists the sources abated, the amount of beneficiation, and the costs associated with each plan.

The distance from Sampling Station GC7L1 to the next polluting tributary downstream, GC9R1, is 2.03 miles. This is the minimum distance on Georges Creek that would benefit from the recommended work.

TABLE 75  
 RECOMMENDED ABATEMENT PROCEDURES - COST BENEFICATION  
 SUB - WATERSHED  
 7L

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	M7L2	\$ 75,000	\$ 75,000	\$ 25.36	\$ 25.36	2,957	97.59	43%	9%
2	S7L103	2,000	52,000	42.02	1,092.44	47.60	23.53	1%	2%
3	Harah Mine	115,000	235,000	48.64	99.41	2,364	357.54	-	-
4	M7L5	25,000	25,000	78.86	78.86	317	22.07	5%	2%
5	M7L1	25,000	25,000	121.56	121.56	205.66	45.73	3%	4%
6	S7L102	53,500	148,500	129.32	358.96	413.7	80.85	6%	8%
7	S7L105	24,500	74,500	207.28	630.29	118.2	10.73	2%	1%
8	S7L101	27,100	127,100	210.08	985.27	129	10.67	2%	1%
9	M7L10	25,000	25,000	346.64	346.64	72.12	1.12	1%	1%
10	S7L111	7,900	7,900	640.19	640.19	12.34	3.57	1%	1%
11	S7L104	19,100	19,100	728.73	728.73	26.21	3.73	1%	1%
12	M7L8	25,000	75,000	1,214	3,644	20.58	2.3	1%	1%
-	M7L6	See Harah Mine				366.17	45.50	5%	4%
-	M7L7	See Harah Mine				1,671	146.93	25%	14%
-	M7L9	See Harah Mine				283.5	156	4%	15%

TABLE 76  
 BENEFICATION - RECOMMENDED PLANS  
 SUB-WATERSHED  
 7L

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	12	6,684	98%	660	64%	5,990	68%	\$ 424,100	\$ 889,100
B	10	6,637	97%	654	63%	5,917	67%	380,000	795,000
C	9	6,625	97%	650	63%	5,594	63%	372,100	787,100

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