

Sub-watershed 1R (White Rock Hollow)

General Discussion

This sub-watershed encompasses 0.82 square miles or 522.34 acres of land area, approximately 1.26% of the total study area. The basin is drained by 3.51 miles of tributaries (1.30% of the total length of all watershed tributaries) and contains no appreciable amount of lakes and ponds. Commonwealth records indicate no mining of any type, which our field surveys substantiated.

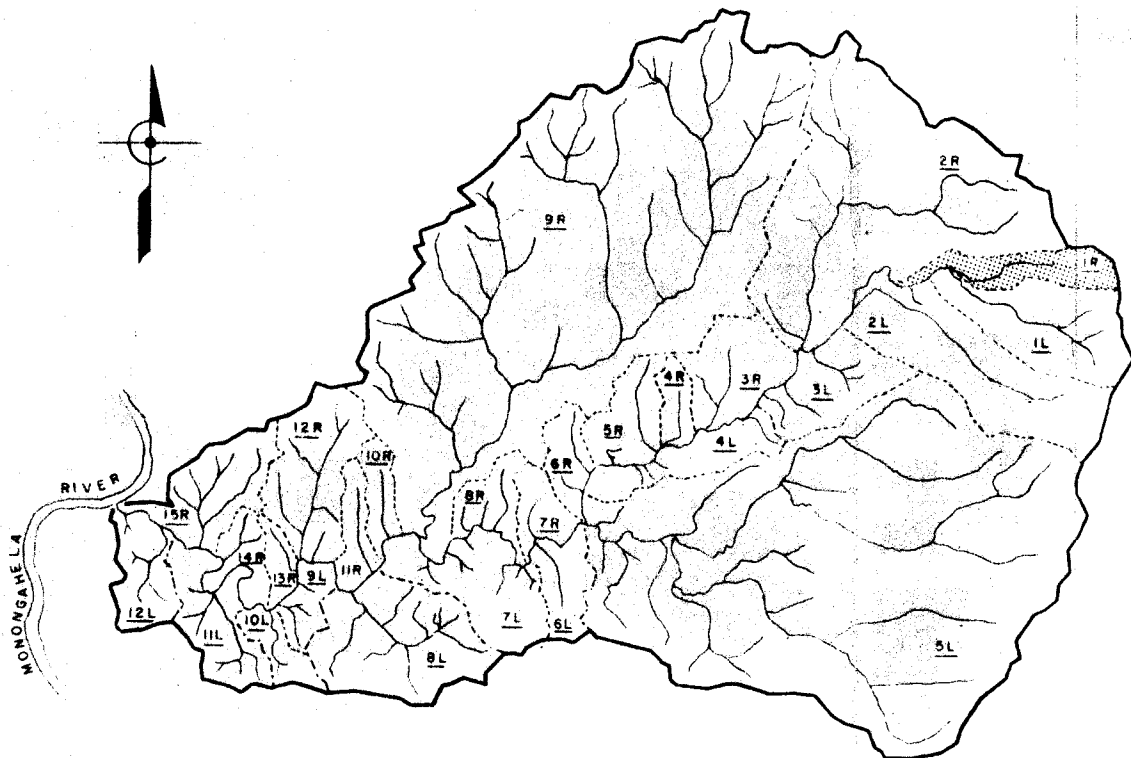
The following information gives the averages of the sampling station designated as GC1R1, White Rock Hollow, shown on Drawing 7316-7. The percentages that this sub-watershed contributes in pollution load and flow to Monitoring Station GC8 near the mouth of Georges Creek are also shown.

| | <u>Averages</u> | | <u>Percent of Total Watershed</u> | |
|-----------------|-----------------|-----|---------------------------------------|---|
| pH 5.8 | | | | |
| Net Hot Acidity | 0 | PPD | 0 | % |
| Ferrous Iron | 0 | PPD | 0 | % |
| Total Iron | 3 | PPD | .09% | |
| Sulfate | 193 | PPD | .28% | |
| Flow | 1,782,720 | GPD | 3.00% | |





TABLE 13
 TRIBUTARY AVERAGE WATER QUALITY DATA
 Sub-watershed
 1R

| 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. |
| GC1R1 | 5.8 | 8.0 | 64.05 | 13.33 | 116.42 | 0 | 0 | 0 | 0 | .40 | 2.48 | 27.67 | 192.72 | 1,238 | 1,782,720 |

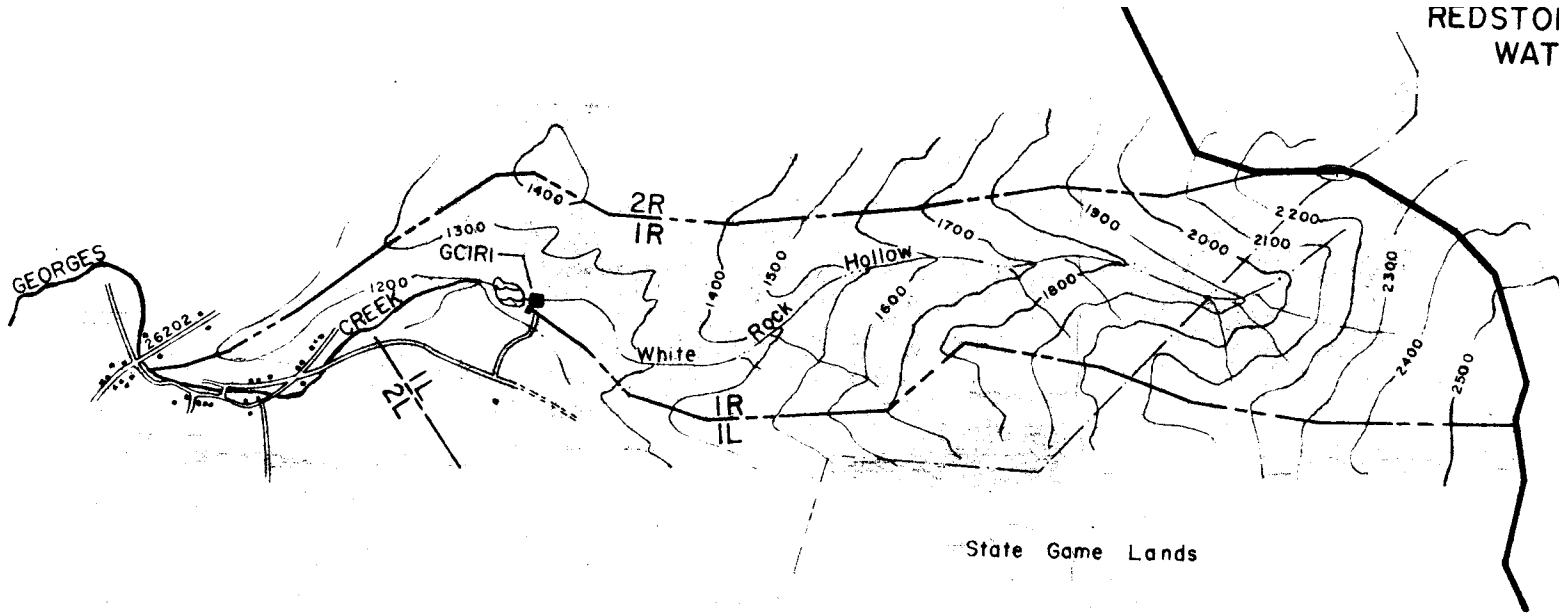
Location Plan



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

REDSTONE CREEK
WATERSHED

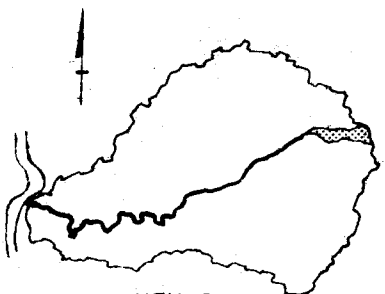


State Game Lands

**MAP OF
SUB-WATERSHED IR**

(White Rock Hollow)

SCALE: 1"=2000'



KEY PLAN

Sub-Watershed 1L (Askon Hollow)

General Discussion

This sub-watershed encompasses 1.89 square miles or 1,210.84 acres of land area, approximately 2.95% of the total study area. The basin is drained by 8.29 miles of tributaries (3.08% of the total length of all the watershed tributaries), and contains 1.84 acres in small lakes and ponds (.15% of the total sub-watershed area). Commonwealth records indicate no surface mines or deep mines in this area. Our field investigations find 1 surface mine, not flowing, and 1 deep mine with 3 openings, all flowing.

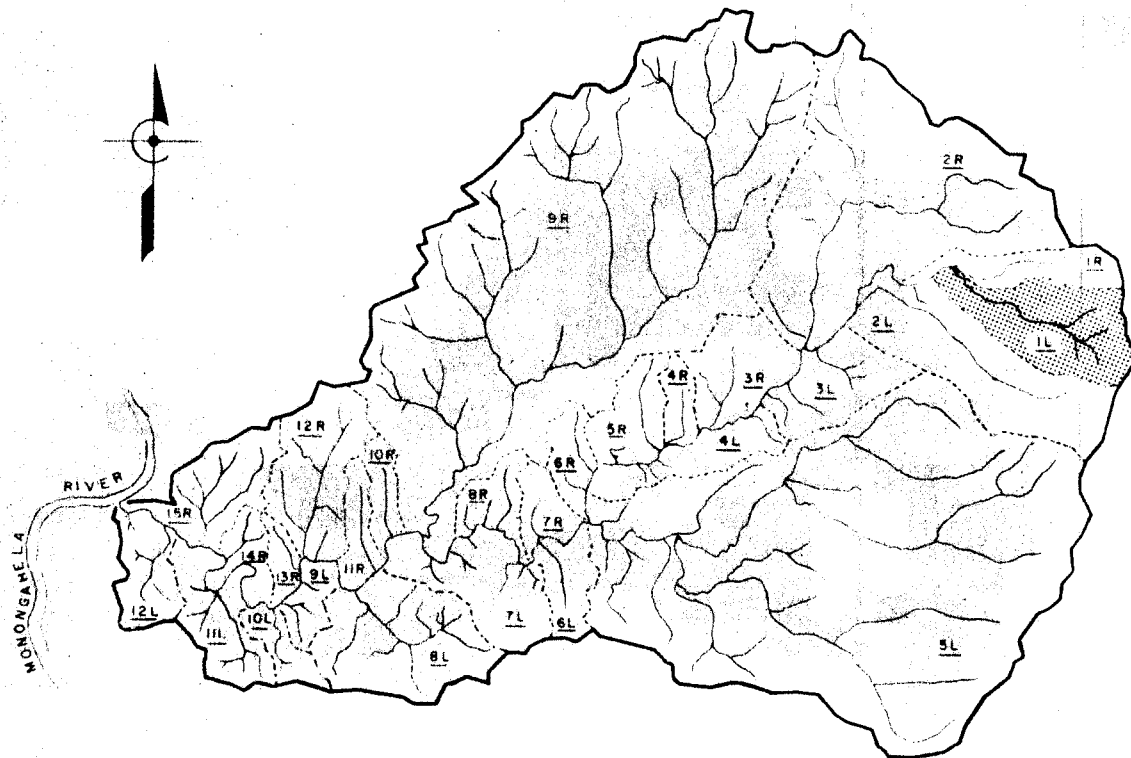
The following information gives the averages of the sampling stations designated as GC1L1, Askon Hollow, and GC1L2, un-named. They are located on Drawing 7316-7, and their individual averages can be found in Table 14. In the case where more than one tributary contributes to a sub-watershed, the values have been combined. The percentages that these stations contribute in pollution load and flow as measured at Monitoring Station GC8 near the mouth of Georges Creek are also included.

| | <u>Averages</u> | | <u>Percent of Total Watershed</u> |
|-----------------|-----------------|-----|---------------------------------------|
| pH | 5.1 | | |
| Net Hot Acidity | 36 | PPD | .14% |
| Ferrous Iron | 0 | PPD | 0 % |
| Total Iron | 2 | PPD | .04% |
| Sulfate | 119 | PPD | .17% |
| Flow | 249,120 | GPD | .41% |





TABLE 14
 TRIBUTARY AVERAGE WATER QUALITY DATA
 Sub-watershed
 1L

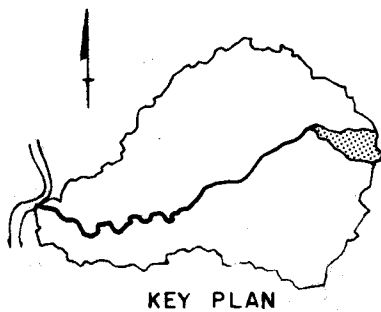
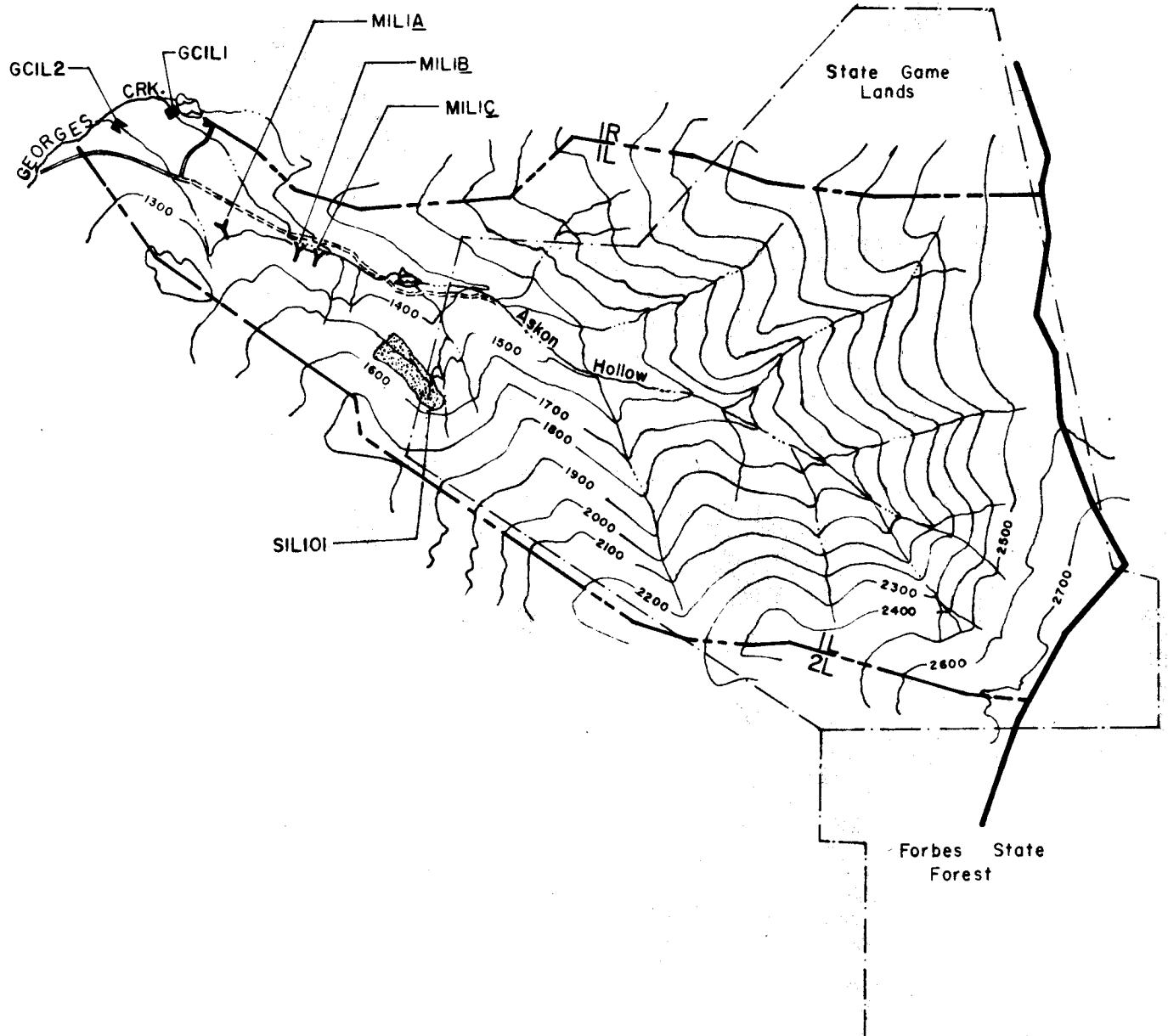
| Station | pH | Hot Acid | | Alkalinity | | Net Hot Acid | | Ferrous Iron | | Iron as Fe | | Sulfate | | Flow | |
|---------|-----|----------|-------|------------|-------|--------------|-------|--------------|-------|------------|-------|---------|--------|------|---------|
| | | PPM | #/Day | PPM | #/Day | PPM | #/Day | PPM | #/Day | PPM | #/Day | PPM | #/Day | GPM | G.P.D. |
| GC1L1 | 6.0 | 2 | 1.10 | 15.00 | 8.75 | 0 | 0 | 0 | 0 | .37 | .23 | 30.00 | 16.80 | 46 | 66,240 |
| GC1L2 | 4.2 | 50.40 | 44.24 | 0.40 | 1.00 | 50.00 | 43.24 | 0 | 0 | 0.60 | 1.06 | 57.00 | 101.73 | 127 | 182,880 |

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 IL
(ASKON HOLLOW)**
SCALE: 1" = 2000'

Deep Mines

The Commonwealth records indicate that there are no deep mines in this sub-watershed. Our field investigations located 1 deep mine with 3 openings, all of which are flowing. Table 15 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 16 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 sampling stations GC1L1, Askon Hollow, and GC1L2, 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 15
 ABANDONED DEEP MINES
 Sub-Watershed
 1L

| Mine Number | Name of Mine or Operator | Strip Mine Connection | Mine Map Obtained | Area Mined (Acres) | Seam Mined | Opening No. | Elev. of Opening | Flow | Permit Number |
|-------------|--------------------------|-----------------------|-------------------|--------------------|------------|-------------|------------------|------|---------------|
| MLL1 | Unknown | -- | No | -- | Unknown | 1LLA | 1260' | Yes | - |
| | | | | | | 1LLB | 1280' | Yes | |
| | | | | | | 1LLC | 1310' | Yes | |

TABLE 16
 ABANDONED DEEP MINE AVERAGE WATER QUALITY DATA
 Sub-Watershed
 1L

| 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. |
| MLL1 | 4.0 | 532 | 34.32 | 6.00 | .81 | 526 | 33.51 | .28 | .02 | 47.45 | 3.24 | 614.25 | 44.32 | 26 | 37,440 |
| % | - | - | - | - | - | - | 94.16% | - | - | - | 251% | - | 37.39% | - | 15.03% |

13-81

Deep Mine M1L1

General Description:

The three openings are located in Askon Hollow approximately 1000' - 2000' southeast of the Fairchance Hi-To Hunting Club. The entire area is heavily wooded and access is provided by a jeep trail. These 3 openings are all flowing and are shown on the map of Sub-watershed 1L. The seam that is assumed to have been mined here is the Upper Freeport.

Recommendations:

Even though 2 of the openings are caved in, all 3 would need to be hydraulically-sealed.

Costs:

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

Strip Mines

The Commonwealth records indicate there are no strip mines in this sub-watershed. Our field investigations located 1 surface mine which was not flowing. Table 17 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 connects with any deep mines.

The total acreage of this abandoned surface mine is 8.26 acres or .68% of the total sub-watershed land area.

TABLE 17
 Abandoned Surface Mines
 Sub-watershed
 IL

| Mine Number | Name of Mine or Operator | Permit No. | Area Mined (Acres) | Seam Mined | Flowing | Connection w/Deep Mine |
|-------------|--------------------------|------------|--------------------|------------|---------|------------------------|
| SLL101 | Unknown | -- | 8.26 | Unknown | No | -- |

Recommendations

Table 18 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 19 lists the sources abated, the amount of beneficiation, and the costs associated with each plan.

The distance from Sampling Station GC1L2 to the next polluting tributary downstream, GC3L1, is 2.32 miles. This is the minimum distance on Georges Creek that would benefit from the recommended work.

TABLE 18
RECOMMENDED ABATEMENT PROCEDURES - COST BENEFICATION
SUB-WATERSHED
1L

| 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 | MLL1 | \$75,000 | \$75,000 | \$2,984.48 | \$2,984.48 | 25.13 | 2.43 | 70 | 122 |

TABLE 19
BENEFICATION - RECOMMENDED PLANS
SUB-WATERSHED
1L

| 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 |
| A | 1 | 25.13 | 70 | 2.43 | 122 | 33.24 | 28 | \$75,000 | \$75,000 |

IT IS RECOMMENDED THAT PLAN "A" BE INITIATED FOR THIS SUB-WATERSHED