

CAMPBELLS RUN

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MAJOR SOURCES 6005, 6002 and 6001
CAMPBELLS RUN

A. Description of the Source Area

1. Sources 6005, 6002 and 6001 are located in Robinson Township, Allegheny County, Pennsylvania, southeast of the community of Moon Run. The locations of these sources are shown on the enclosed Dwg. 6005 - A and on the PITTSBURGH WEST 7-1/2 minute quadrangle which is included in Appendix All.
2. Major source 6005 emerges as an upward flow at the base of a highwall in the drainage ditch of a randomly reclaimed strip mine (PGW 12). Since August, 1968, the flow of the source has been interrupted due to construction of Interstate 279. Subsequent field studies revealed that the flow is now emerging from what was initially minor source 6006.
3. The limited number of readings taken in the past thirteen months show the following maximum, minimum and weighted average parameters for source 6005:

| | <u>Maximum</u> | <u>Minimum</u> | <u>Average</u> |
|-------------------------|----------------|----------------|----------------|
| pH | 4.1 | 1.8 | 2.8 |
| Flow (gpm) | 400 | 60 | 158 |
| Acidity (mg/l) | 1050 | 792 | 888 |
| Iron (mg/l) | 75.0 | 32.5 | 48.0 |
| Manganese (mg/l) | 9.0 | 2.9 | 5.4 |
| Sulfate (mg/l) | 2400 | 1250 | 1790 |
| Hardness (mg/l) | 1940 | 840 | 1218 |
| Acid Load (lbs/day) | 5040 | 579 | 1810 |
| Temperature (degrees C) | 18 | 12 | 15 |

4. Based on the limited number of readings, source 6005 supplies approximately 7% of the total average acid load contributed per day by the major sources into Chartiers Creek and has a slugging index of 3X.
5. Source 6002 emerges from the base of the spoil banks in strip mine PGW 12. The flow dissipates over a large flat area and forms a pond with additional seepage occurring and forming a second pond. These ponds then drain into an unnamed tributary of Campbells Run. The mine maps obtained indicate the area to be part of the Pittsburgh Coal Company's Moon Run Mine which was deep mined in the early 1900's and strip mined in 1946 and 1947.

6. Thirteen months of field and laboratory study indicate the following maximum, minimum and weighted average parameters for source 6002:

| | <u>Maximum</u> | <u>Minimum</u> | <u>Average</u> |
|-------------------------|----------------|----------------|----------------|
| pH | 4.3 | 1.3 | 2.6 |
| Flow (gpm) | 90 | 24 | 45 |
| Acidity (mg/l) | 1180 | 566 | 820 |
| Iron (mg/l) | 72.5 | 9.25 | 46.5 |
| Manganese (mg/l) | 10.0 | 2.9 | 6.4 |
| Sulfate (mg/l) | 2750 | 950 | 1790 |
| Hardness (mg/l) | 1540 | 680 | 1010 |
| Acid Load (lbs/day) | 1274 | 192 | 466 |
| Temperature (degrees C) | 30 | 1 | 11.7 |

7. Source 6002 supplies approximately 1.5% of the total average acid load contributed per day by the major sources into Chartiers Creek, based on thirteen months of readings and has a slugging index of 3X.
8. The discharge from major source 6001 emerges from a pipe at the edge of a randomly reclaimed strip mine (PGW II) which is now a part of Chartiers Valley Country Club golf course. The effluent flows into a deep hollow behind Pennsbury Village apartment houses and discharges into an unnamed tributary of Campbells Run.
9. Thirteen months of field and laboratory study indicate. the following maximum, minimum and weighted average parameters for source 6001:

| | <u>Maximum</u> | <u>Minimum</u> | <u>Average</u> |
|-------------------------|----------------|----------------|----------------|
| pH | 3.6 | 1.7 | 2.6 |
| Flow (gpm) | 150 | 5 | 31 |
| Acidity (mg/l) | 1104 | 646 | 776 |
| Iron (mg/l) | 67.5 | 14.75 | 46.6 |
| Manganese (mg/l) | 9.4 | 1.0 | 3.3 |
| Sulfate (mg/l) | 1875 | 1100 | 1528 |
| Hardness (mg/l) | 1630 | 620 | 912 |
| Acid Load (lbs/day) | 1620 | 39 | 313 |
| Temperature (degrees C) | 24 | 6 | 13.3 |

10. Source 6001 supplies approximately 1.0% of the total average acid load contributed per day by the major sources into Chartiers Creek, based on thirteen months of readings. Analysis of the data indicates that the source is a potential slugger, with a slugging index of 5X.
11. The three major sources supply approximately 9.5% of the total average acid load contributed per day by the major sources into Chartiers Creek and are predominant sources of the pollution of Campbells Run.

B. Drainage

1. Surface Drainage: The major sources drain in a southwesterly direction into a southeasterly flowing, unnamed tributary that discharges its polluted waters into Campbells Run.
2. Subsurface Drainage: W.P.A. coal maps (Carnegie Sheet No. 2) indicate that the subsurface drainage is to the south and southeast. (See Dwg. 6005 - B.) The structure contours on the base of the coal show that the subsurface drainage to the south is affecting sources 6002 and 6005. The prevailing direction of the drainage below 6002 and past source 6001 is to the southeast, i.e., toward the axis of the Nineveh Syncline. A large subsurface level area is located northwest of source 6002 and source 6005.

C. Field Investigations and Abatement Methods

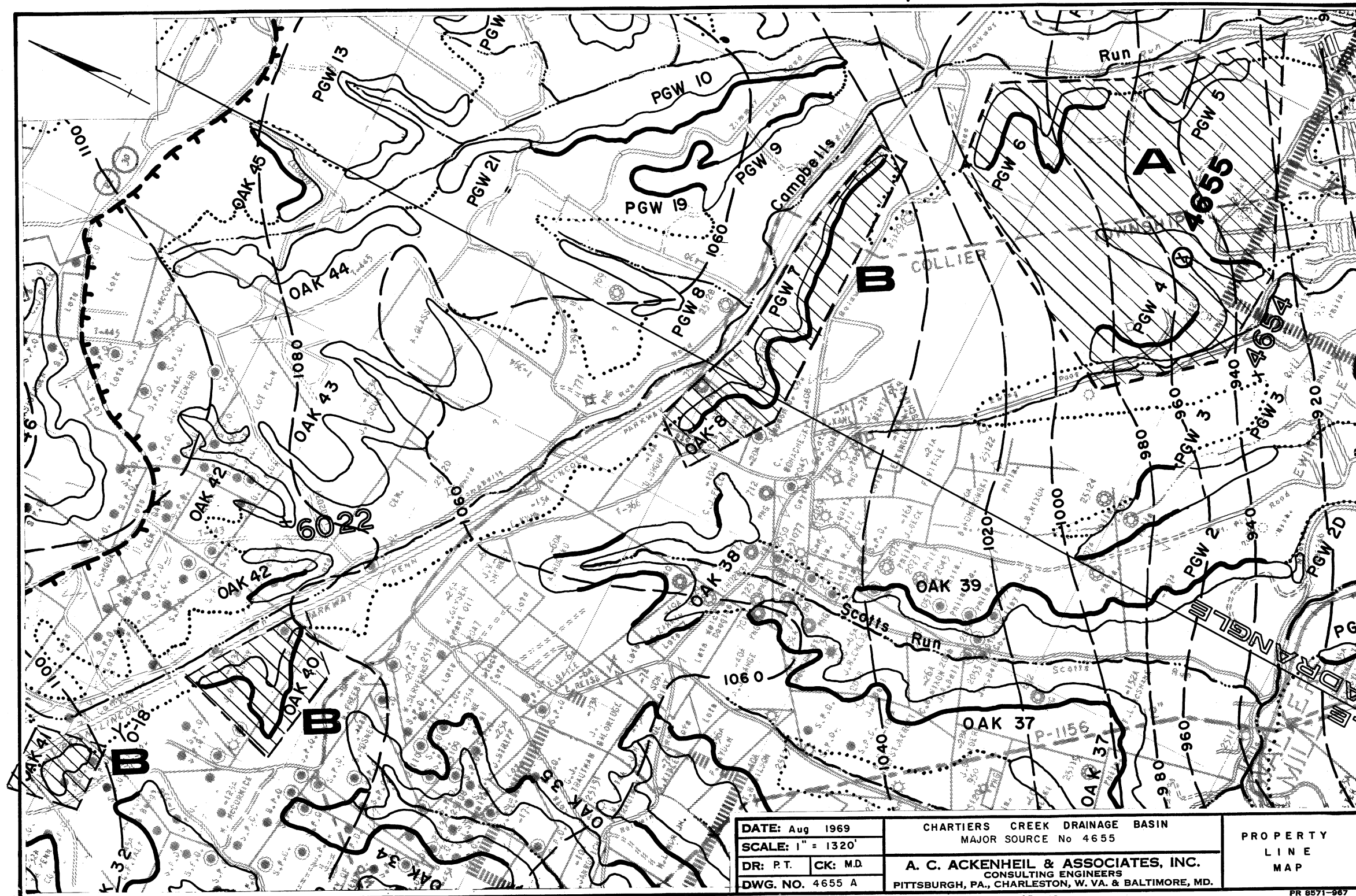
- I. Field studies conducted north and northwest of the major sources and supplemented by a study of aerial photographs revealed a number of strip mines which allow water to enter the deep mines.
2. Due to the rapid residential development of the area, methods which would change the discharge flow of mine drainage should be carefully considered before application.
3. The strip mines affecting the acid mine drainage discharge from the three major sources which are shown on Dwg. 6005 - A are as follows:
 - a. PGW II is to the northwest of source 6001 and occupies about 19 acres and is randomly reclaimed with six acres draining toward the highwall and 13 acres unreclaimed.
 - b. Sources 6002 and 6005 are located in strip mine PGW 12. Source 6002 is south of source 6005. Strip mine PGW 12 occupies 46 acres. Eight of these acres are classified as unreclaimed and 14 reclaimed. The remaining 24 will possibly be reclaimed during the construction of Interstate 279.
 - c. East of source 6002 are strip mines PGW 14 and PGW 15. Strip mine PGW 14 is reclaimed and strip mine PGW 15 is unreclaimed and occupies 17 acres.
 - d. North of source 6005 is strip mine PGW 16, which has about 6 acres unreclaimed and the remaining 8 acres will probably be reclaimed by the construction of Interstate 279.
 - e. West of 6005 is PGW 13, which is unreclaimed and occupies 17 acres.
 - f. Strip mine PGW 20 occupies 8 acres and is unreclaimed. It is north of PGW 16.

4. Improvement of the drainage through strip mine PGW II, PGW 12, PGW 13, PGW 15, PGW 16 and PGW 20 should reduce the flow from the major sources and reduce this slugging index.
5. Mine opening 0-19 is a series of drift entries located off Route 60 in the community of Moon Run. The entries are partially covered with soil, branches and rubbish. However, the timber supports of the entry are still in place. Mine opening 0-19 should be sealed, even though no water was observed to flow through the opening, if only to correct the existing danger of a possible loss of life and to eliminate the possibility of starting a mine fire due to dumping of rubbish and other solid waste products and prevent air from entering the mine through these openings.
6. The drainage from PGW 18 does not affect the major sources because the coal outcrops between this strip mine and the major sources. This strip mine is unreclaimed and is believed to affect minor source 6042.

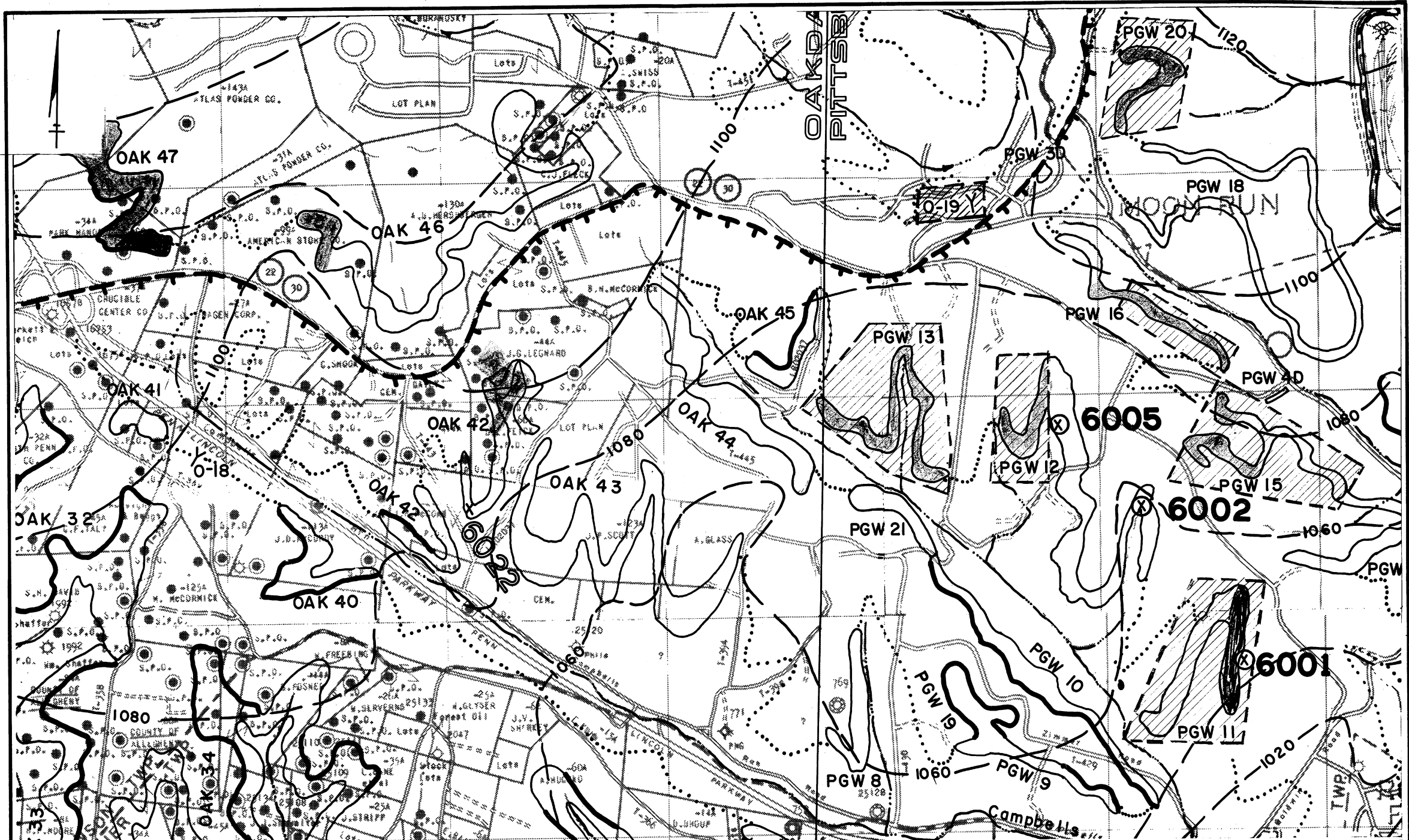
D. Cost of Methods of Abatement

QS - 1 3 A

| Description | Estimated Cost | Estimated Per Cent | |
|---|-------------------|--------------------|----|
| Improve the Natural Drainage through Strip Mines: | | | |
| PGW II | \$19,000 | 4 | |
| Sub-Total: | \$19,000 | | 4% |
| PGW 12 | \$12,300 | 2 | |
| Sub-Total: | \$31,300 | | 6% |
| PGW 13 | \$26,300 | 5 | |
| Sub-Total: | \$57,600 | | 11 |
| PGW 15 | \$26,300 | 5 | |
| Sub-Total: | \$83,900 | | 16 |
| PGW 16 | \$ 9,500 | 2 | |
| Sub-Total: | \$93,400 | | 18 |
| PGW 20 | \$12,500 | 2 | |
| Sub-Total: | \$105,900 | | 20 |
| Seal Drift Opening 0-19 | \$ 5,000 | - | |
| TOTAL: | \$110,900 | | 20 |

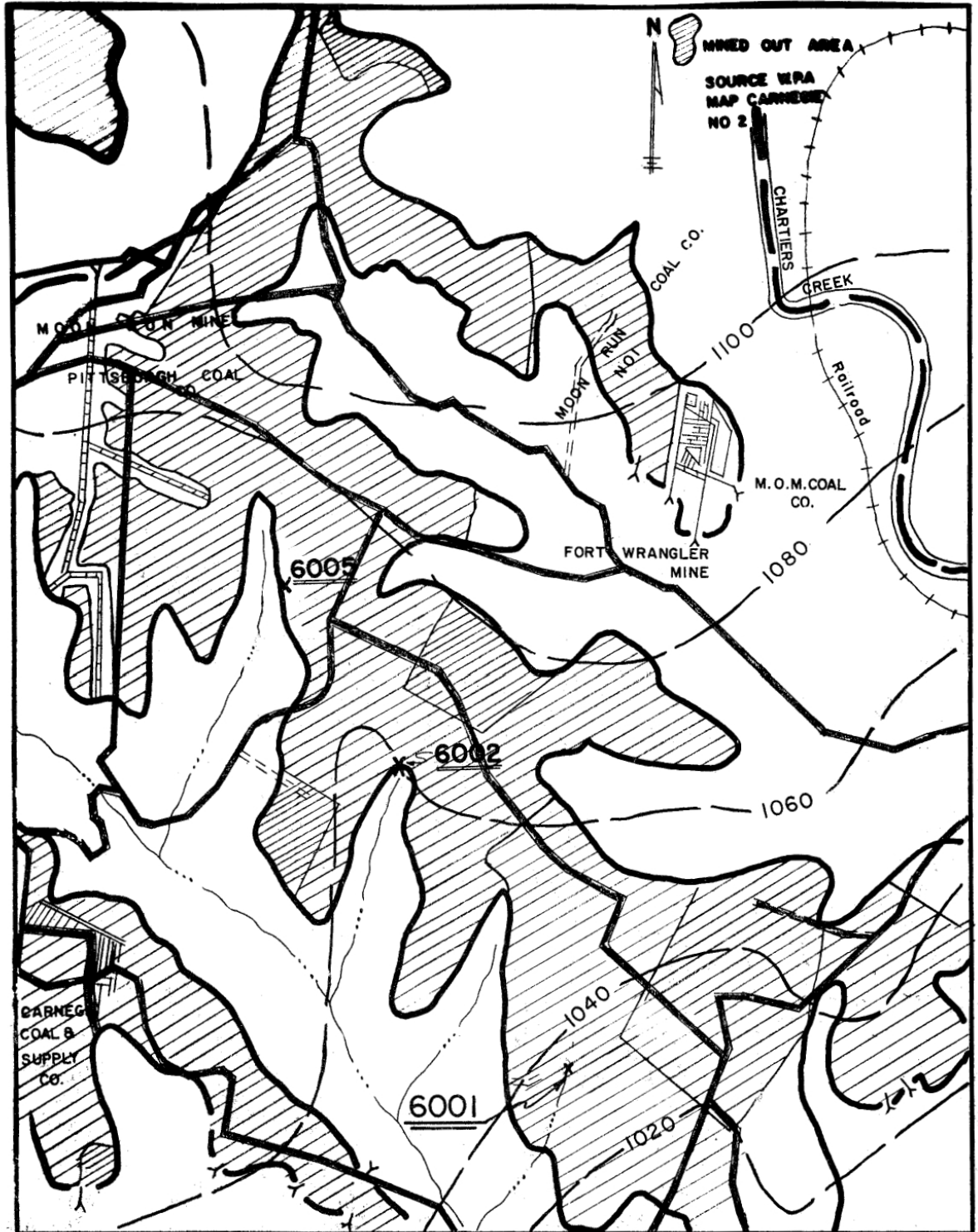


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|-------------------|----------|--|--|-------------------------|
| DATE: Aug 1969 | | CHARTERS CREEK DRAINAGE BASIN | | PROPERTY LINE MAP |
| SCALE: 1" = 1320' | | MAJOR SOURCE No 4655 | | |
| DR: P.T. | CK: M.D. | A. C. ACKENHEIL & ASSOCIATES, INC. | | |
| DWG. NO. 4655 A | | CONSULTING ENGINEERS PITTSBURGH, PA., CHARLESTON, W. VA. & BALTIMORE, MD. | | |



| | | | | |
|-------------------|----------|--|--|-------------------------|
| DATE: Aug 1969 | | CHARTIERS CREEK DRAINAGE BASIN | | PROPERTY LINE MAP |
| SCALE: 1" = 1320' | | MAJOR SOURCES Nos 6005, 6002 and 6001 | | |
| DR: P.T. | CK: M.D. | A. C. ACKENHEIL & ASSOCIATES, INC. | | PR 8571-867 |
| DWG. NO. 6005 - A | | CONSULTING ENGINEERS PITTSBURGH, PA., CHARLESTON, W. VA. & BALTIMORE, MD. | | |

AI-26
 Completion by others
 Construction Areas



| | | |
|---------------------------------|---|--------------------------|
| DATE: June 1969 | CHARTERS CREEK DRAINAGE BASIN | DEEP MINE MAP |
| SCALE: 1" = 1200' | MAJOR SOURCES Nos. 6005, 6002 & 6001 | |
| DR: S.K. CK: I.H. | A. C. ACKENHEIL & ASSOCIATES, INC. | |
| DWG. NO. 6005 - B | CONSULTING ENGINEERS PITTSBURGH, PA. & CHARLESTON, W. VA. | |

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AT - 27

PR 6152-1088

MAJOR SOURCE 6022
CAMPBELLS RUN

A. Description of the Source Area

1. The source is located in the northeastern portion of the Chartiers Creek watershed. It is in Robinson Township, Allegheny County, Pennsylvania, south of Gayly, and is bounded on the north by Pa. 60, on the east by McMichael Road, on the south by the Penn-Lincoln Parkway, and on the west by Church Hill Road. The location of the source is shown on the enclosed Dwg. 6022 - A and on the OAKDALE 7-1/2 minute quadrangle included in Appendix All.
2. Source 6022 discharge is coming out of a large-diameter clay pipe that is probably draining a portion of the Moon Run Mine complex. The area has been deep mined as part of the Pittsburgh Coal Company's Moon Run Mine, Section 2 complex. Coal maps indicate that there are two pit mouth openings northwest and southeast of the discharge, and main entries and a shaft north of the source. No flows were observed from the pit mouth openings. The main entries on the updip side of the discharge could not be located in the field.
3. Thirteen months of field and laboratory study indicate the following maximum, minimum and weighted average parameters for source 6022:

| | <u>Maximum</u> | <u>Minimum</u> | <u>Average</u> |
|-------------------------|----------------|----------------|----------------|
| pH | 4.1 | 2.0 | 3.0 |
| Flow (gpm) | 120 | 60 | 70 |
| Acidity (mg/l) | 890 | 432 | 600 |
| Iron (mg/l) | 27.50 | 8.75 | 16.5 |
| Manganese (mg/l) | 5.2 | 0.8 | 2.7 |
| Sulfate (mg/l) | 2225 | 875 | 1500 |
| Hardness (mg/l) | 1330 | 680 | 980 |
| Acid Load (lbs/day) | 1282 | 311 | 550 |
| Temperature (degrees C) | 18 | 9.5 | 13.0 |

4. Based on 13 months of readings, calculations show that major source 6022 supplies about 1.5% of the total average acid load contributed into Chartiers Creek per day by the major sources.

B. Drainage

1. Surface Drainage: The 7-1/2 minute U.S.G.S. OAKDALE quadrangle sheet does not indicate any surface streams draining the area in the vicinity of source station 6022. The CARNEGIE Sheet No. 2, W.P.A. Mine maps, shows a tributary to Campbells Run flowing southwest and parallel to McMichael Road. The field investigations revealed the following. (See Dwg. 6022 - A.)

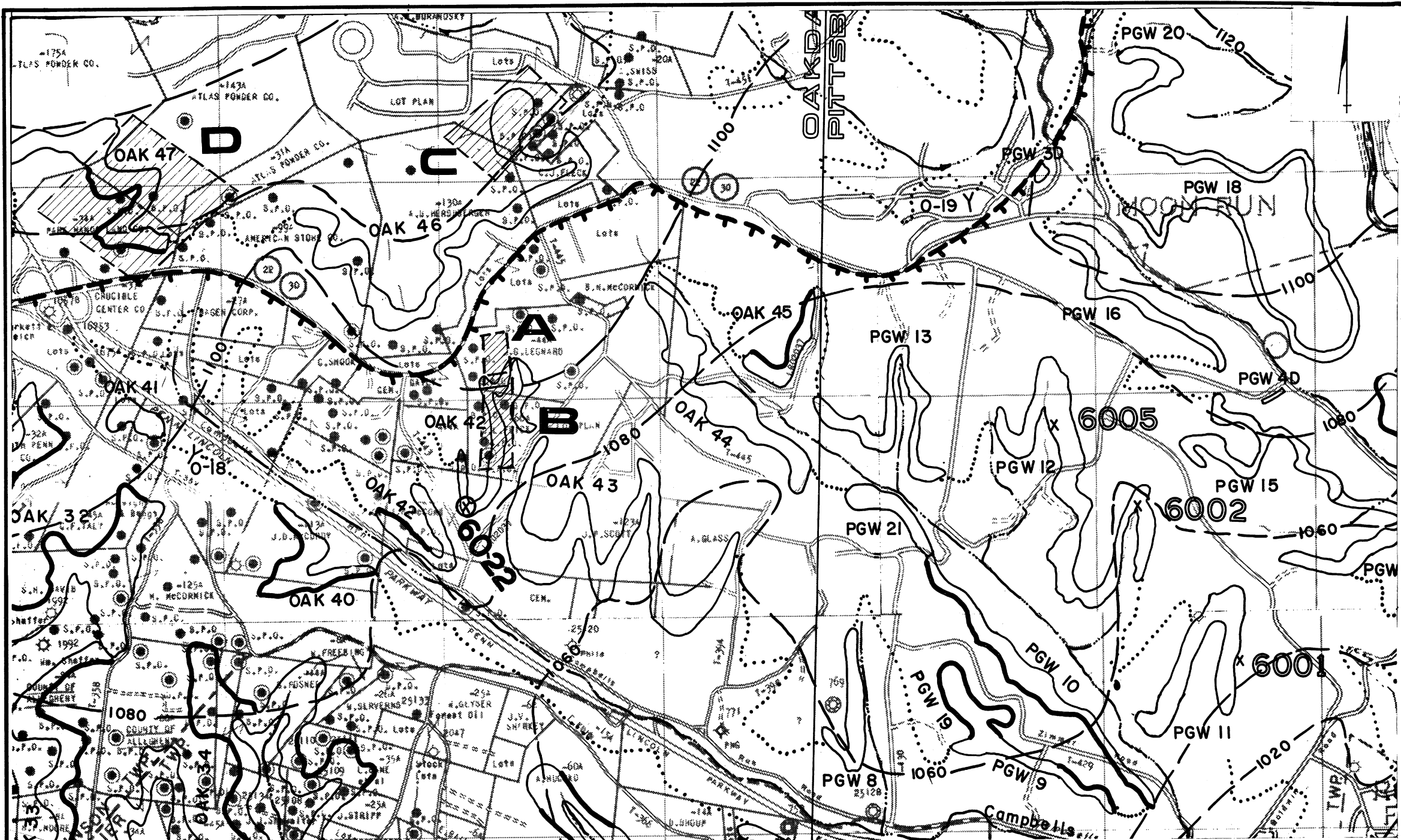
- a. The flow of the stream parallel to McMichael Road, which would normally supply runoff waters to the streams, has been substantially reduced or almost completely eliminated because large sink holes in the valleys drain the surface waters into deep mined areas.
 - b. A small stream that flows parallel to Church Hill Road is polluted by minor source station 6021 before its juncture with the McMichael Road stream.
 - c. Additional flow and pollution is added by major source 6022 before the stream discharges into Campbells Run.
2. Subsurface Drainage: Structure contours plotted at the base of the Pittsburgh Coal indicate that the coal dips slightly to the south, as shown on Dwg. 6022 - B. The dip is approximately 1.4 ft. per 100 ft.

C. Field Investigations and Abatement Methods

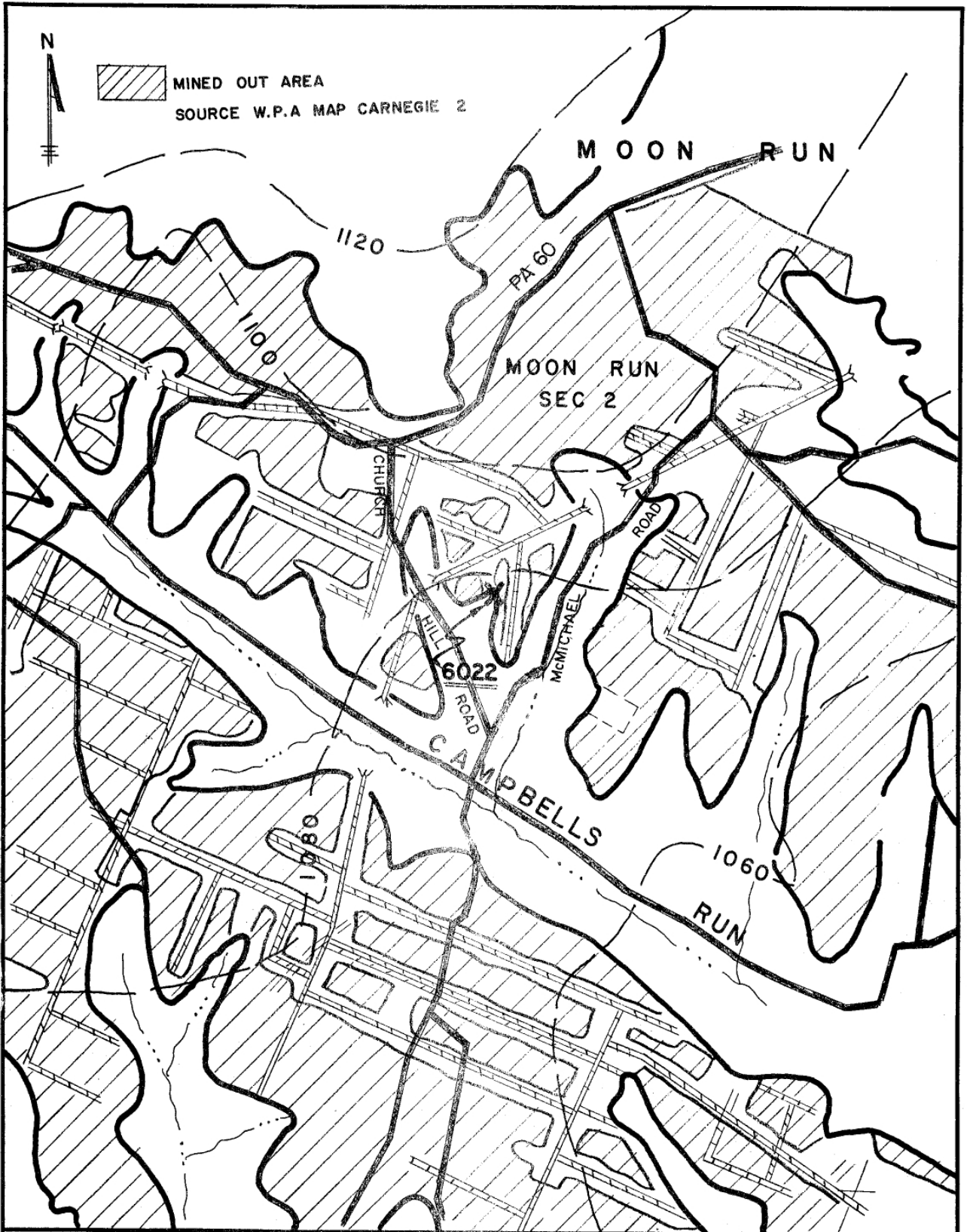
1. Area A: Field investigations in the vicinity of source 6022 revealed that the natural surface drainage has been interrupted by sink holes at three locations. The runoff water flows into the sink holes instead of flowing down natural drainage paths. These sink holes are approximately 8 ft. in diameter. See Dwg. 6022 - A. A series of survey stakes are located north of the sink holes. The presence of these stakes may indicate that private development of this area is being undertaken.
2. Area B: A portion of strip mine OAK 42, which occurs on the property of D. L. Feick, is unreclaimed and could permit additional surface water to enter the deep mine.
3. Area C: Northwest of strip mine OAK 42 is strip mine OAK 46. This strip mine occupies about 58 acres. Ten acres of the northernmost portion are unreclaimed.
4. Area D: Strip mine OAK 47 is west of strip mine OAK 46. It occupies about 39 acres, of which 20 acres in the eastern portion of the strip mine are unreclaimed.
5. In order to reduce the flow at source 6022, fill the sink holes and improve the natural drainage through this area. Surface drainage should also be improved through the unreclaimed portions of strip mines OAK 42, 46 and 47.

D. Cost of Methods of Abatement

| Description | Estimated Cost | Estimated Per Cent Flow Reduction |
|--|----------------|-----------------------------------|
| <u>Area A: J. G. Legnard</u> | | |
| I. Fill in sink holes at the head of the valley and restore natural drainage | \$ 6,000 | 25% |
| 2. Provide natural drainage into the small pond through strip mine OAK 42 | 9,200 | 7 |
| Sub-Total: | \$15,200 | 32% |
| <u>Area B: D. L. Feick</u> | | |
| I. Improve drainage through this portion of strip mine OAK 42 | \$ 9,500 | 5% |
| Sub-Total: | \$24,700 | 37% |
| <u>Area C: Property Owner Not Yet Determined</u> | | |
| I. Improve the drainage through portions of OAK 46 | \$15,000 | 9% |
| Sub-Total: | \$39,700 | 46% |
| <u>Area D: Property Owner Not Yet Determined</u> | | |
| I. Improve the drainage through the eastern portion of OAK 47 | \$30,000 | 18% |
| TOTAL: | \$69,700 | 64% |



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|-------------------|----------|--|--|-------------------------|
| DATE: Aug 1969 | | CHARTIERS CREEK DRAINAGE BASIN | | PROPERTY LINE MAP |
| SCALE: 1" = 1320' | | MAJOR SOURCE No.6022 | | |
| DR: P.T. | CK: M.D. | A. C. ACKENHEIL & ASSOCIATES, INC. CONSULTING ENGINEERS PITTSBURGH, PA., CHARLESTON, W. VA. & BALTIMORE, MD. | | |
| DWG. NO.6022 - A | | | | |



| | | | |
|-------------------|----------|--|------------------|
| DATE: JUNE 1969 | | CHARTIERS CREEK, DRAINGE BASIN MAJOR SOURCE No6022 | DEEP MINE MAP |
| SCALE: 1" = 1200' | | | |
| DR: S. K | CK: I. H | A. C. ACKENHEIL & ASSOCIATES, INC. CONSULTING ENGINEERS PITTSBURGH, PA. & CHARLESTON, W. VA. | |
| DWG. NO. 6022- B | | | |

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PR R188-1088