

DEPARTMENT OF ENVIRONMENTAL RESOURCES

REVIEW NOTICE

This report, prepared by outside consultants, has been reviewed by the Department of Environmental Resources and approved for publication. The contents indicate the conditions that are existing as determined by the consultant, and the consultant's recommendations for correction of the problems. The foregoing does not signify that the contents necessarily reflect the policies, views, or approval of the Department.

LITTLE SCHUYLKILL RIVER BASIN

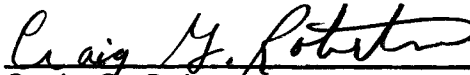
MINE DRAINAGE STUDY

PROJECT WCE SL-167

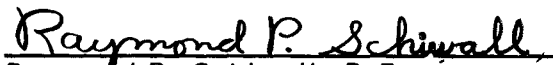
*A Report For The Commonwealth of Pennsylvania
Department of Environmental Resources*

January 1973

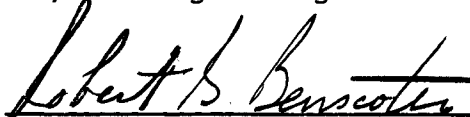
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INTRODUCTION

A . DEFINITION OF STUDY

This report has been prepared and is submitted in fulfillment of Contract SL-167 between A. W. Martin Associates, Inc. and the Commonwealth of Pennsylvania, Department of Environmental Resources, Bureau of Planning and Developmental Research. The contract is for an Engineering Survey of the watershed of the Little Schuylkill River Basin for the development of a plan for the abatement of mine drainage pollution.

The scope of the project encompasses the determination of the geographic area of coal mining and the limits of the coal fields, as defined by the outcrops; and, where necessary to the project, a definition of strip mined and, refuse storage areas and subsurface coal contours. Furthermore, the project entails a field investigation for the location of all sources of acid mine drainage and, through a program of sampling and monitoring, an assessment of the pollution contribution from each discharge and its impact on the Little Schuylkill River .

Using the above data for a basis, the applicability of surface and subsurface corrective measures, as well as supplemental treatment of drainage, are evaluated, and their costs are tabulated, together with the formulation and presentation of an abatement plan.

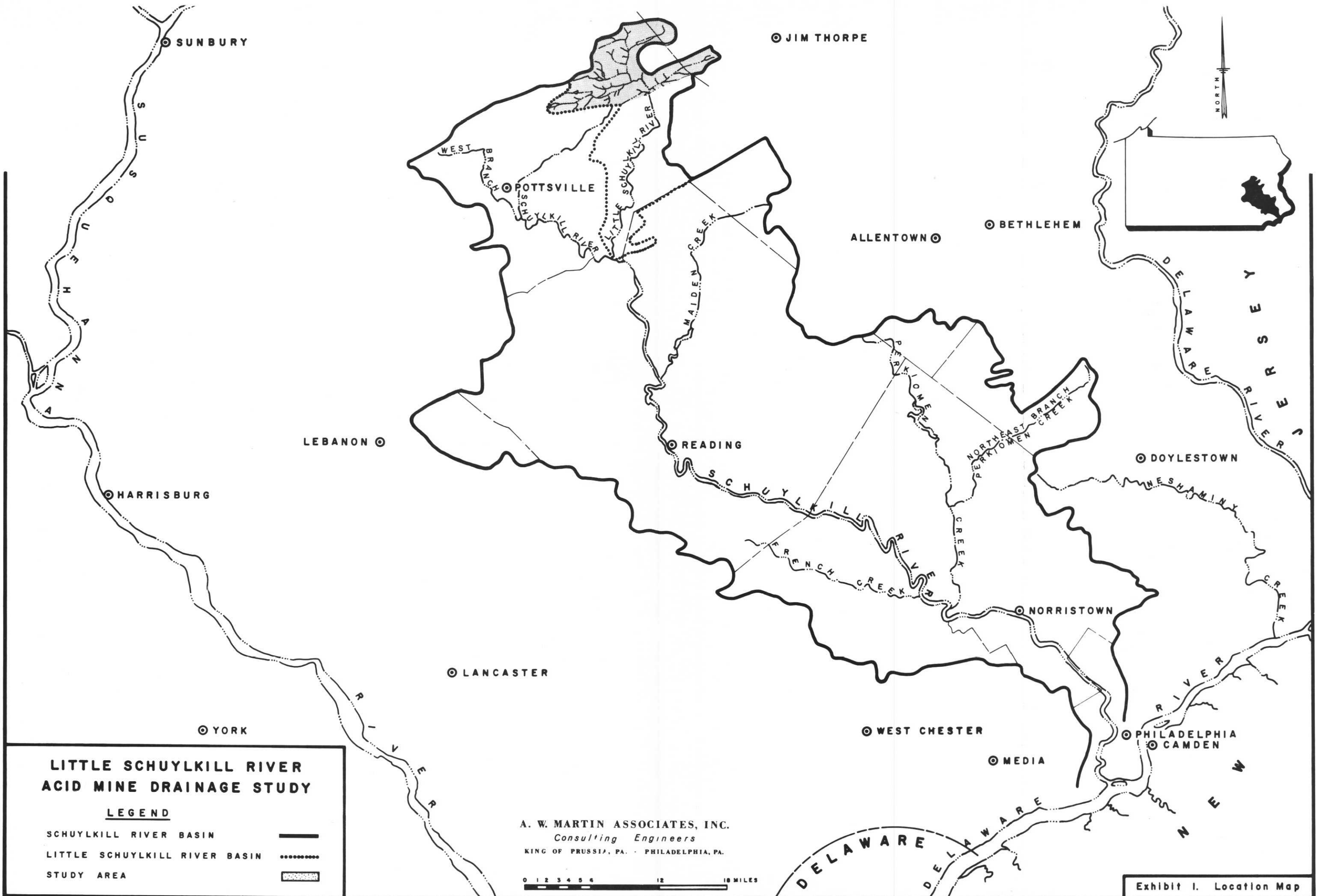
In pursuit of the Contract, the possibility for a Quick Start Project was continuously evaluated.

B. LOCATION AND TOPOGRAPHY

The study area is shown on Exhibits 1 and 2. It is located in East Central Pennsylvania in Schuylkill and Carbon Counties, approximately 60 miles northeast of Harrisburg and 30 miles northwest of Allentown. The area is situated in the Valley and Ridge Province of the Appalachian Mountains and comprises the headwaters of the little Schuylkill River. Pisgah Mountain and Sharp Mountain form its southern boundary.

There is a strong relationship between the structural geology and topography in the area. The ridges are underlain by the resistant rock of the Pottsville Formation, while the valleys are underlain by less resistant rocks of the Mauch Chunk Shale and Post-Pottsville coal measures. Generally the valleys are twice as wide as the ridges. The valley walls are steep with a sharp break in slope marking the valley floor. The valleys slope towards the little Schuylkill River at approximately 100 ft. per mile. In the coal basins, the natural surface has been modified by mining and include many strip mines and deep mine refuse piles.

The maximum relief in the study area is approximately 1,319 feet. The low point of 775 feet above sea level is at the southern end of the study area in the little Schuylkill River Valley. The high point of 2,094 feet above sea level is at Bear's Head Mountain in the northwest corner of the study area.



**LITTLE SCHUYLKILL RIVER
ACID MINE DRAINAGE STUDY**

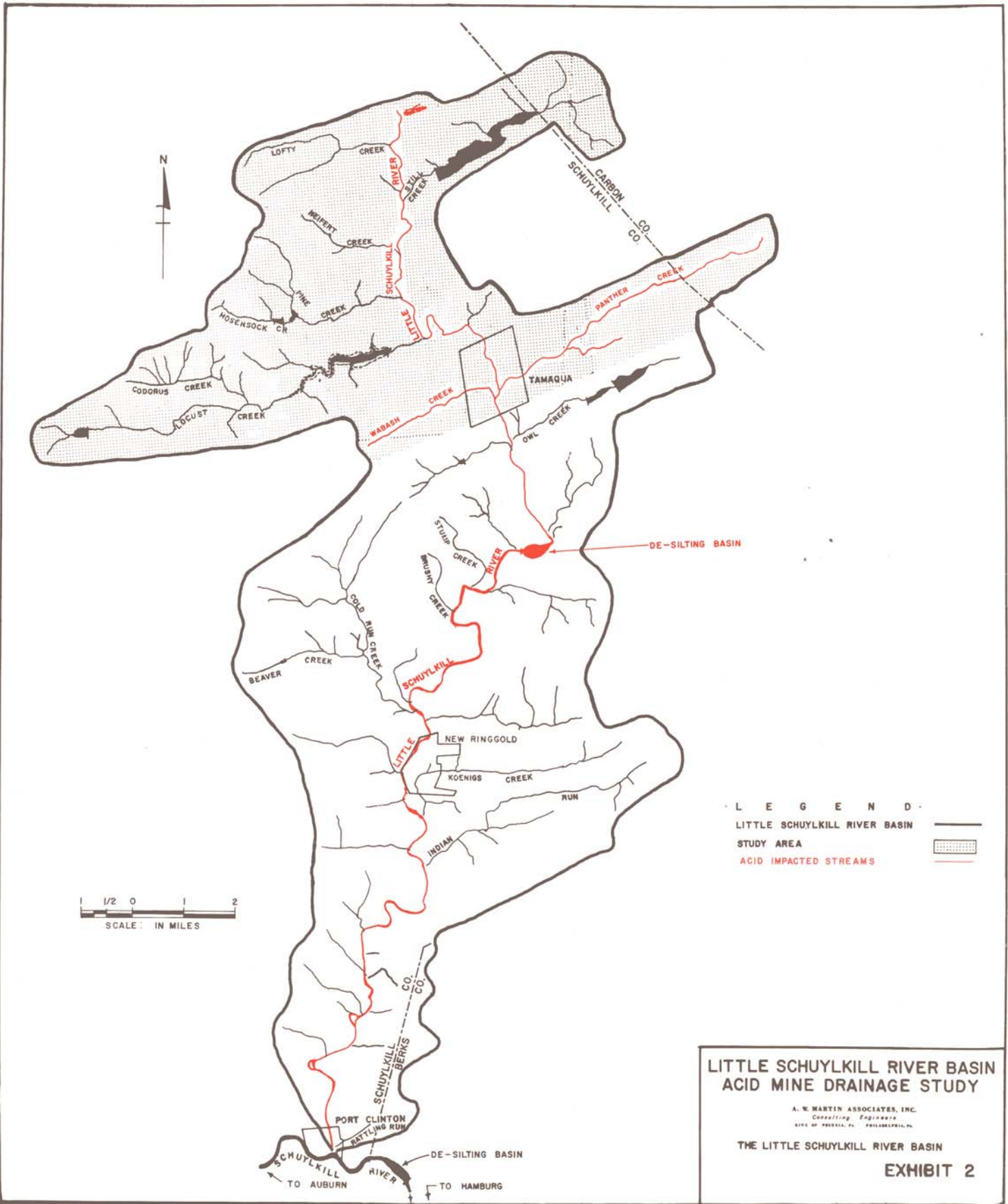
LEGEND

- SCHUYLKILL RIVER BASIN
- LITTLE SCHUYLKILL RIVER BASIN
- STUDY AREA

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Exhibit I. Location Map



TO AUBURN
TO HAMBURG

PORT CLINTON
RATTLING RUN

SCHUYLKILL
BERKS
CO.
CO.

INDIAN
KOEIGS CREEK
NEW RINGGOLD

BEAVER CREEK
COLD RUN CREEK
BRUNY CREEK
STUMP CREEK

WABASH CREEK
OWL CREEK

CODORUS CREEK
AUGUST CREEK
HOSENSOCK CR
PINE CREEK

LOFTY CREEK
WEIBERT CREEK

SCHUYLKILL
CARBON
CO.
CO.

TAMAQUA

PANTHER CREEK

DE-SILTING BASIN

SCHUYLKILL RIVER

LITTLE SCHUYLKILL RIVER

The region is accessible from Hazleton to the north and Allentown to the south using U. S. Route 309. It is accessible from Jim Thorpe to the east and Pottsville to the west using U. S. Route 209. Railroads that serve the area include The Reading, The Lehigh Valley, and The Central Railroad of New Jersey.

C . GEOLOGY

1. Stratigraphy

The study area is underlain predominately by sandstones and shales of Mississippian and Pennsylvanian age. The formations and groups found in the study area are:

Penn.-----	<u>Post Pottsville Formations</u>	Brown or gray sandstones and shales with some conglomerate and numerous mineable coals.
	<u>Pottsville Group</u>	Light gray to white coarse grained sandstones and conglomerates with some mineable coals.
	<u>Mauch Chunk Formation</u>	Red shales with brown to greenish gray, flaggy sandstones.
Miss. ---	<u>Pocono Group</u>	Predominantly gray, hard, massive, cross-bedded conglomerates and sandstones with some shale.

Total thickness of the strata underlying the study area varies from 4,900 feet in Carbon County to 8,500 feet in Schuylkill County of which 850 - 900 feet comprise the coal measures of the Tamaqua Basin.

2. Structural Geology

The study area is part of the Northeast-Southwest trending Valley and Ridge Province of the folded Appalachians. Structural features in this province, including anticlines, synclines and major faults generally follow this trend. The axes of the anticlines and synclines that make up the regional synclinorium exhibit various degrees of plunge, with many plunging in two directions.

The coal basins are synclinal in general form. They do, however, contain faults and anticlines forming a fairly complex structure. The cross sections through Panther and Wabash Creek Valleys illustrate the complex of folds that makes up the coal basin. Although faults are not apparent in the sections, they are present along the axes of folds where compression was greatest and as cross faults transverse to the overall structural fabric. Cross sections through the valley are shown on Exhibits 3, 4, 5, 6, and 7 and, in plan, on Exhibits 31 and 32.

The Tamaqua coal basin consists of several smaller connected basins which become deeper and more steep-sided to the south. The basin is slightly less than 2 miles wide throughout the study area with a structural relief of 2,300 feet on the Buck Mountain coal seam.

Generally, the southern sides of the basins exhibit steeper dips, varying from 45° to vertical or slightly overturned while the northern sides vary from relatively shallow dips to about 75° .

The Silverbrook Coal Basin, in the northern part of the study area, is 1 mile wide at its broadest point and is approximately 5

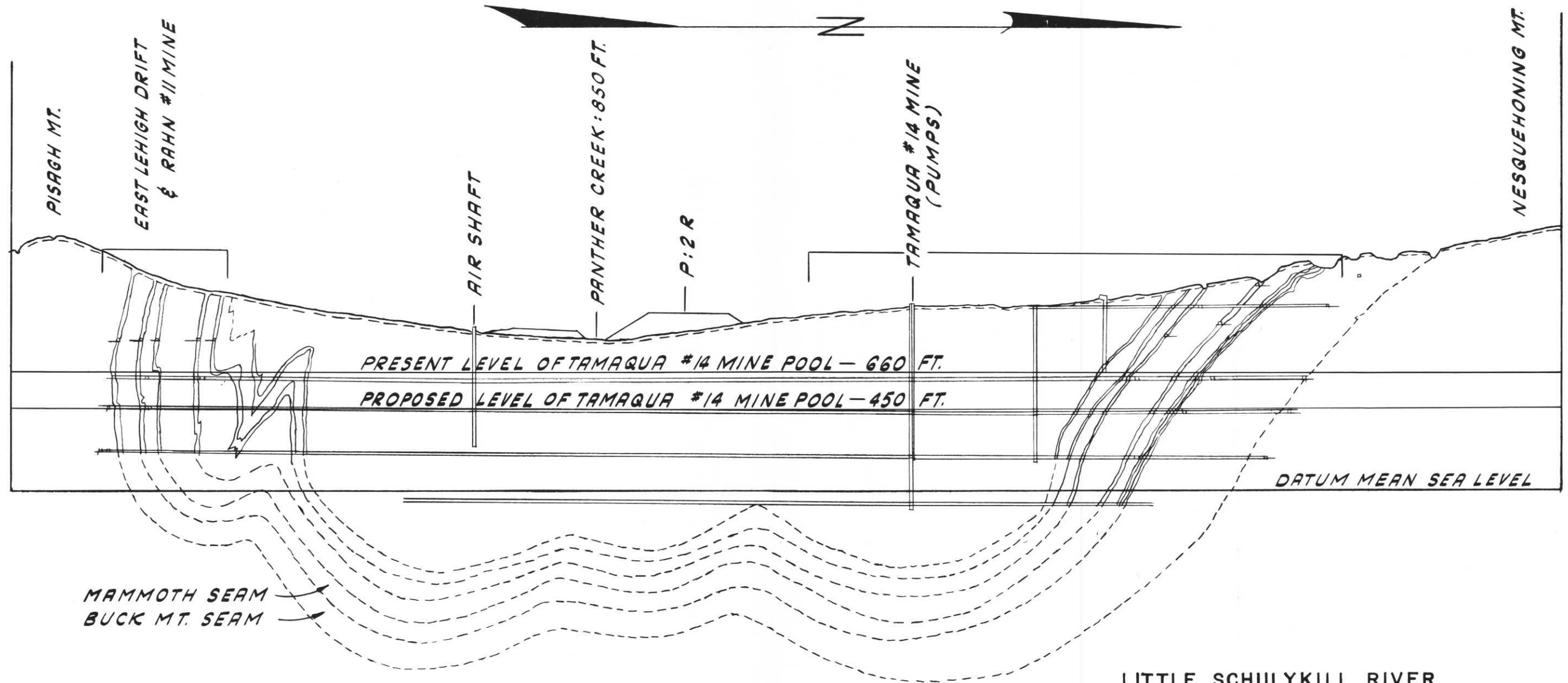
miles long. Structure contours drawn on the Buck Mountain Coal Seam in the Silverbrook Basin, Exhibit 8, indicate a complex structural background. Structures, other than the primary basin, include a thrust fault developed in one of the ancillary anticlines and several small basins which are deepest in the central part of the Silverbrook Basin. The Basin has a structural relief of 600 feet in the lowermost Buck Mountain seam.

D . DRAINAGE

The study area is located entirely in the Little Schuylkill River Basin. It comprises 59 square miles or the upper 43% of this watershed. The Little Schuylkill River Basin, in turn, is approximately 39% of the combined Schuylkill River - Little Schuylkill River watershed above their confluence. The study area may be further divided into tributary basins of the Little Schuylkill River. These basins are summarized below.

<u>DRAINAGE BASIN</u>	<u>AREA DRAINED, SQUARE MILES</u>	<u>% OF STUDY AREA</u>
Lofty Creek	3.24	5.49
Still Creek	7.49	12.69
Neifert Creek	3.23	5.47
Pine Creek	7.96	13.49
Locust Creek	13.30	22.54
Wabash Creek	4.15	7.03
Panther Creek	10.70	18.14
Little Schuylkill River	<u>8.93</u>	<u>15.15</u>
TOTAL OF STUDY AREA	59.00	100.00

The pattern of the drainage net in the area reflects a high degree of structural control by a series of anticlines, synclines, and faults trending northeast-southwest, and, to a lesser degree a joint system trending northwest-southeast.



MAMMOTH SEAM
 BUCK MT. SEAM

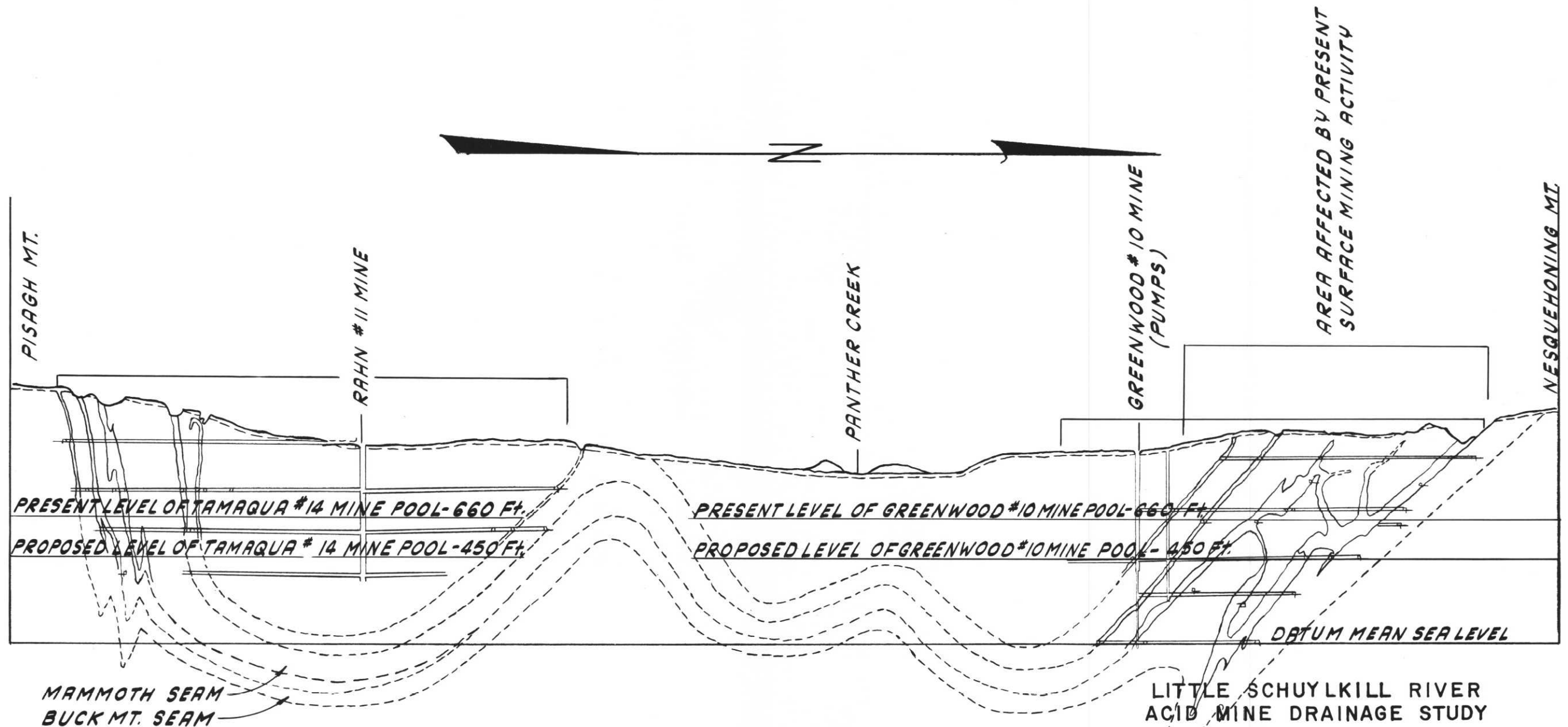


PANTHER VALLEY
 CROSS SECTION A-A'
 AFTER GREENWOOD STRIPPING CORPORATION
 CROSS SECTION — LOOKING WEST

LITTLE SCHULYKILL RIVER
 ACID MINE DRAINAGE STUDY

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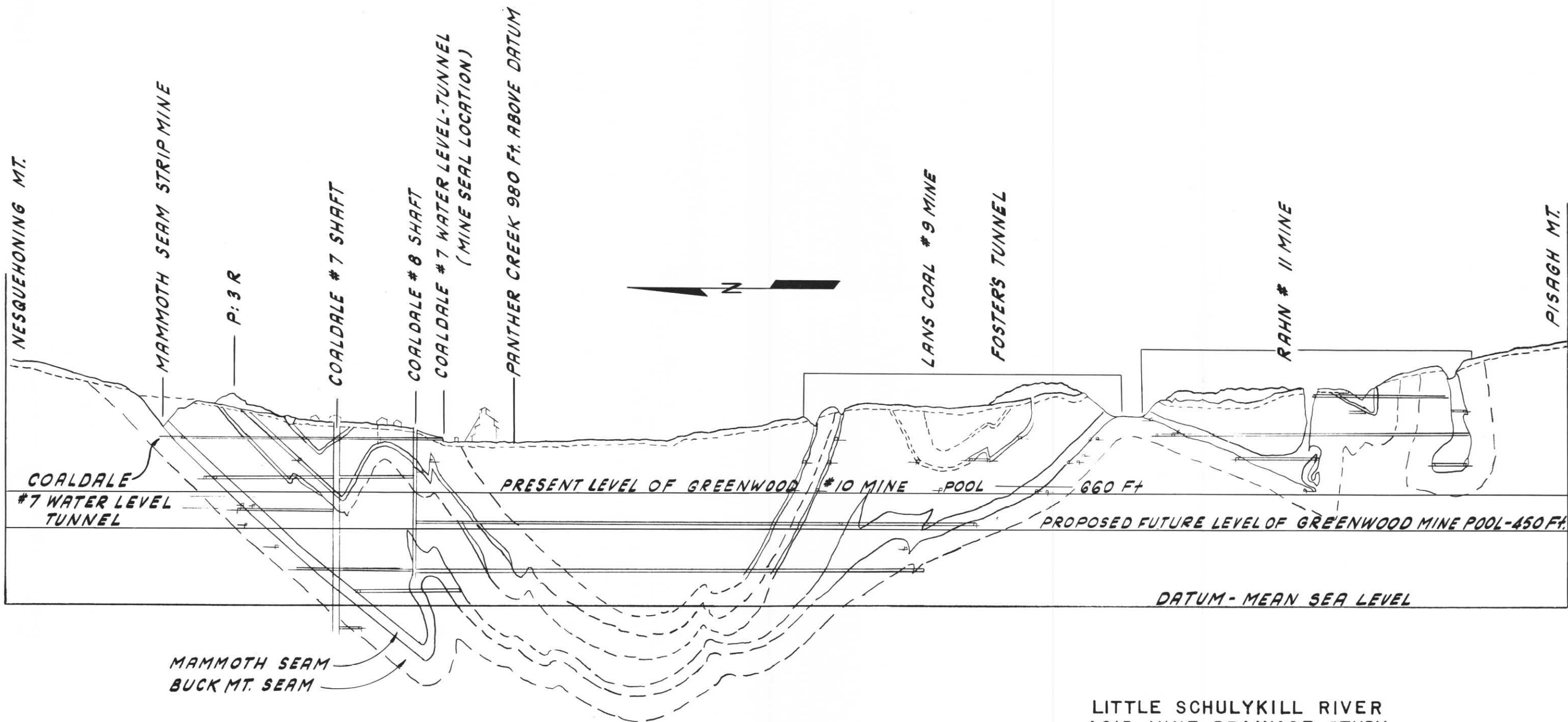
EXHIBIT 3



**PANTHER VALLEY
 CROSS SECTION B-B'**
 AFTER GREENWOOD STRIPPING CORPORATION
 CROSS SECTION -- LOOKING WEST

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 ACID MINE DRAINAGE STUDY**
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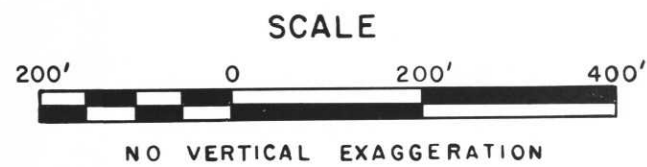
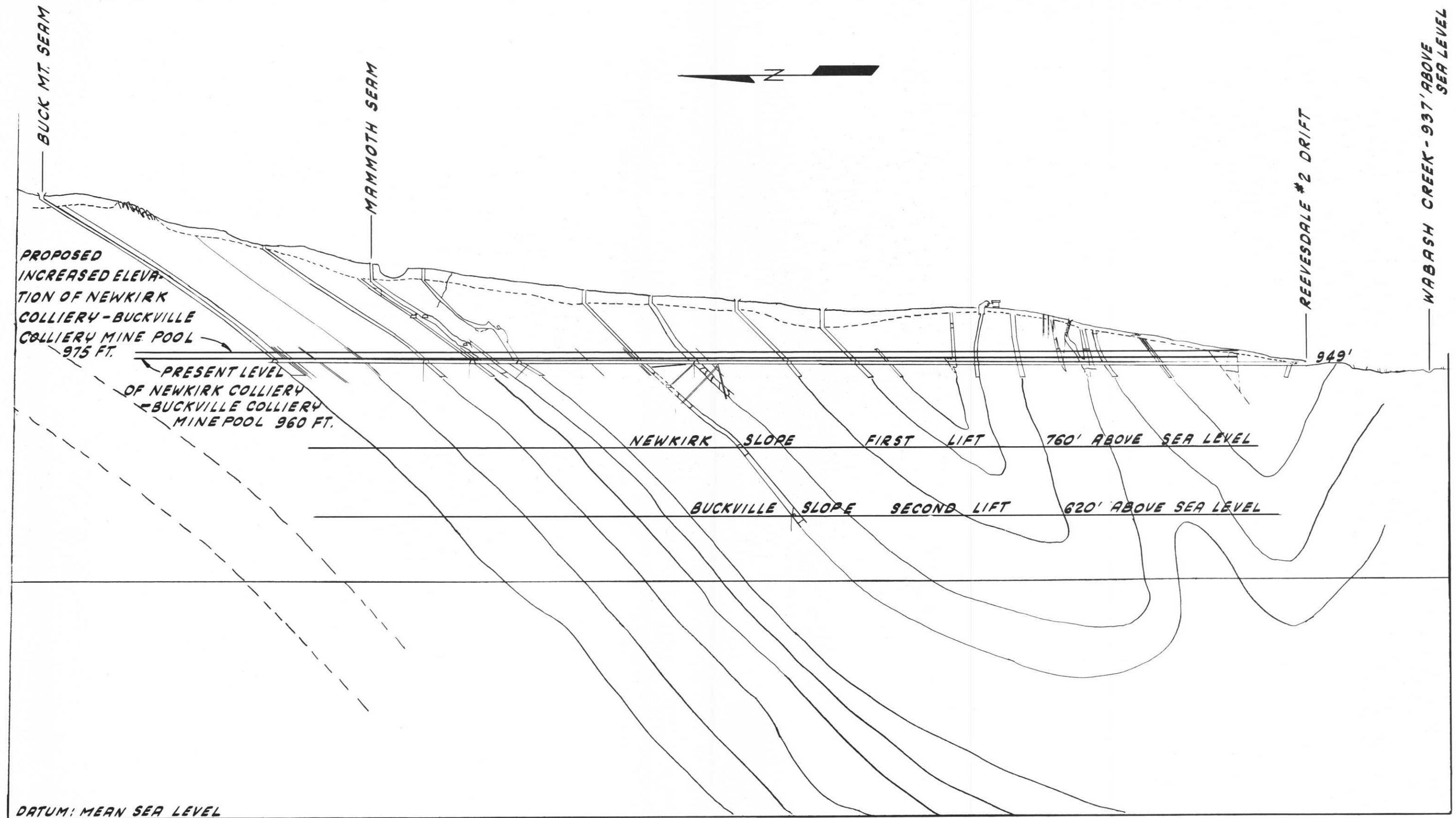
EXHIBIT 4



PANTHER VALLEY
 CROSS SECTION C-C'
 AFTER GREENWOOD STRIPPING CORPORATION
 CROSS SECTION — LOOKING EAST

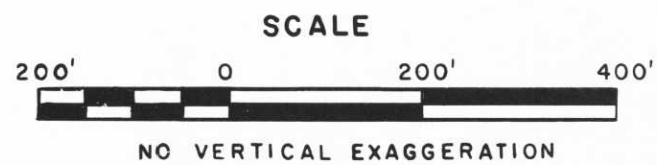
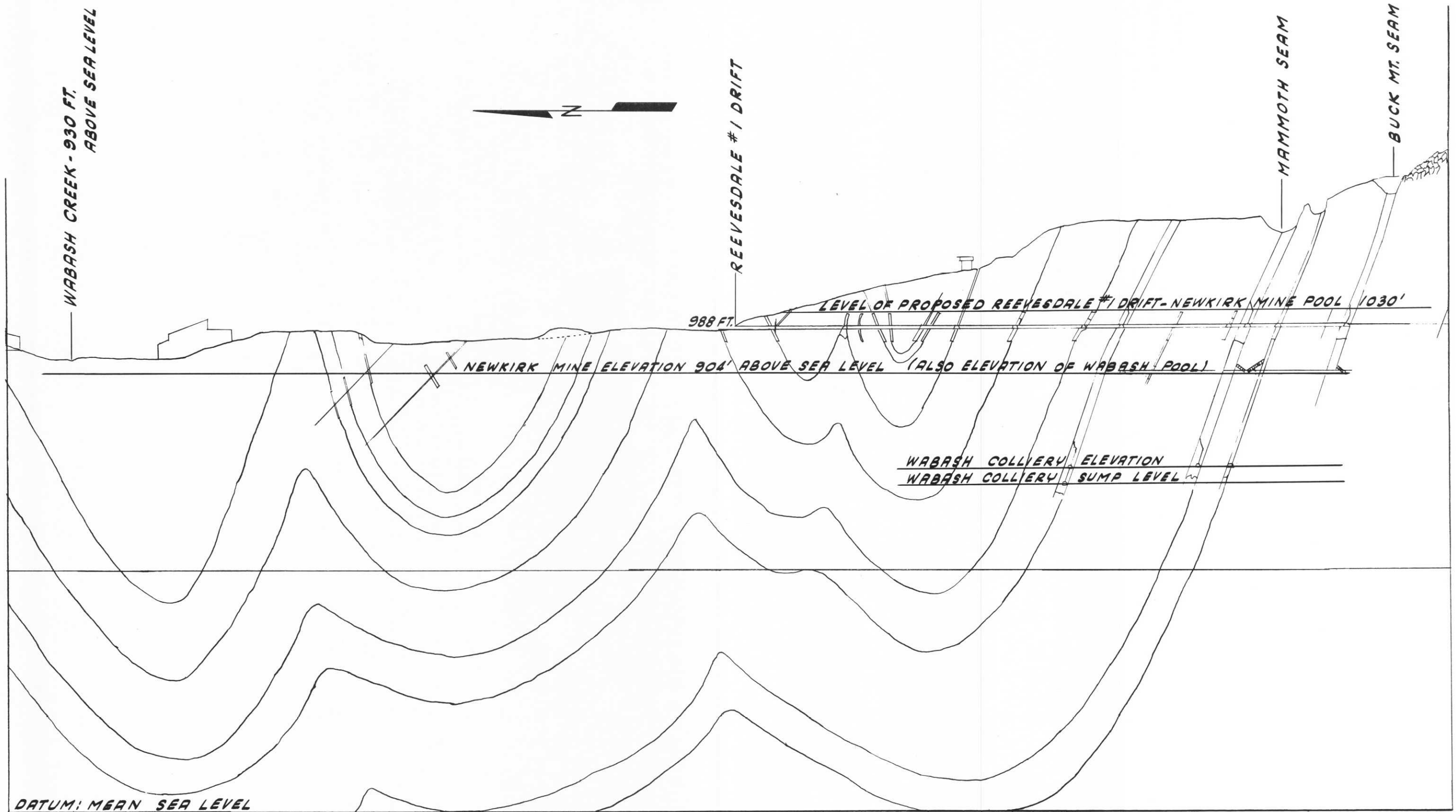
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EXHIBIT 5



WABASH VALLEY
 CROSS SECTION D-D'
 AFTER READING ANTHRACITE COMPANY
 CROSS SECTION — LOOKING EAST

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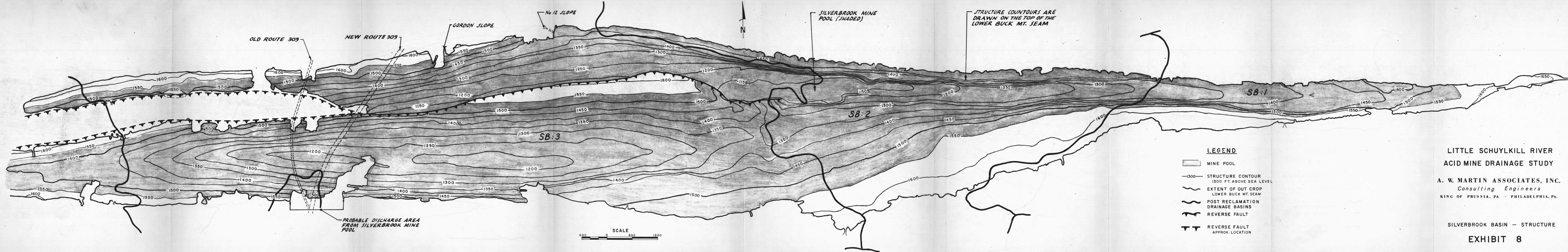


WABASH VALLEY
CROSS SECTION E - E'

AFTER READING ANTHRACITE COMPANY
CROSS SECTION - LOOKING EAST

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ACID MINE DRAINAGE STUDY

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