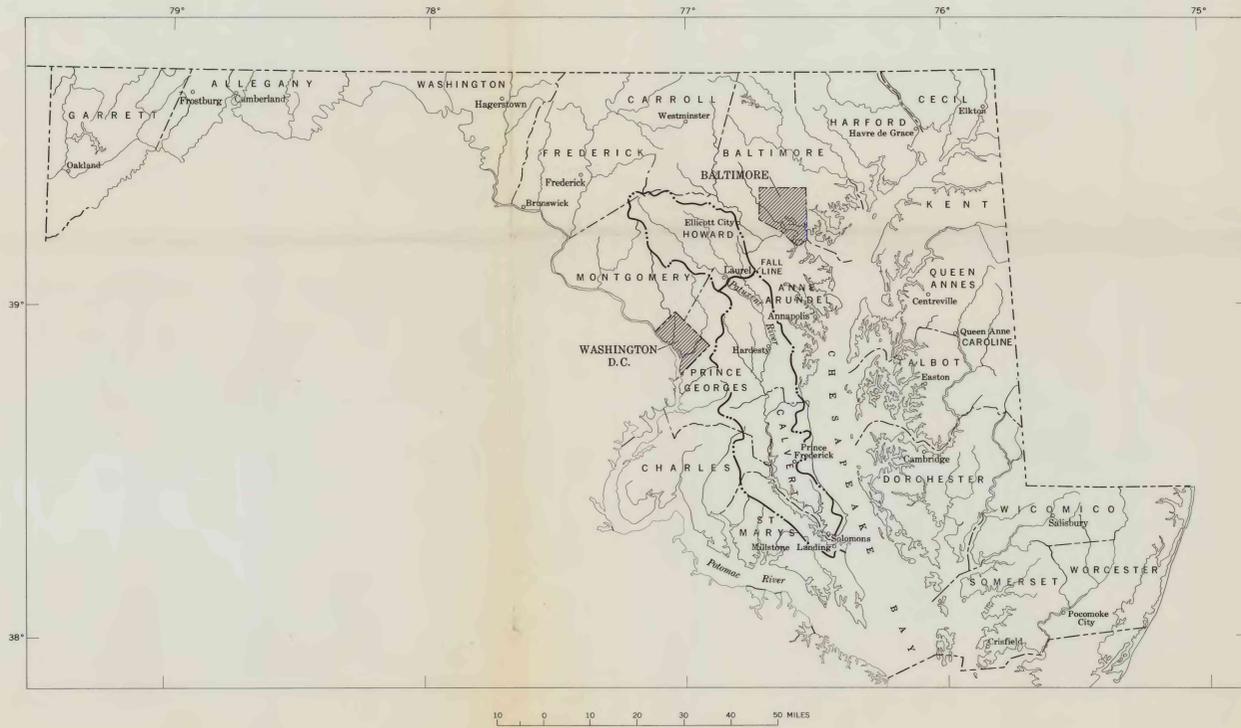


INTRODUCTION

By
Deric O'Bryan



INTRODUCTION

Scope and Purpose of Report.—The Patuxent River drainage basin is being urbanized rapidly, particularly in the central portion between the metropolitan areas of Washington and Baltimore. This report contains data on the water and land resources within the basin essential to planning for orderly development.

Location.—The basin is entirely within the State of Maryland. The main stream heads at the southeast boundary of Frederick County, passes midway between Baltimore and the District of Columbia, and continues southeast to enter Chesapeake Bay about 20 miles north of the mouth of the Potomac River. The basin is about 110 miles long and rarely over 15 miles wide. It contains approximately 930 square miles of land and water surface in 7 counties: Howard, Montgomery, Prince Georges, Anne Arundel, Charles, St. Marys and Calvert. The map delineates the basin's boundary within the State of Maryland, portrays the stream network, and locates the drainage in relation to Washington, Baltimore, and Chesapeake Bay.

Physical Description.—The basin contains 3 environmentally distinct parts. The northern or upper third is in the Piedmont, a rolling to rugged terrain composed of a complex of igneous and metamorphosed rocks, the highest elevation is 873 feet. The stream gradient lessens abruptly at the Fall Line, the junction of the Piedmont with the flatish Coastal Plain, at the town of Laurel. From there the stream meanders over Coastal Plain sediments for about 25 miles, dropping 200 feet to mean sea level near Hardisty. The 50-mile long lower part, also in the Coastal Plain, is estuarine; the water is subject to tidal fluctuations and becomes increasingly saline before entering Chesapeake Bay below Solomons.

History.—England's Charles I granted a charter in 1632 for the peninsula between the Potomac River and Chesapeake Bay to Cecil Calvert, second Lord Baltimore, who named the land after the monarch's wife. Two years later the first shiplod of colonists established a village 8 miles south of Millstone Landing. The community prospered. Additional colonists founded new settlements up the Patuxent estuary; these were connected by boat traffic as far as Lyons Creek. A maintained trail served as a second means of communication between Millstone Landing and Laurel by 1700.

Calvert County was established in 1654; in 1695 the part to the west of the estuary was subdivided into St. Marys,

Charles, and Prince Georges Counties. Anne Arundel County was established in 1650, and divided the following year to form Howard County. Montgomery County, named after one of Washington's generals, was not established until 1776.

Agriculture has been the principal economic base since early colonial times; tobacco still is the principal cash crop, particularly in the southern counties. Plentiful seafood continues to supplement the diet and income of the basin's inhabitants. Plantations were dependent upon slave labor. Life was peaceful and conditions prosperous between the Revolutionary and Civil Wars, except for a brief period when British troops landed at Benedict to engage in the Battle of Bladensburg during the War of 1812.

Prosperity left the region after the Civil War. Freedom for the slaves upset the economy; the farmers had land, but no money to pay labor to work the fields nor to purchase needed fertilizer. Previous intensive farming of up to 90 percent of the countryside had exhausted the soil. Erosion of the bare land over decades gradually choked the upper reaches of the estuary with sediment, impoverishing the fields and curtailing river boat navigation. Later, after the advent of the automobile, the year-around harvesting of oysters to secure shell for road surfaces resulted in their decimation. By 1930, the river steamers and one spur railroad extending from the main line at Bowie south to Mechanicsville were inadequate to serve the southern portion of the basin.

Public works and welfare activities during the depression of the thirties benefited the area. The road network was greatly expanded and most roads were paved. Natural and induced reforestation has lessened erosion; trees again cover almost half of the total acreage.

The headwaters of the main Patuxent River were developed as a water supply for metropolitan Washington in 1942 and enlarged in 1954; Triadelphia and Rocky Gorge Reservoirs impound water from one-seventh of the drainage. Expanding population accounts for more and more suburbs in the basin adjacent to Washington and Baltimore. An increasing number of city dwellers seek relaxation on and around the estuary; summer cottages are commonplace. A river bank state park is in the planning stage. Montgomery and Prince Georges are among the top 10 counties in the nation in regard to rapid development and individual prosperity.

GENERALIZED GEOHYDROLOGY

By
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GEOHYDROLOGY

The northwestern part of the Patuxent drainage basin is in the Piedmont. Various types of consolidated igneous and metamorphic rocks underlie this area. The remainder of the basin is in the Coastal Plain, underlain by loose sedimentary deposits of gravel, sand and clay. These deposits form a wedge-shaped mass that rests on the sloping igneous and metamorphic rock floor and thickens to the southeast.

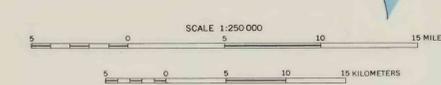
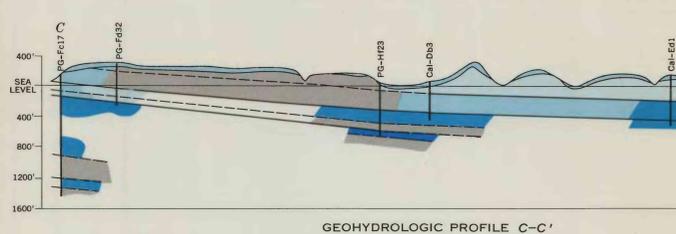
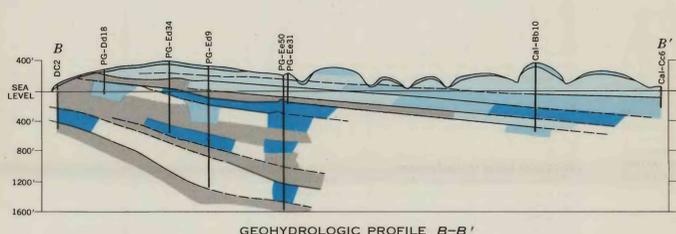
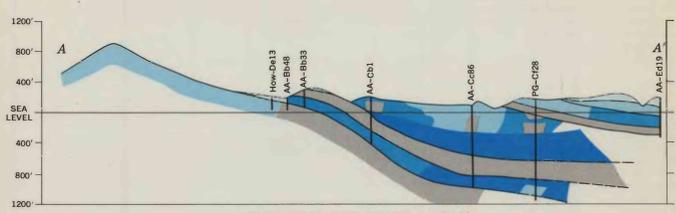
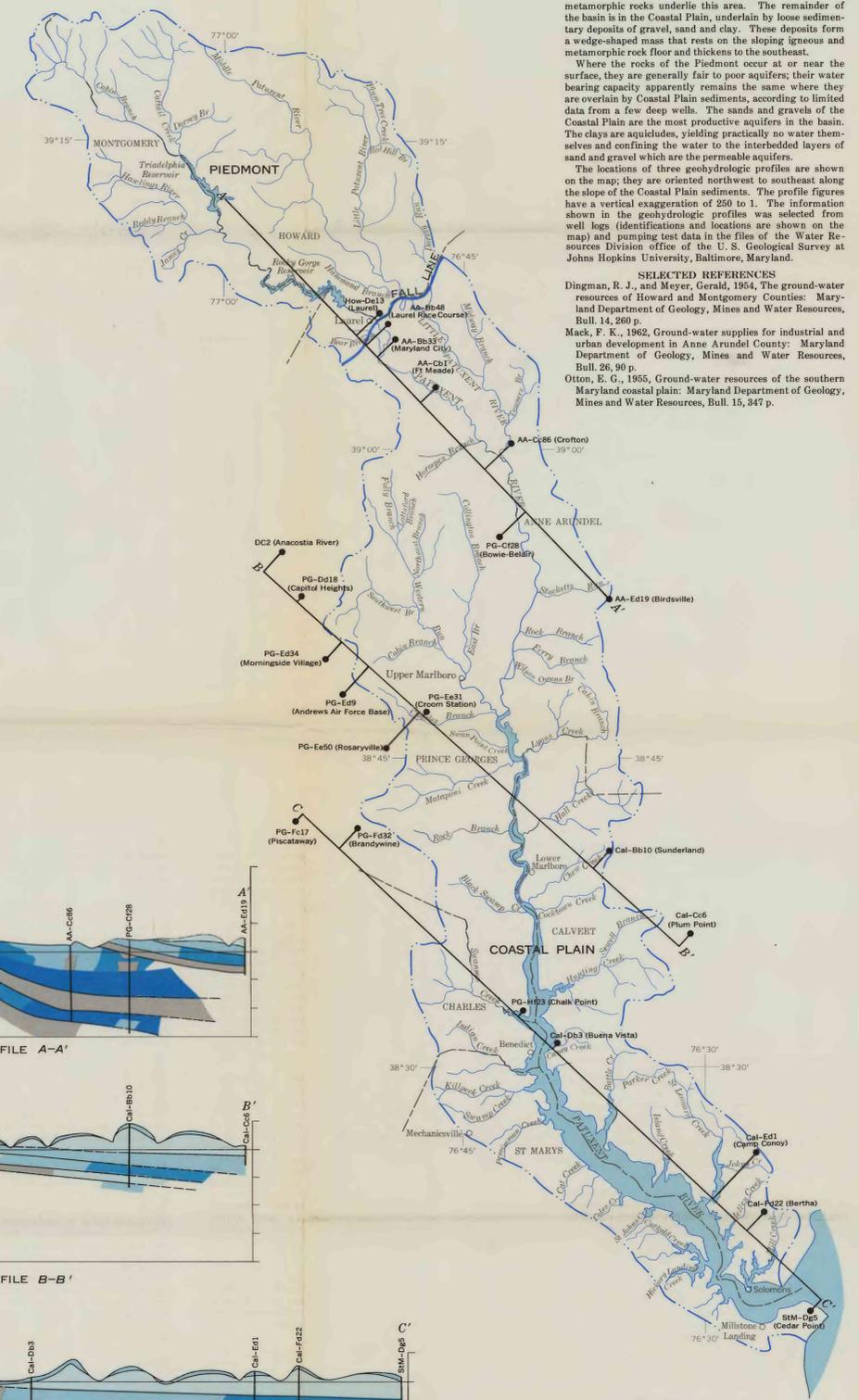
Where the rocks of the Piedmont occur at or near the surface, they are generally fair to poor aquifers; their water bearing capacity apparently remains the same where they are overlain by Coastal Plain sediments, according to limited data from a few deep wells. The sands and gravels of the Coastal Plain are the most productive aquifers in the basin. The clays are aquicludes, yielding practically no water themselves and confining the water to the interbedded layers of sand and gravel which are the permeable aquifers.

The locations of three geohydrologic profiles are shown on the map; they are oriented northwest to southeast along the slope of the Coastal Plain sediments. The profile figures have a vertical exaggeration of 250 to 1. The information shown in the geohydrologic profiles was selected from well logs (identifications and locations are shown on the map) and pumping test data in the files of the Water Resources Division office of the U. S. Geological Survey at Johns Hopkins University, Baltimore, Maryland.

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Mack, F. K., 1962, Ground-water supplies for industrial and urban development in Anne Arundel County: Maryland Department of Geology, Mines and Water Resources, Bull. 26, 90 p.
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EXPLANATION

Ground-water availability
(yield in gallons per minute)



WATER RESOURCES OF THE PATUXENT RIVER BASIN, MARYLAND

By
James W. Crooks, Deric O'Bryan, and others
1967