

PHYSICAL SETTING AND SURFACE WATER

PURPOSE AND SCOPE

This hydrologic atlas represents a part of a comprehensive study of the water resources of southeastern Michigan. Its purpose is to provide information on (1) physical features of the Huron River and its tributaries, (2) characteristics of streamflow, (3) quality of ground and surface water, and (4) availability of ground water. This atlas is one in a series of atlases on several river basins in southeastern Michigan.

POPULATION AND ECONOMY

The Huron River basin, in the zone of influence of the Detroit metropolitan area, has been subjected to urbanization. Bureau of the Census 1970 figures have shown that population growth has surpassed projected growth estimates. Population between 1960 and 1970 in Washtenaw County, which contains a major part of the basin, increased by 35.8 percent. The city of Ann Arbor grew in population by 48.2 percent, Ypsilanti by 40.9 percent, and Livingston County by 54.2 percent.

Small industrial plants are located north and west of Ann Arbor; large industrial plants are located southeast of Ann Arbor, a part of the Detroit industrial complex. Most industries produce accessories and parts for the automobile industry. Other manufactured products are fabricated metals, metal working machinery, and transportation equipment.

Economic pressure and competition for farmland has resulted in a decrease in farming in the basin. Although much of the basin is well suited for agriculture, having fertile soil, a long growing season, and adequate water supplies for irrigation, farm production continues to decline. Only truck farming, intensive cultivation and irrigation of high-yielding specialized crops (lettuce, carrot, cabbage, etc.) has had continued growth.

Because of proximity to the Detroit metropolitan area there is increased recreational development within the Huron River basin. Recreational opportunities for fishing, swimming, boating, and scenic beauty continue to attract development and usage.

PHYSICAL DESCRIPTION

The Huron River basin, draining a hatched-shaped area of 908 square miles, is characterized by two types of surfaces. Upstream from Ypsilanti is a series of moraines, till plains, and outwash deposits in a topographic setting of rolling to rugged hills with an intermixture of relatively flat areas. Downstream from Ypsilanti are lake bed deposits (laid down in ancestral glacial Lake Erie) and the land surface is relatively level. Continental glaciers covered the entire basin and left deposits of sand, sandy till, and gravelly silt. About 80 percent of the basin is underlain by these deposits. Lake bed deposits to the south are composed of fine clay and silt. Altitudes in the moraine area range from about 700 feet to more than 1,100 feet above mean sea level. In the lake bed region, altitudes range from 572 feet at the mouth of the Huron River to about 700 feet. Downstream from Ypsilanti, the Huron River meanders through a wide flood plain with gentle banks rising 5 to 25 feet above the valley floor.

Above Ypsilanti, the Huron flows through well-defined valleys, but in places flows through lakes and wide swampy areas. Tributaries to the Huron generally flow through well-defined valleys with gentle sloping banks. Natural drainage patterns have been altered as a result of urbanization. Dug ditches and drains, sanitary sewers, and roadways serve to convey runoff of precipitation to stream channels.

The Huron River basin has more than 300 named natural and artificial lakes ranging in size from less than one to the 1,270-acre Belleville Lake (a Huron River impoundment). In addition, there are more than 750 unnamed lakes and ponds. Most lakes are in depressions left by glaciers in the moraine area north and west of Ann Arbor. Few lakes are found in the glacial lake bed areas in the southeastern part of the basin. Most lakes in this area are small and widely scattered. Several millponds, none of which are in current use, are located throughout the basin. Many artificial lakes and impoundments have been developed for residential subdivisions.

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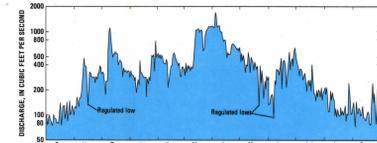
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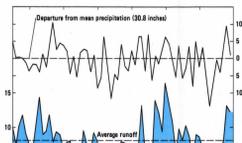
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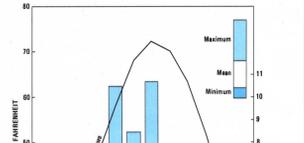
DAILY STREAMFLOW, HURON RIVER AT ANN ARBOR, 1967 WATER YEAR

IN ADDITION TO THE YEAR-TO-YEAR VARIATION IN TOTAL RUNOFF, THERE IS ALSO A WITHIN-YEAR CYCLICAL VARIATION. Runoff is normally highest in the late winter and spring months followed by a general recession to lower flows in late summer and early fall. Day-to-day variations from the general pattern are caused by precipitation and other climatic influences. The Huron River also shows some change due to regulation. Permissible limits on the upper part of the basin cause large volumes of water which remain high base flows during dry periods. Flooding has not been a serious problem, but, in recent years, or a combination of these events, it can cause flood peaks.



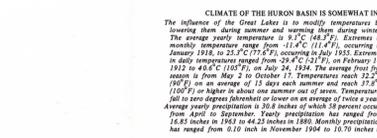
MONTHLY PRECIPITATION MINIMUM, MEAN, MAXIMUM AND MEAN MONTHLY TEMPERATURE AT ANN ARBOR, 1960-1970

Runoff at Huron River at Ann Arbor ranged from 2.05 inches in 1951 to 16.47 inches in 1950. Extremes in runoff reflect precipitation patterns and, in general, are dependent on trends for more than 1 year. Below-normal precipitation during the period 1929-31 resulted in the lowest runoff of record. Above-normal precipitation in 1949-52 resulted in above-normal runoff for 1949-52.

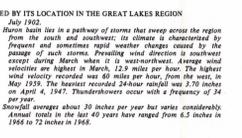


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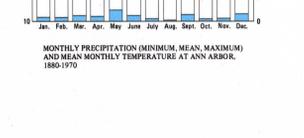
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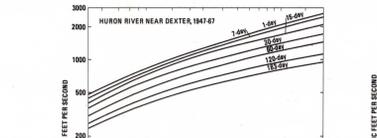
HURON RIVER NEAR DEXTER, 1947-67



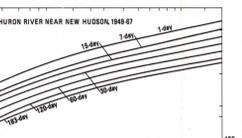
HURON RIVER NEAR NEW HUDSON, 1947-67



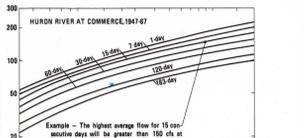
HURON RIVER AT COMMERCE, 1947-67



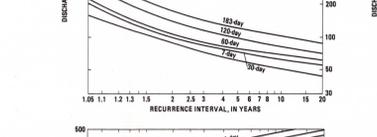
HURON RIVER AT MILFORD, 1947-67



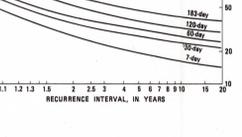
HURON RIVER NEAR HAMBURG, 1952-67



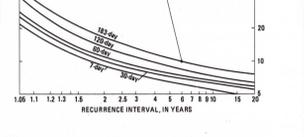
SOUTH ONE CREEK NEAR BRIGHTON, 1952-67



PORTAGE RIVER NEAR PIQUETTE, 1944-64



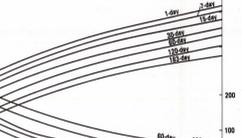
MILL CREEK NEAR DEXTER, 1952-67



HURON RIVER AT ANN ARBOR, 1915-47



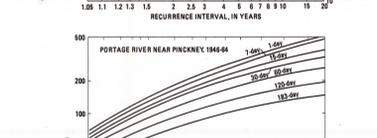
HURON RIVER AT FLAT ROCK, 1911-50



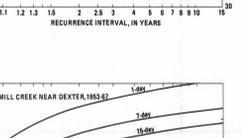
HURON RIVER NEAR NEW HUDSON, 1947-67



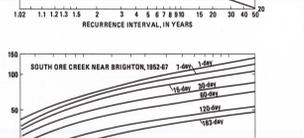
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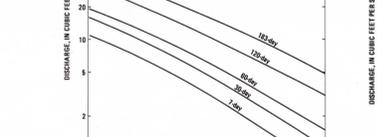
HURON RIVER AT MILFORD, 1947-67



HURON RIVER NEAR HAMBURG, 1952-67



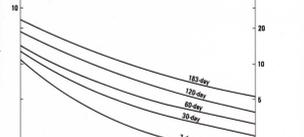
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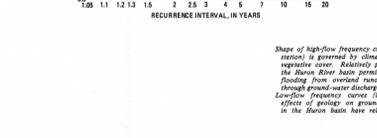
PORTAGE RIVER NEAR PIQUETTE, 1944-64



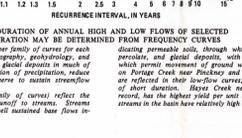
MILL CREEK NEAR DEXTER, 1952-67



HURON RIVER AT ANN ARBOR, 1915-47



HURON RIVER AT FLAT ROCK, 1911-50



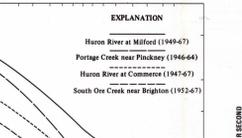
HURON RIVER NEAR NEW HUDSON, 1947-67



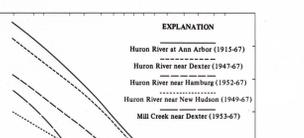
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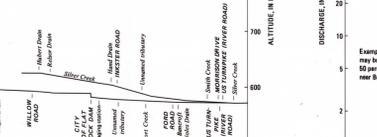
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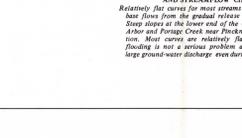
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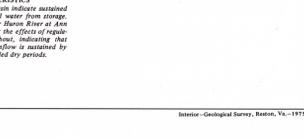
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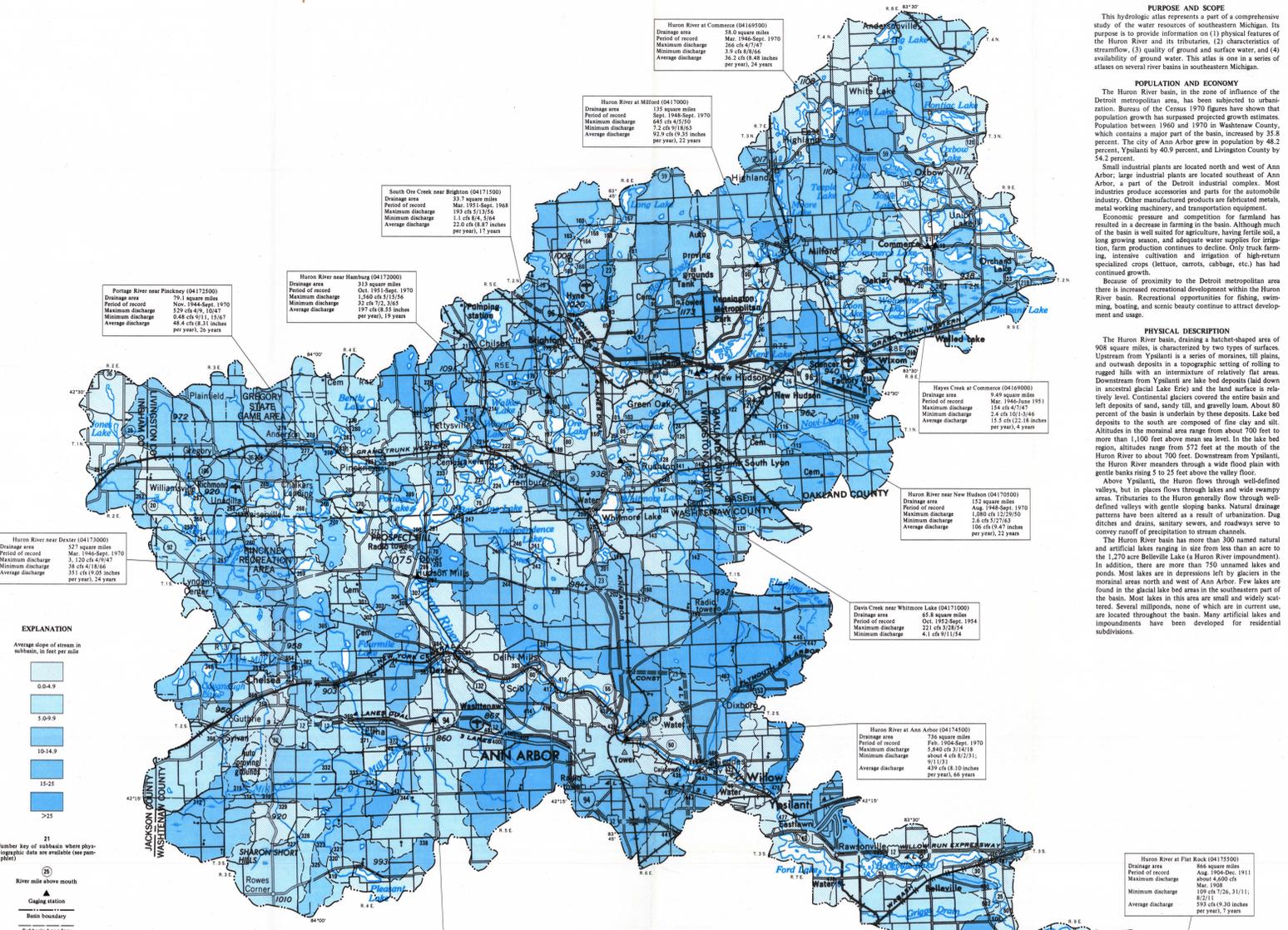
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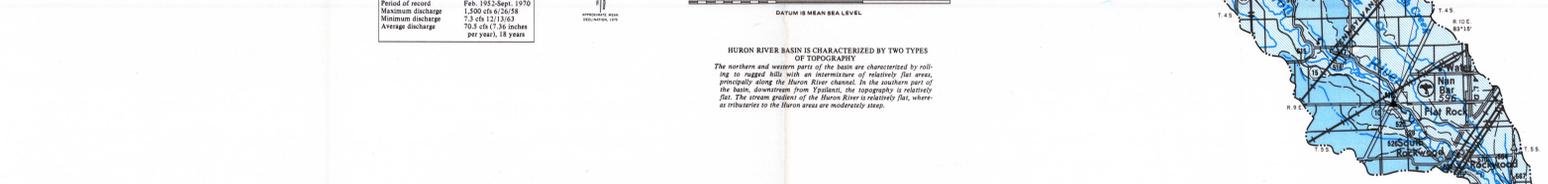
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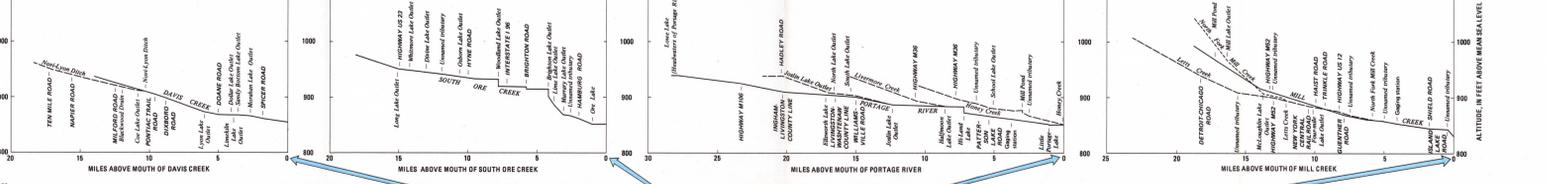
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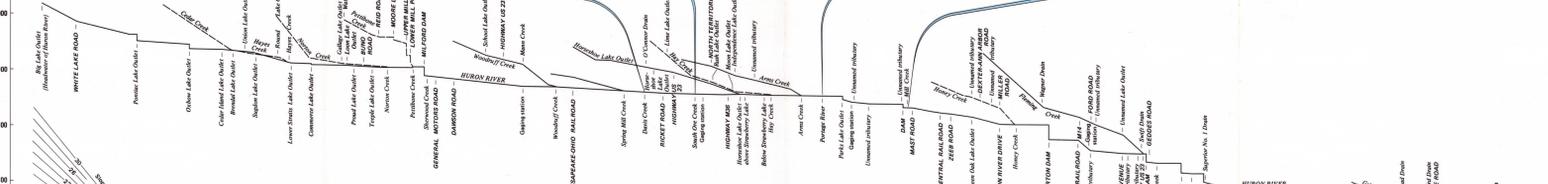
HURON RIVER BASIN IS CHARACTERIZED BY TWO TYPES OF TOPOGRAPHY. The northern and western part of the basin are characterized by rolling to rugged hills with an intermixture of relatively flat areas, principally along the Huron River channel. In the southern part of the basin, downstream from Ypsilanti, the topography is relatively flat. The stream gradient of the Huron River is relatively flat, whereas tributaries to the Huron area are moderately steep.



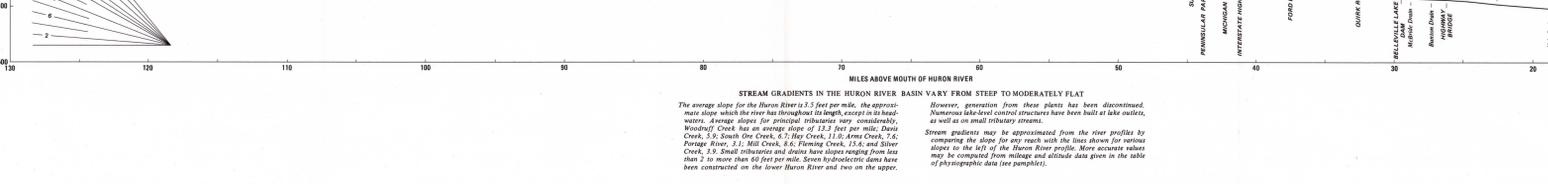
STREAM GRADIENTS IN THE HURON RIVER BASIN VARY FROM STEEP TO MODERATELY FLAT. The average slope for the Huron River is 2.5 feet per mile, the approximate slope which the river has throughout its length, except in its headwaters. Average slopes for principal tributaries vary considerably. Huron River has an average slope of 12.5 feet per mile; Davis Creek, 3.0; South One Creek, 6.5; Mill Creek, 11.0; Ann Arbor, 7.6; Portage River, 2.1; Mill Creek, 6.6; Florence Creek, 15.6; and South Creek, 1.9. Small tributaries and ditches have slopes ranging from less than 2 to more than 40 feet per mile. Stream hydrologic data have been constructed on the lower Huron River and two in the upper.



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