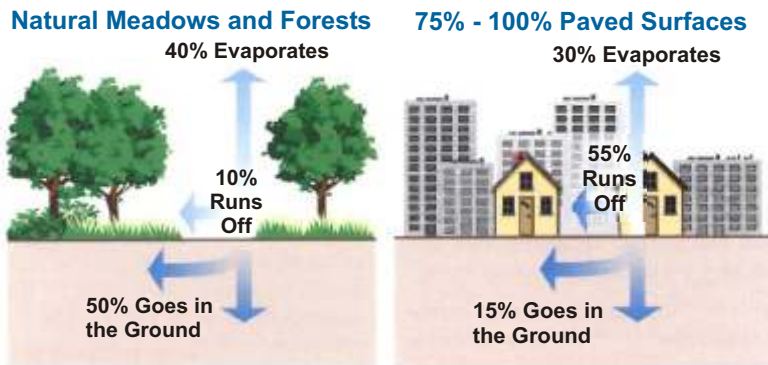




# Land Use & Stream Flow

Land use and stream flow are crucial to the health of our water resources. The strong relationship between land use and stream flow directly impacts water quality. How we develop and maintain land within our watersheds affects both the quality and quantity of water in our streams, rivers and lakes. As the watershed develops, the natural ecology and flow characteristics of our streams and rivers can be greatly altered.

Water quality and stream flow (either high or low) are influenced by numerous factors that include: size of the watershed, climate, meteorological events (e.g. rainstorms), geology (e.g. soil types), polluted discharges, and most notably the type and amount of development within the watershed (e.g. land use).

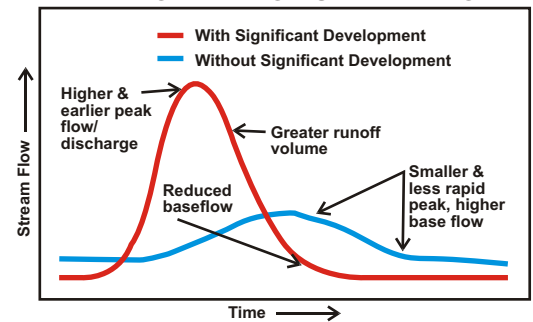


Consider the amount of rainfall that seeps into the ground, evaporates into the air, and runs off the land. In areas with low levels of development, depending on soil conditions, as much as 50 percent of rainfall can be absorbed directly into the

ground, with only about 10 percent of this water running off the land. In contrast, where the land has been extensively developed as in highly urbanized areas, very little water is absorbed into the ground. Instead more than half of the water runs off the land because of hard impervious surfaces like buildings, streets and parking lots.

These increases in runoff volumes from highly developed areas often contribute to frequent and more severe flooding problems. Additionally, this runoff also picks up a variety of pollutants from the surrounding landscape and carries them to the stream. Even small storms in highly developed areas can produce dramatic “pulses” of high flows and pollutant loads. Because these high flow pulses occur on a more or less regular basis, they can lead to stream channel erosion, bank instability, pollutant related toxicity to aquatic

## IMPACTS OF WATERSHED DEVELOPMENT ON STREAM FLOW



organisms and washout of aquatic organisms that live in the stream upon which fish feed.

While there are environmental consequences to high flows during wet periods, there are equally as stressful conditions of lower flow and higher water temperature extremes during dry periods. This occurs because rainfall sheds off the land too quickly in urbanized areas, not allowing rainwater time replenish the groundwater flow to the stream in a slow, sustainable manner. This reduction of “baseflow,” the drying of streams and streambeds, prevents the formation of diverse aquatic life communities and healthy fish populations.

*It is well known that the quality and quantity of water in a stream is a function of the physical characteristics of its drainage area. As individuals, perhaps the greatest way we can influence water quality is by being mindful of how we develop and maintain the land within our watersheds.*

## Land Use and Stream Flow

Land use in the Menomonee River Watershed is a mix of rural, suburban, and urban land uses, with the river beginning in more rural/suburban development in the upper part of the watershed and winding through dense urban development to Lake Michigan. This mix of land uses has implications for the types and quantities of pollution in the waterways of the watershed.