



1



2



3



### The Word of the Day – Imperviousness

by

Crystal Gilchrist, Executive Director  
Perkiomen Watershed Conservancy

The dictionary definition of the word “Impervious” is simply, “Impossible to penetrate”. That seems pretty clear but the implications of imperviousness are much more complex, especially when we are talking about the health of our creeks and waterways.

Imperviousness is a useful indicator of the impacts of land development on aquatic systems. It has been studied in many locations, under different conditions and with many different methods. The results all yield similar conclusions: Stream degradation begins to be evident at levels of imperviousness within a community of 10 – 20%. These are relatively low levels, especially when it is understood that impervious surfaces include not only roads, sidewalks and parking lots but the rooftops of buildings as well.

Let's examine some of the specifics associated with imperviousness.

Impervious surfaces are directly related to the amount of stormwater run-off that must be managed. Stormwater run-off is measured according to run-off coefficients that describe the percentage of rainfall that runs off of an acre of a particular type of surface. For instance, the run-off coefficient for one acre of natural meadow is 6% while the run-off coefficient for the same area of parking lot is 95%. That is a significant increase. If you were collecting run-off from these two surfaces, the run-off of a one-inch storm on a meadow would fill a 10 ft x 10 ft space to a depth of about two feet. The run-off from a parking lot in the same size storm would fill the 10 ft x 10 ft space to a depth of more than 30 feet.

Why is there such a dramatic increase? The characteristics of meadow plants and access to non-compacted soils allow the stormwater to infiltrate into the soil where it will either be used by the plants or move further down to the aquifers below. The parking lot is solid and does not allow any infiltration so all of the stormwater runs off. In addition, paved