

Raritan Basin Watershed Management Project

Fact Sheet # 3

THE IMPACT OF IMPERVIOUS SURFACES

What are Impervious Surfaces?

Impervious surfaces are areas of the earth that have been covered by any material that impedes the infiltration of water into the soil. Areas of land covered by pavement or buildings are impervious to rain water. Concrete, asphalt, rooftops and even severely compacted areas of soil are considered impervious.

How Do Impervious Surfaces Affect Water Resources?

- The addition of impervious cover decreases the amount of ground water recharge and increases the amount of stormwater runoff. This can cause depletion of ground water resources and flooding of local streams and rivers.
- Impervious surfaces also cause stormwater to carry nonpoint source pollution (NPS) directly into storm drains that empty to our local water bodies. NPS includes litter, pet waste, vehicle fluids, fertilizers and pesticides. In developed areas, NPS pollution carried in stormwater may not have sufficient natural areas, such as vegetated buffers, in which to filter pollutants out, resulting in impaired water quality.

Stormwater runoff from impervious surfaces can also erode streambanks. Stormwater runs directly from the storm drains into the streams faster than it would if filtered through a streamside buffer. This fast flow also carries suspended soil particles to the stream that causes siltation of the downstream water bodies. This siltation blocks sunlight from reaching plants and can speed up the natural process called eutrophication, by which water bodies fill in with soil and decaying plant material. Siltation can also harm aquatic animals such as fish and invertebrates by reducing the amount of oxygen in the water.

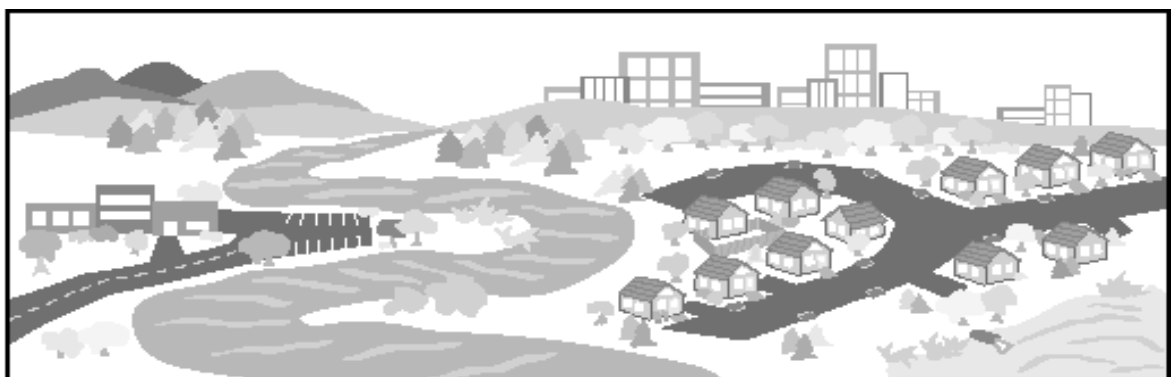
How Much is Too Much?

Various studies from around the country show that stream ecosystems and water quality degrade as impervious surfaces increase. Significant impairment to streams often occurs when more than 10 percent of the land within a watershed is covered with impervious surfaces. When these levels exceed 25 percent, most watersheds experience severe ecosystem and water quality impairment.

How Can We Reduce the Impacts of Impervious Surfaces?

Many techniques are available to reduce the impacts of impervious surfaces. Most techniques should be implemented during the development of an area.

Impervious surfaces include buildings, pavement and highly compacted soils.



- Driveways, parking lots and roadways can be “crowned” or constructed to direct stormwater onto the sides of the pavement where vegetated filter strips can be planted. Nonpoint source pollution and sediment can be trapped in the vegetation, keeping it out of any nearby water bodies or ground water.
- Detention basins are also a way to filter out pollutants from stormwater. These basins are typically used in larger developments to store stormwater or recharge groundwater. The stormwater will be directed into these basins through a storm drain system before infiltrating into ground water or discharging into a local water body.
- Other ways to minimize impervious areas include the use of alternative materials such as gravel, interlocking cement pavers or crushed seashells as a pavement surface. These materials can be used in place of concrete or asphalt.

Another innovative way to reduce impervious surfaces is to “green bank” parking areas in commercial developments. Green banking is a technique that leaves an area designated as “overflow” parking in its natural state. If the site needs the additional parking during higher peak demands, the area can be utilized.

What Can You Do to Help?

Homeowners can reduce the impact of impervious surfaces. Most suburban homeowners value their lawn space. However, studies have indicated that lawn areas recharge ground water less efficiently than landscaped areas that include shrubs, trees and ground covers.

- Minimize lawn areas by planting shrubs, ground covers, flowers and trees at the border of the property. This beautifies the area and provides habitat for local species.
- Rainwater run off can be directed from gutter drains to areas that are landscaped. This provides the plants with the moisture that is needed for survival and increases ground water recharge.
- Homeowners can also become involved in the local development process. Attend municipal meetings and make sure your government officials know about these techniques.
- Encourage your local government to adopt ordinances that protect water quality and enhance the quality of life in your community.

For More Information.....

The Raritan Basin Watershed Management Project is a partnership of government, non-profit and private organizations working together to improve the water resources of the Raritan River. For more information about impervious surfaces and alternatives that can minimize their impacts on our water resources contact the New Jersey Water Supply Authority, Watershed Protection Programs Unit, at (732) 356-9344 or visit our website at www.raritanbasin.org. Also, you may contact the New Jersey Department of Environmental Protection’s (NJDEP) Raritan Region staff at (609) 633-7020 or visit the NJDEP Division of Watershed Management website at www.state.nj.us/dep/watershedmgt/.