

# Urban Conservation

Did you know that impervious surfaces such as pavement and rooftops of a typical city block generates nine times more runoff than a woodland area of the same size? In contrast, the porous and varied terrain of natural landscapes like forests, wetlands, and grasslands trap precipitation and allow it to slowly filter into the ground.

**Increased Runoff:** While the installation of storm sewer systems helps cities to quickly divert runoff from roads and other impervious surfaces; runoff gathers speed once it enters these storm sewer systems. Upon leaving these systems and emptying into streams, this large volume of rapidly flowing runoff erodes adjacent streambanks, damages streamside vegetation, and widens stream channels. Ultimately, this results in lower water depths during non-storm periods, higher than normal water levels during wet weather periods, increased sediment loads, and higher water temperatures.

**Increased Pollutant Loads:** In addition to increased runoff, urbanization also increases the variety and amount of pollutants transported in runoff. Sediment from new construction sites and development projects; oil, grease, and toxic chemicals from vehicular traffic; road salts; nutrients and pesticides from turf management and gardening; and viruses and bacteria from failing septic systems are examples of pollutants generated in urban areas.

When this urban polluted runoff enters storm drains, it can kill native vegetation, harm fish and wildlife populations, foul drinking water supplies, and make recreational areas unsafe.

## Point and Nonpoint Distinctions

There are two different types of laws that help to control urban runoff; one focusing on urban point sources and the other focusing on urban nonpoint sources. The National Pollution Discharge Elimination System of the Clean Water Act addresses urban point source pollution from industrial and sewage treatment plants. Urban nonpoint source pollution is covered by Indiana's Stormwater and Sediment Control

Program under the Clean Water Act, as well as through state water quality protection programs.

## Measures to Manage Urban Runoff

**Plans for New Development:** New developments should make every effort to maintain the volume of runoff at pre-development levels by using structural controls and pollution prevention strategies. The *Indiana Handbook for Erosion Control in Developing Areas*, available through the Indiana Department of Natural Resources – Division of Soil Conservation, establishes guidelines to minimize land disturbances, retain natural drainage and vegetation, and protect sensitive ecological areas.

**Plans for Existing Development:** Runoff management plans for existing areas should identify priority pollutant reductions opportunities, protect natural areas that help control runoff, and begin ecological restoration activities to clean up degraded water bodies. Involving groups within the community as well as private citizens helps to prioritize the cleanup strategies, increase volunteer turnout in restoration efforts, and protect ecologically valuable areas.

**Plans for Onsite Disposal Systems:** The control of nutrient and pathogen loadings to surface waters can begin with the proper design, installation, and operation of onsite disposal systems (OSDSs). These septic systems should be situated away from open waters and sensitive resources such as wetlands and floodplains. Septic systems should be inspected, pumped out, and repaired at regular intervals. Household maintenance of these systems plays a large role in preventing excessive system discharges.

**Public Education:** Educational projects can help increase understanding and management of nonpoint source pollution in communities. Indiana schools are encouraged to work through their county soil and water conservation districts and the Indiana Lake Michigan Coastal Program to conduct educational projects that teach students how to prevent pollution and keep their community waters clean.

