

INCREASED POLLUTANT LOADS (CONT.)

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.

MANAGING URBAN RUNOFF

WHAT HOMEOWNERS CAN DO

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous Pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns.

Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose.

Instead of disposing of yard waste, they can use the materials to start a compost pile.

And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly.

Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff.

Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.



CONTROLLING IMPACTS FROM NEW

DEVELOPMENT

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

CONTROLLING IMPACTS FROM EXISTING

DEVELOPMENT

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments should take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnership with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.

WHAT'S THE PROBLEM WITH CAR WASHING

There's no problem with washing your car. It's just how and where you do it. Most soap contains phosphates and other chemicals that harm fish and water quality. The soap, together with the dirt and oil washed from your car, flows into nearby storm drains, which runs directly into lakes, rivers or marine waters. The phosphates from the soap can cause excess algae to grow. Algae look bad, smell bad, and harm water quality. As algae decay, the process uses up oxygen in the water that fish need.

WHAT'S THE PROBLEM WITH MOTOR OIL

Oil does not dissolve in water. It lasts a long time and sticks to everything from beach sand to bird feathers. Oil and other petroleum products are toxic to people, wildlife and plants. One pint of oil can make a slick larger than a football field. Oil that leaks from our cars onto roads and driveways is washed into storm drains, and then usually flows directly to a lake or stream. Used motor oil is the largest single source of oil pollution in our lakes, streams and rivers. Americans spill 180 million gallons of used oil each year into our waters. This is 16 times the amount spilled by the Exxon Valdez in Alaska. (Water Quality Consortium)

For More Information

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Nonpoint Source Control Branch (4503T)
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Washington, DC 20460 -www.epa.gov/nps



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110 S. ARNOLD ROAD
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STORMWATER

CLEAN WATER IS EVERYBODY'S BUSINESS

The Problem

It goes without saying that it rains in Florida. It rains a lot.



Rain gives us life. It recharges ground water. It keeps our lakes full, and our streams running freely. It contributes to the productive life in our estuaries. It cools the heat of our long summers. Without rain, Florida would have no Everglades or none of the cypress domes that are so typical of southern and middle Florida; our river flood plains would be much less productive than they are.

On average, the State receives between 50 and 65 inches of rain each year - much of it in the form of torrential downpours that result in runoff. It is stormwater runoff that creates the problem.

Once, Nature herself could cope with the runoff from heavy rains. Florida's seasonal rainfall was part of the cycles that dominated its natural environment. In places like the Everglades, life pulsed with Nature's wet and dry cycles. Florida's phenomenal growth interferes with Nature's cycles.

The Problem (cont.)

Roofs, highways, parking lots, and other impervious surfaces cover what once was vegetated porous soil and keep rain water from soaking into the ground; even small rains now create runoff. Local flooding after thunderstorms is common.

But there is more to worry about than just the volume of stormwater.

We add pesticides and fertilizers to our lawns, to parks and golf courses, gardens, fields, and pastures - and they wash away in the next storm. The wastes from farm animals, oils and greases from automobiles on our parking lots, roads and highways; and sediment from freshly plowed fields and construction sites, also are carried off in stormwater.

It's too much. Nature can no longer cope. She needs our help.

POLLUTION FROM STORMWATER

Most people believe water pollution in Florida is caused only by what we call point sources- the discharges from city sewage treatment facilities, or industry. They're wrong. Stormwater accounts for more than half of the State's water pollution. In some waters, it is almost the sole source.

Stormwater generates almost all of the sediment in Florida water.

Stormwater contributes nine times more oxygen demanding substances to water bodies than point sources. These are the organic and inorganic materials which use up the dissolved oxygen in the water when they decompose, often-especially in summertime, when hot temperatures and frequent rains combine to lower oxygen levels even more -leading to fish kills in our rivers and lakes.

Pollutions from Stormwater (cont.)

Stormwater flushes nutrients into water bodies at a rate comparable to discharges from wastewater treatment plants.

Stormwater deposits 80-95 percent of the heavy metals that reach Florida waters. Lead, zinc, copper, cadmium, and chromium, along with oils and greases, are flushed from highways and parking areas into rivers and lakes. Heavy metals are toxic to plankton, fish, and other aquatic organisms, reducing their ability to reproduce.

Stormwater carries viruses and bacteria - disease organisms - into Florida waterways, causing the state to close them to shellfish harvesting and swimming.

WHY DO WE NEED CLEAN WATER?

Having clean water is of primary importance for our health and economy. Clean water provides recreation, commercial opportunities, fish habitat, drinking water and adds beauty to our landscape. All of us benefit from clean water- and all of us have a role in getting and keeping our lakes, rivers, marine and ground waters clean. (Water Quality Consortium)

CLEAN WATER IS IMPORTANT TO ALL OF US

It's up to all of us to make it happen. In recent years sources of water pollution like industrial wastes from factories have been greatly reduced. Now, more than 60 percent of water pollution comes from things like cars leaking oil, fertilizers from farms and gardens, and failing septic tanks. All these sources add up to a big pollution problem. But each of us can do small things to help clean up our water too- and that adds up to a pollution solution. (Water Quality Consortium)



PROTECTING WATER QUALITY FROM URBAN

RUNOFF

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increase in runoff.



How Urbanized Areas Affect Water Quality

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain from infiltrating, or soaking, into the ground. Most of the rain remains above the surface, where it runs off rapidly in unnaturally large amounts. Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out stream banks, damaging streamside vegetation and (cont.)

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wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded stream banks. They often carry higher water temperatures from streets, rooftops, and parking lots, which are harmful to the health and reproduction of aquatic life. The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanizations leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.



Increased Pollutant Loads

Urbanization increase the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- * Sediment
- * Oil, grease, and toxic chemicals from motor vehicles.
- * Pesticides and nutrients from lawns and gardens.
- * Viruses, bacteria, and nutrients from pet waste and failing septic systems.
- * Heavy metals from roof shingles, motor vehicles, and other sources.
- * Thermal pollution from dark impervious surfaces such as streets and rooftops.

