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.)

(cont.)

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.