

Protecting Water Quality from **URBAN RUNOFF**

Clean Water Is Everybody's Business

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 increases in runoff.

How Urbanized Areas Affect Water Quality

Increased Runoff

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 and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

and snowmelt 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 streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

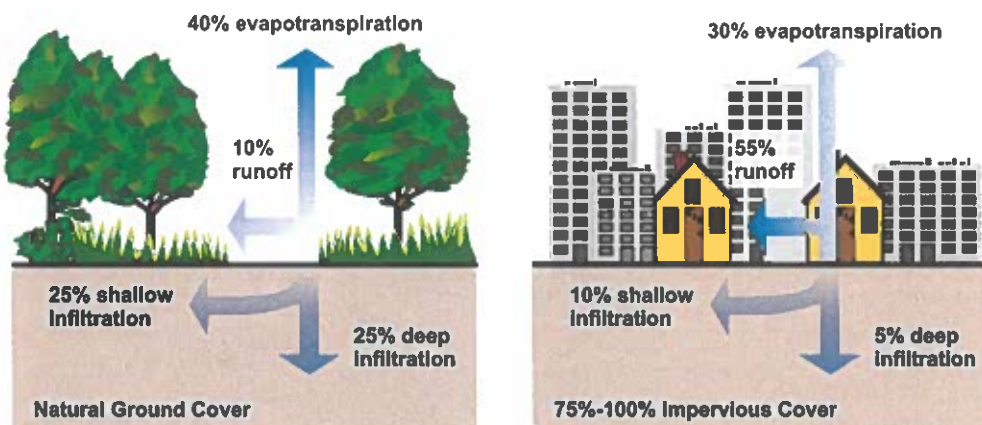
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases 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
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

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



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface runoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

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.

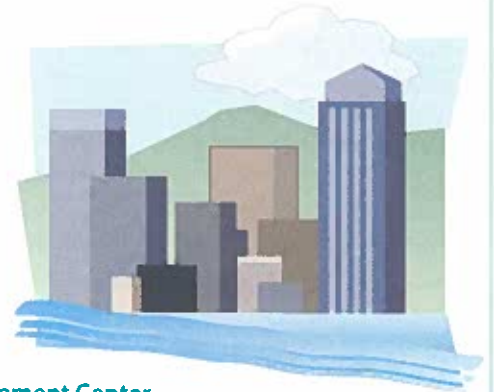
Controlling Impacts from New Development

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 are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships 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.



Related Publications

Turn Your Home into a Stormwater Pollution Solution!

www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas

www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources

www.epa.gov/septic

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center

www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Strategies: Community Responses to Runoff Pollution

www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For more information or to report
stormwater quality concerns please visit



www.txms4.com/northaustin

LET'S WORK TOGETHER TO STOP POLLUTED RUNOFF!

Remember, clean water is important to all of us. It provides recreation, fish habitat, drinking water, and adds beauty to our State. All of us benefit, and all of us have a role in keeping our lakes, rivers, and groundwater clean.

Additional Water Quality Resources:

Texas Commission on Environmental Quality

www.tceq.texas.gov

U.S. Environmental Protection Agency

Stormwater Website

www.epa.gov/npdes/npdes-stormwater-program

Texas Water Explorer

www.texaswaterexplorer.tnc.org

Regulatory agencies and local governments enforce stormwater regulations and monitor water quality for activities that result in discharges to local waterways.

However, stormwater pollution isn't just a government problem. Businesses, industries, and residents are each responsible for a portion of the pollutants deposited by stormwater runoff into local waterways. It takes continuous efforts from everyone to protect the quality of our waters.



For more information or to report stormwater quality concerns visit us at:
www.txms4.com/northaustin

STORMWATER QUALITY

Protecting Our Local Water Bodies





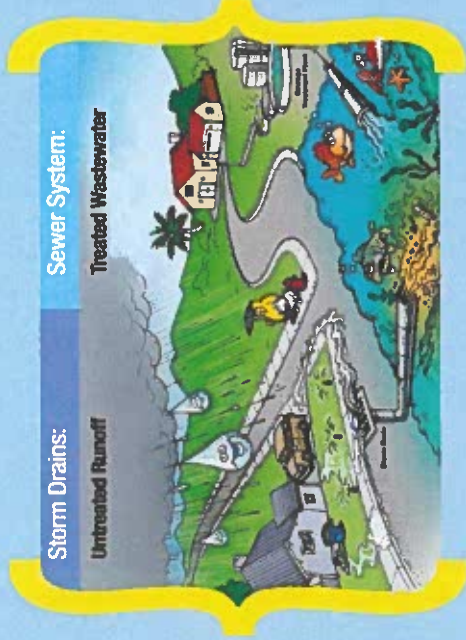
STORMWATER RUNOFF POLLUTION

is a leading cause of water quality problems and the primary reason many of our waters are still considered unfit for swimming and fishing.

- U.S. Environmental Protection Agency

STORMWATER FACTS

The water we utilize inside of our homes goes to a wastewater facility for purification. However, the stormwater from roofs, streets, and other outdoor areas is discharged untreated directly to our local waterways!



Excess nutrients, specifically nitrogen and phosphorus, pollute stormwater run-off from urban areas, contributing to the **third greatest cause of lake deterioration** in the U.S.

DID YOU KNOW

When you wash your car in the driveway, you're washing about **120 gallons** of grime-filled water downstream. The soap, together with the dirt, grease, and grime flows untreated into nearby storm drains that run into lakes and streams.



Leaf "litter" and landscape trash account for **56%** of phosphorus in urban stormwater, not to mention clogging storm drains, causing potential flooding and increasing debris in our waterways.



WHAT CAN YOU DO TO HELP?

Stormwater runoff comes from multiple sources throughout a watershed. To make a positive impact in your area, you can:

Dispose Properly

- Compost or bag your leaves and lawn clippings
- Don't blow leaves or lawn clippings into the street
- Sweep up any spills or overspray of fertilizers on sidewalks or streets



Be Car Smart

- Use a commercial car wash where water is recycled and sent to treatment facilities
- Wash your car on the lawn or gravel
- Dump your soapy bucket in the sink



For Businesses

- Do your part at work to prevent stormwater pollution
- Properly dispose of chemicals and grease

Illegal Dumping

- Do not dump chemicals or other waste materials into storm drains -- it's illegal
- If you see it, report it



Fertilize Efficiently

- Always follow the manufacturer's application recommendations. More isn't better!
- Fertilizing in early fall promotes healthy root systems - leading to stronger, more resilient lawns and plants



Pick Up After Your Pets

- Clean up pet waste and dispose of it properly
- Pet waste contains bacteria that can contaminate surface water

WHAT IS STORMWATER RUNOFF?

Stormwater runoff is surface water flow from precipitation that does not seep into the ground. The runoff carries potential pollutants from the surrounding landscape and roadways into waterways from culverts, pipes, and ditches.

WHAT MAKES STORMWATER HARMFUL?

When it rains, stormwater flows over streets, fields, lawns, and buildings carrying pollutants such as, fertilizers, litter, oil, pet feces, pesticides, and sediment into rivers, lakes, and streams. These pollutants can harm fish and wildlife populations, impact drinking water supplies, and make recreation areas unsafe and unpleasant.

