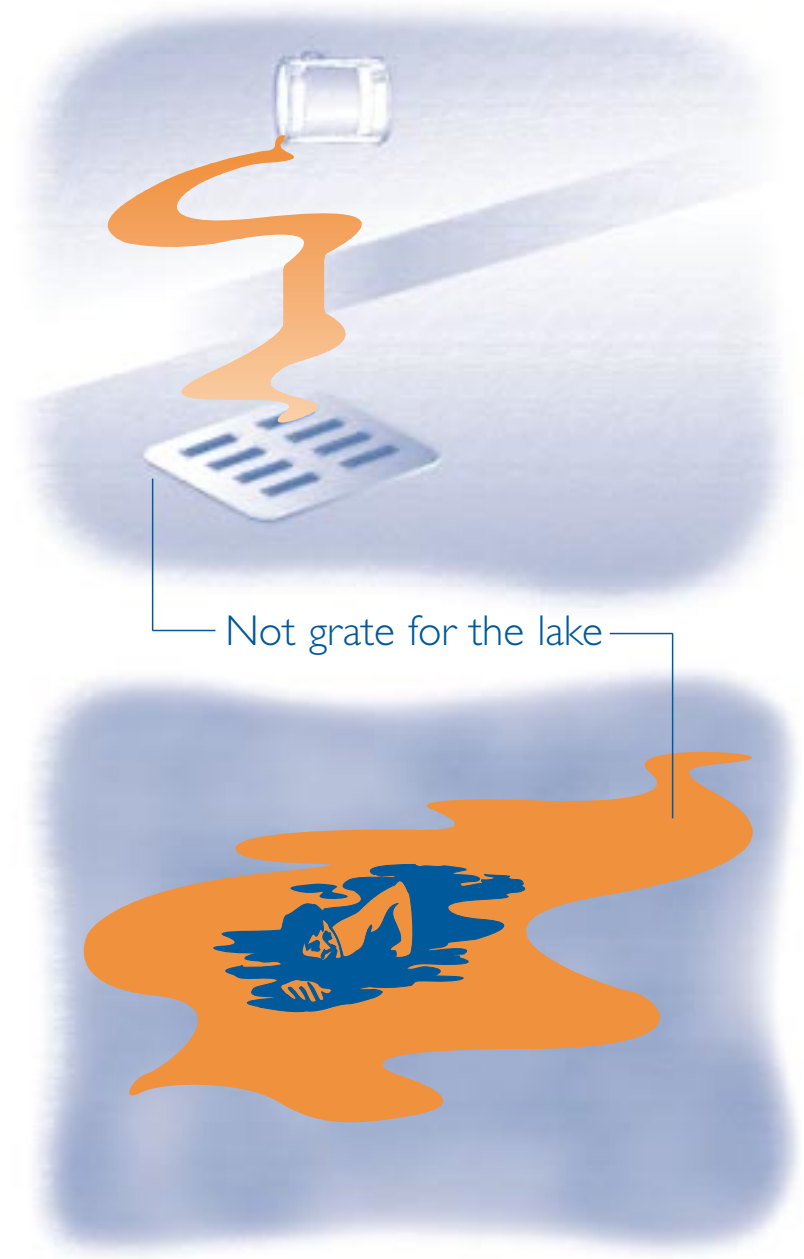


## STORMWATER POLLUTION

Tips on how you can improve water quality.



**Works and  
Emergency Services**  
Support Services  
Metro Hall, 18th floor  
55 John Street  
Toronto ON M5V 3C6  
416-397-7100  
water@city.toronto.on.ca  
June 2000 5M

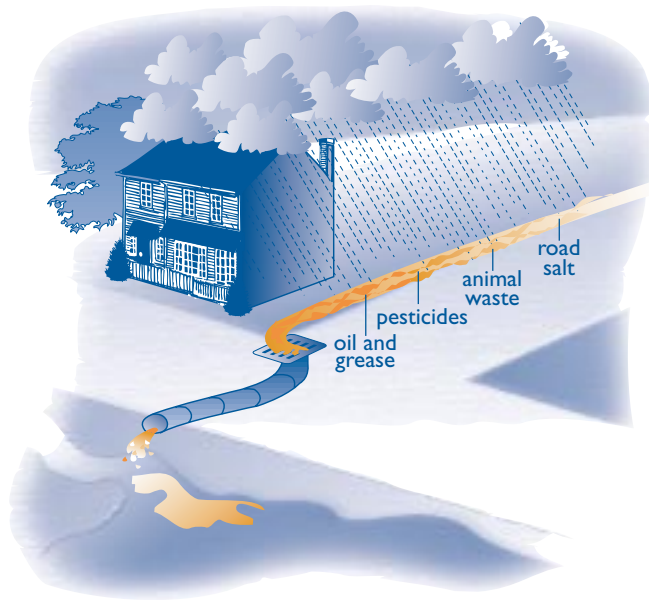


# What is stormwater?

## **THIS BEACH CLOSED TO SWIMMING!**

*An increase in the E.coli bacteria levels in lake water causes Toronto Public Health to post a sign warning that swimming in the lake is a risk to your health. Signs go up when the E. coli count exceeds 100 per 100 millilitres of water. Other Canadian and international cities may not sample and post their beaches as conscientiously as we do. Some famous beaches allow swimming in water with much higher E.coli counts. By learning about stormwater pollution and combined sewer overflows and then taking action to help reduce both of these, you can help keep the beaches open for swimming and improve water quality.*

It's exactly what it sounds like, water from nature in the form of rain (usually) or melting snow and ice. Stormwater will either soak into the earth replenishing groundwater, or it will runoff across hard surfaces, such as driveways and roads, into road-side drains and then into the city's sewer systems. The drains (catch basins) along the curbs of our city streets are connected by sewer pipes directly to our creeks, rivers and Lake Ontario. Whatever goes down the catch basins will flow directly out into the natural environment. Every property in the city contributes to this stormwater flow!



## **Runoff pollutes creeks, rivers and the lake**

Stormwater picks up pollutants as it flows across hard surfaces such as driveways and roads. Oil, grease, dirt, bacteria from animal waste, road salt, litter, pesticides and other toxic pollutants, such as chemical wash-off from industrial or commercial storage sites, all end up in the flowing stormwater. Toronto has 2,700 sewer outfalls (pipes) that empty into local rivers and the waterfront. This polluted stormwater ultimately degrades the quality of our rivers and Lake Ontario and leads to beaches being closed to swimming.

Heavy rainfalls increase the amount of runoff, which is fast-flowing and can cause flooding and erosion to stream banks. The pollution causes a negative impact on the natural aquatic life and all of this flow ends up in Lake Ontario, which is Toronto's source of drinking water. The erosion of our watercourses during runoff conditions means that fish habitat is lost.

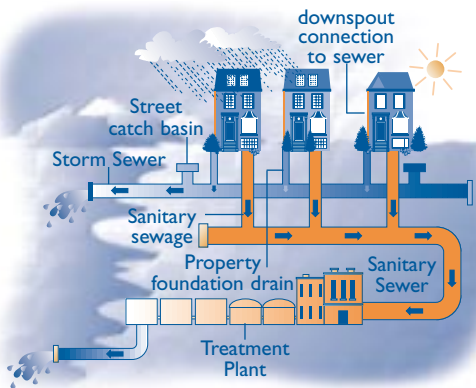
## **City pavement increases polluted runoff**

In a highly urban area such as the City of Toronto, the volume of stormwater runoff increases because so much of the city is covered by paved or hard surfaces. Stormwater doesn't have a chance to soak back into the soil and groundwater. More stormwater means more pollution of our watercourses. Toronto has been named as one of 43 polluted "Areas of Concern" within the Great Lakes by the International Joint Commission.



Please see Glossary of terms at the back of this booklet.

# Make the Connection



## SEPARATED SEWERS

In most of Toronto, stormwater is collected in storm sewers and your home's sanitary sewage is collected in a sanitary sewer.

In most of Toronto, stormwater is collected in storm sewers and your home's sanitary sewage is collected in a sanitary sewer. Stormwater flows directly into creeks, rivers and Lake Ontario and sanitary sewage flows to one of the city's four sewage treatment plants. However, in many older parts of the city, stormwater and sewage are collected in the same pipe, known as a combined sewer. Parts of the communities of York, East York, Scarborough and the former City of Toronto have combined sewers. During

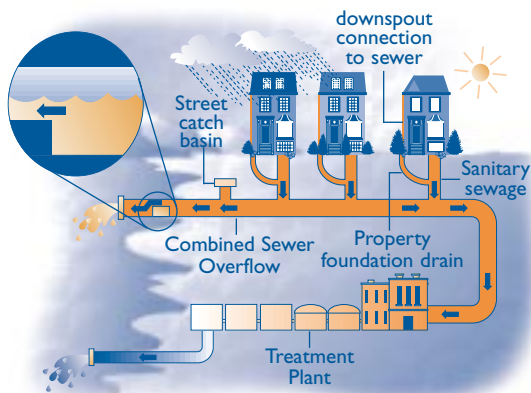
normal conditions, all the wastewater in the combined sewer is treated at one of the city's sewage treatment plants before it is returned to Lake Ontario.

## Stormwater causes watercourse pollution

However, during heavy rainfalls or spring thaws, the volume of wastewater in the combined sewers vastly increases.

The system becomes overloaded. Built-in overflows called combined sewer overflows act as relief points by letting excess flows leave the sewer system before treatment, emptying into the nearest river or directly to Lake Ontario. There are 79 combined sewer overflow outfalls along Toronto's rivers and waterfront. The overflows help prevent sewers from backing up into homes, flooding the sewage treatment plants and area streets but they do so at considerable cost to local water quality.

The overflow wastewater making its way to Lake Ontario is a diluted mixture of sanitary sewage and stormwater from the combined sewer system.



## COMBINED SEWERS

During periods of heavy rainfall, overflow wastewater – a diluted mixture of sanitary sewage and stormwater – makes its way to Lake Ontario from this combined sewer system.

## We're all guilty

Many homes in the City of Toronto have their eavestrough downspouts connected directly into the storm or combined sewer systems. During heavy rainfall, these connections contribute to the volume of stormwater these sewer systems must handle.

To help reduce stormwater flows and avoid combined sewer overflows, we need to reduce the volume of stormwater entering the sewer system. Less stormwater fewer combined sewer overflows means less pollution and improved water quality. There are a number of actions you can take to help reduce stormwater flows and avoid combined sewer overflows. Everything from disconnecting eavestrough downspouts from the sewer system to reducing your use of pesticides and household hazardous waste can improve Toronto's water quality.

## What about industry?

It's easy to think industry is to blame for the pollution in Lake Ontario. While industries do contribute to water pollution, they don't dump wastewater directly into the lake. It is carried in the sanitary sewers to a plant for treatment before going into the lake. In the City of Toronto, stormwater and combined sewer overflows are a major source of water pollution.

However, toxic substances from industries can cause serious problems if allowed to enter our sewer system uncontrolled. Even the city's advanced wastewater treatment systems are not designed to treat and remove metals, petroleum, chemicals, and many organics; these pollutants must be addressed at their source. High levels of such chemicals can threaten the aquatic environment when released into the lake. They also affect the natural processes used in the wastewater treatment process.






The city's Sewer Use By-law regulates industrial wastewater. It controls the kinds and levels of toxic pollutants allowed to be released into the sewer system. Enforcement officers take samples of wastewater and work with industry when problems are found. The city's new Sewer Use By-law is one of the strictest in Canada and it requires industry to do pollution prevention planning. (See the Want to learn more? at the end of this booklet.)

# You can make a difference

If we could just keep more stormwater on our property, we would help improve water quality in Toronto's watercourses. There would be less chance of combined sewer overflows and less stormwater runoff to collect pollution on its way to creeks, rivers and Lake Ontario.

## HERE ARE SOME EASY THINGS...

- ◆ Stoop and scoop animal waste. 
- ◆ Check your car for leaks of fuel, oil, brake, transmission and other harmful fluids. Fix the leaks! Use a drop cloth if you do-it-yourself.
- ◆ Keep your car off the road, ride your bike, take transit or car pool. 
- ◆ Reduce or eliminate your use of fertilizers and pesticides. (See the *Want to learn more?* at the end of this booklet for help.)
  - ◆ Grasscycle! Leave grass clippings on the your lawn when you mow. They'll help your lawn absorb more rain and return nutrients to the soil. This will allow you to cut-back on both lawn watering and fertilizing, which contributes to polluted wastewater runoff.
- ◆ Don't dump toxic substances into the sewer system. Drop-off harmful products such as oil, household cleaners, paint, pesticides, batteries and prescription medicines at the City of Toronto's Household Hazardous Waste Depots or, during summer months, at a city Environment Day. The city will safely dispose of it for you. Call the HHW Hotline at 416-392-4330 for locations and hours of operation, or 416-392-9585 for Environment Day events.
- ◆ Try to limit your use of any hazardous product. Buy only as much as you need and use it all up. If you do end up with leftovers, consider sharing them with a neighbour or donating them to a local community organization. Better still, why not use environmentally-safe alternatives for cleaning products for the home or laundry and for gardening/lawn maintenance products. (See the *Want to learn more?* at the end of this booklet for help.) 



- ◆ Use biodegradable cleaning products when you wash your car. If you can, wash your car over a soft surface that will allow water to soak into the earth and groundwater.
- ◆ Use a broom to sweep garbage and soil off driveways, sidewalks and patios. By doing this you're helping reduce pollution picked-up in stormwater runoff.
- ◆ Get involved in community watercourse restoration or watershed management projects or the Yellow Fish Road Program. (See the *Want to learn more?* at the end of this booklet.)

## ...AND SOME THINGS THAT NEED A LITTLE EXTRA EFFORT

- ◆ Disconnect your home's eavestrough downspouts from the sewer. Catch the stormwater in a rain barrel and use it to water your lawn and gardens, or redirect the flow to a spot where it can soak into the earth and replenish the groundwater. You can register for the city's free Downspout Disconnection Program by calling 416-392-1807.
- ◆ Catch stormwater in rain barrels. Connect a rain barrel to your disconnected downspout and recycle the water by using it to water your lawn or garden, or to wash the car or family dog. If the downspout is already disconnected, make sure to direct the flow onto your lawn or garden and avoid any paved surfaces.
- ◆ Replace paved surfaces such as asphalt and concrete driveways and patios around your home with absorbent surfaces. Consider using gravel, well-spaced interlocking bricks, grass or other groundcovers.
- ◆ Use landscaping that promotes the filtering of rainwater into the ground or consider xeriscaping, a school of landscape design that promotes water conservation.



### STORMWATER-FRIENDLY PROPERTY

Reducing stormwater runoff and combined sewer overflows will improve water quality.



- ◆ Help keep stormwater on your property and allow it to soak into the earth and replenish groundwater. You can do this by changing the drainage slope of your lawn, by changing the grading or landscaping to stop stormwater runoff. Or you can add a special soak-away spot for stormwater from your home's eavestroughs. The spot would retain stormwater long enough to allow it to soak into the earth. Plant trees and shrubs on your property to retain water. (See *Want to learn more?* for information)
- ◆ If you're thinking of adding a bathroom to your home, make sure to connect new plumbing fixtures to your home's sanitary drain.
- ◆ Rooftop gardens can help reduce stormwater runoff. This is a great approach for Toronto businesses or building owners who lack property for other stormwater management techniques. (See the *Want to learn more?* at the end of this booklet.)

## What's the city doing?

### FIRST THINGS FIRST!

*There's an environmental hierarchy to the city's approach to managing stormwater.*

*1. At source: let's deal with stormwater where it falls.*

*2. Conveyance: next, let's deal with stormwater as it's transported through the system.*

*3. End of pipe: lastly, let's catch stormwater before it flows into rivers and the lake.*

The city has a number of projects to reduce stormwater pollution and combined sewer overflows. That work continues and at the same time we're looking at the larger, long-term solutions for the problem. This planning work is being done through a process called the Wet Weather Flow Management Master Plan. Staff, environmentalists, government agencies and public representatives are working on a plan that will manage wet weather flows in the city. The plan will look at stormwater as a resource to be used in a positive way in the city's environment.

### A green roof

One interesting on-site stormwater management project is already underway. The city is building a 'green roof' on the East View Community Centre, in East View Park in the Riverdale community. A green roof retains stormwater and removes it from the building's runoff flow.

### Strict by-law

The City of Toronto has a new Sewer Use By-law. Toronto is being called a pioneer for taking a proactive role in improving water quality through the new by-law. It tightens the limits on industrial waste released into city sewers and has stiff fines for breaking the law. It also requires industries to prepare pollution prevention plans. Industries will have to examine their plant processes and look for ways to improve their levels of industrial waste discharged to the sewers. The by-law limits the discharges to sewers of toxic contaminants.

### Finding illegal connections

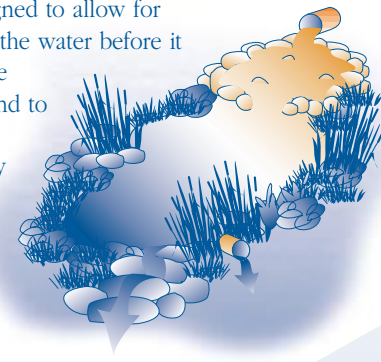
Most storm sewers do not carry any wastewater during dry weather. However, sometimes sanitary waste is discharged into the storm sewers and city staff must investigate to find the source. The source is usually an illegal connection, such as a sanitary drain pipe that is improperly connected and sending sewage into a storm sewer. Once the source is found, staff work with property owners to correct the problem.

### Tanks and tunnel hold overflows

Two underground detention tanks at Toronto's Eastern Beaches capture and hold combined sewer overflows and stormwater, which in the past went directly into the lake, until the system can handle the volume. The tanks have been working very effectively and have resulted in significantly fewer beach closings. A similar project in west-end Toronto, the Western Beaches Storage Tunnel, is expected to be operating by the end of 2000.

### Wetlands and stormwater management ponds

Stormwater management ponds are designed to allow for some settling of silt and pollution out of the water before it flows into the sewer system. Wetlands are added to help in the cleansing process and to improve stormwater quality. The City of Toronto manages wetlands across the city and has plans for many more in the coming few years.

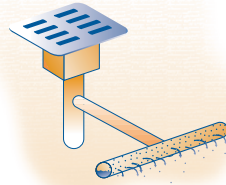


*Toronto's Downspout Disconnection Program provides residents with a free service to disconnect downspouts and install a rain barrel. The city has selected priority areas and is contacting residents about the program. All interested home owners are welcome to register for the program. To date, the city has recorded just under 20,000 homes disconnected from the sewer system and requests keep pouring in.*

Toronto has a stormwater pond with a wetland in the William Alexander Dempsey Eco Park, along Centennial Creek in the Scarborough community. Natural wetlands clean stormwater entering Grenadier Pond in High Park and in Bluffers Park in the Scarborough community. And, a wetland is planned for Wincott Park as part of Humber Creek restoration work in the Etobicoke community and another at the Emery Creek project, in the North York community.

### **Leaky pipes help**

Several stormwater infiltration systems have been constructed by the city in the communities of Etobicoke, North York and Toronto. The systems' buried leaking pipes and stone-filled trenches let stormwater seep into the ground. Toronto is planning to construct more as part of road construction projects with suitable soil conditions.



### **Natural cleaning systems**

A new technology trapping stormwater in a series of compartments within an existing stormwater outfall area has been used in Bluffer's Park, in the Scarborough community and at Humber Bay Shores, in the Etobicoke community. The compartments, created by suspended plastic curtains from floating pontoons, allow for contaminants to settle out of the flow. Furthermore, a wetland system is used to provide additional cleansing.

## Want to learn more?

### **Grasscycling and pesticide reduction**

- ◆ [www.city.toronto.on.ca/compost](http://www.city.toronto.on.ca/compost) - Visit this page on the City of Toronto web site to read or download many of the publications listed here on grasscycling and pesticide reduction.
- ◆ *Get a great lawn with all the trimmings.* Comprehensive booklet on lawn care.
- ◆ *The Green Guide to a Healthy Lawn.* A brochure detailing with how to reduce pesticide use.
- ◆ The following fact sheets provide more information:  
*Using Plants to Protect Other Plants*  
*Organic Insecticides and Fungicides for the Garden*  
*Organic Lawn Care*

### **Household hazardous waste (HHW)**

- ◆ [www.city.toronto.on.ca/hhw](http://www.city.toronto.on.ca/hhw) - Visit this page on the City of Toronto web site to read or download many of the publications listed here on household hazardous waste.
- ◆ *Your Guide to Hazardous Waste in the Home - Recipes for a Cleaner Planet.* Booklet on reduction and disposal of household hazardous waste, including recipes for healthy cleaning products.
- ◆ *Non-Hazardous Alternatives for the Home and Non-Hazardous Alternatives for the Laundry.* A fact sheet with information on environmentally-safe ingredients for healthy cleaning products.

*All of the publications listed here can be ordered by calling the Publications Order Line, 416-397-7100.*

*Or, send an e-mail to [water@city.toronto.on.ca](mailto:water@city.toronto.on.ca) stating the publication you're interested in along with your name and mailing address.*



### Downspout disconnection

- ◆ [www.city.toronto.on.ca/watereff/downspot.htm](http://www.city.toronto.on.ca/watereff/downspot.htm) - Visit this page on the City of Toronto web site to read or download many of the publications listed here on downspout disconnection.
- ◆ *Recycle Your Rain. Don't let it go down the drain.* A brochure on Toronto's Downspout Disconnection Program, including a mail-in registration form.
- ◆ *Downspout disconnection in Toronto.* A fact sheet detailing the steps to completing an eavestrough downspout disconnection.

### Other

- ◆ *Rain. Use it where it falls.* A fact sheet providing information on ways to keep stormwater on your property.
- ◆ *Toronto's Sewer Use By-law.* A fact sheet on the city's new by-law on discharges to the sewer system.
- ◆ *Stormwater pollution. How can business help?* A fact sheet providing information on ways business can handle stormwater on site.

### Community involvement opportunities

- ◆ Call the following contacts to find out how you can get involved in projects that help reduce stormwater pollution.
  - ◆ Yellow Fish Road Program – School or youth groups can show their communities the connection between storm sewers and Lake Ontario and how to protect our water from hazardous wastes. Contact the Toronto and Region Conservation Authority at 905-832-2289.
  - ◆ [www.city.toronto.on.ca/involved](http://www.city.toronto.on.ca/involved) - Visit this page on the City of Toronto web site to read about the many water issues public consultation activities in which you can get involved
  - ◆ [www.city.toronto.on.ca/parks/events/north\\_index.htm](http://www.city.toronto.on.ca/parks/events/north_index.htm) - Visit this page on the City of Toronto web site to read about the community event listings of the Parks and Recreation Division
  - ◆ [www.trca.on.ca](http://www.trca.on.ca) - Visit the web site of the Toronto and Region Conservation Authority to find out what watercourse restoration or naturalization project is happening in your neighbourhood and volunteer to help. Or call TRCA, 416-661-6600.

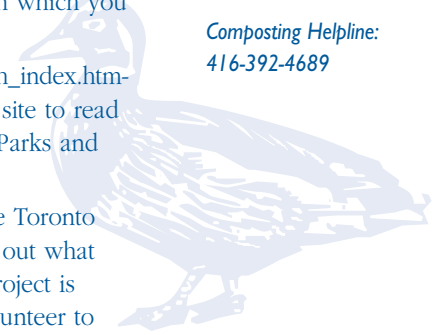
### CITY OF TORONTO INFORMATION LINES

Lawn Improvement:  
416-397-LAWN (5296)

Waste and Water  
Information: 416-392-4546

Household Hazardous Waste  
Hotline: 416-392-4330

Composting Helpline:  
416-392-4689



# Glossary

**Note:** This paper contains recycled content including 20% post consumer waste. Printed on acid-free, chlorine-free paper. Recycle this brochure in your Grey Box.



(Courtesy of the Water Environment Federation)

**absorb:** to take in or soak up a liquid.

**aquatic:** living or growing in or on water.

**bacteria:** very tiny organisms, some can be harmful to people.

**bacterial water pollution:** the introduction of unwanted bacteria to a water body.

**chemicals:** substances which are used in factories, farms and homes for a variety of purposes such as cleaning, painting, killing pests, and helping maintain vehicles.

**fertilizer:** natural and synthetic materials including manure, nitrogen, phosphorus and treated sewage sludge that are worked into the soil to provide nutrients and increase its fertility.

**flow:** move smoothly.

**groundwater:** water that infiltrates the earth and is stored in usable amounts in the soil and rock below the earth's surface; water within the zone of saturation.

**pollutant:** any substance suspended or dissolved in water that builds up in sufficient quantity to impair water quality.

**river:** a large body of flowing water that receives water from other streams and/or rivers.

**runoff:** water (originating as precipitation) that flows across surfaces rather than soaking in; eventually enters a waterbody; may pick up and carry a variety of pollutants.

**toxic pollution:** harmful, chemical contamination in water.

**urban stormwater runoff:** road salt, soil, lawn and garden chemicals, and pet wastes travel via streets and storm drains to nearby rivers, lakes, and ponds.

**Wastewater:** water that has been used for domestic or industrial purposes.

**Wastewater treatment:** physical, chemical, and biological processes used to remove pollutants from wastewater before discharging it into the water.

**Wastewater treatment plant:** a place where sanitary waste undergoes wastewater treatment and water is made safe to use.

**water cycle:** continuous movement of water from the oceans and fresh water sources to the air and land and then back to the oceans.

**water pollution:** water that has been made unclean for aquatic life and plants by dumping in foreign objects or liquids from human activities or natural processes.

**watershed:** land area from which water drains to a particular surface water body.

**wetland:** areas that periodically have waterlogged soils or are covered with a shallow layer of water; wetland areas typically support plant life that are adapted to life in wet environments.

