Stormwater Q & A

What is stormwater runoff?

Stormwater runoff is water from rain or melting snow that "runs off" across the land instead of seeping into the ground. This runoff usually flows into the nearest stream, creek, river, lake or ocean. The runoff is not treated in any way.

What is polluted runoff?

Water from rain and melting snow either seeps into the ground or "runs off" to lower areas, making its way into streams, lakes and other water bodies. On its way, runoff water can pick up and carry many substances that pollute water.
Some - like pesticides, fertilizers, oil and soap – are harmful in any quantity. Others – like sediment from construction, bare soil, or agricultural land, or pet waste, grass clippings and leaves – can harm creeks, rivers and lakes in sufficient quantities.
In addition to rain and snowmelt, various human activities like watering, car washing, and malfunctioning septic tank can also put water onto the land surface. Here, it can also create runoff that carries pollutants to creeks, rivers and lakes.
Polluted runoff generally happens anywhere people use or alter the land. For example, in developed areas, none of the water that falls on hard surfaces like roofs, driveways, parking lots or roads can seep into the ground. These impervious surfaces create large amounts of runoff that picks up pollutants. The runoff flows from gutters and storm drains to streams. Runoff not only pollutes' but erodes streambanks. The mix of pollution and eroded dirt muddies the water and causes problems downstream.

What is nonpoint source pollution?

This is another term for polluted runoff and other sources of water pollution that are hard to pinpoint. The term "nonpoint source pollution" comes from the federal Clean Water Act of 1987. There, it is used as a catch-all for all kinds of water pollution that are not well-defined discharges (point sources) from wastewater plants or industries.

What causes polluted stormwater runoff?

Polluted stormwater runoff generally happens anywhere people use or alter the land. People going about their daily lives are the number one source of stormwater pollutants. Most people are unaware of how they impact water quality. Some common examples include over fertilizing lawns, excessive pesticide use, not picking up pet waste, using salt or fertilizer to de-ice driveways, letting oil drip out of their vehicles and littering. Developed areas in general, with their increased runoff, concentrated numbers of people and animals, construction and other activities, are a major contributor to NPS pollution, as are agricultural activities. Other contributors include forest harvesting activities, roadways, and malfunctioning septic systems.

Why do we need to manage stormwater and polluted runoff?

Polluted water creates numerous costs to the public and to wildlife. As the saying goes, "we all live downstream." Communities that use surface water for their drinking supply must pay much more to clean up polluted water than clean water.
Polluted water hurts the wildlife in creeks, streams, rivers and lakes. Dirt from erosion, also called sediment, covers up fish habitats and fertilizers can cause too much algae to grow, which also hurts wildlife by using up the oxygen they need to survive. Soaps hurt fish gills and fish skin, and other chemicals damage plants and animals when they enter the water.
The quantity of stormwater is also a problem. When stormwater falls on hard surfaces like roads, roofs, driveways and parking lots, it cannot seep into the ground, so it runs off to lower areas. To give you an idea of the difference a hard surface makes, consider the difference between one inch of rain falling onto a meadow and a parking lot. The parking lot sheds 16 times the amount of water that a meadow does!
Because more water runs off hard surfaces, developed areas can experience local flooding. The high volume of water also causes streams banks to erode and washes the wildlife that live there downstream
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How are stormwater and runoff managed?

"Best management practices" is a term used to describe different ways to keep pollutants out of runoff and to slow down high volumes of runoff.
Preventing pollution from entering water is much more affordable than cleaning polluted water! Educating state residents about how to prevent pollution from entering waterways is one best management practice. Laws that require people and businesses involved in earth disturbing activities --like construction and agriculture -- to take steps to prevent erosion are another way to prevent stormwater pollution. There are also laws about litter, cleaning up after pets and dumping oil or other substances into storm drains.
Education and laws are just two best management practice examples. Some BMPs are constructed to protect a certain area. Some are designed to slow down stormwater, others help reduce the pollutants already in it – there are also BMPs that do both of these things. Detention ponds, built to temporarily hold water so it seeps away slowly, fill up quickly after a rainstorm and allow solids like sediment and litter to settle at the pond bottom. Then, they release the water slowly. These ponds are one constructed BMP example. Green roofs, storm drain grates, filter strips, sediment fences and permeable paving are other examples.

Why all the recent fuss about stormwater?

The federal Clean Water Act requires large and medium sized towns across the United States to take steps to reduce polluted stormwater runoff. The law was applied in two phases. The first phase addressed large cities. The second phase, often referred to as "Phase II," requires medium and small cities, fast growing cities and those located near sensitive waters to take steps to reduce stormwater.
These laws require chosen cities to do six things:

1) Conduct outreach and education about polluted stormwater runoff.

2) Provide opportunities for residents to participate and be involved in conversations and activities related to reducing polluted stormwater runoff.
3) Detect illicit discharges (e.g. straight piping or dumping).
4) Control construction site runoff.
5) Control post-construction runoff.
6) Perform municipal housekeeping (e.g. take steps to prevent runoff from city buildings and activities

If it only affects streams and creeks, why should I care?

Streams and creeks feed into rivers, lakes and the ocean. We all drink water, so we are all affected when our water is polluted. When water treatment costs rise, the price of drinking water goes up. If you like to fish, swim or boat, you may have heard or been affected by advisories warning you not to swim, fish or boat in a certain area because of unhealthy water or too much algae. Shellfish like clams and oysters cannot be harvested from polluted waters, so anyone that enjoys these foods or makes a living from the shellfish industry is affected. Money made from tourism and water recreation can also be impacted, as are businesses and home flooded by stormwater runoff. When we pollute our water, everyone is affected!

Pollution from stormwater

Non-Point Source Pollutants

- Sediment
- Bacteria
- Metals
- Pesticides
- Fertilizers
- Petroleum

What can I do to reduce the amount of stormwater pollution I contribute?

If you own a car, maintain it so it does not leak oil or other fluids. Be sure to wash it on the grass or at a car wash so the dirt and soap do not flow down the driveway and into the nearest storm drain.

If you own a yard, do not over fertilize your grass. Never apply fertilizers or pesticides before a heavy rain. If fertilizer falls onto driveways or sidewalks, sweep it up instead of hosing it away. Mulch leaves and grass clippings and place leaves in the yard at the curb, not in the street. Doing this keeps leaves out of the gutter, where they can wash into the nearest storm drain. Turn your gutter downspouts away from hard surfaces, seed bare spots in your yard to avoid erosion and consider building a rain garden in low-lying areas of your lawn.

If you have a septic system, maintain it properly by having it pumped every three to five years. If it is an older system, be sure it can still handle the volume placed on it today. Never put chemicals down septic systems, they can harm the system and seep into the groundwater.
Pet owners should pick up after their pets and dispose of pet waste in the garbage.
Keep lawn and household chemicals tightly sealed and in a place where rain cannot reach them. Dispose of old or unwanted chemicals at household hazardous waste collections sites or events.
Never put anything in a storm drain.
Don't litter.

How else can I reduce stormwater pollution in my area?

Participate in the next stream or beach cleanup in your area. Storm drain stenciling events – where the destination of storm water is clearly marked on the drain – are a fun way to let your neighbors know the storm drain is only for rain. Attend public hearings or meetings on the topic so you can express your concerns. Report stormwater violations when you spot them to your local government. Keep learning about polluted stormwater runoff and tell a friend!

General Tips (tab)

Natural Alternatives:

There are natural/safe alternatives that can replace commonly used products. Link to household alternatives (I have added the page of alternatives below)

Alternatives to Hazardous Materials at Home

Air Fresheners: Use baking soda to absorb odors. Dissolve 2 tsp each baking soda and lemon juice in 2 cups hot water and use as a spray freshener. Boil cinnamon and cloves in water. Burn a candle.
Ant Control: Sprinkle equal parts powdered sugar and powered borax on anthills. At the point of entry to your house, pour a line of paprika or red chili powder.
Drain Cleaner: Use a plunger or plumber's snake.
Flea and tick products: Put brewer's yeast or garlic in your pet's food; sprinkle fennel or rosemary around animal sleeping areas.
Furniture polish: Mix 1 tsp of lemon juice in 1 pint of mineral or vegetable oil and wipe furniture.
Glass cleaner: Mix 1 tbs of vinegar or lemon juice in 1 quart of water. Spray on and use newspaper to wipe dry.
Mothballs: Use cedar chips, lavender flowers, rosemary, mint, or white peppercorns.
Oven cleaner: Clean spills as soon as the oven cools using steel wool and baking soda; for tough stains, add salt (do not use this method in self-cleaning or continuous-cleaning ovens).
Plant sprays: Wipe leaves with mild soap and water; rinse.

Rug deodorizer: Deodorize dry carpets by sprinkling liberally with baking soda. Wait at least 15 minutes and vacuum. Repeat if necessary.

Silver polish: Boil 2 to 3 inches of water in a shallow pan with 1 tsp of sale, 1 tsp of baking soda, and a sheet of aluminum foil. Totally submerge silver and boil for 2 to 3 more minutes. Wipe away tarnish. Repeat if necessary. (Do not use this method on antique silver knives. The blade will separate from

Treatment of lawns and gardens can contaminate storm water through pesticides, fertilizers, and soil runoff.

- Plant and maintain healthy plants because they are less susceptible to insects and disease, requiring minimal pesticides.
- Develop landscape plans that utilize the natural conditions of their property. Test soil every 3 to 4 years. Choose plants that are local. Regional plants use less pesticides and are water efficient.
- Mulch helps to retain water, reduce weeds, and improve soil. If fertilizer/pesticides are necessary, use small amounts of slow-release or organic ones

Rain Barrels

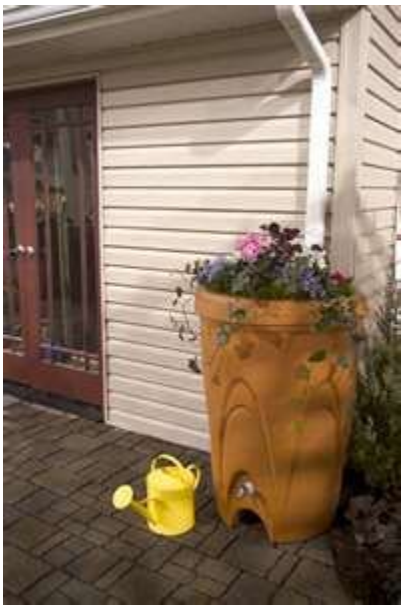
Rain barrels are a low-cost way to reduce runoff, reduce household water usage, and save you money while improving the quality of streams and neighborhoods. One inch of rain on a 1000 sq. ft. roof yields 620 gallons of water. Use this water for your lawn and garden.

Places to purchase a rain barrel:

www.homedepot.com - type in rain barrel, selection is greater on-line and will be shipped directly to you.

www.lowes.com - type in rain barrel

www.starkswcd.org - click on “education” tab or call 330-830-7700 ext. 103.



Rain Gardens:

Rain gardens are shallow depressions that divert rain water from going directly into storm drains or ditches which eventually lead to streams or creeks. They take runoff from a roof, driveway, parking lot, or other hard surfaces where it can pick up pollutants such as fertilizers and pet droppings along the way and allow it to soak in the ground instead of rushing into a storm sewer.

- Check local laws. Some areas do not allow downspouts to be diverted. Also be aware of the location of the public utilities.
- The rain garden should be at least 10 feet from your home and not in an area where rain already collects. Place it in a low spot away from trees.
- Garden design will depend on three factors: depth of garden, amount of runoff being diverted, and type of soil already in your garden.
- A good soil mix for rain gardens is 50 to 60 percent sand, 20 to 30 percent topsoil, and 20 to 30 percent compost. It is recommended that you put down shredded hardwood mulch so the soil remains moist and able to soak up rain.
- To direct water to your rain garden, disconnect a downspout and reroute it to the garden. You can either extend the downspout across your property or create a rock-lined channel. You can also run PVC pipe underground to the garden. Putting in landscape rocks or fabric at the outlet of a pipe can help slow down the rainfall and prevent erosion.