

STORMWATER POLLUTION SOLUTIONS

RESIDENTIAL

Recycle or properly dispose of household products containing chemicals, such as insecticides, pesticides, paints, solvents, and used motor oil (and other auto fluids). **NEVER** pour them onto the ground or into storm drains.



LAWN CARE

Excess fertilizers and pesticides used on lawns wash off and pollute the environment. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams. To avoid pollution of our delicate ecosystem:

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains.
- Cover piles of dirt or mulch being used in landscaping projects.



RESIDENTIAL LANDSCAPING

Permeable Pavement

Traditional concrete and asphalt don't allow water to soak into the ground instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.



Rain Barrels

You can collect rain water from rooftops in mosquito proof containers, then the water can be used later on lawn and garden areas.

Rainy Gardens and Grassy Swales

Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



VEGETATED FILTER STRIPS

Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streams.



SEPTIC SYSTEMS

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby water bodies. Pathogens can cause public health problems and environmental concerns. Make sure to do the following:

- Inspect your system every 3 years.
- Pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.



AUTO CARE

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping materials directly into a body of water. The following tips can help:

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

COMMERCIAL & CONSTRUCTION

COMMERCIAL

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local water bodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous cleanup team. They will know the best way to keep spills from harming the environment.



CONSTRUCTION

Erosion controls that are not maintained can cause excessive amounts of sediment and debris to be carried into stormwater systems. Construction vehicles can leak fuel, oil, and other harmful fluids which can be picked up by stormwater and deposited into local water.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment/erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.

Pollution Solutions Cont.

Agriculture

Lack of vegetation on stream banks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local water bodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- Keep livestock away from stream banks and provide them a water source away from water bodies.
- Store and apply manure away from water bodies with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.

OBLITERATE LITTER FROM OUR STORMWATER

If you leave your trash on the street, at the beach, in a park, or just don't put it in a trash can, it becomes litter. It doesn't matter where you leave your litter, each piece of litter you drop damages our environment. Although the litter you drop might seem only small, if everyone drops a small piece of litter the problem soon multiplies into an environmental disaster. Once you drop a piece of litter it does not stay still. A lot of the litter in Florida is blown or washed into our stormwater drains, where it gets a free ride into our creeks, rivers, wetlands, estuaries and the sea.



**PROTECT FLORIDA'S WATER
STOP POINTLESS PERSONAL POLLUTION!**

Pointless Personal Pollution is pollution washed into water bodies by rain or irrigation water and is a result of common daily activities.

Examples of these type of pollutants include:

- Bacterial and excessive nutrients leaking from septic tanks;
- Pesticides, fertilizers, and weed killers;
- Sand dirt from erosion;
- Oil and grease from automobiles;
- Litter and yard clippings; and
- Pet and livestock wastes.

How to Stop Pointless Personal Pollution

- NEVER drain used motor oil into storm drains. *Remember all drains lead to the ocean!*
- Compost leaves, grass, and shrub clippings — they make great mulch and should not be raked into roadways or storm drains.
- Use garden and lawn chemicals wisely. Follow package directions carefully and NEVER apply if rain is in the forecast.
- Store products safely. Keep toxic products in their original containers, closed and clearly marked.

dangerous POOLS

Chlorine is used to keep swimming pools clean because it kills everything, which makes it especially dangerous to eco-systems. Draining swimming pools directly into stormwater drains, or allowing a pool to overflow in heavy rain could have horrible effects on local creek, wetland, river or estuary.

If you need to drain your pool:

- leave it for 3-5 days (allows chlorine to dissipate safely from the water); and
- NEVER drain chlorine pool directly into stormwater drains.

DID YOU KNOW?

EVEN SMALL AMOUNTS CAN CAUSE GREAT HARM

- Small quantities of toxic chemicals can have terrible consequences if they reach creeks and estuaries.
- Pesticides and herbicides can accumulate in aquatic animals like oysters, fish, and seabirds. These toxins can make oysters poisonous to people, kill fish, and cause breeding problems in seabirds.

Disastrous Effects of Fertilizer, Plant & Animal Waste Run-Off

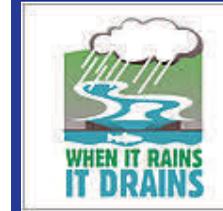
- **Algae Growth & Eutrophication:** Too many nutrients in a waterway can cause water plants like algae to grow out of control. As they grow they remove oxygen from the water and any animals living in the water either die or are driven away, reducing the variety and number of animals in a waterway, a process called **eutrophication**.
- **Blue-Green Algae:** Blue-green algae grows naturally in most waterways, but any extra input of nutrients from fertilizers, pet or garden waste cause these fast growing algae to bloom. These blooms are unsightly, smelly and at times can release toxins into the water that can be fatal to wildlife and livestock, and have negative affects human health.



City of Panama City Beach
Dept. of Public Works
110 S. Arnold Rd.
Panama City Beach, FL 32413
(850)233-5400, ext. 2400

A Citizens Guide to Understanding Stormwater

WHAT IS STORMWATER RUN-OFF?



Stormwater run-off occurs when precipitation from rain flows over the ground. Impervious surfaces like driveways, sidewalk, and street prevent stormwater from naturally soaking into the ground.

WHY IS STORMWATER RUN-OFF A PROBLEM?



THE EFFECTS OF POLLUTION

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closure necessary.
- Debris-plastic bags, six-pack rings, bottles, and cigarette butts—washed into water bodies can choke, suffocate or kill aquatic life.

