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South Florida Water Management District

WHO WE ARE

OUR WORK

Home >> Community residents >> WHAT CAN YOU DO

Water Conservation

Recreation

Education Center

What You Can Do



# Your Impact on the Environment

## Improving Water Quality in Your Neighborhood

When people think of pollution or excess nutrients making their way into surface and groundwater systems, we often imagine industrial plants or large farms as the primary sources. But residents, businesses and visitors also contribute excess nutrients and other pollutants to South Florida's lakes, rivers and wetlands. Individuals and small businesses can reduce pollution in a number of ways: properly maintain local stormwater management systems; use fertilizers, herbicides and pesticides with care; and being aware of how easily household chemicals and other pollutants can be flushed into ground and surface water systems.

**DID YOU KNOW?** Nationwide, polluted runoff/storm water is considered to be the greatest threat to clean water!

On this website you'll find information about stormwater pollution prevention. You'll find tips on how to best use fertilizers and pesticides and maintain a healthy Florida landscape, home or business. Your actions can help reduce pollution and protect your community and the Everglades.

## Water Quality and YOU

### Stormwater: Know the Flow

Florida averages 55 - 60 inches of rainfall a year, with about two-thirds of that coming in the wet/rainy season, from June through November. When rain falls, South Florida landscapes are designed to channel excess storm water into communities' stormwater collection systems, into the swales in our driveways or other parts of our local or regional ponds, lakes or canals. Along the way, stormwater runoff can pick up all kinds of pollutants, including fertilizers and pesticides from lawns and yards as well as oils and coolant spilled from roadways and cars. Eventually, that stormwater runoff flows into lakes, rivers and wetlands and makes its way more gradually to the groundwater aquifers that supply our drinking water.

"First flush" is a term used to describe the flushing action storm water has on accumulated pollutants from roads, parking lots, driveways, lawns etc. – the first time it rains after a dry spell. This effect is even stronger the first time it rains after an extended dry period. That's because the initial stormwater runoff dislodges and removes most of the accumulated pollutants from these surfaces and carries them into lakes, ponds or canals. Once the first flush of polluted storm water is washed away, the water quality of storm water improves.

Anything that enters a storm sewer system is discharged untreated into the water bodies we use for swimming, fishing and, in some cases, drinking water. Those stormwater collection systems are connected to canals that flow either to larger regional lakes, rivers, wetlands or to the ocean. What you do around the house can have significant impacts on South Florida's water quality.

- [Managing Every Drop \[PDF\]](#)

Learn about the three levels of flood control – **neighborhood**, **secondary** and **regional** – and get tips for checking/maintaining your neighborhood drainage system.

- [Managing Flood Water Before and After the Storm \[PDF\]](#)

Learn how you and your neighbors can evaluate and even improve your local drainage systems and prepare yourselves and your community for storms and drought.

## MANAGING STORM WATER

A healthy wetland area around a pond or lake reduces erosion and provides a good habitat for fish

and wildlife. It also reduces pollution by filtering out nutrients and chemicals. When the first flush of stormwater runoff is held back, in wetlands and other holding areas in local and regional systems, pollution is reduced.

Suggestions for maintaining healthy stormwater buffers include:

- Where possible, construct berms on your property to retain storm water and prevent runoff.
- Create buffer strips of vegetation along canals and roadways on your property to filter runoff and prevent soil erosion.
- Maintain your property's existing slopes away from canals and roadways.
- When managing your farm or landscaping your property, remember that you should never change the grading of slopes that drain into canals, waterways or lakes. The grading is based on state and local minimum requirements and was designed by a State of Florida Registered Professional Engineer to meet water quantity and quality criteria.
- Properly maintain water retention areas on your property. Check your permit or easement and follow its specifications.
- Leave a "ring of responsibility" around retention areas like local ponds, canals or lakes by not fertilizing close to the water. This untreated area will serve as a natural buffer zone.
- Remove exotic and invasive vegetation from retention areas. These species can produce dense growth and decaying matter that threaten water quality.

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### **Phosphorus: Too Much of a Good Thing**

Phosphorus is an essential element for living organisms. In plants, phosphorus stimulates growth. In Florida, phosphorus is an abundant nutrient, mostly contained within sedimentary rock and in Florida's natural soil. However, if it is released in excess, it can become a pollutant.

The Greater Everglades (which includes the upper Kissimmee basin of central Florida; Lake Okeechobee and its tributaries; and the Everglades and other wetlands and estuaries south of Lake Okeechobee) is an ecosystem that thrives on low levels of phosphorus. Agricultural and urban development adds much higher levels of nutrients – like phosphorus – to South Florida's landscape. This leads to the excessive growth of cattails and other kinds of vegetation that were only sparsely present, or not found in the region's natural systems.

High levels of phosphorus cause cattails to crowd out more desirable native Everglades plants favored by wildlife. Higher phosphorus concentrations in surface waters also increase the growth of

organisms such as algae and duckweed. This changes the habitats of aquatic and non-aquatic wildlife.

Nitrogen, in excessive amounts, is another nutrient that can stimulate algae growth, which then blocks sunlight penetrating to submerged aquatic vegetation. This can have an impact on the whole food chain, because submerged vegetation is a food source for a variety of creatures.

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### **Other Pollutants and Debris**

Debris and trash in stormwater drains can interfere with flood prevention as well as decrease water quality. When a stormwater drain gets clogged with debris, rainwater that normally would be collected cannot enter into the drainage system. Water will pond around the drain, causing flooded sidewalks or streets and increasing the chances for flooding buildings.

Debris and trash also can be carried by the stormwater runoff directly into a lake or canal. Once there, debris can pose dangers for aquatic plants and wildlife. Birds and fish can be poisoned by eating cigarette butts. Mineral oils and coolant from cars pollute the water and kill fish, frogs and other aquatic species. These substances can also harm the wildlife that eats those species.

Sediments may cover submerged aquatic vegetation, killing the plants and reducing food needed by fish and other animals. Dead organic material can attract bacteria and can cause algae blooms, which consume oxygen in the water. Organisms including large fish die when oxygen levels fall too far. Fine particles that don't settle out can get stuck in the ventricles of fish. This can also lead to fish kills. Debris in the water can block sunlight, starving plants or causing algae blooms and lowering oxygen in the water.

## **Landscape Maintenance**

Managing your landscape effectively can drastically reduce pollutants flowing into surface and groundwater systems. Here are some basic tips to help you reduce pollution: use the right types of soil; select plants that will thrive in your landscape or garden; maintain plants properly – don't over or under water them; use the right kinds of fertilizers and pesticides at the right time. Get more details in the guidelines below.

### **Right Plants, Right Places**

Some plants and grasses are better suited to the subtropical conditions of South Florida than others. If a plant is well-suited to our climate, and is well-placed and well-maintained, you can save time, money (less fertilizer and pesticides needed) and water – and help protect the Everglades – by using them in your landscape! A number of publications and websites offer detailed guidance.

- [Landscaping with Florida-Friendly Plants \[PDF\]](#)

- Water Wise Landscaping – a comprehensive Plant Guide  
[Download and print \[PDF\]](#)  
[Interactive PDF viewer](#)
  - [Landscape Best Management Practices \(BMPs\) for Broward County \[PDF\]](#) – guidelines for landscape maintenance that keep landscapes visually attractive while conserving our water resources, reducing pollution, and protecting our fragile South Florida environment
  - [Stormwise Landscapes \[PDF\]](#)
  - [Institute for Regional Conservation: Natives for Your Neighborhood](#) – a web-based tool that allows you to plug in your zip code, and get expert advise on the best native plants for your landscape!
  - [Florida Yards & Neighborhoods](#) – University of Florida Extension Service landscaping help
  - [Plant Management in Florida Waters \(IFAS\)](#)
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## Soils: From the Ground Up

Florida soils have varying textures, colors, water-retention capacities and nutrient levels available for plants. It is important to examine and analyze your soil before you start a landscaping project. It is equally important to re-examine it every few years to see if changes have occurred.

Most Florida soil types do a good job of supporting plant life – just look around at the variety of plants growing naturally in Florida!

If you are creating a new yard or garden, or if the plants in your garden don't seem to be growing well or look pale and unhealthy, don't just start fertilizing. First, learn what's in your soil. You can determine this by sending a soil sample to a laboratory, or using a do-it-yourself kit.

**DID YOU KNOW?** A soil test is easy and inexpensive. Sample kits are available for free, and a basic test can be done for less than 10 dollars.

Soil sample test kits are often available free of charge at your local County Extension office or from the University of Florida. For more information, go to <http://soilslab.ifas.ufl.edu/>

Knowing more about your soil helps you to choose the kinds of plants that are best for your yard and determine if fertilizer, compost or other additives are needed.

### Soil characteristics to check:

- soil type (sand, clay or rich soil)

- phosphorus (P)
- potassium (K)
- calcium (Ca)
- magnesium (Mg)
- pH (acidity)

A soil test analysis will identify whether your soil lacks needed minerals, the pH is correct or if there is too much or too little phosphorus, nitrogen or other elements that healthy landscapes need.

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### **Drainage Capacity**

In addition to knowing the components of your soil, you should know how well the soil drains water. If you have only sand in your landscape, water will easily drain into the ground. If layers of clay are present, water will not drain into the ground as quickly. It will either run off from the lawn, or keep the soil very wet (saturated).

To check how well your soil drains, dig a hole, fill it with water and see how quickly the water goes away. If water takes a long time to move into surrounding soils, your plants may become susceptible to rot or disease. If water drains too quickly, plants will not be able to take up water they need before it disappears.

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### **Lawn Care: Mowing**

Cutting your grass properly promotes a healthy landscape. Don't cut it too short, but do cut it regularly and be sure to use sharp blades. Lawn clippings can be an asset in your landscape too.

### **GRASS LENGTH**

Longer grass has more surface to take in more sunlight. This enables the grass to grow thicker and develop a deeper root system. Longer grass also shades the soil, keeping it cool and helping it to retain moisture. Longer grass also can block weeds. A lawn's ideal length will vary with the type of grass, but many lawn grass species are healthiest when kept between 2½ and 3½ inches.

Don't remove more than one-third of the leaf blade at any one time. When you cut grass more than that, the grass is stressed. Cutting grass with dull blades also causes stress, and stress makes plants more susceptible to pests and diseases.

### **MOWING FREQUENCY**

Grass adjusts better to frequent mowing. Mow once or twice a week in the summer when rain is abundant and growth is rapid. Mow less frequently in the winter or dry season when rain is scarcer and plant growth naturally slows.

## **KEEP THE CLIPPINGS**

Never hose or rake your lawn clippings into the street, down the drain or into neighborhood lakes or canals. Why? Yard waste can clog drainage systems, which then causes flooding after a rainstorm. Dumping yard waste can also add excess nutrients to lakes and canals, which can cause fish kills and algae blooms.

Leaving short clippings on your lawn recycles the nutrients in the clippings and helps retain water. This practice helps the environment because less yard waste is sent to landfills.

## **Keep It Clean**

### **Fertilizer Application: How and When**

When you have planted a new yard, with new sod and plants, use fertilizer as advised by the grower. But when sod and plants have been established (usually after a month or two), you can start using low phosphorus fertilizer. How can you tell which fertilizer you should use? Look for the middle number on the bag. It should be 2 or lower.

Use slow-release fertilizers. Instead of putting nutrients all at once in the soil, this kind of fertilizer releases small quantities over a period in time. Plants will absorb more minerals and nutrients in a gradual feeding process.

Fertilizers are often overused. More is not better! Overfertilization can lead to excess growth and pest problems. Overfertilization is also a waste of time, labor and money. Finally, overfertilization also contributes to pollution through stormwater runoff and leaching.

You usually only need to apply fertilizer once or twice per year, especially when you use slow-release fertilizer. Never apply fertilizer when you expect heavy rainfall. Why? Most fertilizer will be flushed away, and that's money and pollution down the drain. Be sure to apply fertilizer evenly and avoid overlapping. Clean up any spills. Put a plastic bag or tarp on the ground where you pour out the fertilizer, so any spills can be caught and used.

Except near a protective seawall, always leave a "ring of responsibility" around or along the edges of canals, lakes or other waterways. This is an untreated buffer zone that protects water quality in waterways. The buffer zone helps to ensure that fertilizers and other lawn chemicals do not come into direct contact with the water or with any structure bordering the water, such as a sidewalk, brick border, driveway, or street.

When applying liquid fertilizers, the "ring of responsibility" should be at least 3 feet from the edge of

the water. The same is true for applying granular fertilizers with a fertilizer spreader that features a deflector shield. A deflector shield only allows fertilizer to be distributed on one side. This half-circle application (instead of the typical full-circle application of most fertilizer spreaders) allows for more accurate fertilizer application. If you are applying fertilizer without a deflector shield, the "ring of responsibility" should extend at least 10 feet from the edge of the water.

- [Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes \[PDF\]](#)

This is intended to reduce sources of nutrients coming from urban landscapes to reduce the impact of nutrients on Florida's surface and ground waters. Florida Statue 403.9337 requires adoption of the fertilizer ordinance if the locality is within the watershed of an impaired waterbody; elsewhere, its adoption is strongly encouraged.

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## Controlling Landscape Pests

A pest, by definition, is any unwanted organism. In garden, landscape or lawn management, certain insects, animals, bacteria, fungi, viruses and weeds may all be considered pests. Some pests are good to have in the garden, because they are part of the composting process and bring nutrients in the soil. Other pests can be destructive, especially when there are too many of them.

## GROUPS OF PESTS

Ornamental pests may be divided into five groups, based on how they damage plants:

- **Insects with piercing or sucking mouthparts**

These insects have straw-like mouthparts, which pierce the plant tissue and suck out plant fluids. Examples: Scales, aphids, whiteflies, mealy bugs, thrips, lace bugs, spittlebugs.

- **Spider mites**

These pests are not insects but are closely related to spiders and scorpions. They suck plant fluids with their piercing-sucking mouthparts.

- **Foliage-feeding insects**

They may feed on leaves, flowers or plant roots. Examples: Caterpillars, beetles, grasshoppers, katydids.

- **Leaf miners**

These are very small larvae of flies, beetles or moths that tunnel between upper and lower leaf surfaces. Examples: Blotch leaf miners, serpentine leaf miners.

- **Borers**

Many species of insects bore into the twigs or trunks of plants and trees. These are usually the

larvae of moths or beetles. Examples: Pine bark beetles, sea-grape borer, carpenter worm, dogwood borer.

## MANAGING PESTS

Integrated Pest Management (IPM) is a decision-making process that uses **cultural, biological and chemical practices** to manage pests in a way that minimizes risks to human health, society and the environment. read more about each of these three types of integrated practices below.

### CULTURAL PRACTICES

Cultural practices are the ways in which you establish and manage your landscape to prevent pests or disease from harming your landscape. These practices include properly preparing the soil as well as proper mowing, pruning, fertilization and irrigation. Each is important in maintaining healthy plants. Plants that are old, sick or dying are more susceptible to pests. Insects are only one of many potential causes for unhealthy-looking plants. Diseases, nematodes, drought, nutritional disorders and improper chemical applications can also be damaging.

Correctly identifying landscape problems can save money and prevent unnecessary chemical use. Examine plants weekly in the spring, summer and fall. Look for pests under a few leaves and the along stems or branches of each plant.

Several options exist for managing pests without using pesticides. These include manually removing or hosing pests from plants with water and then destroying the pests. Removing infested plants or pruning plant parts and then burning or throwing them away reduces the chance of pests moving among plants.

Any mechanical or cultural method that prevents or removes pests from plants should be attempted before using a pesticide. Buying or using plants that are naturally resistant or tolerant to certain pests greatly reduces the need for control efforts.

### BIOLOGICAL CONTROLS

Pests in their native areas are usually managed by natural predators and parasites that help keep populations at a constant level. Problems occur when pests, but not their natural enemies, are introduced into new areas, and the pest populations increase unchecked. Biological pest control involves using the plant's natural enemies to reduce pest populations. A minimum level of the target pest will always be present. This low pest population is necessary for the biological control agent to have a continual food source after the target pest has been reduced to an acceptable level.

Homeowners must be willing to accept minor levels of pest pressure. Biological controls are not the answer to all pest problems, but they may be a useful component in an effective Integrated Pest

Management (IPM) program.

## CHEMICAL CONTROLS

Not all pest problems can be solved by manipulating cultural practices in the plant environment or by using biological control agents. In these cases, pesticides become the second or third line of defense. The pest must be properly identified and monitored with reliable techniques to establish acceptable levels in your landscape. Optimum control of many insects and weeds is achieved at a particular stage in its life cycle, which is usually during the early stages of development. For example, mole crickets are most susceptible to chemical control when they are small, usually during the months of May or June. Chemical applications at other times are less effective.

If use of a pesticide is necessary, select the one that is most effective but least toxic to non-target organisms or least persistent in the environment, whichever is more important in that location. Read the label completely and thoroughly. Spot treat, if possible, instead of applying blanket or wall-to-wall treatments.

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### Control Litter

Lawns and gardens may be the most obvious source of excess nutrients and other pollutants, but other daily activities in and outside our homes and businesses can also have an impact. Tips to minimize the impact of litter follow:

- Don't throw cigarette butts or other trash on the street. They will be washed down stormwater drains and end up in lakes, ponds, canals and even the Everglades, where they can harm fish and birds.
- Regularly sweeping the driveway assures there is less chance that sand and debris collected on your driveway can get into stormwater drains. Check your cars regularly for spills/leakage of oils and coolant. Clean up spills with old rags, and dispose of them properly.

## Around the House

### Use Water Wisely

We use and need to dispose of a vast quantities of water in and around the house. If your home or business is connected to a central sewer system, wastewater from your shower, toilet, dishes and laundry is sent to a regional wastewater treatment plant. If not, you likely have a septic tank in your yard.

Older or improperly maintained sewage and septic systems can leak. These kinds of leaks can contaminate interconnected water systems. Systems at risk range from individual yards and

neighborhood or community lakes or waterways to the regional systems that flow eventually into wetlands, aquifers and the oceans, bays and estuaries surrounding Florida.

Water supplies are finite. That means that the overall quantity of water on the planet never really changes, but its location, cost to obtain and quality do change. When more people need access to that supply, the share per person gets smaller. People are drawing from the same sources that wildlife and wild places depend on. And as the way we use water and land adds pollutants, or increasing demands force us to draw from less easily found water sources, the costs of water increase.

Conserving water can lessen the load on sewer and septic systems, help protect the environment and make existing freshwater supplies last longer.



**EPA WaterSense**

The South Florida Water Management District is partnering with the U.S. Environmental Protection Agency (EPA) to bring to you [WaterSense](#), a national program that offers a simple way to choose appliances and other products that use less water – and perform as well or better than your existing products.

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## **Building/Remodeling**

In Florida, most structures must be elevated to avoid flooding, because Florida is so flat that rainfall can quickly accumulate. Elevated foundations or house pads usually require sand, rock or other materials. Some properties require other types of fill (soil, shell rock, silt) to raise the property's overall elevation. That's why building or remodeling may require a truckload of sand or other fill materials. The temporary result: a small mountain sitting somewhere on your property!

Until you start to use the fill material for its intended purpose, that small mountain has the potential to be gradually or quickly blown or washed away by wind or rain, clogging or polluting drainage systems.

Take these steps to protect your investment as well as the environment:

- Cover the pile of fill material if you are not using it.
- Prevent stormwater runoff from coming into contact with the sand.
- Fence in your mountain, so materials stored there cannot be flushed away by storm water.

## Washing Cars or Boats

Washing your car in the driveway is a ritual that seems uniquely American. For those who want to keep excess detergents and chemicals out of our waterways, moving that car onto the lawn is the thing to do. Washing and rinsing the average car with a hose and bucket can use hundreds of gallons of water, and if it's done atop a lawn or yard, that water will also help feed the plants in your lawn.

But moving a heavy vehicle onto the lawn is may compact soils or tear up a landscape, maybe even damage sprinkler heads. So, what's a conservation-minded person who also wants a clean car to do? You may want to consider regular trips to a car wash. These commercial operations use a lot less water per car, are required to recycle the water they do use and are also required to keep that water out of our waterways.

## Green Business

Businesses such as nurseries, landscape or lawn maintenance companies and builders play an important role in protecting water resources, including natural areas such as the Everglades. By supporting businesses that manage water wisely, you can expand protection of our waterways and natural lands.

- [Water Conservation Tips for Businesses](#)
- [EPA Water Sense](#)
- [Conserve Florida Water](#)
- [Florida Green Industries – Florida DEP](#)
- [Pesticide Pollution Prevention – Florida DEP](#)
- [Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes – Florida DEP \[PDF\]](#)

## Landscape Professionals

Many homeowners hire professionals to design our landscapes, to mow and fertilize our lawns or to treat weeds or infestations. We may assume these professionals are doing what's best for the landscape and the environment. That may or may not be true. It's important to communicate that you want to maximize water savings or limit the use of chemicals. Ask questions, and let the professionals you hire know what's important to you.

- [Florida Green Industry – Best Management Practices \(BMPs\) for Protecting Water Resources \[PDF\]](#)
- [BMPs for South Florida Urban Stormwater Management Systems \[PDF\]](#)
- [Sensible Sprinkling \[PDF\]](#)
- [Florida Nursery Growers and Landscape Association](#)

## Nurseries

Where do you buy your plants? Does the nursery you use know how to help you to pick the right kinds of plants? What kind of maintenance suggestions have they shared with you?

- [Quick Facts on Florida-Friendly Landscaping \[PDF\]](#)
  - Water Wise Landscaping – a comprehensive Plant Guide  
[Download and print \[PDF\]](#)  
[Interactive PDF viewer](#)
  - [Florida Yards & Neighborhoods](#) – University of Florida Extension Service landscaping help
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## Don't Horse Around

The primary goal of Equine Best Management Practices (BMPs) is to eliminate or limit excess phosphorus, nitrogen and other pollutants which are byproducts of horse and livestock operations from entering canals and waterways. These practices help ensure better water quality for you, your livestock, your neighbors and the Everglades. Equestrian BMPs will also help you maintain better pastures, improve livestock health and increase property value.

- [Good Horse Sense \[PDF\]](#) – Equine Best Management Practices (BMPs)

## PREVENT SOIL EROSION

- Exposed soil – meaning areas without vegetation – is susceptible to soil erosion. Besides being detrimental to property values, soil erosion allows sediments to drain into nearby surface waters. Eroded sediment can have high levels of phosphorus. Controlling erosion and sediments prevent surface water quality problems and helps retain the property's valuable topsoil. Tips to do this follow:
  - Maintain a vegetated buffer strip between paddocks or pastures and canals and roadways.
  - Construct berms where appropriate.
  - Use pasture management practices.

## Residents Best Management Practices (BMPs)

Residents and homeowners can help protect the environment and conserve water by making small changes inside their homes and outside in their landscapes. Do you know how much water you and your family use each week? The average Florida resident uses as much as 170 gallons per day, with close to half used in landscapes. Pollution doesn't just come from big industry or agriculture. Every time we use too much, or the wrong kind of fertilizer or pesticide on our lawns, or apply them incorrectly, we are contributing to pollution!

That's why conserving water, and preventing pollution from fertilizers or pesticides can make a big difference. In this section, we offer links to resources to help YOU make a difference.

### Other BMP sources

- [U.S. Environmental Protection Agency – Water Sense](#)
- [Conserve Florida Water](#)

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Who We Are

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