BACKYARD CONSERVATION

What I can do to protect water quality.

What can you do to protect water quality?

Fertilize your lawn and garden properly; water wisely; use low maintenance; maintain a healthy lawn.

Water quality is a major environmental issue. Society has been quick to point fingers at industry, agriculture, forestry, and other large land-disturbing activities as the culprits of groundwater and surface water contamination. Soil and nutrients (fertilizers) washed from lawns and gardens may carry the same or more contaminants to surface water then these larger land areas. **Water quality, therefore, is everyone's responsibility.**

Normally, the contribution of water pollutants from a homeowner's lawn, the grounds of a business establishment, or recreational turf, such as golf courses or athletic field, is small. However, when millions of small inputs are added together, the impact on water quality can be significant. The key to minimizing this collective impact is reducing the levels of pollutants that enter the system.

Your property is part of a watershed, an area of land from which all the surface water and groundwater flows from higher elevations downhill to a common body of water. No matter how far you live from a body of water, your property is part of a watershed. Therefore, how you care for your yard can affect both water quality and water supply. It's hard to imagine that a green, flourishing lawn could pose a threat to the environment. However, the fertilizers and pesticides you apply to your lawn are potential pollutants. If you improperly or excessively apply these chemicals, they can wash off your property and end up in streams, rivers, ponds, wetlands, and other waters. Excess nitrogen and

Generally, only new lawns require additional phosphorous for root growth. For mature lawns, choose a fertilizer that is low in phosphorus or phosphorus-free, unless a soil test shows a need for more.

US lawns encompass 2 times the size of Pennsylvania. A NASA sponsored study found over 32 million acres of lawn in the country. Lawns absorb only 67% of the rainfall a forest does. Every 1,000 sq ft of new lawn requires ~10,000 gallons of water.

phosphorous, two key ingredients in fertilizer, may cause these waters to become overgrown with unsightly and foul-smelling algae and weeds. In addition, pesticides and nitrogen, which can dissolve in water, have the potential to contaminate groundwater – a source of drinking water.

You may have heard of these water quality problems – they are the result of **Nonpoint Source Pollution.** Nonpoint source pollution comes from our use of the land and is the leading cause of water quality problems in PA. This pollution occurs when rainwater or snowmelt runs over the land, picking up pollutants and depositing them into streams, rivers, lakes, and groundwater. Pesticides and fertilizers that you apply to your lawn and soil washing off your lawn are all potential nonpoint source pollutants. These pollutants don't observe property lines; they go wherever the water takes them. It is possible to have a healthy, safe – and attractive – yard and to protect water quality and supply at the same time.

Even in suburban and urban settings, where surface runoff is collected from streets and road surfaces and channeled to a water treatment plant, contaminants from lawns and gardens affect water quality. Contaminants increase the degree of treatment required to purify the water before reusing it or discharging it into a public stream. Additional water treatment means an increased cost to a municipality or authority, which passes the cost on to its residents. It is far easier and more cost effective to solve pollution problems at the source. Once polluted

runoff leaves your property, it becomes a public problem – and a much more expensive one. **Thus, water quality affects the pocket books of all taxpayers.**

The responsibility of all landowners is to understand the concept of living in a watershed, where everyone's contribution has an impact. That impact can be either positive or negative. *"The little bit of pollution from my property won't make a difference"* or *"those other guys (developers, farmers, industry, etc.) are causing all the problems"* are two common examples of attitudes that can contribute to negative impacts. In order to make a positive difference, all landowners must accept responsibility for proper and sustainable management of their land, even small backyards. Follow this guide for natural landscape care and you can help keep your property, family, and watershed healthy.

40-70% of fertilizers run off to surface waters or filters into the groundwater.

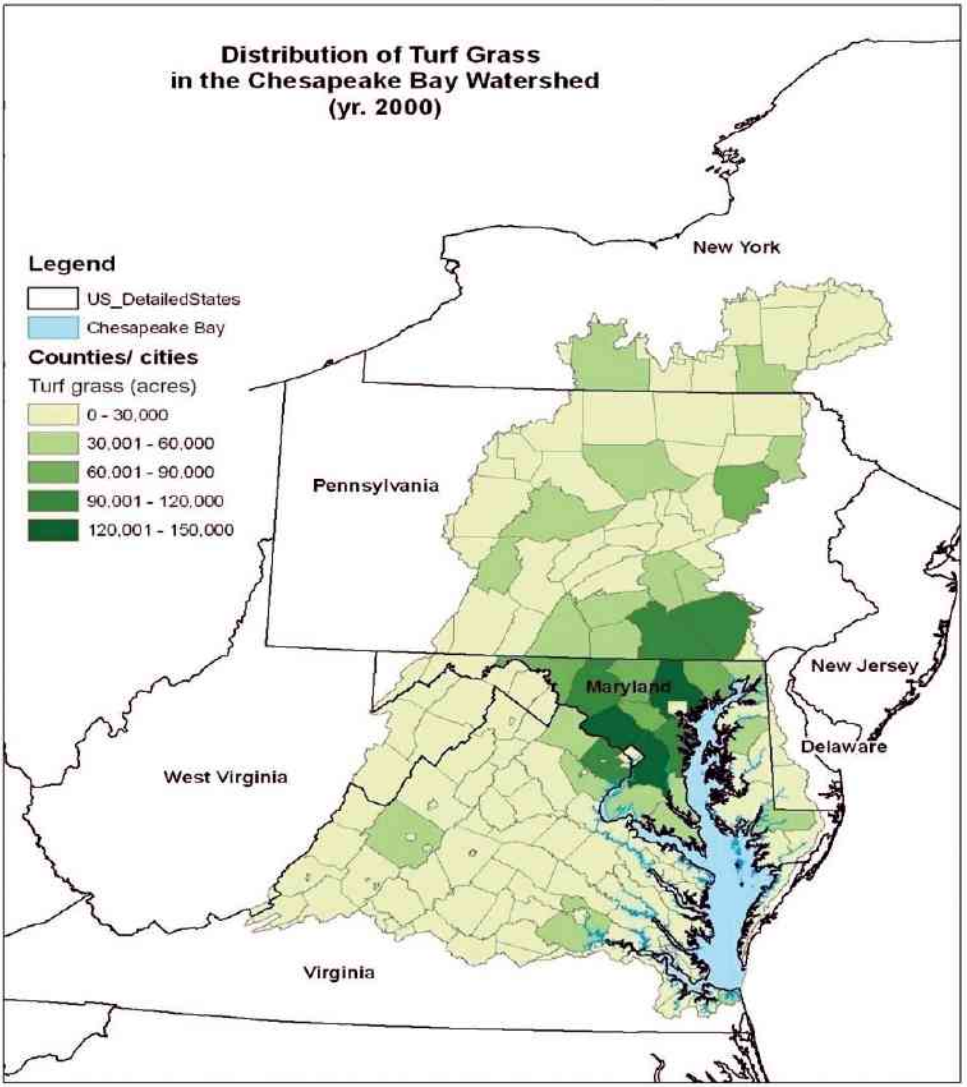
LAWNS

In the Chesapeake Bay Watershed alone lawns and turf grass are now the largest crop grown in the Chesapeake Bay watershed – totaling more than 3.8 million acres covering a staggering 9.5 percent of the watershed's total land area. Bay turf cover now exceeds total pasture cover (7.7 percent), hay/alfalfa acres (7.4 percent) and the acreage of row crops (9.2 percent – corn, soybean, wheat) grown in the Chesapeake Bay watershed.

The Chesapeake Stormwater Network in its 2010 report states; the best estimate for how much nitrogen fertilizer is applied to lawns in the bay watershed is nearly 215 million pounds per year. This is enough nitrogen to grow nearly 2 million acres of corn. About 19 million pounds of pesticide are used each year (mostly herbicides to kill otherwise fine-looking "weeds"). These pesticides are reaching local streams and rivers. The out-of-pocket cost to establish and maintain the Chesapeake Bay watershed grass crop is astonishing – nearly $5 billion per year, which does not even include our free labor on the weekends (equivalent to 61,000 full time jobs). An estimated 6.1 million "grass farmers" and 50,000 lawn care workers exist in the watershed who collectively spend more than $600 million for fertilizers and chemicals alone. Our compacted lawns produce a lot of extra runoff to the bay. A rough calculation suggests that it produces an extra storm runoff flow of over 93,000 gallons per second each day to the Chesapeake Bay.

Proper mowing is one of the most important ways to maintain a healthy lawn:

- Mow only when the grass is dry to get a clean cut and minimize the spread of disease;
- Mow grass to a height of 2-3 inches. The longer the grass, the more water is retained and the longer the roots of your lawn will be, making it stronger and more tolerant. Keeping your grass longer also may allow it to outcompete weeds, reducing the need for herbicides;



- Mow frequently, cutting not more than a third of the height of the grass at a time. Cutting more grass than this at one time and mowing infrequently can damage your grass;
- Sharpen your mower blade to avoid damaging grass blades. Mower blades should be sharpened once a year and touched up after every 10 hours of mowing;
- Do not dispose of grass clippings in nearby waters. The clippings will break down and encourage the growth of algae which depletes the oxygen in water and impacts fish and other aquatic species. If you choose not to leave your clippings on your lawn, compost them.

Lawn maintenance for water quality:

- If you have a lawn, limit its size and break it up with other mixed height plantings;
- A lawn can have a variety of grasses and plants. Enjoy your weeds and their varying root depths (dandelions grow deep tuberous roots that pull nutrients and water deep into the soils);
- Lawns should be brown in the summer heat, resting after the spring growth spurt and using stored energy to grow deep roots. Maintaining green grass with constant watering is a stress on your lawn. Water only if necessary and water deeply when you do;
- Long grass means good roots, less stress and good health. Grass should be mowed to 3+ inches in height and never more than 1/3 of the blade at one time (sugars/cellulose needed for root growth should remain on the plant). In late fall after the grass has set up for winter (begins to brown), cut it shorter;
- Leave mulched grass clippings on your lawn to add nutrients back into the soil;
- Fertilizers create thatch (densely growing roots) which attracts grubs;
- Lawn aeration is the secret to a healthy lawn. By extracting a soil core/plug or using a spike aerator, the soil can breathe, allowing oxygen and water to become more available to the roots, which promotes growth;
- Organic fertilizers may have too much nitrogen, which will acidify the soil and make grass susceptible to insects;
- If after testing your soil you determine that it needs a boost, use a balanced fertilizer such as a compost tea or manure tea at one-half the recommend strength.

FERTILIZERS

We all want a home landscape that is attractive – but did you know that some of our common landscape management practices can cause pollution? The improper use of lawn fertilizers has the potential to harm our water supplies. Have you ever noticed a pond that was overgrown with weeds or algae? Chances are, it received an excess of nutrients – perhaps from lawns or gardens.

Your yard can have a positive effect on water quality by slowing down and filtering runoff water, or it can contribute to water quality problems. It all depends on how you manage water, chemicals, and the landscape around your home. Fertilizer carelessly applied on one lawn may seem insignificant. On hundreds or even thousands of lawns it can add up to polluted streams, lakes, and even groundwater.

Fertilizing tips for you and your lawn:

- Grass clippings contain high amounts of nitrogen, a key ingredient in fertilizer. Use your grass clippings by leaving them on your lawn. It may be all the fertilizer you need, and it will save you time and money. Clippings are approximately 85 percent water, so they usually decompose within a week and will not smother your lawn. The easiest and most common way to spread clippings is called mulching;
- Mulching mowers cut the grass into smaller pieces and then blow them back onto your lawn. If your soil test and then plants you have chosen demand that you apply fertilizer in addition to your clippings use organic or slow-release fertilizers these types are less likely to wash off your lawn than inorganic or fast-release fertilizers;
- Fertilize in the fall, but beware of weather patterns. Although some rainfall is helpful in distributing fertilizer, a heavy downpour will wash the fertilizer off your lawn and into nearby waters; be careful not to apply more than the recommended amount of fertilizer. Too much fertilizer can burn the grass, damage the soil, and attract pests.

WATERING

Most people do not realize that if they choose suitable grasses and other plants, watering in the northeast is usually unnecessary. It is natural for your grass to turn yellowish during hot, dry spells. This is a normal state called dormancy, which a healthy lawn can withstand. Your grass will regain its vibrancy with the next rainfall. If you choose to water your lawn;

- Observe local outdoor water bans;
- Place sprinklers in areas where you won't be wastefully watering your sidewalk and driveway;
- Water in the early morning to prevent the growth of fungi and minimize evaporation;
- Water deeply and infrequently. Deeper watering encourages the roots of grass to grow long and healthy, allowing your lawn to survive drier periods and saving money on your water bill;
- Most lawns need less than one inch of water to saturate grass roots 4-6 inches in length. Place an empty coffee can in the watering area and measure the amount of water in the can to determine when you have watered enough.

RAIN BARRELS

What is a rain barrel? It is simply a rainwater collection system. It allows homeowners to capture rainwater running off their roof top and store it for use when they want too not when Mother Nature wants them to use it. The barrels can range in size, shape, color, and design, but all are designed to capture water for reuse around the home.

What can you do with rainwater you capture from your roof? Pretty much anything; from washing your car, watering your lawn, irrigating your garden, washing lawn furniture, and a host of other activities. The key to any rain barrel is location. You want to place it at the end of a downspout that receives a lot of roof runoff. Water in the barrel should not be stored for months on end but used on a weekly basis to prevent the water from becoming stagnant and smelly. Finally, the barrel should be either taken in or disconnected during the winter months to prevent the barrel from freezing and cracking.

Established lawns generally need about 1 inch of water per week. Measure rainfall with a rain gauge or check the soil – if it's moist 3 to 4 inches down then you don't need to water.

NATIVE PLANTS

It's gardener's common sense – select those plants that will do well at your site. By selecting your plants based on your yard, you not only ensure your garden's success but save money too. The National Wildlife Federation estimates that it costs approximately $700 to care for an acre of lawn. A native wildflower garden of the same size only cost $30. Native plants are better suited for our climate. That means native plants (once established) will require less watering or fertilization to flourish. If you must fertilize, supplement your soil with organic waste from your compost bin or leaf litter. Consider having a detailed soil analysis done on your garden before you plant. This analysis will identify what your soil is lacking. This will not only save you money by identifying what you don't need, but it will also prevent excess nutrients from ending up in the environment.

Vegetative strips planted in areas where water drains from your property, no matter how far from a body of water, can effectively intercept and filter many of the pollutants in runoff. If you live on the banks of a river or shoreline of a lake, a vegetative buffer is particularly important to prevent runoff from going directly into these waters. Protecting water bodies with vegetative buffer zones will help maintain water quality, recreational resources, wildlife habitat, and property value.

Plant a combination of trees, shrubs, and ground cover in areas where water drains from your property. These plants will intercept and filter excess fertilizers or pesticides and eroded soil before they wash into the stream, creek, or pond. Make your buffer zone as wide as possible. Don't be afraid of overdoing it. The recommended width for an effective vegetative buffer zone is 100 ft.

Trees provide many benefits:

- Energy savings by reducing heating and cooling costs;
- Sheltering and feeding wildlife;
- Cleansing the air by absorption of carbon dioxide and nutrients; and
- Reduction of the impacts of stormwater runoff by intercepting rainfall and slowing runoff. The roots of a tree also help to hold the soil in place, thus reducing erosion.

Native Options

Canopy cover trees:

sugar maple, tulip poplar, sycamore, swamp white oak, red oak, red maple, and basswood.

Understory trees/shrubs:

hornbeam, redbud, white flowering dogwood, sweetbay magnolia, arrowwood, and winterberry holly.

Edible species:

serviceberry, persimmon, black walnut, black cherry, elderberry, lowbush blueberry, and paw-paw.

Perennial/showy flowers:

wild columbine, New England aster, purple coneflower, black-eyed susan, New York ironweed, bee balm, and swamp milkweed.

RAIN GARDENS

Do you have an area of your property where a lot of stormwater runoff gathers or is directed to during rain events? If so you might have an ideal location for a rain garden. A rain garden is a specially designed area where rain water is allowed to infiltrate or soak into the ground in a more efficient manner. The garden concept comes from the fact that native trees, shrubs, and perennials are planted in this area to beautify the location. Native plants are used also because they can handle extended periods of wet and dry times this rain garden might experience. Once again the key factor in designing a backyard rain garden is location. You want a location that water drains to, not a location where water sits for long periods of time. Soil and vegetation can play a factor in this. For more information or to figure out if your property might be ideal for a rain garden contact the Conservation District.

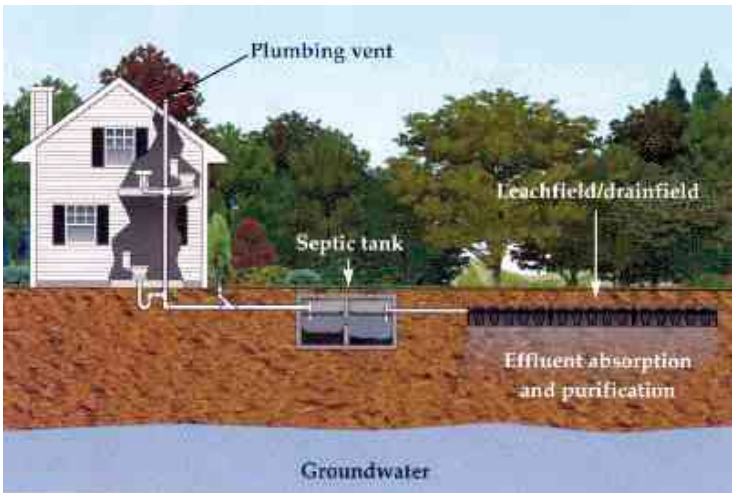
SEPTIC TANKS

With one-fourth of U.S. homes using septic systems, more than 4 billion gallons of wastewater per day is dispersed below the ground's surface. Inadequately treated sewage from septic systems can be a cause of groundwater contamination. It poses a significant threat to drinking water and human health because it can contaminate drinking water wells and cause diseases and infections in people and animals. Improperly treated sewage that contaminates nearby surface waters also increases the chance of swimmers contracting a variety of infectious diseases. These range from eye and ear infections to acute gastrointestinal illness and diseases like hepatitis.

When septic systems are properly designed, constructed, and maintained, they effectively reduce or eliminate most human health or environmental threats posed by pollutants in household wastewater. However, they require regular maintenance or they can fail. Septic systems need to be monitored to ensure that they work properly throughout their lifespan.

A key reason to maintain your septic system is to save money! Failing septic systems are expensive to repair or replace, and poor maintenance is often the culprit. Having your septic system inspected regularly is a bargain when you consider the cost of replacing the entire system. Your system will need pumping depending on how many people live in the house and the size of the system. An unusable septic system or one in disrepair will lower your property value and could pose a legal liability.

You should have a typical septic system inspected at least every 3 years by a professional and your tank pumped as recommended by the inspector (generally every 3 to 5 years).



References for this publication include:

Environmental Protection Agency's "A Homeowners's Guide to Septic Systems"

Lake George Waterkeeper's "Lake George Fact Sheet: Lawn Maintenance for Water Quality"

Massachusetts Department of Environmental Protection's "Lawns and Landscapes in Your Watershed"

Colorado State University Cooperative Extension's "Guide to Fertilizing Your Lawn and Garden"

Alliance for the Chesapeake Bay's "Taking Care of Stormwater: A Bayscapes Guide for Homeowners"

North Carolina Cooperative Extension Service's "Soil Facts: Managing Lawns and Gardens to Protect Water Quality"

USGS Researcher Peter Glaggett

Chesapeake Stormwater Network

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Financial and other support for this project is provided by the Pennsylvania Association of Conservation Districts, Inc. through a grant from the Pennsylvania Department of Environmental Protection under Section 319 of the Clean Water Act, administered by the U.S. Environmental Protection Agency.

Treat specific weedy areas rather than restoring to general "weed and feed" mixtures.