What Practices Can Help You Control Runoff?

You can do a number of things to slow down and reduce the volume of water that runs off your property and into the Bay—otherwise known as surface water runoff. By slowing the water down, you give the water more time to infiltrate below the surface, through the soil and eventually to streams and even groundwater sources—this is referred to as groundwater recharge.

The first and simplest rule of conservation is to minimize runoff and maximize infiltration of rainfall. Protecting soil with grasses, shrubs, trees, or mulch will enable the soil to absorb a greater amount of rainfall before runoff begins to occur and protect against erosion.

You can minimize runoff dramatically by eliminating a hard surface area. Replacing a unused parking area with a planted area increases the filtration capacity of that area while beautifying it. Another approach is to change out impervious surface areas with materials allowing for infiltration. Permeable pavers can be used on driveways, walkways and patios. When planted with grass or moss, the pavers can transform an unattractive surface into a pleasing display of color and texture. Impervious roofs can be transformed into green roofs, a living system of soil, compost and plants. The plants and soil filter rainwater and pollutants; the plants produce oxygen, cleaning the air.

Rain gardens, rain barrels, and cisterns are other excellent solutions for homeowners to manage runoff. Stormwater ponds are often utilized in suburban developments, but can also be installed on larger properties.

What You Can Do in Your Backyard and Home

Permeable Pavers. Pavers allow for runoff to filter through the open areas planted with grasses.

Green Roof. Talbot County Master Gardeners on the Senior Center’s green roof, Easton, Maryland.
Rain Gardens

During a 1-inch rainstorm, more than 750 gallons of water fall on 1,200 square feet (about half the space of ground covered by the average American house). That’s a lot of water rushing off into storm drains, saturating lawns, and heading for the Bay and its tributaries. Rain gardens are gaining popularity as a way to control stormwater runoff coming from downspouts, driveways, walkways, and other impervious surfaces.

A rain garden is more than just a bed of pretty plants; properly sized and installed, it can collect and filter as much as 100% of the water of your drainage area! This helps keep pollutants such as fertilizers, motor oil, and heavy metals out of our streams that eventually flow into the Bay. A rain garden can also save time and money that may otherwise be spent watering a lawn or delicate flowers. Furthermore, a rain garden allows us to create habitat for wildlife.

The difference between a traditional garden and a rain garden lies underground and in the plant selection. A rain garden is positioned slightly downslope of the runoff source, in order to catch the rainwater. The ground is dug to create a depression of up to 9” at the lower end of the downslope, or ponding depth. Depending upon soil makeup, the soil may be dug up and amended with a mixture of topsoil and organic material, compost, or shredded leaves and sand. If heavy clay soils are present, other techniques (such as vertical cores of gravel) may be needed. A 2- to 3-inch layer of mulch keeps the plants moist and provides additional filtration.

Rain gardens are generally best sited in sunny locations, and the plants that do best in them prefer full to partial sun. Plants selected for rain gardens must tolerate drought as well as periodic flooding; deep root systems are also good. Luckily, many attractive native plants fit these requirements. See one of the many sources in the “Help Box” on the next page for detailed instructions to build a rain garden and for plant lists.
Tips for Planting a Rain Garden

- **Pick the Location**: Sunny areas where the land slopes slightly away from the house are best.
- **Determine Size**: Measure the area that will drain to the rain garden. The garden should be about 20% of the size of the area to be drained.
- **Keep your Distance**: Plant the rain garden at least 10 feet away from a dwelling foundation and 25 feet away from a septic drainage area or well head.
- **Choose Native Plants with Large Root Systems**: They are generally best suited to the rain garden environment and there are many to choose from. Non-native plants can be used, but may not adapt as well as native plants. Avoid invasive plant species.
- **Don’t Fear the Mosquitos**: Their larvae take 7 to 10 days to mature. A well-designed rain garden should drain in 3 days or less. It will also attract predators such as birds, toads, and dragonflies to keep bugs at bay.

WHERE TO GET HELP FOR...

RAIN GARDENS
- University of Maryland Extension—Talbot County at (410) 822-1244 or [http://www.hgic.umd.edu/content/documents/Rain_Gardens_Acros_MD.pdf](http://www.hgic.umd.edu/content/documents/Rain_Gardens_Acros_MD.pdf)
- “Rain Gardens Across Maryland”, for online copy go to [www.co.worcester.md.us/drp/natres/Rain_Gardens_Across_MD.pdf](http://www.co.worcester.md.us/drp/natres/Rain_Gardens_Across_MD.pdf)
- Environmental Concern Inc. at [www.wetland.org/nursery_raingarden.htm](http://www.wetland.org/nursery_raingarden.htm)
- U.S. Fish and Wildlife, Native Plants for Wildlife Habitat and Conservation Landscaping, Chesapeake Bay Watershed, [www.nps.gov/plants/pubs/chesapeake](http://www.nps.gov/plants/pubs/chesapeake)
- “How to Install a Rain Garden”, South River Federation at [www.uri.edu/ce/healthylandscapes/CWP_RainGarden.pdf](http://www.uri.edu/ce/healthylandscapes/CWP_RainGarden.pdf)
Rain Barrels

Rain barrels provide so many benefits, it's a wonder not everyone has at least one. They temporarily store rainwater runoff from rooftops, reducing the flow of water into our streams, rivers, and Bay. They provide access to water where you might not have running water.

Rain barrels are plastic drums that are connected directly to a downspout. Water is collected in the drum for later use. One 55-gallon rain barrel can save over 1,000 gallons of water during peak summer months. Rain barrel water can be used to water lawns and plants, and even to wash cars. They are especially convenient in areas where you do not have a source of running water close by. Of course, rain barrels must be emptied before the next storm to function most effectively, but that lets you control when and how fast the water is released.

They can even be designed quite beautifully coordinating with the color and design of your home. See the sources below for specific instructions to plan for and install your rain barrel.

WHERE TO GET HELP FOR...

RAIN BARRELS

• University of Maryland Extension—Talbot County at (410) 822-1244 or http://www.hojc.umd.edu/content/onlinpublications.cfm
• Maryland Department of Natural Resources at http://www.dnr.state.md.us/ed/rainbarrel.html
• Low Impact Development Center, Inc. at http://www.lid-stormwater.net/raincist_specs.htm
• Chesapeake Bay Foundation at (410) 268-8816 or http://www.cbf.org/page.aspx?id=525
• Rainscaping.org at http://www.rainscaping.org/index.cfm/fuseaction/home.showpage/pageID/5/index.htm
Cisterns

Cisterns, like rain barrels, provide a place to store rain water to be used at a later time. Cisterns are significantly larger than rain barrels often storing more than 1,000 gallons of water.

Cisterns can be constructed of nearly any impervious, water-retaining material and can take on a variety of shapes. They can be located either above or below ground, and in out-of-the-way places that can easily be incorporated into a site design. Though it is easier to plan and install a cistern during new construction, cisterns can be designed and incorporated into existing home and landscape structures. Cisterns can either be constructed on-site to meet individualized design requirements or pre-manufactured and then placed on-site.

You can use the water you collect in your cistern for all your water needs—watering your plants, to washing your car, and even for drinking water, if it is filtered properly.

WHERE TO GET HELP FOR...

CISTERN

- Low Impact Development Center, Inc. at http://www.lid-stormwater.net/raincist Specs.htm
Urban Stormwater Management

Stormwater management is part of our everyday landscape in Talbot County. We may not even notice it’s there. Roadside ditches, stormwater ponds, catchments and storm drains are all designed to help keep our roads safe, and our homes and businesses from flooding. Some of these structures are meant to simply convey water quickly (e.g., storm drains, ditches), while others such as detention ponds are meant to temporarily store water and release it slowly to the surface or ground water, reducing the impacts of flash flooding.

Innovations in urban stormwater design have led to many new products and practices to help reduce the amount of runoff and promote infiltration. Examples of these are stormwater wetlands, bioretentions and bioswales. Ditches and stormwater detention ponds are being re-interpreted to include wetland plants as an added level of water treatment (see Wetlands page 38). Blue Flag Iris, a Maryland native plant, for example, has been demonstrated to absorb pesticides out of the groundwater. Though poisonous to handle, this plant can serve as a useful buffer along a bioswale to reduce the amount of pesticides entering the Bay.

New residential developments and shopping centers incorporate these practices as Smart Design. Older communities seek to retro-fit some of these practices within their existing open spaces to help improve water quality and reduce runoff.
What You Can Do in Your Backyard and Home

When Maryland first developed its stormwater management program as part of the Chesapeake Bay initiatives in 1984, regulations required any new suburban development to provide permanent stormwater management practices to treat runoff and slowly release it to the nearest stream. Maryland stormwater regulations have been revised several times since then, including most recently in 2010. These recent changes included requiring developers and designers to incorporate runoff control planning at the start of the land development process. Environmental Site Designs (ESDs) are required to incorporate protection measures tied back to the Total Maximum Daily Loads (TMDLs) established at the county level. Fundamental planning considerations must include (but are not limited to) maintaining 100% of the annual predevelopment groundwater recharge volume, conserving natural drainage patterns, and minimizing impervious area.

The slow release of runoff prevents the concentrated water flow that results in stream bank erosion, which can cause thousands of tons of sediment from eroded stream banks to be moved downstream.

Stormwater management techniques, including stormwater ponds, must be maintained if they are to do their job of protecting our tributaries. In the case of ponds, keeping the grass cut and other maintenance tasks usually fall to homeowners’ associations. Make sure you, or in the case of your development, your association, is maintaining your stormwater pond. It protects not only the Bay, but also you and your neighbors from the expense of repairing a failed pond.

WHERE TO GET HELP FOR...

STORMWATER MANAGEMENT

- Talbot Soil Conservation District at (410) 822-1583, ext. 3.
What Else Can I Do to Control Runoff?  
Backyard Best Management Practices

You have slowed down the water moving across your backyard with rain gardens, rain barrels, or other drainage solutions. What more can you do to decrease runoff volume, promote infiltration and limit the number of pollutants water picks up on its way to the Bay?

Keeping a Healthy Lawn

For too many of us, a lush, green, weed-free lawn has come to symbolize success as homeowners or gardeners. To achieve that look, though, we probably over-apply fertilizer to encourage vigorous growth and pesticides to control weeds, insects, and diseases, as well as water it frequently.

According to the Environment Maryland Research and Policy Center, in 2009, there were more than 1.3 million acres of turf statewide, compared to 1.5 million acres of all other crops. If each of us over-fertilizes our lawn by just 1 pound, a huge amount of excess nutrients ends up polluting groundwater, streams, rivers, reservoirs, and the Chesapeake Bay.

Soil fertility should be tested before seeding a new lawn and every three years for an established lawn to determine the amount of fertilizer and lime needed. Contact University of Maryland Extension or Talbot Soil Conservation District for your soil test kit (see “Help Box” below).

Before establishing a lawn, consider whether turf grass is suitable. Heavily shaded or severely sloped areas may not provide the conditions needed for turf, leading to erosion, pest, and nutritional problems. Native ground covers or plants such as Switchgrass may be more suitable.

Fertilizer-free and pesticide-free lawns are the best choice for the environment. Both time and money can be saved by reducing the frequency of fertilizing and applying pesticides. Slow release and low or no phosphorous fertilizers are optimal to promote a healthy environment. New lawns may require some phosphorous, but require very little once established. Don’t over-fertilize!

WHERE TO GET HELP FOR...

LAWN CARE
- University of Maryland Extension—Talbot County at (410) 822-1244 or http://www.hgic.umd.edu
- Maryland Department of Agriculture at http://www.mda.state.md.us/pdf/lawncare.pdf
- Talbot Soil Conservation District at (410) 822-1583, ext. 3.
- Environment Maryland, http://www.environmentmaryland.org/reports/mde/urban-fertilizers-chesapeake-bay
What You Can Do in Your Backyard and Home

Tips for Lawn Care

• **Reduce lawn mass** where possible and put into conservation landscaping. For some areas (like steep slopes and shady places), groundcover or planting islands (areas with groupings of trees, shrubs, and flowers) may be a better choice than turf grass.

• **Fertilization Amount:** Get a start on following Maryland’s Fertilizer Use Act of 2011 to be fully implemented by October 1, 2013. Apply the recommended amounts of fertilizer. Use no more than 0.9 pounds of nitrogen per 1,000 square feet of lawn per application. If fertilizer is needed, spread 2 or 3 small applications, 1 month apart (early September, October, and November), rather than 1 large application.

• **Fertilization Timing:** Do not apply fertilizer to frozen ground or dormant turf (especially when cool season grasses turn brown during summer months).

• **Spreaders:** Keep fertilizer off paved areas by sweeping it back onto the grass. Use a drop spreader around the edges and in restricted areas to avoid fertilizer going to unwanted places. Calibrate your spreader.

• **Mower:** Switch to a mower with a less polluting 4-stroke engine or if you have a small yard consider a reel mower.

• **Ideal Grass Height:** Maintaining grass height of at least 2 ½ inches helps keep the soil cool and provides drought protection. Mowing too short may reduce root and stem development and encourage weed problems. Proper mowing height helps to reduce weeds by as much as 50–80%. Cut no more than 1/3 of the grass height at one time.

• **Grass Clippings = Fertilization:** Mow with a sharp mulching blade to fertilize the lawn naturally with grass clippings. Routinely leaving grass clippings on the lawn provides the same benefit as one fertilizer application annually.

• **Watering Deeply:** In the spring or fall, watering slowly to wet the soil to a depth of 4–6” will prevent runoff from leaving your property. Early morning is the best time for watering. Light, frequent watering or watering in the evening can actually damage your lawn.

• **Watering Established vs. New Lawn:** Most Talbot County lawns are cool season grasses that naturally go dormant in summer. Watering an established lawn during the dormant season may cause undue stress to it. Be sure to water lawns just being established.
From My Backyard to Our Bay

The Urban Forest

Though you may not realize it, your yard is part of the “Urban Forest”, and critical to the health of the Chesapeake Bay. Urban Forestry refers to trees, shrubs and plants in individual parks, yards and streets, as well as forest fragments such as wooded parkland, unimproved lots and naturally regenerating areas where more than 2,500 people live. Though Easton is the only “urban” area in Talbot County with a population around 16,000 (other towns of Talbot County have populations no greater than 1,100), Urban Forests are important to all residents of the County.

Urban Forests serve many essential functions. They provide recreation and aesthetics to us, and habitat, food, and a place for animals to rear their young. Urban Forests play key roles in stormwater management, carbon storage, and interception of airborne pollutants. For example, by increasing Urban Tree canopy area, we realize several advantages:

- **Reduced Surface Runoff:** The forest floor with its layers of twigs, leaves, and understory vegetation, acts like a sponge for stormwater.
- **Decreased Erosion:** Leaf canopies help reduce the erosive effect of heavy rains.
- **Reduced Air Pollution:** The amount of carbon storage capacity increases with every tree, shrub and plant, as well as the capacity to absorb other airborne pollutants.
- **Less Pollutants Enter the Bay via Groundwater:** Root systems of native trees, shrubs, and plants take up pollutants that would otherwise filter through to groundwater.
- **Reduced Cooling Costs:** Tree canopy provides shade resulting in cooler surface temperatures during the summer. The shade from deciduous trees planted near a home, can reduce air conditioning costs by as much as 40%.
- **Decreased Heating Costs:** Planting evergreen trees as a wind break can require less heating.

The Maryland Department of Natural Resources Forest Service is the state agency responsible for the management and protection of the state's urban forestry resources. The Forest Service’s Urban and Community Forestry program provides direct oversight.

Planting Native Trees, Shrubs, and Plants

More than 60 species of trees and hundreds of shrubs, plants and grasses are native to Talbot County. These are excellent choices for adaptability to the local environment, unlike non-native species that are less likely to adjust to local weather, moisture, and soil conditions. Native plants are less expensive to maintain since they do not require fertilizers and pesticides, or water unless there is a severe drought.

WHERE TO GET HELP FOR...

NATIVE PLANTINGS

- MD DNR – Forest Service Upper Shore Project at (410) 819-4120, [http://www.dnr.state.md.us/forests/programs/urban](http://www.dnr.state.md.us/forests/programs/urban), [http://www.dnr.state.md.us/forests/nursery](http://www.dnr.state.md.us/forests/nursery)
- Environmental Concern at (410) 745-9620 or email nursery-sales@wetland.org
Native trees and shrubs prefer not to be pruned, but pruning and thinning tree branches correctly when they’re damaged can improve the health and lifespan of your urban forest. Contact a licensed tree expert for advice and assistance with these important tasks, particularly if you live in the Critical Area. You may also choose to prune to shape shrubs or to keep them to a desired height and width appropriate for its space. Prior to planting new trees, shrubs and plants, refer to plant lists that help you choose the best plant for your sun, moisture, pH, and space conditions. Request a Bay-Wise volunteer help you identify trees, shrubs, and plants that are best for your landscape, and answer other garden-related challenges you may have.

Native Plant Root Systems. Compare the roots of the non-native Kentucky Blue Grass (far left) to the deep roots of the Maryland native plants (shown left to right): Indian Grass, Heath Aster, Big Blue Stem, Purple Coneflower, Switch Grass and Little Blue Stem. Illustration adapted from Conservation Research Institute by Environmental Concern Inc.
Controlling Noxious Weeds and Invasive Plants

Noxious weeds are agricultural pests. Maryland's noxious weed law requires landowners to control Canada, Bull, Plumeless and Musk thistles; Johnsongrass; and Shattercane on private property. For effective control, both the seed and the root system of these weeds must be managed by mowing, cultivating, or treating with approved herbicide. For information on identifying or controlling these plants, contact Talbot County Weed Control at the number in the "Help Box" below.

Plants that are widely known to outcompete native plants and quickly take over natural areas are called invasive plants. Most of these non-native plants come from other countries or habitats with similar climates when introduced into new landscapes where they lack the animals and insects that feed on them, and/or diseases that limit their populations so they quickly take over. Invasive plants are often spread by wind borne seeds or by birds and other animals. These plants can overrun nearby wetlands, meadows, or forests, crowding out native plants that provide habitat for our local birds and other wildlife leading to habitat degradation and loss of species diversity. Phragmites and multiflora rose are just two examples. A vegetation removal permit may be required, especially for plants such as phragmites that grow in wetlands. For information, contact Talbot County Weed Control or Talbot County Planning and Zoning (see contact information below).

Many common invasive plants are still commonly sold for landscape use. Before you purchase a plant, be sure it is not a listed invasive plant. Some of these plants include purple loosestrife, miscanthus, winged euonymus, Bradford or Callery pear, English ivy, vinca, periwinkle, and Japanese stil grass.

Photos below show native options to replace invasive species. Courtesy of www.SylvanGreenEarth.com

WHERE TO GET HELP FOR...

NOXIOUS WEED & INVASIVE PLANT CONTROL
- Talbot County Weed Control at (410) 770-8157.
- Maryland Department of Agriculture, Plant Protection and Weed Management at (410) 841-5871 http://www.mda.state.md.us/sc/plants-pests/plant_protection_weed_mgmt/noxious_weeds_md/index.php
- Talbot County Planning and Zoning at (410) 770-8030.
- University of Maryland Extension — Talbot County at (410) 822-1244 or http://www.hgic.umd.edu
- Maryland Department of Natural Resources at http://www.dnr.state.md.us/wildlife/
- Maryland Invasive Species Council at (410) 841-5920 or http://www.mdinvasivesp.org
- U.S. Department of Agriculture at http://www.invasivespeciesinfo.gov
- The National Invasive Species Council at http://invasivespecies.gov/
Integrated Pest Management

What can Integrated Pest Management have to do with improving the health of the Chesapeake Bay? Is it really an important contributor?

Pesticides are one pollutant of the Bay. When over-applied, especially before a major rain event, pesticides can be caught in the runoff and flow into the Bay impacting fish and other marine life. Pesticides can also harm beneficial insects, an essential element of the ecosystem supporting the Bay. Honey Bees, for instance, can be killed by the pesticides used to kill mosquitoes. The Department of Agriculture has strict guidelines for spraying in the proximity of bee hives. Birds, bats, insects and other animals also rely on insects as a food source. Pesticides can also be harmful to household pets, children, and adults.

An integrated approach to managing your garden pests and disease, or Integrated Pest Management (IPM), can help you address your challenges more effectively while not creating even more problems. IPM can also help save you money and reduce hazardous materials you use around your home.

IPM’s foundation is building a healthy garden. When a garden is functioning properly, all its parts work to manage pest populations and reduce plant disease. Plant health relies on the right plantings in the right places—plants that are acclimated to the weather and soil conditions—or native plants. Plants brought in from other areas—or non-native plants—may not be accustomed to the heat, humidity, rainfall, or soil drainage properties, and as such will weaken, and be more susceptible to insects and diseases. Get to know your garden so you can prevent problems. IPM does not mean you cannot use pesticides and herbicides, but it does mean that you should understand your garden and resort to the best solution. It may be that you need to move a plant to the shade to reduce stress. Get started by reading University of Maryland Extension’s Home & Garden Mimeo #62, or by inviting a Bay-Wise trained Master Gardener volunteer to walk your garden with you and begin to identify issues and possible solutions.

Beneficial Insects: Naturally occurring predators such as praying mantis (right), ladybird beetles (far right), lacewings, assassin bugs, aphid midges, dragon and damsel flies, predatory wasps, ground beetles and syrphid flies help to control many pests in your garden. Birds, frogs, toads, and lizards help too! Let them do the work rather than pesticides. Photo to far right courtesy of UMCES at www.umces.edu.

WHERE TO GET HELP FOR...

INTEGRATED PEST MANAGEMENT

• University of Maryland Extension — Talbot County, Bay-Wise program at (410) 822-1244 or Mimeo #62: http://www.hgic.umd.edu/_media/documents/IPMSeriesLandscapeHG62pdfv_000.pdf
• State of Maryland, Department of Agriculture, Office of Plant Industries and Pest Management, Mosquito Control at (410) 841-5870.
• Maryland Department of Agriculture at http://www.mda.state.md.us/plants-pests/
Shorelines

Protecting Shorelines

If you live on one of Talbot County’s many tidal creeks or rivers you are aware that shoreline erosion is a constant process and a serious problem. Storms, water craft wakes, and sea level rise can all lead to increased erosion and loss of property. If we study historic aerial photographs of the shoreline we can see that shorelines continually change. In most cases, as time passes, the shorelines recede. This loss of land represents many thousands of tons of sediment entering our waterways and the Bay, smothering underwater grasses and shellfish. Wave action removes the soil undermining trees, causing them to collapse.

In attempts to protect property from erosion, many landowners have installed protection such as bulkheads and riprap (rock revetments). While these methods may effectively protect the upland, they may cause erosion of the bottom as waves crash into these vertical structures and move sediment away from them. As sea level rises and storms worsen many of these structures are over-topped by waves causing the structures to fail. These structures do not provide habitat or water quality benefits. The Maryland Department of the Environment (MDE) and the Chesapeake and Coastal Bays Critical Area Program encourage landowners to select the most environmentally sensitive methods for protecting their shoreline.

Creating Living Shorelines

A living shoreline uses wetland plants to absorb the erosive energy of waves to protect the upland. The tidal wetland that is created is well adapted to the rise and fall of tides, the salinity of the water, and the effects of waves and storms. The plants in the salt marsh filter and trap sediment from stormwater runoff.
What You Can Do In Your Backyard and Home

These plants also take-up nutrients that have already made their way into the tidal waters. Wetland soils support denitrification, a process by which nitrates from fertilizers and animal wastes are released to the atmosphere as a harmless gas.

Tidal wetlands provide habitat for many species of shore birds, fish, shellfish, turtles, and other organisms. They are nurseries for many sport fish as well as Maryland blue crabs. The plants form the base of the food chain for the Bay ecosystem.

There are many examples of Living Shorelines throughout Talbot County on private property as well as several public parks. They are beautiful and beneficial.

WHERE TO GET HELP FOR...

LIVING SHORELINES

- MDE, Wetlands and Waterways: Tidal Wetlands Division at (410) 537-3837.
- Maryland Department of Natural Resources at http://www.dnr.maryland.gov/coastalbays/
- Environmental Concern at (410) 745-9620 or www.wetland.org
- Talbot County Planning and Zoning at (410) 770-8030.
- NOAA Habitat Conservation at http://www.habitat.noaa.gov/restoration/techniques/livingshorelines.html
- Chesapeake Bay Trust at http://www.cbtrust.org/site/c.mJPKXPCJnH/b.5457537/k.B2A2/
Streams in Your Neighborhood Need Help!

Streams flowing through suburban areas need special care. As urbanizing areas develop, natural stream channels must increase in size to handle a higher volume of stormwater due to the new expanses of impervious surfaces such as roofs, parking lots, and streets. High, turbulent waters scour stream channels and undercut the banks until the tops of the stream banks cave in and are carried away, degrading the stream with tons of sediment.

Stream banks should be protected with vegetation and trees. Streamside vegetation acts as a filter for runoff flowing from upland areas toward the stream and is very effective at trapping and absorbing runoff and associated pollutants. The shade from trees and shrubs whose canopies overhang the stream keeps the water cool to protect stream-dwelling organisms. Buffers also provide excellent habitat for birds and other wildlife.

Streams also suffer from the trash build up. Debris is carried off in stormwater events to storm drains and out into the streams.

Besides being unsightly, trash is harmful to plant growth and wildlife.

Many nonprofit organizations have stream buffer cleanup projects throughout the year. You can volunteer to help. Find out more by contacting the Midshore Riverkeeper Conservancy or Choptank Tributary Team shown below.

WHERE TO GET HELP FOR...

STREAMS

- Midshore Riverkeeper Conservancy at (443) 385-0511 or email info@midshoreriverkeeper.org; www.midshoreriverkeeper.org
- Choptank Tributary Team at http://choptanktribteam.net
- Talbot County Department of Planning and Zoning at (410) 770-8030.
- Talbot Soil Conservation District at (410) 822-1583, ext. 3.
What You Can Do In Your Backyard and Home

Composting and Yard Waste

The EPA estimates that each person in the U.S. contributes 4.5 pounds of garbage (municipal solid waste) daily. That equals 1,642 pounds of garbage per person per year! Much of this waste is organic matter and would degrade naturally if composted, saving space in landfills and reducing greenhouse gases. As much as 75% of materials going into the landfill could be composted.

Composted organic material is like black gold—the best kept secret for your garden! It is a dark, crumbly, rich earthy-smelling material that is the result of organic materials decomposing. Compost can be used to improve soil for lawns and gardens, further reducing the need for fertilizers. Start reaping the benefits by setting up a backyard compost tumbler.

Tips for Composting

- **Start Small**: There are many different ways to compost: the bin system, tumblers, trench, sheet, and even vermicomposting (using worms to break down material). Some methods are simpler than others. Take a little time to understand what method is best for you.
- **Keep it Simple the First Year**: Compost either kitchen scraps or yard debris, not both!
- **Kitchen Scraps Attract Wildlife**: If you choose to compost kitchen scraps, try vermicomposting in a closed outdoor building or basement; the odors can be strong and will attract animals. By keeping your bin in a closed environment, you will be able to manage keeping wildlife out of your compost bin.
- **Chop or Cut Compost Material**: The smaller the pieces are the faster it will break down.
- **No Animal Products**: Do not add pet waste, grease, meat, or dairy products to a compost pile. These items may attract pests and do not compost well. Egg shells are fine.
- **Diseased Plant Material**: Do not add diseased plant material to your compost pile. Though composting will often neutralize diseased materials if brought to the right temperature for the necessary period of time, it is better not to include these until you fully understand the process. You don’t want to spread disease where you use your compost.

WHERE TO GET HELP FOR...

**COMPOSTING**

- Maryland Department of Agriculture at http://www.mda.state.md.us
From My Backyard to Our Bay

Best Management Practices for Your Household

There are many things each of us can do in our daily lives that will have a lasting positive effect on the Bay and other important resources. As we understand the factors impacting our environment, we will use resources more wisely. These actions will help us to conserve water and energy, as well as the beauty of our natural environment and wildlife.

Water Use and Conservation

For homeowners utilizing individual wells, as well as Talbot County residents supplied by Easton Utilities, water is sourced from naturally filtered underground aquifers. Easton Utilities pumps from six wells that are 1,000 to 1,200 feet deep. The water is then treated and pumped into its distribution system.

Contamination of groundwater occurs when pollutants reach groundwater supplies, especially those wells closer to the surface. Some sources of these products include storage tanks, landfills, septic systems and the use of road fertilizers, pesticides, road salts, and other chemicals.

Although Talbot County typically gets about four inches of rainfall each month, it has also experienced severe drought periods that have had serious impact on water supplies, both from private wells and the public water systems. As water is pulled up from our wells, or as water is treated and delivered to homes, a considerable amount of energy is used.

As the population grows in our county and region, more people vie for the same sources of water and conserving water becomes ever more critical. By adopting a few simple habits, you can help extend precious water supplies and reduce the load you place on your septic system or public sewer system.

Waste water is treated before it goes into the Bay. Talbot County residents can do their part to decrease the energy and resources required to treat the waste water by reducing the amount of contaminants they put down the drain.

WHERE TO GET HELP FOR...

WATER CONSERVATION
• Easton Utilities at www.eastonutilities.com
• Talbot Soil Conservation District at (410) 822-1583, ext. 3.
• Maryland Department of the Environment at 800-633-6101 or http://www.mde.state.md.us/programs/water/Pages/Programs/WaterPrograms/index.aspx
Tips for Conserving Water and Energy to Treat Waste Water

- **Leaks and Drips:** Repair all leaks and drips around the house. A single running toilet can waste 200 gallons of water per day.
- **Turn off the faucet** while you brush your teeth, shave, or lather up.
- **Water Saving Fixtures:** Install low-flow fixtures on showerheads, sinks, and toilets.
- **Full Loads:** Run only full loads of dishes or laundry.
- **Water Saving Appliances:** Make your next washing machine a front loading model (they use less water).
- **Increase Soil Absorption:** Be savvy about lawn and garden care. Add organic matter to the soil to increase water absorption; this helps the soil to retain water, thus requiring less watering.
- **Mulch** bare areas to conserve moisture.
- **Garden Watering Approaches:** Water deeply, thoroughly, and infrequently—early morning is the best time to water. Make sure your water stays on the lawn and garden, and not on the sidewalk or street.
- **Outdoor Solutions:** Install drip irrigation and/or timers to reduce water use.
- **Water Saving Nozzles:** Use nozzles on outside hoses and wash cars with a bucket of water, using the hose only to rinse.
- **Car:** Wash your car on your lawn rather than on the driveway to prevent runoff.
Scientists tell us that about 25% of the excess nutrients entering the Chesapeake Bay come from air pollution that is rinsed directly into the Bay with rainfall or deposited on the land and then washed into the Bay’s tributaries. Where does that air pollution come from? The great majority of it comes from motor vehicles and from coal-fired power plants that produce the electricity we all use. As the demand for energy increases in the United States along with population and development demands, we must all become increasingly conscientious of conserving energy at every turn. Every household can help reduce energy demand and the flow of pollutants to the Bay.

Air Pollution. Pollutants such as carbon and sulfur are released into the air from this power plant.

WHERE TO GET HELP FOR...

ENERGY CONSERVATION
• Maryland Energy Administration at (410) 260-7655 or http://www.energy.state.md.us
• U.S. Environmental Protection Agency at http://www.epa.gov/climatechange/wycd/home.html
• Choptank Electric Cooperative at (877) 892-0001 or www.choptankelectric.com
• Delmarva Power at (800) 898-8045 or www.delmarvapower.com
What You Can Do In Your Backyard and Home

Tips for Conserving Energy

- **Lights:** Turn off the lights when leaving a room.
- **Tight House:** Keep doors, windows, and drapes closed when running the air conditioning and the drapes open during the day when running the heat.
- **Replace Old Units with Energy Efficient Ones:** If your air conditioning or heating unit is old, consider replacing it. A new energy-efficient model could save significantly on your energy bills.
- **Energy Supplier:** If you are able to select your energy supplier, choose one that offers renewable sources of energy such as wind power, solar, or hydroelectric. You will be surprised that the cost is not much different than heavily polluting coal-produced power.
- **Air Dry:** Air dry dishes instead of using the drying cycle on your dishwasher.
- **Increase Air Circulation:** Clean the lint filter in the clothes dryer after every load to improve circulation.
- **Laptops Use Less Energy:** Consider buying a laptop for your next computer upgrade; laptops use less energy than desktop computers.
- **Power Strips Can Be Useful:** Plug appliances and electronics such as TVs and DVD players into power strips. When the appliance is not in use, turn off the power strip. Appliances still use energy when plugged in and not in use. Approximately twenty percent of a typical American's electric bill is from appliances that are not in use.
- **Programmable Thermostat:** Replace your conventional thermostat with a programmable thermostat. In winter, reducing your thermostat from 72 to 68 degrees for 8 hours a day (when at work) can lower your heating bill up to 10%.
- **Energy Efficient Light Bulbs:** Lighting accounts for approximately 15% of household electricity use. Fluorescent bulbs reduce energy use by 75% and last 10 times longer than incandescent bulbs. Since fluorescent bulbs contain mercury, dispose of them properly.
- **Energy Audit:** Consult your local power company for information on online or in-home energy audits.
From My Backyard to Our Bay

Maintaining Your Vehicles and Boats

Vehicle maintenance is an important and easy way to prevent oil, heavy metals, and other toxic chemicals from reaching our drinking water and the Bay. After oil has leaked from a car onto a driveway, rainwater washes it into the street, toward the nearest storm drain, or into the yard, toward a Bay tributary. Likewise, oil leaks from boats harm the Bay. It is estimated that 180 million gallons of oil are disposed of improperly each year. A single quart of oil can contaminate 250,000 gallons of drinking water.

Tips for Keeping the Chesapeake Bay Free of Vehicle and Boat Contaminants

- **Regular Maintenance:** Check your vehicles—trucks, cars, motorcycles, boats—regularly for oil leaks and drips. If you find leaks or drips, fix them quickly.

- **Drip Cloths and Pans:** Use ground cloths or drip pans when you find leaks, while changing the oil, or when working on the engine.

- **Oil Spills:** If a spill occurs while changing the oil or working on the engine, clean up the spill immediately and properly dispose of the cleanup materials.

- **Antifreeze:** Collect used oil or antifreeze in containers with tight-fitting lids (e.g., plastic jugs) and recycle at any Talbot County Department of Public Works drop-off center (see reference on next page). Do not mix waste oil or antifreeze with gasoline, solvents, or other engine fluids. The oil and antifreeze will become contaminated and will not be reusable. **Motor oil, antifreeze, transmission fluid, or other engine fluids should never be dumped onto roads, into gutters, down a storm drain or catch basin, onto the ground, or into a ditch. It will end up in the Bay.**

- **Boaters:** Use environmentally safe paints, instead of anti-fouling paints that contain copper, mercury, arsenic, or volatile organic compounds (VOCs). When washing your boat, try plain water, or use phosphate free detergents, biodegradable and non-toxic cleaners. Keep oil absorbent material in bilge and replace it once per year. Never discharge bilge water with oily sheen. A single drop of oil can pollute a million drops of fresh water. Pump out sewage at approved facilities. Use approved Marine Sanitation Devices (MSDs) or use restrooms ashore when possible.

WHERE TO GET HELP FOR...

VEHICLE & BOAT MAINTENANCE

- Maryland Department of the Environment at (800) 633-6101 or [http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/index.asp](http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/index.asp)
- U.S. Environmental Protection Agency at [http://www.epa.gov/climatechange/wycd/road.html](http://www.epa.gov/climatechange/wycd/road.html)
- Choptank Tributary Team at [http://www.choptanktribteam.net/getinvolved_boaters.html](http://www.choptanktribteam.net/getinvolved_boaters.html)
Disposing of Household Hazardous Waste

The average household contains between 3 and 10 gallons of materials that are hazardous to human health or to the environment. The improper disposal of household hazardous wastes (HHW) can cause problems for the entire community.

Wastes can be explosive or highly flammable. Sewers have exploded and garbage trucks have burned because people have carelessly discarded flammable or reactive wastes.

Household hazardous wastes can leak from landfills and contaminate groundwater and surface water, or enter the air we breathe through emissions from landfills and incinerators. Some wastes are poisonous to humans and/or wildlife, while others can cause cancer, birth defects, or other serious medical problems.

It is important to learn about the products you use in your home, garden, and workshop, and how to dispose of them when they are no longer needed. These include expired drugs which should only be disposed of along with solid waste, not down the toilet! Hill’s Drugs established a Drug Take Back Program in 2009, which helps to minimize pollution in our soil and water. Since the program’s inception, they have collected over 1,137 pounds. Hill’s sends the collected drugs to a regulated facility that disposes of the drugs in an environmentally sensitive way.

Use the County’s hazardous waste disposal facilities to dispose of goods such as antifreeze, motor oil, and computers. HHW and eCycle collection events are scheduled several times throughout the year—go to Midshore Recycling’s web site (see below) for event dates. Recently, the Midshore Regional Recycling Program (MRRP) collected over 338 tons of electronics that will be recycled and not go into landfill!

To reduce the amount of hazardous material you use, find less hazardous substitutes, do not buy more than you need, and follow the directions on the packaging. To prevent leaks, store your waste materials in their original containers until you can take them for disposal.

WHERE TO GET HELP FOR...

HOUSEHOLD HAZARDOUS WASTE

- Talbot County Department of Public Works at (410) 770-8170 or http://www.talbotcountymd.gov/uploads/File/council/Landfill.pdf
- Midshore Recycling at (410) 758-6605 or http://www.midshorerecycling.org/
- Maryland Department of the Environment at (800) 633-6101 or http://www.mde.state.md.us/programs/Land/HazardousWaste/HazardousWasteHome/Pages/programs/landprograms/hazardous_waste/home/index.aspx
- U.S. Environmental Protection Agency at http://www.epa.gov/conserve/materials/hhw.htm
- Hill’s Drug Stores at (410) 819-6541 or http://www.hillsdrugstore.com
Recycling

The Maryland Recycling Act requires all Maryland counties to recycle at least 15% of the waste generated. Talbot County participates in recycling services through the Midshore Regional Recycling Program (MRRP) along with Queen Anne’s, Caroline, and Kent counties. The town of Easton recently began its single-stream curbside recycling program for town residents and businesses already serviced by the town’s trash service. These programs allow for the recycling of some plastics, aluminum, metal cans, glass bottles, cardboard, newspapers, and paper. Lightly used paint and other household do-it-yourself supplies can be brought to Habitat for Humanity’s Restore in Easton, Maryland for resale and reuse.

Recycling helps us control the amount of pollutants in the Chesapeake Bay watershed and keeps recycled items from piling up in our landfills. Like any other pollutant, litter is carried by runoff into our streams and rivers and into the Bay. Litter is not just unsightly—inproperly disposed of items such as plastic bags and plastic 6-pack holders, may even be harmful to marine life.

Recycling also helps us reduce energy consumption—and we have already talked about how energy production and use harms the Bay. Just think about all the energy saved when an aluminum can is recycled—one ton of recycled aluminum saves 14,000 kilowatt hours, 40 barrels of oil, 238 million Btu’s of energy and 10 cubic yards of landfill space! One glass bottle saves enough energy to light a 100 watt light bulb for four hours.

Also think of the forests that can be preserved and the energy saved by reusing paper products. Recycling also helps to create jobs—paper from the MRRP program is sent to a nearby firm supporting about thirty local manufacturing jobs!

WHERE TO GET HELP FOR...

RECYCLING

• Talbot County Department of Public Works at (410) 770-8170 or http://www.talbotcountymd.gov/index.php?page=PW_Recycling
• Midshore Recycling at (410) 758-6605 or http://www.midshorerecycling.org/
• Habitat for Humanity Restore at (410) 820-6186 or email at restore@habitchoptank.org
• Maryland Department of the Environment at (800) 633-6101 or http://www.mde.state.md.us/Programs/Land/Recyclingandoperationsprogram/pages/programs/landprograms/recycling/index.aspx
• U.S. Environmental Protection Agency at http://www.epa.gov/epawaste/conserve/mm/index.htm
Managing Pet Waste
Always pick up pet waste. Animal waste can be carried easily by rainwater, untreated, to the nearest stream or storm drain. Pet waste contains many harmful bacteria and may contain parasites. It is important to keep these bacteria from entering our surface waters. Many of the streams in Talbot County contain high levels of fecal coliform bacteria, leading to fish and shellfish harvest restrictions and even swimming restrictions.

In addition, pet waste acts as a fertilizer in the water system and promotes the unhealthy growth of aquatic plants, including algae. The increased abundance of aquatic plant life can rob desirable aquatic life of much-needed oxygen.

When walking the dog, take a plastic bag along. Pick up the pet waste and flush it down the toilet, where it will be properly treated, or dispose of it with your other trash. If flushing is not an option, dig a small trench in the yard and layer pet waste with leaves, grass clippings, and dirt. Do not put pet waste down a storm drain or leave it exposed in your yard!
Managing Your Septic System

In areas without public sewer service, household wastewater (from the bathroom, kitchen, and laundry) is treated by individual septic systems. Septic systems can pollute both the surface waters and the ground waters with bacteria, nitrogen and oxygen-demanding materials. Nutrient pollution impacts the clarity of the Chesapeake Bay and nearby waters by causing harmful algae blooms.

A septic system has two major components: a septic tank and a drain field. Wastewater sewage flows from the house to the septic tank, which retains wastewater long enough for the heavy solids to settle to the bottom. A solid pipe leads from the septic tank to a distribution box, where the untreated wastewater is channeled to the drain field—one or more perforated pipes set in trenches of gravel. Here the water slowly infiltrates into the underlying soil. Dissolved or suspended wastes and bacteria in the water are trapped or absorbed by soil particles or decomposed by microorganisms.

These microorganisms perform the only treatment of the water before it percolates into the groundwater. Under normal conditions, the microorganisms perform well, unless very toxic materials overwhelm the septic system. Microorganism performance can also be diminished if the drain field becomes saturated with stormwater.

When a septic system is not working properly, and is located close to the water’s edge, sewage and toxic materials can seep into the Bay. Maintain your system regularly to avoid contaminating the surface water.

A stand alone septic system is not designed to remove nitrogen, however, Best Available Technology (BAT) for septic systems provide an advanced onsite sewage treatment system that will greatly reduce the amount of nitrogen emitted from a septic system. BAT units combine settling of solids, extended aeration, and recirculation to produce a greatly reduced amount of nitrogen in the effluent. The typical traditional household septic system produces 24.7 pounds of nitrogen per year. BAT systems can cut that load in half.

To check on available funds and eligibility for septic upgrade, contact Talbot County Office of Environmental Health.
What You Can Do in Your Backyard and Home

Tips for Septic System Care

- **Pumping Septic Tank:** Tanks should be checked a minimum of once every 3 years, to determine if pumping is required. Use the size of the tank, and the number of people in the house to determine how frequently pumping should occur. If the tank gets too full, sludge particles will flush out of the tank and clog the drain lines. The EPA recommends tanks be pumped before sludge and scum accumulations exceed 30% of the tank volume.
- **Do not** add starter enzymes or yeast to your system. Additives have not been scientifically proven to improve the performance of your system.
- **Do not** pour fats and oils, chlorine bleach, solvents, chemicals, pesticides, paint thinner, or auto products down the drain. These substances can kill the bacteria that make the system function.
- **Do not** put trash in the toilet such as paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins, tampons, or condoms. These items do not break down quickly and can fill the septic tank. Also avoid flushing drugs down the toilet (see page 31).
- **Additional Runoff:** Direct downspout discharges and runoff away from the septic field to avoid saturating the drain field area with excess water.
- **Do not** overload the system—this is the primary cause of system failures. Early morning and bedtime are peak use times in the bathroom. Run dishwashers and washing machines at other times of the day. Try not to do more than one load of laundry each day.
- **Plantings Near Drainfield:** Dense grass cover and other shallow-rooted plants are beneficial over a drain field. However, do not plant trees near a drain field because large plant roots can clog or break the pipes.
- **Compaction:** Avoid compacting the soil over a drain field to ensure proper percolation of effluent.
- **Limit Garbage Disposal Use:** Using a garbage disposal can double the amount of solids in the tank. Instead, consider composting organic matter. See the “Composting” section for tips.
- **BAT System:** Look into getting a BAT unit for your septic system. BAT systems may be more expensive than traditional septic systems.

WHERE TO GET HELP FOR...

**SEPTIC SYSTEM**

- Talbot County Health Department, Office of Environmental Health at: (410) 770-6880 or [http://www.Talbothealth.org/Programs/eh.html](http://www.Talbothealth.org/Programs/eh.html)
- University of Maryland Extension — Talbot County, (410) 822-1244 or [http://www.hqrc.umd.edu](http://www.hqrc.umd.edu)
- Bay Restoration Fund, [http://www.mde.state.md.us/programs/Water/BayRestorationFund/Pages/index.aspx](http://www.mde.state.md.us/programs/Water/BayRestorationFund/Pages/index.aspx)
Living on Well Water

If you have a home well, you are responsible for maintaining the safety and quality of your drinking water. When your well system is suitably located, correctly installed, properly maintained, and regularly tested, you should have few problems with water quality.

Depending on the depth of the well, residential wells are replenished by rainwater that falls anywhere from several hundred feet to miles away from the location of the well. For this reason, the way you and your neighbors use the landscape can be an important factor in the quality of your water supply.

Be alert to possible sources of well water contamination, such as runoff from large paved areas, faulty septic systems, leaking underground fuel tanks, landfills, industrial spills or discharges, and inappropriate use of animal wastes, fertilizers, and pesticides. Be sure the well head is protected and not susceptible to being disturbed by garden equipment. Blows to the well head can cause it to crack allowing contamination to enter.

Test your water supply once a year for bacteria and nitrates. Consider seasonal testing if one sample shows elevated levels of contaminants. Prolonged periods of heavy rain can flush contaminants into groundwater. At the least, test your water any time you notice unusual odors, colors, or cloudiness or if you note an interrupted supply, such as pumping air or sediment.

WHERE TO GET HELP FOR...

WELL SYSTEMS
- University of Maryland Extension — Talbot County, (410) 822-1244 or http://extension.umd.edu/publications/pdfs/mep320.pdf
- Talbot County Health Department, Office of Environmental Health at (410) 770-6880 or http://talbohealth.org/Programs/ehwell.html