

A HOMEOWNER'S TOOLKIT FOR WATER QUALITY AND STORMWATER MANAGEMENT

2023



Prepared by the Thomas Jefferson Planning District Commission and funded by the Virginia Department of Environmental Quality Chesapeake Watershed Planning District Commission Locality Implementation Program.

Statement of Purpose

This toolkit, designed for educational purposes, serves as a resource for homeowners in the Thomas Jefferson Planning District to adopt practices that can enhance property value, bolster water quality, manage excess stormwater, and nurture the local ecosystem. The stormwater runoff improvement practices outlined in this toolkit are intended as general guidelines. Before implementing any practices, seek technical guidance from a licensed professional engineer, landscape architect, or other certified professional specializing in erosion and sediment control for specific recommendations.

2023



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Glossary of Terms

Best Management Practice (BMP) - refers to techniques found to be most effective and practical for a particular situation. In the case of stormwater, BMPs intend to reduce the volume of runoff and/or eliminate pollution and contaminants collected by runoff before reaching local waterways.

Downspout – a pipe that directs stormwater runoff from the roof to the ground.

Green Infrastructure – a type of property design that uses natural or engineered systems to mimic the way nature works.

Infiltration – process by which water on the ground surface enters the soil.

Impervious or Impermeable Surface – a surface that prevents water infiltration into the soil. They are typically made of man-made materials, such as asphalt, concrete, and metal.

Permeable (or pervious) – allowing water to pass through.

Rain Barrel – a catchment or rainwater harvesting system, attached to a downspout, that collects runoff from a roof for later use.

Rain Garden – a depression in a landscape, planted with native plants, that allows stormwater runoff from impervious urban areas like roofs, driveways, walkways, and compacted lawn areas to be collected and slowly absorbed by the plants and drainage material below.

Riparian Forest Buffer – a linear wooded area of varying width (35'-100') near a water feature that filters sediments and other pollutants from runoff and groundwater or transitional areas that protect waterbodies from pollutants.

Stormwater Runoff (or Runoff) – rainwater that is unable to be absorbed by the ground, and instead flows over impervious areas or land already saturated with water.

Urban Heat Island Effect – a phenomenon that developed areas are warmer than their rural surroundings due to reduced natural landscape and heat generating human activities

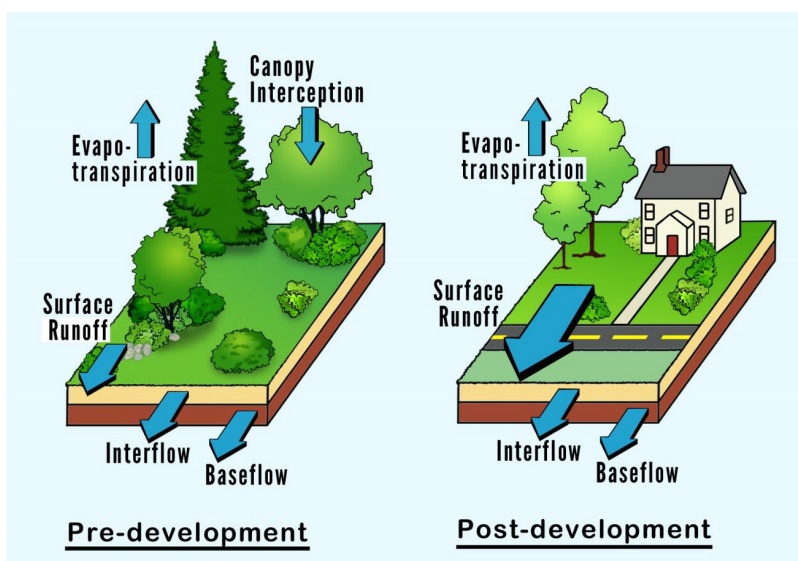
INTRODUCTION

This guide is for landowners in Central Virginia who want to learn about stormwater best management practices (BMPs). BMPs are ways to manage stormwater runoff to protect water quality and reduce flooding and erosion.

BMPs can be as simple as planting trees and shrubs to slow down runoff and filter pollutants, or as complex as installing rain gardens or a green roof. The right BMPs for your property will depend on your specific needs and conditions. If you are concerned about flooding or erosion on your property, or if you are planning an outdoor improvement project, this guide can help you identify and implement BMPs that are right for you and help you find funding and technical assistance from local and statewide resources.

Why are BMPs important?

Rainfall is a natural resource that replenishes our drinking water supply and local waterways, and nourishes the ecosystem. However, during large storms, the ground cannot absorb all of the rainwater, causing runoff. Runoff can carry pollutants such as sediment, oil, and fertilizers to nearby waterways. It can also cause flooding and erosion on your property and in your neighborhood.



BMPs help reduce the negative impacts of stormwater runoff by slowing it down, filtering, and infiltrating it into the ground. This mitigates the negative impacts of stormwater on your property and supports healthy waterways.

Stormwater Best Management Practices

Stormwater best management practices, or green infrastructure techniques, mimic the natural environment by absorbing or storing rainwater, which reduces the speed and volume of runoff flowing over and off of a property. When many landowners adopt green infrastructure practices, the combined water quality benefits can be significant.

These practices also educate others about water quality protection and provide a range of benefits to your property, such as:

- ❖ Flood mitigation
- ❖ Erosion control
- ❖ Wildlife habitat
- ❖ Improved air quality
- ❖ Aesthetic beauty
- ❖ Increased property value
- ❖ Improved soil health and drainage
- ❖ Increased recreational opportunities
- ❖ Less water and energy use
- ❖ Strengthened climate resiliency

Implementing stormwater best management practices on your property helps reduce the negative impacts of stormwater runoff.

Some of the negative impacts of stormwater runoff include:

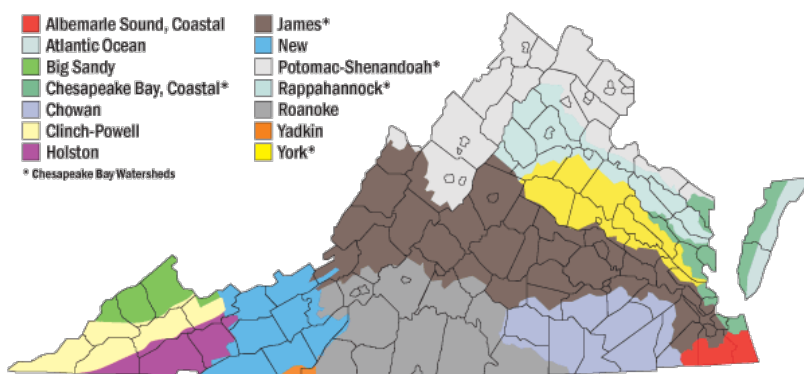
Flooding. Runoff from impervious surfaces like roofs, driveways, and lawns can lead to large volumes of water entering the waterway at a faster rate. This contributes to water levels rising quickly, causing flooding damage.

Erosion. Heavy rainfall and impervious surfaces increase the volume and speed of runoff, leading to land erosion and erosion along streambanks, damaging your landscape and harming the natural ecosystem by contributing to sediment pollution.

Pollution. Runoff carrying pollutants enters local streams which harms the ecosystem. Sediment, loose trash and debris, oil from cars, pesticides and fertilizers, and pet waste are just some of the common sources of pollution from residential areas.

Threats to human health. Stormwater runoff can carry many pollutants that are harmful for humans such as toxic metals, organic compounds, bacteria, and viruses. After large storm events, these pollutants enter our local waterways, deterring recreational activities and straining drinking water supplies.

Your Watershed



Watersheds are areas of land that drain into particular waterbodies or streams. A large river consists of the smaller watersheds for each stream that flows into it. Central Virginia lies within the James River, York River, or Rappahannock River Watershed,

which drain into the Chesapeake Bay meaning stormwater that runs off of your property contributes to pollution in the Chesapeake Bay.ⁱ Many areas of the Chesapeake Bay Watershed contain excess pollutants and are listed as impaired under the Clean Water Act, negatively impacting fishing, recreation, human health and critical infrastructure.ⁱⁱ

All homes in the region are within a few miles of a stream; land use practices on every property affect the quantity and quality of stream water and the water supply, depending on the amount of stormwater runoff that leaves the property.ⁱⁱⁱ

In an undeveloped and natural environment, most stormwater is absorbed by vegetation or infiltrates groundwater by entering the soil. This results in stable stream environments and healthy water quality. In contrast, water runs off hard, impervious surfaces in the build environment, such as roofs, pavement, lawns, and bare soil, picking up pollutants and entering local waterways.






As a landowner, you can reduce the negative impacts associated with stormwater runoff by:



- ❖ Reducing impervious surfaces
- ❖ Planting native trees and plants to filter stormwater
- ❖ Preventing erosion on your property
- ❖ Integrating stormwater best management practices (BMPs) on your property
- ❖ Following sustainable lawn care techniques
- ❖ Talking to your neighbors and friends about taking care of streams and the watershed



This toolkit details common stormwater best management practices to provide an array of benefits to your property, and the technical, educational, and financial resources available to support you.

Many local and Chesapeake Bay wide organizations support the community in reducing pollution to the Chesapeake Bay to protect habitats, public health, and the economy across the region. The following table highlights the practices in this guide and funding options, so that you can begin to identify which practices may work best for your property.

Practice	Costs	Installation Complexity	Maintenance	Funding Opportunities
Rainwater Harvesting 	\$-\$	Easy	Moderate	<ul style="list-style-type: none"> - Virginia Conservation Assistance Program
Rain Gardens and Bioretention 	\$-\$	Easy to Medium	Easy to Moderate	<ul style="list-style-type: none"> - Virginia Conservation Assistance Program - Green Streets, Green Jobs, Green Towns (G3)
Tree Planting 	\$-\$ \$\$\$	Easy	Easy to Moderate	<ul style="list-style-type: none"> - Virginia Conservation Assistance Program - James River Buffer Program - Other options
Permeable Pavement 	\$\$-\$ \$\$\$	Medium to Complex	Moderate	<ul style="list-style-type: none"> - Virginia Conservation Assistance Program - Green Streets, Green Jobs, Green Towns (G3)
Green Roofs 	\$\$-\$ \$\$\$	Medium to Complex	Moderate	<ul style="list-style-type: none"> - Virginia Conservation Assistance Program

Septic System Maintenance and Upgrades		\$- \$\$\$	Easy to Complex	Easy	<ul style="list-style-type: none">- VASWCD Septic System Repair and Maintenance Cost Share- SERCAP Individual Septic Loan Program
					
Land Conservation		\$\$- \$\$\$	Medium	Easy	<ul style="list-style-type: none">- Preservation Trust Fund
					
Installation Complexity	Description	Maintenance		Description	
Easy	Requires minimal site preparation and can be installed by homeowners with minimal training.	Easy		Requires minimal routine maintenance that can be performed by residents with minimal training	
Medium	May require professional expertise or support to design and implement	Moderate		Requires more regular maintenance, which may involve weeding and inspection	
Complex	Requires site preparation, engineering, and professional expertise to install	Extensive		Requires frequent attention and may involve specialized equipment to maintain	

Residential Green Infrastructure Survey and Map

If you complete any of the stormwater best management practices described in this guide, share the project to the TJPDC's Residential Green Infrastructure Map Survey. The purpose of the [TJPDC's Residential Green Infrastructure Map Survey](#) is to:

- provide residents with a resource to learn about the types of green infrastructure practices installed in their community
- collect information about the success of community outreach on implementing best management practices and green infrastructure
- estimate the amount water pollution reduced as a result of the collective action of landowners in the region
- support the Chesapeake Bay Watershed Implementation Plan

RAINWATER HARVESTING



Rain barrels and cisterns capture rainwater from roofs and store it for later use, such as watering lawns and gardens, washing cars, or filling ponds. Collecting roof runoff in rain barrels reduces erosion near downspouts and the amount of runoff leaving a property. Rainwater is better for plants than municipal or well water, and it is a free water source for non-potable water use on your landscape. Rainwater harvesting is a simple and effective way to conserve water. Individuals can install

rainwater harvesting systems on their own, or partner with local organizations to share the cost. You can also check with your local government to see if they offer rain barrel rebates.

Benefits

- ❖ Rain barrels reduce utility bills by reducing the need for treated water from a municipal water supply or well. The Piedmont region of Virginia experiences about 43 inches of precipitation a year. An average 1,700 square foot roof in Central Virginia can collect over 40,000 gallons of precipitation a year. That is a lot of free water to collect!
- ❖ Rain barrels reduce the amount of pollution from impervious surfaces entering local streams and rivers.
- ❖ In times of drought, these systems provide a supplement to water supply.
- ❖ Gardens and lawns benefit from the soft, oxygenated, chlorine free rainwater. Plants prefer rainwater to well or municipal water because it usually contains less salts, minerals, and treatment chemicals.
- ❖ By decreasing the volume of runoff flowing over land, erosion surrounding the rain barrel is minimized.



Cost and Funding Considerations

Rain barrels are often less costly than other stormwater management practices. Local garden centers sell manufactured barrels online and in stores, available in a variety of styles, sizes, and prices. Do-It-Yourself (DIY) rain barrels can be installed at a low cost of about \$50.00 by finding used food grade barrels or similar containers from local environmental groups or food distributors and purchasing the spigot and other attachments to create the system. The accessories and parts to fit the DIY barrels to your downspout are sold online and in stores, in kits or by the part. Local environmental groups offer community rain barrel workshops, which often provide a barrel and the necessary accessories, and demonstrate the steps to setting up a barrel at home. Check to see if any rain barrel rebates are available in your community to qualify to be reimbursed for some of the cost.

The [Virginia Conservation Assistance Program](#) provides financial, technical, and educational assistance for the installation of rainwater harvesting systems of at least 250 gallons. Contact your local Soil and Water Conservation District to apply or request a site visit to see if the practice could work for your property.

Whether you choose to do-it-yourself, partner with a local environmental group to support installation, or purchase a ready to install rain barrel, there are different ways to fit a rain barrel - or multiple - to your property based on your time, budget and style.

Helpful Resources

- ❖ Rain Barrels Fact Sheet (Chesapeake Bay Trust) https://cbtrust.org/wp-content/uploads/Fact-Sheet-and-Guidelines_Rain-Barrel_042120.pdf
- ❖ Build Your Own Rain Barrel (Chesapeake Bay Foundation) https://www.cbf.org/document-library/education-resources/rain_barrel_guide-web8bcf.pdf
- ❖ Demonstration Video Assembling a Rain Barrel. (Thomas Jefferson Soil and Water Conservation District) <https://www.tjswcd.org/residential-topic/rain-barrels/>
- ❖ Virginia Conservation Assistance Program (Virginia Association of Soil and Water Conservation Districts) <https://vaswcd.org/vcap/>
- ❖ City of Charlottesville Rain Barrel \$30.00 Rebates <https://www.charlottesville.gov/501/Water-Rebates-Incentives>

PERMEABLE PAVEMENT



Permeable pavements replace traditional concrete or asphalt with a porous surface and underlying stone to allow for drainage. Instead of quickly moving water over the surface, permeable pavements allow water to pass through the material and percolate into the ground below. Common types of permeable pavement include pervious grid pavers, porous asphalt or concrete, and permeable interlocking pavers. These pavements offer attractive

and cost-effective alternatives to traditional pavement. To ensure proper function over time, work with a contractor to design your specific site according to manufacturer specifications and local permitting requirements.

Benefits

- ❖ Permeable pavement is an attractive alternative to traditional pavements, available in various sizes, colors, and designs.
- ❖ These surfaces reduce stormwater runoff volume by slowly releasing precipitation into the ground below.
- ❖ The design mitigates water pollution and traps pollutants in the pavement and surrounding soil and vegetation.
- ❖ Permeable pavement absorbs less heat than traditional pavement, helping reduce surrounding air temperature.
- ❖ The design increases groundwater recharge and promotes a more natural hydrologic balance.
- ❖ In winter, permeable surfaces reduce the need for salt and deicing up to 100%, saving money, effort, and further reducing water pollution caused by over-salting.^{iv}



Cost and Funding Considerations

The type of permeable pavement used in the project has the largest influence on the cost of installation. Construction costs can range from \$2 to \$16 per square foot according to a Cost Estimation Analysis conducted by EPA. Other factors influencing cost include soil type, slope, and pretreatment needs.^v While the initial installation cost is typically higher than impervious pavements, there are long term cost savings associated with the benefits of stormwater management integrated into the design.^{vi}

The Virginia Conservation Assistance Program is a cost share program available to homeowners in Virginia that provides \$14 per square foot up to \$20,000 for permeable pavement projects. Technical and educational assistance is also provided through the program. Contact your local Soil & Water Conservation District to learn more. Neighborhood and community associations can apply for funding to plan and implement permeable pavements at a larger scale through Green Streets, Green Jobs and Green Towns Grants.

Helpful Resources

- ❖ Virginia Conservation Assistance Program (Virginia Association of Soil and Water Conservation Districts) <https://vaswcd.org/vcap/>
- ❖ Green Streets, Green Jobs, Green Towns (G3) (Chesapeake Bay Trust) <https://cbtrust.org/grants/green-streets-green-jobs-green-towns/>
- ❖ Permeable Pavement Fact Sheet (Chesapeake Bay Trust) https://cbtrust.org/wp-content/uploads/Fact-Sheet-and-Guidelines_Permeable-Pavement_042120.pdf
- ❖ Stormwater Design Specification for Permeable Pavements (Virginia DEQ) <https://www.deq.virginia.gov/home/showpublisheddocument/14521/637878918336330000>

RAIN GARDENS AND BIORETENTION PRACTICES



Bioretention cells and rain gardens are shallow depressions in the landscape planted with native plants and a specialized soil mix that can retain stormwater during rain events. These practices are designed to collect rainwater runoff from roofs, driveways, and sidewalks and allow it to slowly soak into the ground. Rain gardens allow at least 30% more water to infiltrate the ground than traditional lawns of the same size.

Benefits

- ❖ Bioretention practices increase groundwater recharge and promote a more natural hydrologic balance, decreasing localized flooding.
- ❖ Native plants used in these practices increase biodiversity and provides habitat for native wildlife.
- ❖ Rain gardens and bioretention use a mix of native plants which provides the added benefit of enhancing interest and beauty of any landscape and neighborhood.
- ❖ These best management practices treat multiple water pollutants.
- ❖ By capturing drainage from roofs, gutters and pavement, soil erosion is minimized.
- ❖ By replacing grass with native species, bioretention and rain gardens reduce maintenance frequency and costs.

Cost and Funding Considerations

Rain gardens are a relatively easy and inexpensive way to improve your home's stormwater management while adding beauty, interest, and ecosystem benefits to any landscape. The cost of installing a rain garden or bioretention practice can vary depending on the size of the garden, plant

choices, and whether you hire a professional to support installation. According to the Chesapeake Bay Trust, rain gardens cost anywhere from \$4 to \$35 per square foot. ^{vii}

Local Soil and Water Conservation Districts provide technical, educational and financial assistance for the installation of rain gardens and bioretention cells through the Virginia Conservation Assistance Program. Rain garden projects installed through the program can be reimbursed at 80% of total costs up to \$7,000, and bioretention practices can be reimbursed at 80% of total costs up to \$30,000. A DIY Rain Garden that was installed at a residence in Charlottesville and funded through VCAP is linked in the resources below. The homeowner's site plans and project narrative are provided in the resources if you're looking for inspiration!

Helpful Resources

- ❖ Case Study: Charlottesville DIY Rain Garden (Chesapeake Stormwater Network) <https://chesapeakestormwater.net/awards/ormsby-rain-garden/>
- ❖ Rain Garden Plants (Virginia Cooperative Extension) https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/426/426-043/SPES-57.pdf
- ❖ Rain Garden Technical Guide: Learn more about designing and constructing a rain garden at home (Virginia Department of Forestry) https://dof.virginia.gov/wp-content/uploads/Rain-Gardens-Technical-Guide_pub.pdf
- ❖ Virginia Conservation Assistance Program: Rain Gardens (Virginia Association of Soil and Water Conservation Districts) <https://vaswcd.org/rain-garden/>
- ❖ WaterSmart Landscape Design Tips (EPA) <https://www.epa.gov/sites/default/files/2017-01/documents/ws-outdoor-water-efficient-landscaping.pdf>
- ❖ Stormwater Design Specification: Bioretention (VA Department of Environmental Quality) <https://www.deq.virginia.gov/home/showpublisheddocument/14525/637878918350070000>

TREE PLANTING PROJECTS



The entire community as well as individual homeowners benefit when trees are planted and retained. Whether upland or streamside, the right trees in the right locations help alleviate water quantity and quality problems by intercepting and filtering pollution from stormwater runoff, slowing rain as it falls allowing for better infiltration, and preventing erosion by stabilizing the surrounding soil. Tree planting projects involve expanding the tree canopy and

can range from planting a single tree, planting a pocket park in a shared space in your neighborhood, or planting a riparian buffer along a water body. However, like other green infrastructure practices, planting location is critical for both maximizing a tree's stormwater benefits and ensuring its long-term health and survival. Trees can provide stormwater management benefits on their own, but combining them with bioretention practices such as rain gardens can further increase the volume of stormwater captured and treated. This is especially important in urban areas, where impervious surfaces and compacted soils can reduce the impact trees have on reducing runoff volume and velocity. The scope, location, surrounding land uses, and budget of a project will largely determine the type of trees that can be planted.

Benefits

- ❖ Trees reduce the impact of rain to the ground. By intercepting rainfall from their leaves, roots, and surrounding groundcover, trees significantly reduce soil erosion.
- ❖ Trees encourage groundwater recharge and mitigate flooding by making soil more porous, allowing for greater infiltration. Trees are most effective at reducing runoff from more frequent and smaller storms.
- ❖ Trees provide shade to the home and slightly cool surrounding air temperatures, lowering energy costs over time.
- ❖ Native trees provide food and habitat for local wildlife.
- ❖ Trees play an important role in removing water pollutants by absorbing nutrients and pollutants from soils and water through their roots.
- ❖ Trees are essential to air quality.

Cost and Funding Considerations

Cost varies based on tree species, tree maturity, the number of trees planted, equipment needs, labor, and maintenance. A tree planting project for your property can be supported by the Virginia Conservation Assistance Program as a conservation landscaping project. All conservation landscaping practices including Meadows, Mulched Beds, Tree Plantings, Filter Strips, and Riparian Buffers are reimbursed at 80% of total costs up to \$7,000. If your community or neighborhood group is interested in collaborating for a community tree planting, street tree planting, or a turf to trees project in your neighborhood, apply for funding with the Trees for Clean Water Grant Program or the Green Streets, Green Jobs, Green Towns Grant Program. Consult an urban forester, the local cooperative extension office, soil and water conservation districts, or community tree planting groups for guidance.

If your property abuts a waterbody and you are interested in planting a riparian forest buffer, look to the resources below to see if you qualify for a free riparian buffer planting with the Rappahannock Stream Health Initiative or James River Buffer Program. Once your riparian buffer is in place, visit the Virginia Department of Forestry website to determine if a riparian forest buffer on your property qualifies for a Riparian Forest Buffer Tax Credit.^{viii}

Helpful Resources

- ❖ Virginia Trees for Clean Water Grant Program (Virginia Department of Forestry) <https://dof.virginia.gov/urban-community-forestry/urban-forestry-community-assistance/virginia-trees-for-clean-water-grant-program/>
- ❖ The James River Buffer Program helps landowners install riparian buffers on their properties at no cost. Within the TJPDC, landowners in Albemarle, Charlottesville, Fluvanna, Nelson, and part of Greene County are eligible for the program. <https://www.jamesriverbuffers.org/>
- ❖ The Rappahannock Stream Health Initiative help landowners in the northern Greene County install riparian buffers on properties abutting streams. <https://www.pecva.org/work/air-water/rappahannock-headwater-stream-initiative/>
- ❖ Virginia Conservation Assistance Program: Conservation Landscaping (Virginia Association of Soil and Water Conservation Districts) <https://vaswcd.org/conservation-landscaping/>
- ❖ Homeowner Assistance for Urban and Community Forestry (Virginia Department of Forestry) <https://dof.virginia.gov/urban-community-forestry/urban-forestry-homeowner-assistance/>
- ❖ The Piedmont Native Plant Guide highlights many native tree species, their needs, and characteristics to aid in picking the right trees for your property. <https://virginia-witmer.squarespace.com/native-plants-for-northern-piedmont>
- ❖ The Charlottesville Area Tree Stewards provide resources and guidance on properly choosing and planting a tree at any site. <http://charlottesvilleareatreestewards.org/learn-about-trees/care-for-your-tree/how-to-select-plant-and-care-for-your-tree/>

GREEN ROOFS



A green roof is a roof that is partially or completely covered with native vegetation, a growing medium, and a waterproof layer. Green roofs are designed to support plant growth and capture stormwater runoff.

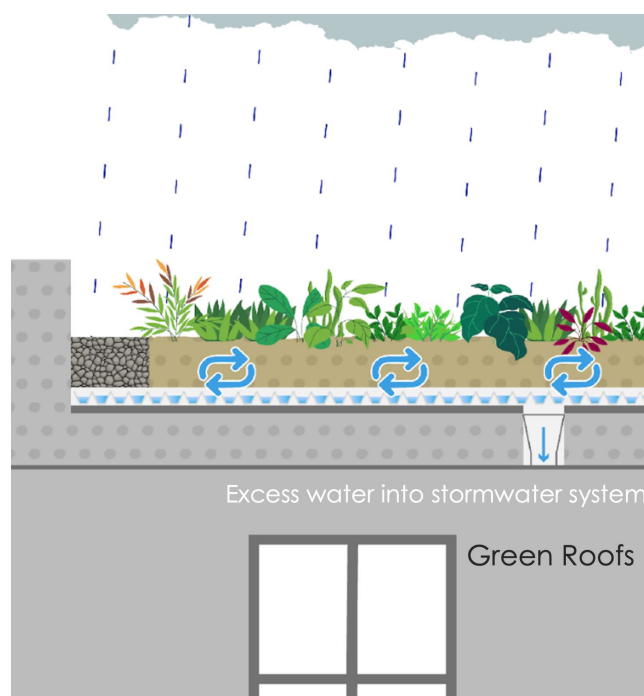
A portion of the captured stormwater evaporates or is taken up by plants, which reduces the volume of runoff, peak runoff rates, and pollutant loads from your roof.

Green roofs can have either an intensive or extensive design. Intensive designs have a deeper layer of growing media which can support larger plantings of shrubs and trees. Extensive designs have a shallower layer of growing media and are designed to support smaller, drought-tolerant plants.

Green roofs can be built on flat and low-angle roofs as well as on pitched roofs up to a 40% slope.

Benefits

- ❖ The added layer of vegetation keeps the house interior insulated in winter months and reduces temperature during summer months up to 20 degrees, reducing energy costs.
- ❖ Reducing energy needs and adding vegetation improves air quality.
- ❖ Green roofs benefit wildlife by connecting the green space to the built environment, providing habitat.
- ❖ Adding plants in areas that are typically impervious mitigates the urban heat island effect.
- ❖ Green roofs reduce roof runoff and associated erosion up to 65 percent.
- ❖ On a flat or low angle roof, vegetated roofs provide added space for gardening.
- ❖ Their typical lifespan is 40 years or more.



Cost and Funding Considerations

The cost of construction depends on whether the roof has an extensive or intensive design, the size of the roof, the type of growing medium, and the plants selected. According to DEQ, construction costs range between \$12 and \$25 per square foot making them one of the more expensive stormwater best management practices to implement at home. However, installing a green roof comes with the added benefit of life cycle cost savings due to improved energy efficiency, increased property value, and increased roof longevity.

Installing a green roof can be supported by multiple funding opportunities:

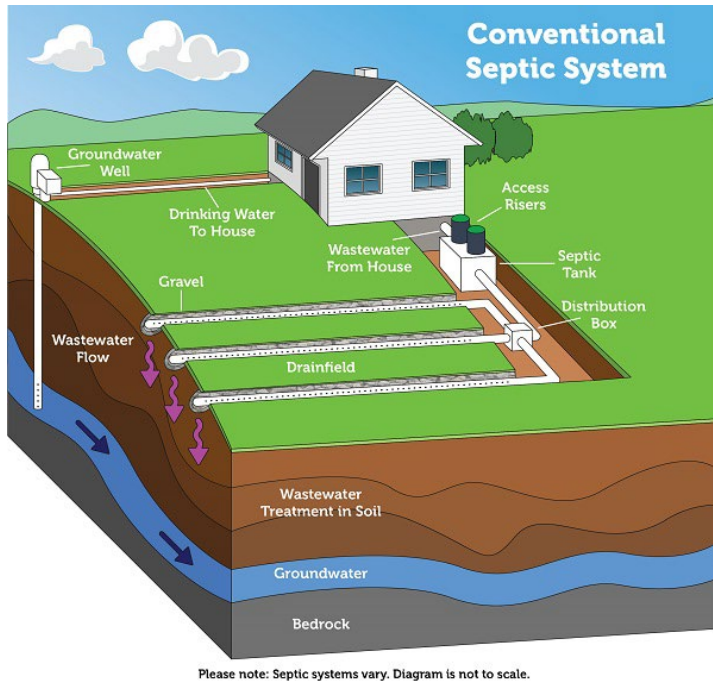
The Virginia Conservation Assistance Program reimburses homeowners at a rate of \$20 per square foot with a maximum payment of \$30,000.

If your neighborhood or community association is interested in implementing green roofs on a larger scale, look to the Green Streets, Green Jobs, and Green Towns grant program to support design, planning, and project implementation.

Helpful Resources

- ❖ Green Streets, Green Jobs, Green Towns (G3) (Chesapeake Bay Trust)
<https://cbtrust.org/grants/green-streets-green-jobs-green-towns/>
- ❖ Virginia Conservation Assistance Program (Virginia Association of Soil and Water Conservation Districts) <https://vaswcd.org/vcap/>
- ❖ Virginia Stormwater Design Specification: Vegetated Roof (Department of Environmental Quality) https://swbmpvwrrc.wp.prod.es.cloud.vt.edu/wp-content/uploads/2017/11/BMP-Spec-No-5_VEGETATED-ROOF_v2-3_03012011.pdf

SEPTIC SYSTEM PUMPOUTS & IMPROVEMENTS



Septic systems are commonly used in rural areas to treat wastewater from homes not connected to public sewer systems. According to EPA, one fourth of US homes have septic systems and up to 18 percent of septic systems in the US are failing.

A conventional septic system typically consists of the septic tank and drainfield. Within septic systems, wastewater that passes beyond the holding tank is treated by the slow release of water into the soil. Solids that build up in the tank must be pumped periodically to prevent backups and failure. When functioning properly, these systems reduce the loads of

pollution to levels that can safely be absorbed by the drainfield. As a general rule of thumb, have your system inspected every one to three years and your tank pumped every three to five years to ensure it is functioning properly.

Benefits

- ❖ A failed septic system can be very expensive to repair or replace. Pumping out your septic tank regularly is a relatively inexpensive way to prevent this from happening.
- ❖ Pumping out your septic system prevents backup and overflow.
- ❖ Septic systems in need of repair or replacement lowers a home's resale value; maintaining your system protects property value.
- ❖ Septic systems release pollutants into the groundwater if they are not properly maintained. Pumping out your septic tank regularly helps to remove these pollutants and improve water quality.

Cost and Funding Considerations

A septic tank pumpout costs between \$200 and \$300 dollars. Pumping out your septic tank every 3-5 years decreases the frequency at which the tank needs to be repaired or replaced. Repairs and replacements are much more costly, typically ranging from \$3,000-\$15,000 dollars. Local Soil and Water Conservation Districts can fund 50%- 80% of costs for pumpouts, repairs, and replacements of systems and drainfields in qualifying watersheds. The Southeast Rural Community Assistance Project, Inc. (SERCAP) offers loans of up to \$15,000 to residents in rural communities to pay for the installation of a new standard or alternative septic system.

Helpful Resources

- ❖ Septic System Repair and Maintenance Cost Share (Thomas Jefferson Soil and Water Conservation District) <https://www.tjswcd.org/septic-system-maintenance/>
- ❖ Cost Share for Septic System Maintenance (Culpeper Soil and Water Conservation District) <http://www.culpeperswcd.org/residential-cost-share-program/>
- ❖ Individual Septic Loan Program (SERCAP) <https://sercap.org/about/who-we-serve/programs-and-services-homeowners>
- ❖ A Homeowners' Guide to Septic Systems (Environmental Protection Agency) https://www.epa.gov/sites/default/files/2015-06/documents/septicsmart_longhomeownerguide_english508_0.pdf
- ❖ How Wastewater Affects the Bay (Chesapeake Bay Foundation) <https://www.cbf.org/issues/sewage-septic-systems/#cbf>

LAND CONSERVATION



Open space and conservation easements are voluntary legal agreements between a landowner and a government agency or land trust to protect all or a portion of their property by permanently limiting future development and subdivision. When a landowner donates an easement, the terms are negotiated between the landowner and the

organization that will hold the easement. Under a conservation easement, landowners can continue to own, use, and control their land and can sell it or pass it on to heirs. The landowner chooses whether to provide public access to the easement or not. Personally, historically, or culturally significant lands are typically conserved and can include lands that are; agricultural or forestal, historic, adjacent to a scenic river, road or byway, land identified in the Virginia Outdoors Plan, recreational and scenic. Local and statewide land trusts, local governments, and state organizations can accept donations of conservation easements.

Benefits

- ❖ Easements help protect local water quality and provide a range of ecosystem benefits by maintaining forests, wetlands, riparian areas, working farms, historical resources, and native vegetation, and limiting development.
- ❖ Once land is donated as conservation easement, the landowner is often eligible for tax benefits including: Virginia land preservation tax credit, federal income tax deductions, estate tax benefits, and lower local property taxes. An attorney and/or an accountant can advise you on potential tax benefits.
- ❖ An easement preserves your land's natural state forever while you and future generations can continue to live and work on the land.
- ❖ Conserving land protects and provides habitat for native species, supports water quality, and natural ground cover helps sequester carbon.

Cost and Funding Considerations

There are appraisal, legal, title, closing, and stewardship fees associated with an easement. The total cost of donating a conservation easement can range from a few thousand dollars to tens of thousands of dollars, depending on location, size, property value, and the type of easement. Landowners may be able to deduct a portion of the value of the conservation easement from their federal income tax.

Tax deductions and funding from land trusts and government agencies can offset the costs of an easement. For example, the Open-Space Lands Preservation Trust Fund (PTF) provides grant funding to support acquisitions, easements, rights of way, and other methods of protecting open space for farming, forestry, recreation, wildlife, water quality, and more for qualifying landowners.

Helpful Resources

- ❖ Land Conservation Organizations in Virginia, <https://www.dcr.virginia.gov/land-conservation/landcon-organizations>
- ❖ How to Conserve Land, <https://www.dcr.virginia.gov/land-conservation/how-protect-land>
- ❖ Virginia Outdoors Foundation, Preservation Trust Fund, <https://www.vof.org/protect/grants/ptf/>
- ❖ Federal and State Grants to Protect Lands, <https://www.dcr.virginia.gov/land-conservation/federal-state-grants>
- ❖ NRCS Conservation Easement Programs, <https://www.nrcs.usda.gov/programs-initiatives/acep-agricultural-conservation-easement-program>
- ❖ Who accepts conservation easements?/How do I get started? <https://www.pec.va.org/our-work/land-conservation/intro-to-conservation-easements/>

CLEAN WATER HOUSEKEEPING PRACTICES

Implementing green infrastructure techniques is not the only way to reduce the volume of stormwater runoff leaving your property. These housekeeping practices are simple to follow and are very effective strategies to reduce the negative impacts of stormwater and are simple to follow.

1. **Test the soil.** Soil tests can help to determine the amount of nutrients existing in your lawn. This is important to do before applying fertilizer as excess fertilizer applied to the landscape often runs into local streams increasing pollution levels. The Virginia Tech Soil Testing Lab offers soil tests and analyzes samples for the public. Your local Virginia Cooperative Extension Office can assist throughout the process. Office location and contact information can be found at <https://ext.vt.edu/offices.html>.^{ix}
2. **Fertilize only when necessary.** Overfertilization is common, and many lawns have a natural soil fertility that may maintain healthy vegetation without additional fertilization. Once you have determined your soil needs with a soil test, site specific recommendations can be determined with assistance from a lawn care professional. The Virginia Cooperative Extension also provides recommendations for lawn fertilization and schedules for fertilizer application.^x
3. **Recycle grass clippings and mulched leaves on the lawn.** Leaving grass clippings and mulched leaves on your lawn slowly releases nutrients back into your lawn and acts as a natural fertilizer. Studies have shown that up to 60% of the seasonal nitrogen need can be met by retaining grass clippings, helping reduce fertilizer and maintenance needs.^{xi} Mulching mowers can be used to recycle lawn clippings and improve soil structure.
4. **Set the mower height to be three inches or greater.** Taller grass has a more extensive root system, helping to reduce runoff, retain water during times of drought, and suppress the growth of weeds. Dense turf grass can slow stormwater, but if runoff continues to cause problems, stormwater best management practices should be considered to support greater water infiltration.
5. **Shrink your lawn.** Reduce the area of turfgrass and impervious surfaces in your lawn to the amount that is needed. Native trees, plants, and shrubs planted in the remaining areas reduce lawn maintenance needs, absorb excess nutrients, prevent erosion, and can serve to protect rare or endangered species. See [Native Plants for Conservation, Restoration, and Landscaping Brochures](#) developed by the Virginia Department of Conservation and Recreation and the Virginia Native Plant Society.^{xii}
6. **Avoid pesticide or fertilizer use within 20 feet of bodies of water.** These substances threaten water supply and wildlife. Consider establishing a riparian buffer along these water bodies instead. The programs listed in the tree planting section can provide assistance with buffer plantings and forest planning and management.

7. **Remove chemicals, pesticides, and fertilizers from paved and hard surfaces.** Avoid spraying on or near hard surfaces and on windy days as this material can be washed into storm drains and waterways.
8. **Notice where you wash your car.** Washing your vehicle on a driveway carries oil, detergents, and other pollutants into nearby streams. Protect local waterways by washing your car on a lawn and using biodegradable products, or take it to a carwash where the water is recycled or treated. Learn more from the [Rivanna Stormwater Education Partnership](#).
9. **Properly dispose of pet waste.** Leaving it on the ground increases public health risks as pet waste contains harmful nutrients, bacteria, and viruses which can end up in local waterways. E. Coli bacteria can lead to water quality impairments that inhibit water recreation activities for the public.
10. **Properly maintain your septic system.** If your home is connected to a septic system, having your system pumped out every 3-5 years, learning what is safe to put down the drain, and learning how the system is related to your well water are important for your health and the environment. ^{xiii}

FUNDING OPPORTUNITIES

Many local, state, and federal agencies offer funding to community organizations, neighborhood associations, and homeowners. Below are resources to get you started.

Available to Homeowners

[Virginia Conservation Assistance Program](#) (VCAP, ACAP and CCAP): VCAP is a cost-share program providing financial, technical, and educational assistance to property owners who install eligible Best Management Practices (BMPs). The [Albemarle Conservation Assistance Program \(ACAP\)](#) and [Charlottesville Conservation Assistance Program \(CCAP\)](#) are similar with special funding from the County of Albemarle and the City of Charlottesville to further encourage BMP implementation. Apply through your local soil and water conservation district.

[James River Buffer Program](#) (JRBP): This funding program helps landowners based in the James River watershed install riparian buffers on their properties. Through no cost to the landowner, the JRBP works with you to select the kinds of native trees and plants that you prefer on your land, takes care of the initial planting, and even maintains the buffers for three years once they are planted. Landowners in the City of Charlottesville, Albemarle, Fluvanna, Nelson, and the southern portion of Greene County are eligible for funding.

[Headwater Stream Initiative](#): This program is designed to provide free technical assistance, project design, materials, and labor for the planting of native trees and shrubs in riparian zones on qualifying properties in Greene County and other counties at the headwaters of the Rappahannock River.

[Individual Septic Loan Program \(SERCAP\)](#): This program offers loans of up to \$15,000 to residents of rural communities to pay for the installation of a new standard or alternative septic system. The interest rate is locked-in at the low-rate of 1%, and these loans are not readily available from other lending institutions.

[Thomas Jefferson SWCD Septic Cost Share Program](#): This program assists landowners with repair and replacement of failing septic systems, connection to public sewer, and routine septic pump outs. Property owners in three watersheds covering portions of Albemarle, Fluvanna, Louisa and Nelson Counties are eligible for 50% reimbursement towards the cost of expenses regardless of income. Some property owners may be eligible for up to 80% cost-share reimbursement depending on income.

[Culpeper SWCD Septic Cost Share Program](#): This cost share program helps fund septic pump out, repairs, replacements, and new systems or drainfields. The funding is available to landowners in the north half of Greene County (north of US 33). All landowners are eligible for 50% cost share for approved amounts, and some may be eligible for 80% cost share.

[Virginia Agricultural Cost Share Program](#) This program supports many conservation planning practices to treat cropland, pastureland, hay land, and forested land. Some practices are cost shared up to 100%, and an individual may receive a maximum of \$300,000 per year. Individuals, trusts, partnerships, and other businesses seeking assistance must apply at their [local soil and water conservation district](#).

Available to Neighborhood Associations

[Urban and Community Forestry Grant Program](#): This program encourages projects that promote the protection and enhancement of urban and community forest ecosystems, tree planting, the care of trees, and education on tree issues in communities. This program encourages citizen involvement in creating and supporting long-term and sustained urban and community forestry projects and programs at the local level. The recommended funding range is \$1,000 – \$35,000.

[Virginia Trees for Clean Water](#): This program encourages the creation of long-term, sustained tree canopy cover to improve water quality across Virginia. This grant funds tree-planting efforts that raise public awareness of the benefits of trees and impacts on water quality. Neighborhood associations and civic groups can apply for a range of eligible projects including: riparian buffers, community or street tree plantings, neighborhood-wide projects, turf-to-trees, and tree giveaways. \$1,000 – \$50,000 is the typical funding range.

[Green Streets, Green Jobs, Green Towns \(G3\) Grant](#): This grant program supports planning, design and implementation of green streets and other green infrastructure projects, community greening, and urban tree canopy projects. Neighborhood and community associations are eligible to apply for this funding. Award amounts range from \$15,000 to \$150,000. See projects that have been funded in previous grant cycles [here](#).

WHO CAN HELP?

Coordinate with local organizations to learn more about conserving your land and implementing stormwater best management practices on your property.

The **Virginia Cooperative Extension** provides resources to learn about maintaining healthy rural and urban landscapes and how to protect soil and water resources. Contact information for VCE offices in the commonwealth is available here <https://ext.vt.edu/offices.html>.

The **Culpeper Soil & Water Conservation District** provides technical assistance to manage, protect, enhance and conserve the land and water for citizens in Greene County and others outside of the TJPDC. They support property owners with financial, educational, and technical assistance to install stormwater best management practices and update septic systems.

<http://www.culpeperswcd.org/residential-cost-share-program/>

The **Thomas Jefferson Soil & Water Conservation District** provides programs and services to protect the watershed. They support property owners with financial, educational, and technical assistance to install stormwater best management practices, locate native plant nurseries, and update septic systems. The district supports Albemarle, Fluvanna, Louisa and Nelson Counties, and the City of Charlottesville. <https://www.tjswcd.org/homeowners/>

The **Virginia Department of Forestry** offers educational, financial, and technical assistance resources for woodland owners and homeowners to support water quality protection.

<https://dof.virginia.gov/water-quality-protection/water-quality-protection-landowner-assistance/>

The **James River Association** provides financial resources to landowners interested in planting riparian forest buffers and works on restoration, conservation, and stewardship throughout the watershed. <https://www.jamesriverbuffers.org/>

The **Rivanna Stormwater Education Partnership** works to educate the community and engage individuals in actions that will protect and improve the waters of the Rivanna River Watershed.

<https://rivanna-stormwater.org/>

The **Piedmont Environmental Council** (PEC) works to protect and restore the lands and water of the Virginia Piedmont. PEC works with residents to conserve land, protect air and water quality, restore wildlife habitat, and improve access to nature. They offer many educational events and volunteer opportunities. www.pecva.org

There are many environmental stewards supporting the health of the environment within the region. Visit <https://tjpd.org/our-work/watershed-implementation-plan-wip/stew-map/> to learn more about the environmental stewardship groups in the region, the work they do, how to get involved, and their partnerships through the Thomas Jefferson Planning District Commission's **Stewardship Mapping and Assessment Project**.

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