November 2000

Water Quality Watch

CHESAPEAKE BAY RESOURCE PROTECTION AREAS

The Chesapeake Bay Preservation Act

The Virginia General Assembly enacted the **Chesapeake Bay Preservation Act** in 1988. The Act requires local governments to include water quality protection measures in their zoning and subdivision ordinances and in their comprehensive plans. In October 1990, Chesterfield County adopted the **Chesapeake Bay Preservation Ordinance** to protect environmentally sensitive lands known as Chesapeake Bay Preservation Areas. The most sensitive of these are called **Resource Protection Areas**.

What are Resource Protection Areas?

Resource Protection Areas (RPAs), or buffers, are the "corridors" of environmentally sensitive land that lie alongside or near the shorelines of streams, rivers, and other waterways. In their natural condition, RPAs protect water quality. RPAs filter pollutants out of stormwater runoff, reduce the volume of stormwater runoff, prevent erosion, and perform other important biological and ecological functions.

The components of an RPA include:

- Tidal wetlands
- Tidal shores
- Non-tidal wetlands connected by surface flow and adjacent to tidal wetlands or tributary streams
- A 100-foot buffer landward of the above features

In Chesterfield County, RPAs are located adjacent to the James and Appomattox Rivers, to the Falling Creek, Lake Chesdin and Swift Creek Reservoirs, and to the 469 miles of perennial streams (streams that flow all year long) throughout the county. The James and Appomattox Rivers are tributaries to the Chesapeake Bay. All of our streams are tributaries to these two rivers.

Why should we protect our waters?

Streams, lakes and rivers are a key ingredient in our quality of life. They support a wide variety of plants, animals and aquatic life. People also enjoy them as visual and recreational resources. In Chesterfield County, a high percentage of homeowners benefit from living near a stream, river or other water body. Chesterfield County is committed to protecting our waters because they are valuable community assets.

What happens if Resource Protection Areas are not properly managed?

Because RPAs are so close to water bodies, disturbing them allows more pollutants to enter our waters and, eventually, the Chesapeake Bay. Stormwater runoff picks up and carries oil from roads, soil from construction sites, fertilizers and pesticides from farms and lawns, harmful bacteria from pet and farm animal wastes, and trash. In many areas, stormwater is one of the leading causes of surface water pollution.

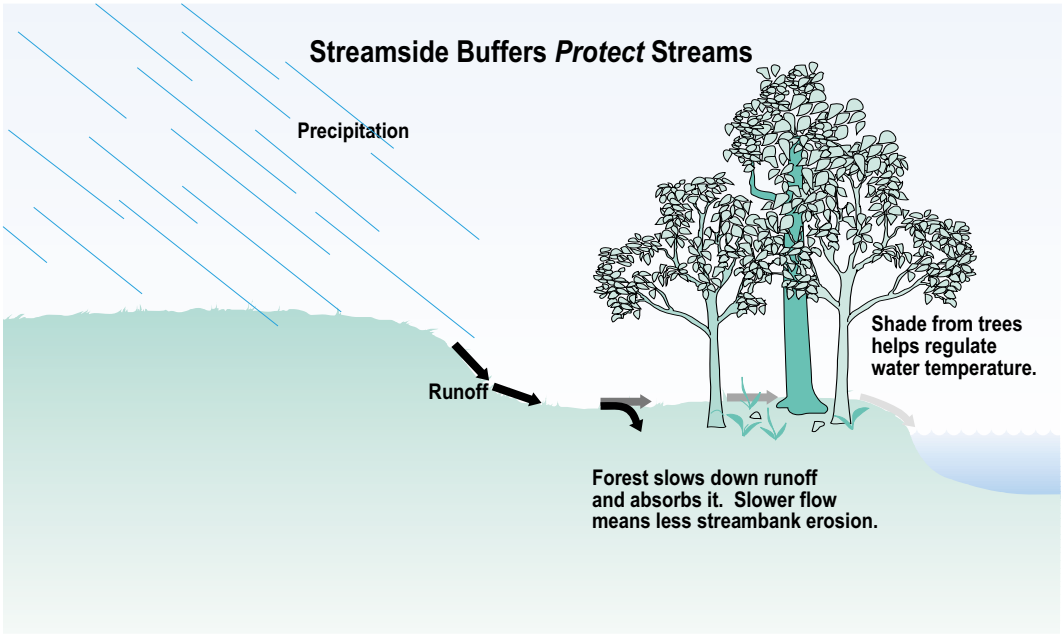
In addition, if RPAs are inadequately managed, or if there is no protected stream corridor, other impacts such as stream bank and channel erosion, habitat destruction, and a reduction in the stream's biodiversity can result.

Why are Resource Protection Areas so important?

A naturally vegetated RPA, or buffer, acts as a ***stream protector***, a ***filter***, a ***transformer***, a ***nutrient sink*** and a f***ood source***. These critical functions enable the RPA to remove pollutants from stormwater runoff and to protect the stream or other water body.

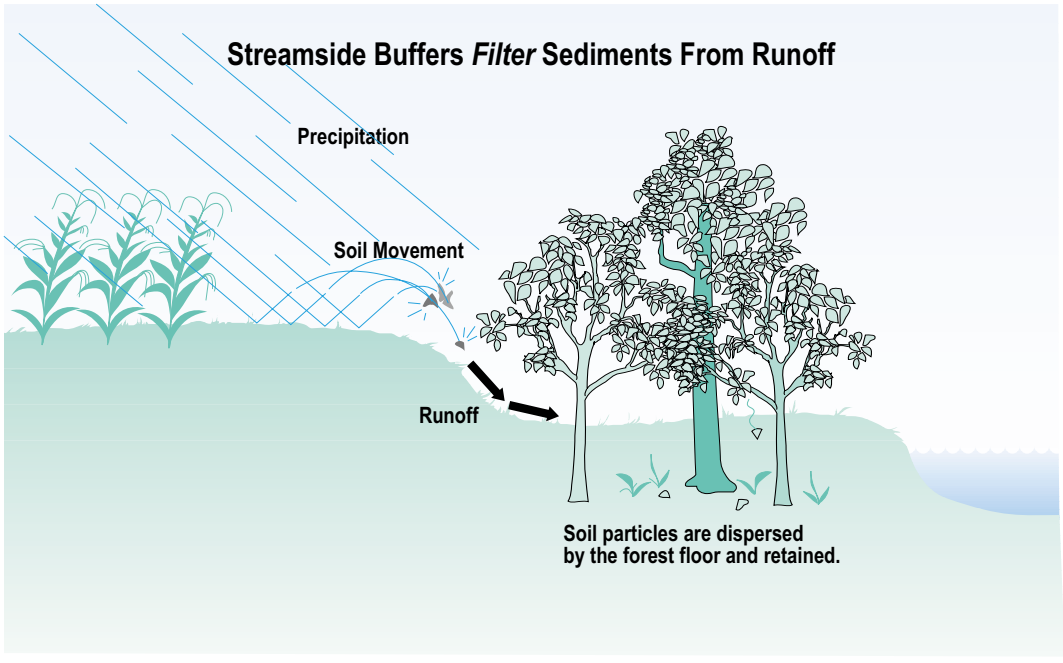
As a *protector…*

Trees and other plants in the RPA help to stabilize stream banks and limit erosion in the stream channel. An RPA can reduce the volume of stormwater runoff coming from developed areas outside the RPA, by slowing it down and allowing it to be absorbed into the soil before it reaches the stream. This, in turn, helps maintain the base flow of water draining to streams during periods of drought. Tree canopies in an RPA provide shade for streams, which moderates increases in water temperature and supports aquatic life. Finally, an RPA provides scenic and recreational value to surrounding areas, as well as habitat for a variety of wildlife.



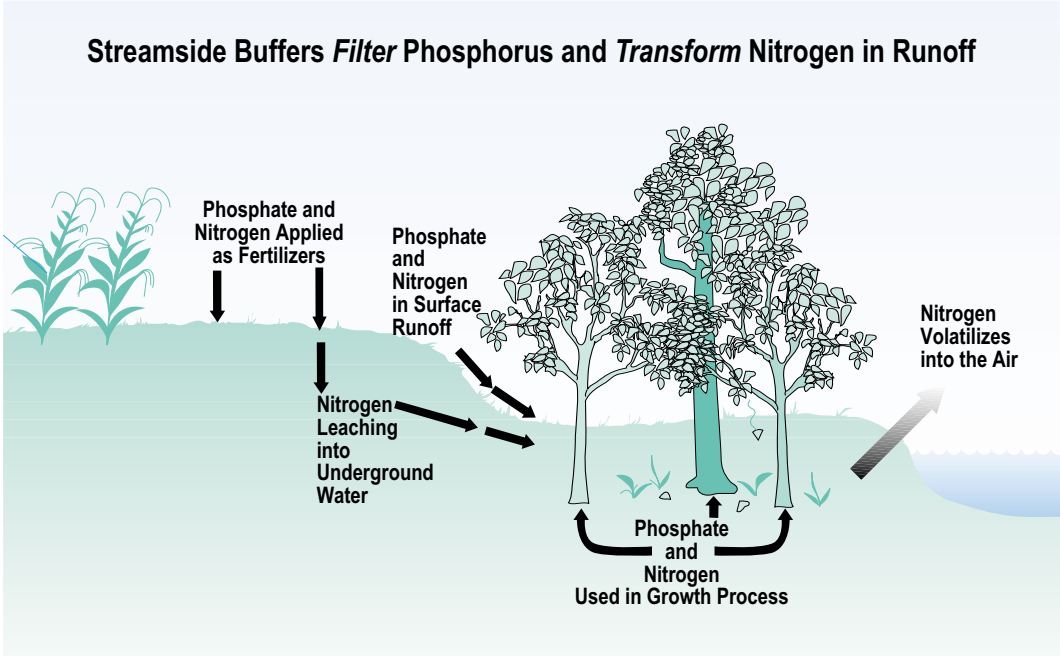
As a *filter…*

The RPA reduces the amount of ***sediment*** and ***nutrients*** (such as phosphorus and nitrogen in fertilizers) that are carried by stormwater runoff. In water bodies, sediment can smother plants and clog fish gills. As stormwater passes through an RPA, sediment settles out or is stopped by vegetative litter (leaves, twigs, etc.) on the ground. ***Phosphorus***, which clings to soil particles, is trapped through this filtering action and is used by the plants in the RPA.



As a *transformer*…

The chemical and biological processes in an RPA actually change the chemical structure of some pollutants. The soil can transform ***nitrogen*** in stormwater runoff and in decaying organic debris into mineral forms, which can then be converted into proteins by plants or bacteria. ***Toxic chemicals*** in pesticides and herbicides are also changed into nontoxic forms by biodegrading forces at work in the soil and vegetative litter.



As a *nutrient sink*…

The RPA vegetation ***takes up nutrients*** such as phosphorus and nitrogen into plant tissue. In RPAs with moist soils, nutrients in leaf litter can be stored for long periods of time. Excess nutrients that reach streams can make algae grow too fast, which kills fish and blocks the sunlight that other aquatic plants need.

As a *food source*…

The RPA provides a source of food for small organisms in streams. This food base comes from material such as fallen limbs and leaves, as well as insects. When those small organisms are consumed by larger aquatic life, the energy from that food base is passed along. The RPA is an important part of the food chain in the adjacent stream.

Under the Chesapeake Bay Preservation Ordinance, activities and uses that are permitted and not permitted in the RPA include:

Permitted

- Water dependent facilities, such as docks, piers and public beaches
- Rebuilding existing structures
- Water wells, boardwalks, trails, pathways and public utility structures
- Selectively removing trees, for reasonable sight lines and vistas or pedestrian walkways (created using natural materials)
- Removing dead or dying vegetation

NOT Permitted

- New development
- Additions to existing structures
- Parking lots
- Secondary structures, such as sheds and gazebos
- Clear-cutting trees
- Filling and grading activities
- Establishing lawns

What activities are permitted in a Resource Protection Area?

The Chesapeake Bay Preservation Ordinance requires that a 100-foot buffer, which is called the Conservation Area component of the RPA, be maintained in a manner "that retards runoff, prevents erosion, and filters nonpoint source pollution from runoff."

Can trees be removed to establish a view of a lake or water body?

Establishing "reasonable" sight lines is permitted by the Chesapeake Bay Preservation Ordinance, but ***only if approved by the Department of Environmental Engineering***. In keeping with the intent of the Chesapeake Bay Preservation Act, any vegetation that has been removed ***must be replaced*** with vegetation that offers an equivalent level of water quality protection. This may be provided by planting appropriate vegetation, such as native shrubs and ground covers, that don't grow as tall.

Even better, ***pruning tree branches at viewing level can provide the desired view without removing the tree and the water quality protection it provides***.

Consequences of violating Resource Protection Area requirements

Non-compliance with RPA requirements is a violation of the county's Chesapeake Bay Preservation Ordinance and can result in penalties. Violators will be required to restore the RPA in accordance with county guidelines. An RPA Restoration Plan must be developed and submitted to the Department of Environmental Engineering for review and approval. The objective of the plan is to restore the RPA's primary functions, so that it can again remove pollutants from stormwater runoff.

Example of a home lot with an RPA that was completely cleared and planted with grass. This is a ***violation*** *of the county's Chesapeake Bay Preservation Ordinance.*

It ***is not enough to simply allow vegetation to "come back" on its own***. It will take too long to restore the buffer's pollutant removal and other functions.

To be most effective, three tiers of vegetation should be established in the buffer:

- Ground cover
- Understory (shrubs and small trees)
- Overstory (canopy trees)

Some of the basic elements of an RPA Restoration Plan are:

- Size of the disturbed area
- Layout of plantings (including spacing)
- A legend indicating the type, number, and size of vegetation to be planted
- Timing of the restoration planting
- Cost of plant materials and labor

The county will require that a "bond" be posted, to cover the cost of plant material and labor for installation.

Example of a home lot with most of the RPA vegetation left in place. The homeowner's view of the lake is "filtered" through the trees.

Restoring a previously disturbed RPA

Do you have property in an RPA that was not properly managed by its previous owner? Would you like to restore it and help protect our waters?

Would you like ideas on how to enhance an existing RPA?

Please contact the ***Chesterfield County Water Quality Section!*** We will be happy to provide you with information about selecting plants and proper planting techniques.

For more information

For specific questions on RPAs or any other water quality issues, call the ***Chesterfield County Water Quality Section*** at ***804-748-1035***.

This is one of a series of fact sheets about surface water quality issues in Chesterfield County. Copies are available in the Department of Environmental Engineering offices at 6806 West Krause Road. The series includes:

- *Chesterfield County's Stormwater Management Program* (August 1997)
- *Household Guide to Chesterfield County's Illicit Discharge Ordinance* (October 1997)
- *Business and Industry Guide to Chesterfield County's Illicit Discharge Ordinance* (October 1997)
- *Chesapeake Bay Resource Protection Areas and Flood Plains* (December 1997)
- *The Streams of Chesterfield County* (September 1998)
- *Homeowner's Guide to Flood Plain Management* (February 1999, revised August 1999)

These fact sheets are produced by the Water Quality Section of the Department of Environmental Engineering. Our mission is to protect, maintain, and restore the chemical, physical, and biological integrity of Chesterfield County's waters. This mission furthers one of the county's Strategic Goals: to maintain an extraordinary quality of life in the county by protecting and preserving our natural and historical resources. For more information, call 804-748-1035.

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