

Controlling Erosion

Erosion occurs when soil particles are dislodged by the force of stormwater runoff or by wind. Some soils have a tendency to erode more than others do. Any soil type that is left bare and unprotected will erode. Also, the steeper and longer the slope of the exposed land, the faster and more erosive runoff becomes. Minimizing runoff and preventing erosion reduces the movement of other pollutants from your property to the nearest stream or storm drain.

A healthy soil is porous, multi-textured and full of life. The topsoil, the upper six to eight inches, should be high in organic content. Earthworms and soil microbes help to make nutrients available to plants and keep the soil absorbent and porous, which facilitates infiltration.

Tips for Controlling Erosion

- Protect the soil with vegetation, mulch, or other materials that will intercept the force of rainfall and runoff and help prevent erosion from taking place. Such protection will also allow maximum infiltration and minimum runoff.
- In a typical suburban yard, maintaining a healthy lawn and mulching flowerbeds and gardens will not only prevent erosion, but will also more effectively retain fertilizer and pesticides as well as other potential pollutants, such as pet waste.
- Remember, vegetation is important on steep slopes, including ditches! Allow vegetation to grow in ditches to help trap eroding soil.

Where To Get Help for runoff, erosion & soil information

- Cecil County Government Department of Public Works Sediment and Stormwater Management Branch **410-996-5267**
- Maryland Department of the Environment, Cambridge Field Office, 410-901-4020; 407 Race Street, Cambridge, MD 21613; <http://www.mde.state.md.us>
- Cecil County Soil Conservation District, 105 Chesapeake Blvd., Suite B-3, Elkton, MD 21921; <http://www.cecilscd.com>; **410-398-4411 ext. 3**
- USDA-Natural Resources Conservation Service Soils, **410-666-1188 ext. 3**; <http://soils.usda.gov>

Storm Water Runoff Can Pollute

In a rainstorm, some rainfall will infiltrate or soak into the ground and some will become runoff. Infiltrated water will percolate through the soil and replenish the ground water that wells tap into. Runoff can cause serious pollution problems.

With every house that is built, a considerable expanse of impervious surface is added. A vacant lot can absorb rainfall over its entire surface, but when roofs, sidewalks, driveways, streets, and parking lots are installed, all of the rainfall striking these surfaces runs off and there is very little infiltration. Runoff from residential areas can quickly pick up pollutants while traveling to the nearest storm drain.

The most common pollutant is sediment, soil particles carried in suspension by the runoff, that makes “muddy” streams. When runoff slows down the sediment will drop out of suspension. Pollutants such as fertilizers or pesticides can be carried in runoff either in solution or attached to sediment particles. Other water-borne pollutants include pathogens, fecal coliform (which could come from wild animal or pet waste), gas, oil, grease, and exhaust particulates that wash off streets, and parking lots. Use caution when swimming in rivers after heavy rains.

In suburban areas, runoff eventually flows into the storm drain system, headed for drinking water reservoirs and the Bay. It is far easier and more cost-effective to solve pollution problems at the source. Once polluted runoff leaves your property, it becomes a public and much more expensive problem.

Suburban developments built since 1984 have been required to provide permanent stormwater management practices that treat runoff and slowly release it to the nearest stream. This slow release prevents the concentrated flow that results in stream bank erosion, which can cause many thousands of tons of sediment from the collapsed stream banks to be moved downstream.

Tips for Reducing Runoff

- The first and simplest rule of conservation is maximize infiltration of rainfall and minimize runoff.
- Protect soil with grasses, shrubs, trees, or mulch. This will make the soil more resistant to erosion and more likely to absorb the maximum amount of rainfall before runoff begins to occur.

Streams in Your Neighborhood Need Your Help

Streams flowing through suburban areas need special care. New expanses of impervious surfaces (roofs, parking lots, and streets) will not allow rainfall to soak into the ground. As urbanizing areas develop, natural stream channels must increase in size to handle a higher volume of storm-water runoff coming from impervious surfaces. 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. Healthy stream banks should angle gently away from the stream.



Stream banks should be protected with vegetation and trees. Streamside vegetation acts as a filter for runoff flowing from upland areas towards the stream and is very effective in 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.

Landowners should bear in mind that any grading or significant changes within the stream channel that would affect the flow or cross-section of the channel require a State permit. This permit is granted only if the landowner can prove that the proposed change will not negatively impact the environment or the stream's ability to convey stormwater.

The best protection for streams is the establishment of a riparian buffer strip, a protected area extending beyond the stream-banks that is densely planted in grasses, shrubs, and trees. Many non-profit organizations have stream buffer planting projects. You can volunteer to help with these projects. Contact the Cecil County Soil Conservation District for more information on the available cost-share programs offered for installing buffers.

Where To Get Help for stream information

- Cecil Soil Conservation District 410-398-4411 ext. 3;
<http://www.cecilscd.com>
- Maryland Department of Natural Resources Streams
<http://www.dnr.state.md.us/streams/>
- USDA-Natural Resources Conservation Service, Buffer Strips Common Sense Conservation; <http://www.nrcs.usda.gov/feature/buffers>

Impacts of Urbanization

In developed areas where land is covered by houses, parking lots, roads, rainwater cannot be absorbed into the ground. Instead, rainwater becomes run-off and is forced to the closest drain-pipe. The resulting run-off is discharged to the nearest body of water and is not properly treated. In areas with increased urbanization, flash-flooding is more common. The increased velocity resulting from flash-flooding erodes stream banks.



Fallen tree from the bank of the Elk Creek.

The base flow (flow not attributed to runoff of precipitation or snowmelt) of streams in more developed areas is typically lower than that in rural areas. As a result, streams in more developed areas cannot support aquatic life. There is a direct relationship between impervious cover and stream health. As the percentage of impervious cover (roads, parking lots, sidewalks, or building roofs, etc.) increases, stream health decreases.

Streams in more developed areas suffer not only from increased flash-flood velocities and low base-flow velocities, but also from increased temperatures, pollutants, and loss of buffers. Typical pollutants found in more developed areas include sediments, nitrogen, phosphorus, oil, heavy metals (zinc, copper, and lead), and pesticides. Excess nutrients (nitrogen and phosphorus) accelerate the growth of algae. The increased growth of algae reduces the oxygen available in the stream, which affects the survival rate of aquatic life dependant on dissolved oxygen.

Where To Get Help for impacts of urbanization information

- Chesapeake Bay Foundation; 410-269-0481; <http://www.cbf.org/site/PageServer?pagename=homev3>
- Center for Watershed Protection; 410-461-8323; <http://www.cwp.org>
- Several slideshows and other information about the impacts of urbanization are available at the Stormwater Manager's Resource Center; <http://www.stormwatercenter.net>

Sustainable Development

In an effort to reduce the impacts of urbanization the idea of sustainable development came about in the 1960s. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

The aim of sustainable development is to link the economy, the environment, and social well-being. To implement sustainable development, practices, ideologies, and policies must be changed at all levels of development from the individual to the international.



Goals of Sustainable Development

- Protect important farmland from being developed.
- Encourage the use of better stormwater management practices.
- Encourage citizens to take care of green spaces including town and state parks and neighborhood gardens.
- Help communities to set development goals for the future, keeping environmentally friendly practices in mind.

Where To Get Help for sustainable development information

- Cecil County Government Planning and Zoning **410-996-5220**
- Cecil County Government Development Services Division
410-996-5265 or **410-996-5267**
- United Nations Division of Sustainable Development;
<http://www.un.org/esa/sustdev/index.html>
- For sustainable development definitions, principles, and timelines
visit Sustainable Development Gateway; **<http://sdgateway.net/introsd/definitions.htm>**