Your Water, Your Future

by Dauphin County Conservation District

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1451 Peters Mountain Road • Dauphin, PA 17018
717.921.8100 • www.dauphincd.org

FLOODPLAINS

Have you noticed that local flood advisories are frequently issued along with storm forecasts in our region? In developed areas, even short periods of heavy rain result in great volumes of runoff rushing into local streams. Unable to contain all the water pouring in, the stream overflows its banks, discharging excess water onto the floodplain, the low-lying land adjacent to the streambank.

As you are aware, floods can cause loss of life and extensive property damage. The degree of destruction depends on the severity of the flood and, more importantly, the amount of development on the affected floodplain. Structures on the floodplain not only stand at risk for damage in the event of a flood, but they also add to the problem by increasing flood levels. Similar to how dropping a pebble in a glass of water will raise the water level in the glass, each structure on a floodplain displaces water and raises its level. Over a large area, this effect can be significant! Taking these factors into account, it makes sense to avoid development of any kind on the floodplain.

What can be done with undeveloped floodplain land? In terms of water quality, floodplains are well-suited for growing vegetated riparian buffers that protect a stream by filtering pollutants from runoff. Buffers also provide additional benefits; these are addressed further in the section about riparian buffers on the reverse side. The most important point is that vegetative cover on the floodplain lowers the extent and cost of flood-related property damage and it also performs environmentally beneficial functions.

Stormwater runoff is a major contributor to flooding issues; inadequately managed stormwater runoff makes a bad situation much worse. Costs arising from flood damage to municipal roads, bridges, facilities and parks can add up to millions of dollars, and flood insurance does not always cover all damages.

As a decision-maker for your municipality, you have authority to better protect local floodplain areas through stormwater and floodplain ordinances. Land use ordinances that prevent development on the floodplain can also save you and your constituents headaches arising from flood-related property damage in the future. Remember the adage, "An ounce of prevention is worth a pound of cure."

Your Water, Your Future is produced as part of Dauphin County Conservation District's Municipal Stormwater Outreach Initiative. This issue, the fourth in the series, examines floodplains, wetlands and riparian buffers as they relate to managing stormwater runoff in your municipality.

Please contact Gil Hirschel at 921-8100 with your questions, comments, or requests for additional information.

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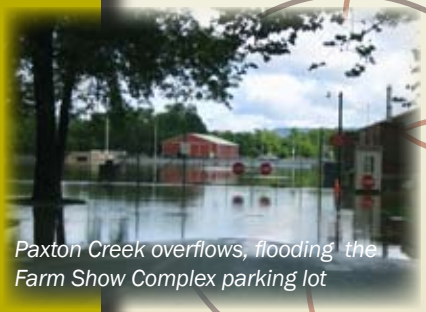

Paxton Creek overflows, flooding the Farm Show Complex parking lot

Quiz - True or False

1. Buildings located on the floodplain add to rising flood levels.
2. Maintaining only 15% of the land area in a watershed in wetlands can reduce flooding peaks by as much as 60%.
3. Manmade wetlands can provide the same environmental functions as natural wetlands.
4. Grassy streambanks provide better infiltration than those planted with trees and shrubs.
5. Streambank buffers are especially effective at reducing pollutants in runoff from agricultural and suburban areas.

Answers on reverse side, bottom of the page.

Riparian Buffers

A riparian buffer is a vegetated strip of trees and shrubs planted along a water body. Buffers provide many benefits related to water quality, including infiltration, groundwater recharge, removal of sediment and pollutants from runoff, and they prevent streambank erosion. They are natural stormwater management tools for intercepting and treating runoff before it reaches a stream.

Forested riparian buffers provide significantly higher infiltration rates and pollutant-removal levels than grass-lined streambanks. The Chesapeake Bay ecosystem has suffered from high levels of phosphorus and nitrogen from lawn and crop fertilizers that are carried in runoff and deposited in streams and rivers that flow to the Bay. Placing forest buffers along streams that run through farmland and residential areas can greatly reduce the amount of these nutrients that enter your local streams and the Bay. Further, vegetated buffer strips placed along *any* section of streambank will help improve water quality locally and downstream.

Forested buffers are one of the most cost-effective options for streamside stormwater management. Aside from an initial investment in plants, tools and labor, once a buffer is established, its maintenance requires minimal effort.

Riparian buffers can be designed to include nature trails for public use. Buffers also enhance habitat for aquatic life and function as wildlife corrdidors that offer shelter and protection to small animals. Their ability to attract fish and small wildlife promotes recreational opportunities for fishing and bird watching enthusiasts.

Municipalities can use land use and development controls to maintain and protect buffers. Enacting zoning ordinances, subdivision regulations or special ordinances that protect buffers are all options that can result in minimizing flood damage, stream erosion, water pollution, and overall financial cost to the community.

Buffer (outlined in yellow)

WETLANDS

Natural wetlands, as the name implies, are land areas generally characterized by soil that is saturated most or all of the time, like bogs and marshes. Wetlands are among the most fertile and productive ecosystems in the world. They perform valuable functions in a watershed, providing temporary flood water storage, infiltration, and groundwater recharge. Wetland plants and soils filter pollutants and excess nutrients out of water, thus improving water quality.

Due to their unique ecological features, wetlands are typically the only habitat where rare or endangered plant species that require a constant water supply or special soil conditions can thrive. For instance, the rare American lotus grows abundantly in Wildwood Lake, one of the largest wetlands in Dauphin County.


Wildwood Lake, Dauphin County
Photo courtesy of Friends of Wildwood Lake

Economically, wetlands yield natural products such as timber, and they can provide recreational opportunities for fishing, boating, hiking and bird watching.

Despite the benefits they offer in regard to stormwater management, natural wetlands can be overwhelmed by receiving too much runoff piped in from developed sites. A more effective stormwater management tool is the constructed wetland. Constructed wetlands are designed to imitate the functions of a natural wetland and provide similar benefits. They also cost significantly less (50 to 90% less!) than conventional treatment systems.

The only drawback to wetlands – natural or constructed – is that they may provide breeding habitat for mosquitos. However, special design features can make a wetland area less suitable for mosquitos. For additional information, contact Eric Naguski, Dauphin County's West Nile Virus Control Coordinator, at our office.

The many benefits derived from wetlands make them worthy of protection from development. According to the US EPA, maintaining only 15% of the land area in a watershed as wetlands can reduce flooding peaks by up to 60%. Municipalities, through watershed planning, wetland protection ordinances, and appropriate land use management, can ensure these valuable areas can be maintained. ☐

Quiz Answers

1-True; 2-True; 3-True; 4-False; 5-True

Next Issue: Development