



Wetland Functions: Flooding and Sediment Reduction

People who consider wetlands to be important usually have wildlife habitat and recreation in mind. Wetlands are a great place to see many species of animals, trees, and other plants which have special adaptations to living in these unique environments. Many people visit wetlands to catch a glimpse of these plants and animals but don't always consider wetlands' other benefits to them and the environment. In this video, we'll discuss two very important wetland functions which help protect property and improve water quality. These functions are flooding and sediment reduction.

The wetlands here at the Conservation District exist on a wide, flat area of land. This land borders Raccoon Creek and is called a floodplain. Floodplains are so named, because they often get flooded during heavy rain storms. Spring storms in Pennsylvania can cause worse flooding if the ground is still frozen from winter or if it is already soaked with snowmelt. In these pictures, we can see our lower wetland looks more like a lake during times of flooding. The water which overtops the banks of Raccoon Creek and flows into our wetland gets spread out over the wide floodplain, slowing the speed of the water and reducing its depth.

As the flow of water slows, this allows time for debris to sink. Flood debris may include many things such as branches, plant stems & leaves, trash, sand, gravel, and soil. The vegetation in a wetland can help to catch this debris and stop it from traveling farther downstream. Forested wetlands, called swamps, are better at stopping large debris, such as logs. But herbaceous wetlands, known as marshes and full of grasses, sedges, cattails, and similar plants, are better at collecting sediment and soil particles. Sediment reduction is important, because sediment can bury aquatic animals, clog their gills, and increase water temperatures which reduces oxygen. Sediment deposits in waterways can build up into sandbars, changing streamflow, and sediment in drinking water sources requires increased filtering to make it ready for human use.

A walk across our lower wetland during a time of drought reveals the sediment collected during times of flooding. As this soil dries out, it cracks apart. Sphagnum mosses and other wetland plants take root in the cracks as the groundwater retreats, but our wetland wildlife

move on until the drought ends. Even though the cracks in the ground run several inches deep, there are no signs of the small rocks which can be found in the soils of the neighboring forests and farmlands. This is because the rocks have become buried under layers and layers of sediment deposits.

Wetlands can survive droughts. Their soils are different compared to upland soils found in forests and fields, and sediments left behind by floods will change into wetland soil within a few years. Wetland soils act like a sponge. They absorb more water than upland soils can take in and then release it slowly over time. This means they help restore groundwater which supplies water wells. During times of drought, wetlands will hold water longer than uplands, allowing their plant communities to stay green and continue growing even as other plants start to wither.

This sponge-like ability of wetland soils helps to reduce flood damage. The average acre of wetland can hold three acre-feet of water and filter 7.3 million gallons per year. This means our 17-acre lower wetland has the capacity to store more than 16.5 million gallons of water at a time and filters 124 million gallons per year. Although flooding rarely occurs when a wetland is empty of water, this amount of storage and filtration capacity per acre of wetland can significantly reduce flood damages in the US by millions of dollars per year.

Evidence of past flooding events at our property are easily seen along our hiking trails where plant debris builds up against tree trunks and where sand mounds line our creek-side paths. Our wetland is a mitigation site, a manmade wetland created because wetlands somewhere else were filled in or drained by development. Our wetlands at the Conservation District exist because the federal and state governments recognize the importance of wetlands to both people and the environment.