

Reducing Pollution to the Chesapeake Bay Through Floodplain Restoration

By

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Thank you for the opportunity to be here today to tell you about a new tool we believe can help solve pollution problems in the Chesapeake Bay.

My comments summarize a longer paper we have made available to the Committee.

LandStudies is based in Lititz, Lancaster County. We have been involved in watershed restoration – assessment, design, and construction – throughout central and eastern Pennsylvania and Maryland for nearly a decade.

If Pennsylvania is to meet its obligation to remove nutrients and sediment from our part of the Chesapeake Bay drainage area, we need to apply all the knowledge and experience we have.

Independent research, including work by Franklin and Marshall College and the University of Louisville, and our own findings from watershed assessments have given us a better understanding of the sources of sediment and nutrient pollution entering the Bay. And that information has changed the tools we need to deal with it.

Up until now, most strategies to reduce pollution to the Bay have focused on agriculture, sewage treatment, and stormwater. These are, indeed, pollutant sources that need to be addressed.

However, research and our own experience have shown that streambank erosion is a much greater source of sediment and nutrient pollution than anyone realized. It could account for as much as 50 to 80 percent of the sediment loads in certain watersheds, and a significant amount of the nutrient load. Measured bank erosion rates in the field are often exponentially greater than the rates predicted by some of the commonly used models. Stream bank erosion, when accounted for at all, has been grossly underestimated.

Streambank erosion is a particular problem in central and eastern Pennsylvania and the entire east coast because of the presence of what we call “legacy sediments.” These are sediments that eroded from land clearing and poor farming practices during Colonial days up until the mid 1950s.



These sediments and attached pollutants were caught behind thousands of mill dams that were built on our streams in the 18th and 19th centuries. These captured sediments elevated stream beds and buried functioning floodplains, creating non-functional terraces instead.

As better land-use practices arose, sedimentation slowed, but the sediments were still trapped until dams collapsed or were removed.

Today, streams are cutting down through three to 20 feet of legacy sediments, trying to find their original stream beds. With each rainfall, stream banks erode and often collapse into the channel, and the soils and their associated nutrients are washed downstream.

Using the results of our research, field measurements, and restoration projects, we are beginning to document the value of a new tool – floodplain restoration – in eliminating pollution caused by stream bank erosion.

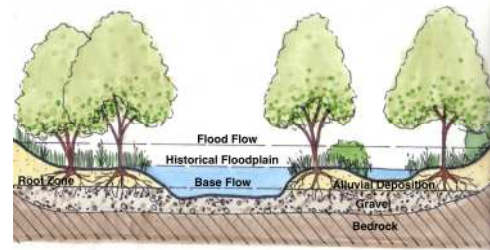
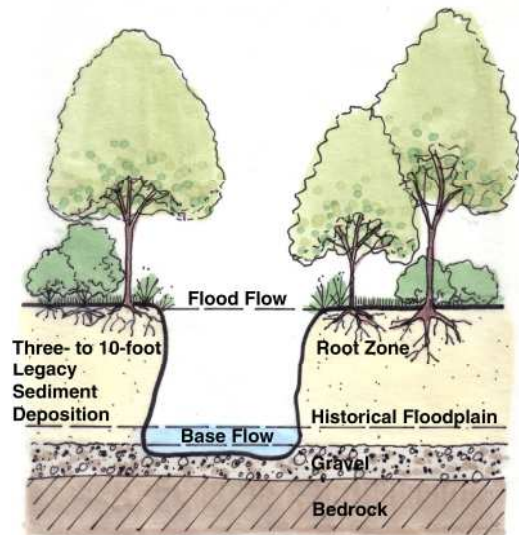
Floodplain restoration involves excavating legacy sediments from carefully defined areas as part of a design to re-create a lower, more natural, meandering stream channel and functional floodplain, complete with wetland pockets and native vegetation – thereby removing on-site sediment and nutrient sources.

As an example of the benefits of floodplain restoration, let me tell you briefly about the New Street Ecological Park restoration project.

LandStudies designed and constructed the project in Lititz, where we removed three to four feet of legacy sediments and restored meanders to Santo Domingo Creek in the Lititz Run watershed. In the process we created several wetlands and replanted the floodplain with native vegetation. Now restored, this 750 foot-long area:

- eliminates a major source of sediment and nutrients;
- reduces downstream nuisance flooding;
- provides an area for groundwater recharge and stormwater filtration; and
- generated trading credits for nutrient and sediment reduction.

Also, the excavated nutrient-rich sediment is a valuable commodity that can be sold for topsoil.



Floodplain restoration is not the answer to every problem and it can't be used everywhere. However, the contribution from legacy sediments needs to be accounted for to avoid spending money on projects that will not effectively address one of the largest sources of pollution.

We were pleased when DEP recognized floodplain restoration in its draft credit trading policy as a technique that can be used to generate credits. And the Susquehanna River Basin Commission's newly-released Northern Lancaster County Groundwater Study highlights floodplain restoration's benefits for groundwater recharge, where applicable.

We hope to see the floodplain restoration tool recognized in DEP's Stormwater Manual and other water programs, such as developing total maximum daily load (TMDL) water quality plans and water resources planning.

Increased recognition of the value of floodplain restoration as a best management practice would allow the private sector to become involved in the financial support of restoration efforts. In fact, we have several local developers who are interested in using this approach to manage stormwater.

A credit system could give various sectors credit for controlling stormwater, for reducing nutrients, and for groundwater recharge using floodplain restoration.

We've also had interest from at least one entrepreneur in financing a large, regional floodplain restoration project as an investment. He would then sell the nutrient reduction, stormwater management, and recharge credits to others who need them.

This is not pie in the sky. We know it works. If the credit and regulatory systems can be designed to include innovative solutions like this, we will be able to solve our pollution problems more effectively and efficiently.

Again, thank you for the opportunity to be here today. I would be happy to answer any questions you might have.



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