

**The Center for Rural Pennsylvania Listening Session  
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Testimonial provided by: Corey Richmond  
Watershed Specialist  
Sullivan County Conservation District  
570-928-0109

Good Morning, my name is Corey Richmond and I serve as the Watershed Specialist for the Sullivan County Conservation District. I have served the residents of Sullivan and portions of Lycoming County for more than 13 years in addressing stream related issues. This morning I would like to share my opinions of stream channel instability and approaches to restoration and stabilization of our local streams following small and large scale flood events.

In 2011, portions of Sullivan County were hit with several flood events. After every event, many spoke of the need for dredging of the streams. "If someone would dredge that stream, we wouldn't get all this flooding" was heard quite frequently across the county. It is imperative that we all realize that flooding is a natural occurrence of any stream. Regardless of how hard one tries, flooding of streams will never go away. It is a natural process of the stream itself. Streams, floodways, and floodplains all play a critical role in the movement of water through the stream system.

Dredging is the word that so many say will take all our problems away. It is a very big misconception that dredging will solve flooding issues. Now before I continue I want to make an important clarification. Dredging and gravel removal is not the same. Dredging is the practice of deepening and widening channels. Gravel removal, or channel modification, is the removal of excess gravel from a stream channel without widening or deepening the original channel. Gravel removal is a common permitted practice in streams. It is also a practice that requires long term maintenance and successive removal.

Dredging is seldom the answer we are looking for in flood prevention or reduction. It has many unexpected and unfavorable effects. Dredging can cause streams to become more unstable, and develop changes in flow, rate of bank and channel erosion, and sediment transport. When a stream channel is altered, it will migrate, cause erosion, and adjust flow as part of its re-stabilization.

When we look at the possibility of dredging, let us look first at the realities of dredging as a flood prevention tool. As an example, let's take a stream that has a channel width of 30 feet and a floodplain with a width of 900 feet. If we want to decrease the potential flood level by 6 inches we would need to dredge the stream an additional 15 feet and maintain that depth to achieve the reduced level. In many cases, this would involve blasting bedrock to gain the required depth. Some other concerns that need to be considered are: Where does the dredging start and stop, and who is going to maintain the stream bed elevation, where is the dredged material going to be put, both short term and long term?

I strongly suggest that other techniques be researched and utilized and that dredging not be considered a solution to flooding potential reduction.

It is my opinion that debris removal from the stream channel and floodway is the most effective way of minimizing effects from future floods. Removal of debris is not going to reduce flood frequency or

flood elevations, but it serves to alleviate additional problems associated with floods. I applaud the Sullivan County Commissioners and surrounding counties for their involvement of stream debris removal crews doing this practice. Stream debris, especially trees and log jams play a large part in increased flood levels due to the creating backwater pools, taking up volume in the stream channel or floodplain, and decreasing the normal natural storage area of the stream. Debris jams impact farm fields and residences in the floodplain and low-lying areas, flood prone areas. Even though removal of log jams may not contribute greatly to reduced flood levels for large-scale events, it can be an effective tool for small-scale events. Removal of these jams does play a significant part in large-scale events in that these types of events can create, relocate, or enlarge log jams by carrying debris from the floodplain into the stream channel and blocking bridge and culvert openings.

Another issue that arises in flood events is the loss of stream-side land. The glacial till of Northcentral and Northeastern counties is highly susceptible to erosion and stream banks suffer through every high water event. Increased protection of stream banks is critical to reducing property loss and soil loss from streamside properties. Increased funding for practices that successfully address stream bank protection are needed to assist these landowners. Landowners do not like losing land but the protection is cost prohibitive. Along with the successful installation of rip-rap, the conservation district is experiencing much success with PA Fish and Boat Commission Habitat Improvement Structures. These practices not only provide increased habitat for aquatic life, they also serve to protect stream banks and play a part in controlled sediment transport and are the most cost effective protection.

Lastly, Even though this is not a stream channel issue, it becomes one during flood events. I see a real need for municipalities to be more vigilant in the enforcement of floodplain ordinances. For whatever reason, placement of homes continues to be allowed with little or no consideration for these ordinances. While most have required the flood insurance, it does not take away the risks to emergency responders and the needs for temporary housing. Many of these buildings were carried away with the flood waters from Tropical Storm Lee and posed substantial threats to infrastructure and bridges.

In conclusion, I would strongly urge for dedicated funding to be made available for stream side landowners to enable stream bank protection and stabilization to occur. I would also encourage the dedication of funding to allow for a "rapid response" of stream debris cleanup of streams following both small-scale and large-scale flood events. Neither of these efforts will stop flooding but would serve as critical steps in alleviating the damages incurred from flood events.

Thank You.