

## **New stream cleanup model?**

Chesapeake Bay experts have high hopes for local project

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By AD CRABLE, Staff Writer

What may be the future of stream cleanup in the Chesapeake Bay is currently a wide swath of exposed dirt on a scenic West Lampeter Township farm.

With 20,000 cubic yards of soil scraped off Rocky Knoll Farm on a highly visible spot along Route 222, it's no wonder people have been peppering the newspaper and township offices with questions, most of them concerned that it might be for a new development that would mar the pastoral landscape.

In truth, at least a portion of the property is being restored to what it looked like 200 years ago.

And some 26 scientists from 12 state and federal agencies, as well as academic institutions, are pinning high hopes on the Big Spring Run stream and wetlands restoration.

They hope it will become a role model for a new way to stop soil and fertilizer from being flushed down streams in several bay states.

"Pennsylvania is really leading the charge. This is really a high-profile project," said Jeff Hartranft, a water program specialist with the state Department of Environmental Protection.

"This is meant to be applied throughout the bay states. We think everyone will benefit from this."

It was on this very stream that flows through a narrow valley near the intersection of Route 222 and Gypsy Hill Road that two Franklin & Marshall College professors made a startling discovery that has redefined what we know about water pollution.

Using such clues as old tree stumps buried 20 feet below the present-day streambed, Dorothy Merritts and Robert Walter determined that nearly 500 mills and mill ponds from long ago had transformed much of Lancaster County's waterways into virtual lakes.

Over the years, sediment built up behind the dams. When they were removed, streams started cutting through this soft soil like butter.

It's still eroding stream banks here and in Virginia, Maryland and New York, Merritts and Walter explained in an iconoclastic article that appeared in 2008 in the journal *Science*.

That means, the scientists said, that a significant portion of the soil — and stored nutrients from manure and fertilizers — that was being blamed on farmers was actually coming from what the scientists coined "legacy sediment."

They advocated a new cleanup method for streams in the bay watershed: remove the layer of topsoil and allow the streams to get back to their historic course, one in which creeks were shallow and were surrounded by wetlands to absorb flooding.

Legacy sediment stream restoration has gained traction in recent years, but proving success has been difficult because there wasn't "before" data to measure against the "after" restoration results.

Until now.

Big Spring Run through the Rocky Knoll farm has been measured and studied for eight years.

After the \$1 million restoration project is finished, there will be a clear-cut way to determine if such ecosystem improvements did indeed result in less soil and nutrients coming through.

"We know of no other projects that have been monitoring to this extent," Hartranft said. "It's really to answer the questions to a newly recognized approach that is legacy sediment."

After a sewer line was moved out of the floodplain, the scraping away of the old sediment on three-quarters-of-a-mile of streambed began in September. Enough highly fertile dirt to cover 5 acres 3 feet deep was removed and will be sold for reuse.

Before, the stream was flowing 3 to 4 feet below ground and etching itself deeper all the time.

Now, at normal flow, it's less than 1 foot deep. When it floods, it will easily flow onto adjacent wetlands and safely store runaway sediment and nutrient runoff — just as it did

hundreds of years ago.

A temporary seed mixture will stabilize the 100- to 150-foot-wide swath until native wetlands grasses and plants can be planted next spring.

"We expect very dense wetlands and hope for plants that can support endangered species such as bog turtles," Hartranft said.

The former owner of the farm, Joseph Sweeney, was instrumental in getting the project launched. The new owners, Andrew and Anne Kirchner, have been equally supportive, Hartranft said.

The Pennsylvania Environmental Council secured state Growing Greener funds for the construction portion of the project. LandStudies, a Lititz-based ecological design consulting firm, is the subcontractor.

[acrable@lnpnews.com](mailto:acrable@lnpnews.com)