



United States Department of the Interior
U.S. Geological Survey
5522 Research Park Drive
Baltimore, MD 21228
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Maryland-Delaware-District of Columbia Water Science Center
Seminar Series

Tuesday, March 19, 2013 -- 11:00 – 12:00

**Geomorphic Responses to Stream Channel Restoration at
Minebank Run, Baltimore County, Maryland**

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Urban streams frequently undergo severe incision and erosion due to flashy streamflows caused by impervious surfaces in the watershed. Such streamflows can lead to unstable sediment dynamics that can limit options for urban stream restoration. Between 2002 and 2008, the U.S. Environmental Protection Agency, U.S. Geological Survey, Cary Institute of Ecosystem Studies, and the Baltimore County Department of Environmental Protection and Sustainability collaborated to study the effects of restoration on sediment processes in a selected study reach of Minebank Run, a small urban stream in Baltimore County, Maryland that was restored during 2004 and 2005.



The pre-restoration dimension, pattern, profile, and composition of the stream channel at Minebank Run were quantified, and changes over time caused by storms and flooding were assessed. Changes in cross-sectional area, bed elevation, lateral migration of the stream channel, rate of bank retreat, and grain-size distribution were measured throughout the study reach. Similar post-restoration characterizations of the dimension, pattern, profile, and composition of the stream channel were done and compared to the pre-restoration conditions to assess the natural response to stream channel restoration. Much of the post-restoration geomorphic variability that was observed was primarily due to alternating patterns of sediment storage and removal, and shifting of the channel thalweg, in contrast to channel degradation and widening, and lateral erosion from receding cut banks observed during the pre-restoration monitoring.



**Minebank Run at
USGS streamgage
in Cromwell Valley
Park, Baltimore
County, Maryland
before and after
restoration.**

For more information, contact Ed Doheny (ejdoheny@usgs.gov, 443-498-5535)
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Presentation also available remotely via Webex: <https://usgs.webex.com/703-648-484837126#>

For directions to the USGS MD-DE-DC WSC: <http://md.water.usgs.gov/directions/baltimore.html>.