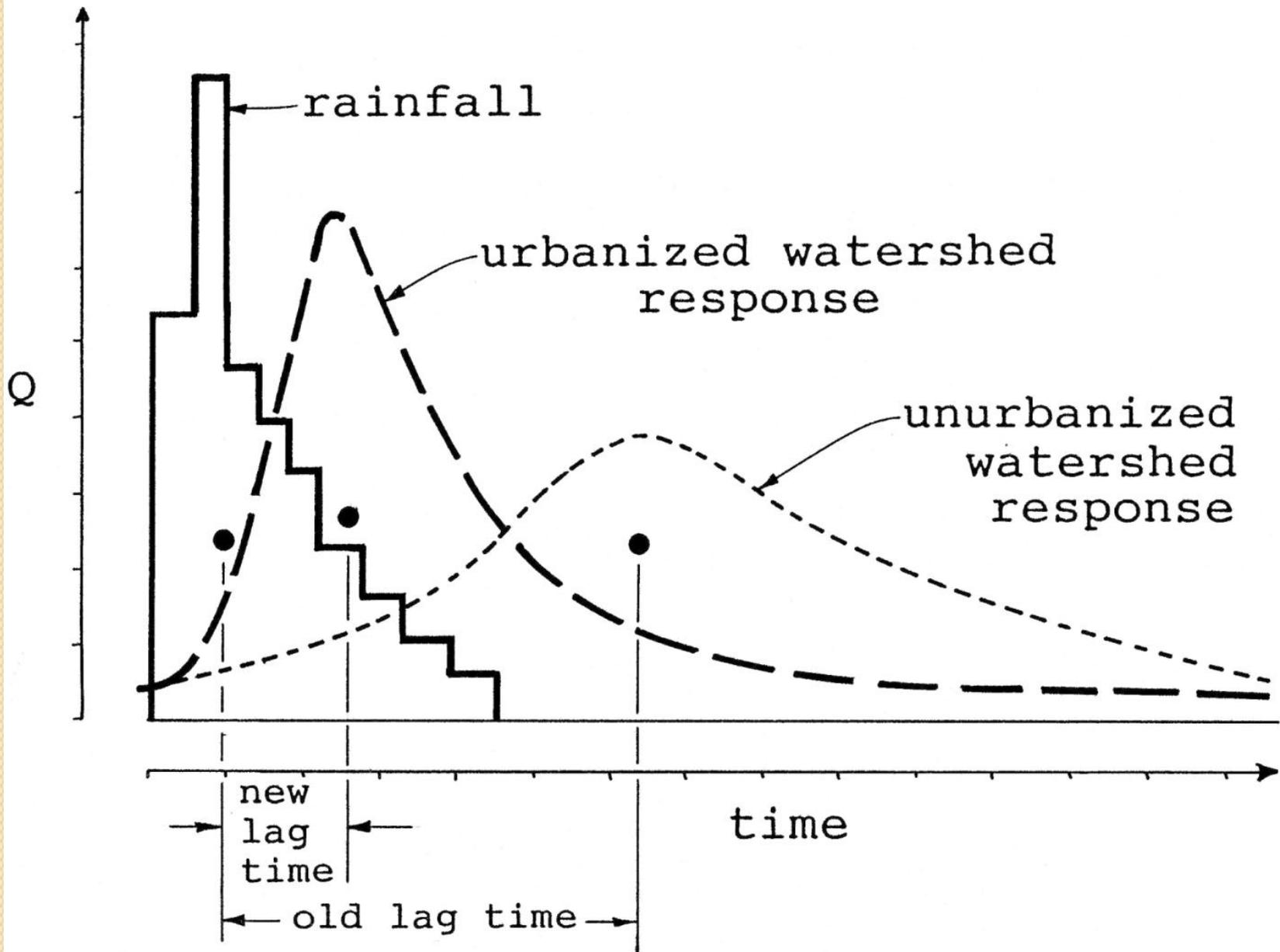
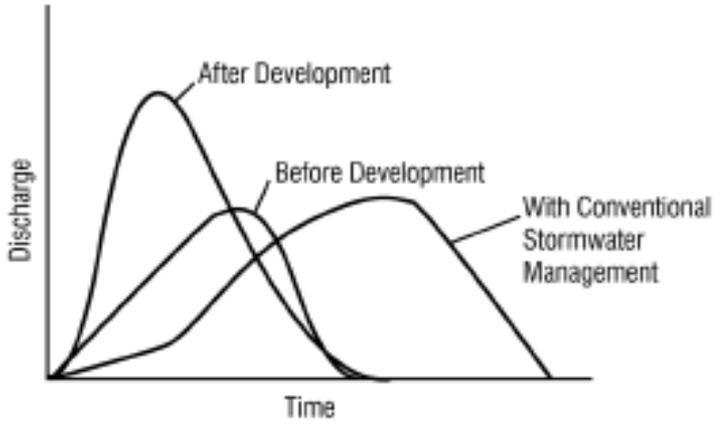


Beyond Channel Protection Volume (CPv): Moving from Stormwater Management to Integrated Restoration

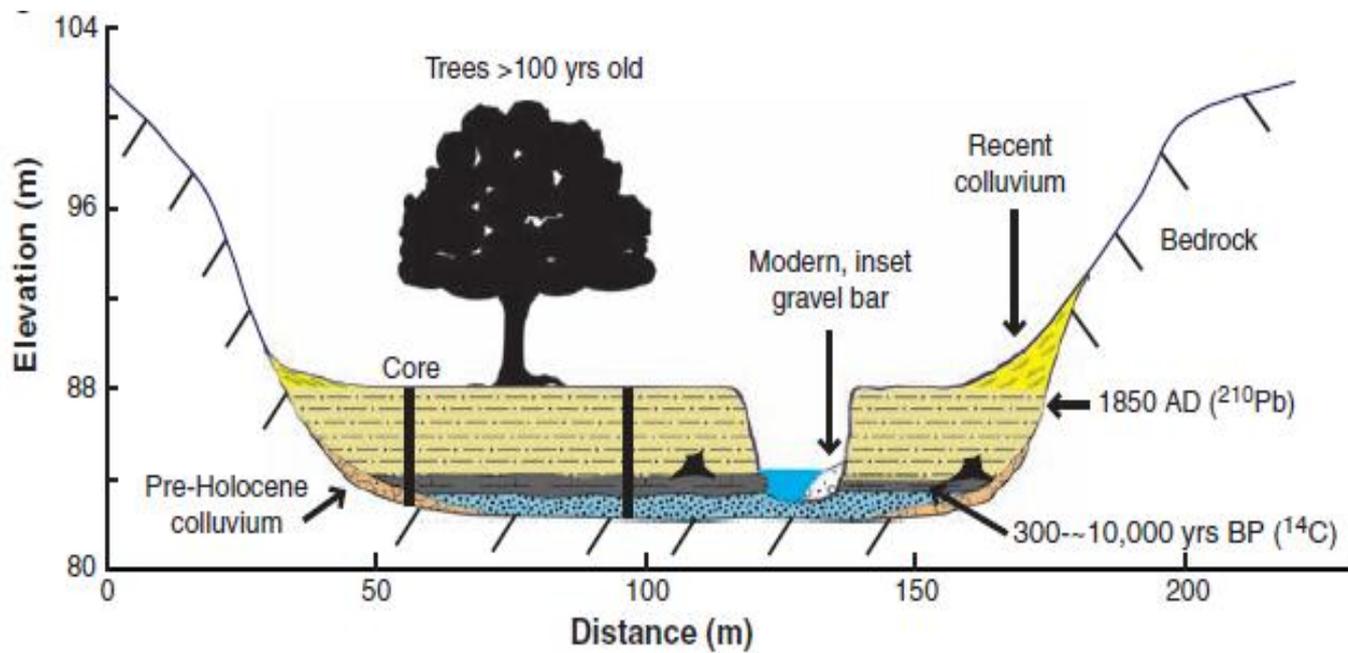
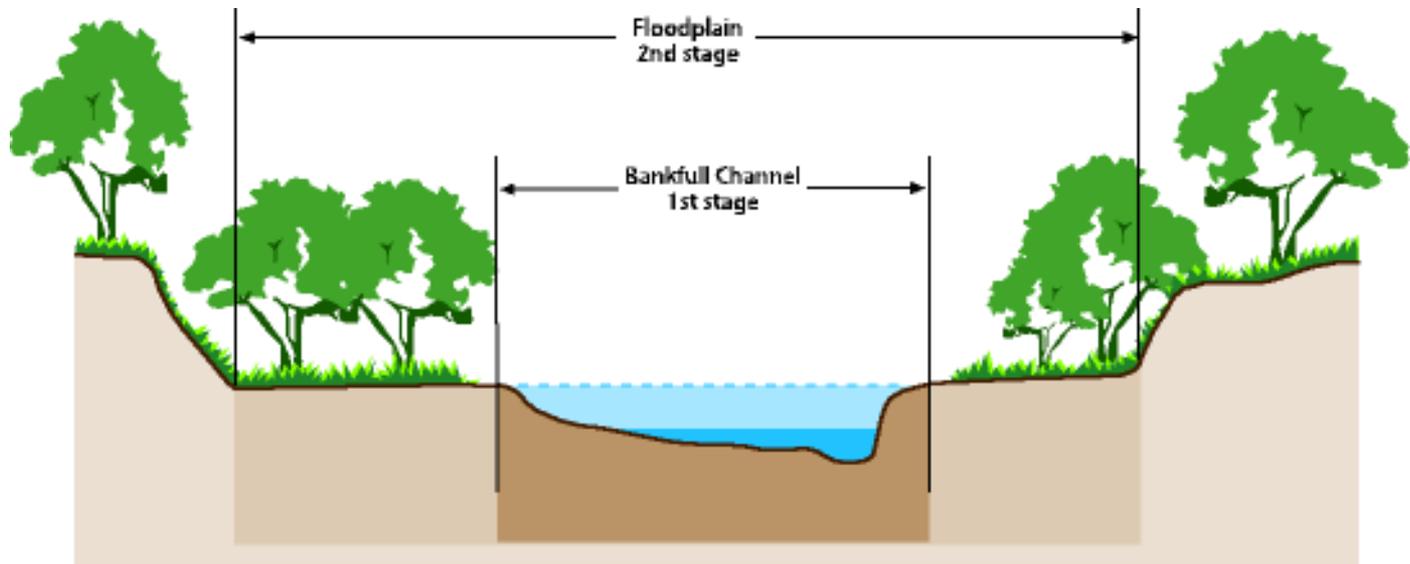
Erik Michelsen
Executive Director
South River Federation











The wetness of the land is evidenced by the presence of water lily pollen in dark organic layers exposed in stream banks that have radiocarbon dates of 1,700 years (Brush, G. (2008)., *Historical Land Use, Nitrogen, and Coastal Eutrophication: A Paleoecological Perspective*. Estuaries and Coasts)



The modern, incised, meandering stream is an artifact of the rise and fall of mid-Atlantic streams in response to human manipulation of stream valleys for water power.

(Walter, R., & Merritts, D. (2008). Natural streams and the legacy of water-powered mills. *Science*, vol. 319.)





Are These Really Streams?

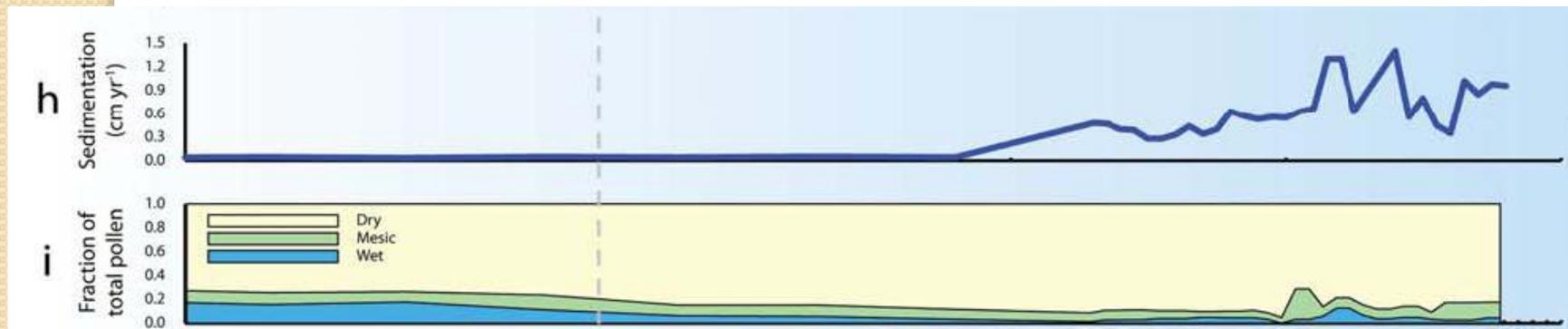
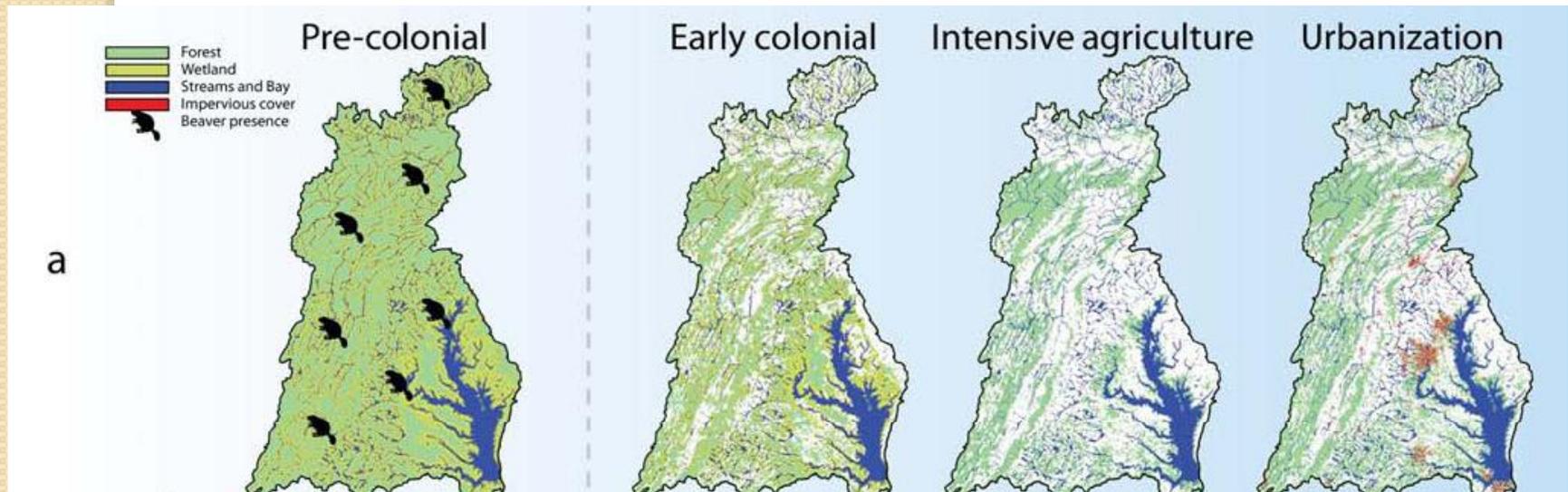


What a difference 50 years makes.

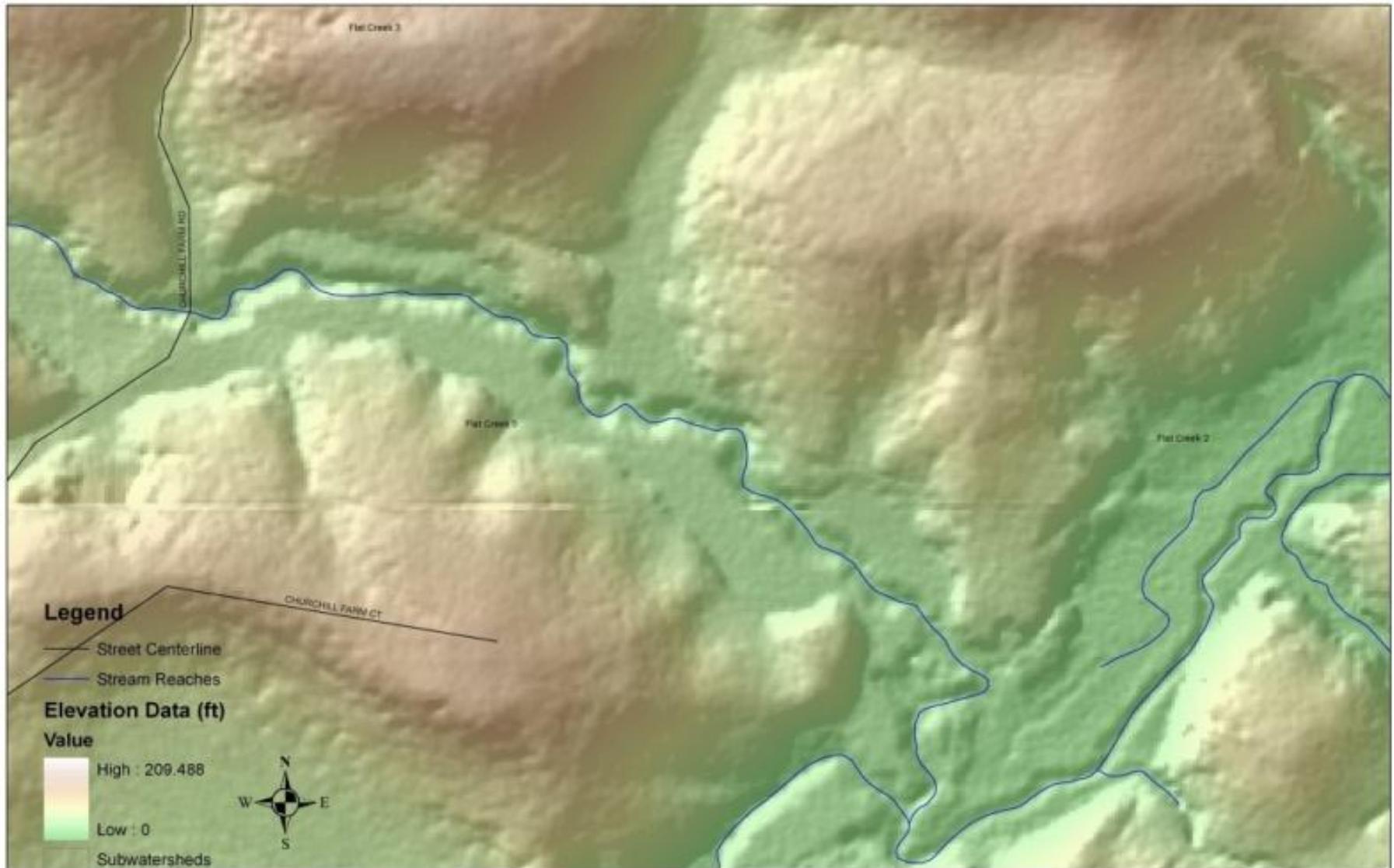


“[In the pre-colonial landscape], sedimentation rates were low, ranging between .01 and .1 cm.year.” — *Brush, G. (2008).*

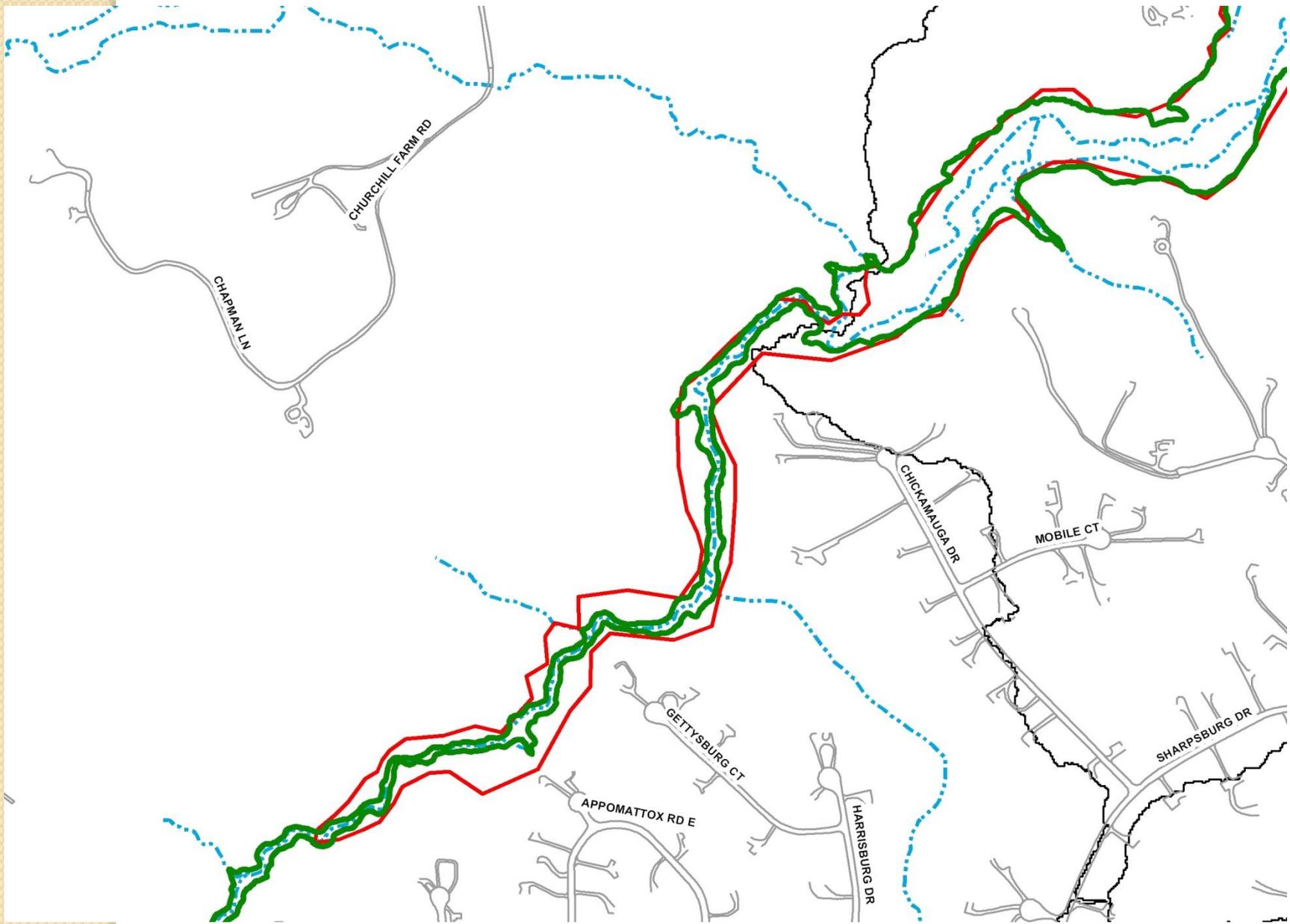
Historical Land Use, Nitrogen, and Coastal Eutrophication: A Paleoecological Perspective.



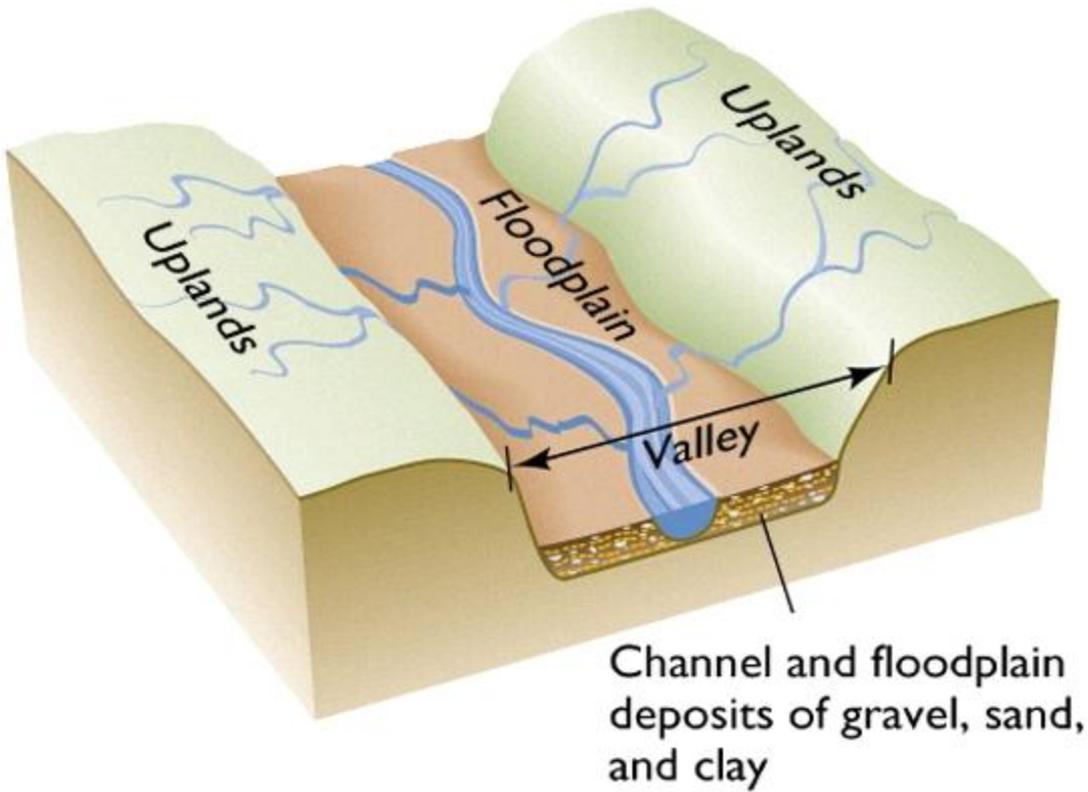
What if a channel itself is evidence of a system still out of balance?







- Existing 100 year FEMA floodplain
- Proposed MDE revision to 100 year floodplain



What if, rather than a stream and “floodplain,” ideally connected once every 1.5 to 2 years.....



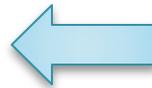
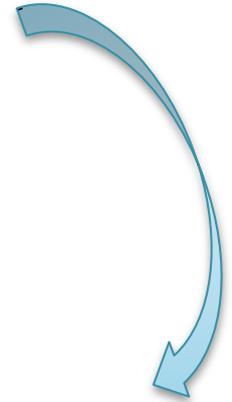
We aim to restore these systems as hydrologically-connected, permanently inundated, “valley flats?”







What if we manage for water quality throughout the system and aim for safe conveyance to restored valley flats for water quantity, water quality, and habitat benefits?





Thank You

Erik Michelsen
Executive Director
South River Federation

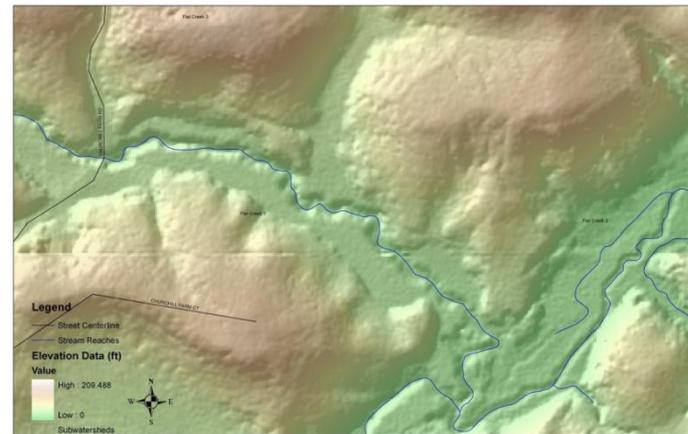


410-224-3802
erik@southriverfederation.net

Simple “restoration” of the stream valley is not possible because the H&H of the area has changed too much, right?



0.8 sq/mi drainage area (512 acres)
 $Q_{100} = 484$ cfs



No, that’s not the case. Using parabolic weir sizing criteria, a weir width of 150’ (stream valley width) and length of 600’ (stream length), can accommodate a bed particle the size of sand during the 100-year event.