

Revisiting Stream Restoration EPR: An Update for the USWG

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Chesapeake Stormwater
Network

April 23, 2019
SHWG Meeting

Revisiting Stream Restoration: 2018/2019

The USWG formed four groups to revisit the stream restoration EPR

- Group 1: Verifying Stream Restoration Practices
- Group 2: Crediting Outfall Stabilization Practices
- Group 3: Establishing Standards for Applying Protocol 1 (Prevented Sediment)
- Group 4: Adjusting Protocol 2/3 to Capture Floodplain/Stream Reconnection

65 outstanding stream experts

(and a few divas)

Group 1 (Verification)		
Name	Affiliation	E-mail
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Group 3		
Name	Affiliation	E-mail Address
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Group 2. Outfall Stabilization Crediting Group		
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Table 4. Roster for Group 4 (Adjusting Protocols for Floodplain Reconnection)		
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Group 1: Verifying Stream Restoration Projects

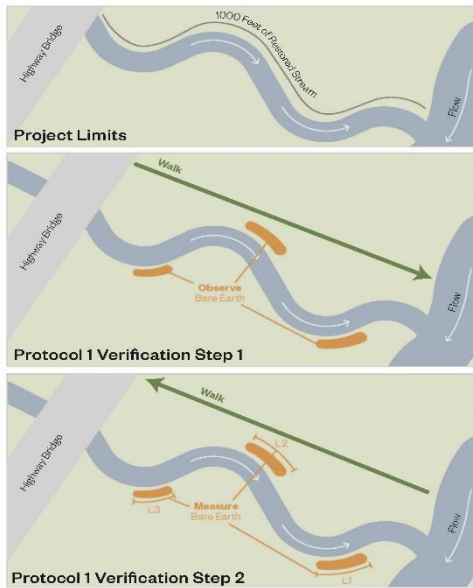
Focus: Develop a system to cost-effectively verify individual projects every five year

Status: Final Draft Out for Review

Product: Memo on methods, with visual indicators

Visual Indicators to Inspect for Stream Projects





Defining Loss of Pollutant Reduction Function for Protocol 1

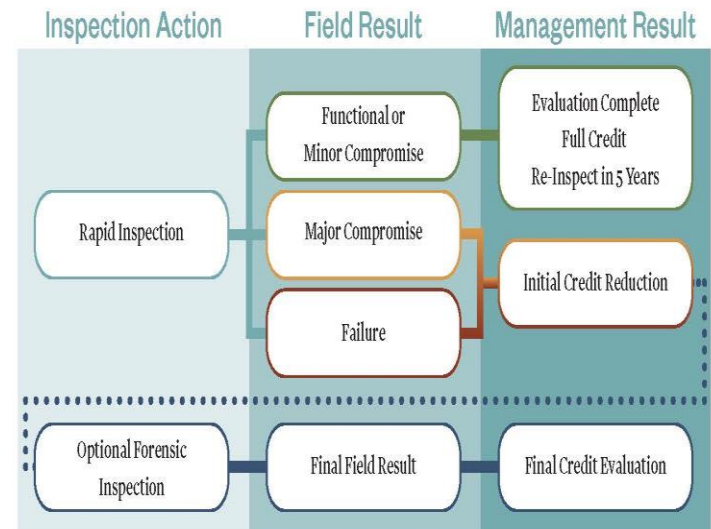
Criteria for Loss

Evidence of bank or bed instability such that the project delivers more sediment downstream than designed,

Key Visual Indicators

- Severe bank undercutting (bare earth exposed)
- Incising bed (bed erosion evident)
- Flanking or downstream scour of channel structures
- Failure or collapse of bank armoring practices

Status	% Failing *
Functioning	0 to 10% of reach
Showing Major Compromise	20 to 40% of reach
Project Failure	50% or more of reach



Group 2: Crediting Outfall Restoration Projects

Focus: Decide whether to establish a new crediting protocol for this class of projects

Status: Final issue resolution

Product: New Protocol “5” along with supporting technical memo

Eroding Outfalls as an Urban Sediment Delivery Hotspot



Outfall Restoration Practices



Stone step pools below outfall: courtesy Anne Arundel County DPW

Group 3:

Revisiting the Prevented Sediment Protocol

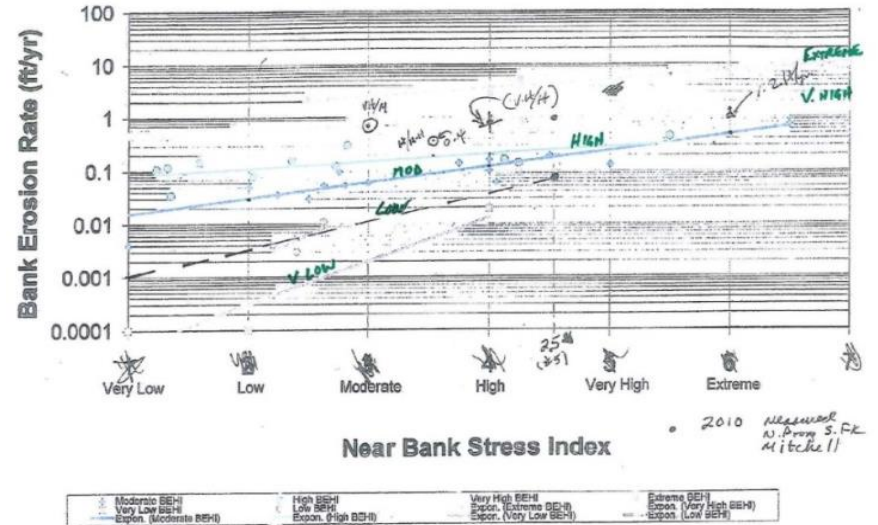
Focus: Agreement on best practices for applying the protocol in the field and office, and setting limits on the degree of armoring allowed

Status: Expect to finish up in June or July

Product: Technical memo with revised protocol and incentives for better on-site data collection



North Carolina Stream Bank Erodibility (Rev. 3-31-09) (Erosion from Bankfull Events)



Bulk Density	(lbs/ft ³)
Expert Panel Report Case Study Example (Schueler and Stack 2014)	125
Carroll County Average of 5 sites and 39 samples	56
James Madison University Arboretum, Virginia (Mumaw 2015)	80
Paxton Creek, PA range of 9 samples	67 - 76
Case Study Projects in North Carolina (Doll et al. 2018)	52 - 88



Three Armoring Categories

<i>Non-Creditable Armoring</i>	<i>Creditable w/ Limits</i>	<i>Creditable Armoring</i>
<ul style="list-style-type: none">• Concrete retaining walls• Gabions• Dumped rip-rap• Sheet piling/planking• Block walls• Geogrid/concrete/gabion mattresses• Non-biodegradable soil stabilization mats/systems	<ul style="list-style-type: none">• Angular riprap stone installed for bank protection• Imbricated rip rap• Berm/pool cascades• Boulder revetments	<ul style="list-style-type: none">• Rocks used for localized toe protection• Root-wad revetments?• Any soft-armoring bioengineering practices such as live stakes, coir logs etc.• Riffle weir series



Group 4: Floodplain Reconnection and Hyporheic Exchange (Protocol 2 and 3)

Focus: updating the protocols to reflect new research and design approaches for this class of projects

Status: Still in research phase, expected to run to Fall, 2019

Product: Technical memo and possibly revised protocols 2 and 3

Sediment and nutrient dynamics in the floodplain



Courtesy of Greg Noe, USGS



Streambank erosion and floodplain deposition dominate the watershed sediment budget, especially in urban areas



High erosion rates



Long term storage

CBP STREAM FEEDBACK LOOP



- Extensive state and EPA involvement in all four groups
- Expect extensive additional review and comment at USWG phase
- Goal is to compile an updated guidance document for crediting stream restoration projects by end of 2019

Photo Credit: Severn Riverkeeper

Next Steps

Verification Memo

- Comment Period Until May 31
- Seek USWG Approval at June 18 Meeting

Outfall Memo

- Subgroup meeting to develop compromise language
- Comment Period will open following group consensus
- Seek USWG Approval June 18 or following meeting