Chesapeake Bay Program's (CBP)
Scientific and Technical Advisory Committee (STAC)
Workshop

The State of the Science and Practice of Stream Restoration in the Chesapeake: Lessons Learned to Inform Better Implementation, Assessment and Outcomes

March 21-23, 2022
Potomac Science Center | Woodbridge, VA

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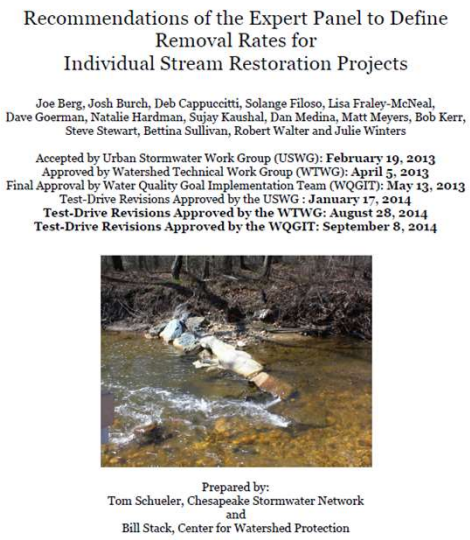
Center for Watershed Protection

Background

- TMDL for Sediment and Nutrient assigned to states Dec 20, 2010
- CBP develops robust protocol for crediting BMP's across all source sectors.
- Stream restoration Projects before TMDL were associated with Comprehensive Watershed Management plans and mitigation
- Existing stream credit extremely low based on monitoring of a restored concrete channel.
- CWP becomes the Stream and Sediment Coordinator for the CBP and is charged to work with the Stormwater Coordinator to develop Stream Restoration Protocols

The CBP Process for BMP Crediting 2012 - 2014



Recommendations of the Expert Panel to Define
Removal Rates for
Individual Stream Restoration Projects

Joe Berg, Josh Burch, Deb Cappuccitti, Solange Filoso, Lisa Fraley-McNeal, Dave Goerman, Natalie Hardman, Sujay Kaushal, Dan Medina, Matt Meyers, Bob Kerr, Steve Stewart, Bettina Sullivan, Robert Walter and Julie Winters

Accepted by Urban Stormwater Work Group (USWG): **February 19, 2013**
Approved by Watershed Technical Work Group (WTWG): **April 5, 2013**
Final Approval by Water Quality Goal Implementation Team (WQGIT): **May 13, 2013**
Test-Drive Revisions Approved by the USWG : **January 17, 2014**
Test-Drive Revisions Approved by the WTWG: August 28, 2014
Test-Drive Revisions Approved by the WQGIT: September 8, 2014

- CBP ranks BMPs in order of importance and assigns BMP to source sector workgroup (e.g. Urban Stormwater)
- Workgroup assembles Expert Panel
- Expert panel uses literature, new data and best professional judgment to develop sediment and nutrient reduction credits
- Expert Panel solicits input from different CBP committees

BMP EXPERT PANEL → **URBAN STORMWATER WORKGROUP** → **WATER QUALITY TWG and GIT**

The Agriculture Work Group, Watershed Technical Workgroup and Stream Habitat GIT is also actively involved in the review process.

Review of the Science

- Review of the old rate
- How sediment and nutrients are simulated in the CBWM
- Nutrient flux at stream reach level
- Nutrients and physical properties of stream sediment
- In-stream nitrogen processing
- Nutrient dynamics in restored floodplain wetlands
- Regenerative stormwater conveyance systems
- Longevity of stream restoration practices

Expert Panel Process

- 7 calls, 2 workshops, 5 drafts over 12 months
- Product: Technical Memo and 5 Appendices
- More than 125 papers and reports reviewed by Panel
- For Stream Restoration – 6 month test period
- 3 Protocols plus Default Rate

Stream Restoration Crediting Protocols

1. **Prevented Sediment Approach**
- BANCS method from Rosgen to estimate sediment.
- Sediment nutrient rates from literature
- Assumed 50% efficiency

2. **In-Stream Denitrification**
- Assumed denitrification rate from Mine Bank Run Study
- Baseflow reconnection volume

4. **Default Rate**
- Stream bank erosion rate from 20-30 studies
- Assumed a 50% reduction in sediment and averaged nutrient values of sediment

3. **Floodplain Reconnection**
- Estimate annual flow/load that reconnects to floodplain
- Reduction efficiency from studies by Tom Jordan from Smithsonian Lab

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Qualifying Conditions, Verification, and Reporting Requirements

- Stream restoration project must provide functional lift and be part of a comprehensive watershed management plan.
- Credit is renewed based on a 5 yr field performance inspection that verifies the project still exists, is adequately maintained and operating as designed.
- Protocols have to be reapplied and credits adjusted if changes occur in watershed (e.g., BMP implementation)

Slide 7

BS17 I would cite the verification memo and the specific requirements in each memo as this could be future work for us.

Bill Stack, 9/16/2021