

**Restoration Guidance for Streams with Adjacent Wetlands in Piedmont and Coastal Plain Regions** 

#### Guidance

#### Wetlands and Waterways Protection Program

**Maryland Department of the Environment** 

Wildlife and Heritage Service Maryland Department of Natural Resources

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## Training Modules for Guidance for Stream Restoration with Associated Wetlands

- This training consists of the following modules:
- Module 1: Background and General Standards
- Module 2: Pre-application Planning and Site Identification
- Module 3: Use of the Ecological Integrity Assessment for Key Wildlife Habitats
- Module 4: Design and Performance Standards
- Module 5: Construction and Post-construction



#### Module 1:

#### **Background and General Standards**



 MD and Jurisdictions Must Meet Load Allocations to Reduce Sediments and Nutrients under Chesapeake Bay TMDL

- Stream Restoration is a Practice Eligible for Credit towards Reducing Sediments and Nutrients
- Guidance and Assessments Are Additional Tools to Be Used with Other Rules for Decision Making



# Most stream restoration projects are in highly degraded areas and authorized with short review time

Existing stream and adjacent wetland habitat condition has been a concern in some cases where stream restoration has been proposed

Review is extended if there is debate about degradation and potential loss of existing resource benefits



- The potential problems do NOT always occur in all cases.
- This effort is intended to address the unintended consequences of projects with a design or construction which may not be appropriate for a specific site.
- Expands and updates work under previous grant in Upper Coastal Plain/Western Shore, completed in 2021.



- Stream restoration increases floodplain inundation, and potentially water quality improvement (According to data, not in all cases)
- Function most frequently and adversely affected is wildlife habitat
- Loss of riparian forest, increase in temperature, lowered DO, lowered pH
- Other goals which may be adversely affected:
- Riparian forest, fish passage, stream health, wetlands



### Background

- For successful stream/riparian corridor restoration, both a stable, connected stream channel and fully functioning riparian areas, including wetlands, are required
- Fully functioning stream/riparian corridors are dominated by appropriate native vegetation; natural patterns of surface and groundwater inundation and saturation, and intact, non-compacted soil profiles



 Stream restoration projects are intended to improve water quality and increase floodplain inundation

 Focus then of this assessment and guidance is on habitat characteristics



- Design to support other Chesapeake Bay Agreement goals beyond nutrient and sediment reduction:
- Stream health, improving IBI scores, riparian forest buffer, fish passage, and wetland acreage and functional gains.
- Do not increase flood levels on adjacent properties without permission of the affected landowners.
- Aquatic life should be able to pass through, over or around instream structures at base flow



### Flow around and over structures

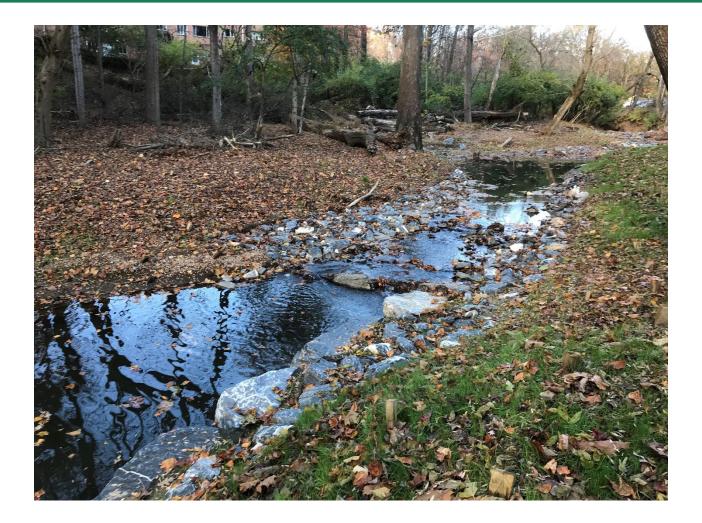


Photo: MDE



## Flow through structure – beaver dam analog



Photo courtesy Biohabitats



## General Standard Recommendations cont. Climate Change

- Upland management for stormwater are recommended when discharges are degrading stream
- Designing for extra quantity control in uplands also helps with climate resiliency, water quality, and reducing flood hazards
- Use "cooling" BMPs where possible riparian forest, infiltration
- Also may allow for watershed management credit under MS-4 permit
- Reducing discharges may allow for some natural recovery
- Reduce need for extensive alteration of floodplains





#### **Recommendations Welcome for:**

- Additional Practices to Protect Wetland/Riparian Areas
- Format/Ease of Use of Forms
- Assessment

**Recommendations to be Considered for Future Revisions in 2024** 

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