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, 2023

Potomac Science Center | Woodbridge, VA
[Workshop Webpage](#)

Exact Times Are Subject to Change
This meeting will be recorded to assure the accuracy of meeting notes.

The **overall purpose** of the workshop is to bring together a diverse cross-section of experts and stakeholders in the field of stream restoration to review and distill lessons learned from past stream corridor restoration projects to improve restoration outcomes. For the purposes of this workshop, stream restoration is broadly defined as an intervention to move a degraded ecosystem to a trajectory of recovery as informed by a reference condition considering local and global environmental change. The scope of the workshop includes the riparian area. A key theme is relating the current drivers of stream restoration (regulatory, policy, etc.) to identified project goals and measured outcomes.

The workshop will be **focused on three topics**:
1. Identify the evolution of stream restoration goals, regulations, practices and practice implementation;
2. Present and discuss science and assessment to document holistic impacts and outcomes; and
3. Create a synthesis of the best available science, practices and monitoring to enable adaptive management that improves stream restoration activities.

Day 1, March 21, 2023:
8:30 am   **Coffee & Light Breakfast (Provided)**

9:00 am   **Workshop Overview & Objectives –** Greg Noe *(USGS)* and Neely Law *(Fairfax County)*
Discuss objectives of the workshop, an overview of the sessions, desired outcomes, and how the expertise in the room can contribute to discussion and synthesis towards improving stream restoration practices.
- Introduce the general theme of the causal pathway of stream restoration outcomes: Impairment →Regulatory/policy drivers → Goals → Design approaches/practices → Monitoring → Outcomes.
- What have been the goals (and what is target reference condition)?
- How do different goals lead to different approaches (local reach vs. watershed+ecosystem restoration)?
- What approaches lead to better outcomes?
- The need for adaptive management to improve outcomes

Session 1: Identify the evolution of stream restoration goals, regulations, practices, and practice implementation (after 1972 Clean Water Act)

Session Objective: Background information. 1) how has management or mismanagement resulted in impairment of streams (watershed and stream mismanagement)? 2) What is our understanding of how stressors influence streams and our ability to appropriately identify and address stressors? 3) What were the drivers for stream restoration? 4) And in the past, what management was taken to restore streams.

9:20 am　　*Opening Plenary*: **Watershed History and Evolution of Stream Degradation Patterns and Restoration –** Ellen Wohl *(CSU)*
Discussion of 1) land use change and legacy sediment and contaminants, 2) definition of reference condition of streams, 3) interaction of stream hydrology, geomorphology, chemistry, and biology, and stakeholder interests, and 4) implications for stream restoration.

9:50 am　　*Opening Panel with Q&A*: **The Chesapeake Nontidal Watershed History and Evolution of Stream Degradation Patterns and Restoration –** facilitated by Ben Hayes *(Bucknell)*
Opening panel discussion with questions and answer portion built-in.

　　　　　　Panelists: Dorothy Merritts (*Franklin & Marshall College*); Karen Prestegaard (*UMd*); Andy Miller (*UMBC*); Matt Cashman (*USGS*); Kevin Smith (*Maryland Coastal Bays Program*)

10:50 am　　**20-minute break**

11:10 am　　**Outcomes from Stream Restoration in the Past (pre-2010 period of Chesapeake Bay Agreement) –** facilitated by Tess Thompson (*VT*)
An examination of past outcomes in stream restoration before the 2010 Chesapeake Bay Agreement. Includes two summary presentations on 1) Ecology and Water Quality (15 min) and 2) Stream Stabilization (15 min). 30 minutes for Q&A.

　　　　　　Ecology and Water Quality Speaker: Scott Stranko (*MD DNR*) and Bob Hilderbrand (*UMCES*)
- Ecology panelists: Nancy Roth (*TetraTech*), Dave Penrose (*Penrose Environmental Consulting*), Solange Filoso (*UMCES*)

Stream Stabilization Speaker: Rich Starr (*Ecosystem Planning and Restoration*)
- Stream Stabilization panelists: Scott Lowe (*McCormick Taylor*); David Wood (*CSN*); Bill Stack (*Center for Watershed Protection*)

12:10 pm　　**Lunch (provided)**

1:40 pm　　**Lessons Learned from the Past –** Ben Hayes *(Bucknell)*
Recap on morning presentations followed by a group discussion on how the past can inform stream restoration practices and lead to better outcomes.

Session 2: Present and Discuss Science and Assessment to Document Holistic Impacts and Outcomes (2010-present)

Session Objective: What are we doing now? What have we seen not go so well? What has been a "success"? What are common regulatory/policy, trade-offs, and unintended consequences (looking at both obstacles and opportunities)?
What is the research telling us?

2:00 pm　　**Introduction to Session 2 –**Neely Law *(Fairfax County)* and Greg Noe *(USGS)*
5-minute introduction to Session 2, focusing on presenting and discussing science and assessment to document holistic impacts and outcomes from 2010 to the present.

2:05 pm　　**Regulatory/Permitting and Policy: Parameters for showing success** – facilitated by Rich Starr (*Ecosystem Planning and Restoration*)
A series of presentations from Bay states on current regulatory and permitting processes, voluntary efforts, and how they drive stream restoration goals. Discussion of how restoration practices affected restoration outcomes and influenced 1) reach vs. downstream improvement approach, 2) stabilizations vs. habitat vs. water quality, and 3) diverse goals from different stakeholders/drivers of management. Each presentation is 15-minutes, followed by a 15-minute Q&A.
- Maryland – Denise Clearwater *(MDE)*
- Virginia – Brock Reggi (*VA DEQ*)
- Pennsylvania –Jeffrey Hartranft *(PA DEP)*

3:05 pm　　**20-minute break**

3:25 pm   **Detailed case studies of individual stream restoration projects**
– facilitated by Chris Ruck (*Fairfax County*) and Joe Berg (*Biohabitats*)
Presentation of four stream restoration case studies that review their causal chain: Landscape setting/impairment → Regulatory/policy drivers → Goals → Design approaches/practices → Monitoring → Outcomes. Each presentation is 15-minutes, followed by 20-minutes for Q&A.

Presentation(s):
- Legacy Sediment – Robert Walter (*Franklin and Marshall College*)
- Coastal plain – Joe Berg *(Biohabitats)*
- Urban – Josh Burch *(DC DOEE)*
- Suburban – Chris Ruck *(Fairfax County)*

4:45 pm   **Synthesize and Overview of Day 1; Expectations for Day 2** – Greg Noe (*USGS*) and Neely Law (*Fairfax County*)

5:00 pm   **Recess**

Day 2, March 22, 2023:
8:30 am   **Coffee & Light Breakfast (Provided)**

Session 2: Present and Discuss Science and Assessment to Document Holistic Impacts and Outcomes (2010-present) – continued

9:10 am   **Review of Day 1; Objectives for Day 2** – Neely Law *(Fairfax County)* and Greg Noe *(USGS)*

9:20 am   **Restoration Outcomes and Uplift** – facilitated by Sadie Drescher *(Chesapeake Bay Trust)*
Invited speakers will synthesize research on restoration outcomes and uplift. Presentations will consider what goals and practices were assessed and monitored, restoration outcomes in the stream corridor (including unintended outcomes), if the stream restoration is being undertaken to improve the Bay, and if stream stressors were mitigated by the presented stream restoration – why did uplift happen or not? What are we not achieving?
Presentations:
- 20-minutes: in-channel biotic – Mark Southerland *(TetraTech)*
- 20-minutes: stabilization – Tess Thompson (*VT*)
- 20-minutes: water quality (including geomorphic restoration for WQ) – Paul Mayer (*EPA*)
- 20-minutes: riparian –Lisa Fraley-McNeal (*Center for Watershed Protection*) and Meghan Fellows (*DE Center for Inland Bays*)

10:40 am   **20-minute break**

11:00 am   **Panel with Q&A**
A 1-hour panel discussion with 15-minute for Q&A.

12:15 pm   **Lunch (provided)**

1:30 pm   **Breakout Discussions**
Participants will split into small groups to discuss outcomes of stream restoration. Each group will be led by steering committee members as a facilitator and a separate note-taker. Topics for each group to discuss:

Discussion Question(s): Why are we getting these outcomes?

1. How have historical and present conditions been incorporated into restoration goals and approaches?
2. What regulatory/policy drivers led to different goals and approaches?
3. What are the stressors that led to stream impairment and to what degree have stream restoration approaches addressed them?
4. Has the monitoring of outcomes been effective and sufficient, including biotic uplift?
5. When outcomes have been successful, why where they successful? What has worked?

2:30 pm   **10-minute break**

2:40 pm   **Breakout Group Summary: Why did we get these outcomes?**
The facilitating steering committee member in each group will report out on the discussion and
outcomes from the breakout session.

3:20 pm   **Group Discussion on Initial Synthesis of Outcomes: How do different practices lead to
outcomes for various goals?** – *Facilitated by Steering committee member*

4:40 pm   **Synthesize and Overview of Day 2; Expectations for Day 3** – Greg Noe *(USGS)* and Neely Law
(Fairfax County)

5:00 pm   **Recess**

Day 3, March 23, 2023:
8:30 am   **Coffee & Light Breakfast (Provided)**

*Session 3: Create a Synthesis of the Best Available Science, Practices and Monitoring to Enable Adaptive
Management (future)*

Session Objective: How do we advance stream restoration to improve restoration outcomes (including ecological uplift)?

9:00 am   **Review of Day 1 and 2; Objectives for Day 3** – Neely Law *(Fairfax County)* and Greg Noe *(USGS)*

9:05 am   **Breakout Discussions**
Participants will meet in the same breakout group as Day 2 to discuss ways to achieve better
outcomes. Each group will be led by a steering committee member as facilitator and a note-taker.

Topics for each group to discuss:
•   *What do we do differently to get better outcomes?*

10:00 am   **20-minute break**

10:20 am   **Breakout Group Summary and Structured Group Discussion**
– *led by all Steering committee members*
The steering committee member in each group will report out on the discussion and outcomes
from their breakout sessions, and provide initial synthesis recommendations.

11:00 am   **Synthesis Results and Recommendations** – Greg Noe *(USGS)* and Neely Law *(Fairfax
County)*

11:40 am   **Closing plenary** – Erik Michelsen *(Anne Arundel County)*

12:00 pm   **Workshop Adjourn; Lunch (Provided)**