



Pooled Monitoring Initiative: Science Syntheses for Restoration Decisions

Sadie Drescher

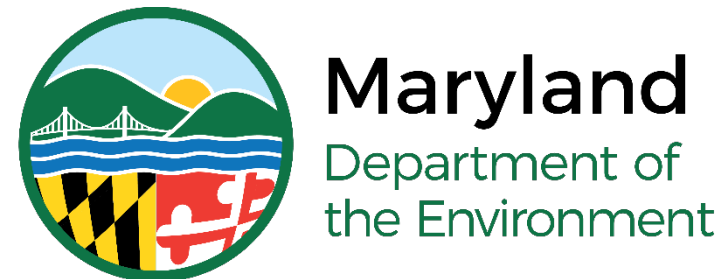
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EPA CBPO Stream Health Workgroup
10/16/26, 10:40 am to 11:10 am

Closing the Monitoring-to-Decision Gap: Translating Pooled Monitoring Research into Actionable Tools



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Empowering People.
RESTORING NATURE.

About the Chesapeake Bay Trust

The Chesapeake Bay Trust is a nonprofit grantmaking organization dedicated to improving the Chesapeake, Coastal Bays, and Youghiogheny watersheds. Our mission is to restore and protect our natural resources by focusing on three core objectives: environmental education, community outreach, and on-the-ground restoration.

Each year, the Trust awards millions of dollars in grants to support healthier local communities and a cleaner environment. We engage more than 250,000 individuals annually who are making a positive impact on our waterways and the natural resources of our region.

We believe that empowering people to take action is the key to protecting forests, streams, rivers, bays, wildlife, and more—right in their own communities.





Agenda

- What is this program?
- What is the research finding?
- What tools are available to help us translate the findings?
- How is the research used?
- How can I plug in?



Field site visit 6/11/26.

Organization: University of Maryland Baltimore County

Title: Evaluation of SmartSWM Continuous Monitoring and Adaptive Control Technology for Improving BMP Effectiveness

Award Amount: \$350,995

Award # 25722

Year: 2025

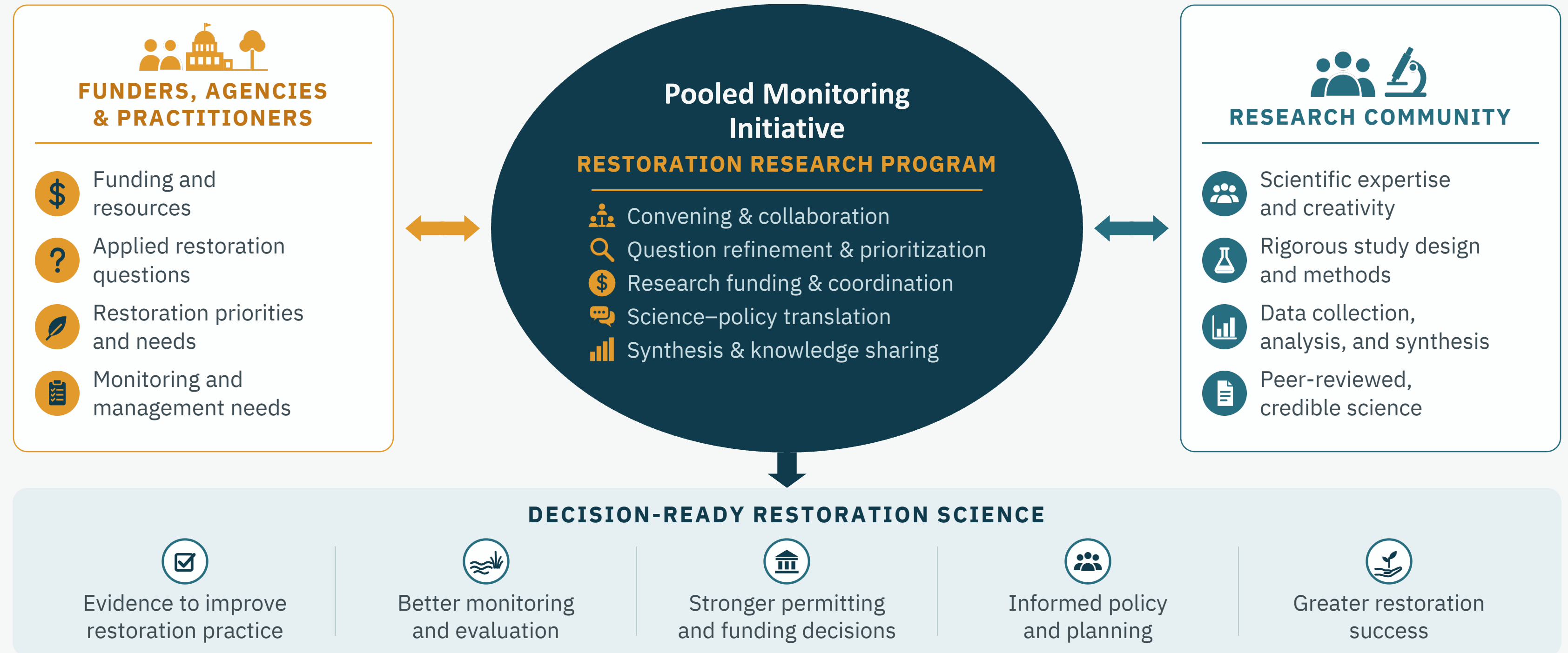


Program started due to debates in the field

Does stream restoration work? Should we be doing stream restoration – at all, in this spot, or in this way?



How the Pooled Monitoring Initiative works





Where are we now?

Pool funds to support research to answer key restoration questions vs site/project specific monitoring (often without controls or replication)

Restoration Research Award Program

2017 Pooled Monitoring Forum

- Key restoration research was needed and is delivered through this program
- Pooled Monitoring advisory panel
 - Formed in 2014 to determine if and how restoration practices perform
 - Use a grant program to pool resources and answer restoration questions that could not be answered by site specific monitoring
 - Many partners



Pooled Monitoring Forum: Restoration Research: Connecting Science and Regulatory Practice

June 18, 2026, from 9 AM to ~5 PM

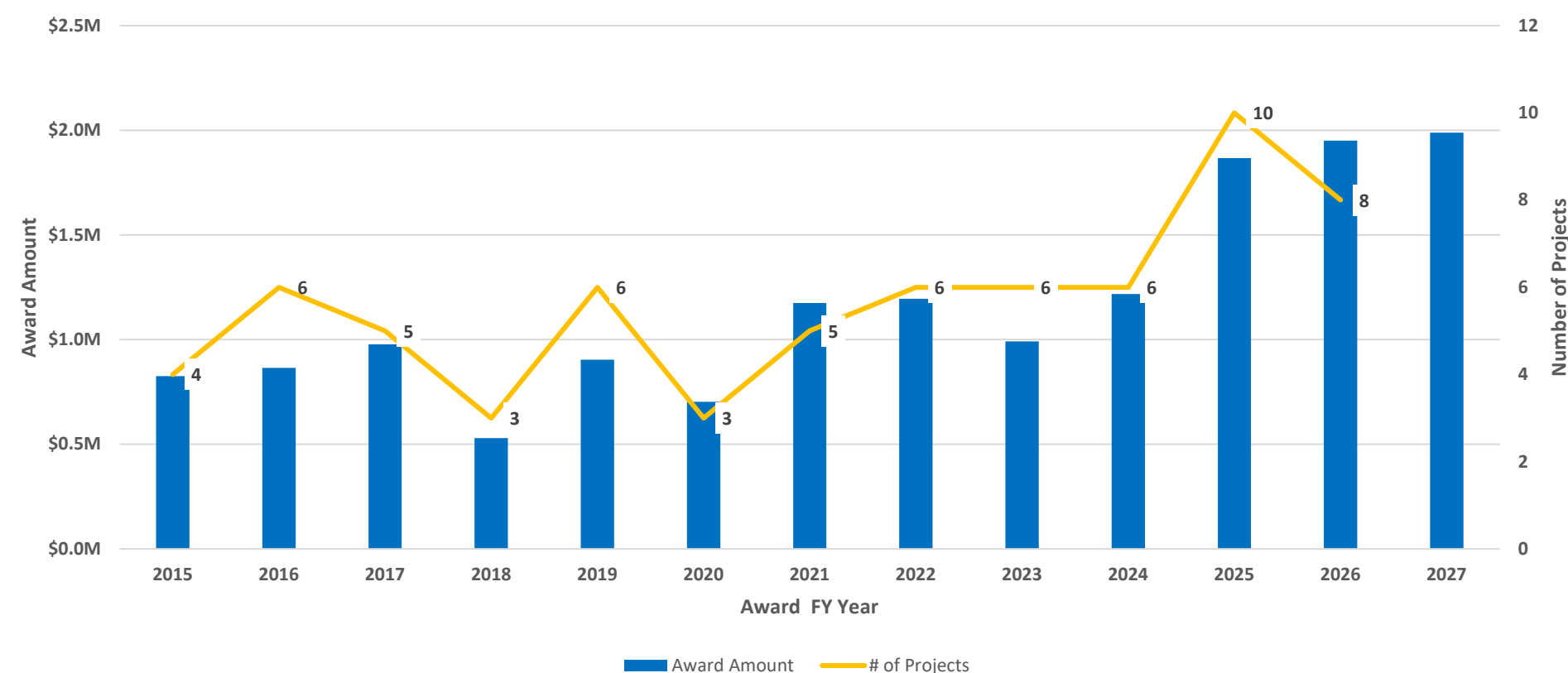


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Zoom/tech leads are Anabel Kadri, akadri@cbtrust.org, 410-974 2941 xt 168, Kayleigh Katzenberger, kkatzenberger@cbtrust.org, 410-974-2941 xt 127 & Sadie Friesen, sfriesen@cbtrust.org, 410-974 2941 xt 150



Pooled Monitoring Awards: Annual Funding and # of Projects





Where we are now?

Restoration Research Award Program

- Supported 68 projects since FY 15 at \$13.2 M
- Annual RFP opens in early November
- Questions are cycled off/on each year
- RFP open to any organization – looking for best groups to answer our questions
- Uses scientific reviewers across the world to vet applications
- Runs all applications through a “management review”
- All awards, progress, and program products are online at: <https://cbtrust.org/grants/pooled-monitoring-initiatives-restoration-research-award-program/>



Lauren McPhillips Pennsylvania State University, “Impacts of salt loading on nutrient and metal processing in stormwater bioretention” (2023 forum presentation [here](#), final report [here](#), and fact sheet [here](#)).

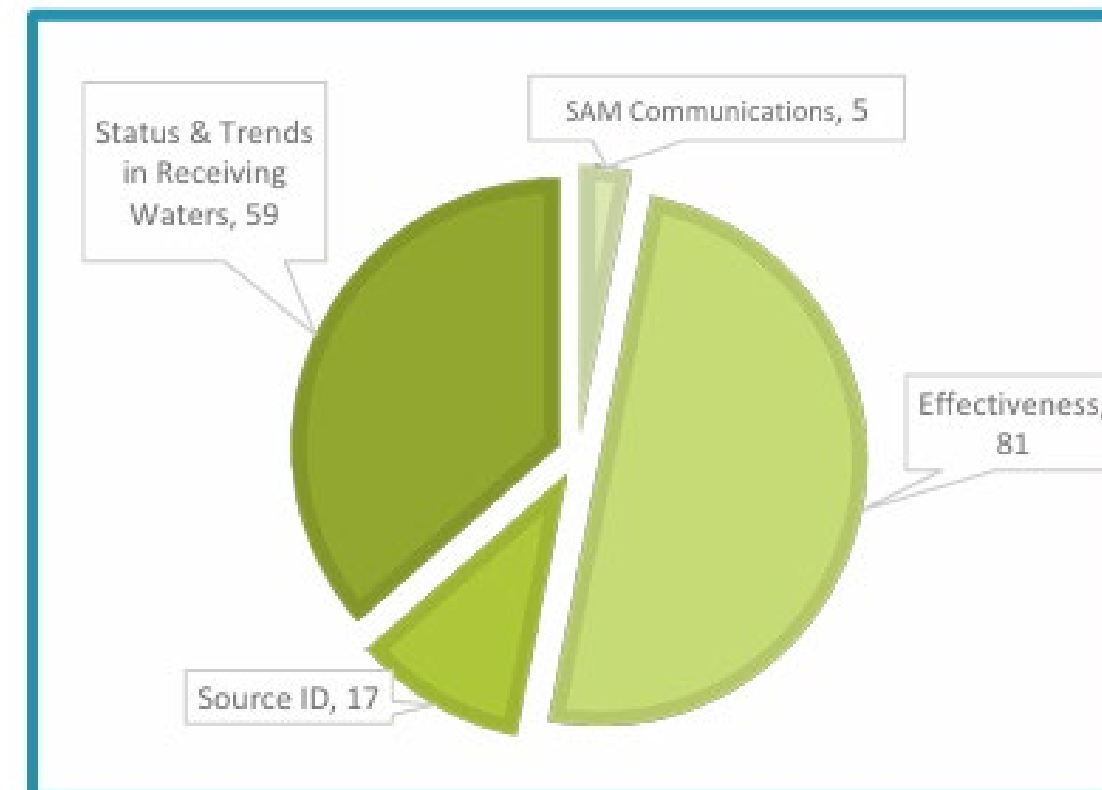
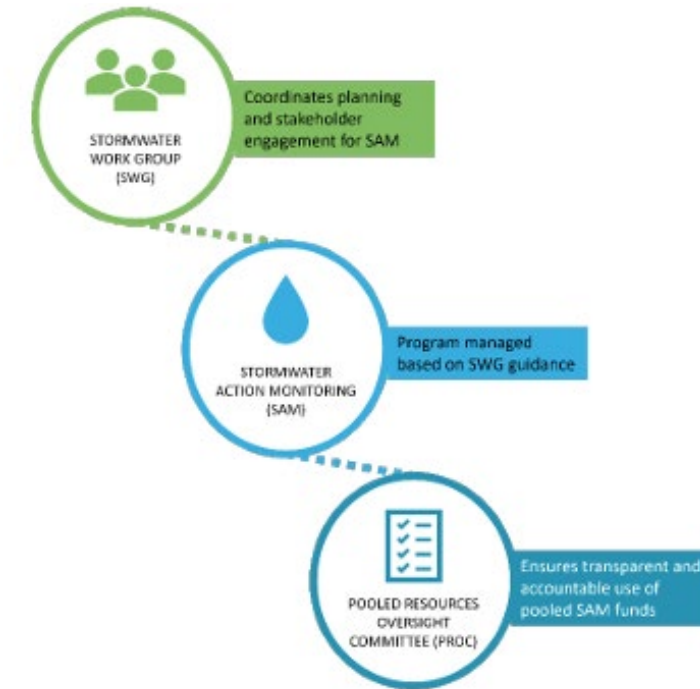


How does this compare to similar programs?

Similar Model in Washington State

- Dept. of Ecology manages the Regional Monitoring Program to see if things are getting better, what is working, what is not working, and what is more cost effective
- Stormwater Work Group (SWG) established in 2008 has oversight to implement the Stormwater Action Monitoring (SAM) program
- Recommended to establish a Regional Stormwater Monitoring Program in 2010 (\$10.5M in first permit cycle)
 - Status and trends
 - Effectiveness studies
 - Source identification
 - Permit Required Monitoring in 2013
 - Permittee either pays into the collective fund or conducts individual monitoring
 - Costs allocated by population

Washington State's Pooled Resources program: [SAM administration - Washington State Department of Ecology](#)



Since 2014, made about 160 contracting actions as shown in figure on left.

Source: [SAM Annual Report 2024](#)



MD MS4s can opt in to the program in their Phase 1 permits

G. Assessment of Controls

Anne Arundel County shall conduct BMP effectiveness, watershed assessment monitoring, and polychlorinated biphenyl (PCB) source tracking for assessing progress toward improving local water quality and restoring the Chesapeake Bay. The *2021 MS4 Monitoring Guidelines: BMP Effectiveness and Watershed Assessments*, (hereafter 2021 Monitoring Guidelines) shall be referenced for addressing the technical guidelines and requirements outlined below.

1. BMP Effectiveness Monitoring

By March 5, 2022, or by July 1 of each year, the County shall notify the Department which option it chooses for BMP effectiveness monitoring. The two options are:

- a. The County shall collaborate with the Department in a Pooled Monitoring Advisory Committee administered by the Chesapeake Bay Trust (CBT) for determining monitoring needs and selecting appropriate monitoring studies. To implement the required monitoring, the County shall pay \$100,000, or an amount to be proposed by the jurisdiction based on demonstrated past permit monitoring expenditures, annually into a pooled monitoring CBT fund. Enrollment in the program shall be demonstrated through a memorandum of understanding (MOU) between the County and CBT by September 1 of each year. The terms of the BMP effectiveness MOU are described in the 2021 MS4 Monitoring Guidelines. The County shall remain in the program for the duration of this permit term; or
- b. The County shall continue monitoring Church Creek or select and submit for the Department's approval a new BMP effectiveness study for monitoring by March 5, 2022, or by July 1 of each year. Monitoring activities shall occur where the cumulative effects of watershed restoration activities, performed in compliance with this permit, can be assessed. The minimum criteria for chemical, biological, and physical monitoring are as follows:

i. Chemical Monitoring:

- Twelve (12) storm events shall be monitored per year at each monitoring location with at least two occurring per quarter. Quarters shall be based on the calendar year. If exceptional

2. Watershed Assessment Monitoring

By March 5, 2022, or by July 1 of each year, the County shall notify the Department which option it chooses for watershed assessment monitoring. The County must implement one of the two options as follows:

- a. The County shall collaborate with the Department in a Pooled Monitoring Advisory Committee administered by CBT for determining appropriate watershed assessment monitoring. To implement the required monitoring, the County shall pay up to \$172,968 annually into a pooled monitoring CBT fund. The final cost will be dictated by the chosen proposal. Enrollment in the program shall be demonstrated through an MOU between the County and CBT to be signed by September 1 of each year. The terms of the Watershed Assessment Monitoring MOU are described in the 2021 Monitoring Guidelines. The County shall remain in the program for the duration of this permit term; or
- b. The County shall submit a comprehensive plan for watershed assessment and trend monitoring by March 5, 2023 related to stream biology and habitat, bacteria, and chlorides and commence monitoring upon the Department's approval. The plan shall follow the 2021 Monitoring Guidelines and include:
 - i. Biological and habitat assessment monitoring at randomly selected stream sites using MBSS protocols;
 - ii. Bacteria (i.e., *E.coli*, *Enterococcus* spp., or fecal coliform monitoring); and
 - iii. Chloride assessments at two locations.



MARYLAND

Department of the Environment

Source: [Anne Arundel County MS4 Permit Final.pdf](#)

MD's NPDES permits: [NPDES MS4 Permits](#)



What is the research finding?



Research Questions

- BMP Effectiveness Monitoring
- Watershed Restoration Assessment
- Biological Community Restoration
- Changing Environmental Conditions
- Social Science
- Pollutants of Emerging Concern
- Restoration trade-offs

The Chesapeake Bay Trust, the Maryland Department of Natural Resources, the Environmental Protection Agency's Chesapeake Bay Program Office, Anne Arundel County, Baltimore City, Charles County, Frederick County, Harford County, Montgomery County, Prince George's County, and the Maryland Department of Transportation State Highway Administration, and other partners, such as Maryland Department of the Environment, announce a Request for Proposals for its Restoration Research award program. **The goal of this research program is to answer several key restoration questions that are a barrier to watershed restoration project implementation.** Funding partners hope that answering these questions will ultimately lead to increased confidence in proposed restoration project outcomes, clarification of the optimal site conditions in which to apply particular restoration



**FY 27 RFP release early
November 2026**

Research projects, including final reports and all program information, is at:

<https://cbtrust.org/grants/pooled-monitoring-initiatives-restoration-research-award-program/>



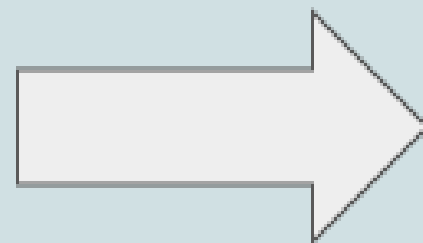
Synthesizing Restoration Research to Inform Chesapeake Bay Decision-Making



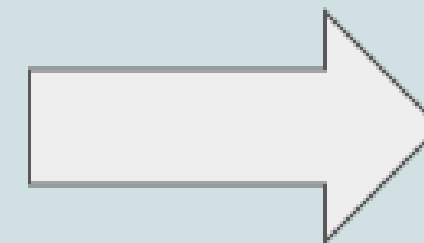
Goal: Translate over a decade of the Pooled Monitoring Initiative's studies into accessible, policy-relevant tools that inform restoration decision making.

- **Synthesize** key findings, uncertainties, and practical implications across PMI–RRP studies
- **Translate** technical research into clear, decision-relevant guidance
- **Organize findings** around user needs and real-world restoration decisions
- **Develop accessible products** for practitioners, funders, regulators, and local governments
- **Increase the impact of PMI–RRP science** by supporting use in planning, funding, permitting, monitoring, and communication

PMI-RRP Research



**Decision-Ready
Science Synthesis
Products**



**Better Use of
Science in
Restoration
Decisions**

**Strong
science
existed and
obstacles to
use
included:**

RESEARCH FINDINGS ARE DISPERSED ACROSS
MANY STANDALONE STUDIES

BUSY DECISION-MAKERS NEED CLEAR
TAKEAWAYS, NOT HUNDREDS OF PAGES OF
SOURCE MATERIAL

RESULTS ARE NOT ALWAYS ORGANIZED AROUND
PRACTICAL DECISION POINTS

*WITHOUT TRANSLATION, VALUABLE SCIENCE
CAN REMAIN UNDERUSED*

A decade of applied restoration science, broad but dispersed

60+ PMI-RRP studies across five themes, developed over 12 years

Stream restoration (effectiveness, water quality effects, wet vs. dry, ecological uplift)

18 studies

Restoration tradeoffs and co-benefits (tree trade-offs, biological outcomes, living shorelines)

15 studies

Stormwater BMPs (efficiency, stream self recovery, urban trees, climate change)

13 studies

Pollutants of emerging concern (road salts, thermal, PCBs)

8 studies

Monitoring and data optimization (water quality sampling design, monitoring efficiency improvements, methodological innovations)

6 studies

But breadth alone does not guarantee impact

Dispersed: findings sit in dozens of reports and journal articles

Dense: busy decision makers need clear takeaways

Not decision-linked: results are rarely organized around the practical decision points people face: siting a project, writing a permit condition, designing a monitoring plan

Without translation, valuable science can remain underused.

What decision-makers told us

- Short, decision-linked products are desired: 64% of surveyed stakeholders preferred 1–2 page fact sheets
- **They want findings tied to permitting, planning, funding, and MS4 requirements; regulatory crosswalks were a top request**



Product Type	Primary Use
Science synthesis briefing documents (PDF, 4-9 pages) <i>Stream restoration; stormwater BMP efficiency; pollutants of emerging concern; restoration tradeoffs; monitoring and data optimization</i>	Technical grounding and decision support
Interactive two-pagers (web-based) <i>Stream restoration; stormwater BMP efficiency; salt management</i>	Accessible, web-based communication
Social media toolkit (web-based)	Outreach and awareness
Learning session package (web-based)	State-of-the-science knowledge transfer and facilitated discussion

The five science syntheses

1

Stream Restoration

18 studies

Effectiveness: what works, where, and why · scale and monitoring design · tree trade-offs · iron mobilization · wet vs. dry construction · biological uplift

2

Stormwater BMP Efficiency

13 studies

Comparative effectiveness of stormwater practices for nutrient and sediment reduction, stream self-recovery, urban trees, and climate considerations

3

Pollutants of Emerging Concern

8 studies

Winter road salts, thermal loading, PCBs, and bacteria: sources, effects, and management responses

4

Monitoring & Data Optimization

6 studies

Sampling design and monitoring efficiency · power analysis, flow-normalized metrics, and other methodological innovations

5

Restoration Trade-offs & Co-benefits

15 studies

Cumulative impacts, co-benefits, and trade-offs across restoration practices, including tree trade-offs, biological outcomes, and living shorelines

Common structure

Background → How to Use → What PMI-RRP Science Shows → Management Implications Parenthetical citations make every statement traceable. Each synthesis is a living resource, updated as new PMI-RRP science emerges.



techniques, how to bolster practice adoption using social science, information useful to regulatory agencies in project permitting, and information that will help guide monitoring programs.

This program supports the Pooled Monitoring Initiative which is designed to connect key stormwater and stream restoration questions posed by the regulatory and practitioner communities with researchers. This program also supports research for pollutants of emerging concern, social science, “trade-offs,” and more. Each year the top research questions are added to this RFP and some years past research questions are cycled off while we await findings to inform the next question’s iteration. **The Pooled Monitoring Initiative pools funding resources to answer your top research questions and deliver the results back to you for use.** If you are interested in funding this research, let us know as we can work together to add your funds to the “pool.”

PROGRAM STATUS: CLOSED

[Additional Information on Projects](#)



Pooled Monitoring Science Synthesis Products

- [Stream Restoration Science Synthesis](#)
- [Stormwater Best Management Practices Science Synthesis](#)
- [Restoration Tradeoffs & Cross-Functional Benefits Science](#)
- [Pollutants of Emerging Concern Science Synthesis](#)
- [Monitoring & Data Optimization Science Synthesis](#)
- [Interactive Science Synthesis Communication Products](#)

Stream restoration - what works, where, and why

Watershed context drives nutrient performance. Nitrogen reductions are most consistent in smaller headwater catchments with lower impervious cover; larger lowland systems show weaker, more variable responses, although longer and larger restored reaches can raise absolute nitrate removal. *(Filoso 2020; Hester & Scott 2024)*

Sediment load reductions can be more readily detected than nutrient reductions. Floodplain reconnection reduced storm-event TSS loads by ~10–37% at a monitored site, while nitrogen and phosphorus load responses are more often variable and site-specific. *(Beauchamp et al. 2020)*

Floodplain connectivity matters. Projects that measurably increase inundation and baseflow contribution are more likely to show downstream water quality responses. *(Filoso 2020; Thompson et al. 2018; Galella & Inamdar 2024)*

Scale and duration govern detectability. Reach-scale gains are often masked at watershed outlets; <3 years of monitoring and <5–10 storm samples per year are usually insufficient. Detecting load change typically needs 3–5 years and ~30–50 storm events. *(Thompson et al. 2018; Liang et al. 2019)*

Bottom line: Many "null" or weak results reflect monitoring limitations rather than restoration failure. It is important to align monitoring design with the decision or evaluation it needs to support.

Trade-offs and realistic expectations

Tree removal is a temporal trade-off. Losing up to ~80% of woody basal area reduces carbon for denitrification and can raise shallow groundwater nitrate in early years; soils typically recover over roughly a decade, while biological indicators (e.g., microbial biomass) often lag longer. (*Beauchamp et al. 2020; Wood et al. 2022; Galella et al. 2025*)

Invasion risk persists if not managed. Across 46 Maryland projects 8–29 years post-construction, non-native plant cover averaged $37\% \pm 12\%$ with no decline over time; geomorphic success did not predict native vegetation recovery. (*Barney et al. 2025*)

Iron flocculation is geochemical, not construction failure. ~2–5 mg/L total iron driven by groundwater and soil geochemistry; no consistent impairment of macroinvertebrate or fish communities attributable to iron alone. Primarily an aesthetic and perception issue. (*EA Engineering 2021*)

Wet vs. dry construction. Wet methods raise turbidity, but total loads are typically <1% of annual pre-restoration sediment export and comparable to small storms; dry construction adds ~5–10% cost with only modest (~9–15%) production rate differences. (*Straughan 2019; CWP et al. 2025*)

Biological uplift is often constrained by watershed condition and proximity to donor reaches. Habitat gains do not reliably translate into benthic recovery, but eDNA detects responses that traditional sampling can miss. (*Hilderbrand et al. 2015; Southerland et al. 2017; Hilderbrand & Richardson 2023*)

Bottom line: Stream restoration trade-offs are real but manageable. Design and permitting frameworks can pair tree removal, iron, and construction choices with intentional mitigation measures and realistic timelines.

Management implications

- 1 Set expectations by watershed context.** Stream order, impervious cover, and catchment size strongly shape nutrient outcomes; headwaters are often more responsive, while larger channels may yield greater cumulative benefit.
- 2 Match monitoring to the decision.** Invest in multi-year, flow-weighted sampling where load reductions are the objective and treat weak or "null" results cautiously.
- 3 Manage tree removal as a deliberate trade-off.** Limit clearing, retain canopy refugia, plan post-construction reforestation and invasive control, and judge success on long-term revegetation alongside geomorphic and water quality metrics.
- 4 Treat iron as a design and communication issue.** Site-specific, with routine monitoring of iron speciation and dissolved oxygen rather than a categorical ecological failure.
- 5 Consider wet construction conditionally.** Under clearly defined, site-specific performance standards, particularly where diversion is infeasible.
- 6 Adopt tiered biological expectations.** Reflecting watershed condition, connectivity, and monitoring sensitivity (e.g., eDNA); restoration creates the conditions for recovery rather than guaranteeing it.

*Restoration can create the conditions for recovery;
however, outcomes vary by site and will not appear uniformly across monitoring approaches.*

Measuring restoration credibly across scales

Failure to detect change is often a monitoring artifact, not evidence that restoration failed.

Natural hydrologic variability routinely exceeds the expected restoration signal. (*Thompson et al. 2018; Liang et al. 2019*)

Moderate reductions (~20%) can be undetectable under conventional watershed-scale monitoring designs.

Sampling frequency is a major control on annual load estimation error, reaching up to ~60% error with coarse sampling. (*Liang et al. 2019; Goodfellow 2020*)

Design choices can improve detection power. BACI designs with multiple controls and flow-stratified sampling can improve detection and reduce required sample sizes by 10–20%; flow-normalized concentrations outperform raw loads in flashy urban streams. (*Liang et al. 2019, 2024*)

Storm sampling is essential for sediment and phosphorus. Automated, flow-paced storm sampling and hybrid baseflow + storm designs generally outperform grab-only sampling. (*Thompson et al. 2021; Liang et al. 2024*)

Management implications

Power-test before data collection

Use simulation tools, including the PMI-funded R power analysis tool (Liang et al. 2024), to match designs to expected effect sizes.

Design quality over sample counts

It may be beneficial within MS4 permits and BMP verification frameworks to emphasize BACI, flow-stratified, and flow-normalized approaches.

Calibrate expectations to scale

Tie watershed-scale detection expectations to monitoring duration and coverage. Treat non-detection cautiously in crediting and adaptive management.

Interactive web tools: two-page guidance

KEY TAKEAWAYS FOR RESOURCE MANAGERS



Reduce chloride loads at the source first

References: 2 [Copy](#)

All common deicers mobilize contaminant "cocktails," but NaCl is the strongest driver of copper release and strongly mobilizes nutrient release—mobilizing an order of magnitude more Cu and significantly more dissolved nitrogen (TDN) than CaCl₂ (though comparable to MgCl₂) at equivalent doses. Sodium ions displace ammonium and chloride displaces phosphate on soil exchange sites, promoting organic colloid dispersion and releasing nutrients and metals together. Prioritize cutting NaCl and substituting CaCl₂/MgCl₂ where safety allows.



Expect late-winter/spring water-quality risk windows

References: 1 [Copy](#)

Following winter salt (NaCl) applications, thaw events produce transient increases in effluent loads (e.g., +61% phosphorus and copper, +88% zinc, +66% total suspended solids), indicating short-term reductions in treatment efficiency rather than net export, with annual removals still exceeding ~85%.



Design and maintain for nutrient and salt resilience

References: 5 6 [Copy](#)

Internal water-storage (IWS) zones and healthy, diverse vegetation sustain denitrification and nutrient uptake despite elevated salinity. Sites without IWS or with salt-damaged vegetation exhibit higher nutrient export. Routine maintenance—spring sediment cleanouts and replacement of salt-injured plants—helps maintain nutrient removal efficiency.

AI Assistant

[Feedback](#)

How each tool is organized

1

About this resource

How to use the page and context on the Pooled Monitoring Initiative

2

Key takeaways

Findings for resource managers, each with supporting detail and references one click away

3

Policy and implementation guidance

What the science means for decisions and on-the-ground actions

Available for stream restoration, stormwater BMP efficiency, and winter salt management.

Shown: winter salt management tool, "Key takeaways for resource managers" section. The stream restoration and stormwater BMP efficiency tools follow the same structure.

What this means for stream health work

PRACTITIONERS AND DESIGNERS

Set realistic performance expectations by watershed context, choose approaches suited to site conditions, and plan post-construction vegetation management from the start.

REGULATORS AND PERMIT PROGRAMS

Weigh the documented trade-offs (tree removal, iron, construction method) and align verification and crediting expectations with what monitoring can detect.

MONITORING PROGRAMS

Power-test monitoring designs before deployment, prioritize BACI, flow-stratified, and flow-normalized approaches, and interpret non-detection cautiously.

RESEARCHERS AND THE WORKGROUP

Use the syntheses to spot gaps and emerging questions (long-term vegetation recovery, eDNA-based biological assessment, watershed-scale detection) that can shape future PMI-RRP and Bay restoration research priorities.

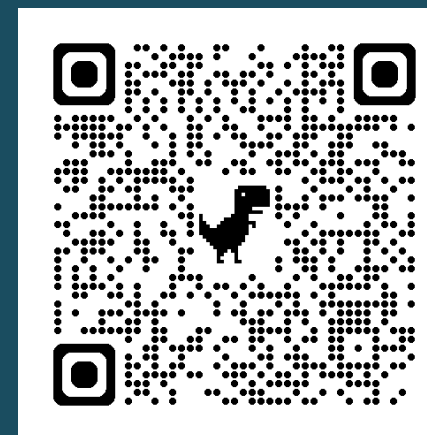
All syntheses are living resources. Feedback from this Workgroup on gaps, framing, and priority decision contexts can help shape the next round of updates.

NEXT STEPS

Where we go from here, and how to engage

- 1 Available now!** All five syntheses and the interactive products are on the Pooled Monitoring Initiative, Restoration Research Program (PMI-RRP) website; scan the QR code to go straight there.
- 2 Phase II roll-out.** Sharing the products through partner meetings and webinars this fall; the syntheses are living resources updated as new PMI-RRP science emerges.
- 3 On the horizon.** Cross-walking synthesis findings with regulatory and technical guidance.
- 4 We welcome your feedback!** How can these products best support the Workgroup's priorities, and which decision contexts should we target next?

Find the products



Chesapeake Bay Trust Pooled Monitoring Initiative, Restoration Research Program (PMI-RRP)

cbtrust.org/grants/restoration-research/

Syntheses · interactive two-pagers · social media toolkit · learning session package

Sadie Drescher · sdrescher@cbtrust.org

Funded through the Chesapeake Bay Trust Pooled Monitoring Initiative – Restoration Research Program, Award #26574 · Work supported by Thriving Coasts Consulting, LLC and akorn environmental consulting



How is the research used?

- “I like the format for having the researchers and practical application presenters. I found the presentation by Lana Kashuba and Josh Thompson and their program sampling to be extremely useful. The work of Tom Jordan was complimentary. **I recommended changes to a sampling program in VA based on the work of both projects.** This work will change what I recommend for Nutrient sampling methods and programs.” – 2020
- “**Need to consider how watershed is doing as a whole** & get out of silos (MD Regulatory Agency) – 2020
- 2020 – Pooled Monitoring Forum presentation (MD Regulatory Agency):
 - Guided some living shorelines through federal permit questions
 - Used ecological uplift study to better shape stream restoration goals/expectations
 - **Allow MS4s to opt into the Pooled Monitoring Program**
 - Salt application research findings – added points about equipment to Phase 1 MS4 permits to reduce salt and ask for data in permits to get a baseline for changes over time
- 2022 – Pooled Monitoring Forum panel of end users shared how they use this research:
 - **Inform comments and input to rulemakings and regulations (NPDES permits & TMDLs)**
 - **EPA supports MDE’s alternative to MS4 permits to allow for funding the Pooled Monitoring Program**
 - EPA CBPO expert panels use this research that inform state NPDES, state workgroups, and permits
 - Limit drainage area to less than 1,000 acres based on S. Filoso findings (MD County)
- “I get the chance to hear the science needs related to restoration and BMP effectiveness, which **helps me to design my research program and target partners for more successful program development**” – 2020
- [Federal agency] “staff found the forum incredibly insightful and applicable to project review. **More of what was discussed at the forum will be used than not**” – 2020



How is the research used?

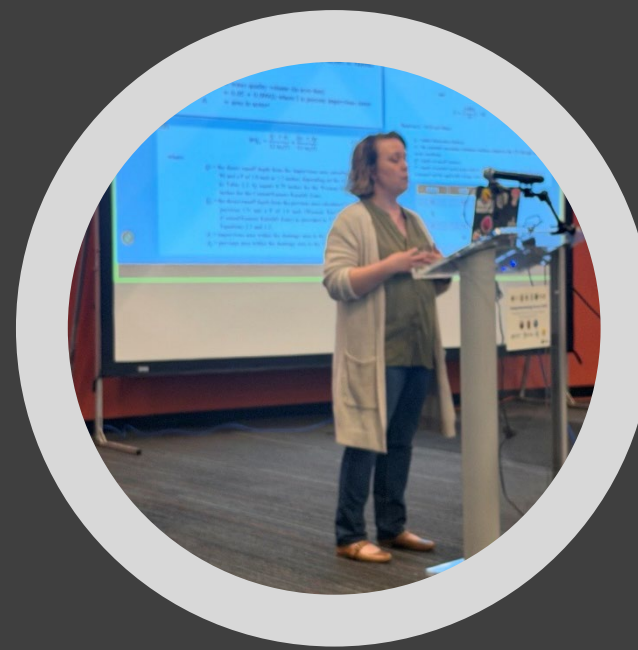
- We opened discussions with DOT to change to PCB free road paint! – 2025
- I used data from **stream restoration research in the past for permitting purposes.** – 2025
- ... will use the information on benthic monitoring using paired methods and **assessing post restoration riparian vegetation.** – 2025
- There is a wide range of good research and monitoring occurring with the Chesapeake Bay watershed **that informs policy, public health, restoration and scientific method and understanding.** – 2025
- Topics such as stream restoration trade offs and macroinvertebrate colonization provided helpful information when needed **to consider and respond to public comments/concerns** on projects. – 2025
- Information shared at this forum will be very **helpful in future stream restoration projects that I manage** as this, and previous forum information, shares best practices and lessons learned to be implemented in future restoration projects. – 2025
- 2026 – MS4 funder – **“We've used the results from the program to tailor our own restoration efforts, including specifically stream restoration, and to provide regulatory agencies (e.g., MDE and the Corps) with the confidence that these practices can be used to comply with the TMDL.”**



Claire Welty (UMBC) quantifying the cumulative effects of stream restoration and environmental site design on nitrate loads in nested urban watersheds using a high-frequency sensor network (Baltimore County, MD)
Final report [here](#) and publication [here](#)

2026 Pooled Monitoring Forum

- Eleventh annual
- ~200 registrants
- Thanks to everyone who participated and especially those who helped present





How can I plug in?

Pooled Monitoring Initiative Gains Support & Research is Valued

- Review/use research, apply, help advertise the RFP, and provide feedback
- Attend an annual forum where we bring together regulators, practitioners, and scientists to hear the research results
- Part of the EPA Chesapeake Bay Program Office's Stream Health Work Plan
- Maryland permittees have the option to “pool” resources vs. conducting site specific monitoring in the MS4 (municipal separate storm sewer system) permit
- Recent Blue Convergence award to translate this science for Virginia (Lead: Thriving Coasts)
- Diverse funding partners who use the research findings
- Maryland Stream Restoration Association hosts Pooled Monitoring researchers
- Be a collaborator and/or potential funding partner



FOR IMMEDIATE RELEASE:
March 3, 2026

FOR INFORMATION CONTACT:
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Chesapeake Bay Trust Receives Congressional Funds to Translate Over a Decade of Research into Usable Products for Regulators, Legislators, and Policymakers

The Chesapeake Bay Trust (Bay Trust) empowers thousands of people every year with the resources they need to restore nature in communities across the Chesapeake Bay watershed, including providing research to stakeholders who influence natural resource restoration policy and practices. The Bay Trust has just been awarded Congressionally Directed Spending or Community Project Funding of \$178,000 to turn more than a decade of Chesapeake Bay restoration science through its Pooled Monitoring Restoration Research Program into clear, practical tools for regulators, legislators, and policymakers.

“The Chesapeake Bay is both a natural treasure and an economic lifeline for Maryland. That’s why we fought to secure this direct federal funding for the Bay Trust to conduct critical research to best inform decisions on where restoration resources can have the greatest impact. This investment will better equip us to improve the health of the Bay and support the communities throughout the watershed that depend on it,” said **Senator Chris Van Hollen, a member of the Senate Appropriations Committee.**

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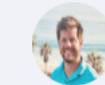


We were just at Restore America’s Estuaries (RAE) 9/23/26 @ 1pm, for a panel, **“Products for Policymakers: Reconfiguring Monitoring Programs to Answer Real Restoration Questions”**

- Jana Davis, Chesapeake Bay Trust
- KC Filippino, Hampton Roads Planning District Commission, (VA)
- Erik Michelsen, Anne Arundel County Bureau of Watershed Protection and Restoration (MD)
- Brandi Lubliner, Stormwater Engineer, City of Tacoma (WA)



Project Leads



Seth Theuerkauf
Founder and Lead Consultant, Thriving
Coasts Consulting, LLC
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Translating Science to Improve Chesapeake Bay Restoration and Biodiversity Outcomes in Virginia

This project will mobilize existing Chesapeake Bay restoration science to co-develop decision-ready syntheses with Bay restoration decision-makers to improve restoration and biodiversity outcomes in Virginia.

The **Chesapeake Bay Trust's Pooled Monitoring Initiative Restoration Research Program (PMI-RRP)** represents a rich body of restoration science for the Bay. Despite functioning as a dynamic science-to-policy hub in Maryland, informing decisions across jurisdictions, including stormwater management, stream restoration, nutrient reduction, contaminant pollution and more, it remains underutilized in Virginia.

Led by Thriving Coasts Consulting, LLC, this project is anchored in three actionable decision pathways in Virginia: restoration permitting and stormwater management; decision-support guidance updates; and support for Tribal restoration priorities. They will convene a Virginia-focused working group of Bay restoration decisionmakers to develop:

- a decision pathway priority list and framework for connecting science to decisions;
- science-to-policy crosswalks linking recommendations to permitting criteria, restoration planning, and guidance; and
- implementation-ready materials (e.g., updated guidance for the Virginia Stormwater Management Handbook) to foster immediate use.

This project was funded in August 2026 as part of the **2026 Ocean Biodiversity Program Regional Engagement Grants.**

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