P.O. Box 278
Riverdale, MD 20738

Committee: Environment and Transportation
Testimony on: Bill HB 942 "Protection of Maryland Streams and Waterways"
Position: Support
Hearing Date: March 3, 2023

The Maryland Chapter of the Sierra Club supports HB 942. This legislation will strengthen Maryland's commitment to reaching its pollution-reduction goals for cleaning up the Chesapeake Bay, while at the same time safeguarding local natural resources and helping local communities become more resilient to the impacts of climate change.

Specifically, this legislation will:

1. Protect our natural resources and environment by incentivizing alternatives to stream restorations using less destructive out-of-stream stormwater control methods.
Streams and stream valleys are essential parts of our communities and ecosystems. They sometimes are the only natural areas present in urban and suburban areas. Stream valleys are integral to lessening heat island effects, countering the impacts of global warming, and providing a healthy environment for people, plants, and wildlife. Wooded natural stream valleys provide critical services such as recreational opportunities for local communities, connections with plants and animals, and mental health promotion. They provide habitat for diverse aquatic and streamside plant and wildlife communities. Healthy watersheds absorb stormwater, replenish and purify groundwater, and provide ecosystem services such as carbon sequestration, oxygen production, cooling of the community and waterways, and biodiversity protection.

Land development in Maryland has resulted in large areas of impervious surface due to increased land areas covered by streets, parking lots, rooftops, and turfgrass. Impervious surface represents over 30% of land in many municipalities. These impervious surfaces, along with increased storm intensity, cause excessive stormwater runoff, which rushes into streams, carrying with it sediment, pollution, and trash. These flows cause increased erosion along stream banks and flooding that in turn causes property damage to communities, as well as damage to the streams and surrounding natural areas.

Maryland municipalities that hold stormwater discharge permits must meet local municipal separate storm sewer systems (MS4) permit targets for sediment and pollution reduction and Chesapeake Bay Total Maximum Daily Load (TMDL) goals to reduce sediment and pollution flowing into the Bay. There are a variety of methods, called Best Management Practices (BMPs), allowed by the Maryland Department of the Environment (MDE) to reach these goals. Quite often municipalities employ engineered stream restoration BMPs. These projects employ heavy construction equipment to modify stream channels to handle stormwater runoff. This typically involves a mix of straightening or changing stream's natural meander patterns, placing heavy boulders to armor-plate sections of the stream and to alter the natural water flow, scraping away stream bank soil, using plastic and other types of soil stabilization mats,

dumping fill material into the stream channel to raise its level, clearcutting steam valleys, and then removing dump truck loads of soil to lower the stream valley closer to the stream, or even filling in the stream channel and moving it to a different location.

Exhibits 1 and 2 below are typical examples of stream restoration projects. The stream-side forest buffer and topsoil have been completely removed. Construction projects like these require cutting down mature riparian forests along the stream corridor to access the stream channel. New trees are planted, but it takes decades to regain the ecosystem services provided by the mature riparian forest.

Exhibit 1: Stream restoration in Upper Watts Branch, Rockville, MD; photo by City of Rockville

Exhibit 2: Stream restoration at Solitaire Court, in Gaithersburg, MD. 12/3/21 photo by K. Bawer

Stream "restorations" are only one practice among many that can be used to control excess stormwater and keep sediment and pollution out of the Bay. Out-of-stream practices that control stormwater at its source include rain gardens, bioretention techniques, tree plantings, permeable pavement, and replacement of turf lawns with native trees, bushes, and herbaceous ground cover. These upland practices control stormwater before it enters streams, are less destructive to the environment, and may eliminate the need for stream "restorations."

Exhibit 3: Upland stormwater control practices. Photo by Montgomery County Department of the Environment.

This bill requires Maryland Department of the Environment (MDE) to incentivize stormwater discharge applicants to treat stormwater runoff closer to its source (for example, near

impervious surfaces such as roads and roofs), rather than allowing stormwater to firehose into our waterways causing stream erosion.

The total lifecycle cost of stream restorations can be much greater than other BMPs, because impervious surface coverage in the watershed, the source of the stormwater runoff, has not been addressed. Observations in the field confirm that stream restorations are only temporary fixes. When upland stormwater runoff is not controlled, the result is that stream restorations are blown out as post-construction storms initiate structural failures. This will be a continually greater problem since precipitation levels are increasing due to the warming climate. We are not aware of any rigorous comparisons of the total cost of ownership, or lifecycle cost of the various BMPs permitted. The costs include the sum of construction, maintenance, repair, and replacement, and a quantification of the value of lost ecosystem services. For example, trees have been shown to reduce air conditioning costs. Taxpayers must pay the cost for these failures of stream restorations. Exhibit 4 below is just one example of a blown-out section of a stream restoration project.

Exhibit 4: Stream restoration failure in Snakeden Branch, Potomac MD. Photo by K. Bawer

2) Require stream restoration mitigation projects be located in the same watershed as the stream for which mitigation is required.

This bill will also require MDE to specify that stream restoration mitigation projects be located in the same watershed as the stream for which mitigation is required. The purpose of mitigation projects is to meet a goal of "no net loss" of stream function, so damage done in one location by a construction project is theoretically balanced by repair work to a stream in a different location. If a mitigation project is done in a different watershed than the one in which the damage is done by a construction project, there may be a regional no net loss, but the damaged watershed itself experiences an "uncorrected" degradation. This is inherently harmful to natural resources at the local level and unfair to local residents, especially to communities of Environmental Justice concern.

3) Promote more effective and beneficial stream restoration projects.

By requiring improvement of in-stream biology (biological uplift) and the protection of trees, HB942 promotes more effective and less destructive stream restoration projects.

The scientific literature shows that the results of engineered stream restorations rarely, if ever, show evidence for biological uplift (biological improvement) for aquatic organisms.[1][2][3][4][5]

The intent of stream restoration projects for Municipal Separate Storm Sewer System (MS4) permits is to promote biological uplift in the Bay (i.e., to increase aquatic vegetation and fish, crab, and oyster stocks). But MS4 permits do not require local biological uplift to be demonstrated at the actual project site which can be very far from the Bay itself. We should not have to sacrifice our local natural areas while saving the Bay.

This bill also requires that tree removal be minimized and that the remaining trees are better protected, including critical root zone protection by fencing around trees to prevent heavy construction equipment from compacting the soil around trees since soil compaction usually leads to tree death.

To be clear, the requirements of this bill do not apply to "infrastructure protection" projects which are done in the immediate area of an infrastructure problem such as an undercut road or bridge abutment or exposed sewer line. Infrastructure protection projects are not stream restorations and are not impacted by this bill.

4) Enhance monitoring requirements for stream restorations to ensure that goals are achieved.

HB942 also enhances project monitoring requirements by requiring monitoring of stream restoration projects for ten years after project completion to ensure that all stated goals are achieved. Currently, MS4 permits require only one stream restoration project to be monitored, no matter how many are done by a jurisdiction, and the monitoring is required for only five years[6]. In addition, current MS4 permits only require the measurement of sediment and nitrogen and phosphorus, but are not required to demonstrate biological uplift. In fact, jurisdictions can opt out of monitoring altogether by paying into a "shared pool" to support research projects. Enhanced monitoring requirements will allow biological systems time to recover so that biological improvement can be demonstrated.

---

[1] Hilderbrand, Robert H., et. al., "Quantifying the ecological uplift and effectiveness of differing stream restoration approaches in Maryland," Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, 2020 (https://cbtrust.org/wp-content/uploads/Hilderbrand-et-al_Quantifying-the-Ecological-Uplift.pdf)

[2] Jepsen, R., Caraco, D., Fraley-McNeal, L, Buchanan, C., and Nagel, A. 2022. "An Analysis of Pooled Monitoring Data in Maryland to Evaluate the Effects of Restoration on Stream Quality in Urbanized Watersheds: Final Report." ICPRB Report 22-2. Interstate Commission on the Potomac River Basin, Rockville, MD. (https://www.potomacriver.org/wp-content/uploads/2022/06/ICP-22-1_Jepsen.pdf)

[3] Laub, B.G, McDonough, O.T, Needelman, B.A., Palmer, M.A., "Comparison of Designed Channel Restoration and Riparian Buffer Restoration Effects on Riparian Soils," Restoration Ecology, Vol. 21, Issue 6, November 2013 (https://onlinelibrary.wiley.com/doi/abs/10.1111/rec.12010)

[4] Palmer, M. A. et. al., 2014, "Ecological Restoration of Streams and Rivers: Shifting Strategies and Shifting Goals," Annual Review of Ecology, Evolution, and Systematics. 2014. 45:247–69 (www.ecolsys.annualreviews.org or www.annualreviews.org)

[5] Pedersen ML, Kristensen KK, Friberg N (2014), "Re-Meandering of Lowland Streams: Will Disobeying the Laws of Geomorphology Have Ecological Consequences?" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4180926/)

[6] "MDE Recommendation for Addressing Nutrient and Sediment SW-WLAs" (2022 Version) https://mde.maryland.gov/programs/water/TMDL/DataCenter/Documents/MDE_Nutrient_Sediment_Guidance_2022.pdf

5) Improve public notification and participation for stream restoration projects.
Typically, only immediately adjacent property owners are notified even if a project will impact an entire community. HB942 will require MDE and municipal permittees to notify all interested parties who have requested, via a web site, to be notified via email of requests for restoration project permits. The U.S. Army Corps of Engineers (USACE) web site to sign-up for permit request notifications could be used as a model.

The web site should allow the public to register for a tracking account which would push update notifications to the registrant. This could be patterned after the Maryland General Assembly website where one can register to be notified of the progress on selected bills.

Summary
In summary, stream restorations are currently ineffective since they do not address the source of our stormwater problem – runoff from developed areas and agricultural fields outside of streams – and therefore must often be repaired at great cost. This bill addresses the root cause of the problem and encourages jurisdictions to obtain credits for out-of-stream solutions to excessive stormwater runoff. Out-of-stream stormwater control will reduce, if not eliminate, the need for stream restorations. If stream restorations continue to be built, this bill will enhance their effectiveness.

Sierra Club Maryland urges the Committee's favorable report on HB 942.

David Mosher
Natural Places Committee
davidmosher1@yahoo.com

Josh Tulkin
Chapter Director
Josh.Tulkin@MDSierra.org