

SENATE BILL 688 – ENVIRONMENT – STREAM AND FLOODPLAIN RESTORATION – REQUIREMENTS AND LIMITATIONS

COMMITTEE – Education, Energy, and the Environment

Testimony on S.B. 688

Position – Support

Hearing Date – March 3, 2026 (submitted on February 27, 2026)

Dear Members of the Education, Energy, and the Environment Committee:

I am Robert Dover, a resident in Columbia, Howard County, Maryland. I am writing to request that you file a favorable report for Senate Bill 688.

Background

I am a geologist with more than 35 years of environmental consulting experience. For more than 30 years, I have served as a subject matter expert (SME) in surface water hydrology, responsible for evaluating the benefits and adverse impacts of proposed watershed, energy, and transportation projects on stormwater flow, erosion, water quality, and flooding potential for dozens of Federal projects.

My first exposure to the practice of stream and wetland “restoration” projects being conducted for purposes of generating MS4 permit or wetland compensatory mitigation credits in Maryland was in 2021, when I learned that a pond re-construction project was proposed adjacent to my back yard and, simultaneously, a large-scale wetland mitigation bank project was proposed adjacent to my side yard. In both cases, the project description offered by local officials and the affiliated contractors claimed that the existing stream, mature forest, and pond were to be destroyed in order to “restore” them to something resembling original conditions. Although I have served as a subject matter expert in surface water hydrology for Federal clients for more than 30 years, this was the very first I ever heard of an industry practice that seeks to establish a high-functioning ecosystem by first destroying a mature, existing ecosystem and replacing it, from scratch, with a system designed by engineers.

Even though I know that hydrologic and ecological systems in densely developed urban and suburban areas are no longer functioning as they did before Europeans arrived, this concept of reversing perceived degradation by completely removing all trees, draining all water bodies, and re-grading the soil to match some engineering fantasy made no sense at all. My entire career is based on the knowledge that the only way to restore any degraded system is to eliminate the cause of the degradation. Taking any other actions while leaving the cause of the degradation in place, and then expecting the situation to remain intact over the long-term, is absurd.

In the case of streams and wetlands that have been degraded by elevated volumes and velocities of stormwater runoff, the only way to stop and reverse the degradation is to reduce the elevated runoff volumes and velocities back toward the original runoff conditions, and then let the stream heal naturally. This can only be done by capturing stormwater runoff at the source, before it enters the stream channels. It cannot be done by simply re-directing the same volume of stormwater in a different direction. As discussed in detail in my comments below, any solution that fails to address this root cause of degradation will only be temporary, and will quickly be destroyed by continuing erosion and sedimentation. This is not only the logical conclusion based on an understanding of the hydrologic processes of streams and adjacent

floodplains, but it is borne out by post-construction observations and monitoring measurements of hundreds of stream restoration projects.

It is not just the failure to address the root causes of the elevated runoff levels that makes no sense. In order to allow the stream channel to be relocated and the topography of the floodplain to be regraded to the design of the engineers, these projects are accompanied by full clearing of all mature trees and understory vegetation. The theory behind this practice has not one, but two, major flaws:

- It completely ignores the critical functions that mature trees and understory vegetation perform in stabilizing soils in our watersheds. While purporting to have the purpose of reducing erosion, these projects actively and completely remove the extensive root systems that are the only things protecting the soil from erosion in the first place. Removing a root system in order to protect the soil from erosion is literally insane – yet it is done on a massive scale on these projects, with devastating consequences.
- Similarly, removing mature trees immediately eliminates the evapotranspiration process, which functions to remove up to 50 percent of rainfall out of the watershed and return it to the atmosphere. It is well-documented that, when evapotranspiration is stopped, groundwater levels immediately rise in a process called “watering-up”, resulting in an increase in runoff volumes and velocities and associated flooding. Again, if the cause of the degradation is elevated runoff volumes due to urban development, then removing mature trees that harmlessly transfer up to 50 percent of this excess water out of the watershed is the exact opposite of what we should be doing.

Maryland’s current regulatory framework for replacing the trees removed during stream restoration and other projects ignores the science behind how trees function. It focuses entirely on *numbers* of trees removed and replanted, when it should be focusing on the *functions* of the trees removed and replanted. If the replanted trees are 2-inch diameter immature trees, which they always are, there is simply no replacement ratio (1:1, 3:1, 10:1, or 100:1) that will restore the hydrologic, ecological, and residential functions of the removed mature trees. Even if those replanted trees survive (and post-construction survey results from multiple projects show they often do NOT survive), it will take those 2-inch diameter trees decades before their root systems begin to stabilize the surrounding soils, and before they begin to evaporate and transpire rainfall in any significant quantities. When the mature trees are removed, those functions are effectively destroyed forever, leading to even more extreme erosion, flooding of nearby properties, and degradation of water quality and ecological function.

In my studies, I was also shocked to learn that the impetus behind these misguided practices was that the State of Maryland had instituted a “crediting” system that is almost entirely weighted toward solutions that involve total destruction of the existing ecosystem, instead of toward incremental solutions that address the root causes of the degradation. Again, as a long-time environmental consultant, it was obvious to me why the environmental engineering industry has consistently urged Maryland’s legislators and regulators to establish this upside-down crediting system. When the crediting system has largely been developed with substantial participation of the environmental engineering industry, it should be of no surprise to anyone that the resulting crediting system is strongly weighted toward projects that generate the highest amount of revenue to that industry.

Comments on Specific Proposed Changes

- 1) Section 4-203(D)(1) – Prioritizes capture and reduction of stormwater volume and velocity at its source**
Section 4-204(a)(2)(I) and (II) – Prohibits consideration of cost, property ownership, or administrative convenience when considering feasibility of less disturbing out-of-stream alternatives

There are two major reasons that this change is needed:

- a) Reducing the erosive velocity of stormwater runoff by capturing it at its source to encourage infiltration of some portion and spread the release of another portion over a longer period of time is the *only* effective and permanent method for reversing degraded water quality and ecological function in our watersheds; and
- b) Construction work and engineered structures for these upland methods will occur in already developed areas, and will thus have fewer adverse impacts on existing mature forests, floodplains, and stream channels than in-stream methods.

Both the science and the post-construction results demonstrate that in-stream methods that seek to reduce erosion by modifying the stream channel DO NOT WORK.

Here is the science:

The reason for degradation of our streams is excessive runoff due to development. This excessive runoff causes the velocity of runoff to increase, thus increasing erosion and deepening (channelization) of stream channels. In-stream stream restoration projects seek to reduce erosion in two ways: by spreading the stormwater runoff laterally across a wider area to reduce its velocity, and by placing engineered structures (rock walls, rip-rap, step-pools, riffles, and log vanes) across the soils and sediment, like paperweights. This will work – temporarily. Spreading the runoff across a wider area of the floodplain will cause it to flow more slowly – temporarily. Using armoring methods will protect underlying soils and sediments from erosion – temporarily.

But, just as the elevated runoff volumes caused the erosion in the stream channel in the first place, the continuation of these elevated volumes following completion of construction will *always* re-initiate that erosion. Similarly, just as the elevated runoff volumes eroded behind and beneath natural rocks and logs in the first place, the continuation of the elevated volumes will *always* quickly erode behind and beneath the engineered structures, causing them to become unstable and collapse into the stream, and again leaving the underlying soils and sediments exposed to erosion.

Although the stream restoration industry and its supporters within the regulatory agencies are always careful to defend these projects, they occasionally slip and reveal that they know that their projects do not work. The following examples show that the decision-makers, designers, and constructors of these projects are fully aware that their efforts are only be temporary and will be destroyed by erosion and flooding in a few years, and that they do no achieve the pollutant load reductions that they claim:

- When I recently commented to a Howard County official that one of his planned stream repairs would only be temporary, he replied, casually, “Everything we do is temporary,” as if this was a normal and acceptable expenditure of taxpayer funds. It is not normal, and it is not acceptable.

- The Chesapeake Bay Program's *Recommended Methods to Verify Stream Restoration Practices Built for Pollutant Crediting in the Chesapeake Bay Watershed*, General Verification Requirements for Stream Restoration Projects, recommended that the five-year duration of credits for stream restoration projects be shorter than those for other credit-earning projects (ten years) because stream restoration projects were "subject to catastrophic damage from extreme flood events".
- The 2023 Comprehensive Evaluation of System Response (CESR) report by the Chesapeake Bay Project's Scientific and Technical Advisory Committee (STAC) found that decades of efforts to improve water quality and ecological function in the Bay through load reductions in TMDL and other programs have not been successful. One particularly relevant statement, from Page 75 of the Findings of that report, is "*To date, efforts to reduce nonpoint sources have not produced sufficient levels of BMP implementation to meet the TMDL, and the implementation that has occurred may not be producing the pollutant reductions expected*". While the stream restoration industry tried to spin this by claiming that the failures to meet the TMDL were entirely due to not having done enough stream restoration projects, and not having done them of a large enough scale, it is quite obvious, based on the science and reports of other researchers, that the failure is because the individual projects, themselves, do not achieve any significant load reductions.

And here are the post-construction results (note that these are far too voluminous to provide in these comments, but here are a few examples):

- In Columbia, Maryland, right now (2026), two stream restoration projects are in progress – a project at the Unnamed Tributaries of the Little Patuxent River (a.k.a., the Longfellow project) and a project at Font Hill Wetland Park. Both of these projects are nothing but repairs of erosion damage to engineered structures and supposedly "stabilized" streambanks that were constructed during a previous stream restoration in 2019 to 2020. The residents see this going on, and they are not stupid – how does the state legislature justify allowing state and county agencies to continue to spend state and county tax dollars to continually repair failed projects, yet continue to promise that the new ones will be successful, especially when the scientific reasons for these failures are glaringly obvious?
- The Programmatic Environmental Assessment (PEA) for the Nationwide Permit 27 (NWP-27) by the U.S. Army Corps of Engineers (USACE) presents a reasonably comprehensive assessment of the scientific literature regarding stream restoration projects and, in so doing, presents a strong case for concluding that these projects frequently fail to achieve the advertised improvements. Some of the highlights include:
 - ". . . restoration typically cannot return a degraded wetland or stream to a prior historic condition . . ." (e.g. Moreno-Mates et al. 2016, Higgs et al. 2014, Jackson and Hobbs 2009, Zedler and Kercher 2025, and Palmer et al. 2014). This is echoed on Page 91 by citing Wohl et al. (2015) and Roni et al. (2008), who concluded that stream restoration cannot return a stream to a historic state.
 - Rey Banayas et al. (2009) and other researchers are cited as showing that the projects will not restore biodiversity or ecosystem services to levels on undisturbed reference sites, or to historic or reference standard levels.
 - Hobbs et al. (2014) are cited to show that the ability to reverse ecosystem degradation to restore ecological function depends on factors such as the extent to which the location is degraded and the surrounding landscape. By citing this statement, USACE acknowledged that the ability to achieve positive benefits by these projects is site-specific. This acknowledgement, in turn, makes the analysis of these projects under non-site-specific programmatic NEPA documents, and the

inclusion of these projects under non-site-specific Nationwide Permits, inappropriate. It also shows that the claims in other parts of the PEA that benefits will definitely occur are not nearly as certain as they sound, and those claims should be qualified to disclose the uncertainties.

- Page 91 of the PEA acknowledges that there have not been enough studies of the effects of these projects on aquatic resources to be able to say whether compensatory mitigation projects (which are largely done using the destructive Natural Channel Design method) are able to offset the lost functions of the project area that was originally disturbed (Kettlewell et al. 2008).
- NRC 2001 claims that wetland restoration, enhancement, and establishment projects can provide wetland functions as long as the project is placed in an appropriate landscape position and has appropriate hydrology. This importance of site conditions is echoed by Mitsch and Gosselink 2015 and Meli et al. (2014). I have never seen a proposal for one of these projects that does an assessment of whether the proposed site has this appropriate landscape position and hydrology. Yet all of the project documents claim, with no qualification, that their project will certainly be successful.
- Moreno-Mateos et al. 2015 did a study of 628 wetland restoration projects, and concluding by emphasizing the importance of re-establishing water flows instead of extensive earthwork.
- In a study of more than 600 stream restoration projects, Palmer et al. (2014) documented that, to be successful, stream restoration activities must address the cause of stream degradation, which is often outside of the stream channel, in other locations within the watershed, and that effective stream restoration requires implementing practices that reduce stormwater runoff to streams.

In contrast, upland Best Management Practices (BMPs) such as retention ponds, swales, rain gardens and other methods seek to reduce the erosive velocity of stormwater runoff by promoting infiltration and/or detaining runoff for release at a later time. Because it is the elevated volume and velocity of runoff, caused by development, that is the root cause of erosion and sediment transport, these methods address the root cause of the degradation of water quality and ecological function.

It is very easy to get anyone, even those in the stream restoration industry, to agree that these non-destructive upland practices are more effective than more destructive in-stream practices. However, it is also a fact that implementation of in-stream practices are much simpler and less costly to implement than upland practices. This is because land ownership along stream channels is generally consolidated, and the land area is largely undeveloped, making large-scale projects easier and less costly to implement. In contrast, upland areas are usually already developed, with land ownership spilt into small parcels. These challenges are usually cited by stream restoration companies and MS4 permit holders to justify why they choose to implement in-stream projects rather than upland projects. However, the fact that upland projects have a higher cost and level of effort is completely independent of the question of whether an in-stream alternative will or will not be effective.

Unfortunately, the discussion about which of these completely disparate stream restoration methods to use always focuses on feasibility of implementation, including whether or not there is space available to construct the necessary structures, and whether the responsible agency has land ownership and easements to use that space. Because the land availability and ownership are always easiest to address within the stream channel and floodplain, and is always more challenging in the upland areas, the decision almost always defaults to choosing in-stream methods. If the in-stream methods were just as effective upland methods, then it would still be preferable to implement upland methods in order to avoid the adverse hydrologic,

ecological, and residential effects of tree removal and channel modification. However, they are NOT as effective – they are not effective at all. The agencies and landowners prefer them because they are administratively easier to implement, and the engineers prefer them because they generate the highest profits.

2) Section 4-203(D)(2) – Prioritizes projects that minimize disturbance and tree removal

Section 4-203(E)(1) – Prohibits in-stream construction and mechanical alteration of stream channels.

Section 18-102(b)(6) – Establishes a requirement to document that stream degradation cannot be addressed through non-stream-disturbing upland practices

Section 18-102(b)(7) – Establishes a requirement to prioritize preservation and non-destructive management of streams, floodplains, and mature riparian and upland forests

There are three reasons for prohibiting in-stream construction, channel modification, soil disturbance, and tree removal in the conduct of stream restoration projects:

- a) As discussed above, the in-stream methods that are focused on re-directing the direction of flow of streams rather than reducing the volume of runoff are only temporary fixes that are not effective.
- b) By removing the evapotranspiration function of the canopy, removal of trees actually increases runoff, which is the exact opposite of what these projects should be doing. Similarly, removing the soil stabilization function of the tree root systems makes soil and sediment more prone to erosion, instead of less. The simple act of the “restoration” project actively makes the factors that degraded the stream in the first place WORSE.
- c) In-stream methods are enormously destructive and disruptive of the existing hydrologic, ecological, and residential functions of the existing mature forest, floodplain, habitat, wetlands, and stream itself.

As discussed above with respect to Section 4-203(D)(1), any method that seeks to reduce erosion by diverting water or armoring soils without actually reducing the excess volume of stormwater runoff is doomed to failure. This is not only obvious through knowledge of the hydrologic science about stream flow, but is also demonstrated in the post-construction results. However, even if the in-stream methods were effective, the question of whether their benefits would outweigh the adverse impacts would still remain.

The negative, adverse impacts of “stream restoration” projects are definite and certain, while the positive benefits are speculative and uncertain. Meanwhile, the more destructive a project is, the more money that the “stream restoration” contractor makes. Those two statements, combined, should make any influence exerted on this legislative process by the “stream restoration” industry questionable.

Whether or not they are ultimately successful in achieving any long-term restoration goals, so called “stream restoration” projects are enormously destructive. They generally rely on massive deforestation in order to re-connect floodplains, and to replace upland forests with riparian communities. In addition to eliminating the critical evapotranspiration and other hydrologic functions of mature forests, this displaces or kills existing wildlife, increases the potential for downstream flooding on adjacent properties, and impacts viewscapes from residences, reducing their property values. The disturbance of the soil exposes deeper soils to oxygen and

pH changes, which will then mobilize otherwise insoluble minerals, such as iron. The projects also bring in foreign materials such as rocks, soil, gravel, and organic material from other locations, upsetting the established geochemical equilibrium, and again resulting in mobilizing otherwise stable materials.

When a project is approved, the deforestation, displacement of existing wildlife, increase in flooding potential, and visual impacts to adjacent property owners WILL occur. What is more concerning is that these destructive impacts are not only certain, but they are immediate and irreversible. The devastation occurs within a few short weeks and, once done, cannot be undone. I have found multiple examples of communities, including my own, where the first “stream restoration” project was allowed to proceed because the community was not properly informed about the extent and duration of destruction that was going to occur, but the proposed second project was fought aggressively, once the community saw how these projects really work. This pattern can only be stopped by a more proactive community engagement program, including comprehensive public notification and multiple comment opportunities, beginning at the conceptual stage, and including the ability to review and comment on final design plans before a project is approved.

The negative impacts are also long-term, affecting the project area for years or decades. The public notices that I received from MDE for one of these projects not only failed to disclose the extent of tree removal adjacent to my property, but also claimed that the impacts would be “temporary”. In a recent Environmental Impact Statement for another project in Maryland, the U.S. Army Corps of Engineers (USACE) defined the duration of impacts for a project involving vegetation removal as “long-term” or “permanent”. This is a standard assumption under the National Environmental Policy Act (NEPA). Also, even non-professionals understand that it will take decades to restore a mature forest canopy and ecology once mature trees are removed from an area. Claims that the adverse impacts of these project are “temporary” can only be a deliberate attempt to misinform the public in order to minimize public scrutiny.

It should also be noted that the profits generated by these companies are DIRECTLY proportional to the destruction they cause. The larger and more aggressive the project, the greater the level of effort, and therefore the greater the cost to the Maryland State and county agencies paying for the projects. These companies actually have a financial incentive to inflict the maximum amount of destruction on an area, regardless of the adverse impacts or whether the area is residential.

Most of the adverse effects of tree removals on ecology and adjacent residential property values are well-documented, and need no further elaboration. However, there is a substantial adverse effect that is less well-known, and which cuts directly to the core of the success or failure of “stream restoration” projects. This is the effect of tree removal on surface water hydrology and runoff volumes.

I have had substantial professional experience in surface water hydrology, including multiple projects in which I analyzed the hydrologic effects of either planting fast-growing trees, or of removing trees. There is an enormous body of literature on this subject – it is not complicated, nor is it controversial. Trees perform the following hydrologic functions:

- Trees directly remove stormwater from the watershed through evapotranspiration. Trees remove enormous quantities of groundwater, substantially lowering the elevation of the water table. Also, tree roots are very effective promoters of infiltration pathways. Operating together, these provide substantial storage for stormwater in the unsaturated zone, and active infiltration pathways for surface water to get to that storage. When trees are removed, the groundwater table in the immediate area immediately rises, a process known as “watering-up”. This allows the unsaturated zone to become saturated during a

storm much more quickly. It is well-established in logging areas that removal of trees immediately increases the frequency and intensity of surface water flooding.

- Watering up also has the effect of killing whatever trees have been left in place. Even if a tree removal project leaves some trees uncut, they will quickly die due to the modification of their hydrologic setting. This can be clearly seen at past projects. Advocates of stream restoration like to proclaim that these projects do not “clearcut” forests. This depends on the definition of “clearcut”. At past projects I have visited, a small number of mature trees were left uncut by the developer. In both cases, all of those leftover trees died anyway, and still stand there today as ghostly reminders of the mature forest that once thrived in both places.
- Trees also directly remove stormwater from the watershed before it reaches the ground, through evaporation. When it rains, the trunk, branches, and leaves get wet – a process known as canopy interception. Following the rain, much of this water evaporates without reaching the ground. This is a large amount of water. When trees are removed, this water that would have evaporated over time instead reaches the ground immediately, during the most intense part of the storm, and becomes stormwater.
- Much of the water from the branches and leaves that does drip and reach the ground does so in the hours or days following a storm. Although the water enters the watershed, it does so slowly, over a period of hours or days, and thus does not add to the immediacy of a flood during a storm. Removal of trees eliminates this attenuation effect of trees, thus adding to stormwater volumes at the very time that additional water is most destructive.
- The presence of tree trunks and fallen tree trunks, branches, and leaves all add to the roughness of the forest floor. This roughness is another strong attenuation effect on stormwater. It slows the stormwater velocity, reducing its erosive effect. Removal of trees allows stormwater to flow freely, with nothing to hinder its velocity and erosive powers.
- The root structures of trees, as well as fallen trunks and branches, serve to stabilize soils in place and protect them from erosion. Removal of trees removes this stabilizing effect, exposing soils to increased erosion and downstream transport.
- Trees directly reduce nutrient concentrations, such as nitrogen, in groundwater and, by extension, in nearby surface water bodies that receive discharged groundwater.

In all cases, there are some important observations:

- 1) The effect is highest at the tree, and diminishes with distance from the tree. Therefore, removal of trees within close proximity of surface water bodies has a substantial ability to influence the amount of stormwater that enters the stream.
- 2) The effect is immediate when a tree is cut down. The hydrologic functions of the tree cease immediately, the groundwater level begins to rise immediately, and adverse effects on nearby streams can be seen to happen within a few weeks.
- 3) The effect is permanent, unless trees of similar size and evapotranspiration capacity take their place. Where mature trees are removed and attempts to re-establish the forest are made, the hydrologic system can take 10 to 20 years to recover.

Almost all of the discussion regarding stormwater management issues in urban watersheds focuses on the conversion of permeable land surface to impermeable, thus eliminating infiltration and increasing the volume and velocity of stormwater. This is true, but it is the highly visible part that is easy to understand and explain to people. Evaporation and evapotranspiration are invisible. You cannot stand by a tree and watch as it physically removes water from the watershed, as the groundwater table is lowered, and as the water is evaporated

into the atmosphere. Nevertheless, this happens, in enormous quantities. By some estimates I have looked at, forests stands in Maryland evaporate more than 50% of the precipitation that falls on them (Sanford, Ward E., and Selnick, David L., 2012). When these trees are removed, this water raises groundwater levels, reducing water storage capacity during a storm. This excess water then becomes increased runoff stormwater during rainstorms.

3) Section 4-203(E)(2) – Prohibits awarding any pollution reduction or mitigation credit simply for completion of construction on a project.

Section 18-102(E)(2) – Provides a statement that authorization of a stream or floodplain project does not automatically qualify the project for MS4 permit or wetland mitigation credits

Section 18-102(E)(3)(II) and Section 18-102(E)(4) – Establishes a requirement for post-construction monitoring to verify that the project has produced measurable functional uplift, including demonstration of improvements to biological function, and prohibition on demonstration of uplift through modeling or physical channel stability

Unfortunately, the question of how ecology, hydrology, water quality, streambank erosion, and other functions of watersheds react to human manipulation is complicated by the length of time that it takes these systems to react, and the multiple external factors, some natural and some human-caused, that may influence these reactions. Ideally, we would all like to have immediate answers to inform our future efforts, but that is not possible. So, instead of ensuring that science-based, quantifiable and measurable techniques are used, and are given the time to generate meaningful answers, the “stream restoration” industry has, until recently, responded by managing to avoid the need to do any monitoring whatsoever.

As a 30+ year experienced environmental consulting contractor, this fact had me completely stunned. EVERY environmental project I have ever worked has established measurable and quantifiable goals. It was only after a year of studying these projects, in detail, that I realized how little actual field monitoring and data collection is required.

As two examples of the extreme extent to which the stream restoration industry had managed to exert full self-regulation of stream restoration projects, I cite the proposed Elkhorn Branch wetland mitigation bank and the Unnamed Tributaries of the Little Patuxent River, both in Columbia. For Elkhorn Branch, the developer proposed, in their Prospectus, that they be allowed to sell 70% of their mitigation credits upon completion of construction, with no demonstration that the construction achieved any positive results. This is despite the fact that MDE regulations allowed no more than 30% to be claimed. This would have effectively allowed the developer to make a profit on the project just by pushing some dirt around, without any demonstration that they had any beneficial effect.

At the Unnamed Tributaries of the Little Patuxent River project, there is no requirement to conduct pre- or post-construction water quality or ecological monitoring to establish whether these objectives have been achieved. The only required monitoring is surveying of engineered structures, and counting of trees. Even with that absurd limitation in monitoring requirements, the contractor still failed on both accounts. Less than three years after completion of construction (and having been paid more than \$2 million for it), the reforestation success rate had dropped to 36%. In a series of emails and PIA requests inquiring about this failure, I found that:

- The contractor tried to claim that no trees had died, even though all of the residents knew it;
- The contractor made a statement in their annual monitoring reports about the trees being “well-established“ based on results of a survey that was done SEVEN DAYS after the trees had been planted;
- MDE, the agency that is supposed to be making a determination about the success of the project, had never been informed about the dead trees, or that a corrective action had been implemented (the person who notified MDE of this was me);
- DNR acknowledged that, not only do they allow the developer to set their own tree surveying standards, but they did not know what standards the developer for this specific project had established; and
- With respect to the erosion of engineered structures, the contractor noted more than 20 instances of structures at risk of failure, but they still made a suggestion, in one of their annual reports, that they be excused from their required fifth year of monitoring.

Even though MDE did not require any monitoring of the Unnamed Tributaries project, they did conduct some monitoring of their own. In reviewing emails regarding this monitoring, I found an exchange in which MDE acknowledged that the ability of the agency to reach conclusions regarding the success or failure of multiple projects was hampered by the “unfortunate” choice to not collect any background data, and the fact that it takes years for biological systems to respond to the projects. I fully agree with the statements in that email. While I agree that it is “unfortunate” that these projects are not subjected to pre-construction monitoring, so that a science- and data-based evaluation of the project could be developed, this is how USACE and MDE have chosen to operate the program. This unfortunate circumstance could, and should, be avoided in the future by requiring both pre- and post-construction monitoring on the projects, including field measurements of the stream stability, water quality, and ecological parameters that are supposed to be improved by the project. It makes no sense that your agencies would sanction the destruction of mature forests in residential areas based on a promise of improvements, without actually requiring that those improvements be demonstrated through pre- and post-construction data collection.

If the “stream restoration” industry is so convinced of the benefits of their projects, then they should have no problem performing site-specific monitoring, both pre- and post-construction. However, their actions are the exact opposite, and it is not hard to understand why. These practitioners resist project-specific monitoring because it costs money, and because it may provide results that they do not like. It is much easier, and more lucrative, to simply cut down the trees, push the dirt around, and declare success without any actual data to demonstrate this. Meanwhile, the individuals testifying in favor of this bill have, in past hearings, expressed surprise and disappointment at the ongoing failure to accomplish improvements in the Chesapeake Bay. Given that there is no actual data for the individual projects, it should not be surprising that the agglomeration of projects also shows no improvements.

4) Section 4-204(D) and Section 18-102(E)(3)(I) – Establishes a requirement to define objectives and analyze alternatives

The changes proposed in Section 4-204(D) and 18-102(E)(3)(I) are important in communicating to the adjacent property owners, regulators, and other stakeholders that the objective of the project is clearly defined, that a range of alternatives to attain that objective are developed, and that the benefits and adverse impacts of each alternative are evaluated.

In my review of several of the project permit applications, the objective is very poorly defined, and there is little or no analysis of alternatives. It is also a common practice in these documents

to refuse to acknowledge, and even to deny, that ANY adverse impacts may result from these projects. Some of these documents, such as the U.S. Army Corps of Engineers 2025 Environmental Assessment for the proposed Anacostia Aquatic Ecology Restoration Project, completely fail to disclose that cutting down trees has actual adverse impacts on local wildlife, on hydrology, or on local residents, and even go so far as to say that cutting down acres of trees for a project would be considered a BENEFICIAL impact to visual aesthetics for residents. Such a ridiculous statement strains credulity, with the authors seemingly twisted into knots to avoid acknowledging that there is any possibility of an adverse impact to anything or anyone. This type of manipulative reporting would be impossible if the changes proposed in Section 4-204(D) were implemented, and then enforced through a thorough technical review of the permit applications by Maryland regulators.

5) Section 4-204(F) – Establishes the conditions in which in-stream practices may be approved

Section 4-204(F) allows for use of in-stream construction and hydrologic modification in situations where actual, documented cases of threats to public safety or damage to infrastructure exist. I agree that this exception should be made but, based on my observation of recent projects, I am concerned that it will not be enforced by regulators.

I commented on this issue in comments to Howard County regarding the proposed Plumtree Branch project after MDE had already approved the permit. In those comments, I noted that the Design Report made multiple references to infrastructure in the project area, including photos, claiming that the project was needed to protect infrastructure. However, there was not a single instance where the document claimed, or showed a photo of, an actual, specific piece of infrastructure that was threatened. Instead, the contractor obviously felt that it was sufficient to generally cite that there was infrastructure nearby, and that this would justify any project they wanted to do. Obviously, the MDE reviewers failed to catch this obvious case of manipulation, because they went ahead and approved the permit.

The same goes for health and safety threats – we have seen contractors claim that trees need to be cut down because they may, someday, fall into the stream and, if humans happen to also be in or near the stream, they could be injured. Using this logic, the State of Maryland should re-direct every stream in the state because it is a short distance from a road, power line, or property line, and should cut down every tree in every forest because a tree might fall when someone is hiking.

While I agree that actual threats to public safety and infrastructure should be exempted from the prohibition on in-stream practices, this will only be effective if it is enforced. Permit applicants must not be allowed to just make vague, generalized claims of such threats in order to justify being exempted. They must be forced to be specific, and to provide actual documentation of the potential threat, and reviewers of the permit applications must aggressively enforce this provision.

6) Section 18-102(b)(3) and Section 18-102(c)(7) – Establish requirements for content of community notifications and presentations

I spent more than 35 years serving as a third-party technical consultant for Federal agencies, conducting technical accuracy and completeness reviews of permit applications and reports submitted by commercial companies, and also managing the public engagement process for notifying stakeholders and integrating their concerns into project designs. In my past four years

of being subjected to, and studying, the practices of the stream restoration industry, it has become obvious that their public notifications and presentations constitute deliberate fraud. They are obviously intended to conceal the actual scope and extent of their project plans, exaggerate the expected benefits of those projects, and either ignore or trivialize the adverse impacts their projects will have on hydrology, ecology, and adjacent residents. And, unfortunately, the regulators, including MDE, DNR, and Army Corps of Engineers, are complicit in this concealment, by failing to conduct their own technical accuracy and completeness reviews.

It was not until the Whole Watershed Act was passed that there was even a requirement to notify the public about upcoming projects. That requirement passed, fortunately, over the objections of the stream restoration industry. However, notifying residents and other stakeholders is not sufficient, if the information conveyed does not completely and accurately describe the actual physical activities that the project will entail, or if it falsely describes the expected benefits or trivializes adverse impacts.

I not only have more than 30 years of experience in managing public engagement programs for federal NEPA projects, but have also recently experienced, as an adjacent property owner, how the stream restoration industry implements these programs. For the recently proposed Elkhorn Branch project adjacent to my property, the process played out as follows:

- 1) There was literally no direct contact with me, or my neighbors, as part of the Columbia Association's approval of the 130-acre, six mile-long easement. A presentation was made to the Village Board, at a meeting that is commonly attended by fewer than five residents, out of a community of more than 10,000. The stream restoration contractor's position was that the onus was on the 10,000 residents to attend bi-weekly Village meetings, or on the Village to individually notify its 10,000 residents. In my federal NEPA experience, the onus is always squarely on the contractor who will be making profits by implementing the project.
- 2) There was no requirement for an official MDE or USACE public notification or comment opportunity. It was only after a neighbor made strenuous efforts and complaints that the agencies agreed to do this.
- 3) The notice of public comment period was sent to directly adjacent owners of single family homes. No notices were sent to hundreds of other single family homeowners who live within sight of, and walking distance of, the area which would be subjected to deforestation. For the seven multi-family apartment, condo, and townhouse communities that are directly adjacent, a single notice was sent to the management company. In none of these cases did the management company forward the notices to the individual unit owners, many of whom live within less than 100 feet of the project area.
- 4) Despite there being a requirement in the checklist for Nationwide Permit 27 (NWP-27) to disclose the area and extent of tree clearing, the public notices for the project did not clearly provide this information, and did not even mention that fact that trees would be cut down. Instead, they presented the "Limits of Disturbance" (LOD). In engineering and construction parlance, LOD generally means "removal of all vegetation and grading of soil." However, this definition is not generally known among residents without training in engineering or construction and I know, from speaking about it with neighbors, that none of them understood that it indicated removal of all trees and vegetation. One of the requirements of the federal National Environmental Policy Act is that project documentation must be written in non-technical laymen's terms that are readily understandable to the general population. The presentation of the LOD, without defining what that term means with respect to tree removal, was a clear attempt to avoid public opposition by using terminology that was not familiar to the general public.

- 5) Confusing the situation even more was the actions of the owner of the project, the Columbia Association (CA). At the end of the public comment period, the Staff encouraged its Board to dismiss all comments from the public regarding tree removal because the extent of tree removal had not yet been determined. This is a direct admission that the permit application and public notice had failed to satisfy the checklist requirement to disclose this information to the adjacent property owners and residents.
- 6) The public notice also failed to accurately describe the duration of the impact of the project. It described the adverse impacts as “temporary”, even though any impacts associated with de-forestation are clearly long-term or permanent. The U.S. Army Corps of Engineers – Baltimore District, in its recent Environment Impact Statement for the proposed Bureau of Engraving and Printing project in Beltsville, define the duration of the impacts of vegetation removal as “long-term”. Meanwhile, even a successful stream restoration project, if it involves extensive tree removal, will take years or decades to recover. In Columbia, the Longfellow project was recently required to re-plant 700 trees, three years after construction, because the first attempt at re-forestation had failed. At The Glade in Reston, Virginia, there is no evidence of a return of a mature forest 14 years after construction. Yet I, and my neighbors, chose not to review project documents, attend public meetings, or provide comments, because the public notices encouraged us to believe that the only adverse impacts were associated with construction, and failed to acknowledge that longer-term impacts would also occur. Again, the reference to all impacts as “temporary” was a transparent attempt to avoid any public opposition.

Conclusion

Based on these observations, it is my opinion that the “stream restoration” industry, in general, is not based on a solid, scientific footing. Instead, it is entirely based on greenwashing, making exaggerated claims of benefits to persuade well-meaning members of the community that these projects are environmentally-friendly and science-based, when nothing could be further from the truth. Any objective consideration of these projects must present an accurate and up-to-date assessment of both the expected benefits AND the long-term, adverse impacts, and must honestly report the likelihood of each occurring. That information is currently completely missing from the documentation submitted by these companies.

I hope you agree that, to be successful, the practice of stream restoration in Maryland must:

- Be based on the most up-to-date, published science available;
- Have its results, positive or negative, documented through comprehensive pre- and post-construction field data collection and monitoring;
- Closely coordinate with the surrounding community and potentially affected property owners at ALL stages of the process;
- Consider the realistic probability of success, rather than just assume that placement of engineered structures will automatically result in improved water quality and uplifted ecology; and
- Consider the adverse impacts, including the duration of those impacts to residents, the challenges associated with revegetation efforts, and the certainty that long-term adverse impacts will occur.

Without addressing these issues, the “stream restoration” companies will continue to present their unrealistic, unsupported opinion of the benefits of these projects, and will continue to fail to

properly notify the surrounding residents of the actual extent and duration of destruction that is about to be inflicted on their communities.

Thank you for considering these comments, and providing a favorable report on S.B. 0688

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