

Subject: Written testimony on FY25 Capital Budget & FY25-30 CIP

Date: To accompany oral testimony on February 7, 2024

To: Council President Friedson, Vice President Stewart, and Councilmembers.

From: Kenneth Bawer

Dear Councilmembers:

I urge you to remove funding for so-called stream “restorations” from the following projects in the FY25 Capital Budget’s **Conservation of Natural Resources** category & FY25-30 CIP:

- 1) **“Anacostia Streams Restoration”** project: remove funding.
- 2) **“General Repair of BMPs and Stream Assets”** project: remove funding for all stream “restoration” repairs.
- 3) **“Stormwater Management Facility Major Structural Repair”** project: remove funding for all stream “restoration” repairs.
- 4) **“Stormwater Management Retrofit: Countywide”** project: remove funding for all stream “restorations.”

I also urge you to remove funding for stream “restorations” from the following project in the **M-NCPPC** category:

- 5) **“Stream Protection: SVP”**: remove funding for all stream “restorations”

Appendix 1 has details from the **Conservation of Natural Resources** category and the **M-NCPPC** category projects listed above with specific reasons to defund stream “restorations.”

To be clear, I am not asking to decrease funding for DEP or Parks by a single dollar. I am only asking that funds be shifted from stream “restorations” to out-of-stream stormwater projects that actually work to stop or decrease stream erosion. Examples of out-of-stream projects are raingardens, roadside bioretentions and grass swales, permeable pavement, and replacing turf with conservation landscaping. These types of projects and others keep stormwater runoff out of streams in first place. Out-of-stream projects are the only way to fix the root cause of stream erosion – uncontrolled stormwater from impervious surfaces such as roads and parking lots that firehoses into streams.

It is perverse to include funding for stream “restorations” in the Conservation of Natural Resources and M-NCPPC categories since they are highly destructive to our natural areas. To see a short video of the destruction done by a typical stream restoration, use this link:

<https://www.youtube.com/watch?v=NvTvPnG6Qs8>. Use the following link to see a presentation on the benefits of out-of-stream stormwater control and the problems with stream “restorations”:

<https://drive.google.com/file/d/1BmTsaxHdfuI5POZluAP35ER6ud4tW1pH/view>.

To be clear, I am not against infrastructure protection projects to fix exposed sewer lines in streams, for example. Those are not stream “restorations,” they are infrastructure protection projects that can be done in tens of feet in a stream, not the hundreds or thousands of feet for a typical stream “restoration.”

What about erosion on private property? Again, stream “restorations” simply do not work since they are washed out by post-construction storms. Appendix 3 has photos of washed-out stream “restorations” all over the county. Stormwater needs to be controlled *before* it firehoses into streams.

To give an analogy, what if you have a leaking roof that is damaging your furniture? No one in their right minds would replace their furniture before the source of the problem is fixed, which is the leaking roof. But this is exactly what is happening with stream “restorations.” They are trying to repair the streams before fixing the source of the problem – urban stormwater runoff. This is simply throwing tax dollars away and it is a gross mismanagement of county funds.

At this point, there should be no debate about whether or not so-called stream “restorations” work. They don’t. But I am not asking you to take my word for it.

Appendix 2 has photos showing the destruction caused by stream “restorations.” These photos show the massive loss of fish and wildlife habitat, the loss of habitat for disappearing pollinators like bees and butterflies, the clearcutting of stream-side forests that accelerates global warming and which will take 100 years or more to replace what was destroyed. Stream “restorations” result in the trashing of our natural habitats that are important to protecting our quality of life and for future generations to enjoy.

Appendix 3 has photos of failed stream “restorations” that have been washed out across the county due to lack of out-of-stream stormwater control. And by the way, stream “restoration” companies typically only guarantee their projects for one year since they know that these projects will be washed out.

Some examples of washed-out projects in the county include Josephs Branch in Kensington, Cabin John Creek near Montgomery Mall, Long Branch in Takoma Park, Snakeden Branch in Potomac, Bedfordshire Tributary in Potomac, Old Farm Creek in North Bethesda (scheduled to be repaired in 2024 for \$800K), the Grosvenor Luxmanor project in North Bethesda (scheduled to be repaired in 2024 for \$4.8M), and Lower Booze Creek in Potomac (repaired for \$3.6M). Rather than building new stream “restorations” and repairing failed stream “restorations” that will simply get washed out again, this money should be spent on out-of-stream stormwater control projects that prevent stream erosion.

Published scientific papers (see Appendix 4) including meta-analyses from Hilderbrand, Palmer, and others show that the water quality and ecology is not improved and is sometimes worse as a result of stream “restorations.” DEP just gave a presentation about the proposed Grosvenor stream “restoration” to the Stormwater Partners Network on January 16. One slide says that the project was selected because of the “Opportunity for water quality and ecological improvements.” In fact, DEP says that ecological improvement is a goal for all their stream “restorations.” However, that contradicts the published science. In fact, it was only in response to a question about the results of past projects that DEP admitted, “We have not seen benthic [macroinvertebrate] improvement in *any* of our stream restorations.” BMIs are a standard measure of stream health.

DEP also tries to justify stream “restorations” by claiming they are cheaper than out-of-stream (upland) stormwater control practices (see Appendix 5). But DEP misleadingly compares pricing for stream “restorations” versus Green Streets which is actually a DEP program comprised of at least seven different practices including Rain Gardens, Bioretentions, Tree Box Filters, Pervious Sidewalk, Permeable Pavers & Pavement Removal, Curb Extensions, and Grass Swales. DEP does not break out the prices for these seven different practices which is needed for a true comparison between practices. In fact, Maryland

Department of the Environment (MDE) has statewide data from the 2022 Annual Report on Financial Assurance Plans (FAPs)¹ showing there are twenty non-destructive, out-of-stream project types that are more cost effective than so-called stream “restorations.” Please see the details in Appendix 5.

The county’s Climate Action Plan has a goal to “Retain, increase, and restore terrestrial ecosystems including forests....” DEP’s website states that “Trees contribute to the economic and social vitality of every community. Trees clean the air and water, reduce the cost of cooling and heating homes and businesses, increase biodiversity and increase our general sense of well-being.” And yet, hypocritically, the county continues to approve the clearcutting of countless trees, shrubs, and other forest plants in our natural areas for stream “restorations.”

This is also a huge environmental justice issue. DEP has said they want to give underserved, lower income communities their fair share of stream “restorations.” Really? Why would we want to inflict stream “restorations” on those communities which will cut their trees, destroy their natural areas, increase the heat islands, and yet do nothing to actually improve the streams? Why would we want to deprive these communities of the co-benefits of out-of-stream stormwater control such as reducing urban flooding, reducing heat islands, increasing property values, providing urban green spaces, and protecting natural areas?

In summary,

1. Stream “restorations” destroy natural areas. Direct evidence of washed-out projects and the science show that they do not work to either stabilize streams or improve the ecology. Even DEP admits that none of their past projects improved stream ecology.
2. Budget dollars should instead be spent on out-of-stream stormwater control practices that, unlike stream “restorations,” address a whole list of residents’ concerns such as reducing urban flooding, reducing heat islands, increasing property values, providing urban green spaces, and protecting natural areas.
3. There are 20 out-of-stream stormwater control practices that are less expensive than stream “restorations” according to Maryland Department of the Environment. DEP uses misleading data to claim otherwise.
4. The way to stop stream erosion is to address the problem at its source - to control stormwater outside of streams by non-destructive practices such as raingardens, bioswales, tree planting, etc. in already disturbed areas.

We can protect our streams and save money by meeting stormwater control regulations with upland, out-of-stream practices. I urge the County Council to remove funding for stream “restoration” projects and repairs (which will get washed out yet again) and shift these funds to out-of-stream stormwater control projects.

Thank-you for consideration.

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¹<https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Pages/WPRPFinancialAssurancePlans.aspx>

Appendix 1: Details from the **Conservation of Natural Resources** category and the **M-NCPPC** category listed above with reasons to defund stream “restorations.”

Details from the referenced four projects in the **Conservation of Natural Resources** category with reasons to defund stream “restorations.”

- 1) The **Anacostia Streams Restoration** project JUSTIFICATION has information that is simply not true and is easily refutable. It says, “This project is needed to comply with the County's MS4 permitting requirements and to implement the County's adopted water quality goals (COMCOR Chapter 19, Article IV) and to protect habitat conditions in local streams.” This is disinformation. A stream “restoration” is *never* required to meet water quality goals per Maryland Department of the Environment’s Accounting Guidance document for MS4 permits², and the science shows that stream “restorations” do not result in improved water quality or ecology - even DEP admits this. (Details in Appendix 4).
- 2) The **General Repair of BMPs and Stream Assets** project DESCRIPTION says, “This project is intended to fund repair sub-projects for stormwater management (SWM) facilities and stream restoration assets.... The intent of this project is to protect and enhance the functioning of these assets to protect water quality.... This work will also provide some climate change resiliency by addressing the sediment erosion impacts of more severe storms.” The repair of stream “restoration” projects is throwing good money after bad. There is a long list of failed stream “restorations” in the county (see photos in Appendix 3) because the root cause of the problem – uncontrolled stormwater from impervious surfaces (roads, roofs, parking lots, etc.) fire-hosing into streams – is not addressed. Failed projects in the county include Josephs Branch in Kensington, Cabin John Creek near Montgomery Mall, Long Branch in Takoma Park, Snakeden Branch in Potomac, Bedfordshire Tributary in Potomac, Old Farm Creek in North Bethesda (scheduled to be repaired in 2024 for \$800K – throwing good money after bad), the Grosvenor Luxmanor project in North Bethesda (scheduled to be repaired in 2024 for \$4.8M – again, throwing good money after bad), and Lower Booze Creek in Potomac (repaired for \$3.6M). These projects are the gift that keeps on giving for the \$25 billion dollar stream “restoration” industry since their guarantee is typically only for one year. Rather than repairing failed stream “restorations” that will simply get washed out again, this money should be spent on out-of-stream stormwater control projects.
- 3) The **Stormwater Management Facility Major Structural Repair** project JUSTIFICATION states, “This project provides for major structural repairs in order to comply with the County's municipal separate storm sewer system (MS4) permit.” Any repair of a stream “restoration” is throwing good money after bad. See the photographs of failed projects in Appendix 2. Rather than repairing failed stream “restorations” that will simply get washed out again, this money should be spent on out-of-stream stormwater control projects.
- 4) The **Stormwater Management Retrofit: Countywide** project DESCRIPTION states, “This project provides for the design and construction of new and upgraded stormwater management facilities

²<https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Final%20Determination%20Dox%20N5%202021/MS4%20Accounting%20Guidance%20FINAL%2011%2005%202021.pdf>

throughout the County under the County's Municipal Separate Storm Sewer System (MS4) Permit. Facilities include ...stream restorations.” Again, these funds should be used exclusively for out-of-stream MS4 Permit projects.

Detail from the project in the **M-NCPPC category** with reason to defund stream “restorations”:

- 5) “**Stream Protection: SVP**” project DESCRIPTION states, “This work may include... stream restorations...” These funds should be used exclusively for out-of-stream projects since they address the root cause of stream erosion.

APPENDIX 2: Photos of damage done by stream “restorations”

Nature Forward (formerly ANS), Chevy Chase



(3/26/2021. downstream from Jones Mill Rd. Photos by K. Bawer)

Falls Reach, Potomac, MD



BEFORE

Before Montgomery County DEP "stream restoration" on Falls Reach. (Photo by DEP)



AFTER

After "stream restoration" on Falls Reach completely destroyed the forest community in its footprint. (Photo by K. Bawer on 3/19/2019)

Stream "Restorations" Don't Restore Streams



Bedfordshire, Potomac, MD

Blocks aquatic wildlife from moving along the streams to hunt and breed.

(By K. Bawer, 10/17/2023)

Asbury Methodist Village, Montgomery County



(Regenerative Stormwater
Conveyance at Asbury Methodist
Village;
<https://www.youtube.com/watch?v=hGZN-L0Qrj0>)

Whetstone Run, Gaithersburg



(Stream "restoration" in Blohm Park, Gaithersburg at Watkins Mill Rd. over Whetstone Run at the same location. Note the stream bank armor-plating on the right. (Left on 9/3/2020; right on 5/03/2021); by K.Bawer)

Solitaire Court stream "restoration", Gaithersburg

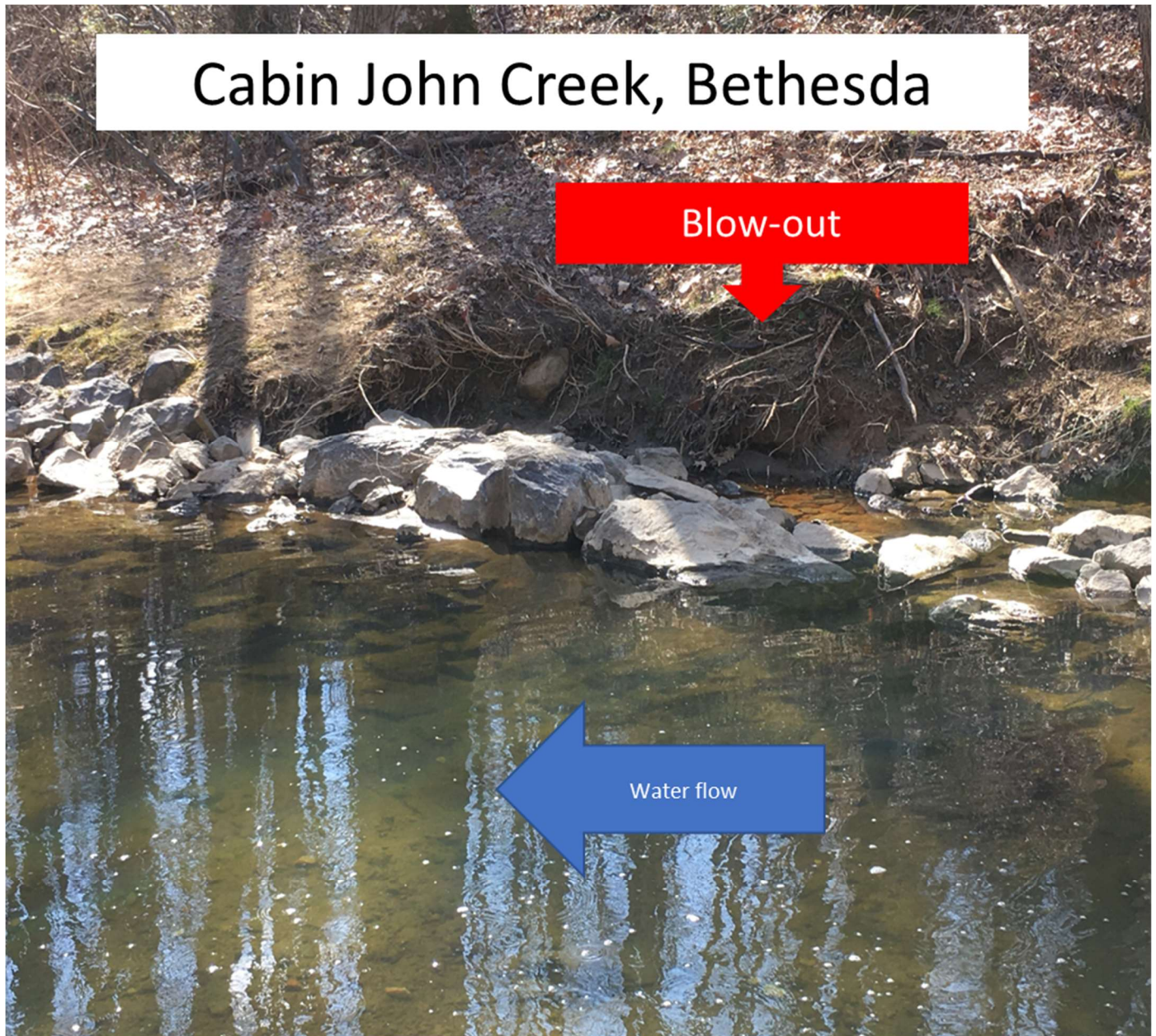


(<https://www.gaithersburg.md.gov/government/projects-in-the-city/solitaire-court-stream-restoration-project>)

Upper Watts Branch, Rockville



APPENDIX 3: Photos of failed stream “restorations”



Cabin Branch Stream in Cabin John Regional Park (by K. Bawer, 3/19/2021)

Long Branch, Takoma Park, Md



Long Branch, Takoma Park, 10/2/2021 (Photo by K. Bawer)

Snakeden Branch, Potomac, MD



(By K. Bawer, 11/23/2021)

Stream “restoration” failures

Bedfordshire, Potomac, MD



Post stream
“restoration”
stream bank
erosion

(By K. Bawer,
10/17/2023)

Stream “restoration” failures.

Old Farm Creek Tributary, North Potomac



(by K. Bawer, 4/26/2021)

Stream "restoration" failures

Grosvenor Luxmanor Stream "Restoration," Mo Co



Wildwood Manor, south of I-270

<https://www.montgomerycountymd.gov/water/Resources/Files/restoration/streams/grosvenor-presentation-wildwood-manor.pdf>

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Stream "restoration" failures

Lower Booze Creek, Potomac, MD
Two different locations.



APPENDIX 4: Scientific references that show stream “restorations” do not work

Annotated references:

- Analysis of 644 projects by M. Palmer et al., University of MD:

“Improvements in the five metrics within the water quality category were found for only 7% of the channel reconfiguration projects and for none of the in-stream channel projects (Table 2).”

“Unfortunately, recovery of biodiversity was rare for the vast majority of stream restoration projects.”

“We show that a major emphasis remains on the use of dramatic structural interventions, such as completely reshaping a channel, despite growing scientific evidence that such approaches do not enhance ecological recovery, and the data we assembled (Table 2) suggest they are often ineffective in stabilizing channels when stability is the primary goal.”

Palmer, M. A., K. L. Hondula, and B. J. Koch, University of MD, 2014, “Ecological Restoration of Streams and Rivers: Shifting Strategies and Shifting Goals,” *Annu. Rev. Ecol. Evol. Syst.* 2014. 45:247-269. (<https://akottkam.github.io/publications/Palmerpublications/Palmer2014a.pdf>)
- Analysis of 40 projects by Robert Hilderbrand, University of MD:

“There simply were few ecological differences between restored and unrestored sites. In fact, the unrestored sections upstream [from the restoration sites] were often ecologically better than the restored sections or those downstream of restorations.”

Hilderbrand, Robert H., et. al., 2020, “Quantifying the ecological uplift and effectiveness of differing stream restoration approaches in Maryland,” Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, (https://cbtrust.org/wp-content/uploads/Hilderbrand-et-al_Quantifying-the-Ecological-Uplift.pdf)
- Analysis of 11 streams by Southerland et. al. that were been converted to RSCs (regenerative stormwater conveyances), a type of stream “restoration”

“...fish diversity in RSCs [a type of stream “restoration”] was lower than in high-quality sites...”

“Fish indices of biotic integrity (IBIs) [an industry-standard for measuring in-stream biology] were also lower in RSCs than in high-quality sites...”

Southerland, Mark, et. al., 2021, “Vertebrate Community Response to Regenerative Stream Conveyance (RSC) Restoration as a Resource Trade-Off,” Award: 18002 CBT Restoration Research Grant to Tetra Tech and UMCES-Chesapeake Biological Laboratory; <https://cbtrust.org/wp-content/uploads/FINAL-Report-for-18002-Tetra-Tech-CBL-CBT-RR-Vertebrates-in-RSCs-30SEP2021-Submitted-to-CBT.pdf>
- Analysis of 30 projects by Carr et. al., Drexel University:

“Our analysis of the differences between the ecological condition of restored sites and their paired reference reaches showed that the restored sites consistently scored lower in riparian habitat quality as well as the biotic integrity of both periphyton (i.e., attached algae) and benthic macroinvertebrate

assemblages. These results clearly demonstrate that at the present time these stream reaches continue to exhibit the types of impaired conditions that originally made them candidates for restoration.”

Carr, J., Hart, D., McNair, J., 2006, “Compilation and Evaluation of Stream Restoration Projects: Learning from Past Projects to Improve Future Success,” The Patrick Center for Environmental Research, The Academy of Natural Sciences of Drexel University, Report Submitted to the William Penn Foundation. <https://ansp.org/research/environmental-research/projects/restoration/>

Additional references:

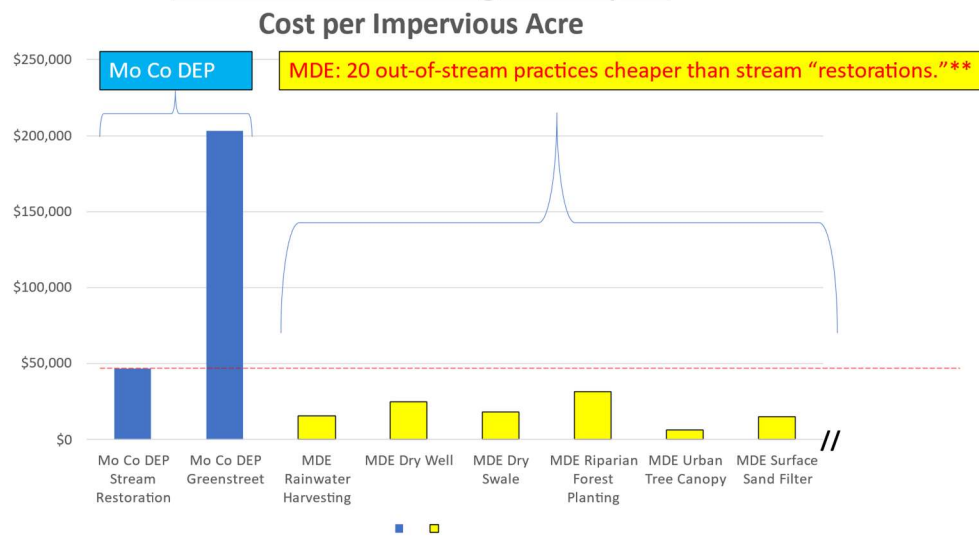
- Carr, J., Hart, D., McNair, J., 2006, “Compilation and Evaluation of Stream Restoration Projects: Learning from Past Projects to Improve Future Success,” The Patrick Center for Environmental Research, The Academy of Natural Sciences of Drexel University, Report Submitted to the William Penn Foundation. <https://ansp.org/research/environmental-research/projects/restoration/>
- Hilderbrand, Robert H., et. al., 2020, “Quantifying the ecological uplift and effectiveness of differing stream restoration approaches in Maryland,” Final Report Submitted to the Chesapeake Bay Trust for Grant #13141, (https://cbtrust.org/wp-content/uploads/Hilderbrand-et-al_Quantifying-the-Ecological-Uplift.pdf)
- 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
- Kaushal, Sujay S. et. al., 2018, “Tree Trade-offs in Stream Restoration Projects: Impact on Riparian Groundwater Quality,” University of Maryland, State University of New York ESF, Maryland Department of Transportation State Highway Administration, 2018 Presentation (https://cbtrust.org/wp-content/uploads/Kaushal-and-Wood_UMD_061219.pdf)
- Laub, B.G, McDonough, O.T, Needelman, B.A., Palmer, M.A., 2013, “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>)
- 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)
- 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/>)

APPENDIX 5: Misleading DEP price comparison

DEP uses bogus data to “prove” that stream “restorations” are the cheapest method for MS4 permit credit (they are not).

A modified slide (below) from DEP’s presentation to the Montgomery County Water Quality Advisory Group on 4/12/2021 shows a bar chart where stream “restoration” cost per impervious acre is \$46,886 while Green Streets is \$203,088. The fallacy of this comparison is that the single practice of stream “restorations” is being compared to Green Streets which is actually a DEP program comprised of at least seven different practices including Rain Gardens, Bioretentions, Tree Box Filters, Pervious Sidewalk, Permeable Pavers & Pavement Removal, Curb Extensions, and Grass Swales. DEP does not break out the prices for these seven different practices which is needed for a true comparison between practices. Also, DEP does not show the twenty different practices that the 2022 MDE Annual Report on Financial Assurance Plans (FAPs)³ states are cheaper than stream “restorations.” MDE averages the cost data reported from around the state by the various MS4 permit jurisdictions. Shown as yellow bars in the chart below are just some of the twenty practices that are more cost effective than so-called stream “restorations” per the 2022 MDE Annual Report on FAPs.⁴

DEP misleading analysis:



*Presented by DEP to WQAG (4/12/2021)

**MDE 2022 Annual Report on Financial Assurance Plans, * Appendix C Tables
https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/FAP-WPRP/2022%20Stormwater%20Financial%20Assurance%20Plan%20Annual%20Report%20to%20Governor_%20MSAR%20%23%2010954%2010.18.2022.pdf 426

³ MDE Annual Report on Financial Assurance Plans, 2022

https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/FAP-WPRP/2022%20Stormwater%20Financial%20Assurance%20Plan%20Annual%20Report%20to%20Governor_%20MSAR%20%23%2010954%2010.18.2022.pdf

⁴ Ibid