MD banned fracking* (2017 HB1325/SB0740), now ban engineered stream "restorations"

(6/24/2025, v.118)

1. WHAT?. They are civil **e**ngineering projects that **destroy natural areas,** converting streams into engineered stormwater conveyances using heavy equipment to clearcut forests, dig artificial channel shapes, and dump fill material into streams. They are a **crime against nature** like fracking. Use the QR code to see videos.

2. WHERE? Usually in public land like parks that do not require public approval and are from hidden from street view.

3. WHY? They try, but **fail, to stop stream erosion** & improve water quality & stream ecology**. Their unattainable goal to recreate "natural" or "historical" pre-colonial conditions is impossible given today's land use and climate.[i] Governments hide the real drivers of "restorations" - not environmental concern, but Bay pollution (MS4 permit) and construction "mitigation" laws[ii]. Engineered stream "restorations" are never mandated by law – they are the worst of many alternative project types.[iii]

**** ROOT CAUSE OF STREAM EROSION?** Upland (out-of-stream) stormwater runoff from roads, parking lots, etc. that firehoses into steams. The scam is that engineered stream "restorations" **do not address this root cause of stream erosion**.

4. WHO INITIATES? Local government or MDOT SHA for pollution laws; private companies for construction "mitigation."

5. HOW SOLD TO THE PUBLIC? Greenwashing & disinformation[iv] are used to make stream "restorations" seem both necessary and desirable (they are neither) to the public and elected officials. For truthful, non-biased, educational presentations by a surface water hydrologist, use the QR code.

a. Local, state, and federal governments and the $25B industry **ignore the science** and Chesapeake Bay Program Expert Panel Report[v] that engineered stream "restorations" don't stop erosion. Published papers[vi] analyzed over 700 engineered "restorations" to show that water quality and ecological function are not improved, are sometimes worse, and less than half stopped stream erosion – less than a coin toss. A few claims of "successful" projects (if they even exist) are outliers.

b. They **use false claims** that 1) studies[vii] prove upland projects cannot stop stream erosion – in fact, these studies only show that too few properly sized projects were built, and 2) there are not enough upland areas for stormwater control, even when not evaluated or only considering meets-minimum projects done only in public areas/ROWs.

c. Governments **ignore or trivialize adverse consequences[viii]** by hiding tree numbers to be cut, claiming that wildlife habitat loss by forest clearcutting is temporary - quickly mitigated by planting saplings[ix], that invasives will be removed and then successfully controlled, concealing that small animals will be crushed or buried alive, and hiding the loss of property values due to viewshed destruction, decreased shade, privacy, and nature-based recreation, and increased traffic noise.

d. They **hide negative consequences** from floodplain reconnection[x] "restorations" like more flooding due to runoff from more frequently saturated floodplains & loss of evapotranspiration from cut trees, death of trees not adapted to water-logged soil, and deposition of stormwater toxins that are hazardous to animals and children into reconnected floodplains.

e. Governments falsely claim that **photos of washed-out engineered "restorations"**[xi] that failed to stabilize streams and that require costly taxpayer-funded repairs[xii,xiii] are cherry-picked, yet they provide no scientific evidence to the contrary.

f. They use bogus irreproducible erosion rates from theoretical models[xiv] to justify the need for stream "restorations."

g. To promote "restorations," governments falsely conflate the need for infrastructure and property protection (e.g., exposed sewer lines and backyard erosion), which can be done via spot repairs, with the need for stream "restorations."[xv]

h. Governments (e.g., Montgomery Co. DEP) **use false data** to claim that engineered stream "restorations" are cheaper[xvi] than 20 less expensive out-of-stream (upland) stormwater control practices per MD Department of the Environment.[xvii]

6. SOLUTION? Control stormwater outside of streams with **non-destructive, upland practices** such as bioswales, rain gardens, etc.[xviii] some of which are cheaper, and which provide co-benefits like reducing urban flooding and heat islands, providing urban green spaces, increasing property values, and protecting streams and floodplains from toxins in stormwater.

7. COST vs. NATURE? Even if some upland stormwater controls are more expensive, **our natural areas must be protected**.[xix]

8. ERODED STREAM BANKS? Once upland runoff is controlled, research suggests that **streambanks will self-stabilize**.[xx]

9. OUR ASK: Sponsor legislation to ban engineered stream "restorations."

*" We Banned Fracking in Maryland." https://chesapeakeclimate.org/maryland/fracking/

[i] Just as the Chesapeake Bay Program's "Comprehensive Evaluation of System Response" (CESR) report states that "The Bay of the future will be different from the Bay of the past because of permanent and ongoing changes in land use, climate change, population growth, and economic development," so, too it will be impossible to restore local streams to "natural" or "historical" pre-colonial conditions.

[ii] MS4 permits for stormwater runoff pollution control and mitigation projects to offset damage done e.g. by proposed Beltway widening.

[iii] Allowed MS4 permit practices in Maryland are listed in the MDE Accounting Guidance document: https://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Final%20Determination%20Dox%20N5%202021/MS4%20Accounting%20Guidance%20FINAL%2011%2005%202021.pdf

[iv] Public presentations by local governments and the industry falsely promise stream and ecological restoration and water quality improvement. Hidden from the public, per Montgomery County DEP in private meeting with Stormwater Partners Network on 1/16/2024, is that "We have not seen benthic [macroinvertebrate] improvement in any of our stream restorations." BMIs are a standard measure of stream health.

[v] In their Step 3: Estimate restoration reduction efficiency, The Chesapeake Bay Program's (CBP) Expert Panel Report states that, "In the last step, sediment and nutrient load reductions are conservatively reduced by 50% to account for the presumed [in]efficiency of stream restoration practices." https://chesapeakestormwater.net/wp-content/uploads/2022/07/9928-1.pdf.

[vi] 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); 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; Southerland, M., et. al., 2021, "Vertebrate Community Response to Regenerative Stream Conveyance Restoration as a Resource Trade-Off," CBT Research Grant; https://cbtrust.org/wp-content/uploads/FINAL-Report-for-18002-Tetra-Tech-CBL-CBT-RR-Vertebrates-in-RSCs-30SEP2021-Submitted-to-CBT.pdf; Carr, J., Hart, D., McNair, J., 2006, "Compilation and Evaluation of Stream Restoration Projects: Learning from Past Projects to Improve Future Success," Drexel Univ., Submitted to Penn Foundation. https://ansp.org/research/environmental-research/projects/restoration/

[vii] Williams, B. et. al., (2022), "Tracking geomorphic changes after suburban development with a high density of green stormwater infrastructure practices in Montgomery County, Maryland," Geomorphology. https://doi.org/10.1016/j.geomorph.2022.108399 Thompson, T. W. et al., (2023) "Effectiveness of stormwater management practices in protecting stream channel stability," presented at the 2023 Maryland Water Monitoring Council Annual Conference. https://drive.google.com/file/d/1isYAs58zVsLJ9H1VOiu4PvzMuYvSplf3/view

[viii] References provided on request.

[ix] Stream "restoration" disturbances are not temporary. After clear-cutting, "…full ecological recovery, including soil stabilization and biodiversity restoration, can take several decades to over a century." https://forestry.com/education-and-community/educational-resources/clear-cutting-pros-and-cons-what-you-need-to-know/

[x]The floodplain reconnection technique of stream "restoration" tries to re-create pre-colonial conditions when stormwater more frequently overflowed stream banks and spread out over a floodplain where sediment (and now pollutants) from stormwater runoff are dumped. In the "Legacy Sediment Removal" or "CUT" method, the stream valley forest is clearcut then tons of soil are removed to lower the valley floor to the level of the stream. In the FILL method of floodplain reconnection, imported fill material is dumped into a stream channel to raise the level of the stream closer to the valley floor (only to be eroded out again by uncontrolled upland stormwater runoff.)

[xi] Photos in Appendix 3, testimony on Montgomery Co. FY26 Capital Budget; MoCo DEP and Parks have no public list of storm intensity each project has experienced and which were damaged. https://drive.google.com/file/d/1DTOOLLm_Aei8lRpPoxPpnFvnTXWJW8eq/view?usp=drive_link

[xii] Examples of Montgomery Co. failed "restorations" repair cost per DEP: Lower Booze Creek, Potomac: repair = $3.6M, Grosvenor Luxmanor: repair cost will be $4.8M; Old Farm Creek Tributary, North Bethesda: repair cost will be $800K per.

[xiii] Stream "restoration" companies typically only guarantee their projects for one year since they know that these projects will be washed out. After that, taxpayers foot the bill.

[xiv] Per CBP Expert Panel Report, theoretical erosion rate calculations have "…high variability when performed by different practitioners," and "restorations" are presumed to be at most 50% effective in stopping erosion. https://chesapeakestormwater.net/wp-content/uploads/2022/07/9928-1.pdf

[xv] False statement: "What is stream restoration? What problem can it solve? …Erosion can also be harmful to public infrastructure (such as exposing a sewer pipe) and private property (such as a backyard in danger of eroding away into a stream). https://www.montgomerycountymd.gov/DEP/water/clean-water-montgomery/watershed/stream-restoration.html

[xvi] Montgomery Co DEP claims "restorations" are cheaper than upland stormwater control practices (WQAG meeting, 4/12/2021). They misleadingly compare pricing for stream "restorations" versus DEP's "Green Streets" program comprised of at least 7 different practices including Rain Gardens, Bioretentions, etc. DEP does not break out prices for these 7 practices for a true comparison of practices.

[xvii]Per MDE's Annual Report on Financial Assurance Plans and the Watershed Protection and Restoration Program -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

[xviii] Examples at MoCo DEP's site https://www.montgomerycountymd.gov/DEP/water/clean-water-montgomery/watershed/green-streets.html

[xix] Especially given global warming and Montgomery Co.'s Climate Action Plan goal to "Retain, increase, and restore terrestrial ecosystems including forests…." https://www.montgomerycountymd.gov/climate/Resources/Files/climate/climate-action-plan.pdf

[xx] Fraley-McNeal, L., Stack, B., et. al. (2021), "The Self-Recovery of Stream Channel Stability in Urban Watersheds due to BMP Implementation," https://cbtrust.org/wp-content/uploads/Self_Recovery_of_Stream_Channel_Stability_Final_Draft_03-23-21.pdf; yes, streambank soil will slough off into streams during self-stabilization, but then the science (endnote vi) shows that most engineered stream "restorations" do not stabilize streams, and "restorations" in the Montgomery County are being eroded away by post-construction storms.