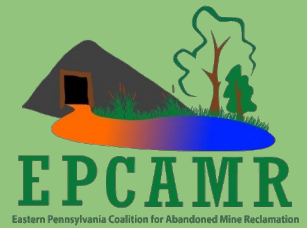
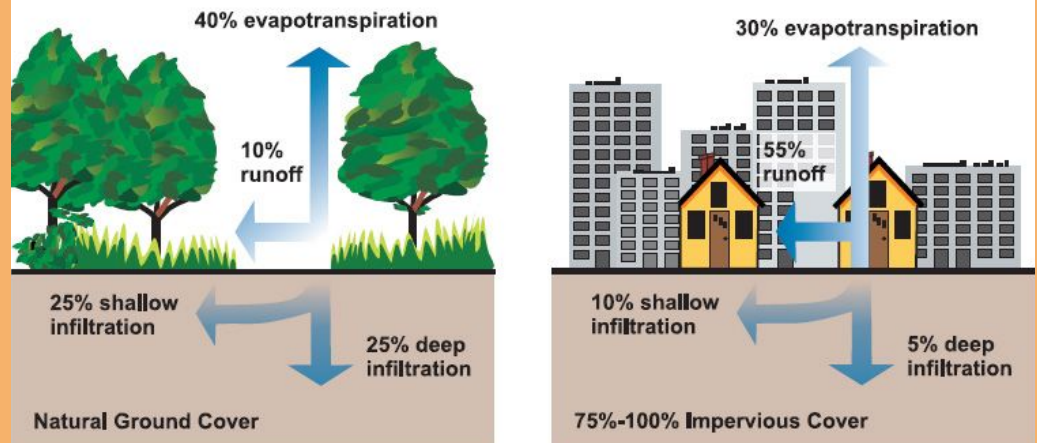


# Surface Runoff and Streambank Erosion



## What is it?

Streambank erosion is the removal of material from stream channel banks due to constant friction from moving water. It occurs naturally, but has become worse as humans alter the landscapes around them.



## Why is it worse?

As humans alter to landscapes to suit their needs, they alter the flow of *runoff* from rainwater. For example, as we build parking lots and streets (*hardscape*), that rainwater which would have absorbed into the ground (*infiltrated*) now runs off quickly into streams. This causes streams to take on water very quickly (flash flood) and aggressively cut into the banks. As we decrease the amount of infiltration, we increase the amount of runoff.

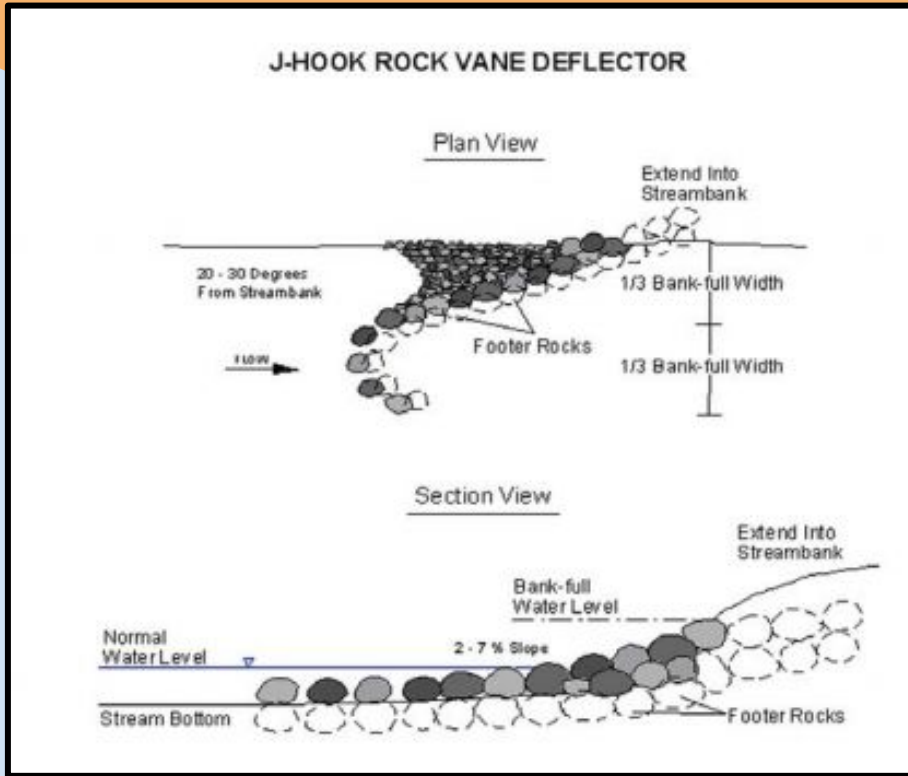
Some things which decrease infiltration are:

- *Deforestation*
- *Soil Removal*
- *Vegetation removal*
- *Hardscaping*
- *Ground compaction*

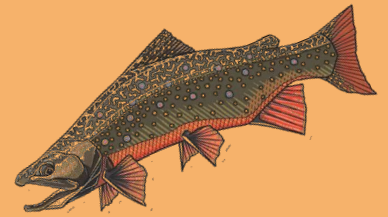
## Why you should care!

- Stream restoration is not cheap. It is handled by your municipality and costs YOUR taxpayer dollars. When streambanks erode, it comes out of your pocket.
- Surface runoff causes erosion, but it also causes pollutants to enter your water. This in turn makes water dirtier, and more expensive for municipalities to treat; which you will see in your water bill!
- Increased surface runoff can lead to flash flooding; directly impacting communities. This can cost you as it damages your home, property, or municipally owned areas.
- If you are an angler, bank erosion can create gravel bars and increase sedimentation. This in turn can create conditions unfavorable to trout, reducing their presence.

# Surface Runoff and Streambank Erosion

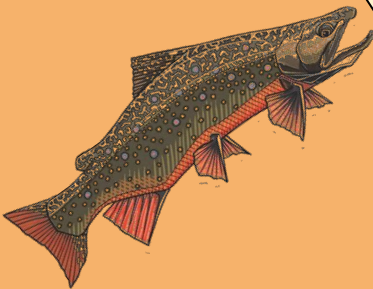


## J-Hooks



J-Hooks are a 2 for 1 when it comes to stream restoration as they provide both a bank stabilization and habitat trout creation!

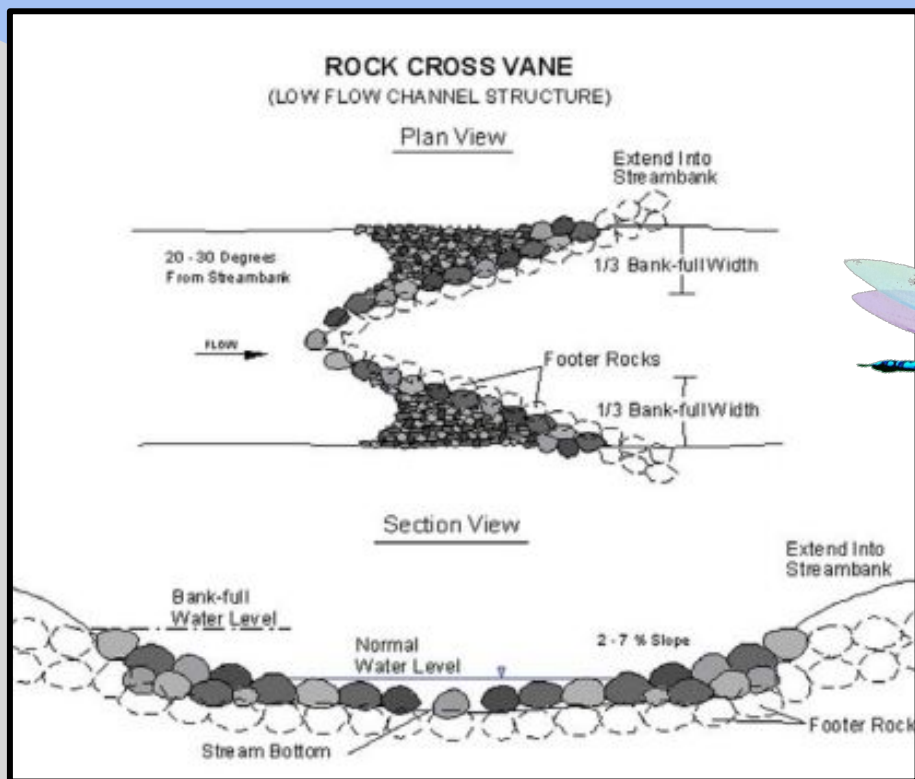
The hook directs water away from stream banks, while gaps in the front rocks allows fast water to flow through. The fast water digs holes for trout like me!



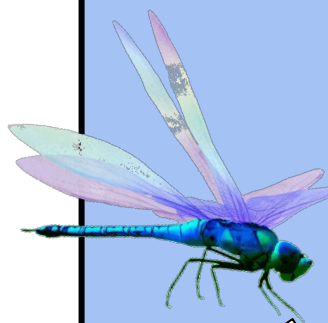
#### Sources:

[https://www.fishandboat.com/Resource/Documents/habitat\\_improve\\_trout.pdf?fbclid=IwAR0JfPiQyZdzndvABg9eRdmAlcVWRffRakPXexcAs5130VMvdv24s5OMwaE](https://www.fishandboat.com/Resource/Documents/habitat_improve_trout.pdf?fbclid=IwAR0JfPiQyZdzndvABg9eRdmAlcVWRffRakPXexcAs5130VMvdv24s5OMwaE)  
<https://www.montgomerycountymd.gov/water/restoration/streams.html>

# Surface Runoff and Streambank Erosion

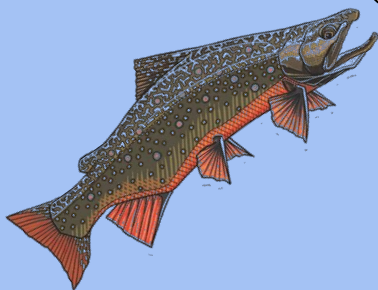


## Cross Vanes

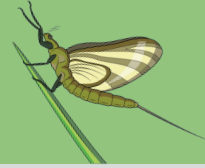


Cross vanes direct stream energy to the center, reducing erosion at the banks!

Cross vanes also cascade water down, creating a scour pool which is ideal for trout! Even better, they slow water velocity and prevent downcutting of the stream!



# Surface Runoff and Streambank Erosion



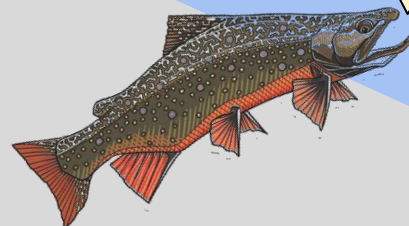
## Deflectors

Deflectors can be made from various materials such as root wads(1), logs (2), stone and logs(3), and many others! Here are some examples!

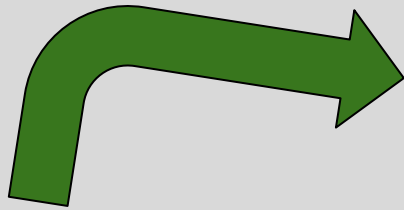
Deflectors armor the side of the stream bank directly, keeping it from eroding. Here are a few examples!



They can be made of many different materials: logs, stone, both, and some even include vegetation!



# Surface Runoff and Streambank Erosion



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## Sources:

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