



TURTLE TRACKS FALL 2005 EDITION

OFFICIAL NEWSLETTER OF THE TURTLE CREEK WATERSHED ASSOCIATION

Erosion & Sedimentation

Effects upon Stream Organisms

In our last edition, we reviewed stream quality indicators using examples of pollution intolerant organisms – stonefly and mayfly nymphs and caddisfly larvae. With feathery gills, flattened bodies, and claw-like feet, they are well-adapted to live in clean, flowing water, so their presence in a stream demonstrates high quality water. Their absence along with the presence of more pollution tolerant organisms shows evidence of contamination.



Mayfly Nymph www.famu.org

Our watershed is among those with more than its share of abandoned mine drainage (AMD) pollutants. Only Haymaker Run and Steel's Run are AMD free. However, another major source of contamination is sediment. This soil-based material is being eroded from streambanks and flood plains faster and faster by more frequent high water events.

Increasing Erosion

As the pace of development continues to increase, more impervious surfaces such as roads, driveways, and roofs replace forests and fields thick with spongy topsoil. Consequently, the amount of rainfall runoff immediately entering the storm sewer systems is also

increasing. Despite efforts to improve municipal codes related to stormwater management, accepted methods usually do not fully consider all factors. For example, differences in infiltration rates between natural terrain and land that has been stripped, regraded, and covered with only a few inches of medium quality topsoil may not be accurately converted. Detention ponds may be designed for 5, 10, 25, 50, or 100-year storms, but those volumes are calculated terms of steady rainfall over a 24-hour period – not the typical situation. Therefore, two inches of rain in one hour can overwhelm the management systems.

Or, rainfall leaves a pre-construction site by various means (deep and shallow infiltration, transpiration, evaporation, and sheet drainage) and at a multitude of locations. Yet post-construction rainfall often leaves a site via only one pipe with little regard for the receiving stream's ability to handle that volume of water at one point or for upstream and downstream conditions.

Natural Flood Protection



nashville.gov

In natural settings, the effects of higher volumes of water are mitigated by riparian zones, wetlands, and flood plains where water can spread out, slow down, infiltrate, and drop any sediments it is carrying on land where they belong.

But development frequently destroys these critical natural features, instead substituting man-made ones.

These measures may conform to local codes, yet they are inadequate to the task of slowly releasing single site stormwater runoff or of being part of a larger runoff management strategy.

Do We Really Care?

Why should this matter to any of us, much less all of us?

In addition to the ecological damage caused, flood prevention is one reason. As we have seen over the last few years in this area and across the country, flood damage causes significant problems, and costs, for those directly affected, but clean up efforts take huge amounts of federal, state, and local tax dollars. If floods and their associated damage can be prevented, then we all benefit.



Tribune Review

Two Stormwater/Flooding Problems

We know that the initial volume of stormwater is increasing, and we know this leads to two interrelated problems. First, if the water volume exceeds the channel volume, then flooding results. Second, much like wind blowing between two tall buildings, high water volume in a channel - especially one that has been made smaller by development or now has no associated flood plain - means faster water velocity. Increased velocity causes increased erosion of streambed and streambank materials. These eroded materials are then deposited further downstream in the channel, thus reducing its volume for carrying water, making flooding more likely.

Upstream/Downstream Connections

The fate of stormwater in the eastern portion of the watershed helps determine the extent of floodwaters further downstream. With higher initial volumes of

water occurring after a rainstorm, more and more people who never had flooding problems are being affected - especially along Brush Creek and Turtle Creek. This is in addition to those who routinely experience some flooding. Many of these victims are simply not able to flood proof their homes or to move.

As if this situation isn't bad enough, the U.S. Army Corps of Engineers estimates that when its dam project on the Mon River is complete, the water level at the mouth of Turtle Creek will rise five feet. The concrete flood channel running through our downstream communities holds a finite amount of water. The combination of less channel volume available and greater stormwater volume flowing downstream holds the promise of more flooding in these communities.

Ecosystem Damage

Sediments suspended in fast moving streams not only erode and scour the channel and banks, but they scour living tissues like delicate leaves and gills. Plants and animals sustain direct damage. Contaminants within soils are released. Soil particles in suspension absorb heat from sunlight, thus raising the water temperature and lowering dissolved oxygen levels. Reduced visibility interferes with feeding. When sediments are deposited, they smother bottom-dwelling organisms, including fish eggs.

These effects reduce a stream's fishery capabilities - whether to support stocked fish or a natural hatchery zone. Drinking water source quality is reduced. In turn, there are quality of life and economic impacts.

What Can We Do?

There are several options that can improve the situation. Homeowners can reduce the runoff from their driveways and roofs by using rain barrels, dry wells, or diverting water into rain gardens. Municipalities can borrow ideas from communities in the eastern part of the state to improve stormwater ordinances. Developers can do a better job of protecting natural stream features, enhancing rainwater infiltration, and reducing stormwater volume and runoff rates. By working together, a lot of progress can occur in a short amount of time.

Project Updates

Abandoned Mine Drainage

1. Borland Farm Road - mine water parameters are very different than originally believed. Consequently, the original treatment system concept is not suitable for this site. We are working with the Bureau of Abandoned Mine Reclamation, the Western Pa. Coalition for Abandoned Mine Reclamation, and CME Engineering to develop a new treatment design.
2. Export Mine Discharge - we received a Growing Greener I grant to continue working with GAI to expand data collection, then develop a project design.
3. Irwin Mine Discharge - we received a grant from the Western Pa. Watershed Program for the project. However, our OSM PA (AMR-05) proposal was not the project selected, so we are now exploring other funding options.

Streambank Stabilization



1. Bear Hollow Trail - As always, some last minute surprises necessitated some last minute changes, but those worked well. Erosion potential is dramatically reduced, and the neighboring properties are less likely to sustain damage. Levin Furniture sponsored the project. PennDOT, Triangle Construction, and North Suburban Tree Service donated logs for the cribbing - most of which are not visible. Murrysville provided other materials and all delivery. Confluence Ecological and Beran Environmental designed and constructed the project.



2. Duff Park - another Levin sponsored project, natural stream design features were installed along a one mile stretch of Turtle Creek, including log sections, boulders, j-hook weirs, rebuilt banks, and lots of native plantings. The plants took hold extremely well. Unfortunately, the deer have eaten them back several times, so their survival is in question. Ideas for replanting are welcome!
3. Saunders Station - a grant project via the Canaan Valley Institute will assess the valley upstream to the water treatment plant and downstream to Trafford. This work is the first step in a comprehensive plan to prevent future washouts and protect water quality for continued fish stocking.

Inter-Municipal Environmental Forum

1. Stormwater seminars - partnering with The Local Government Academy and the Center for Environmental Research and Education, a series of workshops and seminars for municipal solicitors and engineers in both Allegheny and Westmoreland Counties is planned for the spring.

Calendar

TCWA meetings

- Room 220 The Castle 7:00 p.m.
- November meeting changed to December 6th
- No meeting in December
- January 31st
- February 28th
- March 28th - Annual Meeting at 6:00 p.m.

Join Us!!! Become a member of the Turtle Creek Watershed Association and become a partner in a dynamic local conservation effort. A broad base of financial and volunteer support from local individuals, families, communities, business, and industry will allow all of us together continue improving the quality of life in this region.

(Don't forget - it's tax deductible!)

Membership Form 2006

Name: _____

Address: _____

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Permission to list donor name: Yes No

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Please make checks payable to:
Turtle Creek Watershed Association

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Thank you very much!



TURTLE CREEK WATERSHED ASSOCIATION

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