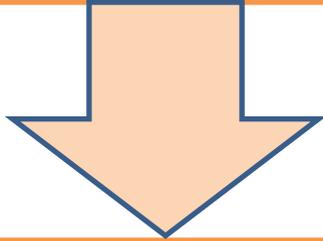


The Stormwater Paradigm Shift

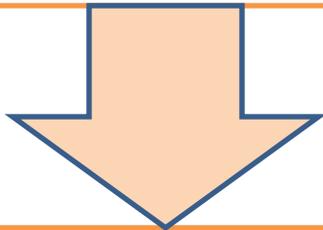
(a fundamental change in approach or underlying assumptions)

*“We need to clearly understand the problem . . .
or the solution will not be clear.”*

43.7 " Annual Average
100%
Precipitation



30.6 " Penn's Woods
70 %
Evaporation/Infiltration



17.5 " Urban/Suburban
40 %
Evaporation/Infiltration

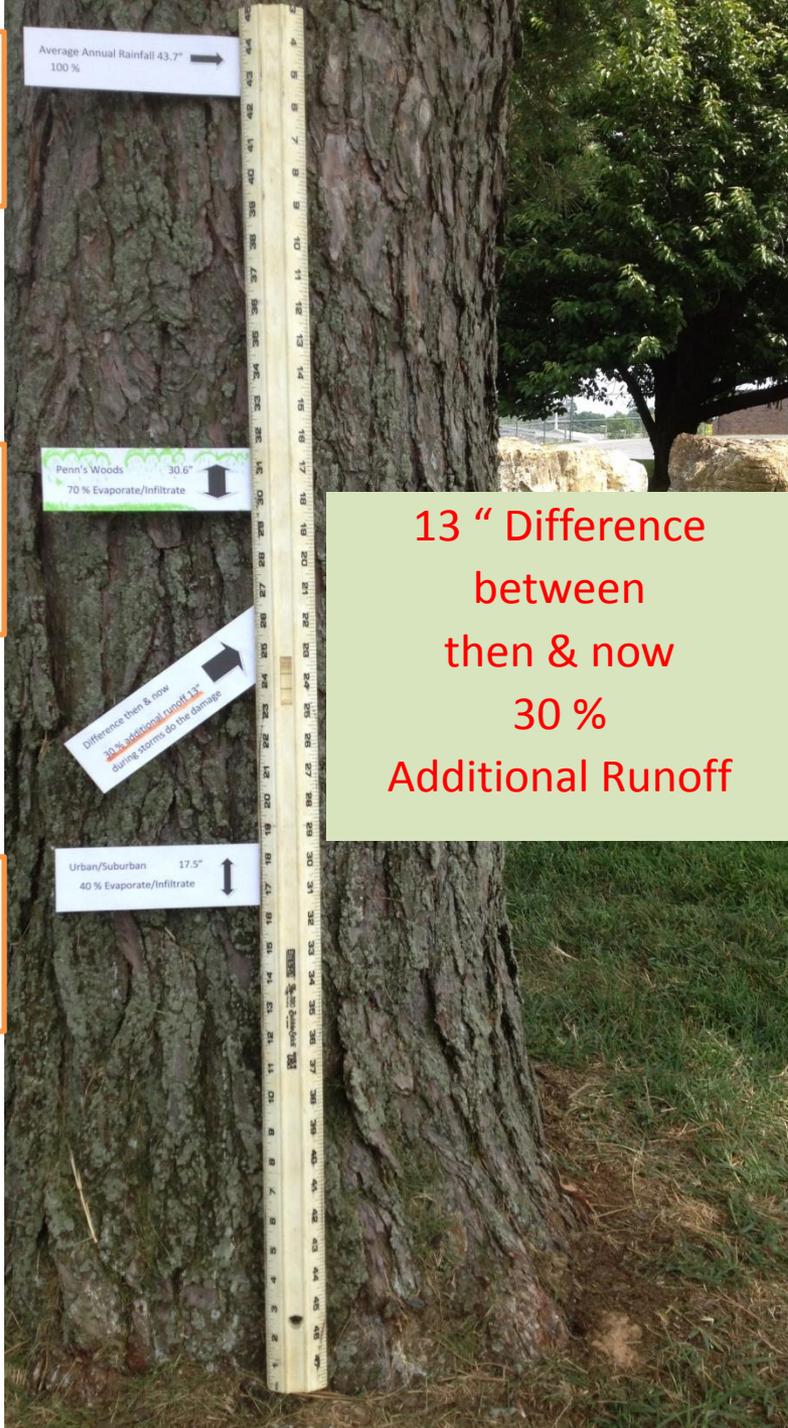
Average Annual Rainfall 43.7" →
100 %

Penn's Woods 30.6" ⇄
70 % Evaporate/Infiltrate

Difference then & now
20% additional runoff 13"
during storms do the damage

Urban/Suburban 17.5" ⇄
40 % Evaporate/Infiltrate

13 " Difference
between
then & now
30 %
Additional Runoff



Here's what happens to the additional 13 inches of rain ...



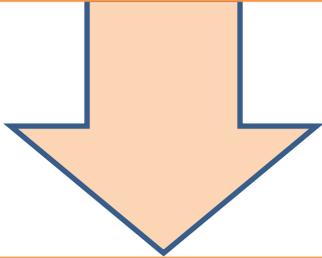
This is why a **Stormwater Paradigm Shift** is needed ...



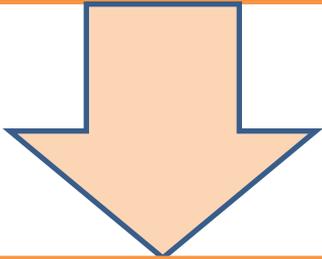
Sorta Look Familiar?

Tropical Storm Lee
(13" rain in 1 ½ Weeks)

Cocalico Creek
"Impaired"



Conestoga River
"Impaired"



Susquehanna River
Not Listed Yet?

Chesapeake Bay??



Ephrata's MS4 Permit Obligation

6 MCM's – Minimum Control Measures

20 BMP's – Best Management Practices

MOU – Memorandum Of Understandings
(Partnering Opportunities)

6 Minimum Control Measures (MCMs)

MCM #1 - Public Education & Outreach on Stormwater Impacts

MCM #2 - Public Involvement/Participation

MCM #3 - Illicit Discharge Detection and Elimination (IDD&E)

MCM #4 - Construction Site Runoff Management

MCM #5 - Post-Construction Stormwater Management

MCM #6 - Good Housekeeping and Pollution Prevention for
Municipal Operations

Each MCM has several Best Management Practices (BMPs)

MCM #1 - Public Education & Outreach

- BMP #1: Publish at least one article annually including steps the public can take to reduce pollution and runoff. Annual evaluation required. In addition, determine the target audience's measurable improvement in understanding the causes & impacts of stormwater pollution and the steps they can take to improve it.
- BMP #2: Target Audience(s) – Plan – Record & track
 - General Public – Environmental articles on Borough's Stormwater Web site + Office & Library "*When It Rains it Drains*"
 - Borough Staff - " " " + " " "
 - School - Environmental Education class(s) – tour WFP & WWTP + discuss stormwater
 - Public Officials – Borough Council & Borough Stormwater Web site
 - Neighboring Municipalities – communicate through E-mail, meet to brainstorm educate & share ideas
 - Ephrata Area Chamber of Commerce - Offered to present program update
 - Developers - Zoning Office distributes info. packets w/ stormwater requirements to all applicants
- BMP #3: Annually publish on the web site or bill stuffer general stormwater educational information, a general description of Ephrata's MS4 Program & Activities including links for additional information reviewed & updated annually. Republication is acceptable.
- BMP #4: Select at least two different distribution methods each year for educational Information in addition to the two preformed in BMP #1 & #3. (displays, posters, signs, pamphlets, booklets, brochures, radio, TV, newspaper, bill stuffers, posters, presentations, conferences, meetings, watershed groups, fact sheets, giveaways, etc.)

Stormwater Ordinance

- Original Ordinance passed 10 years ago
- New Ordinance
 - General Concept – Every property owner is responsible for the rainwater that falls on their property
 - New ordinance intended to control volume of rainwater to the river (total gallons, not gallons per minute)
 - How?
 - Controlled run off
 - Infiltration
 - Evaporation
 - Storage for later use

Stormwater Ordinance

- Examples:
 - Rain Gardens
 - Rain Barrels
 - Green Roofs
 - Trees, Shrubs, Wet lands
 - Buffer Zones along Stream
 - Pervious Paving Options
 - Amended Soils with Compost
 - Rock filled trench
 - Cistern

What's the Goal?

- Reduced loading to Cocalico Creek
 - Less nitrogen, phosphorous, sediment, flow
- Impact entire watershed – 140 square miles
 - South Mountain (Leb. Co.) to Conestoga River @ Brownstown
- Ephrata Borough – 4 square miles
 - We could do everything 100% of the time and the Creek could still be impaired
- Need to work with our neighbors
 - Cocalico Creek Watershed Association
 - Establishment of baseline for entire watershed
 - Seek “biggest bang for our buck” – largest impact may be outside of Borough.
 - All members benefit

For More Information. . .

- www.Ephrataboro.org

Click on Stormwater



Stormwater 201

8 – 11 – 2014

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“We need to clearly understand the problem . . . or the solution will not be clear.”