Community Techniques for Protecting Water Quality

Beginning slide
Huron River
Context: Direct Erie watershed is unique... land use
Context: Where we are in Freedom Twp drains to Huron River and then to Lake Erie. All of Michigan drains to a great lake, and all lakes that drain Michigan drain through Lake Erie.
Context: Erie is different... Depths
Context: Highest percentage of heavy cropland and urban land use
Context: Most biologically active, toledo water intake, mycosystin, wwtp vs nps runoff
Context: As a result, it gets the most sediment and nutrients. Most biologically productive, toledo water intake, mycrosystin, wwtp vs nps runoff. WWTP not enough to cause the problem. It’s a tiny bit of phos coming off every acre. The solution needs to be as widespread.
Nonpoint: Problem is widespread and everywhere – nonpoint source pollution
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Water quantity is Water Quality, greenspace absorbs runoff
Even low density zoning will cause stream impacts, 1 acre zoning = 10% imperviousness. Don’t let this happen STORMWATER MGT!
Urban is 40+%  Creeks turn into pipes. Don’t let this happen, Prevention is cheaper.
NPS and volume – obvious when it’s flooded, but any heavy rain will cause it.
Many communities have their engineer use our new rules, some use our old rules, some have a different standard.
WCWRC RULES:

3 KEY CHANGES

1. MANDATORY PRE-APPLICATION MEETING
2. METHOD OF CALCULATING RUNOFF
3. INFILTRATION REQUIREMENT
PRE-APPLICATION MEETING

Purpose: Engage Owner, clarify changes and benefits

- Soil types – testing!
- Information on geology and hydrology including estimate of groundwater table elevation
- Topography
- Land cover
- Other pertinent natural or man-made features
- Potential locations for infiltration BMPs
Method: 1% STORM

- 24 hour 1% storm was = 4.36 inches
- NOAA Atlas 14, Volume 8
  - Published 2013
  - Provides data for discreet locations
  - Ann Arbor, Milan & Ypsilanti Stations
    - Range for the 24 hour 1% storm at these stations varies minimally
    - All indicate the 24 hour 1% storm = 5.11 inches
- Chelsea Station
  - 24 hour 1% storm = 5.21
- New WCWRC Rules 24 hour 1% storm = 5.11 inches

Take home: 5.11” must be detained
IN FILTRATION

• WCWRC Rules will require an attempt to infiltrate the first 1” of runoff
• If unable, must hold back extra

Take home: the first 1” must be infiltrated
Most storm less than 1” and that’s our first flush
Most storm less than 1” and that’s our first flush
HOW DOES DEVELOPMENT BENEFIT?

Many developers are finding lower cost for GI when used in greenfields.

- Less concrete infrastructure needed.
- Less surface area of storage needed if doing infiltration
- Less impact to developable area with co-location
- It will always be more costly to develop unsuitable land
  - This is why poorly suited land (soils, etc) is cheaper
  - Public cost of developing poorly suited land
  - Whose job is it to look at total cost of a site?

I’m sorry....
705 ZEEB ROAD
REDUCED CONSTRUCTION COST

- 8 structures @ $2,000 ea. = $16,000
- 425 ft.-12in. RCP @ $40/ft. = $17,000
- 265 ft.-15 in. RCP @ $50/ft. = $13,250
  - Savings = $46,250
- BUT SOILS ARE SUITABLE FOR 100% INFILTRATION
- Extra Savings: 1,950 cyd earthwork @ $10/cyd = $19,500

- NET SAVINGS = at least $65,750
Freedom Twp Example; To keep water quality high requires collaboration. WCWRC has some jurisdiction, not all waterways, but no land use control. That’s the locals and protections requires collaboration.
We only look at some development, the rest is up to locals. Collaboration means prevention.
Conservation credits for agriculture. WLEB, MAEAP and Farm Bill
How Would it Work

Current drain assessments:
- Municipalities pay up to 35%; parcels pay the other 65%
- Per parcel charge is based on assessors classification code (tax category) and acreage

But....
- Assessments per Drain Code can be based on “benefits derived”
In Van Buren County, credit is tied to sediment. Less sediment = less maintenance. But could be volume too. Less need for repair and upsizing.
Contact Conservation District for MAEAP
Contact NRCS For Farm Bill Practices
Other Opportunities to Collaborate

- MSU, UMich, HRWC, RRWC, MDEQ and WCWRC
- Municipalities and the Road Commission in funding stormwater for repaving and reconstruction projects. Particularly at crossings!
- Specific Water Resources Programs
  - Community Partners
  - Rain Gardens
  - K-5 Education
  - Homeowners Handbook
  - Household Hazardous Waste
  - Lake Management
  - Asset Management
  - HOA Workshops
  - Green Infrastructure
  - Reforestation
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Ending slide