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Re-plumbing the Chesapeake Watershed: Improving roadside ditch management to meet TMDL Goals

Workshop Findings and Recommendations
October 2014

Workshop Goals

1. **Increase awareness of the critical impacts** of roadside ditches and best management practices to reduce these impacts.

2. **Inventory** current status of **ditch management** across the Chesapeake Watershed.

3. **Develop recommendations** for how best to improve roadside ditch management to meet TMDL goals, reduce flooding and buffer impacts of climate change.

Re-plumbing the Chesapeake: Workshop Discussion

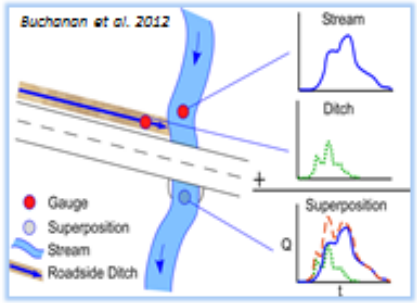
Re-plumbing the Chesapeake: Workshop Structure

- SESSION I: **Sizing Up the Problem**
  - Rebecca Schneider (NY)
  - Beverly Wemple (VT)
  - Zack Easton (VA)
  - Robin Van Meter (MD)
- SESSION II: **Mitigation Strategies**
  - Steve Bloser (PA)
  - David Wick (NY)
  - Ray Bryant (PA/MD)
  - Bernard Sweeny (PA/MD)
  - Laura Christianson (MS)
  - Jason Keppler (MD)
  - William Ryall (MD)
- SESSION III. **Barriers to Implementation**
  - Jeff Sweeney (CBP)
  - Kari Dolan (VT)
  - David Orr (NY)
  - Robert Shreeve (

Key Findings – Roadside Ditches: Big Impacts from Micro-Scaled Features

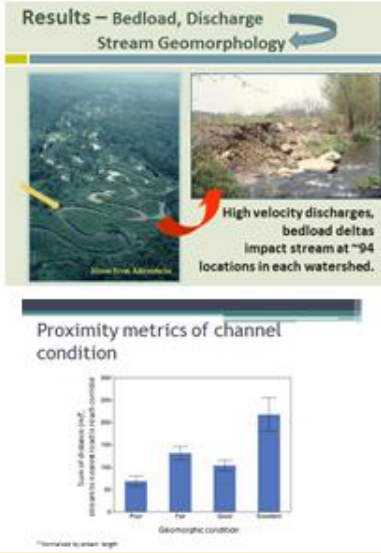
Hydrologic Impacts:

- Extends stream network, doubling or more stream density (Sweeny 2014)
- Intercepts more than 20% of runoff/shallow groundwater flow (Schneider et al 2014; Diaz-Robles 2007)
- Increases peak flow by more than 50% (Buchanan 2012)



Habitat Impacts:

- Alters environmental flow regimes
- Increases bed loads causing down-stream disequilibrium (e.g., Pechenick et al 2014)
- Headwaters dry out
- Salinization of freshwater habitats (e.g., Kaushal et al 2005)



Credit: R. Schneider; B. Wemple

Water Quality Impacts: Source and Conduit

- Exposed (scraped) ditches exponentially increase TSS concentrations (Diaz-Robes 2007)
- Accounts for more than 10% of observed sediment load in upper Susquehanna (SRBC)
- Provides important conduit of *E. coli* bacteria

Key Findings - Management

Diverse array of BMPs to reduce impacts:

1. BMPS which hold or redirect stormwater runoff, and reduce flooding downstream;
2. BMPS which slow down flow and filter out contaminants, which reduce pollution;
3. BMPS which improve habitat.

Key Findings - Management

Challenges and barriers to improving ditch management

1. **Unmapped ditch networks and prioritization criteria.**
2. **Uncertainty of BMP performance, especially in relation to location and conditions**
3. Lack of efficient communications network among the hundreds of jurisdictions;
4. Pervasive unawareness by public, who control ROWs;
5. Problematic, conflicting policies concerning adoption of roadside ditch BMPS;
6. Insufficient resources, equipment, manpower;
7. **Exacerbation of ditch impacts due to climate extremes.**

Workshop Next Steps: GIT Outreach

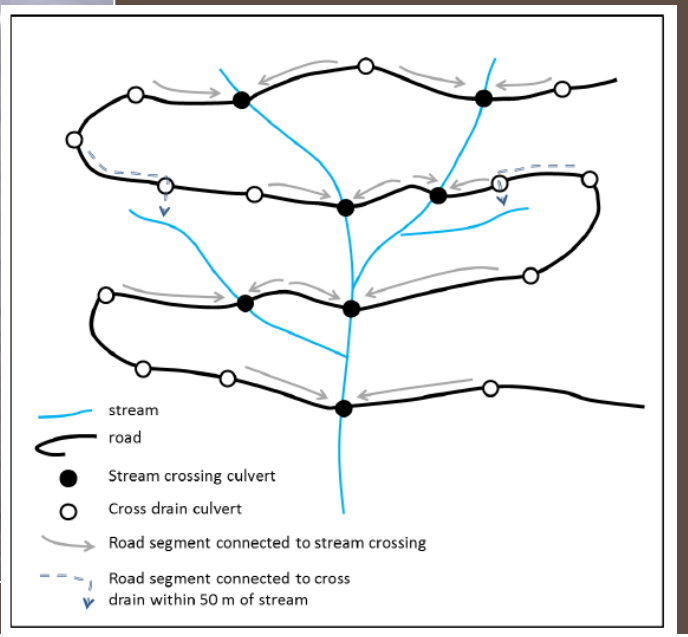
- 4/14 Management Board Meeting
- 4/21 Stream Health Workgroup
- 4/25 Water Quality GIT

- 6/10 CBP Local Gov't Advisory Committee (LGAC)
- 6/21 Urban Stormwater Workgroup

GIT Member Feedback

- "interest in ditch projects and improved maintenance of ditches could be enhanced if these activities were explicitly credited in the Chesapeake Bay watershed model (CBWM) and therefore could be incorporated into WIPs and demonstrated to be cost-effective [current structure doesn't provide enough incentive]"

Questions?


stream
road
Stream crossing culvert
Cross drain culvert
Road segment connected to stream crossing
Road segment connected to cross drain within 50 m of stream