Stormwater Planning for Non-MS4 Communities

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Agenda

- Stormwater management challenges in Vermont’s small towns

- An approach to more comprehensive stormwater management
  - What was the impetus for this project?
  - What are we finding?
  - What is most meaningful to the communities?
Stormwater Management Challenges

- Stormwater management is essential to achieving water quality goals, including implementation of many TMDLs
  - 140,000 acres of impervious surface in Vermont

- Stormwater contributes ~50% of Vermont’s phosphorus load to Lake Champlain
  - Lake Champlain watershed is currently 3% impervious surface
  - ~10% of that 3% is covered by an MS4 permit

- About 80% of public road miles in Vermont are maintained by towns

- In short, there is a need to improve stormwater management outside the MS4s – but how?
Stormwater Management Challenges

- Talking to non-MS4 communities about stormwater
  - Storm what?
  - Perception as a “Chittenden County” issue
  - Problems already known – just not linked to “stormwater”

Roadside/ditch erosion
Localized flooding
Failing culverts

- Limited awareness of how local land use decisions influence stormwater
Local Stormwater Management

- Stormwater management occurs as part of the local review of land development plans
- There is often a complicated web of local regulations that touch on stormwater:
  - Zoning and subdivision regulations
  - Land use policy
  - Floodplain regulations
  - Public works specifications
  - Stormwater management (model) ordinance
What was the impetus for this project?

- Watershed group – Friends of Northern Lake Champlain – identified need
  - Struggle to engage small municipalities in water quality work
  - Farmer perception of being “picked on” was hindering work with the agriculture community

- State needs priority-ranked lists of stormwater problem sites and proposed corrective actions
  - Proposed developing a consistent approach as a means for providing “reasonable assurances” for the Lake Champlain TMDL
  - Stormwater master planning guidance under development
What did the “baseline” in non-MS4 communities?

- In general, there is broad support for improving water quality and reducing the impacts of development.

- Communities are in different places…
  - Those who understand/feel some pressure to improve stormwater management
    
    Likely candidates for future MS4 designation
  
  - Those who are interested, but not particularly concerned
  
  - Those who aren’t paying attention
Framework for Stormwater Management

■ STEP ONE: coarse analysis of study area
  – Collection, inventory and analysis of existing information

■ STEP TWO: detailed analysis of priority areas
  – Field observations

■ Building to a “punch list” of high priority projects, including:
  – Low hanging fruit
  – Stormwater needs that should be addressed as part of other potential projects (e.g., culvert replacement)
  – Recommendations for changes to zoning
Framework for Stormwater Management

- **STEP ONE: coarse analysis of study area**
  - Collection, inventory and analysis of existing information
    - Identification of existing conditions
    - Identification and documentation of problems
    - Review local zoning/land development regulations
    - Local interviews/public input
  - Establishing priority areas for more detailed field evaluation
STEP ONE: important elements

- Review existing plans and data
- Thorough problem area identification
- Document everything
STEP TWO: detailed analysis of priority areas

- Evaluate and prioritize problem areas
- Complete field observations
- Identify areas appropriate for local regulations
- Identify key sites targeted for future management activities
STEP TWO: Important Elements

- Prioritize problem areas with objective scoring
- Determine highest priority sites for project development
- Generate conceptual solutions for problem areas
- Identify project partners and funding mechanisms
- Develop location specific regulations
What are we finding?

- Many communities lack basic infrastructure mapping → pipes, swales and effective impervious areas
  - Don’t know where the stormwater is coming from
- Roads are an even bigger problem than first imagined
- Undersized bridges and culverts exacerbate road concerns in many locations
- Local zoning requirements conflict with some SW goals
What are we finding?

ROADS:

- Research at Cornell has found as much as ¼ of all surface runoff is intercepted by roadside ditches
- Sediment contributions from gravel roads are significant
  - anecdotally: gravel roads lose 1” of material a year
  - tolerable soil loss for annual crop land is 1/20” a year
- UVM project – 10-25% of total sediment load in streams attributable to road network
- Best opportunities to manage “unmanaged” stormwater are often within the ROW
What are we finding?

BRIDGES AND CULVERTS:

- Many undersized structures
- Sediment tends to accumulate on bridges and stream crossings
- Need more information on planned road improvements to be able to coordinate stormwater work at the same time.
What are we finding?

ZONING:

- At the municipal level, land use regulations and road ordinances create barriers to or disincentives for LID.

- The most common issues include:
  - Requirements for wide roads even when serving few homes
  - Oversized parking spaces and parking minimums
  - Setback requirements often result in longer driveways (particularly in rural districts)
  - Requirements for road frontage
  - Requirement for paving with bituminous concrete effectively prohibit porous pavements
Next Steps

- Achieving better results from stormwater management requires:
  - Regulation to avoid future problems
  - Mitigation to fix existing problems

- Planning is (relatively) cheap – implementation is not
  - FNLC is partnering with municipalities to pursue funding

- Need for long-term commitment to a combination of:
  - Revised zoning
  - Improved road practices
  - Construction and maintenance of targeted BMPs
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