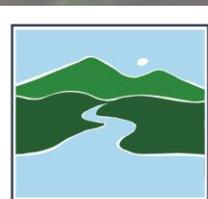
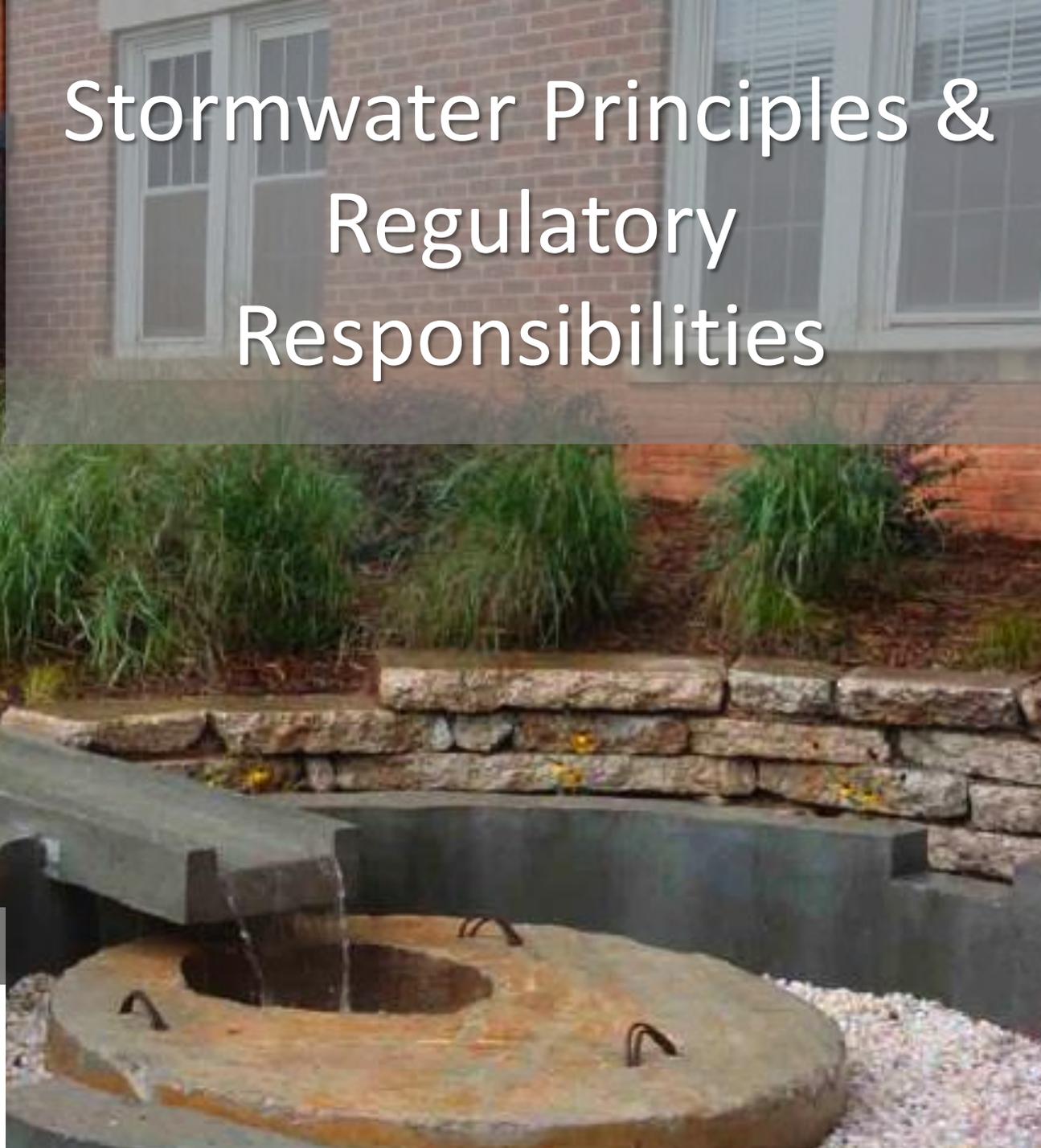


Stormwater Principles & Regulatory Responsibilities

Christy Witters, AICP



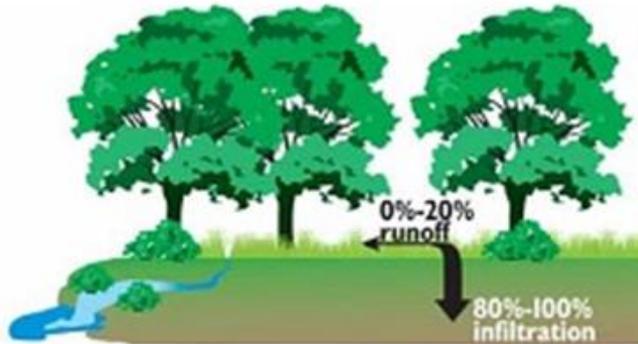
VERMONT DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
**WATERSHED
MANAGEMENT DIVISION**
STORMWATER PROGRAM



Stormwater Runoff

INCREASE IN STORMWATER RUNOFF WITH URBANIZATION

NATURAL GROUND COVER
0% IMPERVIOUS SURFACE



LOW DENSITY RESIDENTIAL
10%-20% IMPERVIOUS SURFACE



URBAN RESIDENTIAL
35%-50% IMPERVIOUS SURFACE



COMMERCIAL/INDUSTRIAL
75%-100% IMPERVIOUS SURFACE



Jordan Spieth & Joe Colangelo really do understand Stormwater



Stormwater Principles

- Water Quality – What's in the runoff?



- Sediment
- Nutrients
- Pollutants (oils, litter, etc)

Stormwater Principles

- Water Quality – What's in the runoff?



- Sediment
- Nutrients
- Pollutants (oils, litter, etc)



- Settle out sediment before stormwater reaches receiving waters

Stormwater Principles

- Groundwater Recharge - How much is:

Running off

vs.

Infiltrating

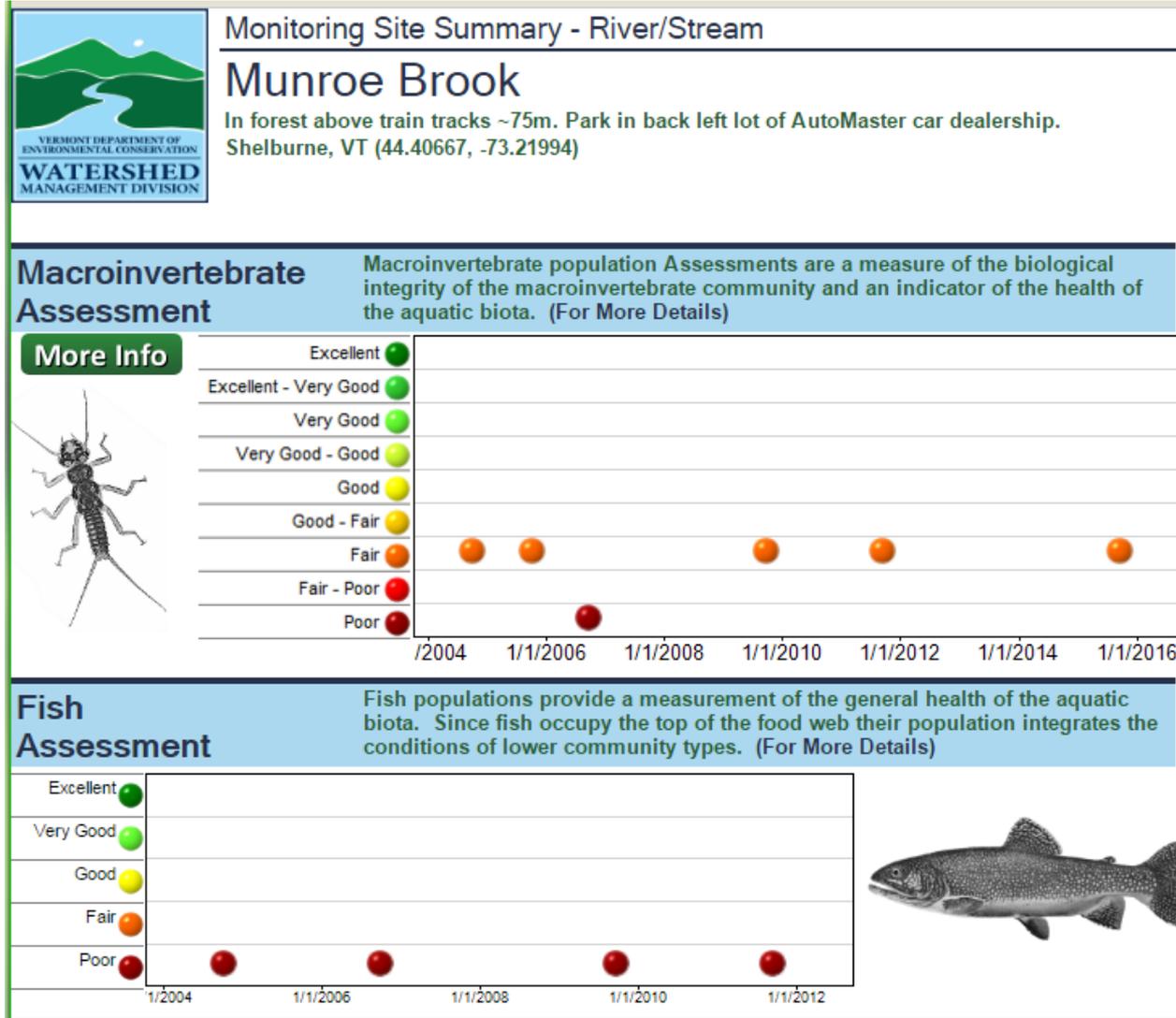


Stormwater Principles

- Channel Protection - How *fast* runoff is getting to receiving waters



Stormwater Impacts



- Impaired Waters
 - Bartlett Brook
 - Munroe Brook
 - Lake Champlain

Plans to Restore Water Quality

- Stormwater TMDLs
 - Reduce the high, flashy flows from Munroe & Bartlett Brooks
 - Restore water quality: aquatic life support
- Lake Champlain Phosphorus TMDL
 - Shelburne Bay → reduce the P load from developed land by 20.2%

State Permitting Tools

