

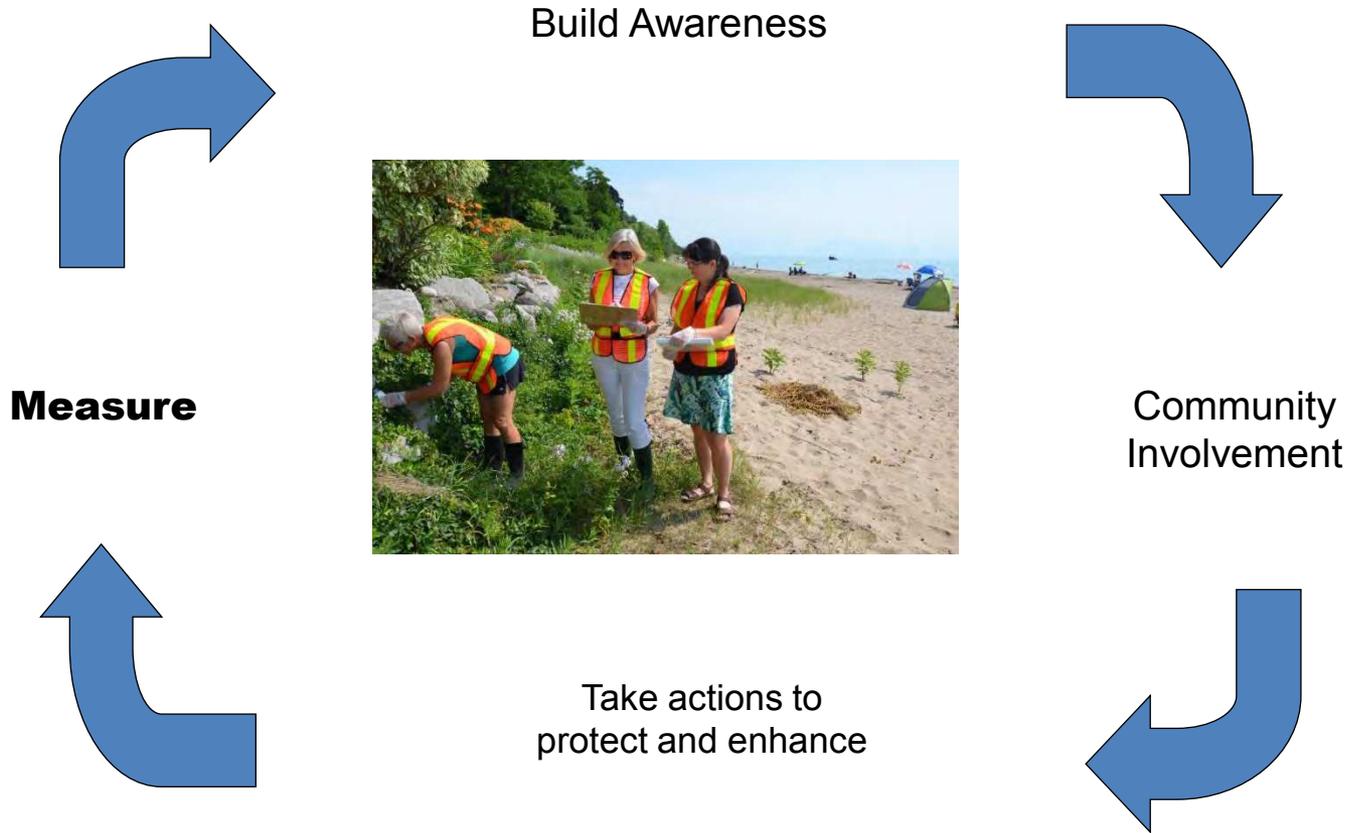


# Best Management Practices Verification: Results from a Huron County Watershed

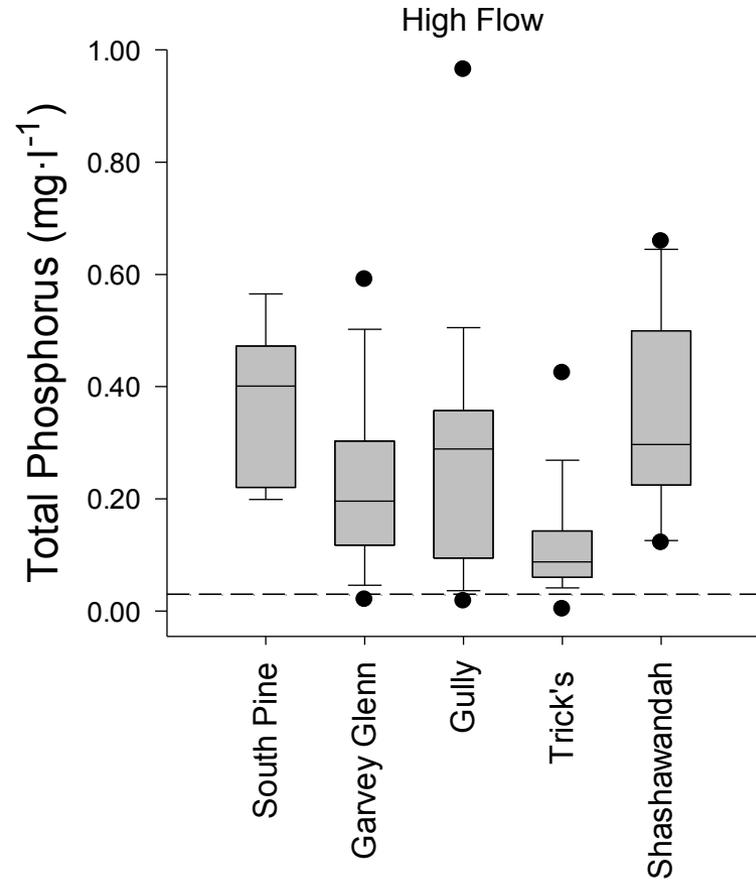
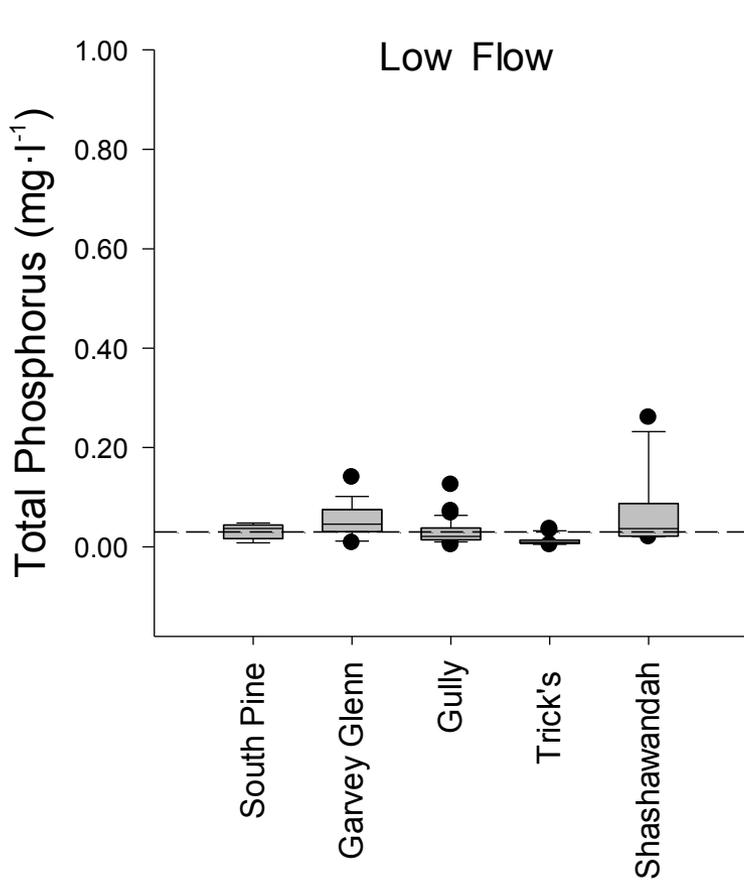
A presentation to:  
National Farmers Union  
November 28, 2015

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# Communities in Action



# Water Quality Issues = Runoff Issues



# Stormwater

## - Why Do We See Differences?



Typical conditions



During an event

- The ephemeral channels are important to water, sediment and nutrient transport
- There is an hierarchy of urban and agricultural BMPs to address storm events
- To evaluate the effectiveness of BMPs we need to monitor during storm events

# BMP Evaluation

- Management BMPs:
  - Cover crop
  - Nutrient management
  - Conservation tillage
- Structural BMPs:
  - Water and Sediment Control Basins
  - (Grassed Filter Strip)



# Cover Crop Rainfall Simulation

Treatment	Antecedent conditions	Runoff (mm)	Runoff (%)	Total Suspended Solids (mg/L)
no cover crop <sup>A</sup>	workable	0.8	6.4	406
no cover crop <sup>B</sup>	wet	1.1	8.8	482
cover crop <sup>A</sup>	workable	0	0	0
cover crop <sup>B</sup>	wet	0.9	7.2	130
light cultivation <sup>C</sup>	very wet	3.6	28.8	2260

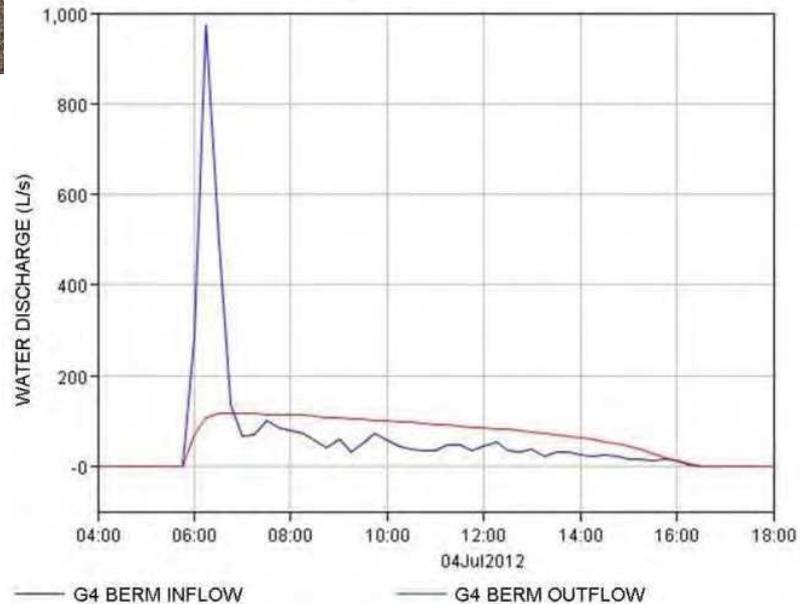
## Treatment

- on a field that was post no-till wheat harvest, straw baled with a portion that had red clover cover crop
- 1 X 1m plots
- simulation<sup>A</sup>: 12.5 mm/10 min simulates a 2 year 10 minute storm
- simulation<sup>B</sup>: 12.5 mm/10 min a 2<sup>nd</sup> time - 3 h later
- simulation<sup>C</sup>: PLUS 12.5 mm/10 min a 3<sup>rd</sup> time - 0.5 h later

# Field BMP Monitoring Water and Sediment Control Basin

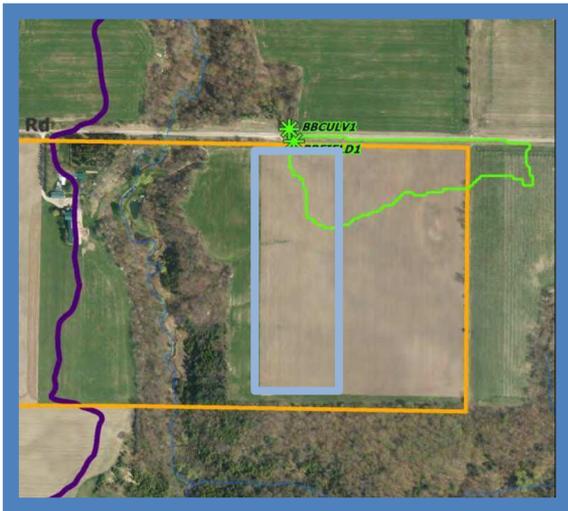


Duration of  
most inflow  
<1.5 h



Duration of  
most outflow  
~9 h

# Linking Landscape and Water Quality

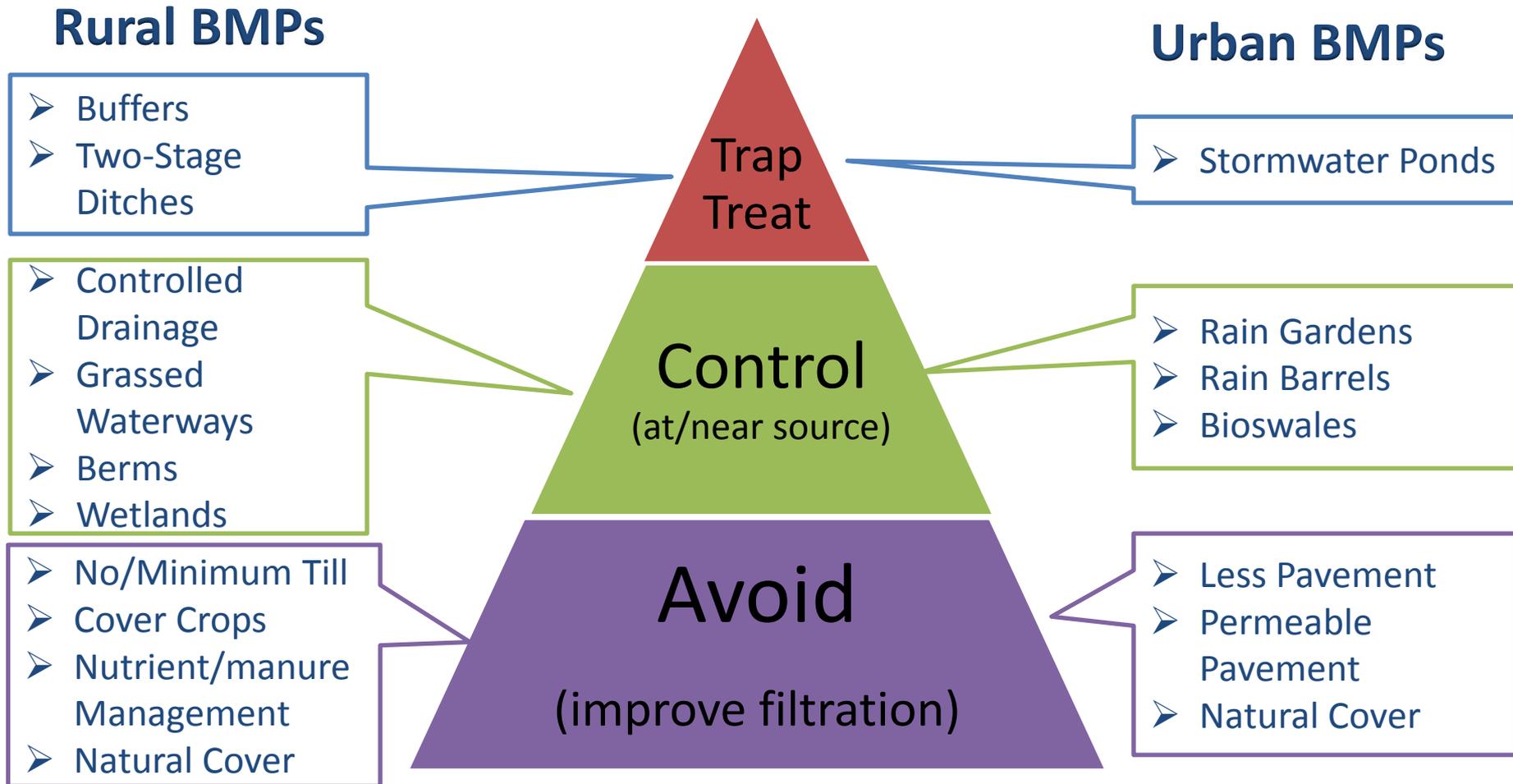


- Grass filter strip reduced:
  - TSS, TP, and SRP
  - did not change nitrate-N
- Change in cropping system:
  - landowner extended hay field
  - no concentrated flow path
  - no water samples
  - some BMPs can be measured at the site scale and some cannot



# ACTION BMPs and the Treatment Train

(Avoid, Control, Trap/Treat)



# Soil Health Recommendations



1. Cover soil (with vegetation not pavement)
2. Reduce tillage
3. Rotate crops
4. Test soil
  - Fertility
  - Organic matter
  - Erosion risk

# Acknowledgements

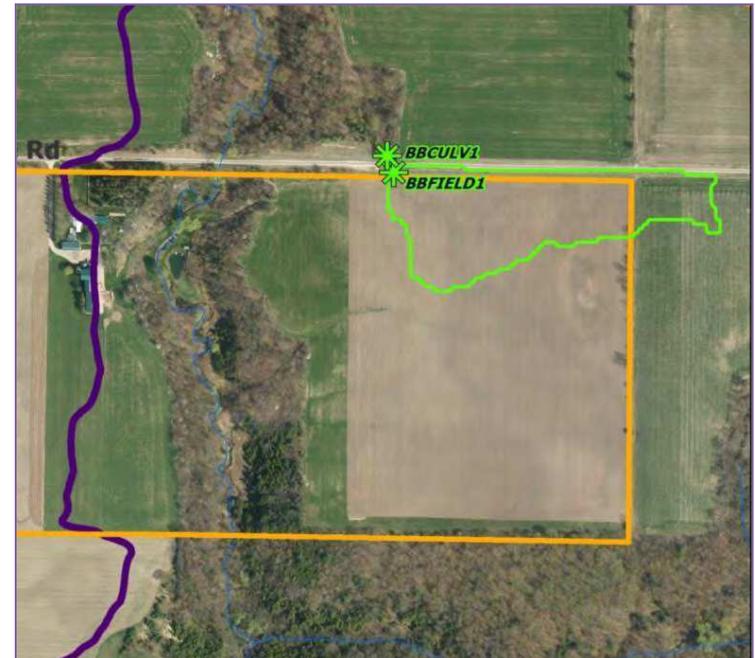
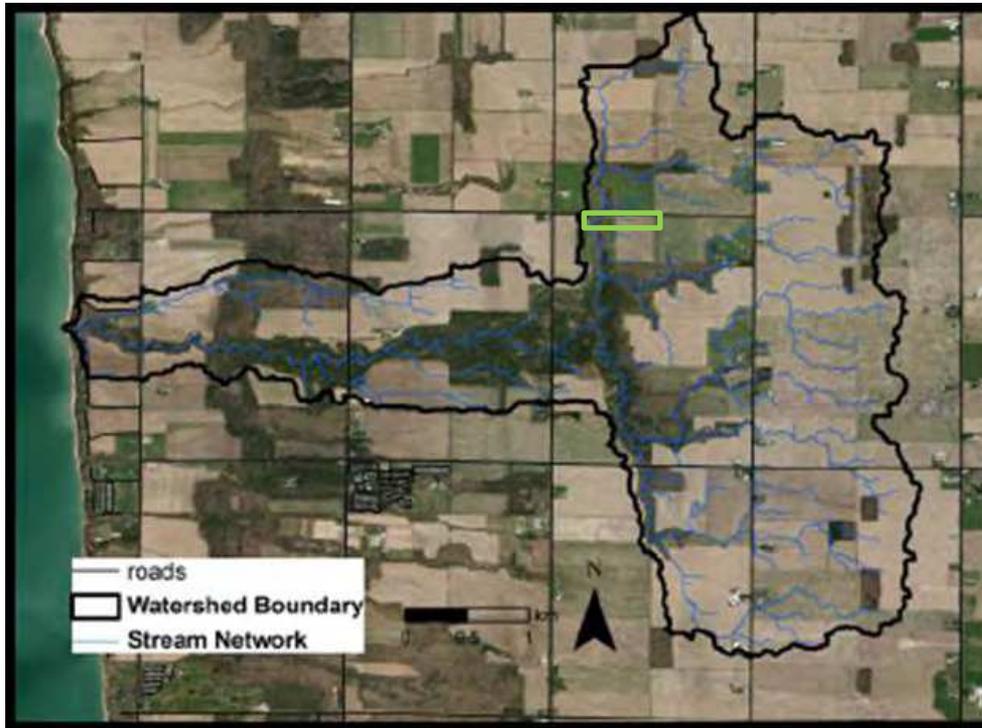
- Other collaborators on the Watershed Based BMP Evaluation:
  - University of Guelph
  - Ontario Ministry of Agriculture, Food and Rural Affairs
  - Ontario Ministry of the Environment and Climate Change
  - Huron County Federation of Agriculture
  - Landowners in the Gully Creek watershed

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The views expressed are the views of the presenter and do not necessarily reflect those of the funders.



# Temporal and Spatial Scale Considerations



- Measuring the effectiveness of this grassed ditch
  - Cannot be measured in the downstream channel or at watershed outlet or in the Lake during routine water sampling