



# Non-point source credit quantification

Jeff Thomas

Resource Management Specialist  
Ohio Department of Natural Resources  
Division of Soil & Water Conservation

# Use in Ohio

- Nutrient trading
- Agricultural pollution abatement program
- 319 program
- Watershed planning

# Models used in Ohio

- STEPL
- Region 5 model
- Ohio load reduction spreadsheet

# STEPL

- Spreadsheet Tool for Estimating Pollutant Loads v3.0
- Developed by Tetra Tech for USEPA
- <http://it.tetratech-ffx.com/stepl/>

# STEPL

- Watershed & field scale modeling
- Primarily used in Ohio for watershed planning
- Lacks resolution for TMDL development

# STEPL

- Very easy to use
- Data required is readily available
- BMP calculator

# Other models

Models for Estimating Loads and Load Reduction							
Model	Field or Watershed	Land Use	Pollutant	Event or Continuous	BMP	Data Requirements	Level of Effort
<b>Simple</b>							
Simple Method	Watershed	Urban	N, P	Event		Low	Low
SLOSS/ PHOSPH	Both	Rural	P, Sed..	Event		Low	Low
Watershed	Both	Both	P	Event	Simple	Medium	Medium
<b>Mid Range</b>							
AGNPS	Both	Rural	N, P, Sed.	Both	Detailed	Medium to High	Medium to High
GWLF	Both	Both	N, P, Sed.	Both	Simple	Low to Medium	Low to Medium
<b>Detailed/Complex</b>							
ANSWERS	Both	Rural	N, P, Sed.	Both	Detailed	Medium to High	Medium to High
GLEAMS	Field	Rural	N, P, Sed.	Both	Detailed	Medium to High	Medium to High
HSPF	Both	Both	N, P, Sed.	Both	Detailed	Medium to High	Medium to High
SWAT	Both	Rural	N, P, Sed.	Both	Detailed	Medium	Medium
SWMM	Both	Both	N, P, Sed.	Both	Detailed	High	High
WEPP	Both	Rural	Sed.	Continuous	Detailed	Low to High	Low to High

Source: *Alternative load and load reduction models*. Tetra Tech, 2003.

# Region 5 model

- 1999 - Michigan DEQ published manual
- Field scale
- Nitrogen, phosphorous and sediment



# Region 5 model

- Indiana Department of Environmental Management created spreadsheet
- 2002 – Ohio version for use with 319 program
- 2004 – Tetra Tech updated model to bring it in line with STEPL

# Region 5 model

- Many states use Region 5 model for 319 reporting
- Numbers are submitted to USEPA through GRTS



# Region 5 model functions

- Gully erosion
- Based on volume of soil over time
- Nitrogen (lb/yr), phosphorous (lb/yr) & sediment (T/year)
- Waterways, erosion control structures

# Region 5 model functions

- Feedlot runoff
- Feedlot must be hydraulically connected
- BOD (lb/yr), nitrogen (lb/yr), phosphorous (lb/yr)
- Filter strip, waste storage, settling basin

# Region 5 model functions

- Bank stabilization
- Streams, road ditch, etc.
- Lateral recession rate – narrative descriptions provided
- Nitrogen (lb/yr), phosphorous (lb/yr) & sediment (T/year)

# Region 5 model functions

- Urban runoff
- Apply a variety of BMP's to various land uses
- Up to 12 pollutants

# Ohio spreadsheet

- Currently an adaptation of the Region 5 model
- Undergoing revisions
- Septic system, milkhouse waste, soil P drawdown
- [www.ohiodnr.com/soilandwater/resources.htm](http://www.ohiodnr.com/soilandwater/resources.htm)

# Remember...

- We're working with estimates
- To know your limitations