

# AGWA2

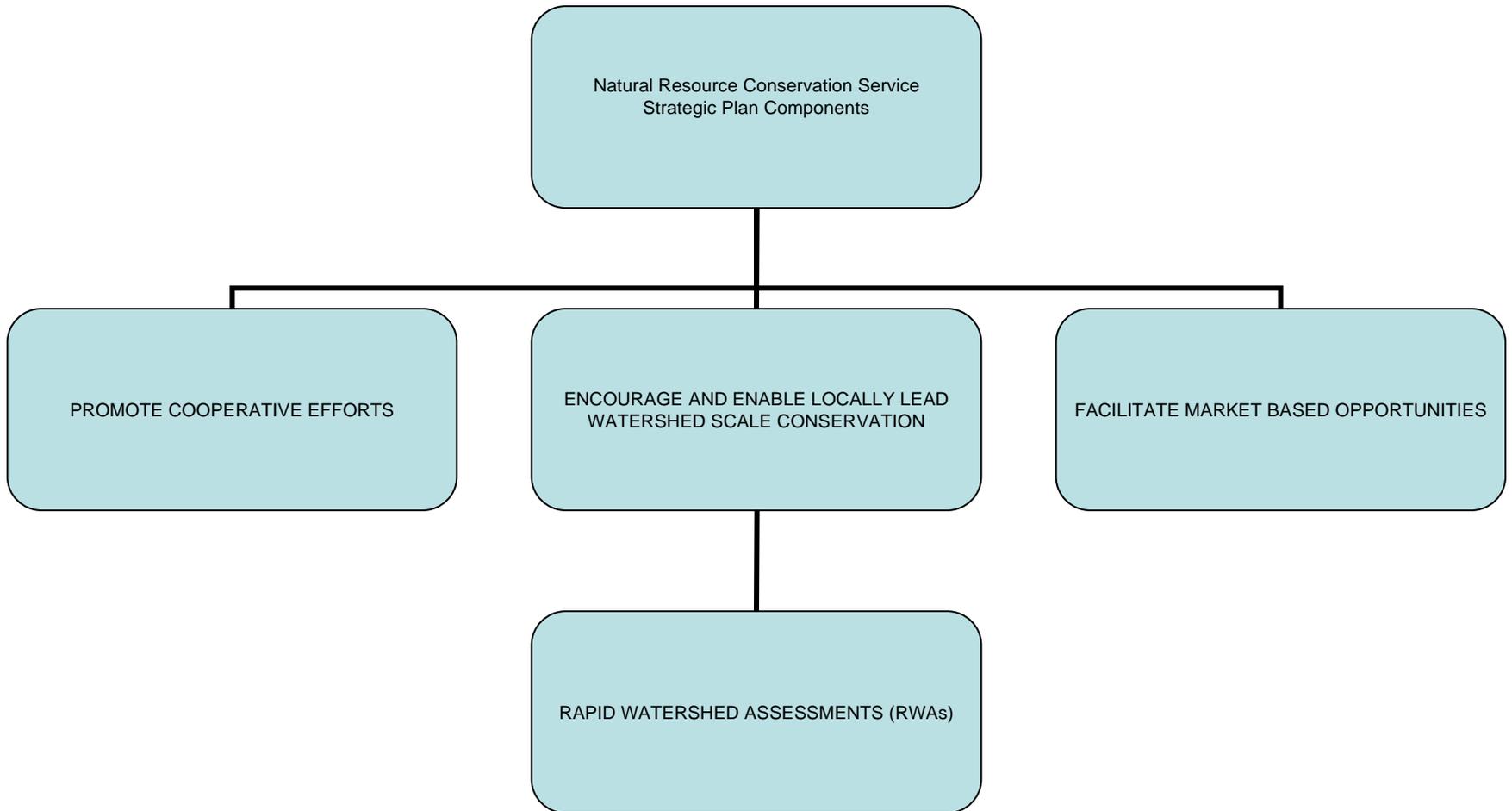
Utility In NRCS

Rapid Watershed Assessments

# Great Thanks and Appreciation

- CO-AUTHORS
  - David C. Goodrich, ARS, Tucson, AZ
  - Darius J. Semmens, USGS, Denver, CO
- Technical Support
  - Janell Leidholt, OCIO, AR
  - Shea Burns, ARS, Tucson, AZ

# THE NEXIS



# RWA PROCESS

1. Select a watershed
  - a. 8 digit Hydrologic Unit or smaller
2. Develop Profile
  - a. Identify Concerns
3. Quantify Needs

# DEVELOP PROFILE

- Acquire available digital data

# Identify Concerns

- Forest Health
- Range Health
- Wildlife Habitat
- **Water Quality**



# NEEDS ASSESSMENT

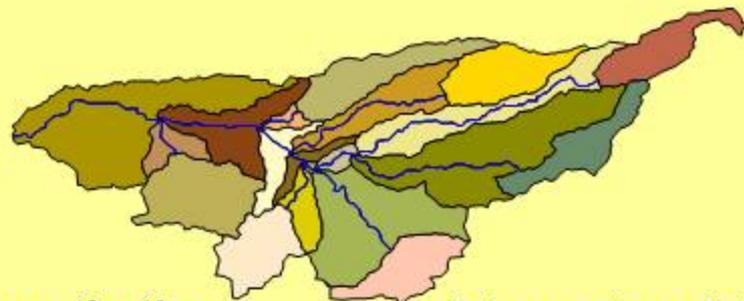
- Profile added value
  - Automated Geospatial Watershed Assessment (AGWA2) Tool Results

# AGWA Conceptual Design: Inputs and Outputs

Watershed Delineation  
using Digital Elevation  
Model (DEM)



Watershed Discretization  
(model elements)



Intersect model  
elements with

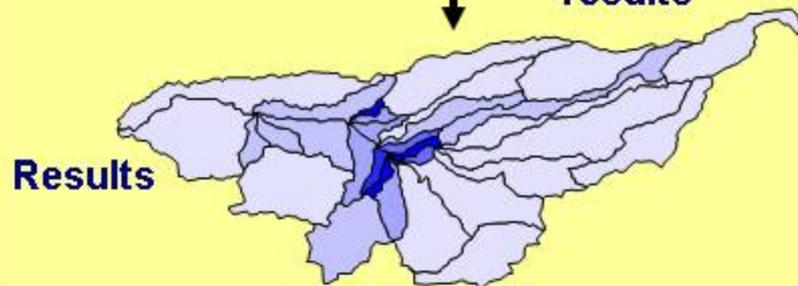


Soils

Land  
Cover

Rain  
(Observed or  
Design Storm)

Run model  
and import  
results



Results

Output results that can be displayed in AGWA

<i>KINEROS</i> Outputs	<i>SWAT</i> Outputs
Channel Infiltration (m <sup>3</sup> /km)	Precipitation (mm)
Plane Infiltration (mm)	ET (mm)
Runoff (mm or m <sup>3</sup> )	Percolation (mm)
Sediment yield (kg)	Channel Disch. (m <sup>3</sup> /day)
Peak flow (m <sup>3</sup> /s or mm/hr)	Transmission loss (mm)
Channel Scour (mm)	Water yield (mm)
Sediment discharge (kg/s)	Sediment yield (t/ha)

# System Characteristics

- Windows XP Professional
- ArcGIS 9.2
- Microsoft Service Pack 3
- .98 GB of RAM
- Pentium 3.4 GHz processor
- 149 GB hard drive

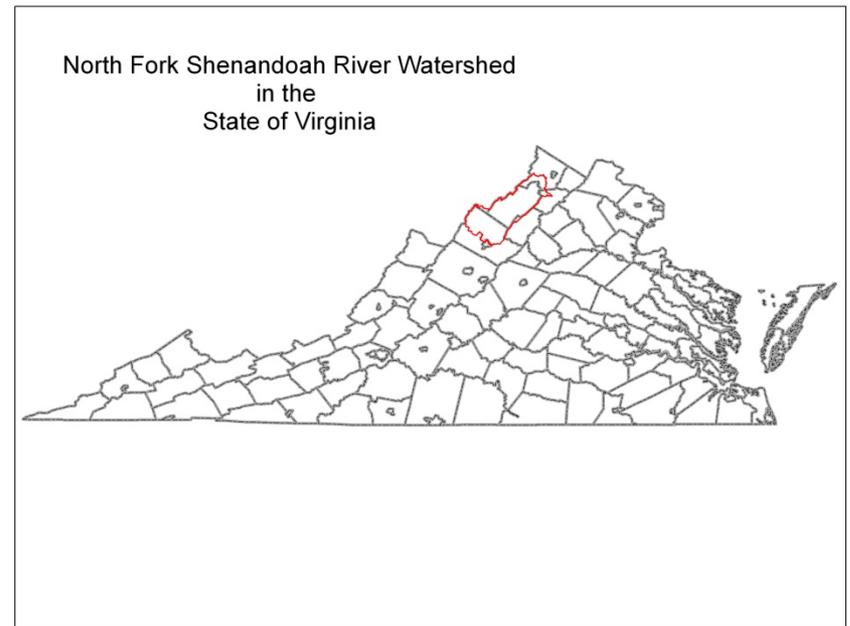
# DATA/SOURCES

- Soils – STATSGO (NRCS)
- Land Cover – NLCD 1992 (USGS)
- DEM 30m – (USGS)
- Precipitation
  - SWAT – (NOAA) weather station data
  - KINEROS – TP40, 10yr/24hr event (ARS)

# PROJECT OBJECTIVES

1. Evaluate Model efficiency
  - Time required (setup & run)
  - Quality of Output
2. Ability to predict relative baseline resource conditions

# STUDY SETTING



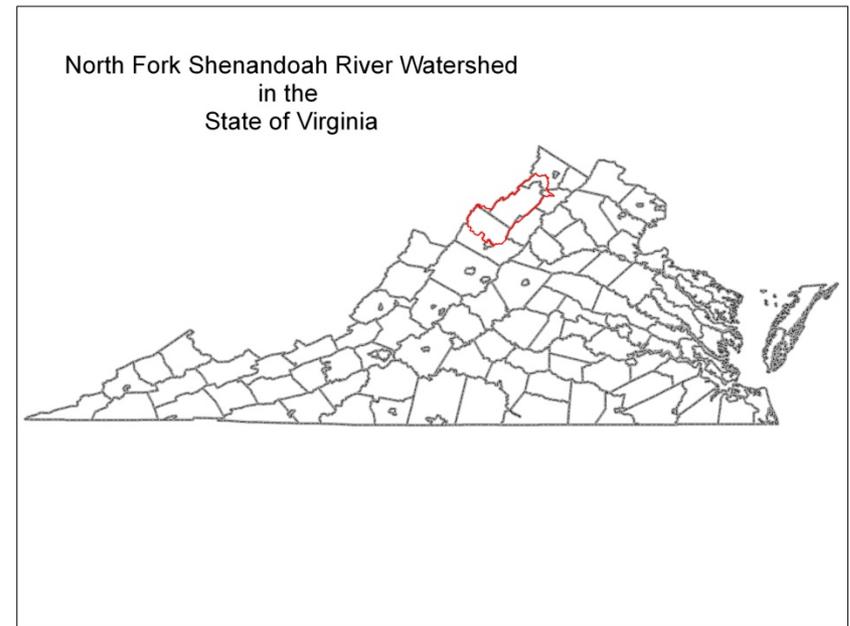
# MISSOURI STUDY SETTING



- Majority >15% cultivated
- Elevation 92-388 M
- Precipitation 40-50"
- Loamy skeletal soils

# Virginia Project Setting

- Land cover forest & pasture
- Elevation 170-465 M
- Precipitation 40-50"
- Soils loamy skeletal



# GENERAL FINDINGS

- GIS knowledge
- Experience with downloading data helpful
- Most time spent in data acquisition

# INSTALLATION FINDINGS

- Minor instructional changes needed

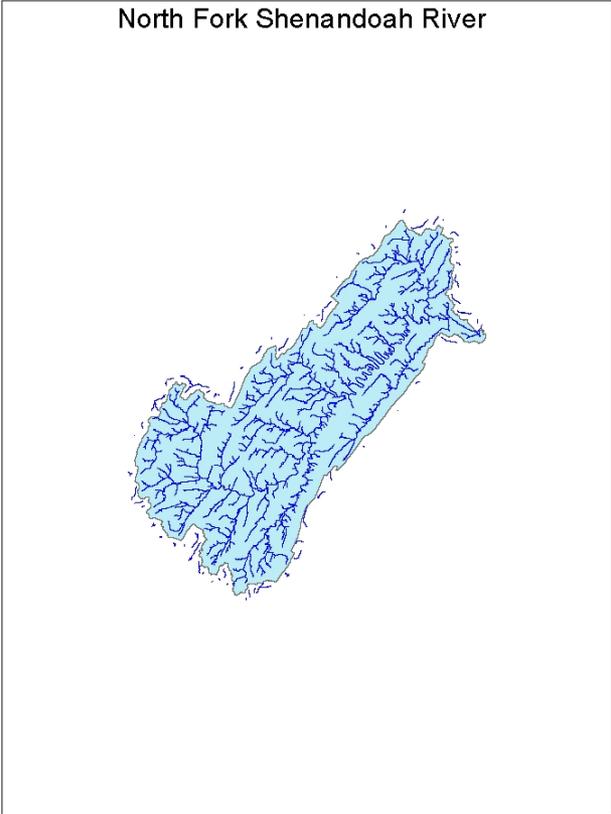
# DATA ACQUISITION FINDINGS

- NLCD – Information Technology Support
- DEM – Straight forward
- NOAA precipitation data – SWAT
- Not all STATSGO data is equal
  - MUID used previously now MUKEY

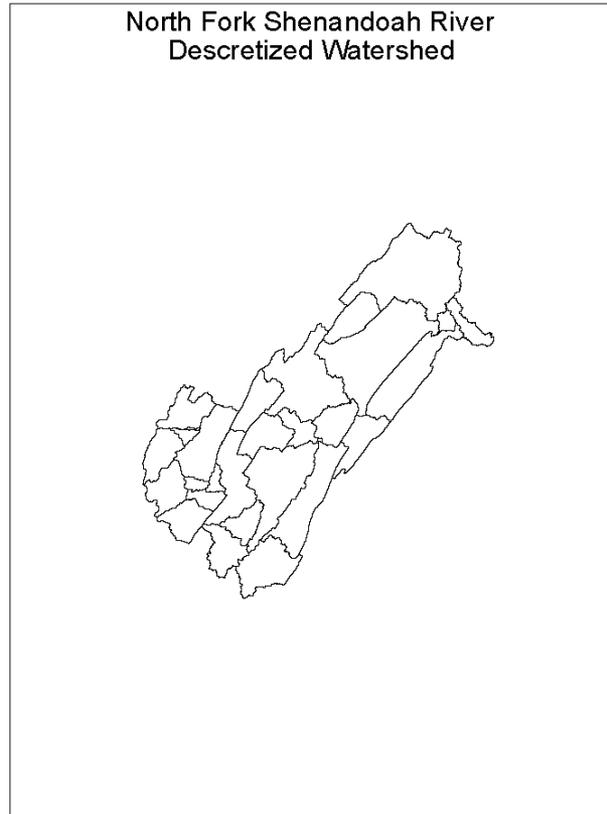
# USE FINDINGS

- Clipping layers
- Selecting an Outlet –(Delineation Process)
- Hard copy output
- Sharing spatial output

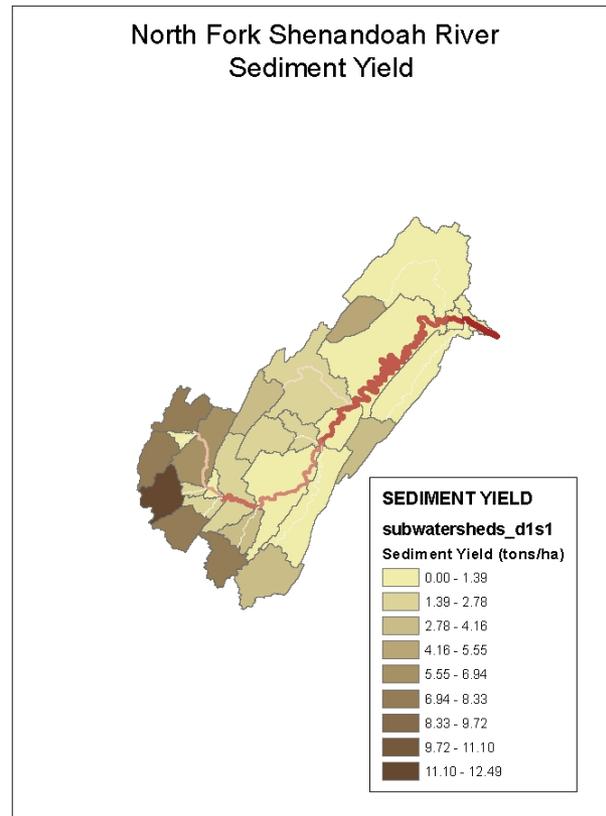
# WATERSHED DELINIATION



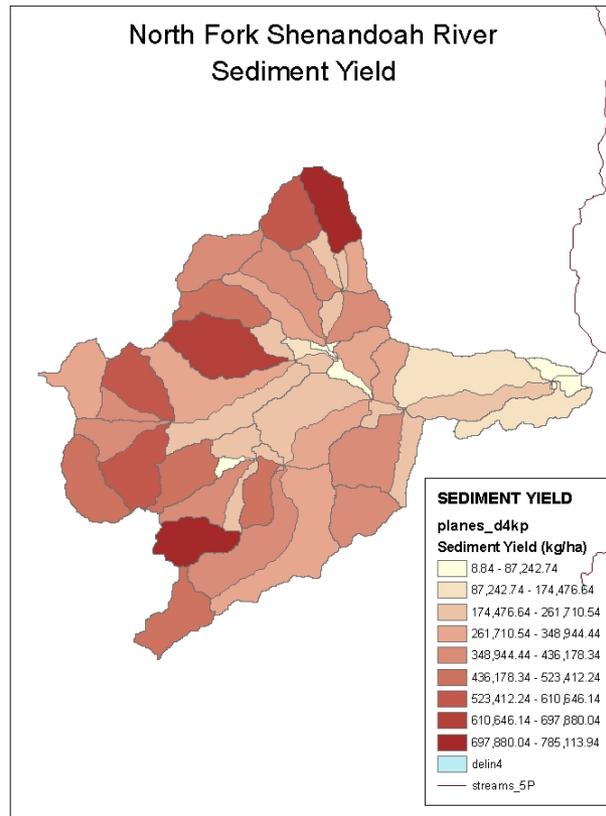
# DESCRETIZED WATERSHED



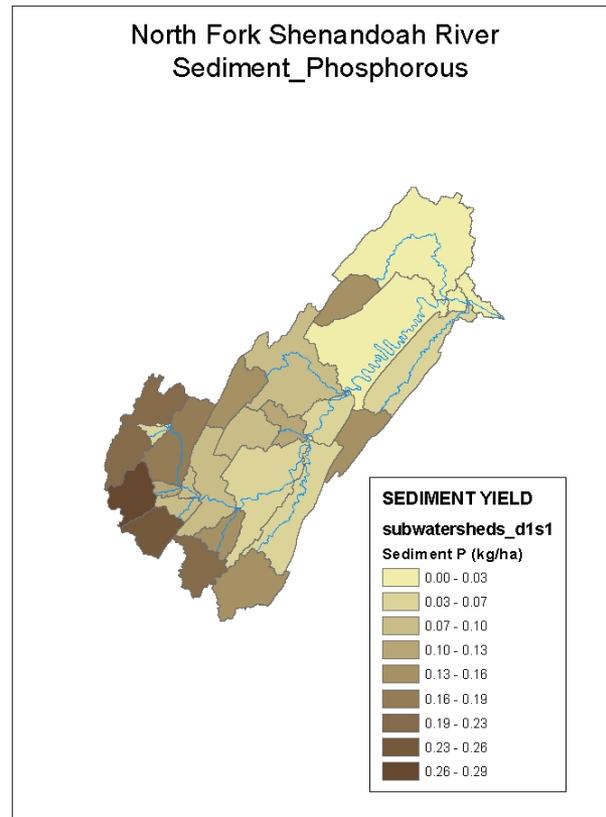
# SWAT SEDIMENT



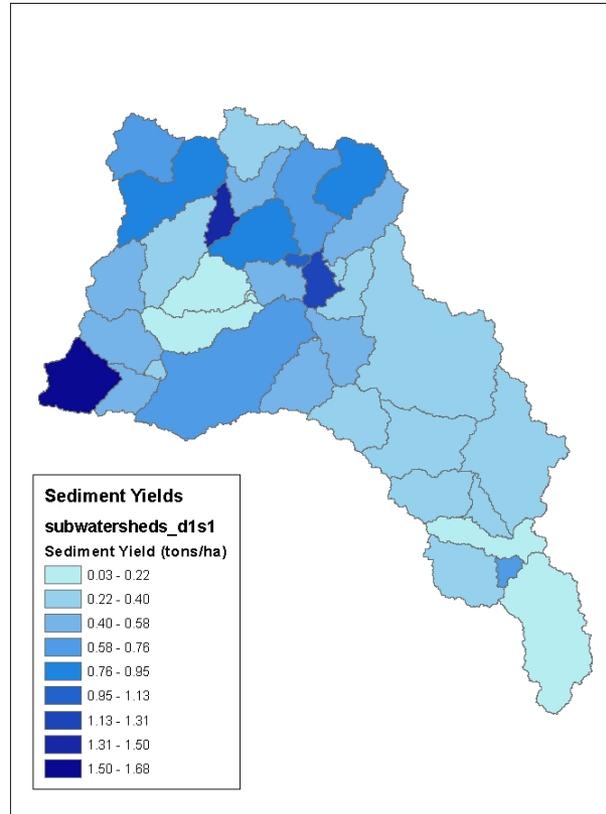
# KINEROS SEDIMENT YIELD



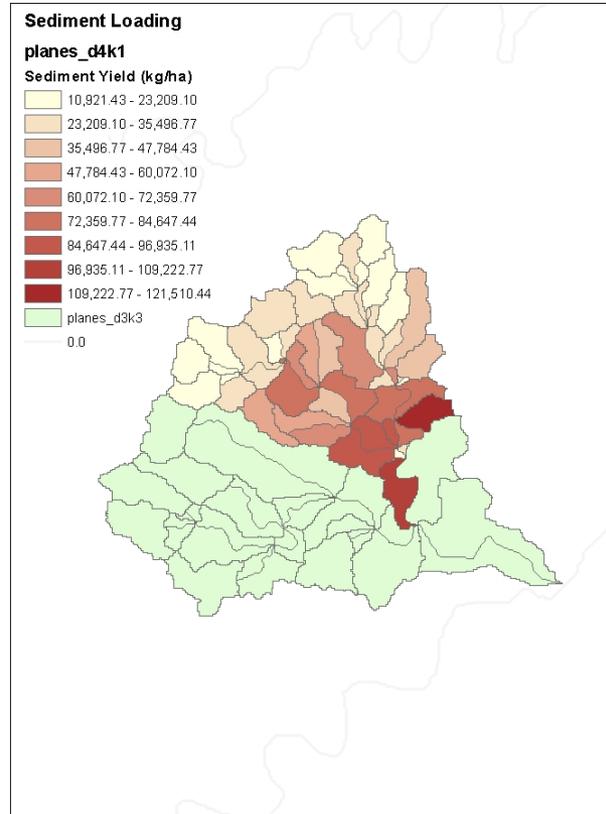
# SWAT SEDIMENT “P”



# MISSOURI WATERSHED



# MISSOURI KINEROS



# CONCLUSIONS

- Installation is not complicated
- Developing input data relatively easy
- Use is not intuitive initially
- Science based output (SWAT/KINEROS)
- Fast Screen display of model results
- Hardcopy output easily produced
- Sharing spatial output relatively easy

# RECOMMENDATIONS

- AGWA2 should be considered by locally led groups trying to identify possible sources of pollutant loading.
- AGWA2 should be incorporated into the tool set currently being used by the NRCS in watershed planning.