

USDA Technology Workshop

Watershed Targeting Program

- Presented by
- **Dr. Jon F. Bartholic, Director**
 - November 3, 2011
 - Washington, DC

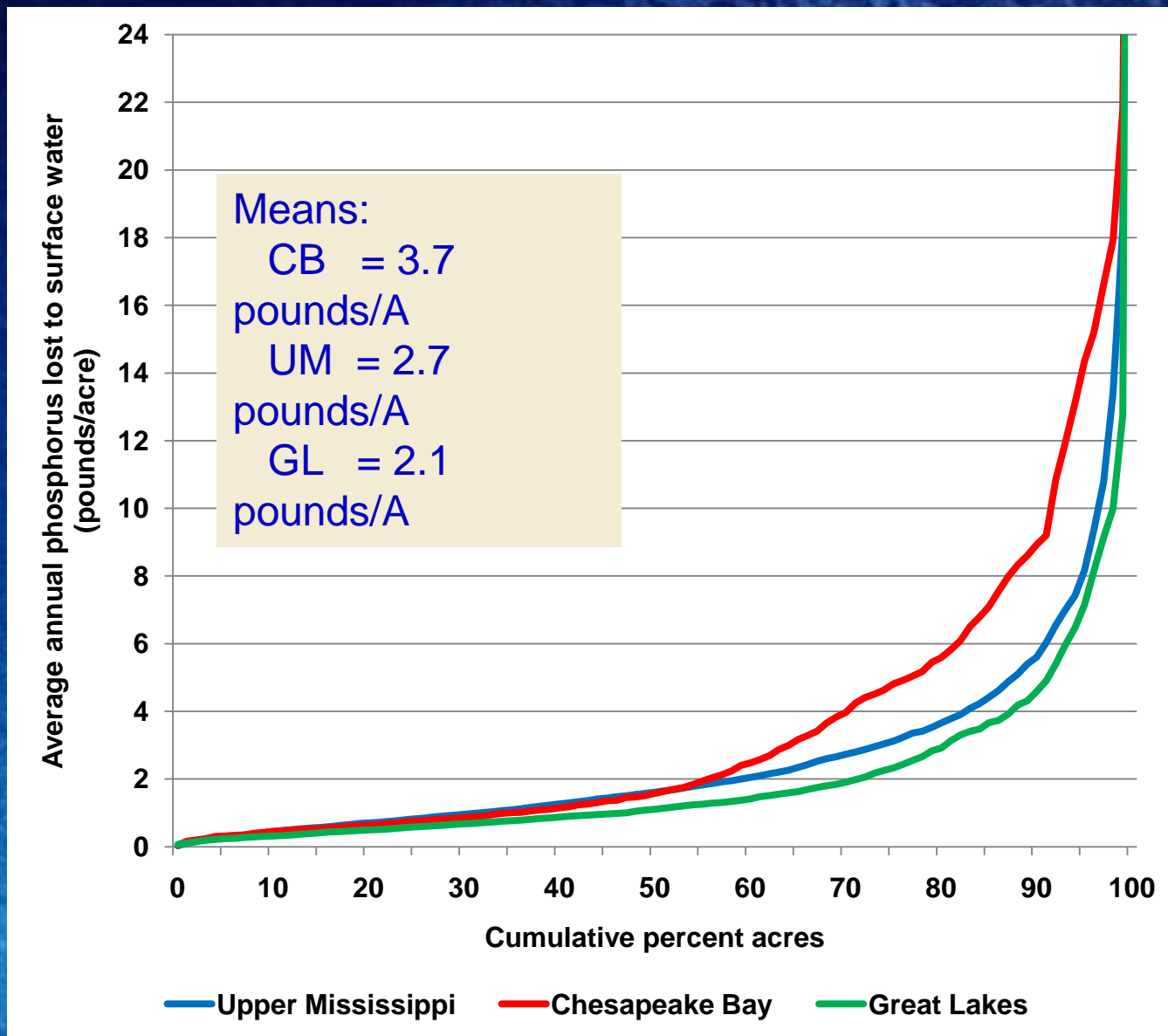


**Productivity and Conservation
Enhancement: Mapping, Assessing
and Tracking**

Losses of Sediment and Nutrients from Fields

Robert Kellogg, Natural Resources Analyst
NRCS Headquarters, Resources Inventory
and Assessment Division

Phosphorus Loss (pounds/acre), Baseline

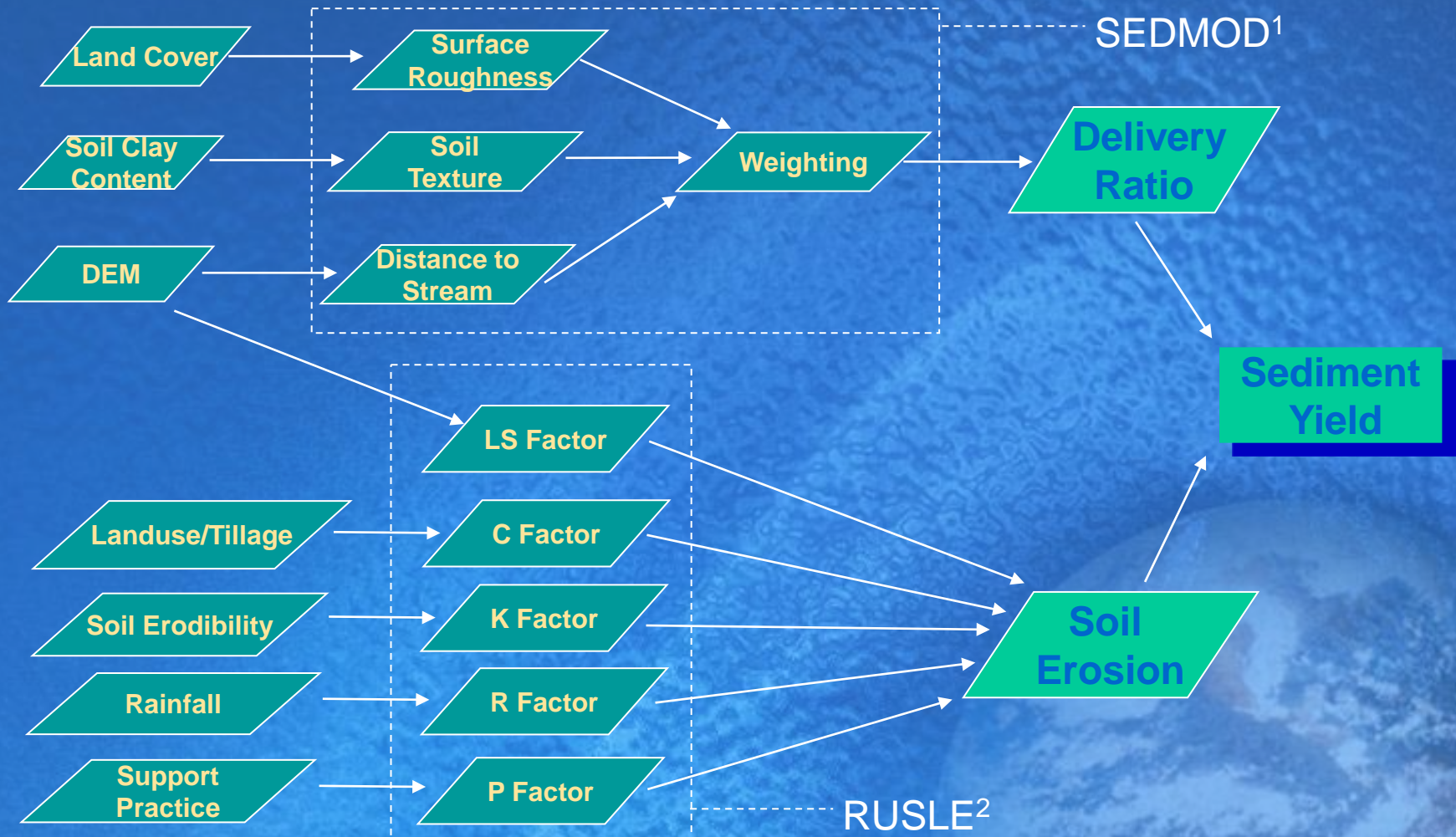


The background of the slide features a view of Earth from space, showing the planet's curvature and various landmasses and clouds. A semi-transparent, blue, textured overlay covers the entire background, giving it a grainy, digital appearance. The text is centered and rendered in a bold, white, serif font with a subtle drop shadow.

**High Impact Targeting Decision
Support System for BMPs to Most
Effectively Reduce NPS Pollution**

- HIT combines an erosion model and a sediment delivery model (SEDMOD - Spatially Explicit Delivery Model) to calculate annual sediment loading (correlated with N and P loads) to streams.

HIT Model



1. Fraser, R. *SEDMOD: A GIS-based Delivery Model for Diffuse Sources Pollutants* (doctoral dissertation). Yale University. May 1999.

2. Renard, K.; Foster, G.; Weesies, G.; McCool, D.; Yoder, D. *Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation (RUSLE)*. USDA, Agriculture Handbook Number 703. 1996.

New Basin Wide System



The DSS – www.iwr.msu.edu/hit2

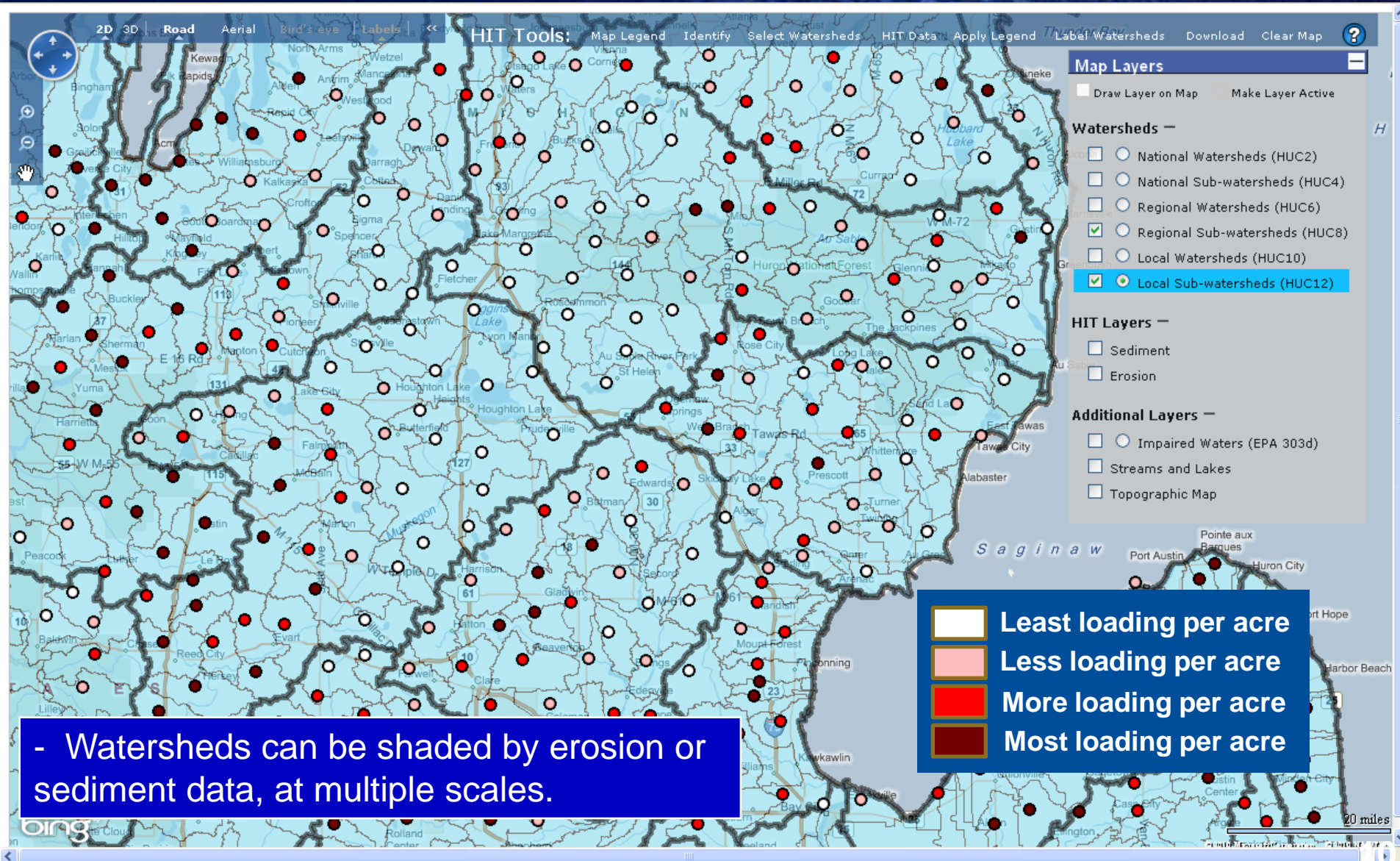
The screenshot displays the HIT2 web application interface. The main map shows the Great Lakes basin with various watersheds highlighted in yellow. Three specific locations are circled in yellow: a point in the Upland region near Duluth, MN; the city of Wausau, WI; and the city of Auburn, NY. The interface includes several tool windows:

- Select Watershed By Address:** A dialog box with the text "Specify an address:" and a text input field containing "100 Arkola Rd, Cotton, MN". A "Find & Select" button is located below the input field.
- Select Watersheds:** A dialog box with the text "On map" and "By watershed name or HUC". It has a radio button selected for "By address" and a text input field containing "What are my watersheds?".
- Map Layers:** A panel on the right side of the map showing a list of layers. The "Regional Sub-watersheds (HUC8)" layer is selected with a checked radio button. Other layers include National Watersheds (HUC2), National Sub-watersheds (HUC4), Regional Watersheds (HUC6), Local Watersheds (HUC10), Local Sub-watersheds (HUC12), Sediment, and Erosion.

The map itself shows the Great Lakes basin with various cities and towns labeled. The map is overlaid with a grid of watersheds. The interface also includes a top navigation bar with options like "2D 3D", "Aerial", "Bird's eye", "Labels", and "HIT Tools". A bottom status bar shows "Internet | Protected Mode: On" and a zoom level of "100%".

- Select watersheds for analysis spatially, by name, HUC, or address.

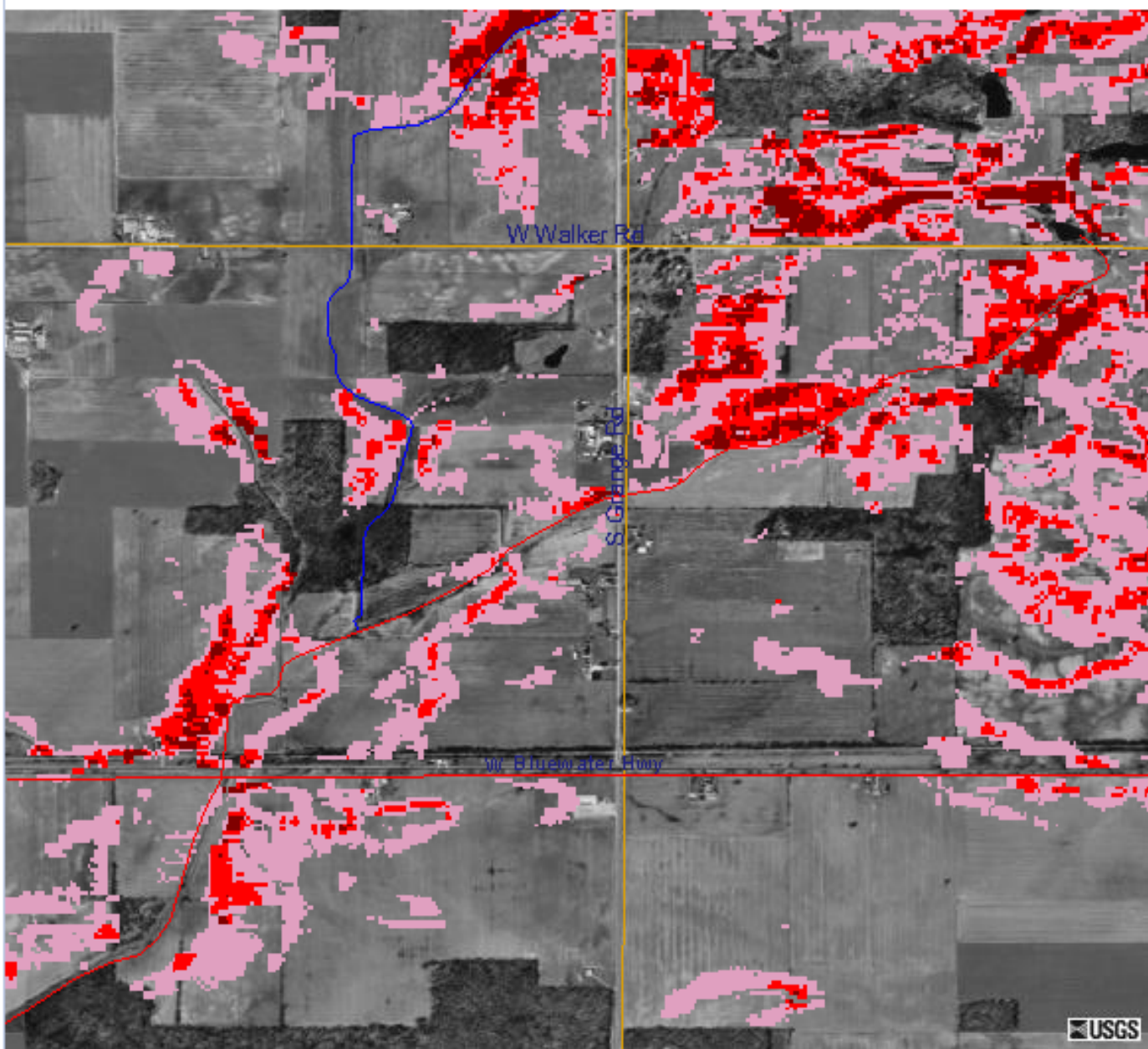
The DSS – www.iwr.msu.edu/hit2



Within Watershed Analysis



Active Layer	Data Layer
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Scale 1 : 24241.9

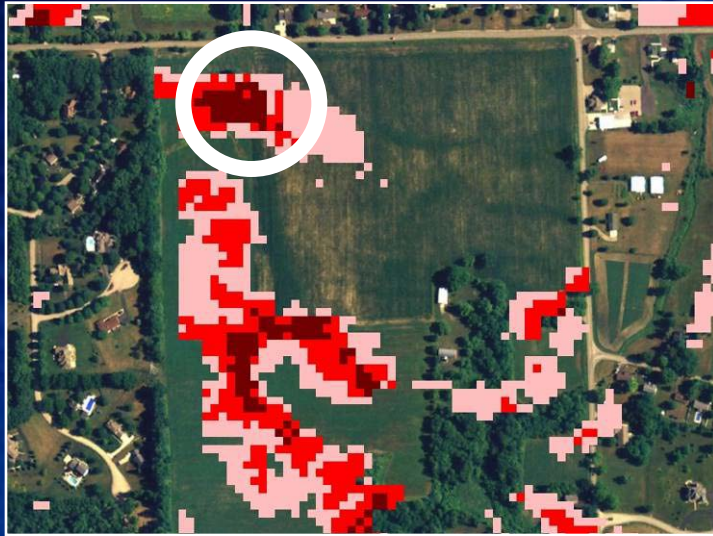
- Photo from TerraS
- Streets
- Best Management
- Permit Compliance
- Industrial Facilities
- Toxic Release Inve
- Water Quality Sta
- Bacteria Stations
- National Sediment Stations
- USGS Gage Statio
- Water Quality Ob: Stations
- WDM Weather D
- Impaired Waters (

Field Level Analysis



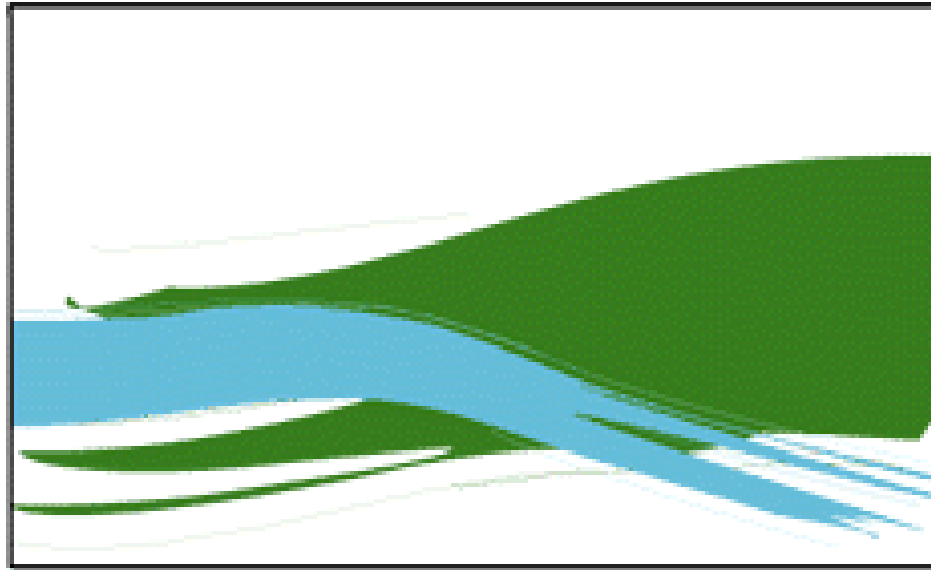
Field Evaluations

Results: 70% of the time HIT maps correctly characterized the landscape.



M·N·R·G

Midwest Natural Resources Group



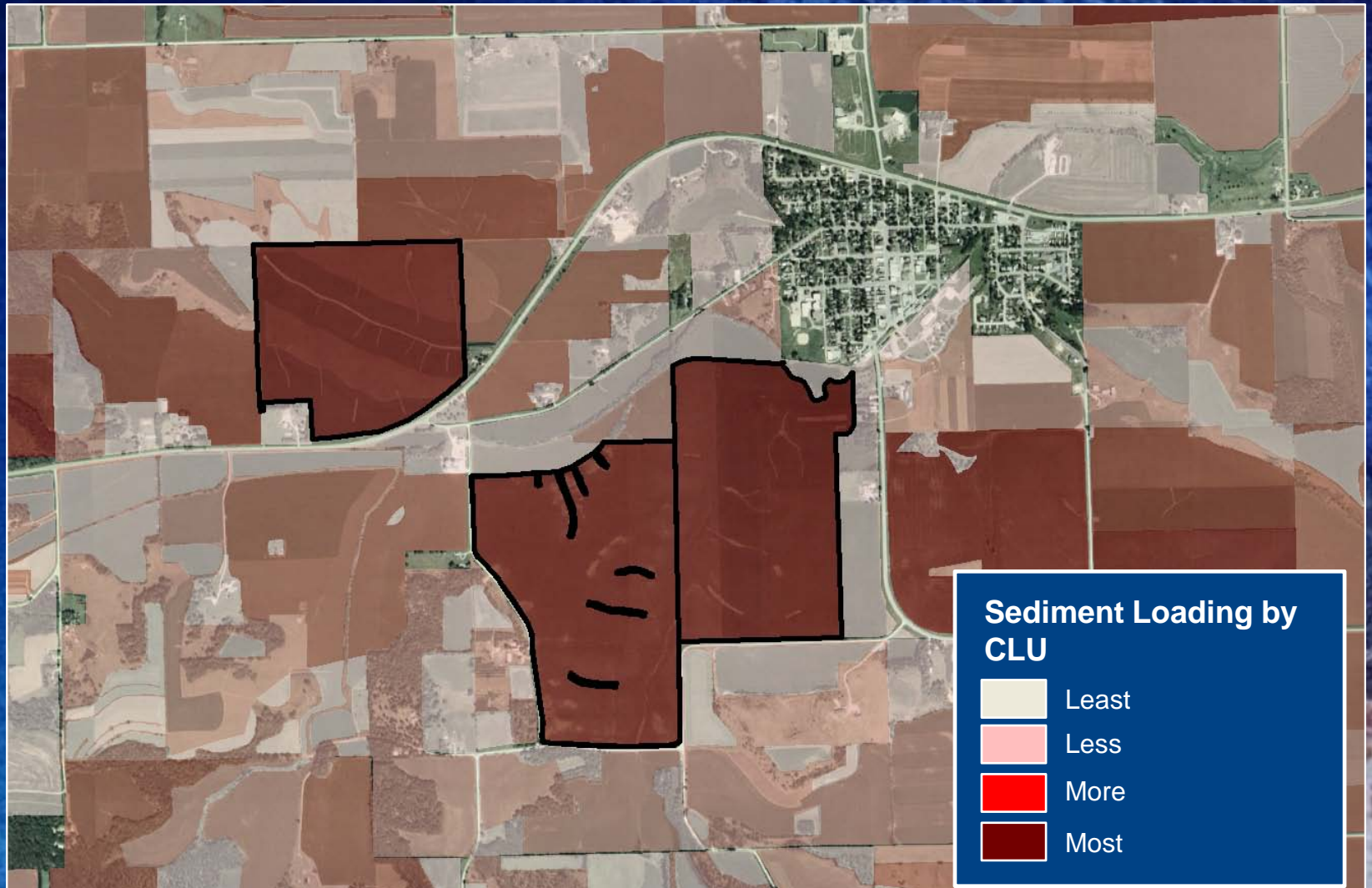
Root River Stewardship Initiative Statement of Commitment

“Working Together for Watershed Sustainability”

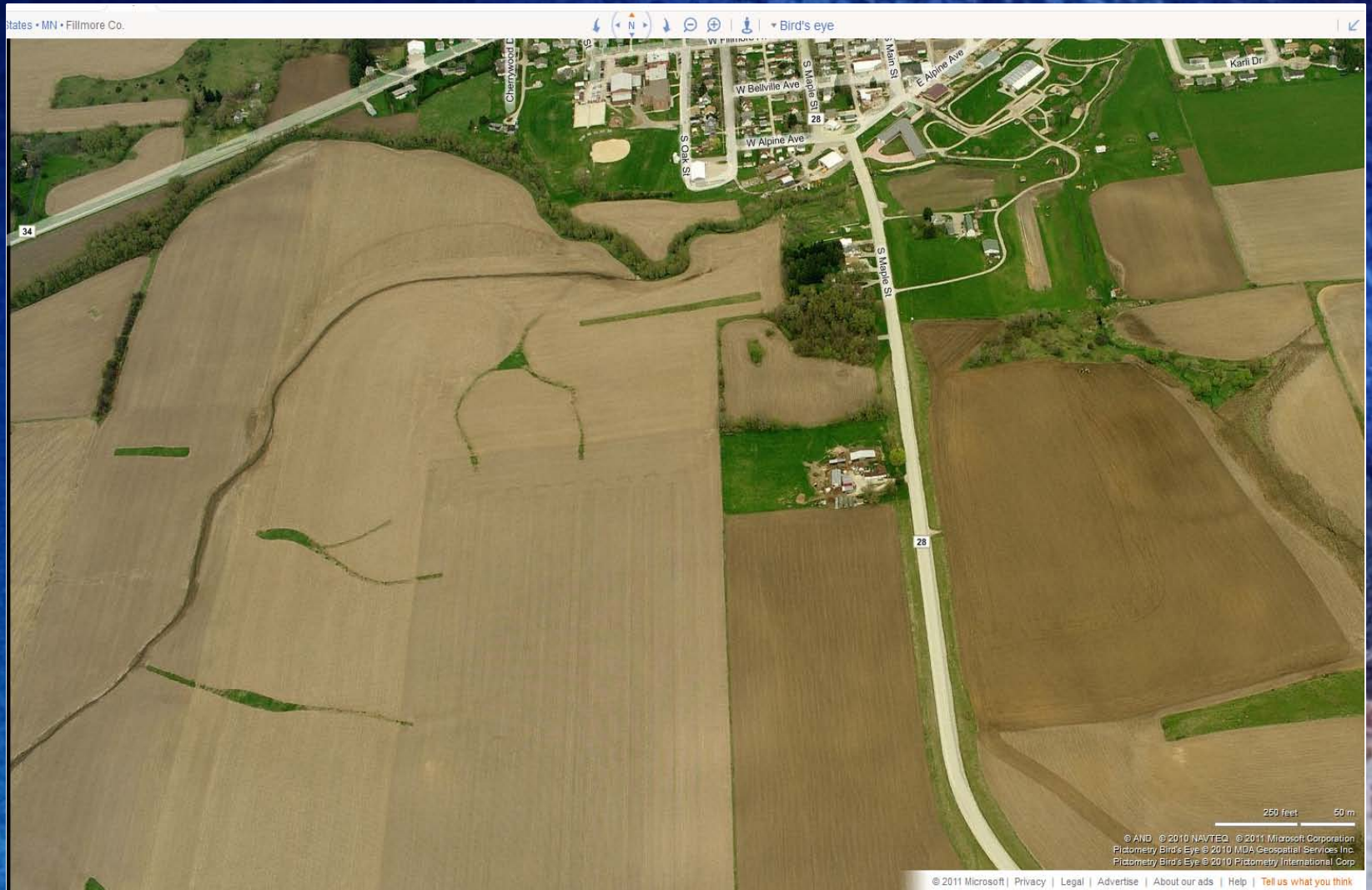
Applications within the Root River Watershed



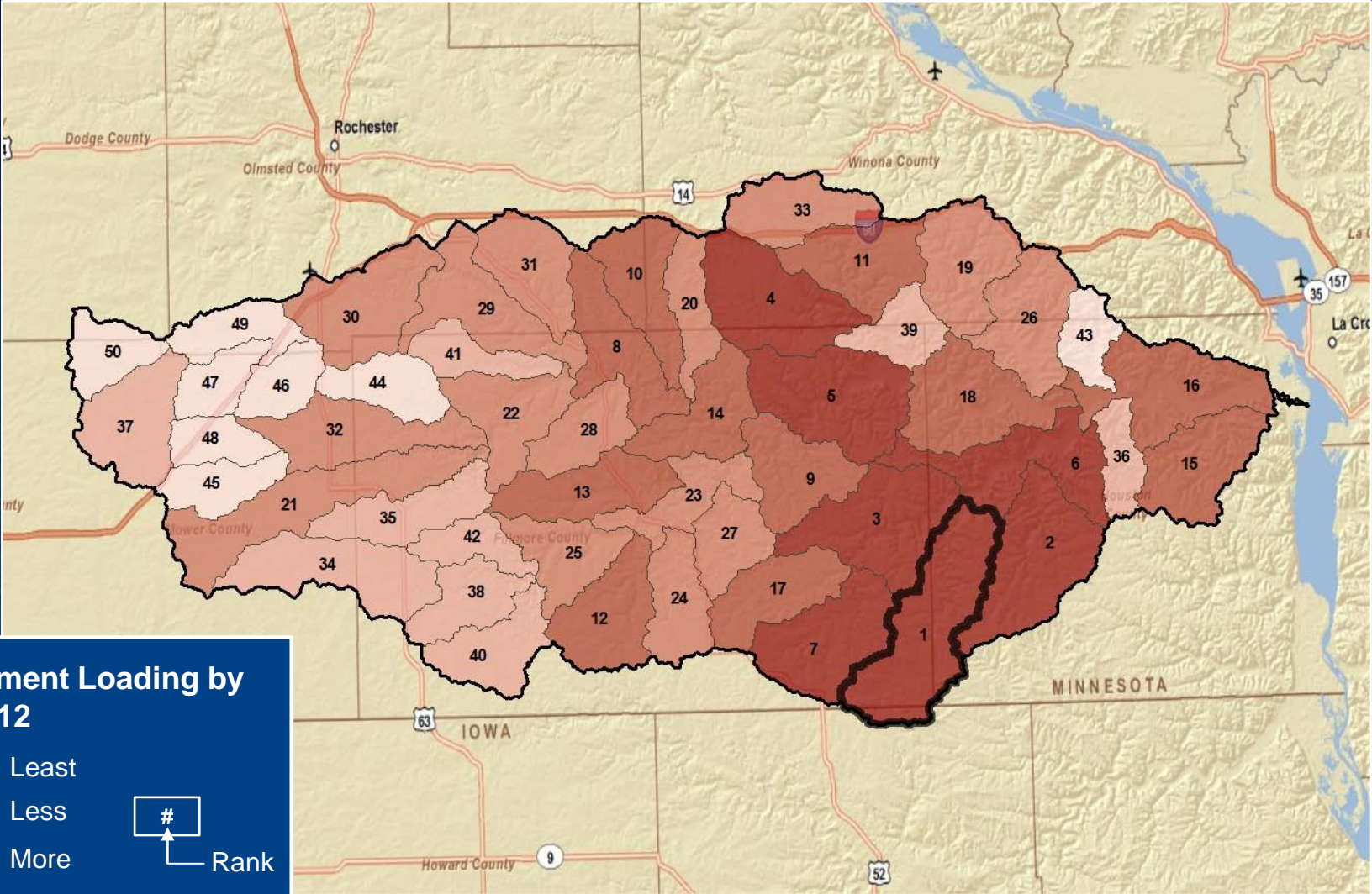
Root-Pike HIT Modeling

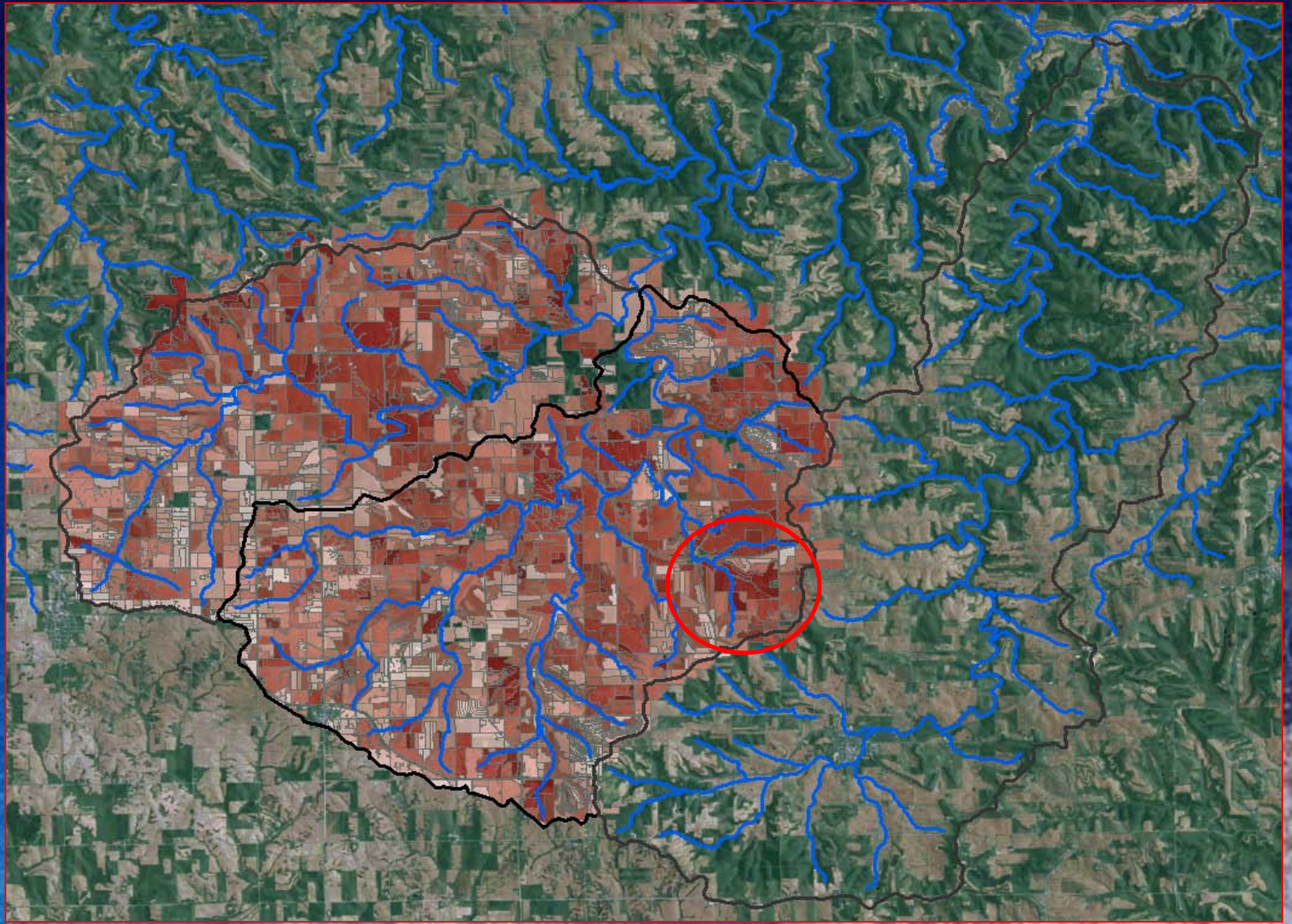


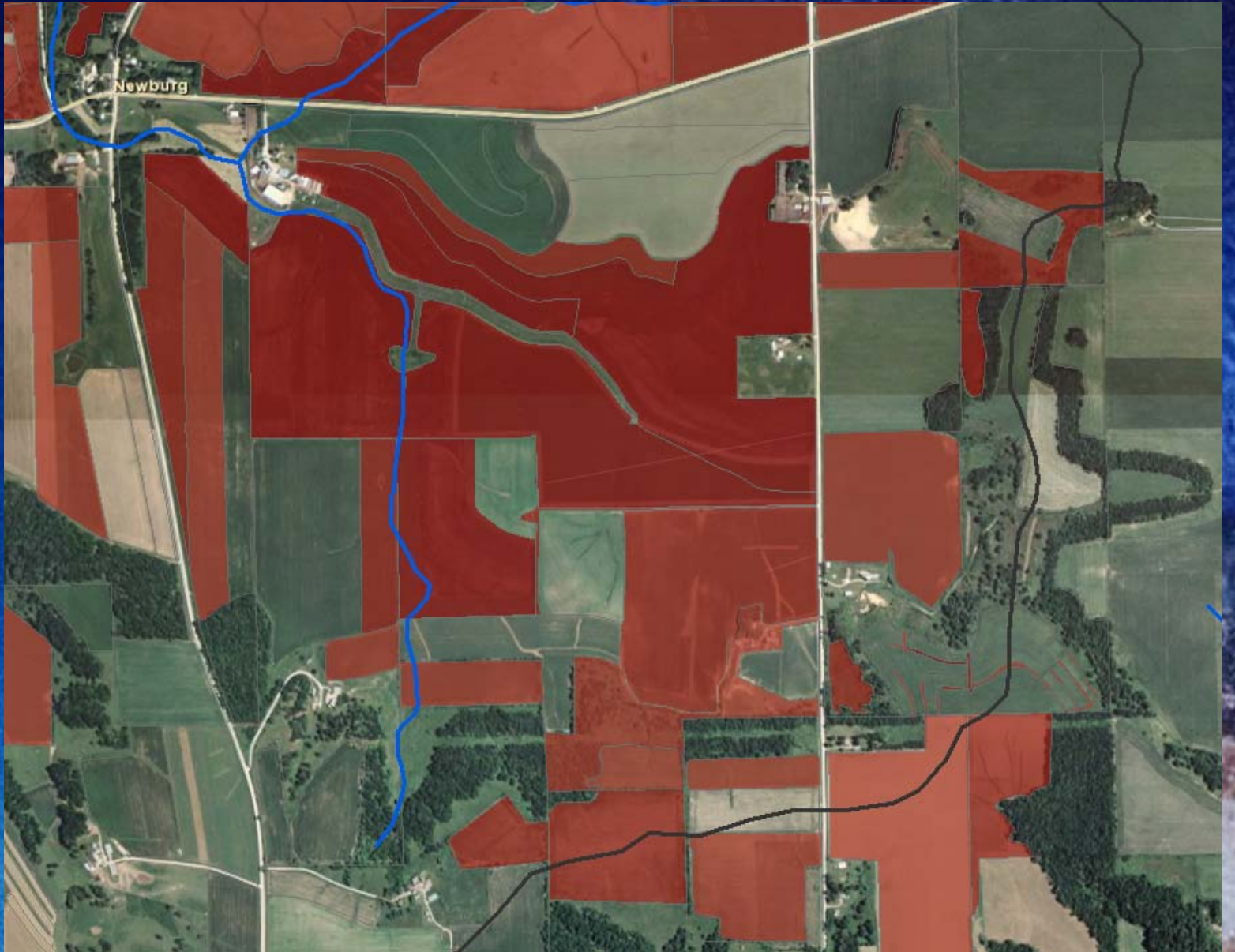
Root-Pike HIT Modeling



Now Let's Go to Sub-Watershed #7

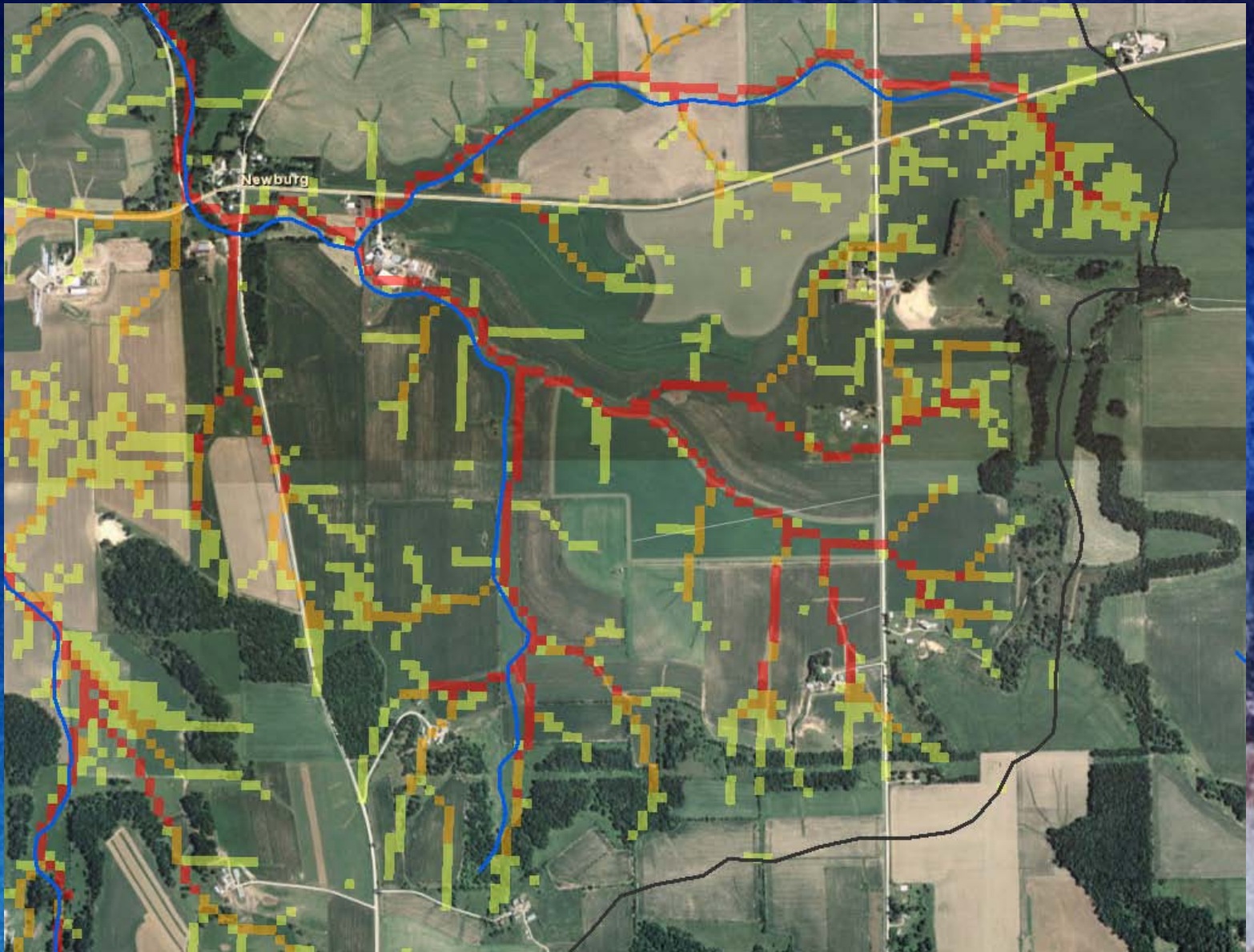




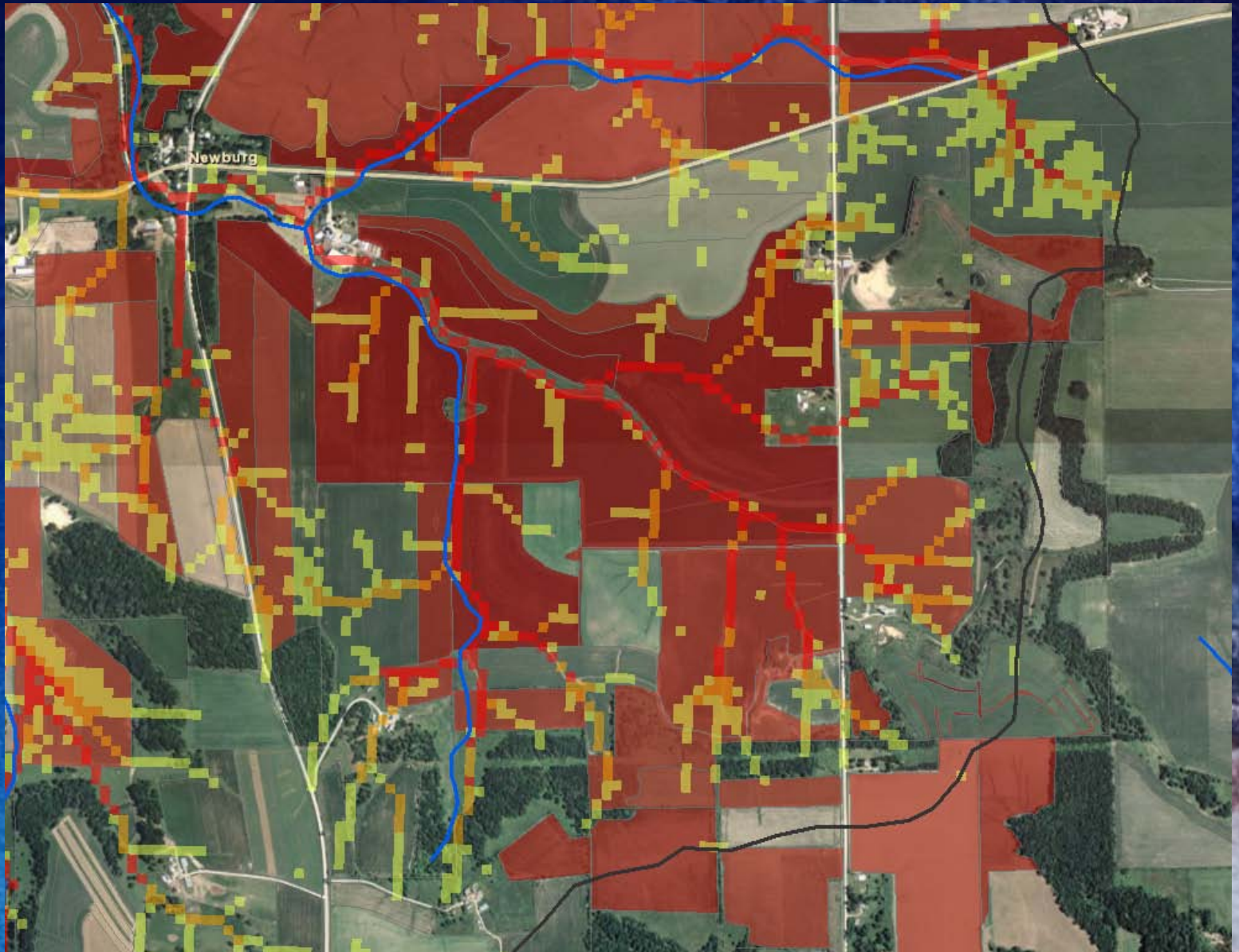




Potential Gully Locations

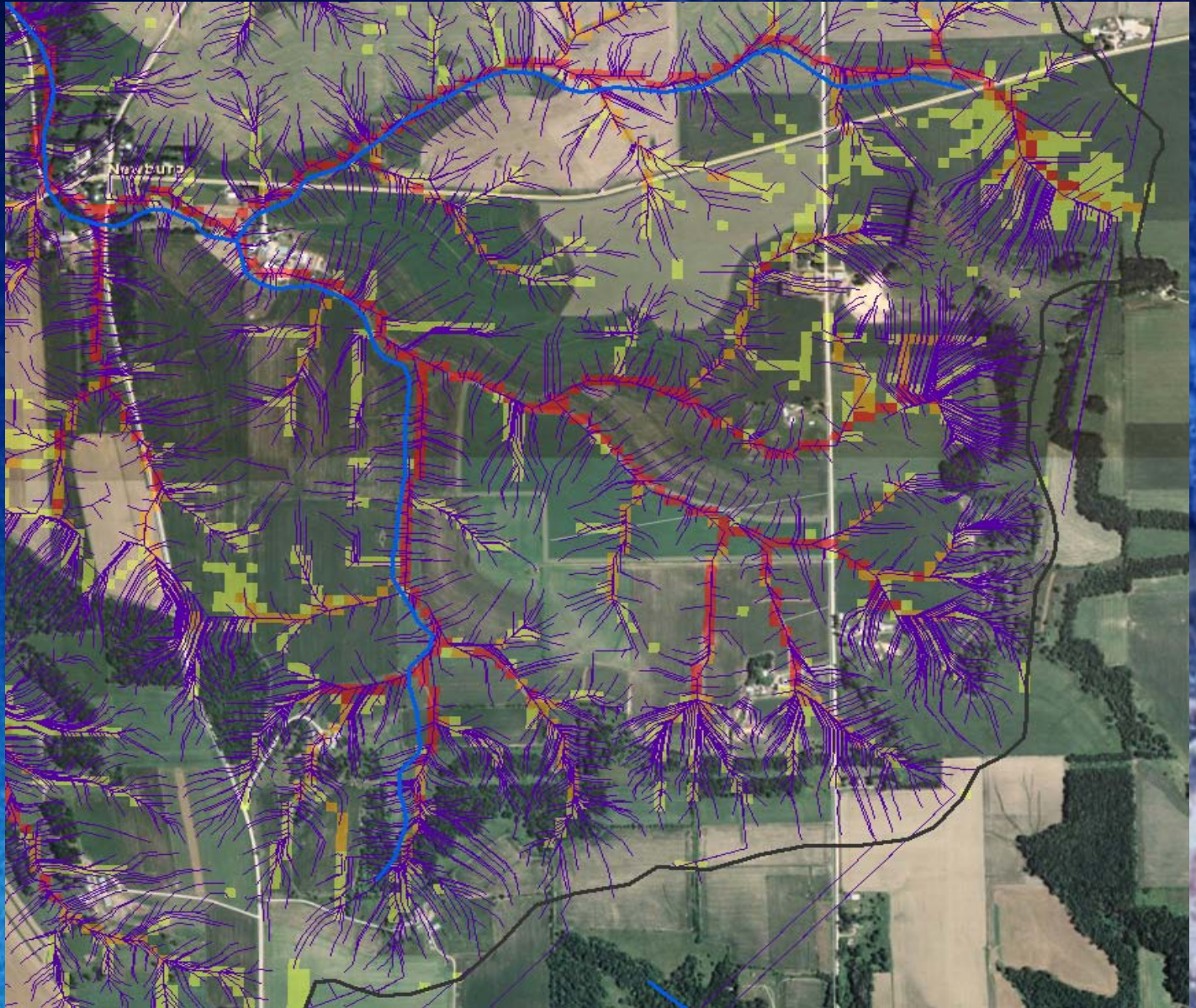


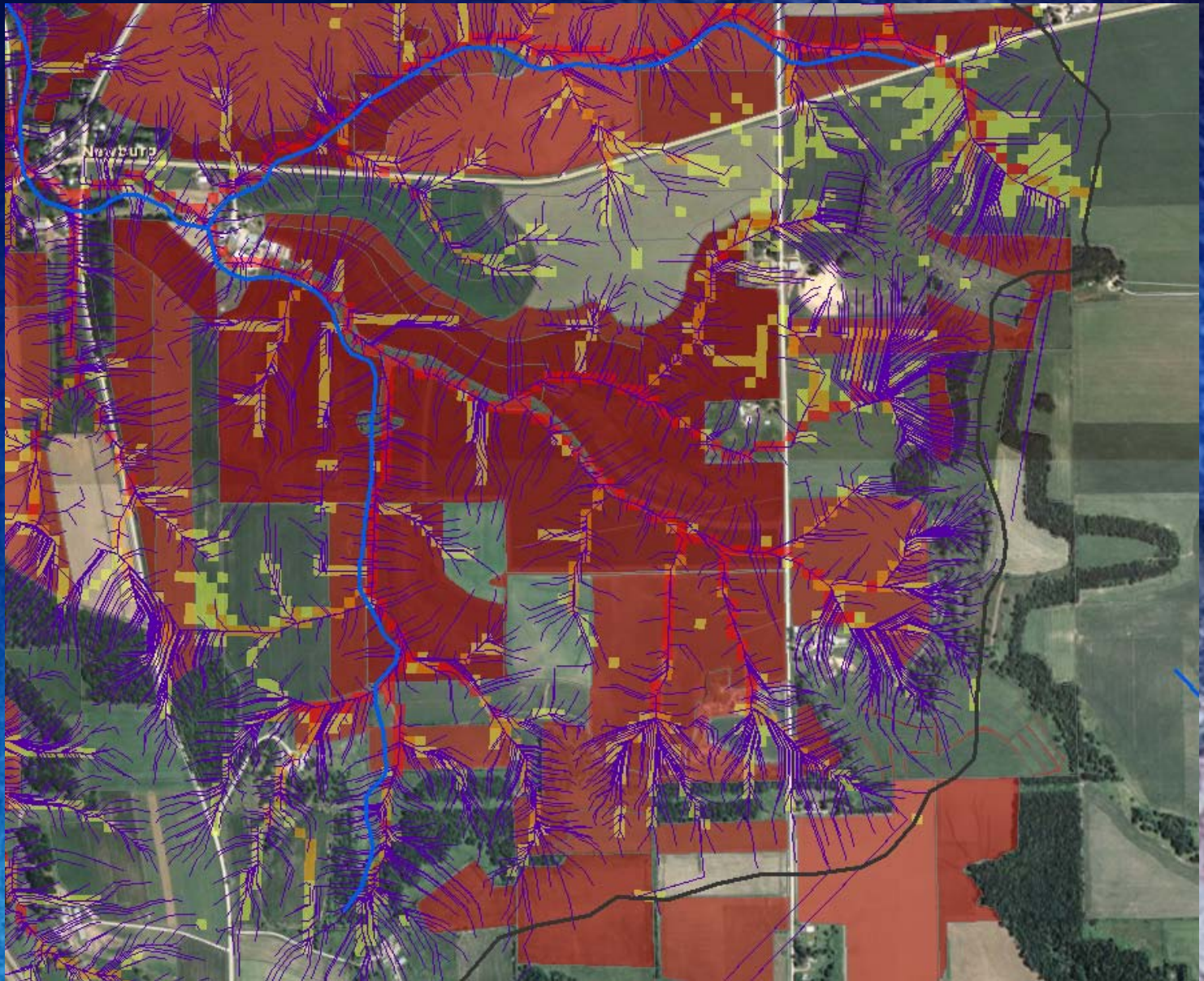
Potential Gully Locations



Flow Paths

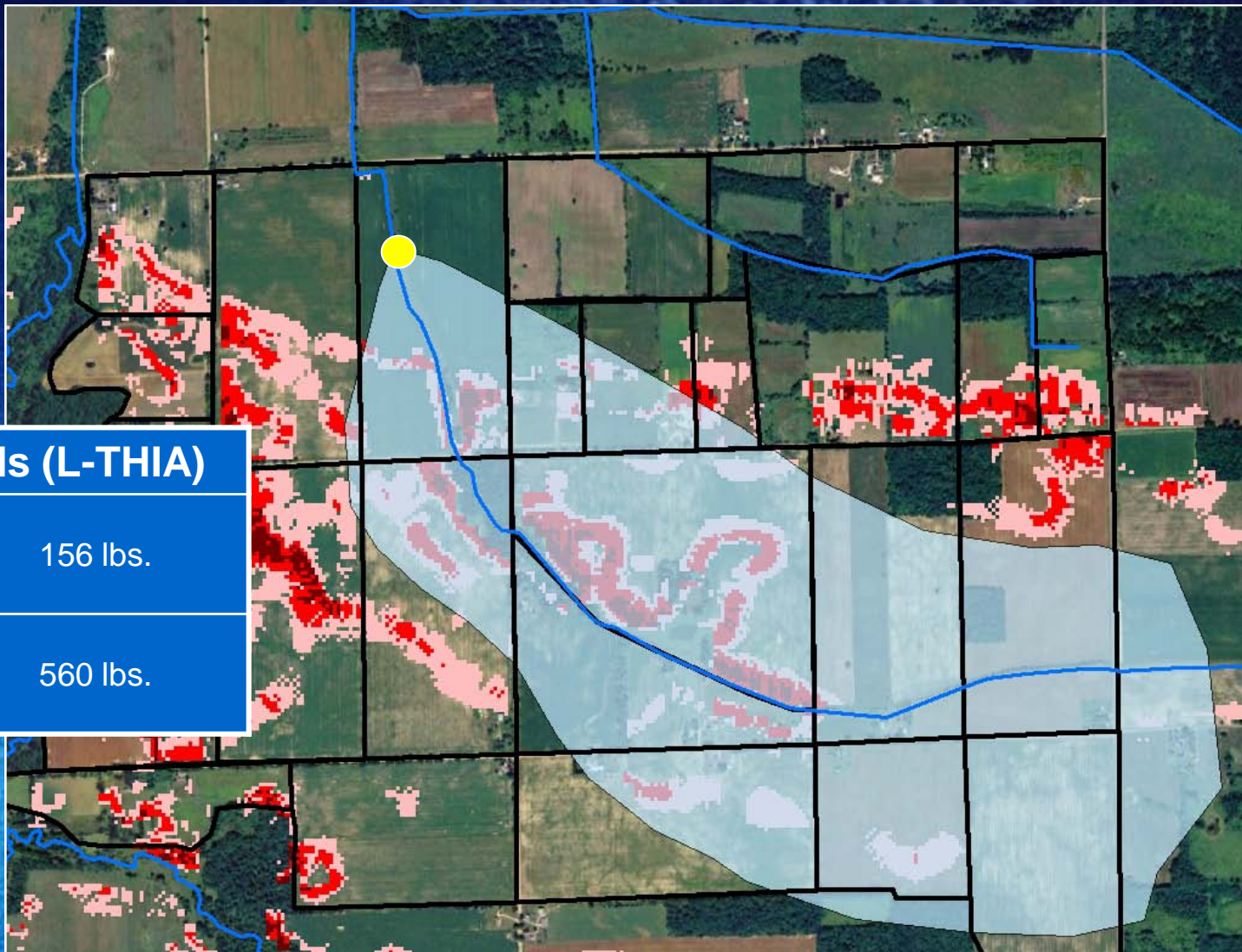
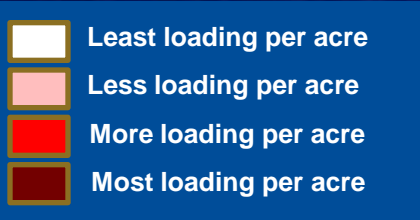








Field Level Prioritization



Catchment Loads (L-THIA)

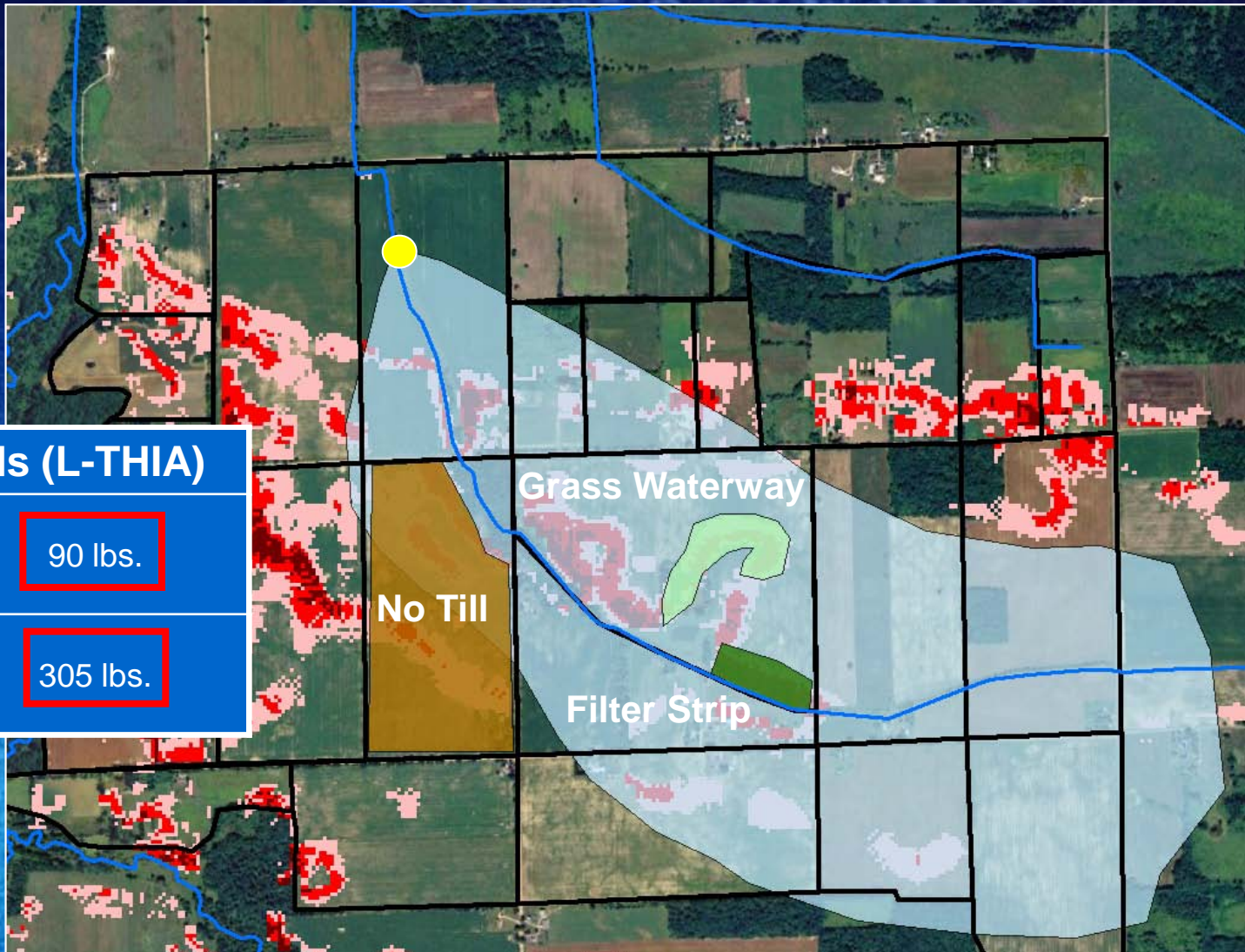
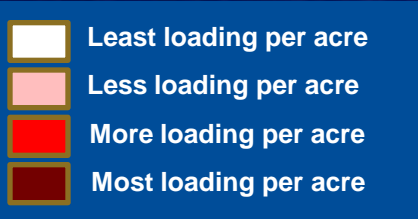
Phosphorus

156 lbs.

Nitrogen

560 lbs.

Field Level Scenarios



Catchment Loads (L-THIA)	
Phosphorus	90 lbs.
Nitrogen	305 lbs.

Questions & Answers



<http://www.iwr.msu.edu>