



EPA Pesticide Program and Water Quality

NWQMC Meeting
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Topics to be Covered

- ▶ Pesticide Program Mission
 - ▶ Pesticide Registration Review
 - water quality issues
 - ▶ Process improvements
 - ▶ Use of monitoring data in pesticide aquatic exposure assessments
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Pesticide Program Mission

- ▶ Complete best possible regulatory decisions to protect public health, non-target species, and the environment
 - ▶ Pesticide Re-evaluation -- Ensure that all registered pesticides continue to meet the statutory standard of no unreasonable adverse effects on human health or the environment
 - ▶ Effectively assess, manage and mitigate risks based on best available science, involving stakeholders and the public
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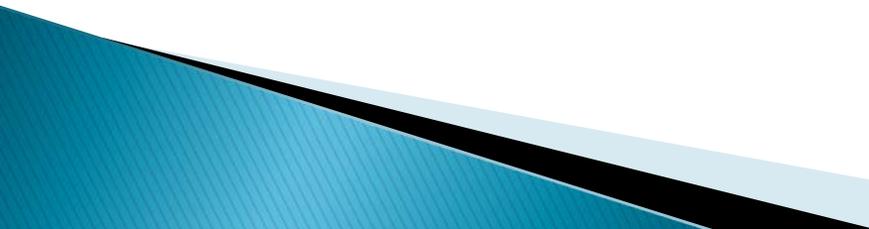
Federal Pesticide Laws – FIFRA

- ▶ Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
 - Registration of new pesticide products and uses
 - Periodic re-evaluation of registered pesticides
 - Risk/benefit balancing
 - Label is the law -- states are the primary enforcer

Registration Review Program

- ▶ Requires periodic review (15-year cycle) of each pesticide's registration; by Oct. 1, 2022
- ▶ Covers all pesticides; currently 1,154 pesticide active ingredients
- ▶ Flexible, transparent, open process includes opportunities for public participation
- ▶ Ensures continuity in protecting human health and the environment

Water Quality Data

- ▶ OPP routinely uses water monitoring data from USGS and USDA/Pesticide Data Program
 - ▶ 2007 public process for submission of state water monitoring data developed at request of states
 - ▶ Opened dockets for pesticide cases associated with CWA impaired waters (e.g., pyrethroids and organophosphates)
 - ▶ Some monitoring data and many comments received regarding impacts of pesticides on ambient water resources and public water treatment facilities
 - ▶ Re-evaluation cycle is opportunity to reassess licensing decisions—any unexpected impacts on water resources?
 - ▶ Objective is to address water quality issues attributed to pesticides, and reduce potential for future issues
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2007 WQ SOP Highlights

- ▶ Options for providing data
 - EPA Office of Water STORET database (let OPP know where it is located)
 - Submission by the state or tribe
- ▶ Minimum data elements
 - Date, ID, location, media sampled, concentration, LOD/LOQ, method, reference
- ▶ Additional information to aid in interpretation
 - Purpose of study, QA/QC, timing of sample, sample method
 - Land use, pesticide usage, environmental conditions

Process Improvements

- ▶ Increased communication and coordination – OPP–OW–EPA Regions (pesticides & water)– States (lead pesticide and water agencies) and Tribes
 - ▶ Targeted outreach to Regions/States/Tribes for pesticide cases with imminent risk assessments and impaired water listings
 - ▶ Clearer guidance on when and where to submit data.
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How Do We Assess Risk?

Hazard Identification

- What are the toxicological effects (endpoints)? Short-, intermediate-, long-term effects?

Dose-Response Assessment

- At what dose level do the effects occur? For example, what's the NOAEL?

Exposure Assessment

- How much pesticide is a person or other nontarget organism being exposed to?

Risk Characterization

- Combine the hazard, dose-response, uncertainty, variability, database limitations, and exposure information to describe the overall magnitude of the risk

Aquatic Exposure Assessment

- Estimate pesticide levels in water
 - What are the risks?
 - Who or what is exposed to what, how much, where, how long?

Screen out unlikely concerns

Account for variability in

- Location (water source, pesticide use, environmental factors)
- Time (daily, seasonal, yearly)

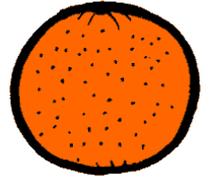


Where Do Monitoring Data Fit In?

- ▶ How monitoring data are used depends upon the nature of the data
 - Variety of sources
 - Data varies tremendously in quality
- ▶ Context information helps us interpret monitoring results
- ▶ Monitoring and modeling generally complement each other, strengthen assessment
- ▶ Monitoring generally more useful as a lower bound or for longer-term exposure estimates



Monitoring vs. Modeling



- ▶ Different sampling frequencies (few days per year vs. daily distributions)
- ▶ Different weather patterns (limited weather variability in samples vs. 30-yr range in weather)
- ▶ Different water bodies (flowing water vs. static)
- ▶ Different use patterns (range in intensity vs. high-use, high-ag)
- ▶ Different purposes (nontargeted vs. targeted screening estimates)

Examples Where State Monitoring Data Impacted Risk Assessments

▶ Carbamate Cumulative

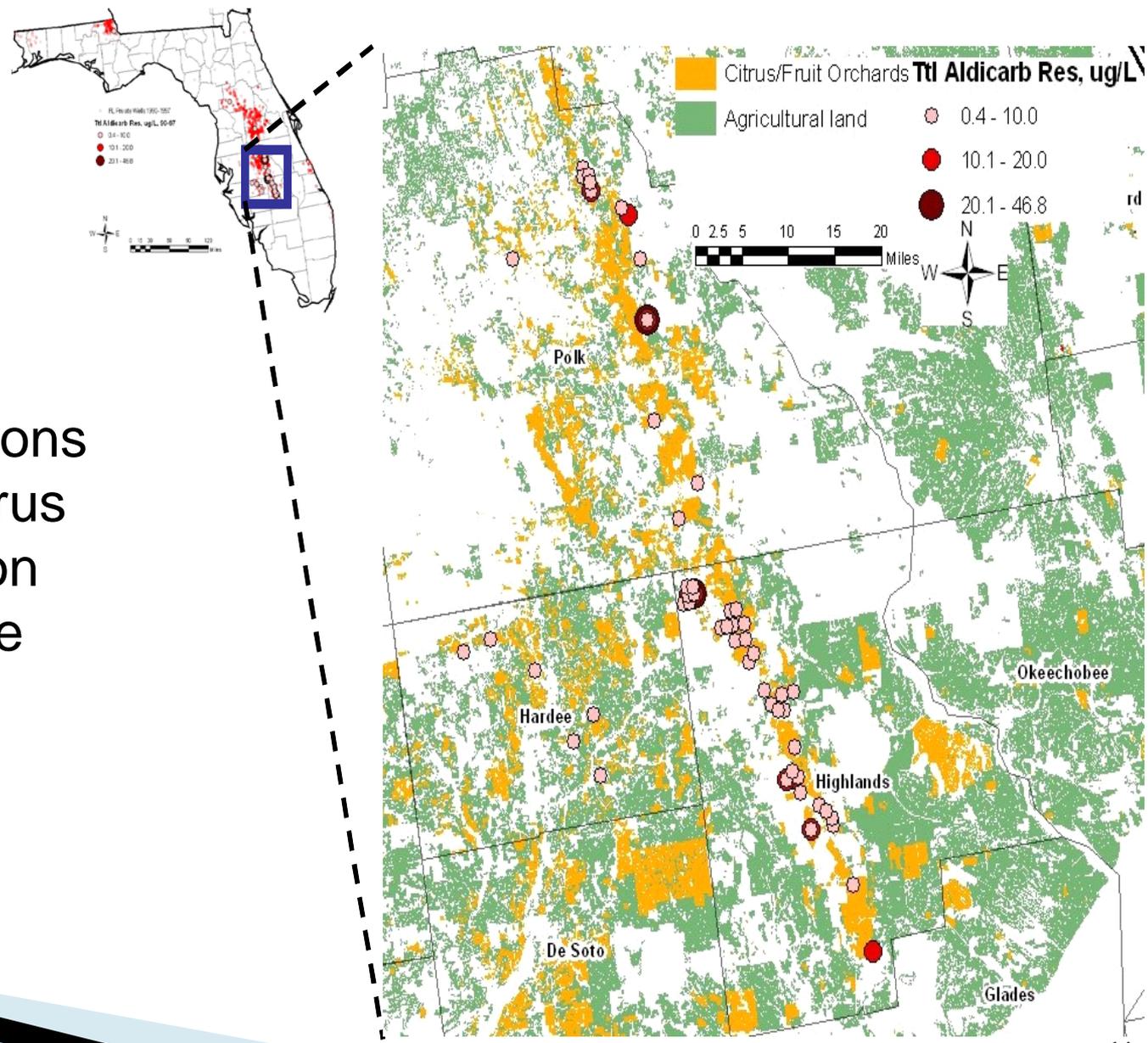
- Aldicarb
- Shallow groundwater in Florida
- State data confirmed soil conditions driving risk
- Led to identification of areas in other states with similar profile

▶ Atrazine

- Intensive targeted monitoring data from registrant
- Evaluation of data led to new idea on runoff driver (i.e., shallow restrictive soil layer)
- Used state data to test hypothesis in areas registrant did not monitor
- Data led to expansion of registrant monitoring that confirmed high exposures

Carbamate cumulative Analysis & characterization

Relationship of aldicarb detections (red/pink) in citrus area (orange) on the central ridge



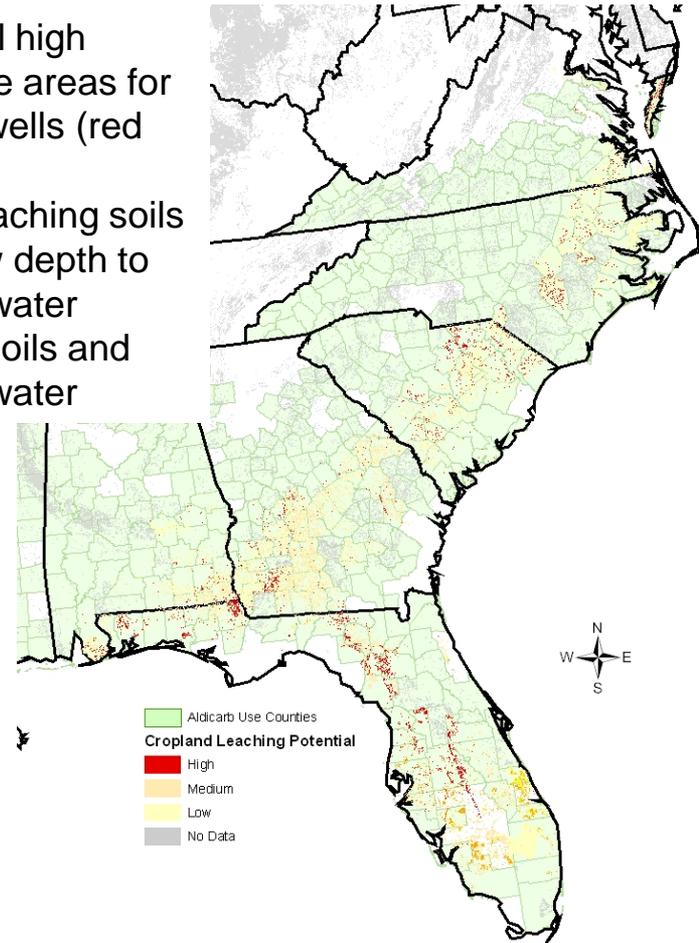
From monitoring to spatial extent

Extrapolating to broader extent

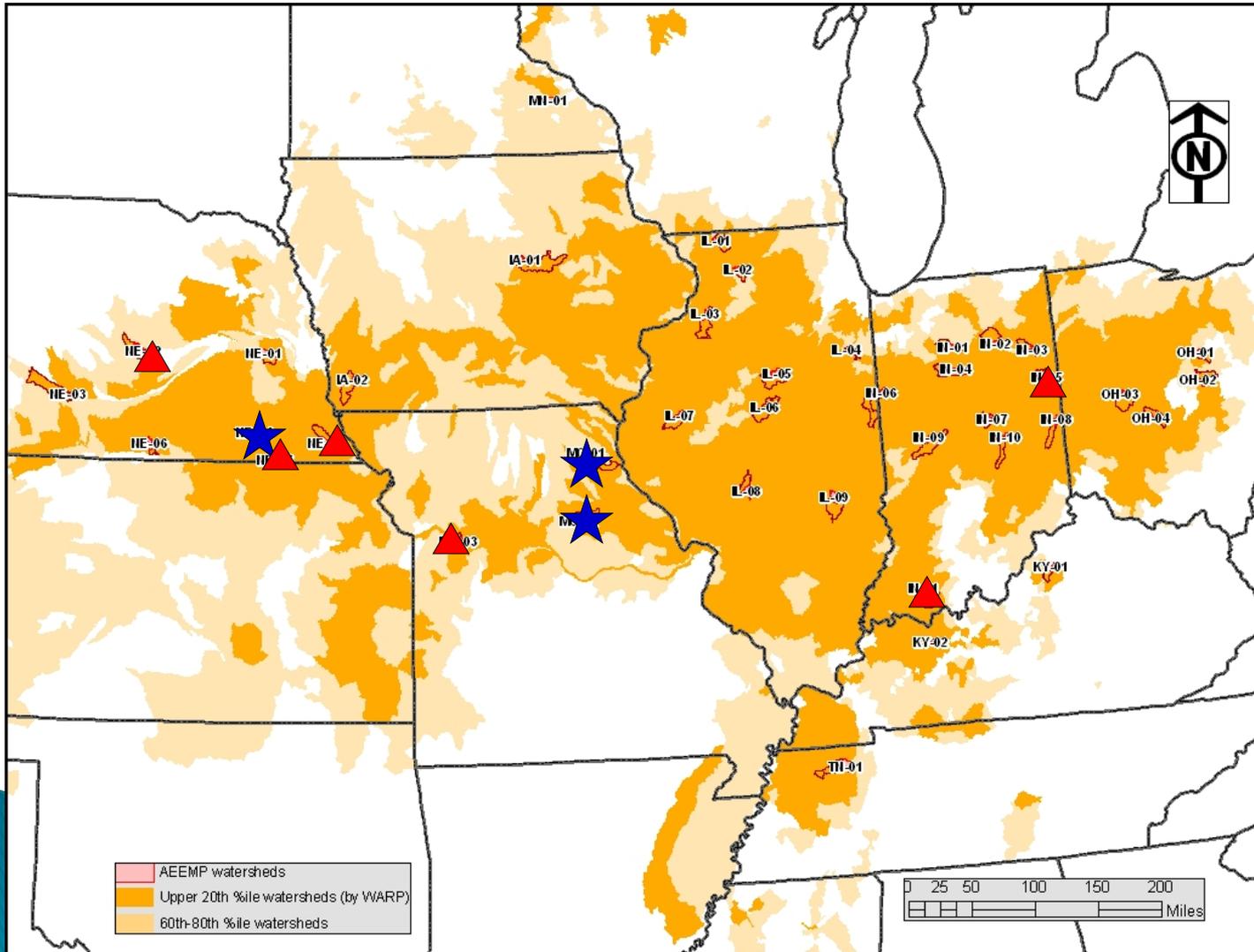
- Lack of monitoring in other use areas
- Linked monitoring to soil and hydrologic characteristics
- Identified similar soil and hydrologic conditions elsewhere
- Limited by available data (soil, hydrology, land cover, monitoring)

Potential high exposure areas for private wells (red areas):

- High leaching soils
- Shallow depth to ground water
- Acidic soils and ground water



Locations of Sites that Exceeded the LOC

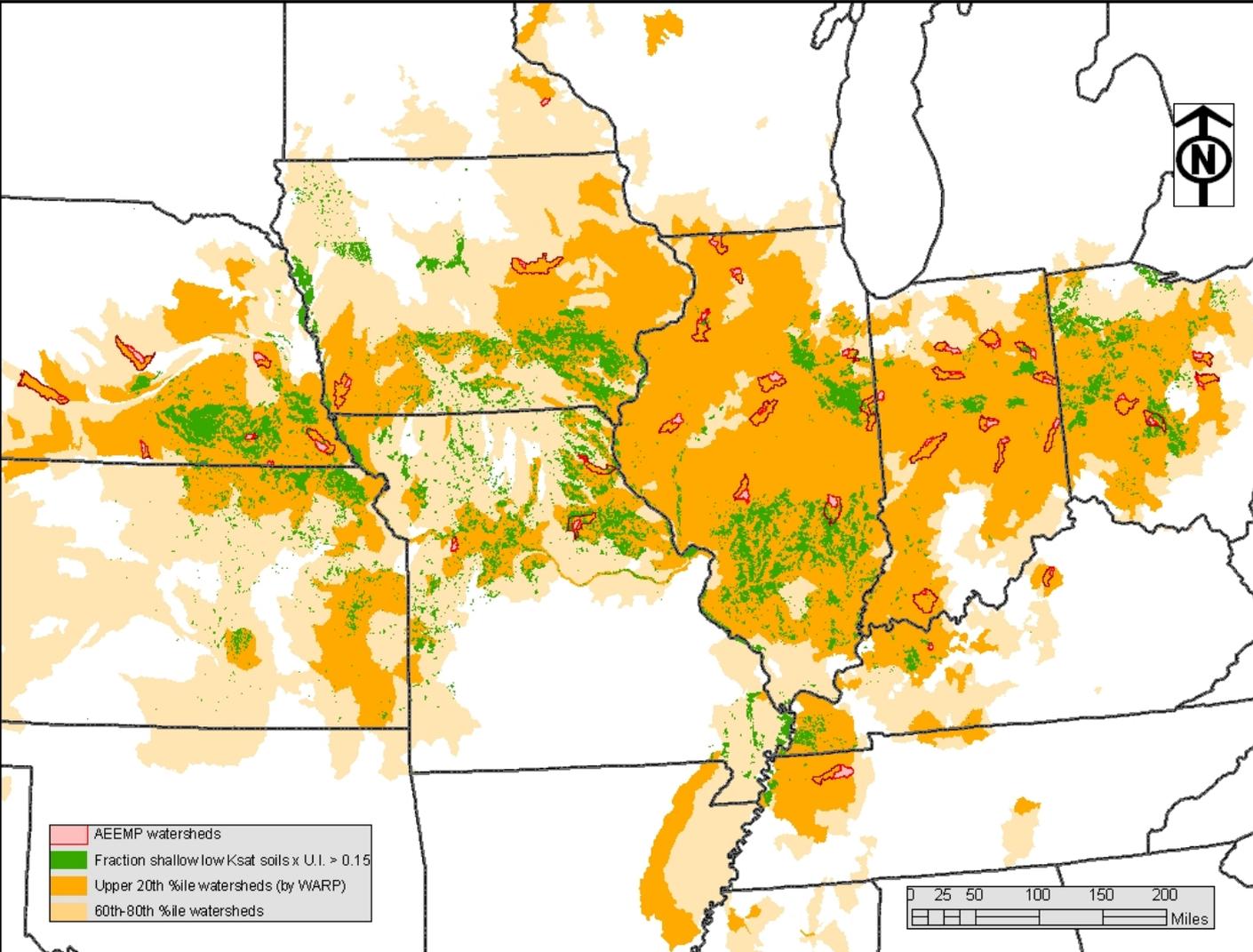


Key

★ Sites exceed LOC in 2 or more years

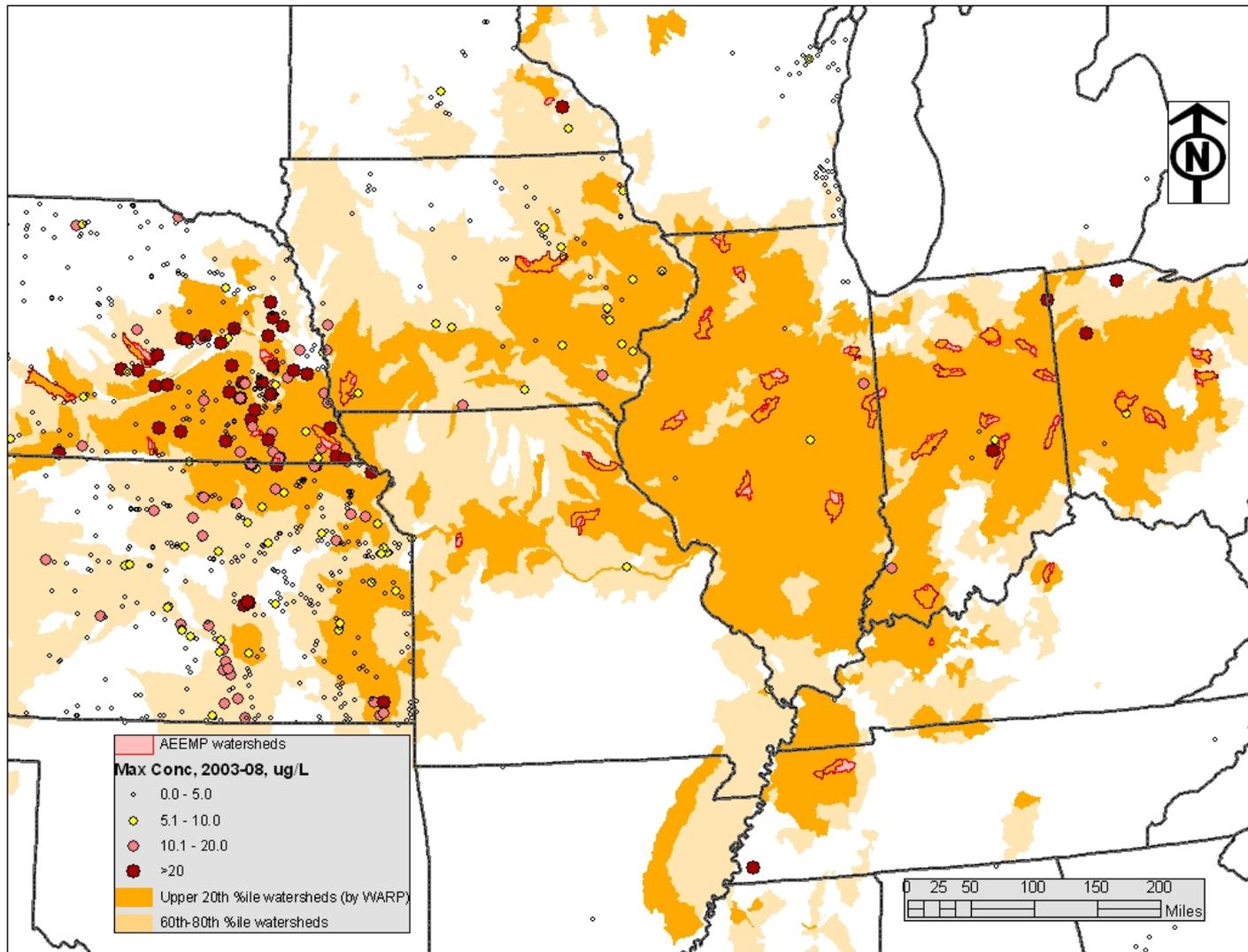
▲ Sites exceed LOC 1 year only

Areas Meeting the Shallow Low Ksat x U.I. Index Criteria



Areas shaded in **Green** have a (fraction with shallow low Ksat) x (use intensity) index value >0.15

Distribution of Additional Monitoring Data



State/Tribe Monitoring Data

- ▶ EPA recognizes that pesticide monitoring data reflects information consistent with a State's or Tribe's current and historic sampling philosophy, objectives, and goals.
- ▶ EPA expects that data will vary by State and Tribe based on characteristics mentioned above.
- ▶ EPA recognizes the tremendous amount of time and resources expended on these efforts and will diligently evaluate the information submitted.

Information on EPA's Website

- ▶ **Re-evaluation: Review of Registered Pesticides**
<http://www.epa.gov/oppsrrd1/reevaluation/>
- ▶ **Pesticide-Specific Information** – For documents and other information about specific pesticides, visit Chemical Search, www.epa.gov/pesticides/chemicalsearch/ or the dockets for these pesticides at www.regulations.gov.
- ▶ **Guidance for submission of water quality data**
http://www.epa.gov/oppsrrd1/registration_review/water_quality_sop.htm