Agricultural Nonpoint Source Pollution: Agenda for the Future

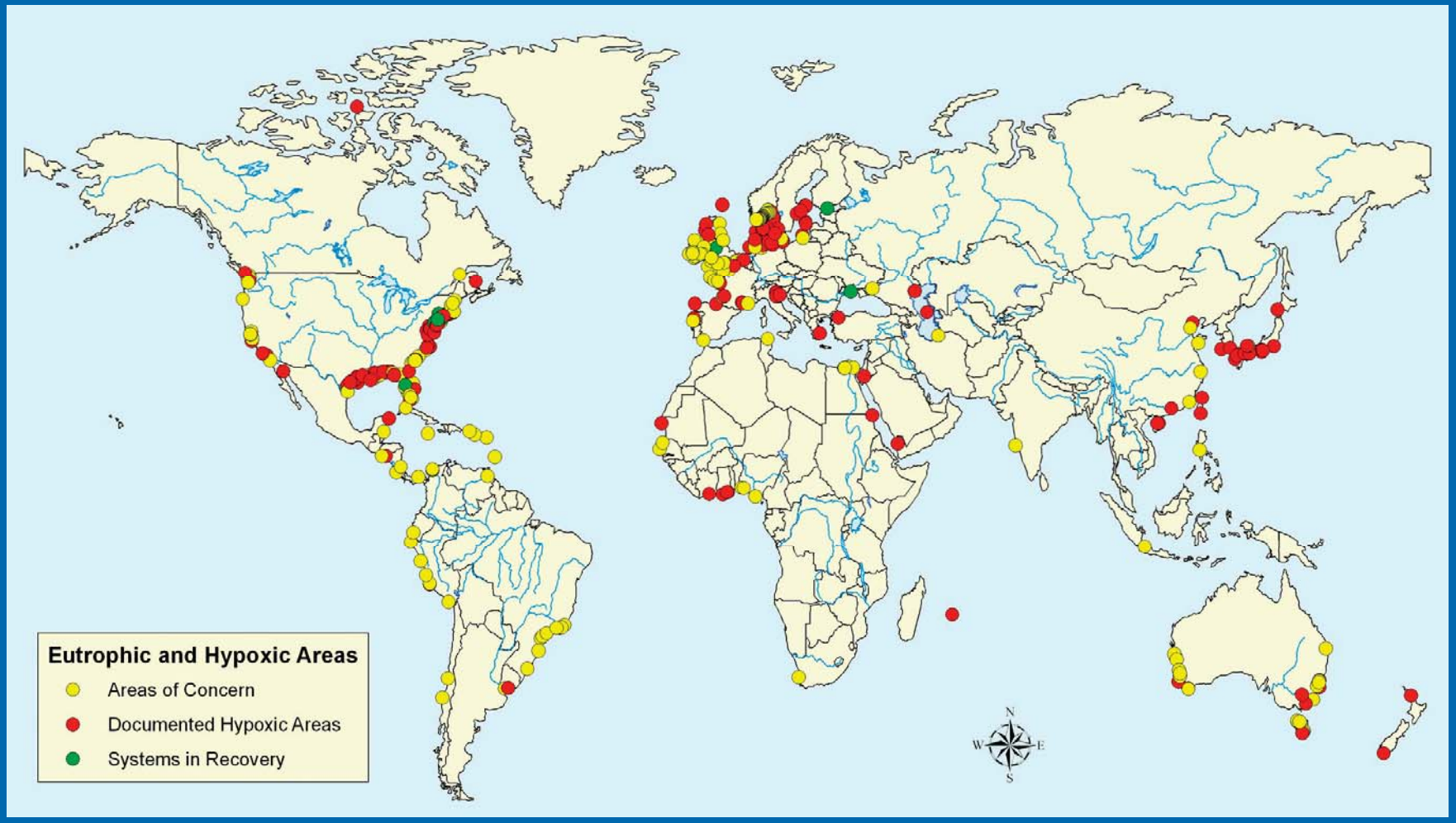
Farm, Ranch, and Rural Communities Federal Advisory Committee

February 23, 2009

Why is This on the Agenda?

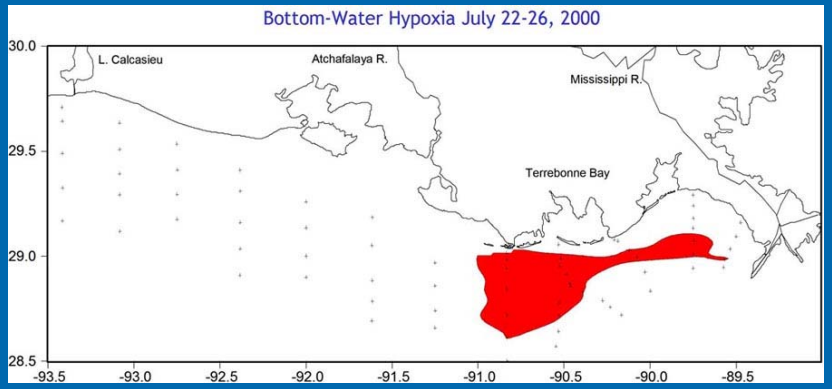
- Nonpoint source (NPS) pollution is a significant problem for the Nation
  - Water quality/ecological consequences
    - Hypoxia and eutrophication
    - Impairment
    - Leading sources and trends
  - Human-health concerns for drinking water
- Addressing nutrients is a top priority for EPA
  - Current efforts are not sufficient
  - Future actions: Are we heading toward regulation?
- The agricultural community should be involved in future decision-making

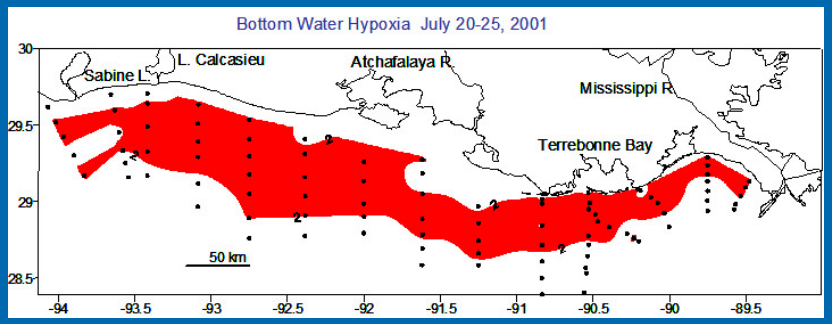
Hypoxia Areas Have Increased Dramatically over the Last 50 Years

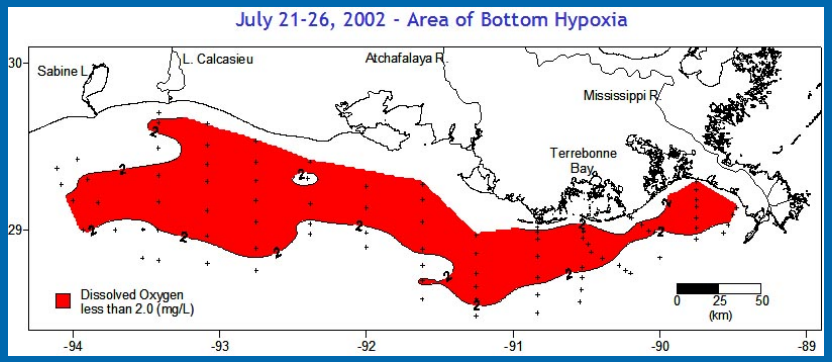


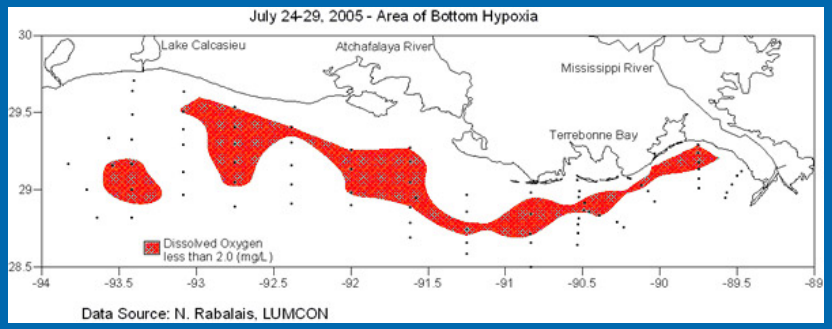
Source: Science/World Resources Institute.

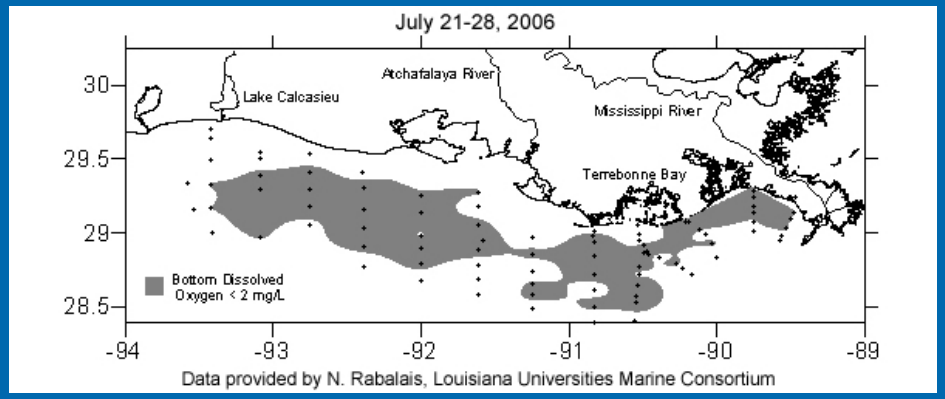
Gulf of Mexico Hypoxia

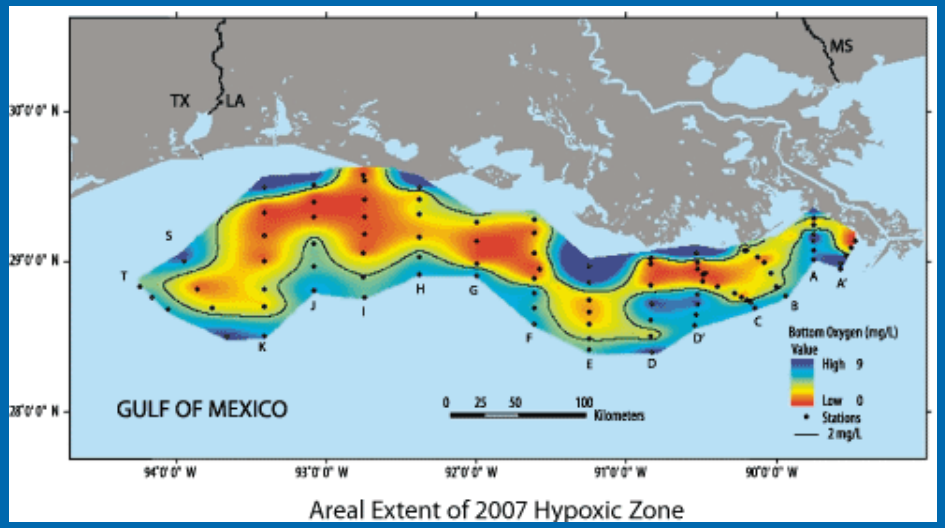


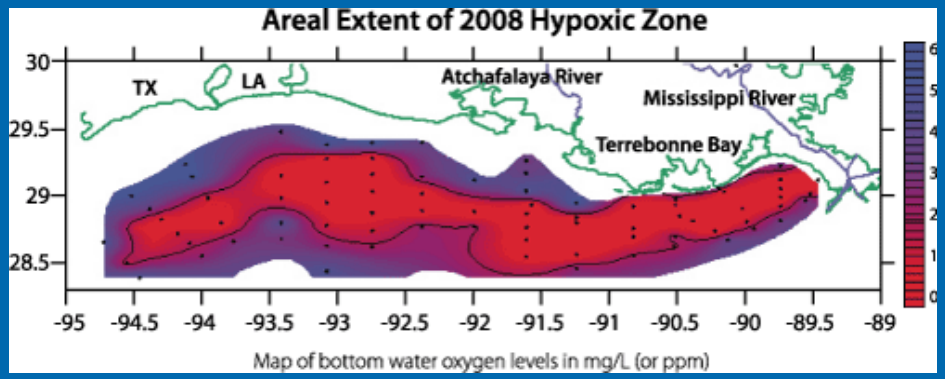








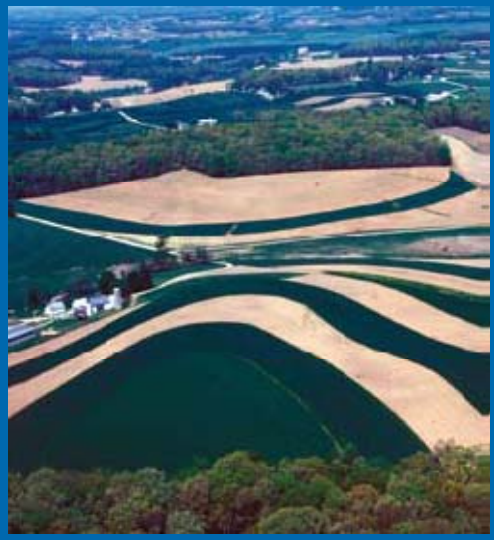




“Failing the Chesapeake Bay”

-- Washington Post, December 2008

- EPA Chesapeake Bay Program’s 2007 Annual Assessment found most of the Bay's waters are degraded:
  - 12% of the Bay and its tidal tributaries met dissolved oxygen standards during the summer months
  - 26% of the Bay's waters had acceptable concentrations of chlorophyll *a*
  - 12% of the Bay's waters had acceptable water clarity.
  - Fish kills in a number of rivers leading to the Bay



“Stepped-up Regulation Backed as 25-Year Effort Fails to Meet Long-Term Deadlines” -- Washington Post, December 9, 2008

Other Areas of the Country

- Although smaller in size, many other watersheds exhibit significant water quality challenges caused largely by agricultural runoff.
  - Selenium discharges from irrigation return flows in the Central Valley of California
  - Runoff of unusually large sediment loads in eastern Washington (Palouse Region) due to agricultural activities on highly erosive lands
  - Grazing impacts throughout much of the West from both upland and riparian erosion

Nutrients, Organic Enrichment, and Pathogens are Leading Causes of Impairment

Rivers and Streams (23% assessed)	Lakes, Ponds and Reservoirs (40% assessed)	Estuaries (32% assessed)
Pathogens	Mercury	Pathogens
Sediment	Nutrients	Organic enrichment
Nutrients	Organic enrichment	PCBs

Source: Most recent state 305(b) reporting in ATTAINS (mix of 2006, 2004, and 2002).

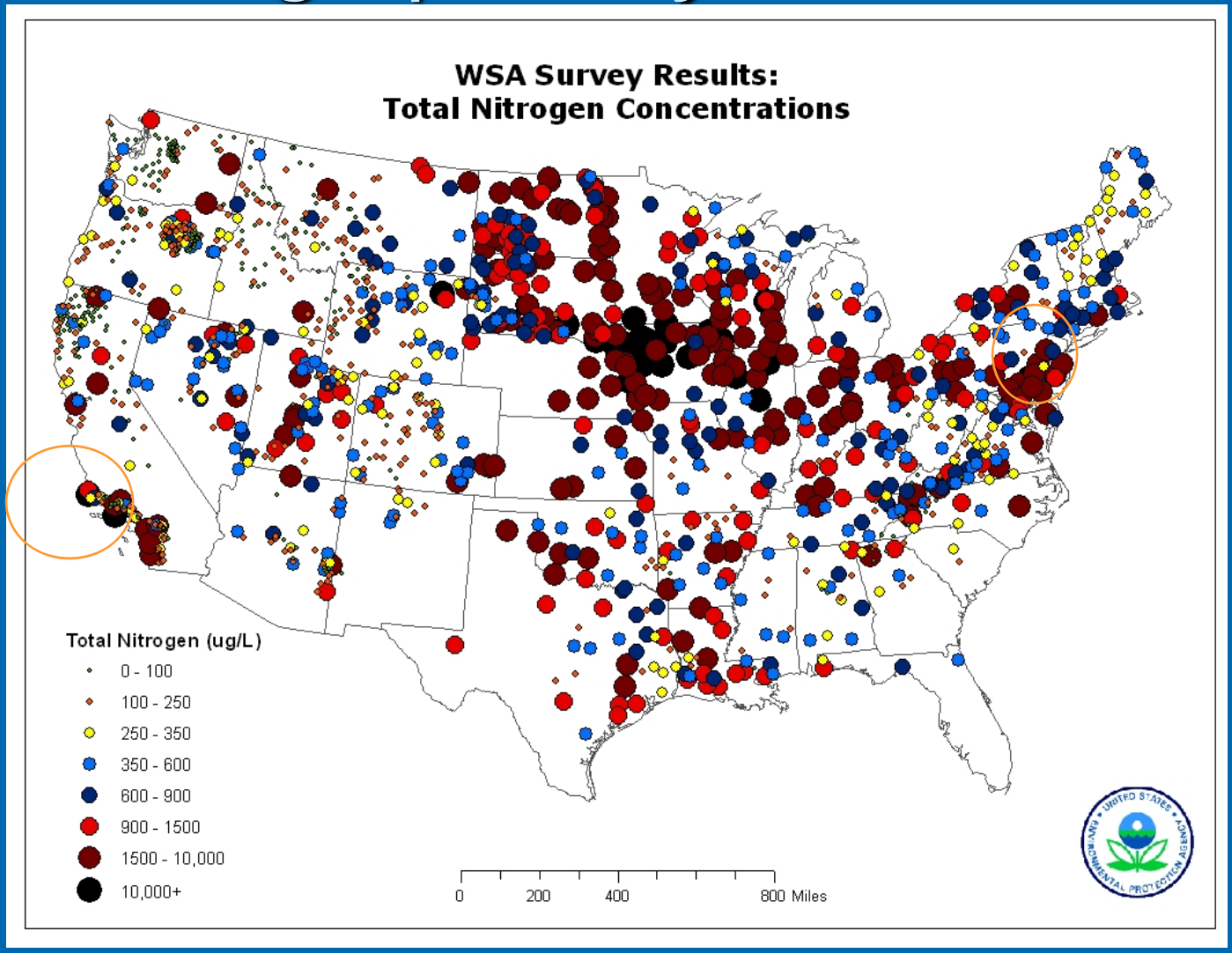
Agriculture and AtmoDep are Leading Sources of Impairment

Rivers and Streams (23% assessed)	Lakes, Ponds and Reservoirs (40% assessed)	Estuaries (32% assessed)
Agriculture	Unknown/ Unspecified*	Unknown/ Unspecified*
Unknown/ Unspecified*	Atmospheric deposition	Atmospheric deposition
Hydromodification	Agriculture	Municipal discharges

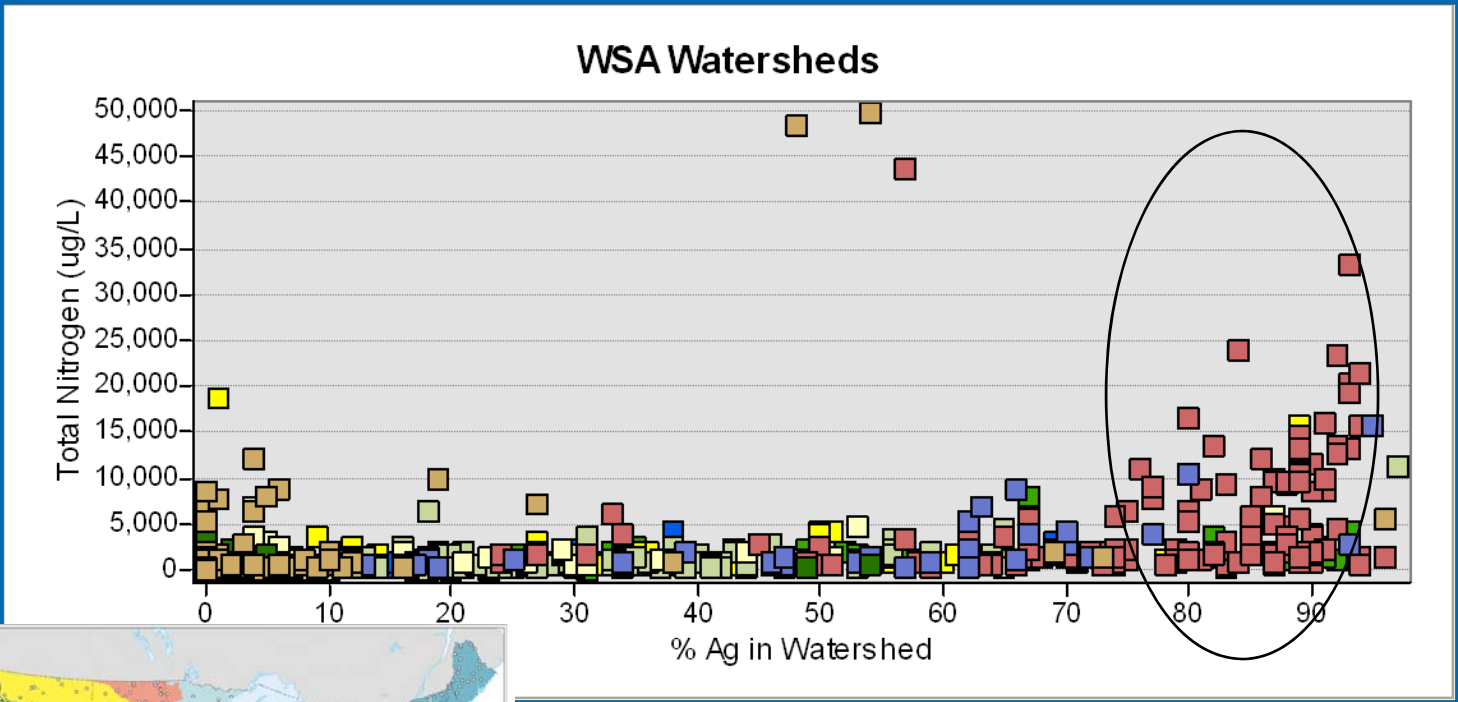
**Source unknown or undocumented due to insufficient information*

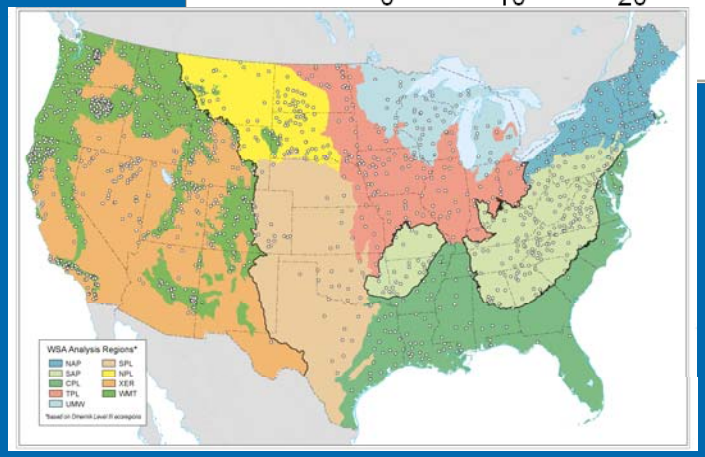
Source: Most recent state 305(b) reporting in ATTAINS (mix of 2006, 2004, and 2002).

Highest Concentrations of Nitrogen are Geographically Focused



Nitrogen Concentrations Increase with Percent Agriculture in Watershed

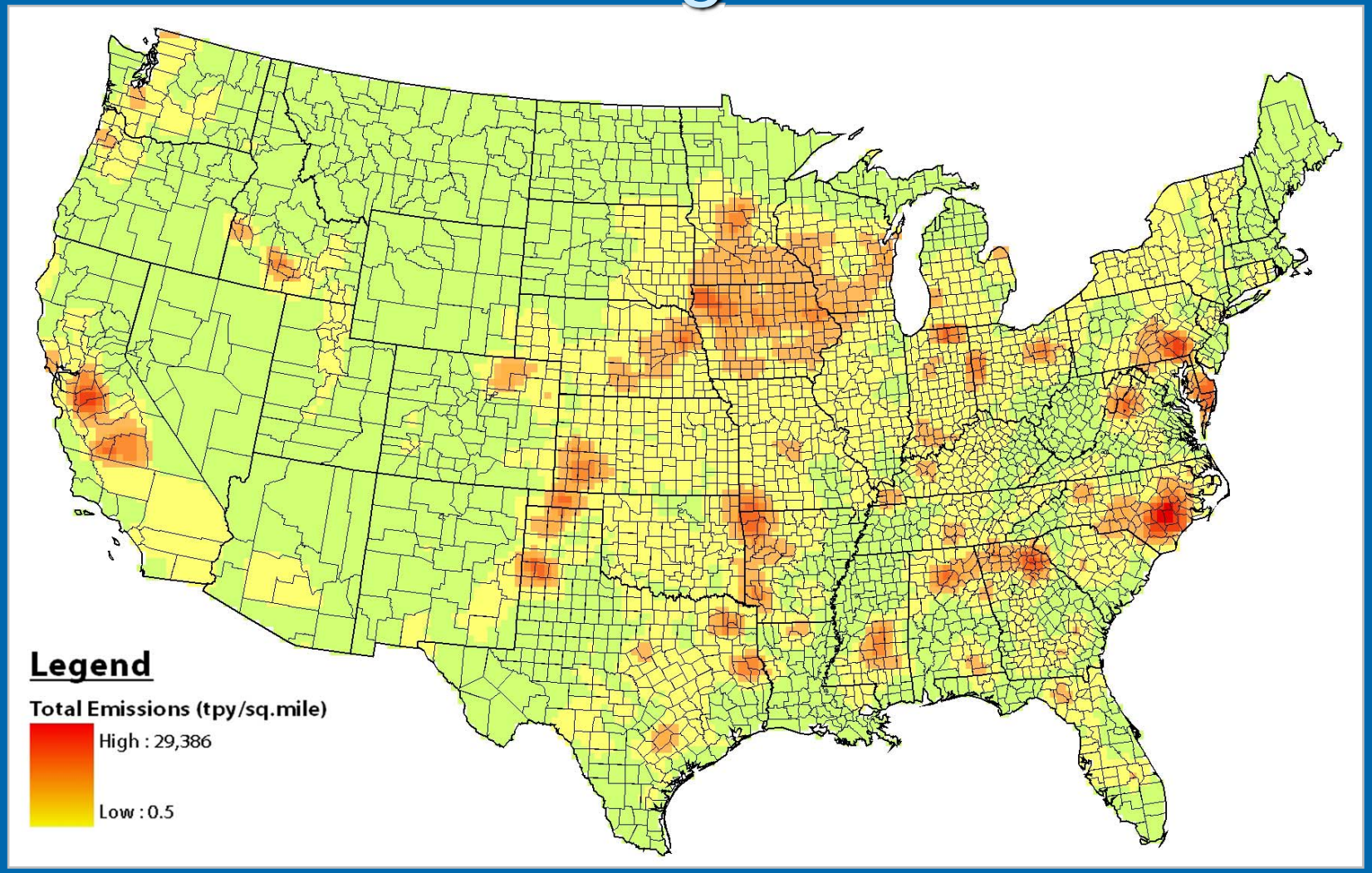




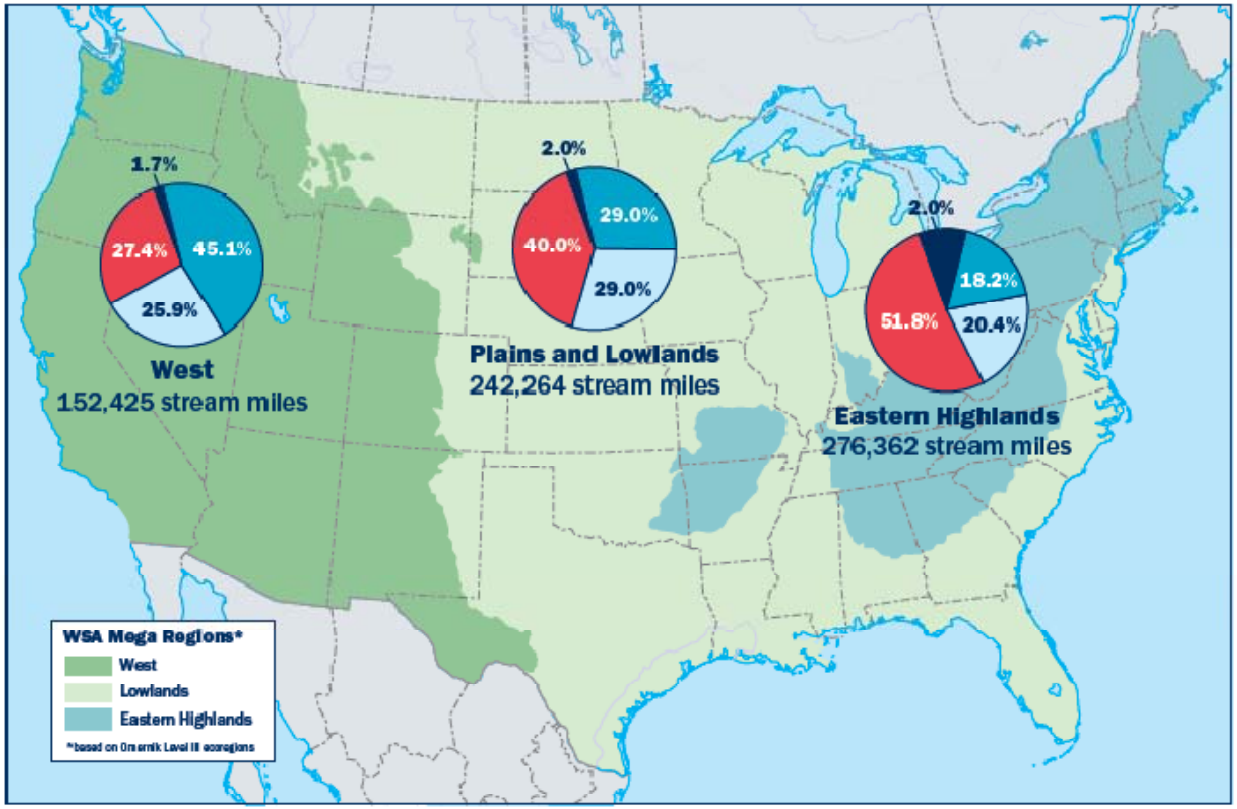
Ecological Regions

- XER
- WMT
- NPL
- SPL
- TPL
- UMW
- NAP
- SAP
- CPL

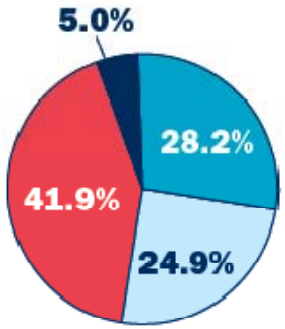
2002 Ammonia Emissions from Animal Agriculture



Poor Stream Biology is Twice as Likely in Streams with High Levels of Nitrogen, Phosphorus or Sediments



National Summary

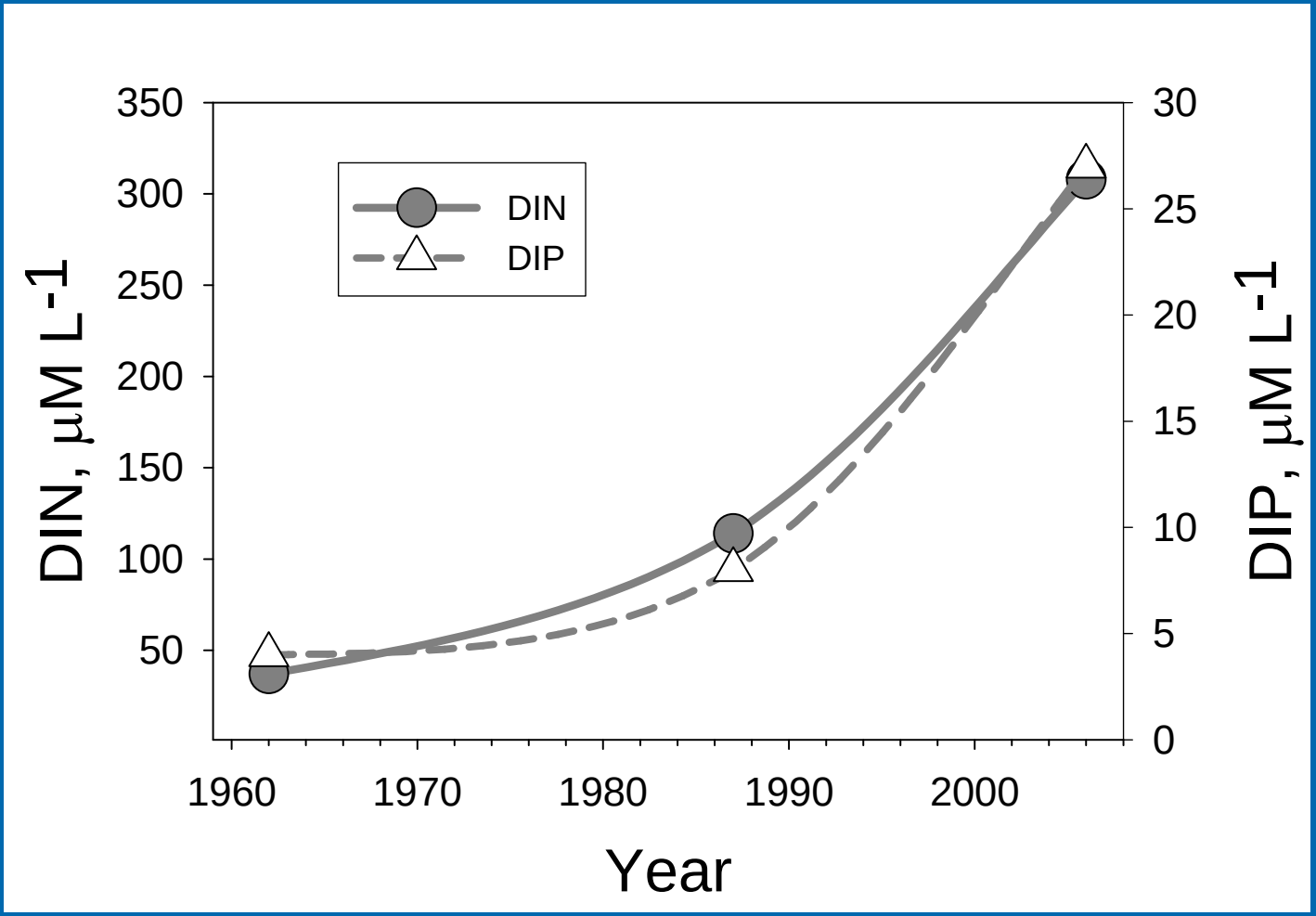


Biological Condition of Wadeable Streams

- Good
- Fair
- Poor
- Not Assessed

From the December, 2006 Wadeable Streams Assessment

Nutrient Trends for Mississippi River



Dissolved Inorganic Nitrogen (DIN)
Dissolved Inorganic Phosphorus (DIP)

Agriculture is the Predominant Nutrient Source to Gulf

- Ag contributes more than 70% of the N and P delivered to the Gulf
- AtmDep contributes16% of N
- Urban sources represent only 9-12%
- Watersheds contributing highest load include Central Mississippi and Ohio (IL, IA, IN, IS, AR, KY, TN, OH, MS)
- Greatest reduction in load to the Gulf predicted from targeting sources near large rivers or small streams that flow quickly to large rivers

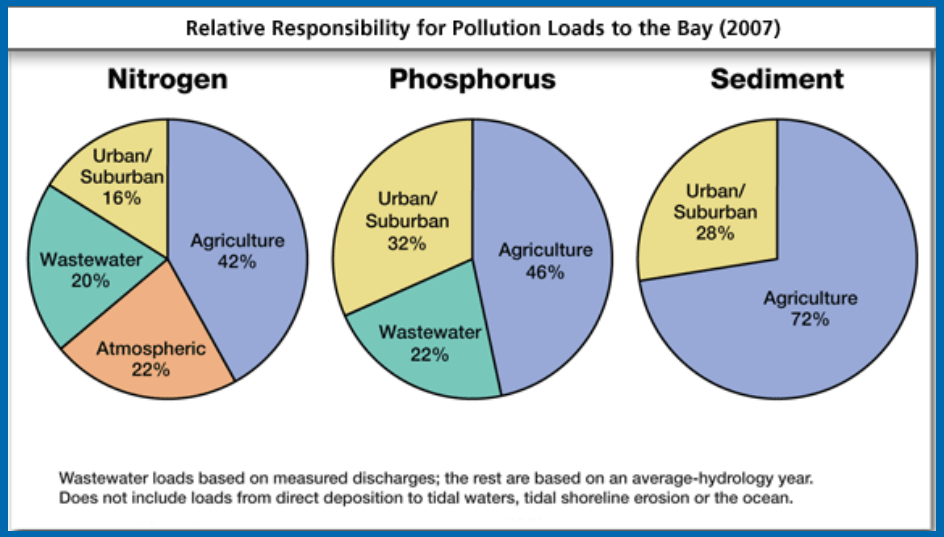
Source: USGS SPARROW Model for Mississippi/Atchafalaya Basin

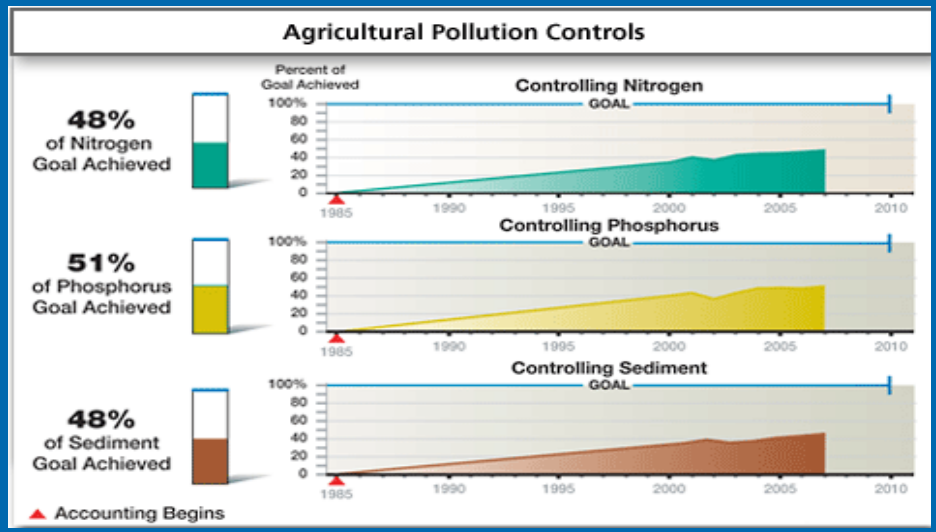
Effects of Excess Nutrients on Drinking Water Quality

- Nutrients can stimulate algal growth – elevated levels of organic matter
  - Creates taste and odor problems
  - Possible health effects from algal toxins
  - Organic matter + disinfectants = disinfection byproducts
- Runoff of nitrogen-based fertilizers leads to elevated nitrate levels in surface and ground water
  - Acute health risks for children (blue babies)

Current Voluntary Approaches Alone are not Sufficient to Deal with the NPS Problem

For Example: Chesapeake Bay





Source: EPA's Chesapeake Bay 2007 Health and Restoration Assessment Report

Numeric WQS for Nutrients are Not Being Adopted Fast Enough

- Florida Determination
  - On January 14, EPA issued a formal determination under the CWA that numeric nutrient water quality criteria are necessary in Florida.
  - EPA expects to propose numeric nutrient standards for lakes and flowing waters within 12 months, and for estuaries and coastal waters within 24 months.
- Mississippi River Petition
  - On July 30, 2008, various environmental groups petitioned EPA for Rulemaking under the CWA for numeric water quality standards for N and P and TMDLs for the Mississippi River and the Gulf of Mexico.

Is it Time to Regulate NPS Pollution?

- What's the tipping point?
  - *More hypoxic "dead" zones?*
  - *Fisheries collapse?*
- Are we there now?

Your Help is Needed

- We need YOUR HELP to:
  - Better connect the water quality message with the farming community
  - Assure that we all understand how we can better support farmers in their nutrient reduction efforts
  - Make sure our solutions make financial sense to the farmer
  - Figure out a way to start getting significant reductions sooner rather than later!

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