NORTH DAKOTA'S

Nutrient Reduction Strategy

Planning Team Meeting – *Follow-up on Goals and Objectives*

- Welcome and Introductions -

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Water Quality

Update on Progress

- Goals set at last meeting
  - Prioritization
  - Draft Outline
  - Others…
- Feedback from the Webcast
- Status of other state strategies

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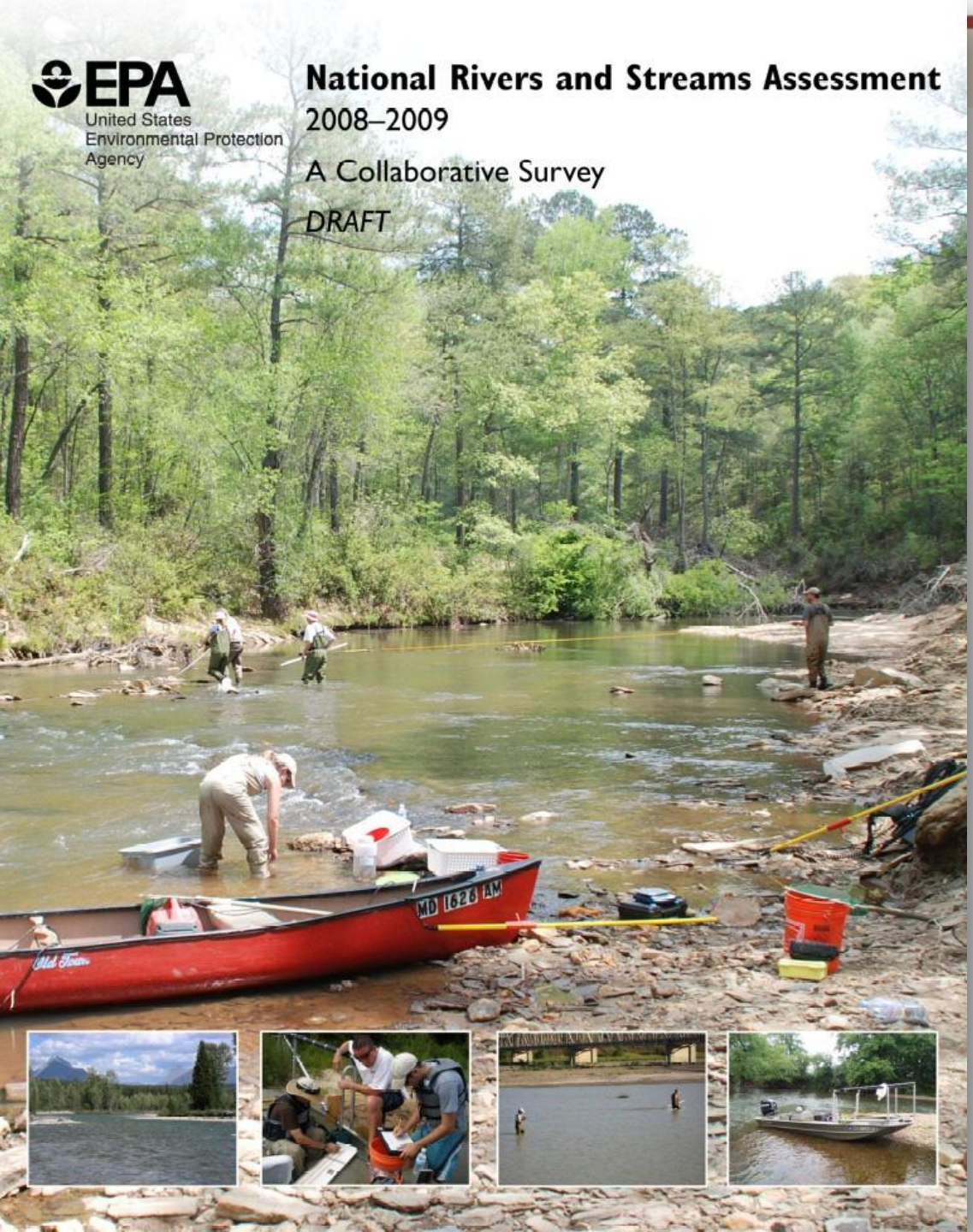

National Rivers and Streams Assessment

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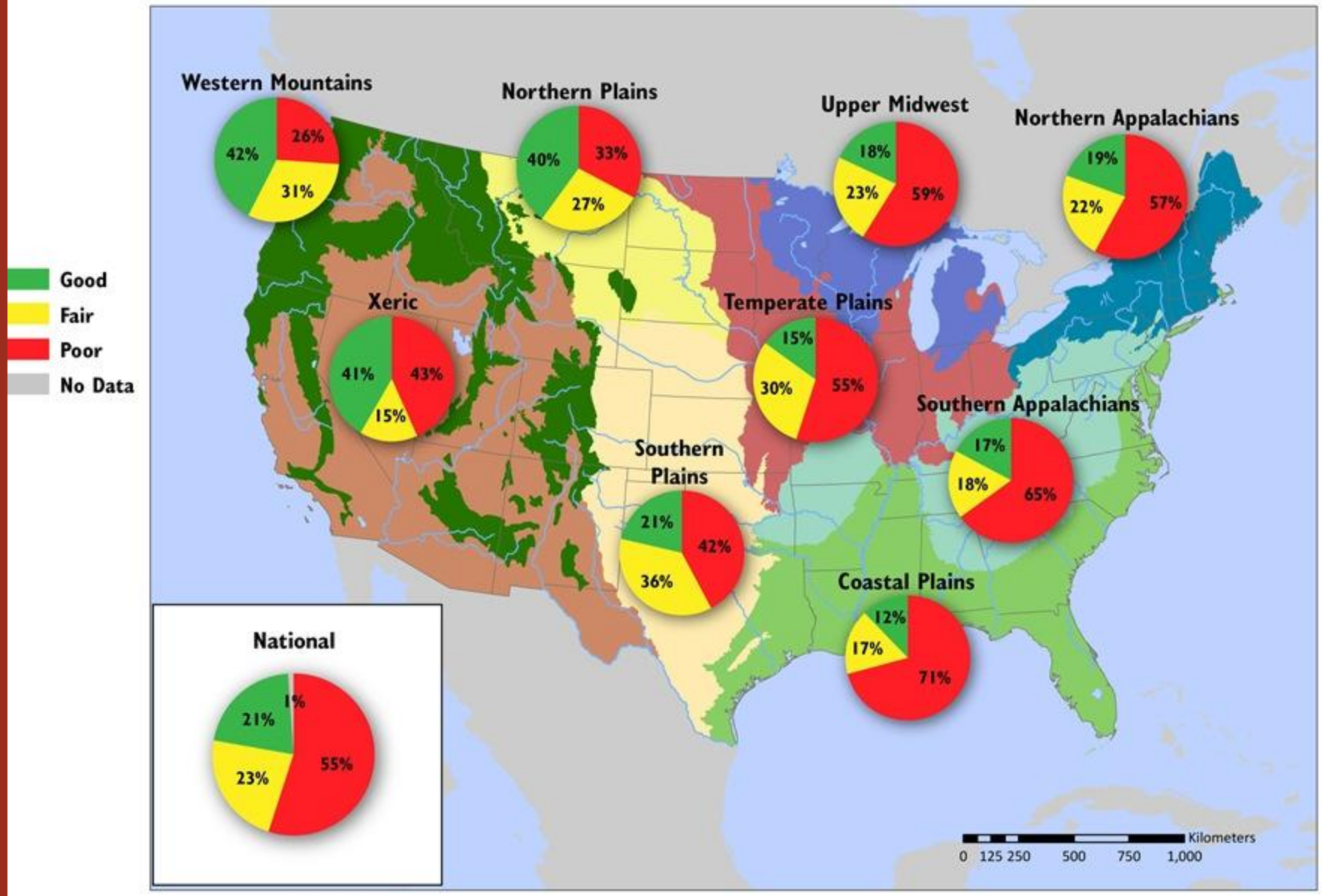
Biological Condition — Macroinvertebrate MMI



United States Environmental Protection Agency

The National Rivers and Streams Assessment

2008-2009: A Collaborative Survey

www.epa.gov/aquaticsurveys

Leading Problems: Nutrient Pollution and Habitat Degradation

- 40% of the nation's river and streams miles have high levels of phosphorus. 27% have high levels of nitrogen.
- Biological communities are at increased risk for poor condition when phosphorus and nitrogen pollution levels are high.
- Phosphorus and nitrogen pollution comes from excess fertilizers, wastewater and other sources, and can cause algae blooms, low oxygen levels, and more.
- Poor vegetative cover and high levels of human disturbance near river and stream banks are also widespread, reported in 24% and 20% of the nation's river and stream miles respectively.
- These habitat conditions make rivers and streams more vulnerable to flooding, contribute to erosion and allow more pollutants to enter waterways.
- Excess levels of streambed sediments, which can smother the habitat where many aquatic organisms live or breed, are reported in 15% of river and stream miles. Excess sediments are found to have a significant impact on biological condition.

February 2013

Progress Toward Clean Water Act Adopted Numeric Nutrient Criteria

WISCONSIN'S NUTRIENT REDUCTION STRATEGY WEBINAR SERIES

Update on Wisconsin's Statewide Nutrient Reduction Strategy & Working Groups

Thursday March 14, 2013

Purpose of Nutrient Reduction Strategy:

- Compendium of federal, state and local programs to control nutrients to all surface and ground waters.
- Roadmap to achieve 45% load reduction of N and P
- A living document, website, and summit (annual).
- Information for public & stakeholders.
- A means to address gaps and gain efficiencies.
- Possibly a federal grant eligibility requirement

Status and Schedule (cont.)

- Stakeholder (public) review:
  - Draft late-April or early May
  - Public meeting late-May or early June
  - End of comment period – mid to late June
  - Revised document -- July

Content of Draft

- Will include
  - Response to each of EPA's 8 elements, including program descriptions
  - Strategic directions to fill gaps, enhance implementation of ongoing programs
- Will not include
  - New regulations

EPA's recommended elements of a strategy

1. Prioritize watersheds for N & P load reductions (HUC 8 – 12)
2. Set watershed load reduction goals on available info
3. Ensure effective permits (WPDES, CAFO, storm water)
4. Agricultural areas
5. Storm water & Septics (MS4s, leverage local gov't resources)
6. Accountability and Verification
7. Annual public reporting of implementation and reductions
8. Develop workplan for numeric P and N criteria

Chesapeake Bay TMDL

- Goal: restore water quality in the bay by 2025
- Included point source and NPS allocations
- Interim: Achieve 60% of needed reductions
  - Nitrogen – 25% reduction
  - Phosphorus – 24% reduction
  - Sediment – 20% reduction
- States develop Watershed Implementation Plans, approved by US EPA, to get reductions

Watershed Implementation Plans

- New or increased loads from development, agriculture, etc. must be offset
- "EPA expects (the states) to develop Plans to achieve needed nutrient and sediment reductions whose control actions are based on regulations, permits, or otherwise enforceable agreements that apply to all major sources of these pollutants, including nonpoint sources."
  - Not a blanket requirement, but a "strong encouragement"

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General Bay TMDL WIP Approach

- Develop pollutant load reduction targets
- Distribute loads to sources (point/nonpoint)
- Identify source-based pollutant load reduction strategies (BMPs)
- Establish system to track and verify load reduction strategies
- Develop program implementation milestones to monitor progress
- Better water quality monitoring
- Report on implementation and overall progress

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Urban WIP approaches

- All states – targeted lower load limits for wastewater treatment plants; some trading
- Maryland – mandatory stormwater / watershed fee programs for large MS4 areas
- Virginia – tighter stormwater regulations
- Pennsylvania – county-level pollutant load reduction planning targets, across all sectors, implemented locally & regionally; trading

How ag sector WIPs are evaluated

- Is there a minimum set of management practices to be included in nutrient management plans?
- If so, how is the inclusion and implementation of these practices verified?
- How is phosphorus managed in soils?
- How are appropriate agronomic rates determined for application of manure/biosolids/organic byproducts?

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Agricultural **Aspects** of the TMDL

- Load reductions rely on various ag planning and tech assistance programs; CAFO permits
  - Targeting fertilizer, manure, erosion
- Failing to meet nonpoint source load reductions can lead to NPDES permit limits
  - Wastewater treatment plants: extensive upgrades
  - Industrial stormwater: tighter controls
  - CAFOs/AFOs: increased permit requirements
    - EPA reserves the right to object to CAFO & other permits, and designate AFOs as CAFOs

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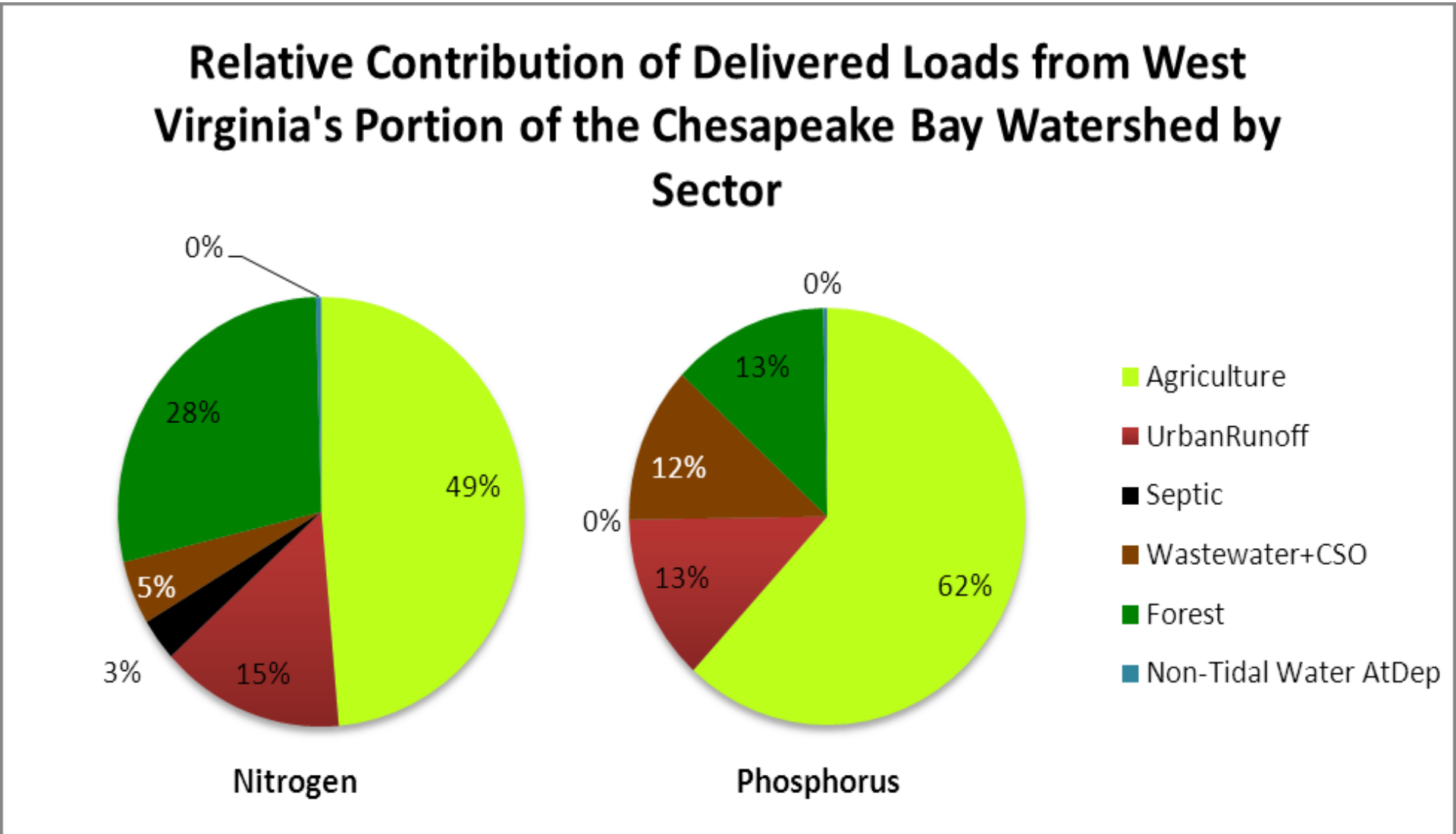
West Virginia Assessment



Example: West Virginia Ag WIP

- Increase cover crops by 68%
- Focused CAFO program implementation
- More nutrient management plans
- Poultry litter export
- Livestock exclusion from streams
- Land retirement
- Forest buffers
- Stream stabilization/restoration
- Education, outreach, technical assistance

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Example: Virginia Ag WIP

- Funding: additional $3m for livestock exclusion, $2m for animal waste BMPs, and $10.5m for other BMPs
- Targeting smaller AFOs for tech and financial assistance to reduce runoff, loads
- Better nutrient management, both fertilizer & manure
- Defining & implementation resource management plans, with BMP verification & inspections
- More/better data collection, need assessment
- Tracking and reporting of BMPs, etc.

Example: Pennsylvania Ag WIP

- Beefed up CAFO regulations/program
- Model Agricultural Compliance Policy, for adoption by local conservation districts
- Compliance inspections
- Farm visits by conservation district personnel to promote BMPs
- Better tracking, verification, and reporting of BMPs

General trends

- More focus on animal feeding operations
  - Tighter requirements, tech assistance, inspections
  - Designation of AFOs as CAFOs
- Nutrient management planning
  - Soil testing prior to nutrient application
  - Phosphorus based nutrient analysis where appropriate
  - Rules for manure application setbacks & conditions
- Better cropland and pasture management
  - Livestock exclusion fencing
  - Tillage, cover crop, grazing practices
  - Mandatory stream buffers

Common discussion topics among states

- Better water quality monitoring
  - Need to identify highest pollutant load areas
- Prioritizing where to go & what to do first
  - Approaches vary across sectors
- Fixing the easy stuff
  - Obvious problems are still out there . . .
- Documenting existing good practices
- Tracking and reporting water quality and programmatic progress

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North Dakota's Nutrient Reduction Strategy Draft Outline

- Background
- Why a nutrient reduction strategy for ND?
- Relationship between the strategy and other watershed/water quality programs
- Elements of a statewide nutrient reduction strategy
- Outreach Strategy (TBD)

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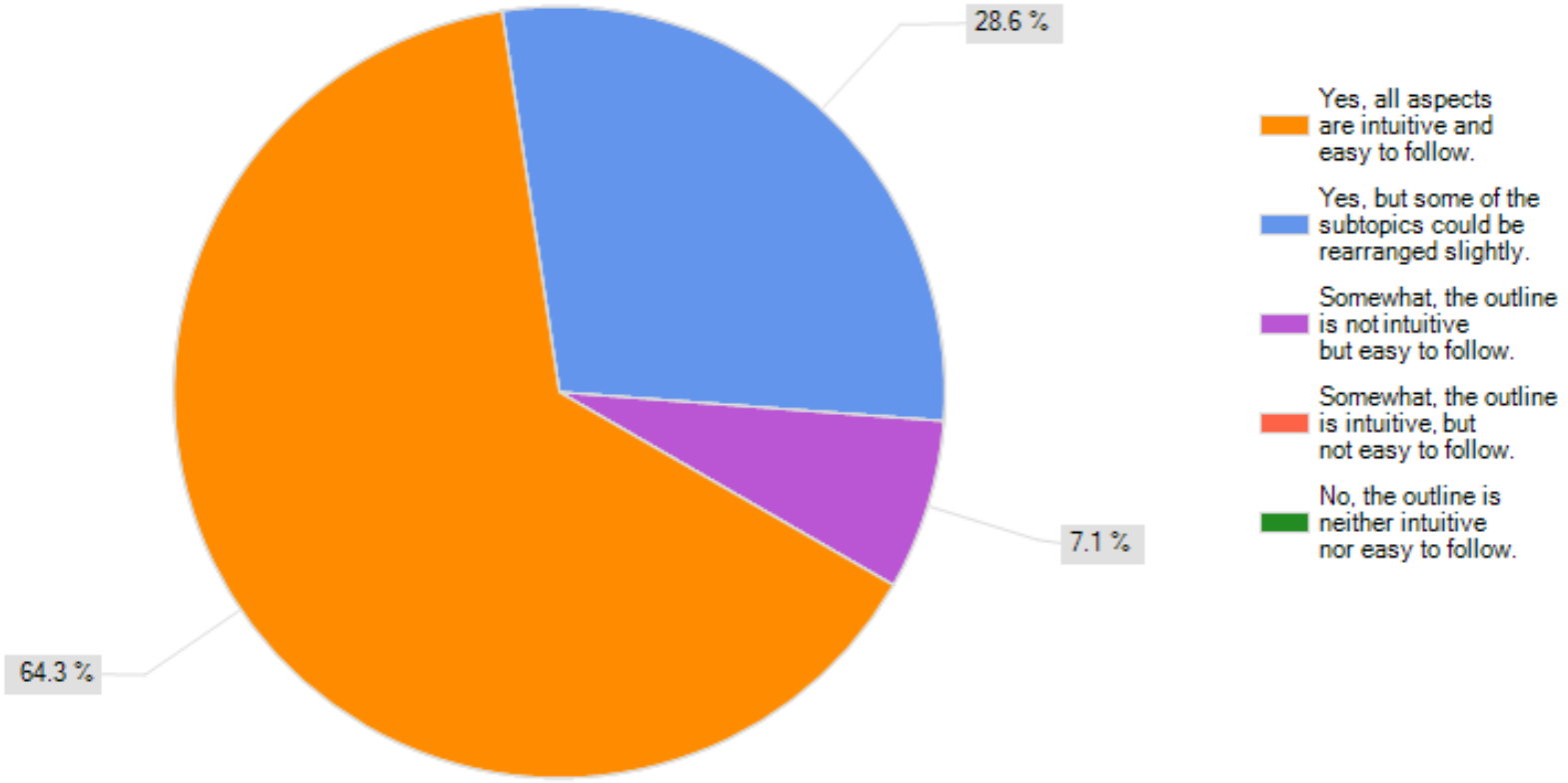
Results of the Survey

Do you find the structure of the outline intuitive and easy to follow given its content?



Results of the Survey

- Are there any topics, sectors, or information missing from the current outline?
  - *Answer: Within the NRCS Locally Lead process add EQIP / National Water Quality Initiative, Technical Assistance , WRP*

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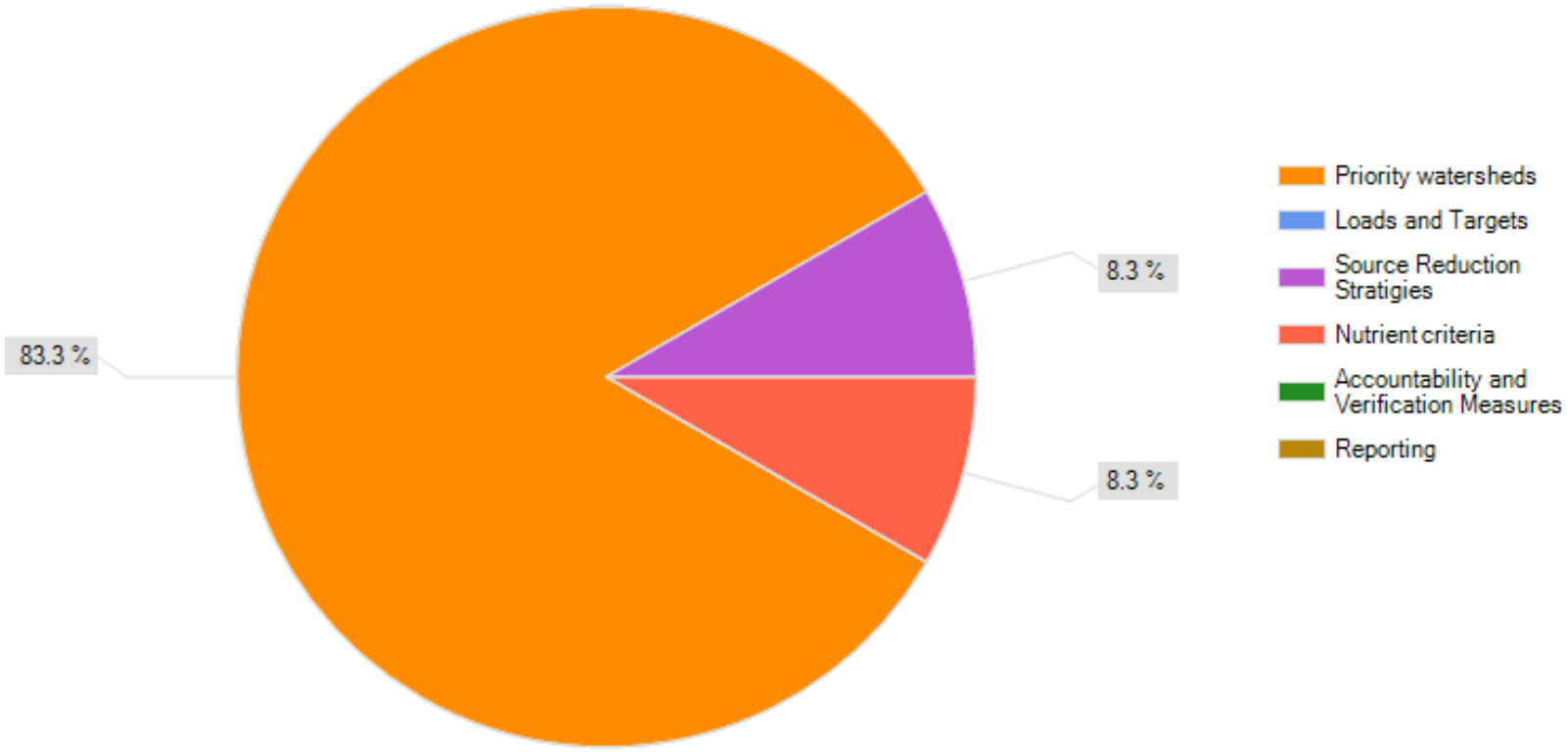
Of the elements listed in Section 4, which do you think need to be addressed first?



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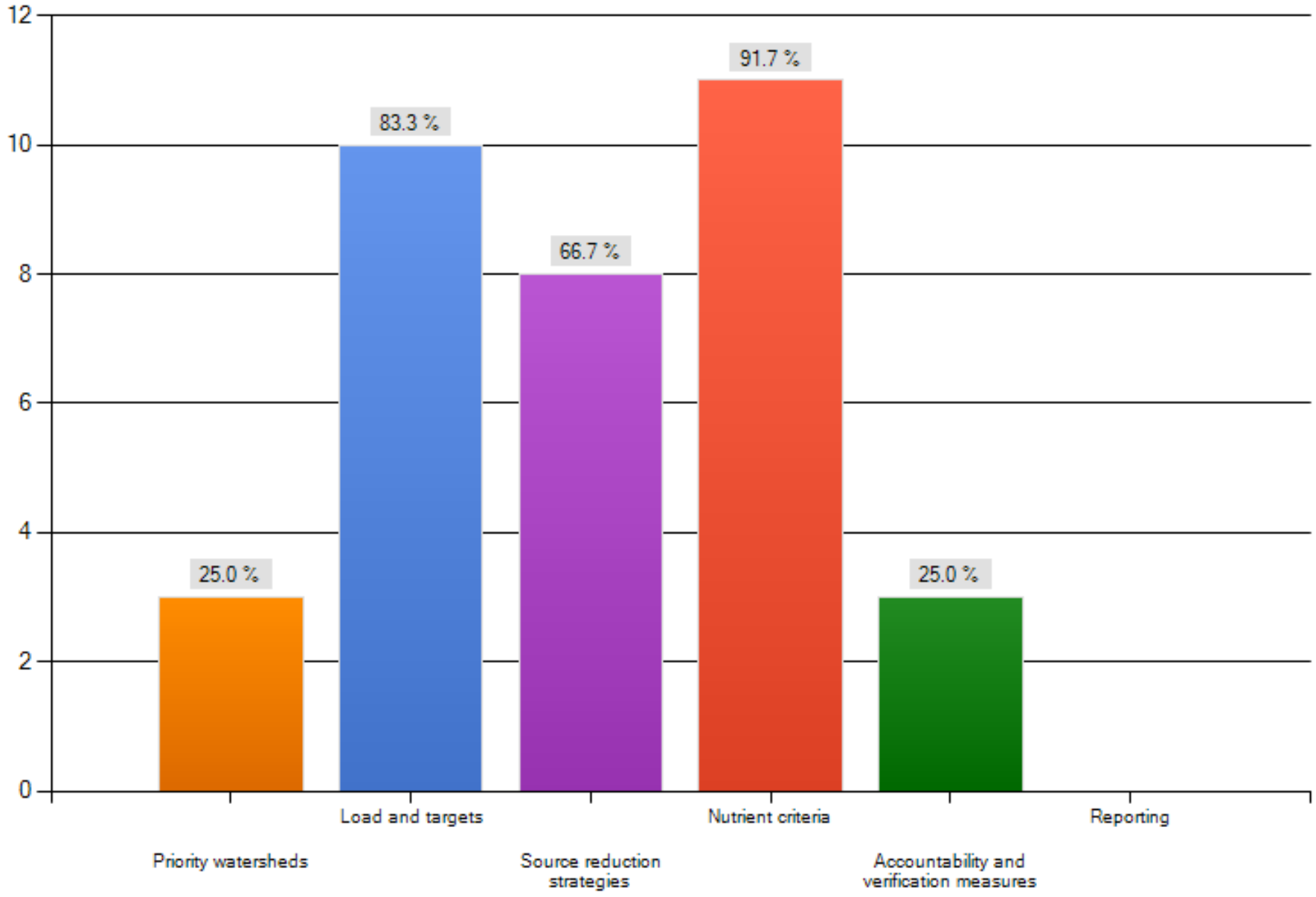
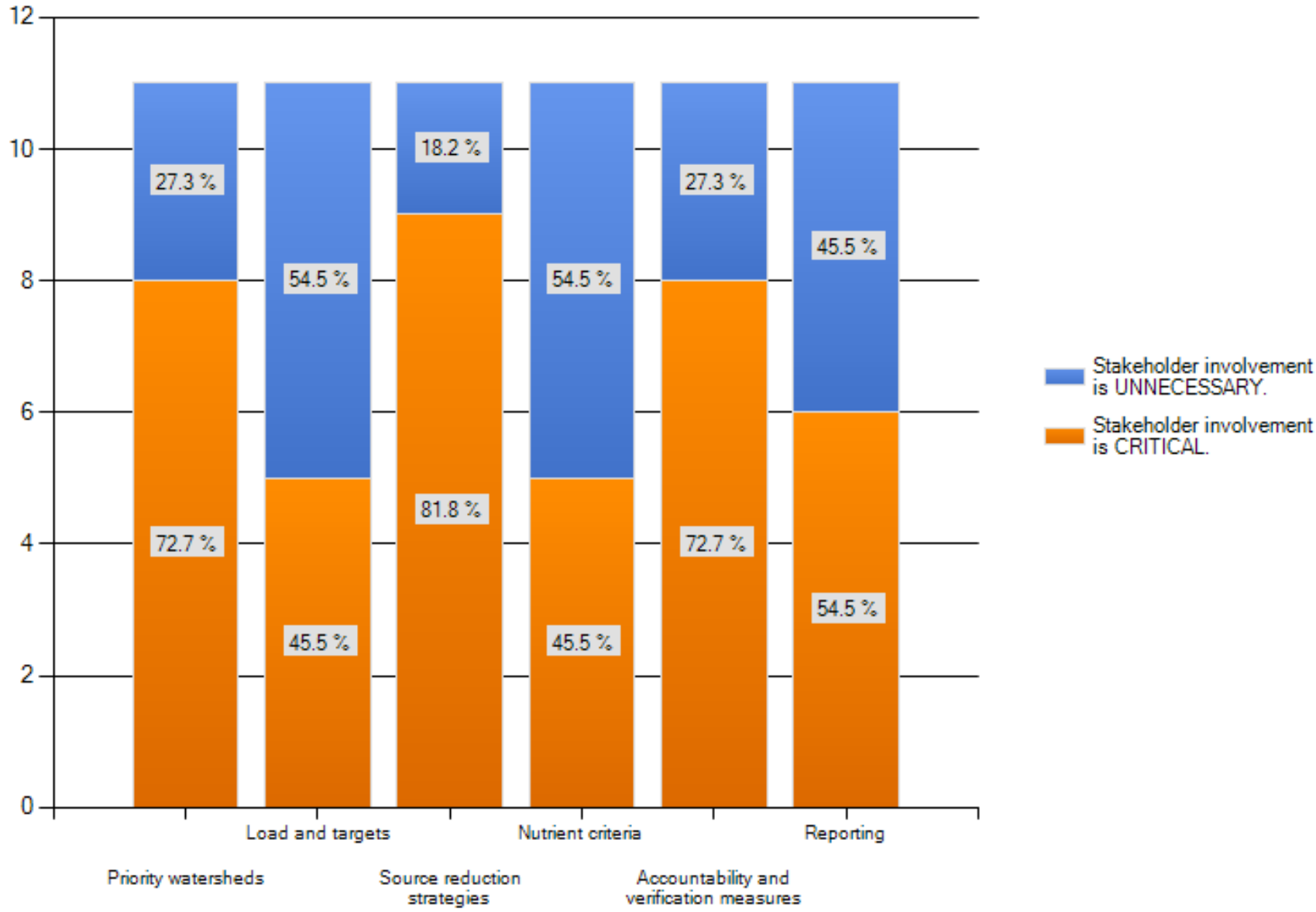
Survey: Section 4

- Do you find the elements listed in section 4 to be logical? If no, how would you change it and why?
- Which of these elements do you see the need for a technical work group of experts in the field? (*see graph on next slide*)

Which of these elements do you see the need for a technical work group of experts in the field?



Of the elements in Section 4, which do you see stakeholder involvement being critical?



Survey: Stakeholder Engagement

- What measures would you recommend NDDoH take to educate the public about the strategy development process?
  - *Quarterly articles in county newspapers, TV adds, radio spots, personal presentations, etc.*
  - *Frequent, reoccurring, public community educational meetings. Power point presentations, films, tours, bring in live examples of the stinking dog killing algae, the result of excessive nutrient loading*
- What recommendations do you have for a public outreach component of the nutrient reduction strategy?
  - *Use all media. Include two basic components……a general statewide educational program to inform the public on the development process and the final direction of the strategy and……basin-specific educational programs focused on the issues and solutions per basin.*

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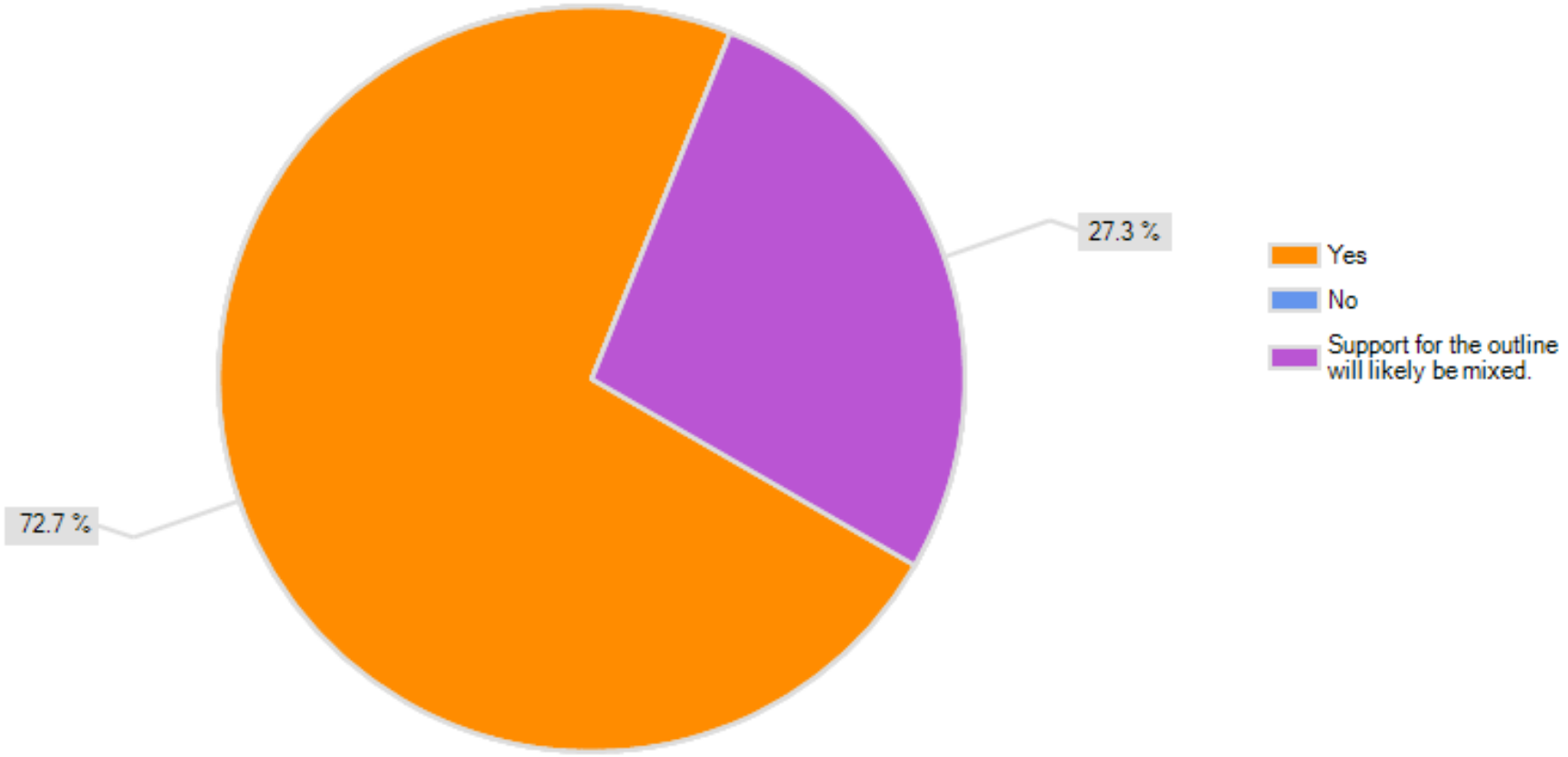
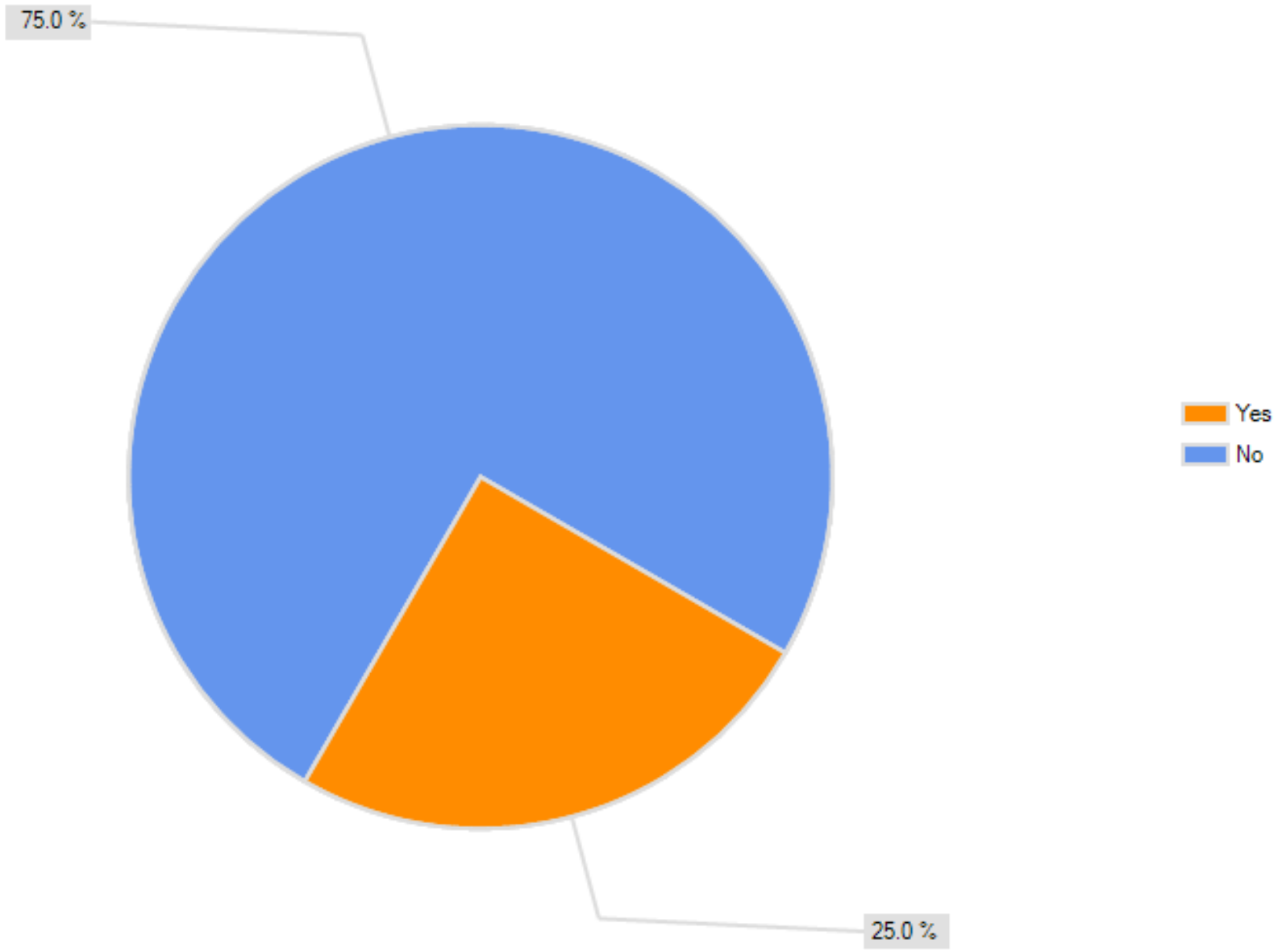
Survey Results

- Do you think your collogues or constituents would support this outline? (*see outline on next slide*)
  - *Not so much this particular outline but, where it may lead, the potential for mandatory, expensive, implementation of best land use management practices, i.e. loss of potential future revenue.*
  - *I think the outline isn't very controversial, it will be the details.*
  - How can we address concerns: *Equitable, yearly, cash incentives for implementation of potential, suggested recommendations of best land use management practices that be the result of this Planning Team.*

Do you think your colleagues or constituents would support this outline?



Do you think the issue of nutrient pollution is well known in the state?



If not, what measures would you recommend NDDoH take to educate the population about nutrient pollution?

- *Is NDDoH doing any outreach on nutrient pollution?*
- *Outreach, what's the problem, how does it affect citizens, environmentally and financially*
- *Create broader awareness - this is not a top-of-the-mind issue for people*

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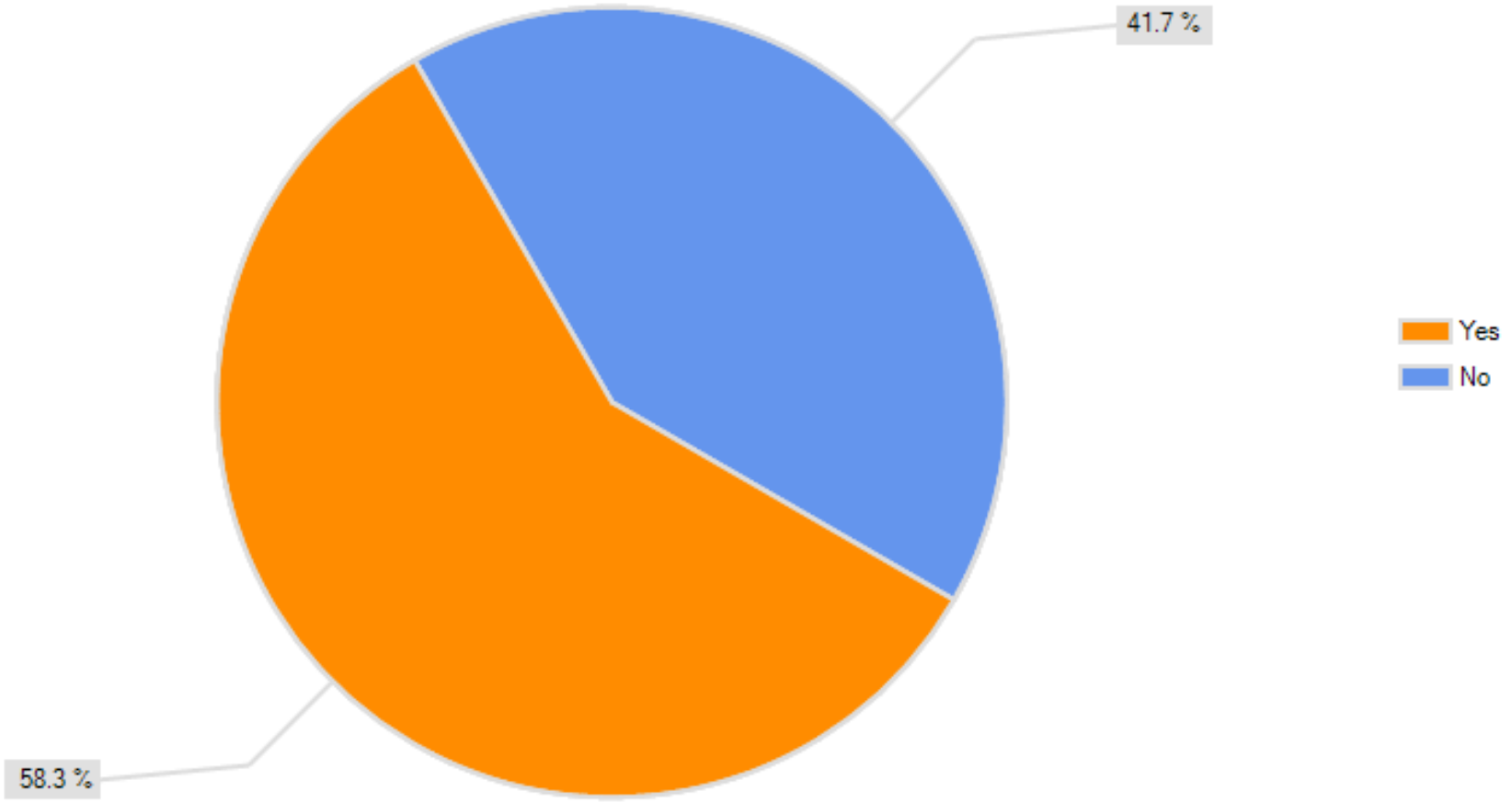
Would you recommend bringing together a large stakeholder group?



FACILITATED DISCUSSION ON NORTH DAKOTA'S NUTRIENT REDUCTION STRATEGY DRAFT OUTLINE

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Options for Watershed Prioritization in North Dakota

- Prioritization is the systematic ranking in order of importance.

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Why prioritize?

- We live in a world of limited resources
  - Time
  - Manpower
  - $$
- We all prioritize
  - Home
  - Work
  - Family and friends
  - Consciously and unconsciously

Watershed prioritization is the systematic ranking of watersheds

- Priorities will vary based on purpose
  - Monitoring and assessment
  - Planning
  - Permitting
  - Restoration (Section 319 projects, NWQI)
  - Protection
- Priorities will vary based on scale
  - 8 digit sub-basin
  - 10 digit watershed
  - 12 digit sub-watershed
  - Stream segment
  - Lake or reservoir

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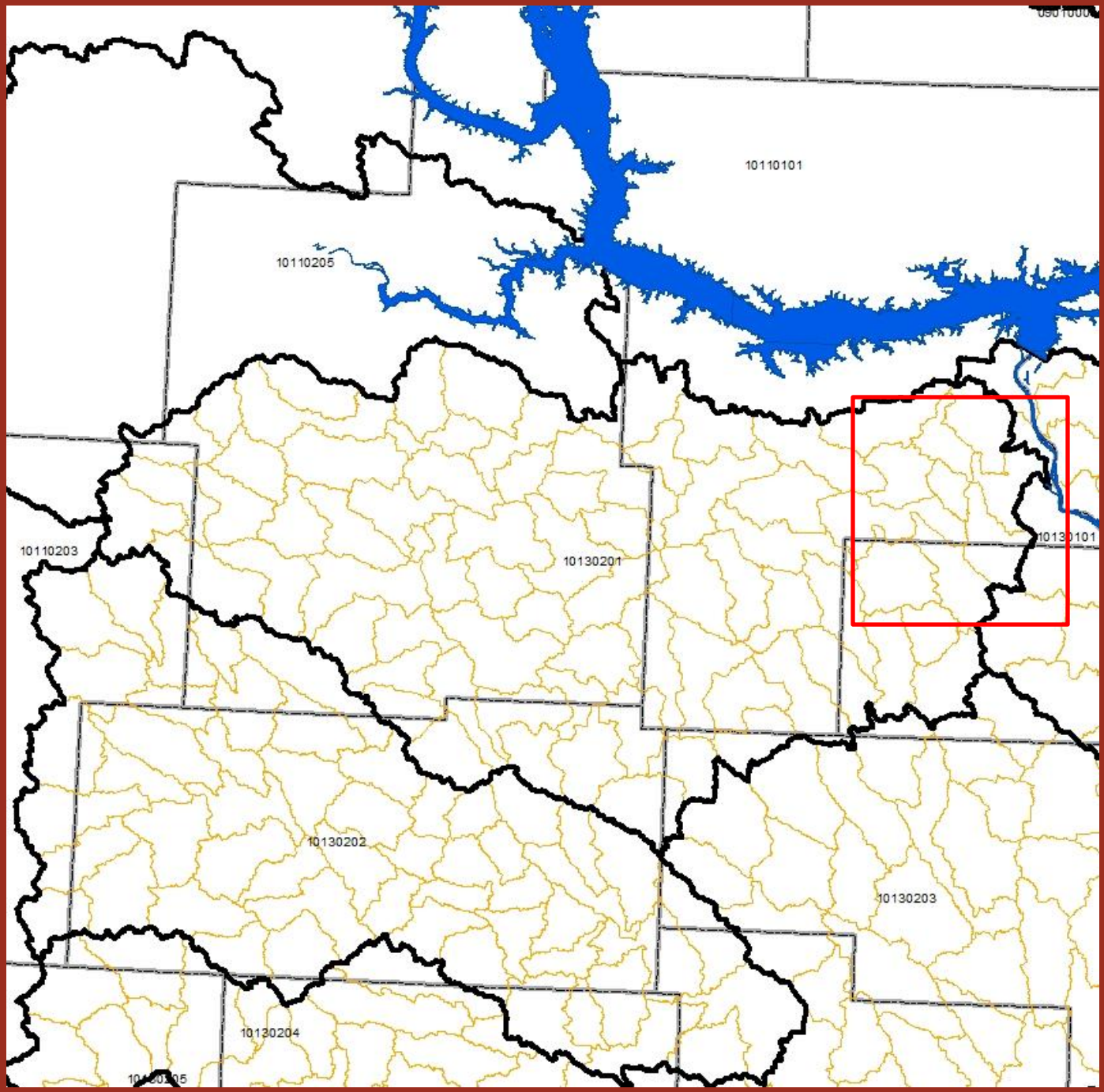
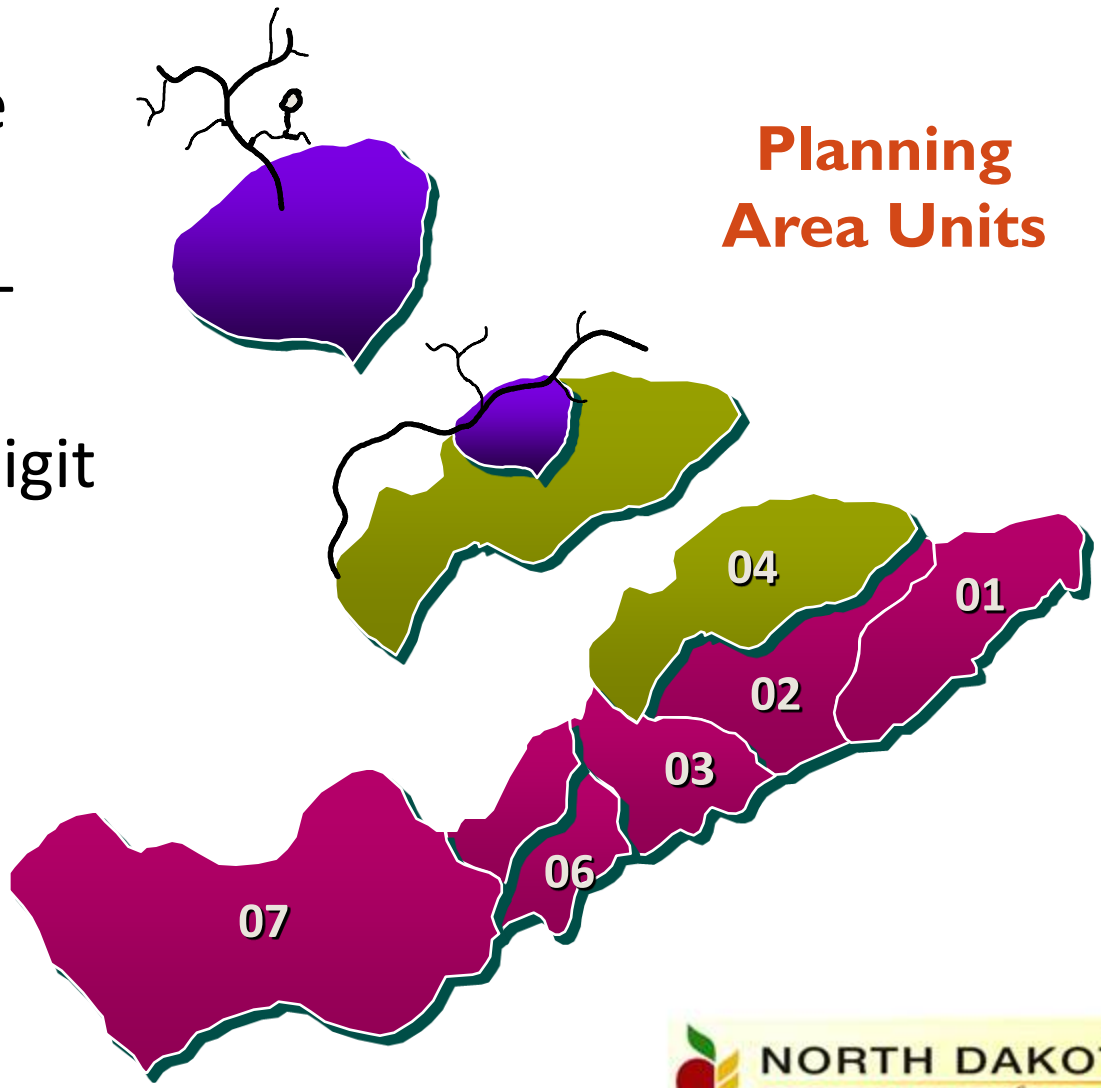

10110101
10110205
10110203
10130201
10130202
10130203
10130204

10110101
10130201
10130101

Prioritization Considerations

Prioritization may be tiered:

- Tier 1 - 8 digit sub-basins
- Tier 2 – 10 or 12 digit watersheds
- Tier 3 – stream segments, lakes, reservoirs



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Prioritization Considerations

- How we prioritize will depend on various factors
  - Nutrient reduction (or other pollutants/stressors)
  - Monitoring and assessment
  - TMDLs
  - 319 implementation
  - NDPDES permitting
  - Enforcement/inspections
  - Water quality standards development
  - National Water Quality Incentive Program (USDA)
  - Source Water Protection Program
  - Flood protection
  - Etc.

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Prioritization Considerations

Different approaches to prioritization:

- Geographic based
  - Watersheds
  - Political boundaries
- Pollutant based
  - Nutrients
  - Sediment
  - Toxics
  - Etc.
- Source/problem/stressor based
  - Stormwater
  - Point sources
  - Nonpoint Sources
  - Riparian habitat/stream buffers
  - CRP
  - Wetland loss
  - Rangeland loss
  - Etc.

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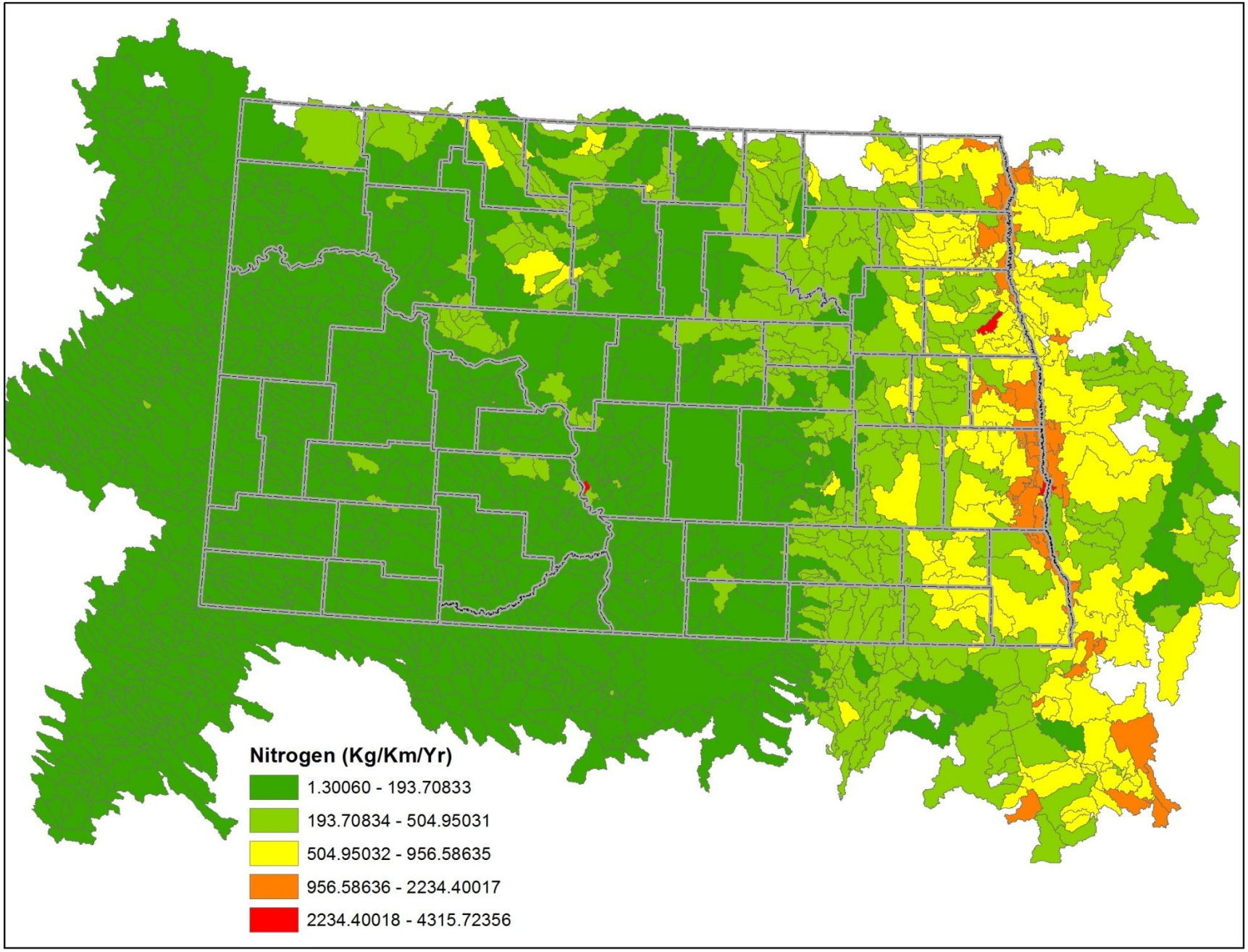
Indicators/metrics/factors used in Prioritization

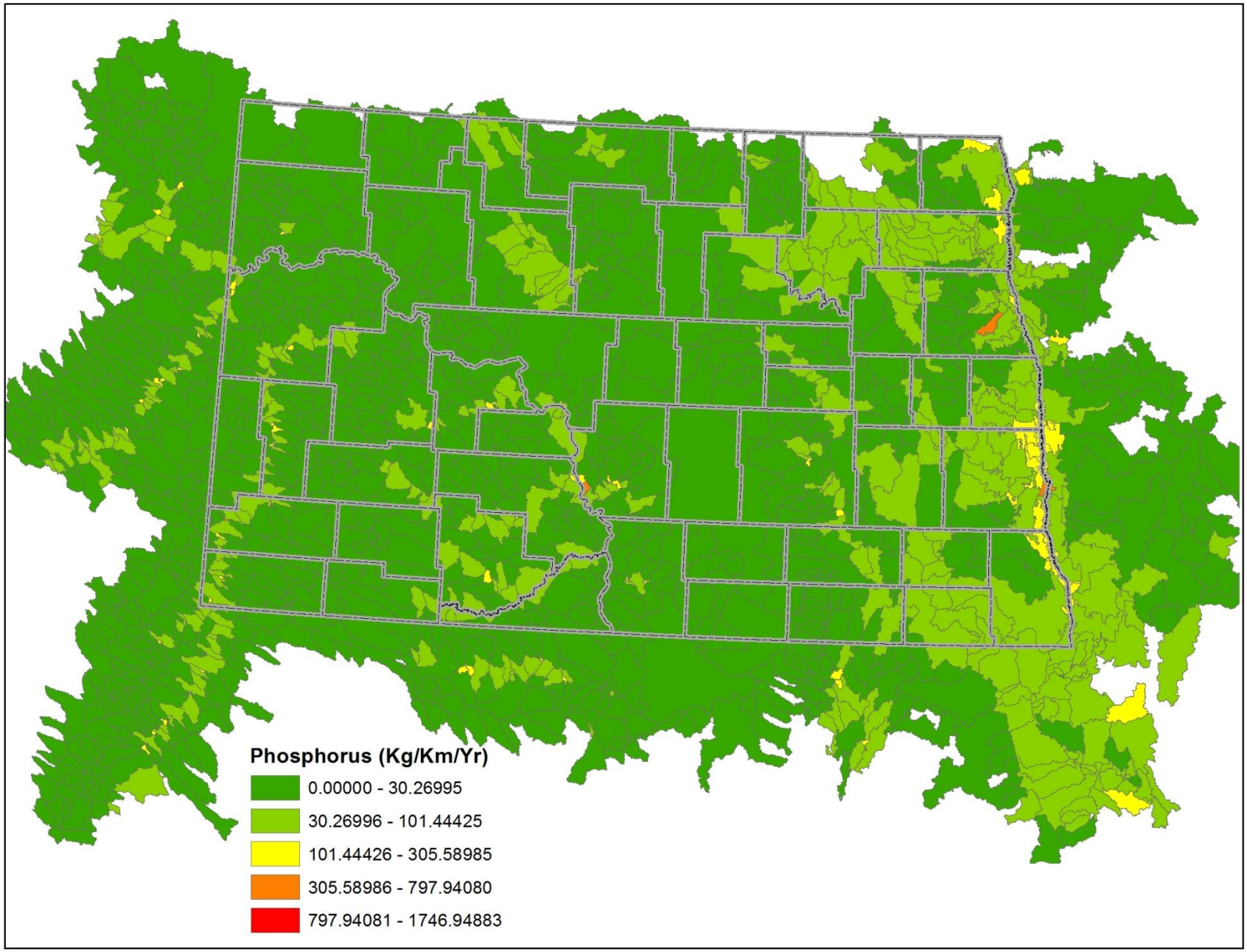
- Used to develop a “watershed profile”
- Recognizes that there is a range of watershed condition
  - Healthy watersheds (all uses attained), no pollutants, sources or stressors
  - Severely impaired watersheds (multiple uses impaired by multiple pollutants/stressors

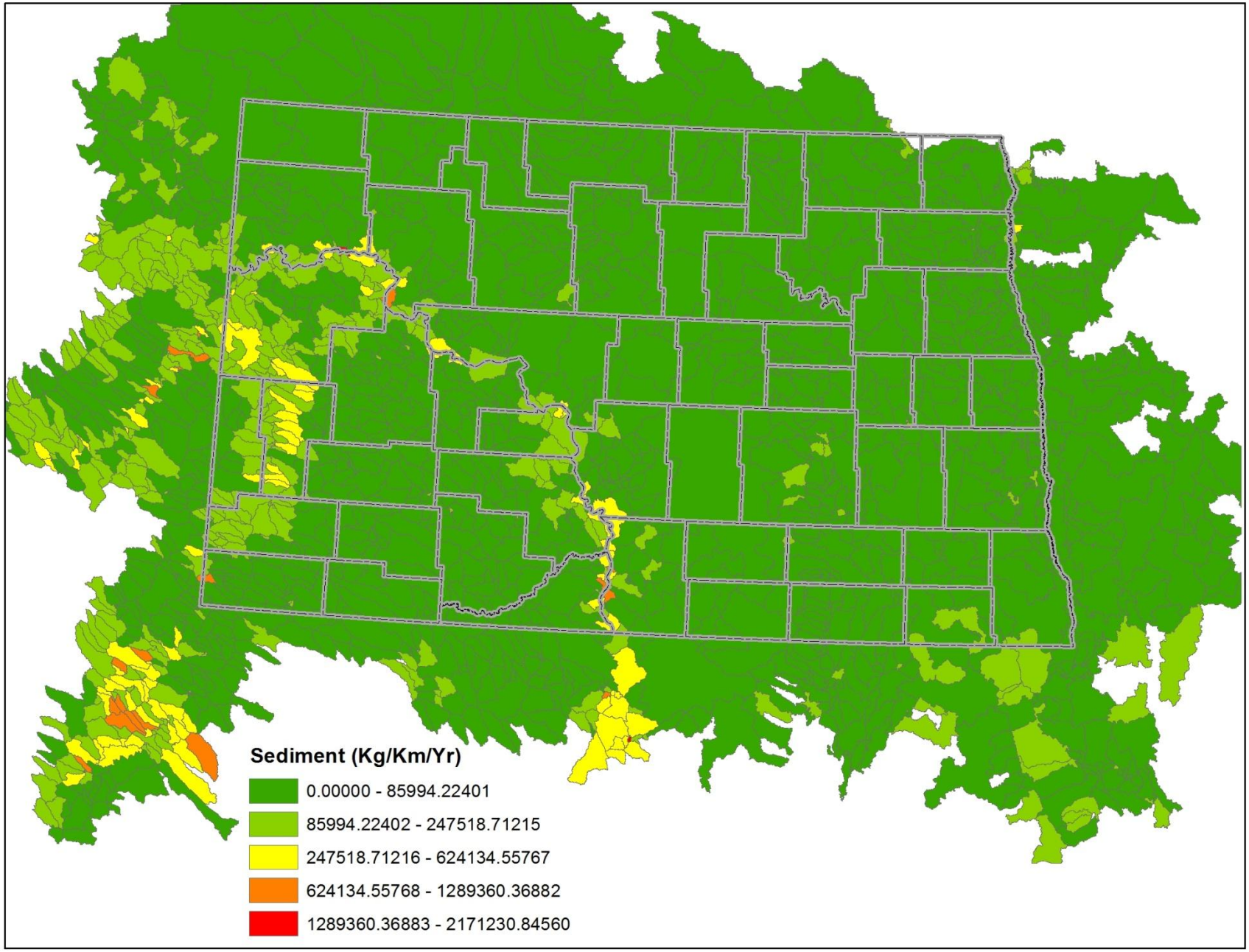
Indicators/metrics used in Prioritization

Types of indicators/metrics:

- Ecological indicators
  - Biological integrity
  - Flow and channel dynamics
  - Corridor and shoreline stability
  - Aquatic connectivity
  - Ecological history
- Stressor indicators
  - Watershed-level disturbance
  - Corridor or shoreline disturbance
  - Hydrologic alteration
  - Legacy or past, trajectory of future land use
  - Severity of pollutant loading


Nitrogen (Kg/Km/Yr)
1.30060 - 193.70833
193.70834 - 504.95031
504.95032 - 956.58635
956.58636 - 2234.40017
2234.40018 - 4315.72356


Phosphorus (Kg/Km/Yr)
0.00000 - 30.26995
30.26996 - 101.44425
101.44426 - 305.58985
305.58986 - 797.94080
797.94081 - 1746.94883


Sediment (Kg/Km/Yr)
0.00000 - 85994.22401
85994.22402 - 247518.71215
247518.71216 - 624134.55767
624134.55768 - 1289360.36882
1289360.36883 - 2171230.84560

Indicators/metrics used in Prioritization

Types of indicators/metrics

- Societal values/functions
  - Ecological services
  - Beneficial uses (single use -> multiple uses)
    - Recreation
    - Drinking water
  - Fishery value
  - Restorability

Availability of data for indicators/metrics

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Prioritization Decision Tools

- Use of different metrics/indicators based on prioritization purpose, scale, and approach
  - Indicators/metrics may be weighted based on importance

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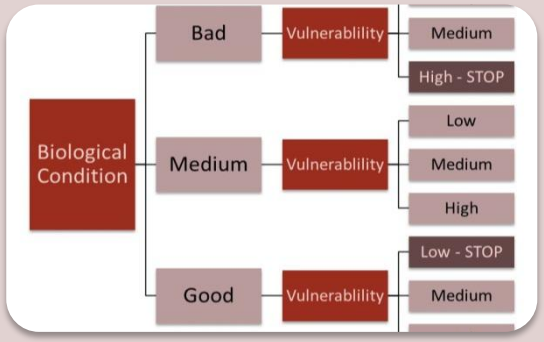
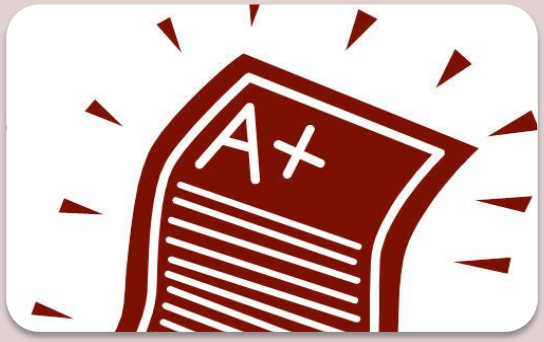
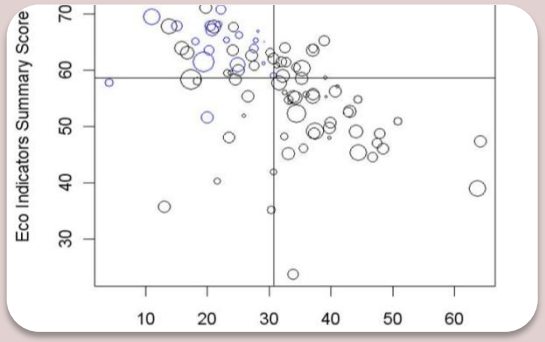
Prioritization Methods







Decision tree method

Score card method

EPA's Recovery Potential Screening Tool

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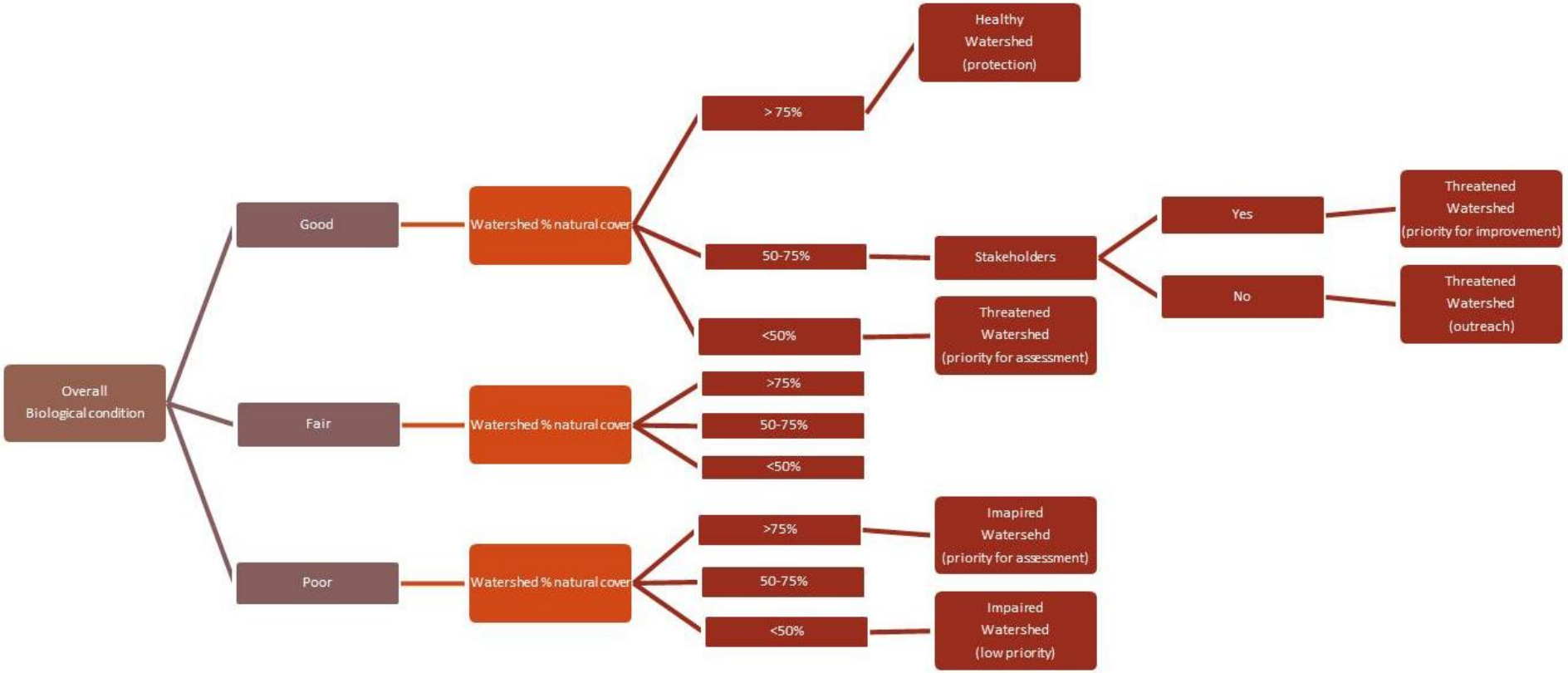
Decision Tree Method



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Score Card Method

- Select indicators/metrics
  - Ecological/health
  - Stressor
  - Societal
- Scale indicators and select scoring criteria

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Indicator/Metric Scoring

Biological condition	Watershed % natural cover	Total Phosphorus Yield
• Good = 1 • Fair = 3 • Poor = 5	• >75% = 1 • 50-75% = 3 • <50 = 5	• Low = 1 • Moderate = 3 • High = 5

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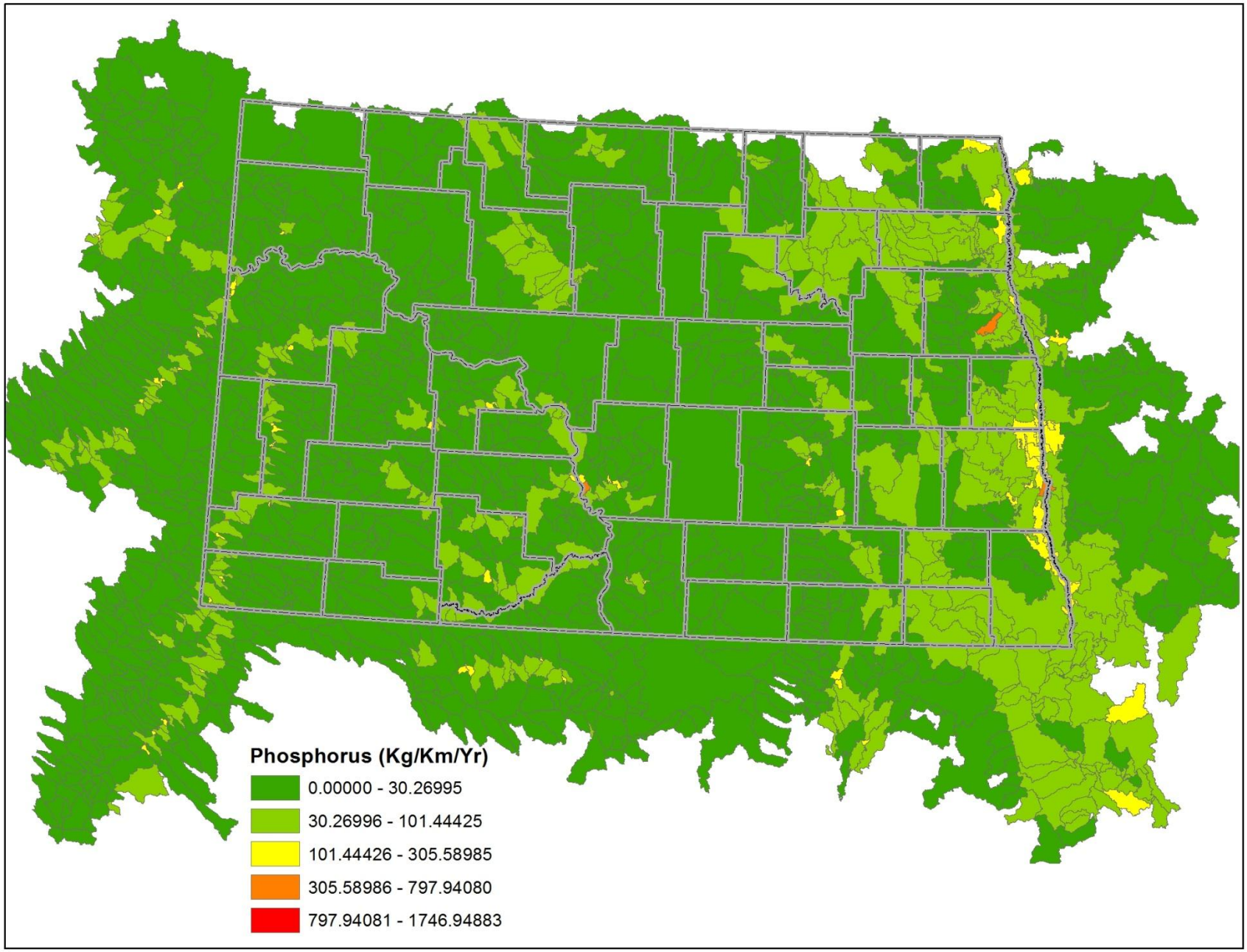
Phosphorus (Kg/Km/Yr)
0.00000 - 30.26995
30.26996 - 101.44425
101.44426 - 305.58985
305.58986 - 797.94080
797.94081 - 1746.94883

Indicator/Metric Scoring

TMDL Completed	Drinking Water Intakes	Fishery Value
• Yes = 5 • No = 1	• No = 1 • Yes = 10	• Tier 1 = 5 • Tier 2 = 3 • Tier 3 = 1

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Indicator/Metric Scoring

Section 319 Watershed Project

- Yes = 5
- No = 1

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Score Card Method

	Biological Condition	Watershed % Natural Cover	TP Yield	TMDL Complete	Drinking Water Intakes	Fishery Value	319 Project	Total Score
Watershed A	3	1	3	1	10	1	5	**24**
Watershed B	5	5	3	1	1	3	1	**19**
Watershed C	1	1	3	1	1	3	1	**11**
Watershed D	1	3	3	5	1	5	1	**19**

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Recovery Potential Screening Tool

- **Recovery potential** is the likelihood of an impaired waterbody/watershed to meet water quality standards (i.e., restoration), given its ecological capacity to regain function, exposure to stressors, and the social context affecting efforts to improve its condition.
- Uses 3 broad categories
  - Ecological Indicators
  - Stressor Indicators
  - Social Indicators
- 7 step process

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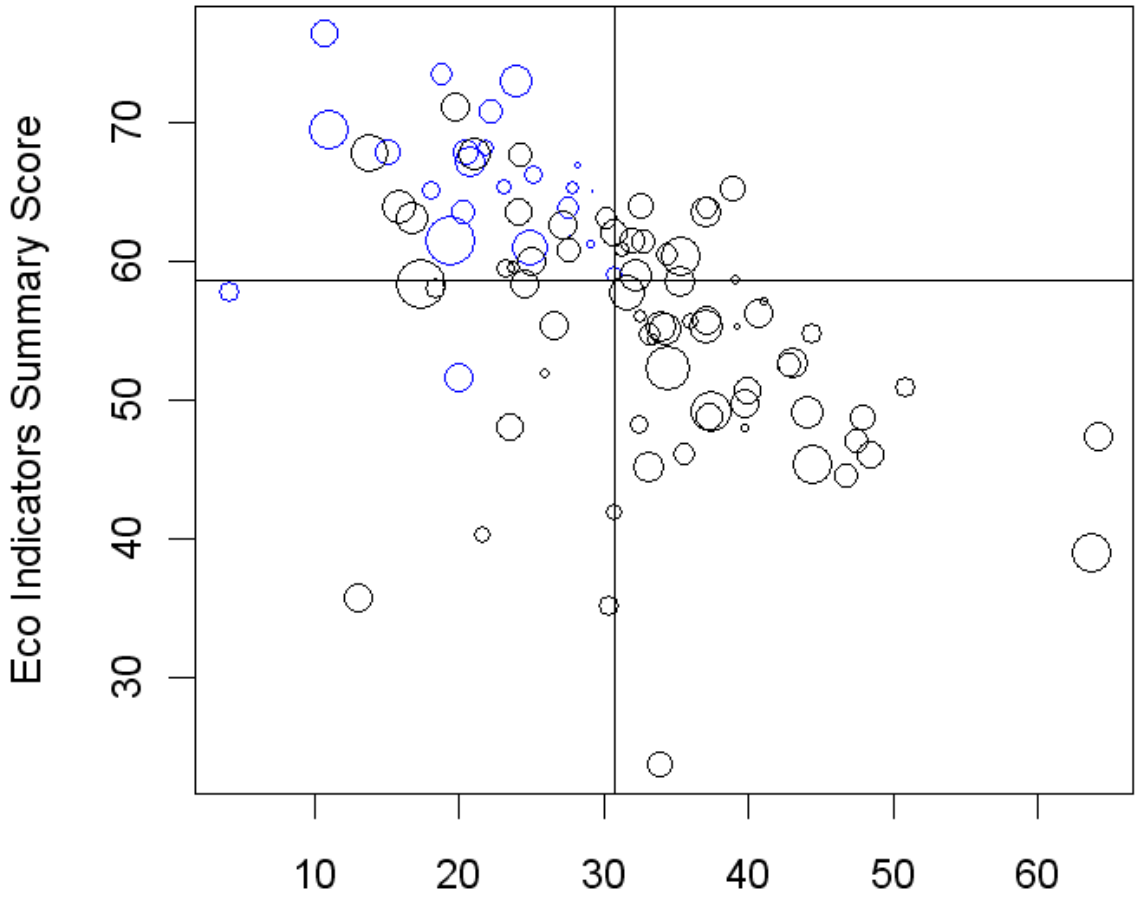
Recovery Potential Screening Tool



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Find the Recovery Potential Screening Tool at:

http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/index.cfm

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Next Steps

- Process of moving forward with the Nutrient Reduction Strategy
- Timeline for the Planning Team and important milestones
- Components of a Nutrient Outreach Strategy
- Existing groups or organizations to facilitate sector specific discussions
- Potential for stakeholder engagement and technical working groups

Thank you!

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