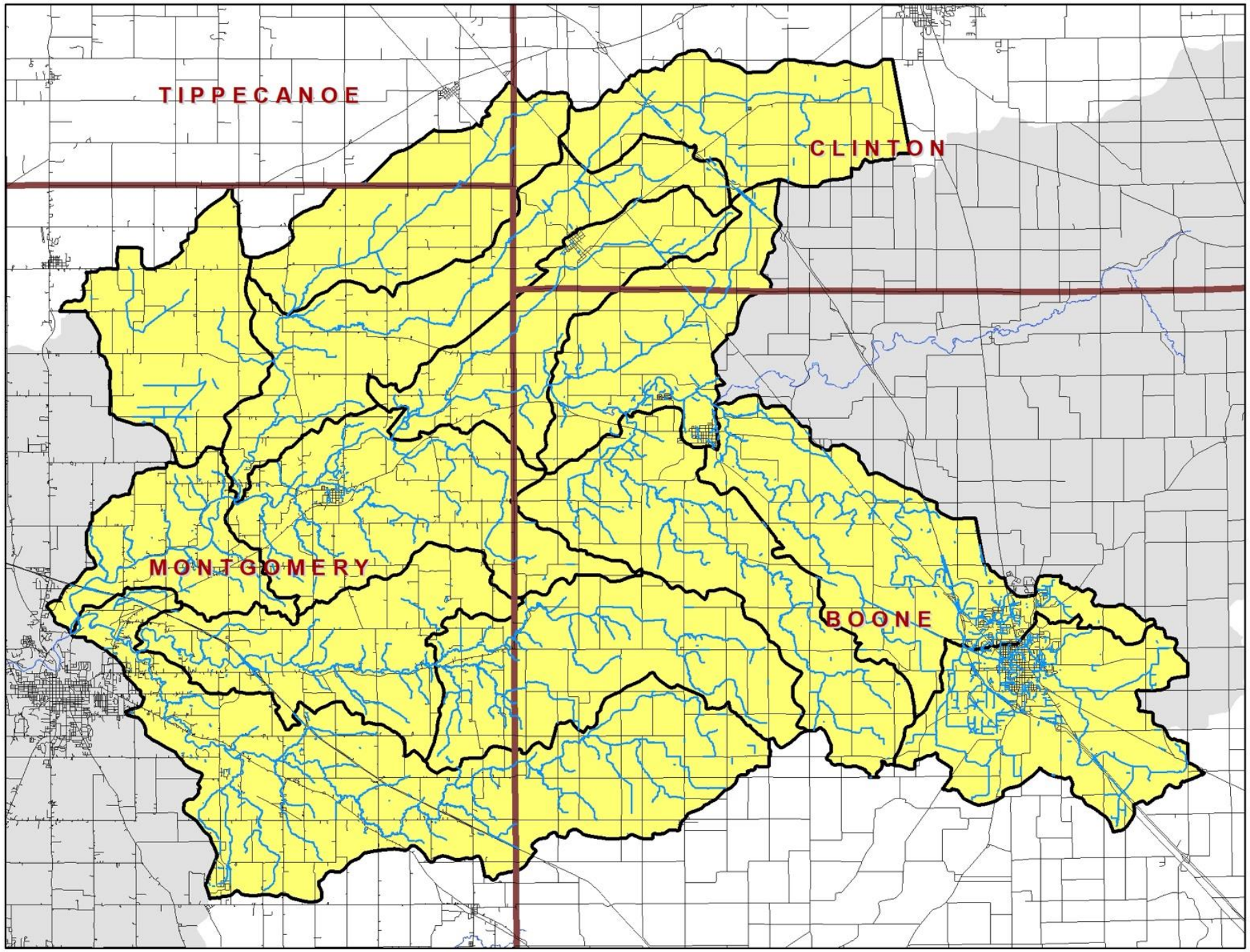
Upper Sugar Creek Watershed Management Plan

Final Stakeholder Meeting

Agenda and Objectives

- 5:30 – 6:00pm – Meal and Networking
  - Have a conversation with someone you don’t know
- 6:00 – 6:45pm – Watershed Management Plan Overview
  - Critical Areas
  - Priority Best Management Practices
  - Other Findings
- 6:45 – 7:15pm – Project Future (Facilitated Discussion)
  - Layout of Project Implementation Phase
  - Opportunities and Challenges


TIPPECANOE
CLINTON
MONTGOMERY
BOONE

Happening Now:
Meal and Networking

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Watershed Management Plan Overview

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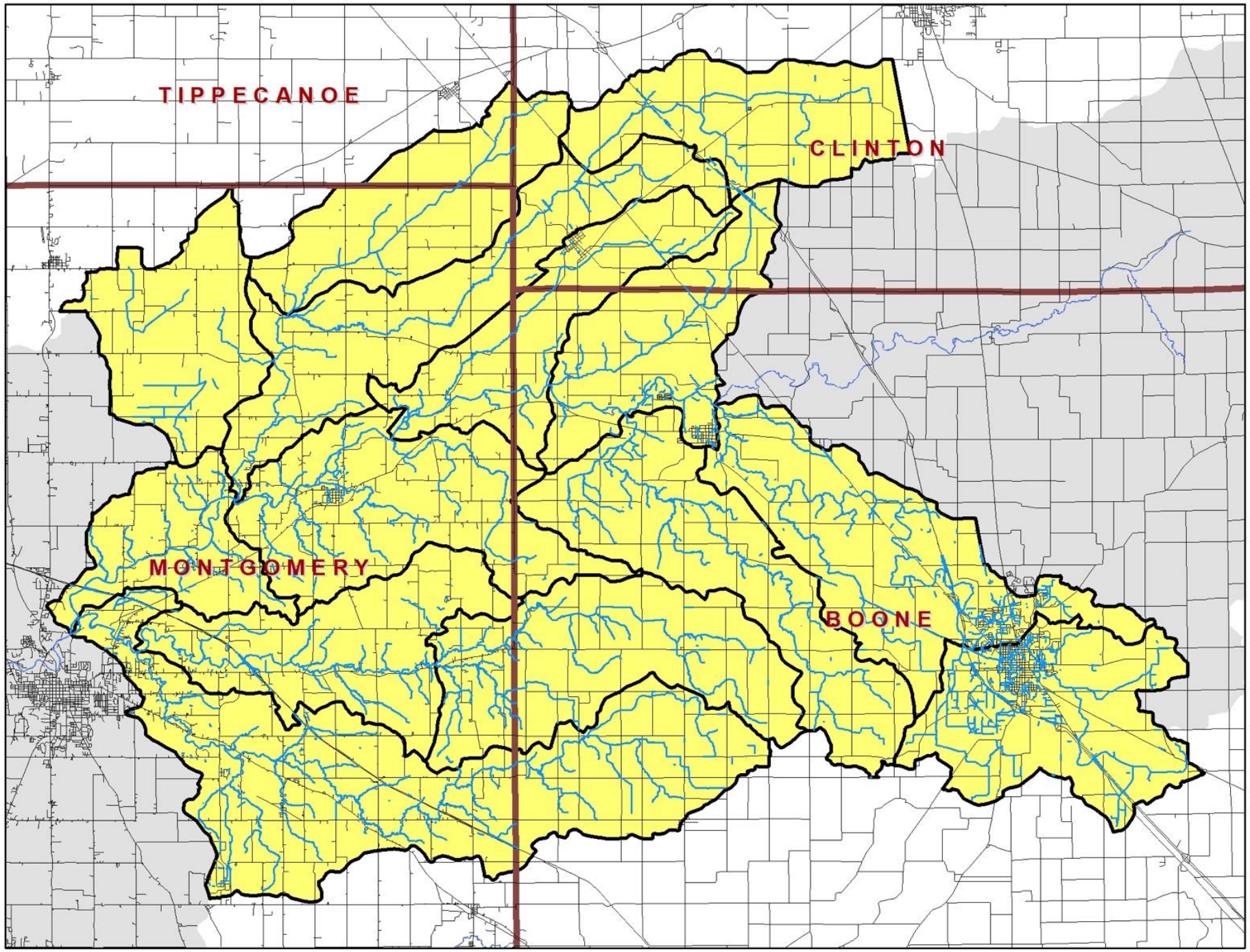
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Land Use and Watershed Features

- Boone, Clinton, Montgomery, Tippecanoe Co.
- Lebanon, Colfax, Thorntown, Darlington
- 89% Ag Land
- 6% Forested/Open Water/Wetlands
- 5% Residential/Commercial
- 76% of cropland is tile drained

Social Indicators

In your opinion, how much of a problem are the following water impairments in your area?

Question	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know	Total
Phosphorus	41 (22.3%)	42 (22.8%)	33 (18.5%)	7 (3.8%)	60 (32.6%)	184
Sedimentation (dirt & soil) in the water	33 (17.8%)	52 (28.1%)	67 (36.2%)	11 (6%)	22 (11.8%)	185
Pesticides	44 (23.8%)	48 (26%)	28 (15.1%)	14 (7.6%)	51 (27.6%)	185
Nitrogen	43 (23.1%)	44 (23.7%)	35 (18.8%)	6 (3.2%)	58 (31.2%)	186
Bacteria and viruses in the water (such as E.coli / coliform)	48 (25.8%)	35 (18.8%)	32 (17.2%)	10 (5.4%)	61 (32.8%)	186
Habitat alteration harming local fish	59 (31.7%)	31 (16.7%)	32 (17.2%)	8 (4.3%)	56 (30.1%)	186
Trash or debris in the water	37 (19.8%)	50 (26.7%)	55 (29.4%)	24 (12.8%)	21 (11.2%)	187
Algae in the water	56 (30%)	49 (26.2%)	38 (20.3%)	6 (3.2%)	38 (20.3%)	187

Social Indicators

In your opinion, how much of a problem are the following issues in your area?

Question	Not a Problem	Slight Problem	Moderate Problem	Severe Problem	Don't Know	Total
Contaminated drinking water	64 (35.2%)	33 (18.1%)	23 (12.6%)	17 (9.3%)	45 (24.7%)	182
Reduced beauty of lakes or streams	48 (26.2%)	61 (33.3%)	36 (19.7%)	11 (6%)	27 (14.8%)	183
Loss of desirable fish species	53 (28.8%)	34 (18.5%)	32 (17.4%)	10 (5.4%)	55 (29.9%)	184
Reduced opportunities for water recreation	71 (38.6%)	34 (18.5%)	33 (17.9%)	6 (3.3%)	40 (21.74%)	184
Reduced quality of water recreation activities	68 (34%)	36 (19.6%)	32 (17.4%)	5 (2.7%)	43 (23.4%)	184
Excessive aquatic plants or algae	54 (29.4%)	44 (23.9%)	29 (15.8%)	11 (6%)	46 (25%)	184
Fish kills	69 (37.5%)	32 (17.4%)	21 (11.4%)	12 (6.5%)	50 (27.2%)	184
Polluted swimming areas	57 (31%)	39 (21.2%)	21 (11.4%)	16 (8.7%)	51 (27.7%)	184

Primary Resource Concerns

- Residential Septic
  - 98% of soils in the watershed are ‘Severely Limited’ for septic usage
  - Contributing to E. Coli and Phosphorous Loading
- Crop Production
  - 40% of cropland is conventionally tilled (2021 ISDA Tillage Transect)
  - 60% of Watershed Soils are Highly Erodible
- Livestock Production
  - ~128,400 animals produce ~354K tons of manure per year
  - 15 CFOs and ~2,500 animals on unregulated farms
- Channel Stability and Flooding
  - 84.8 miles of streambank erosion

Stream Impairments

- E. Coli – 108 stream miles (22%)
- PCBs in Fish Tissue – 101 stream miles (19%)
- Nutrients and Impaired Biotic Communities – 11 stream miles (2%)

In total, an 84% reduction in nitrogen, 97% reduction in phosphorus, 95% reduction in sediment, and 91% reduction in E. coli loading rates are required to meet water quality targets or state standards.

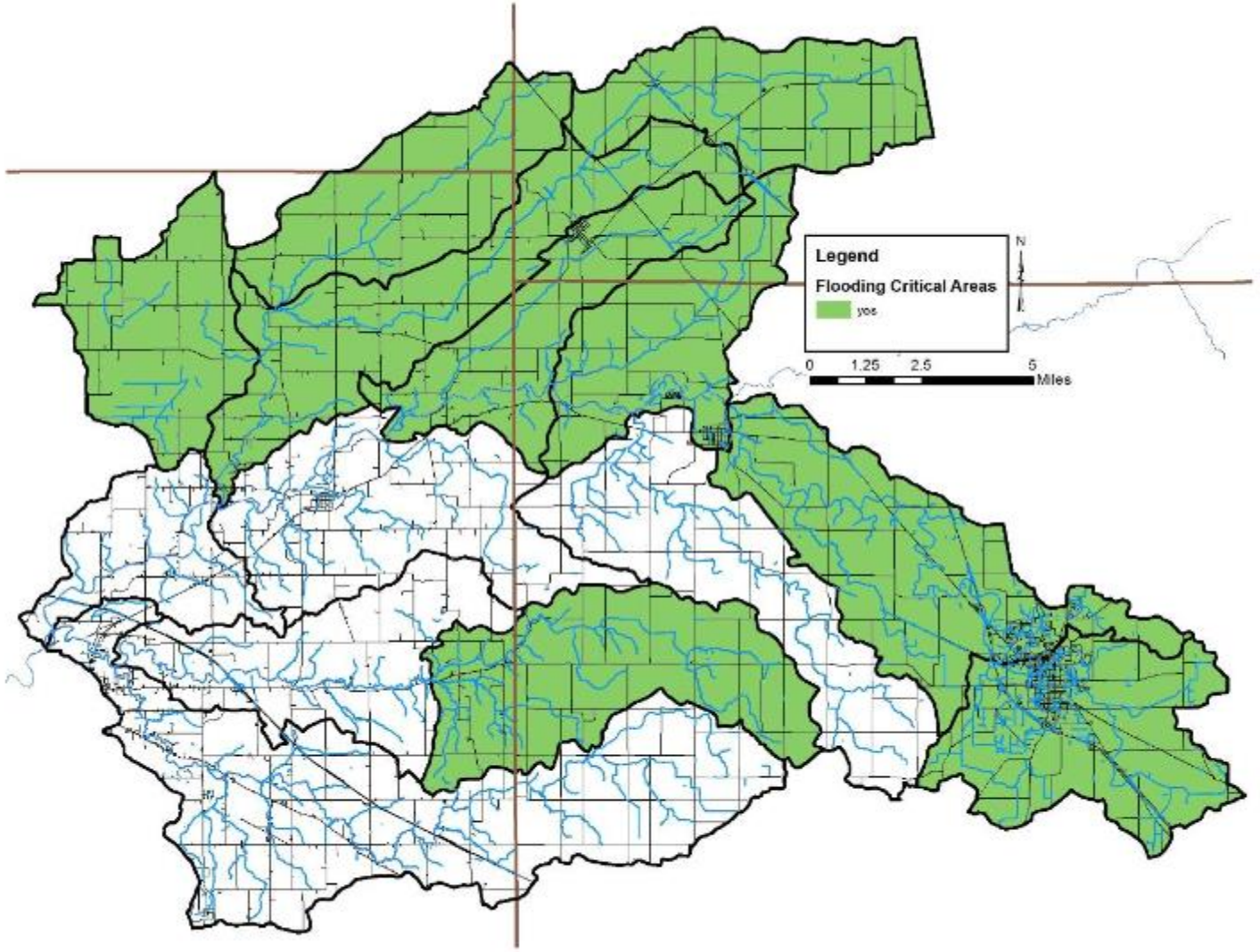

Figure 99. Critical areas for flooding in the Upper Sugar Creek Watershed.

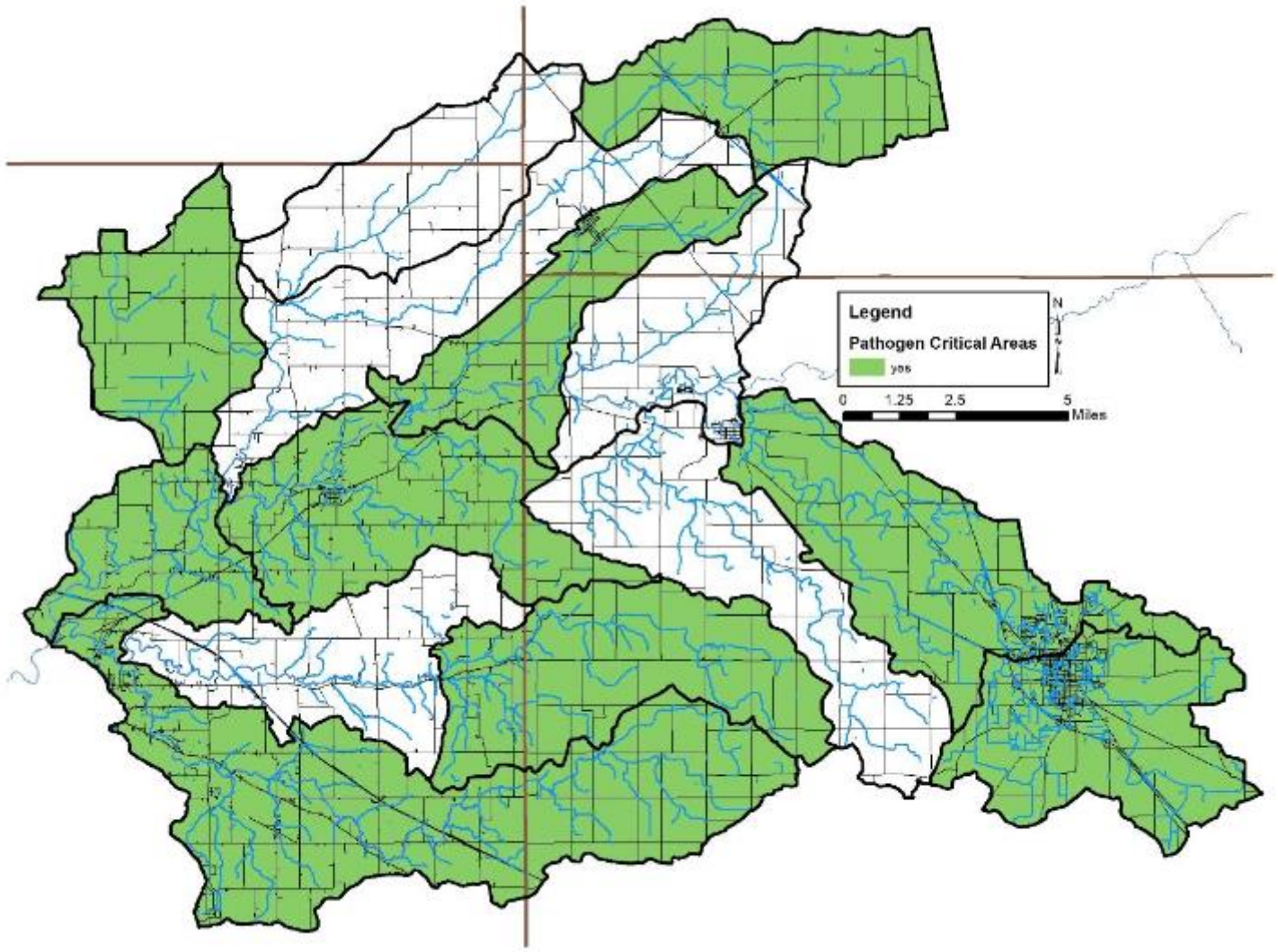

Figure 98. Critical areas for *E. coli* in the Upper Sugar Creek Watershed.

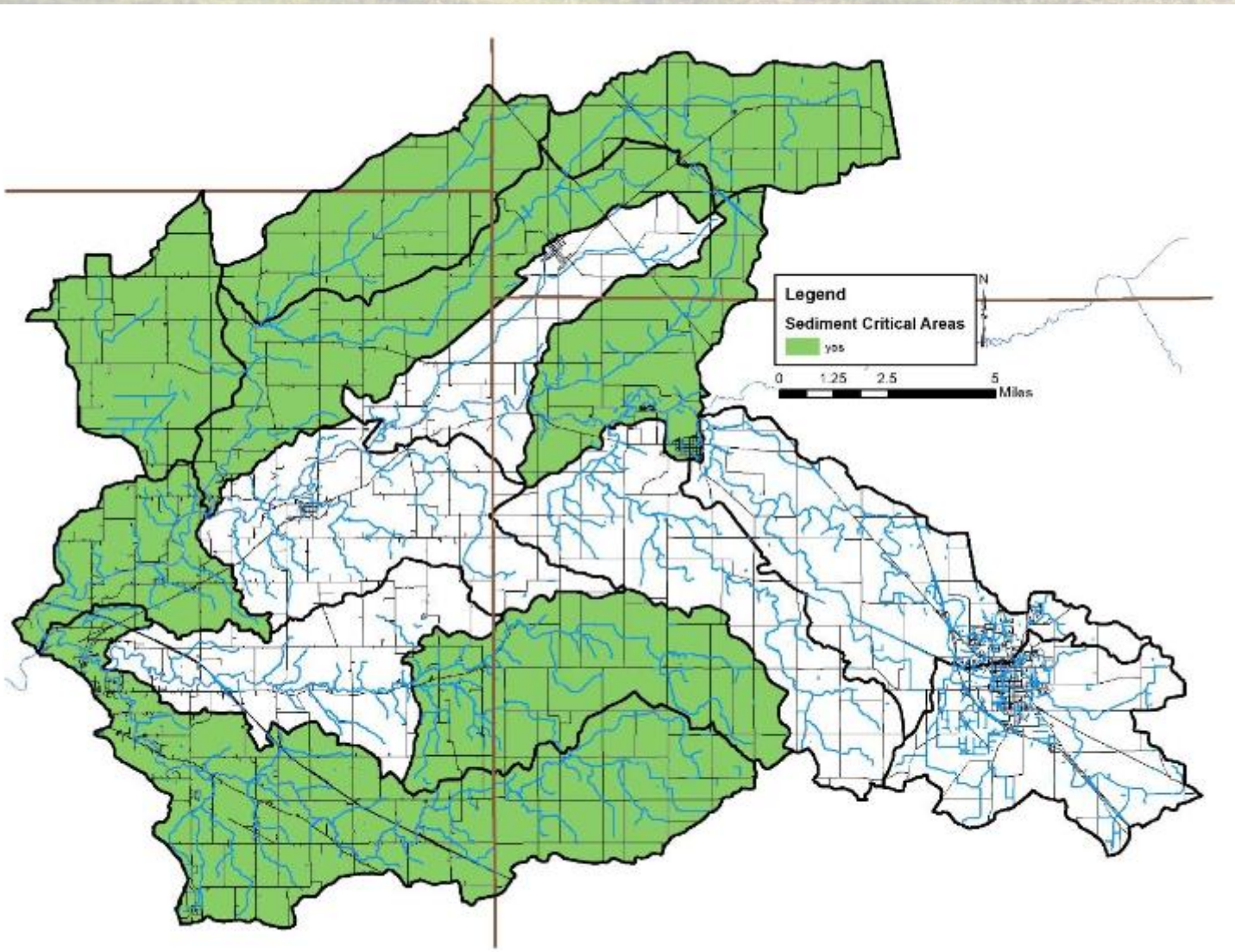

Figure 97. Critical areas for sediment in the Upper Sugar Creek Watershed.

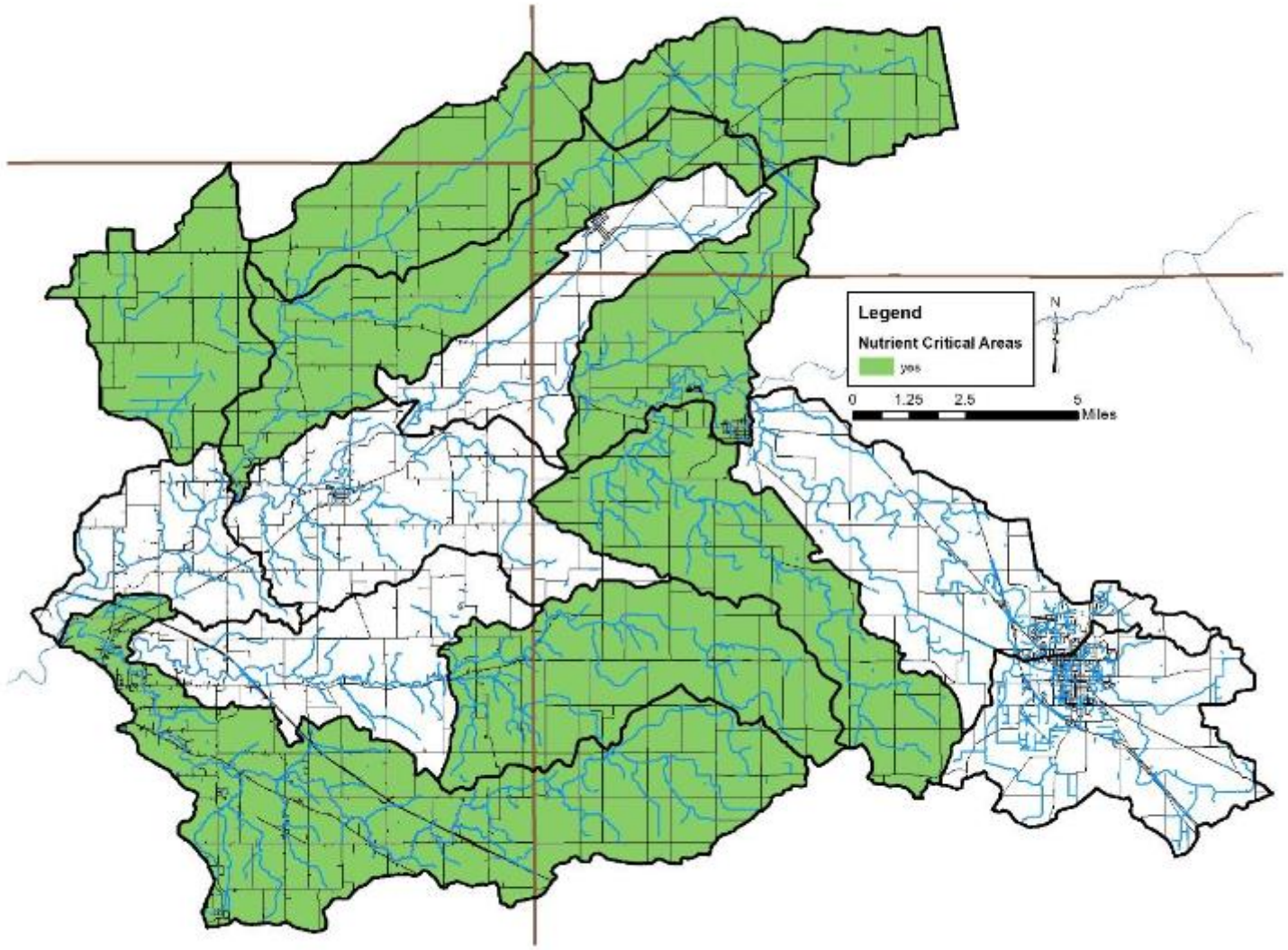

Figure 96. Critical areas for nutrients in the Upper Sugar Creek Watershed.

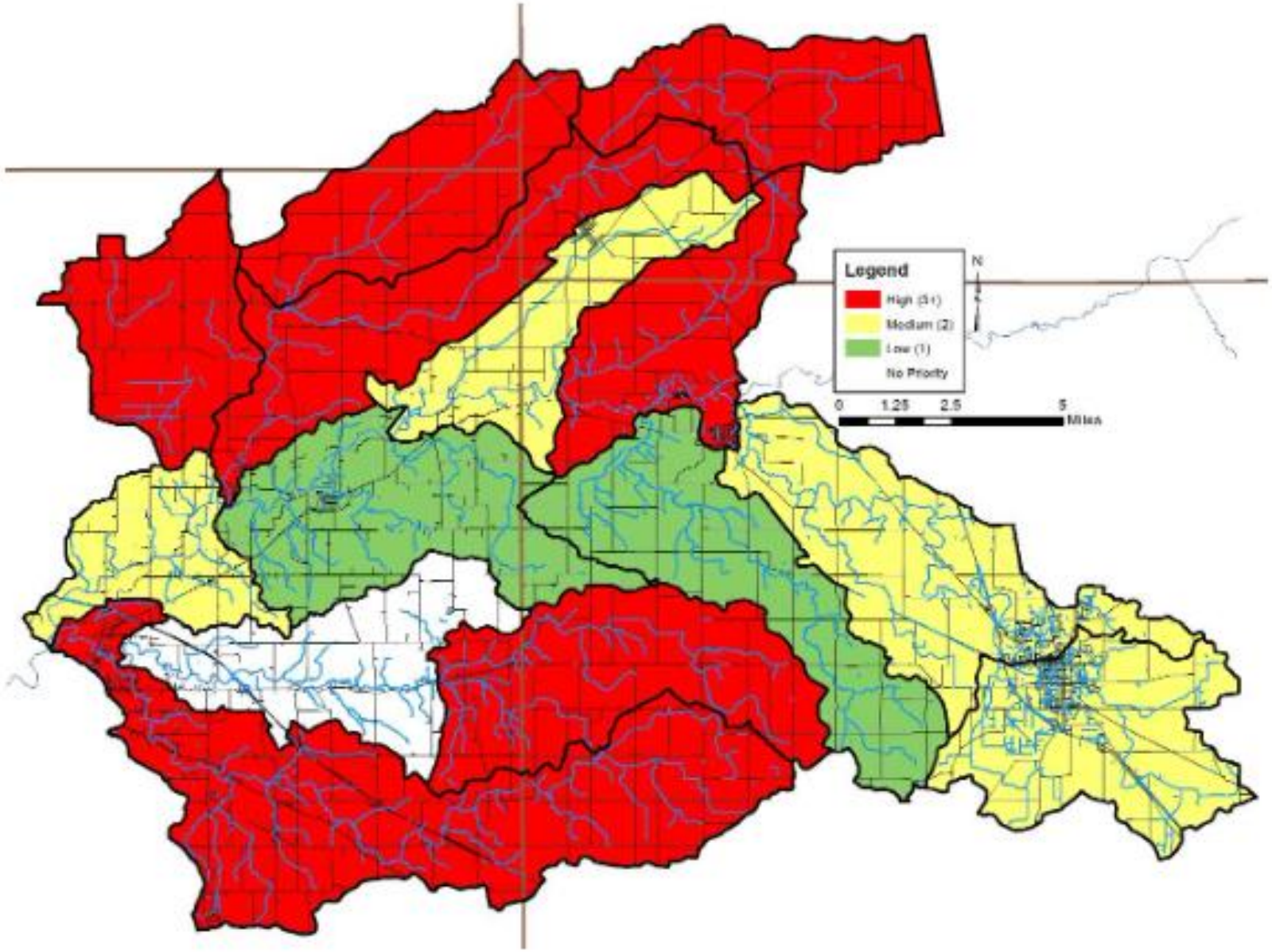

Figure 100. Prioritized critical areas in the Upper Sugar Creek Watershed.

Suggested BMPs

Suggested BMPs	Estimated Cost per Unit
Conservation Cover (327)	$75-$300
Cover Crop (340)	$25-$40
Fence (382)	$1.00 temp./ $3.00 perm.
Filter Strip (393)	$75-$300
Forage and Biomass Planting (512)	$75-$300
Grassed Waterway (412)	$5,000
Livestock Restriction (Alt Watering System, Access Control)	$1,000
Nutrient/Pest Management (590)^	$4
Pollinator planting (CP42)	
Prescribed Grazing (528)	$15
Residue and Tillage Management (329)	$15
Streambank Stabilization**	$1,000
Tree/shrub Establishment (612)	$450
Wetland Creation/Restoration	$1,000

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Project Future
(Facilitated Discussion)

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Upper Sugar Creek Watershed 30 Yr. Goals

1. Reduce nitrate-nitrogen loading from 3,314,191 pounds per year to 514,580 pounds/year (84%);
2. Reduce total phosphorus from 1,214,352 pounds per year to 41,166 pounds/year (97%);
3. Reduce total suspended solids from 160,733,493 pounds per year to 7,718,695 pounds/year (95%);
4. Reduce E.coli inputs so that they meet state standards or from 5.79E+15 to 5.49E+14 col/year (91%);
5. Reduce flooding impacts by increasing storage and infiltration across the watershed within 30 years.
6. Natural habitat (grasslands, forests, wetlands) will increase by a total of 5% with a focus on improving habitat connectivity across the watershed within 30 years.
7. By 2053, 100% of the public will be informed about practices that can be implemented to positively impact Upper Sugar Creek, and no less than 50% of individuals living and farming in the watershed will be engaged in the project within 30 years.

High-Priority Critical Areas

10 Yr. Goals

1. Reduce **nitrate-nitrogen** loading from 3,314,191 pounds per year to **2,380,987 pounds/year (28%);**
2. Reduce **total phosphorus** from 1,214,352 pounds per year to **823,290 pounds/year (32%);**
3. Reduce **total suspended solids** from 160,733,493 pounds per year to **109,728,561 pounds/year (32%);**
4. Reduce **E.coli** inputs from 5.79E+15 col/year per year to **4.04E+1 col/year (30%).**
5. **Reduce flooding** impacts by increasing storage and infiltration across the watershed within 10 years.
6. **Natural habitat** (grasslands, forests, wetlands) will **increase by a total of 2%** with a focus on improving habitat connectivity across the watershed within 30 years.
7. By 2033, **30% of the public will be informed about practices that can be implemented to positively impact Upper Sugar Creek**, and **no less than 50% of individuals living and farming in the watershed will be engaged in the project within 10 years**.

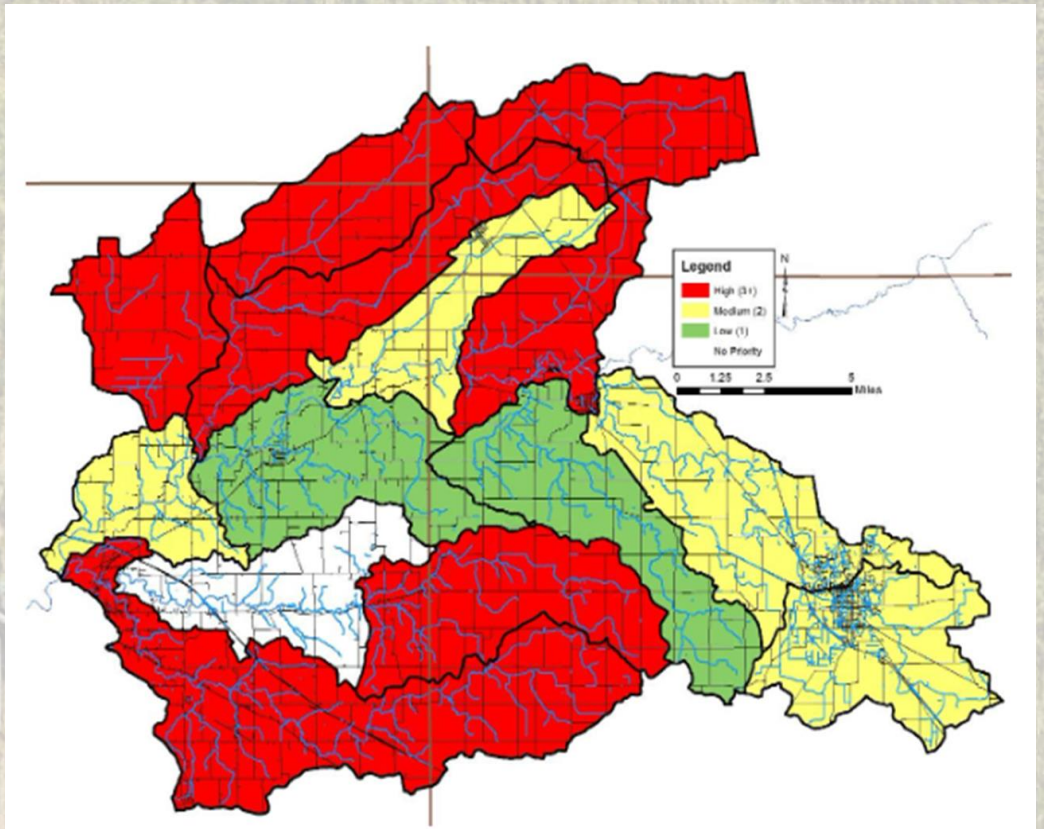

Figure 10o. Prioritized critical areas in the Upper Sugar Creek Watershed.

3 Yr. 319 Project Goals

- **Goal 1**: Identify and implement projects in high-priority critical areas only, by developing, promoting, and implementing a targeted cost-share program which will result in measurable changes in water quality.
- **Goal 2**: Develop and promote a cost-share program.
- **Goal 3**: Cultivate interest in BMP implementation:
- **Goal 4**: Continue targeted and watershed-wide education and outreach efforts aimed at increasing awareness about water quality issues and the adoption rate of BMPs in high-priority critical areas.

Public Engagement

- Mail information about the cost-share program to landowners and producers in the high-priority critical areas during the first year of the cost-share program to inform them of the program and its opportunities for on-the-ground cost-share.
- Distribute quarterly newsletter articles or press releases and post monthly website and social media updates to highlight the project goals, promote the cost-share program, available funds, and education/outreach activities, and detail cost-share application periods.
- Quarterly steering committee meetings to guide the development and implementation of the cost share program, provide education & outreach event updates, and review progress on all Upper Sugar Creek watershed-based projects.
- Public events including river clean-ups, float trips, and county fairs with the goal of connecting the community to Sugar Creek and educating them about the river, its watershed, and potential impacts on the local community.