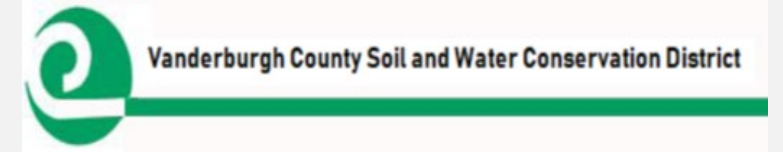




“WATERSHED SHOWCASE:  
PLANNING AND MANAGEMENT  
AT THE WATERSHED SCALE.”

**TODAY'S PANEL:**



Erin Shoup – Vanderburgh County SWCD, Administrative Assistant

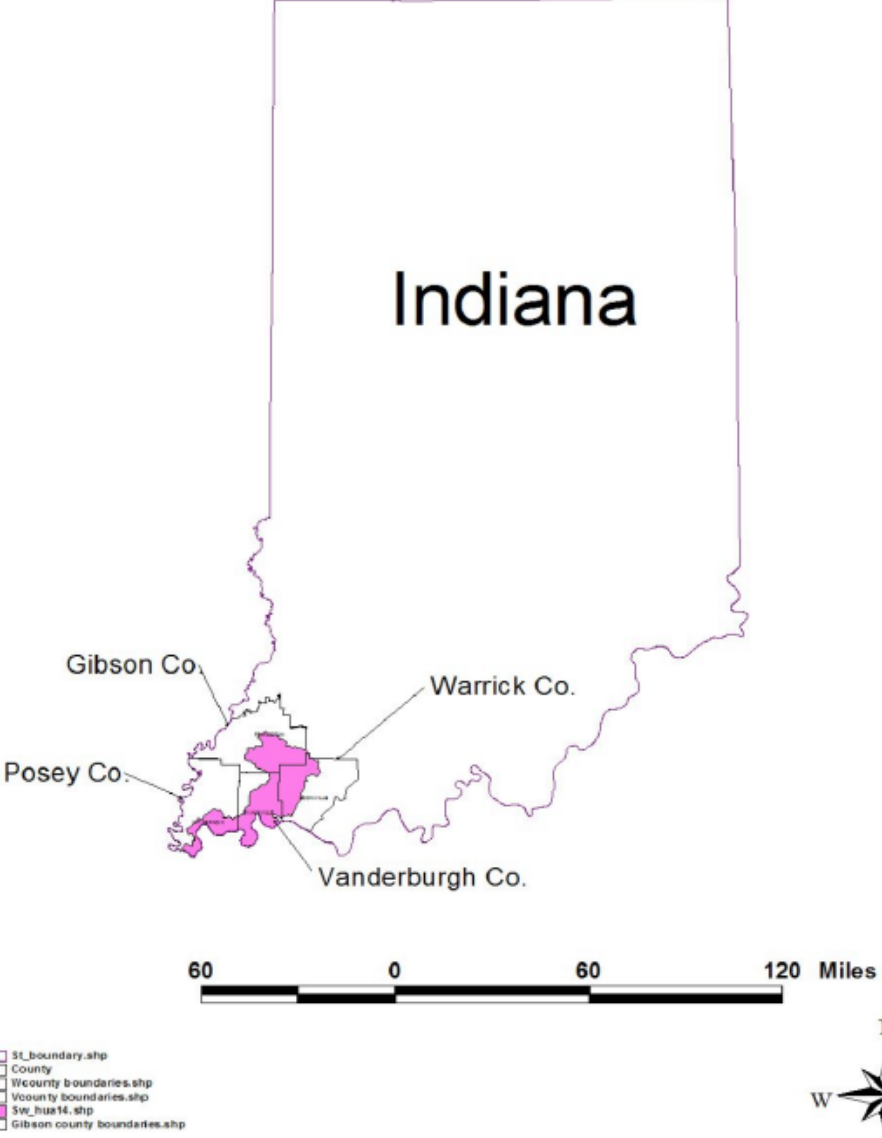
Julie Loehr – Southwest Program Manager for CCSI

Sara Peel – Lead Scientist and Co-owner of Arion Consultants, Inc.

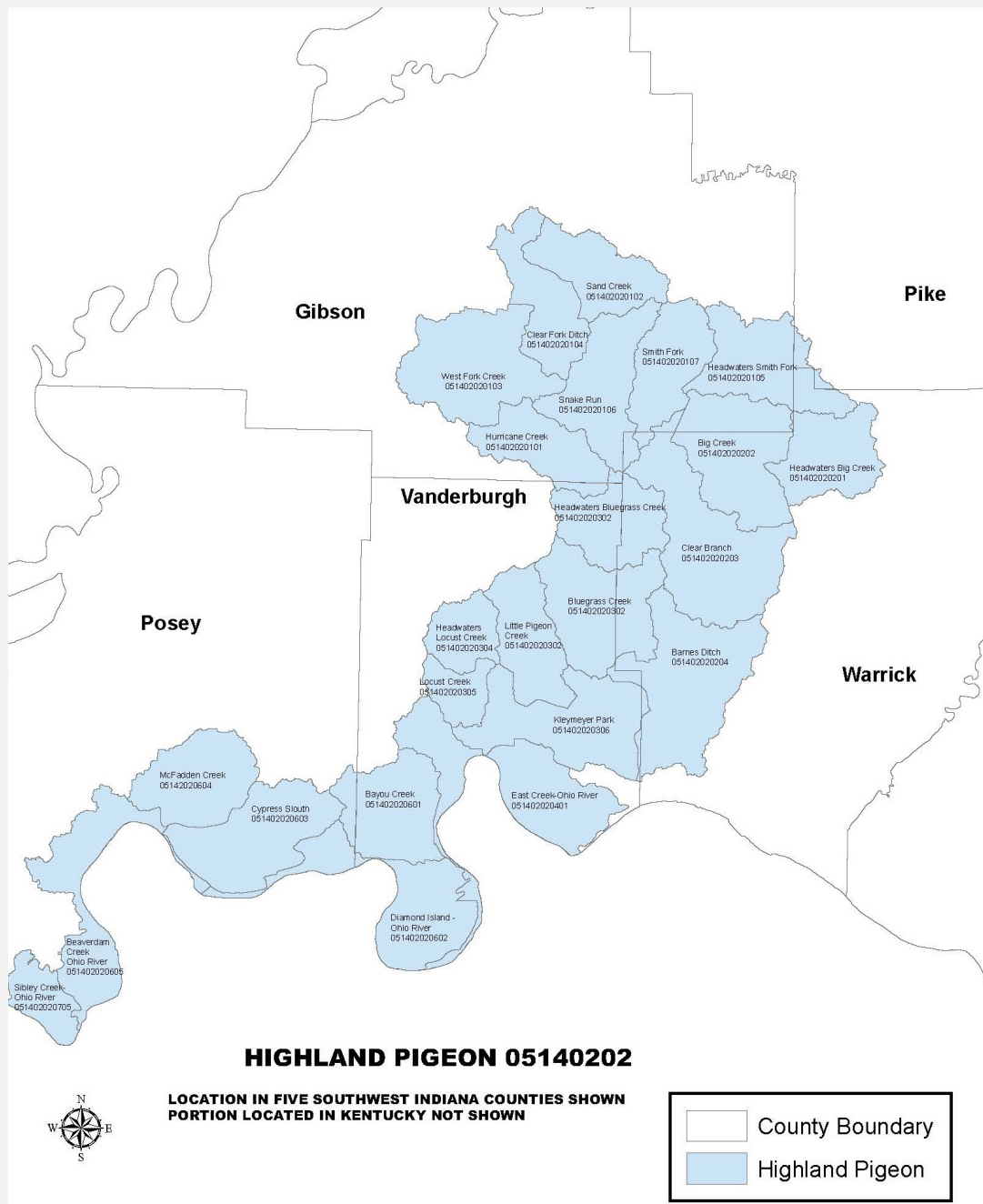
Carrie Parmenter – TNC, Lower Wabash Project Director



Conservation Cropping  
Systems Initiative  
Improving Soil Health on Indiana Crop Land



Pigeon Creek, north of mouth at Ohio River. *picture from paddling enthusiast*



- Encompassing five counties.
- Draining 337,253 acres.
- Nearly 49 communities / towns.
- Includes Evansville MS4.
- Approximately 150,000 people.

Goal is to first understand the water quality issues, then to develop a plan to manage the watershed in a way that improves water quality.

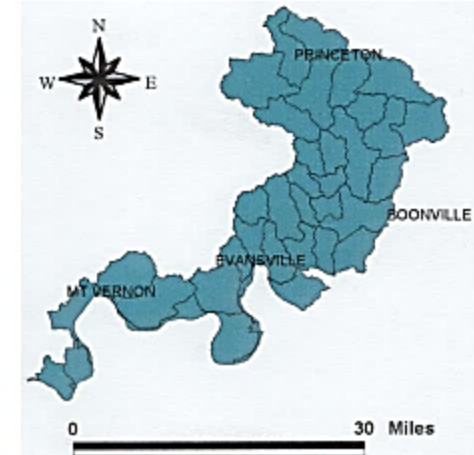
Imagine the partnerships needed to address water quality on this scale.

# HISTORICAL EFFORTS

One of the first watershed efforts was in 1996. A Clean Water Section 319 Grant was awarded Vanderburgh County SWCD.

The grant work resulted in a Watershed Management Plan in 2003.

## Watershed Management Plan For Highland-Pigeon Watershed



Prepared for Indiana Dept. of Environmental Management by  
Pigeon-Highland Watershed Steering Committee and  
Four Rivers Resource Conservation & Development Area, Inc.  
June 2003

Several years go by between the 2003 WMP and recent work.

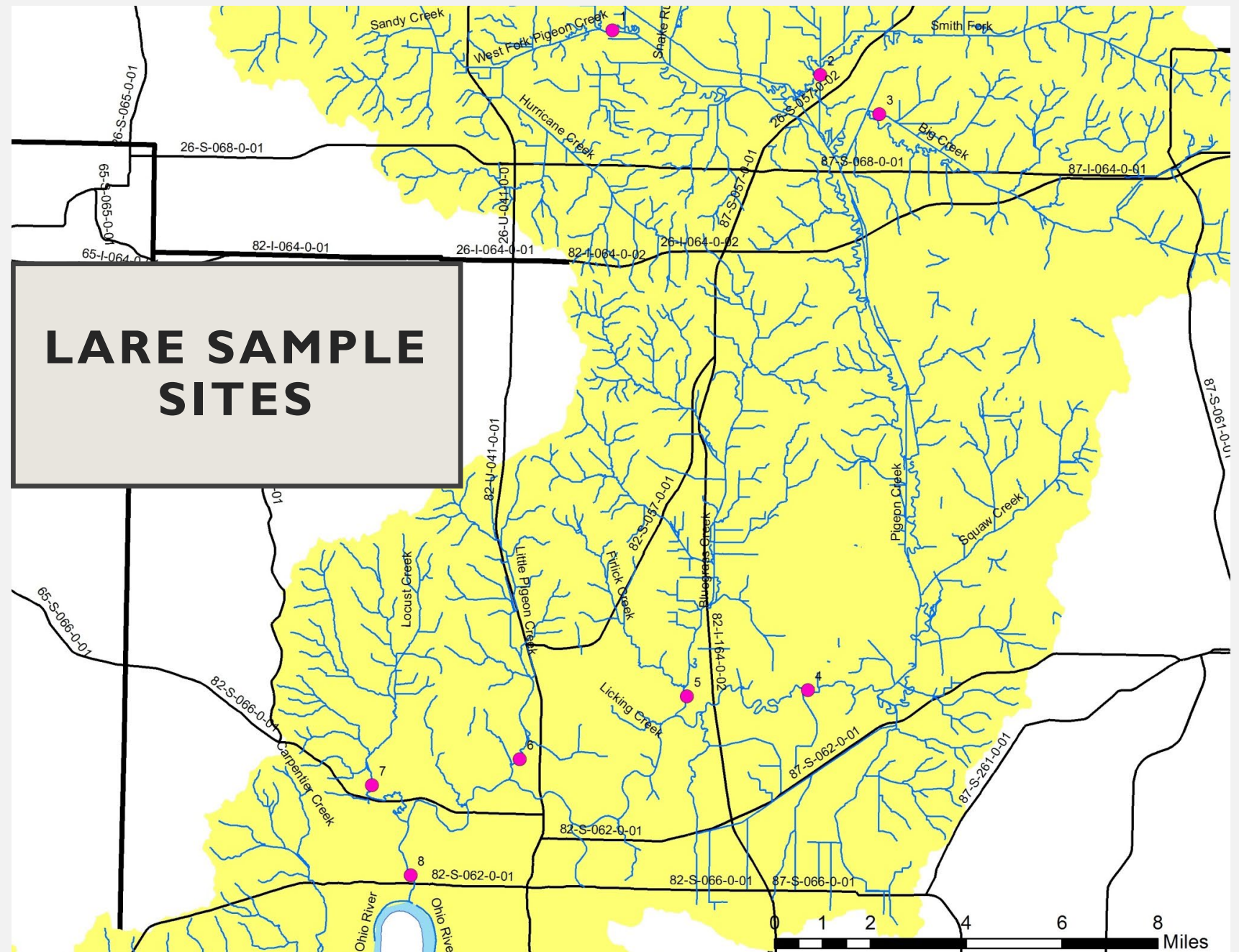
## GIBSON SWCD LARE GRANT WORK

- Gibson SWCD - Patoka Watershed work from 2013 to 2017.
- 2018 decided to focus on Gibson headwaters of Pigeon Creek.



- Dated WMP no longer eligible for implementation funds
- WMP needed to meet 2009 checklist requirements.
- LARE grant sought to characterize any changes and update data.

Sara Peel, Arion Consultants, gathered water quality data in 2017, followed by a stakeholder meeting to discuss recommendations in 2018.



# WATER QUALITY CONCERNS FROM LARE GRANT

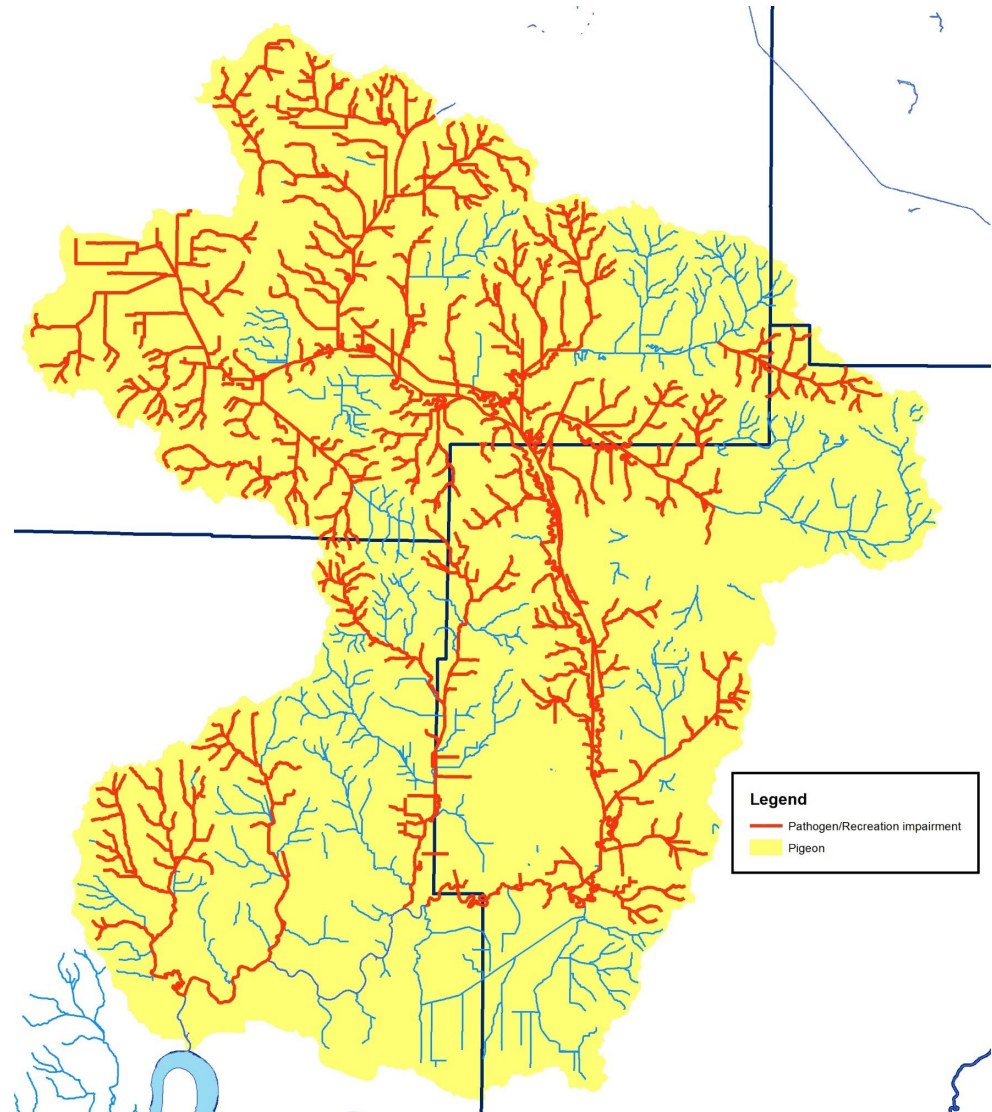
- Elevated Phosphorus
- Elevated Nitrogen
- Elevated Total Suspended Solids
- Elevated E. coli
- Streambank erosion
- Flooding
- Poor Instream Habitat



High orthophosphate reading on Hurricane Creek in Gibson County, September 2021



# IMPAIRED WATERBODIES



# LARE: POTENTIAL NEXT STEPS

Soil  
Health

Hold soil in place.

Nutrient  
Reduction

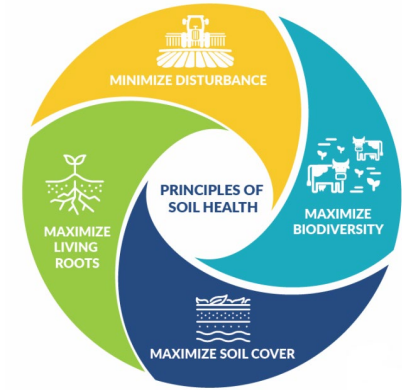
Implement reduction-  
based practices.

Erosion

Address instream habitat  
and streambank erosion.

Update

Update Watershed  
Management Plan.

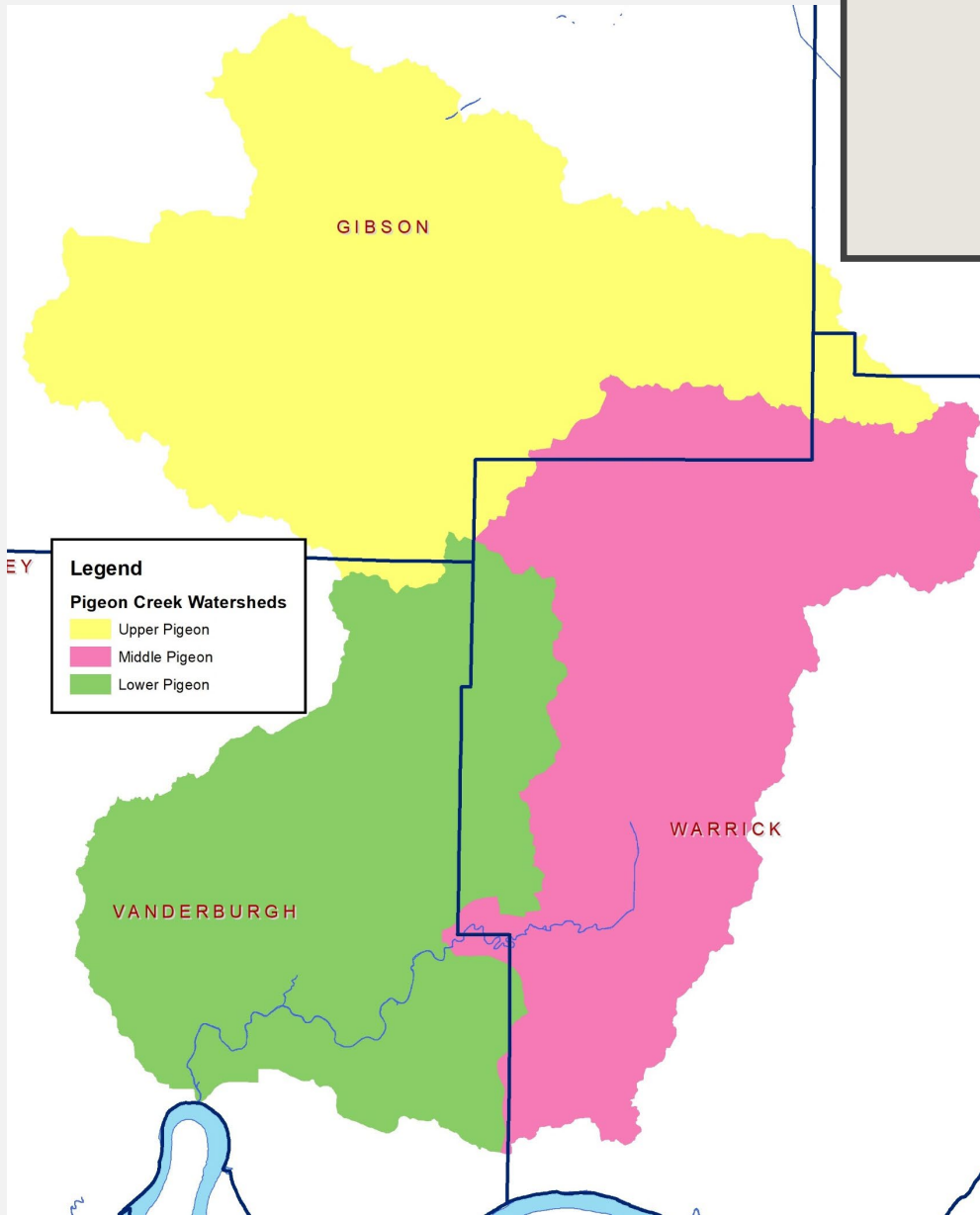


## DIVIDING UP THE WATERSHED

The five counties gathered to hear the results of the LARE diagnostic study. The meeting's discussions resulted in the understanding that there was a need for an updated WMP. Once a revised WMP was completed, implementation funds could be requested.



## DIVIDING UP THE WATERSHED

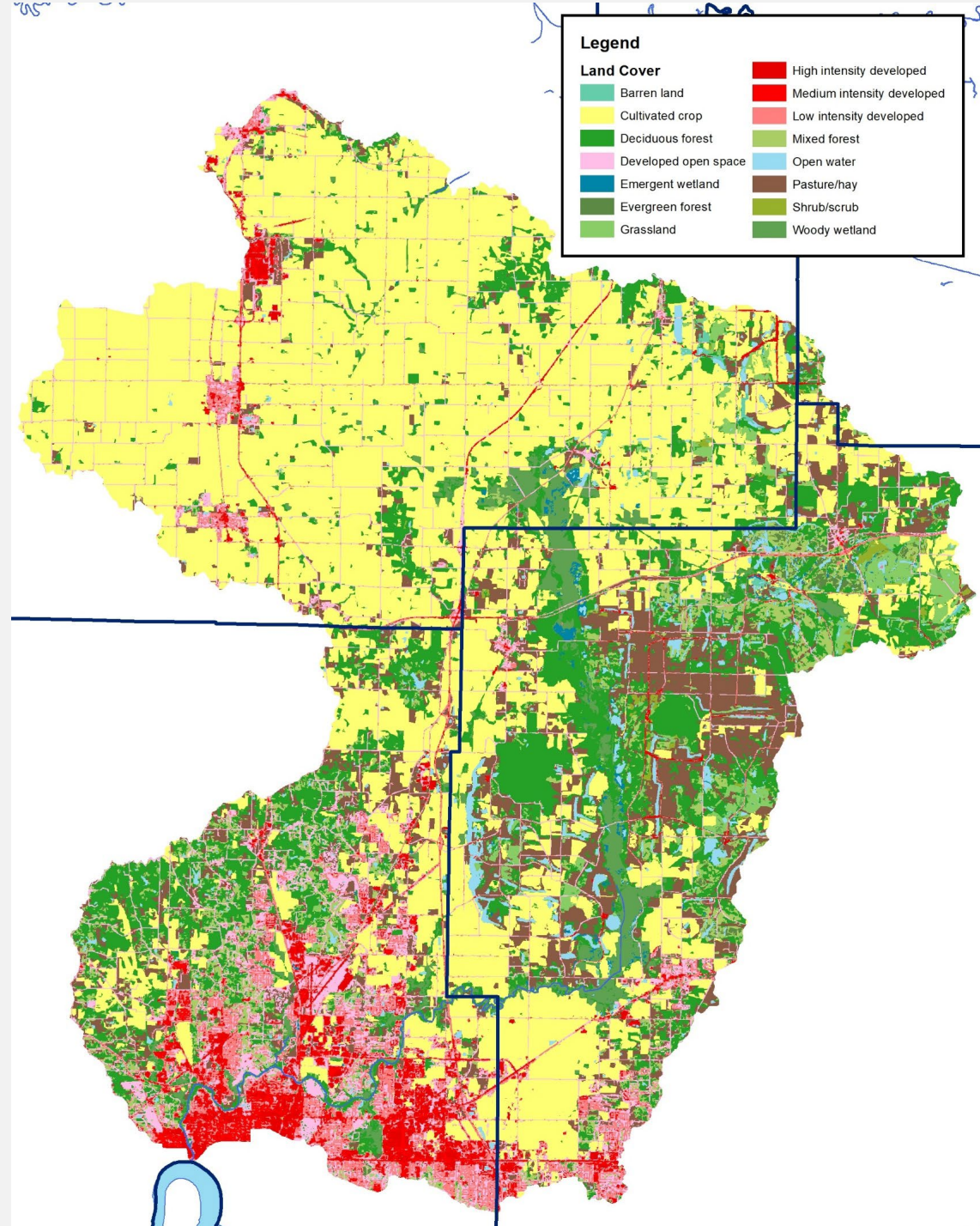


IDEM suggested subdividing the watershed as the best strategy to being awarded 319 grants.

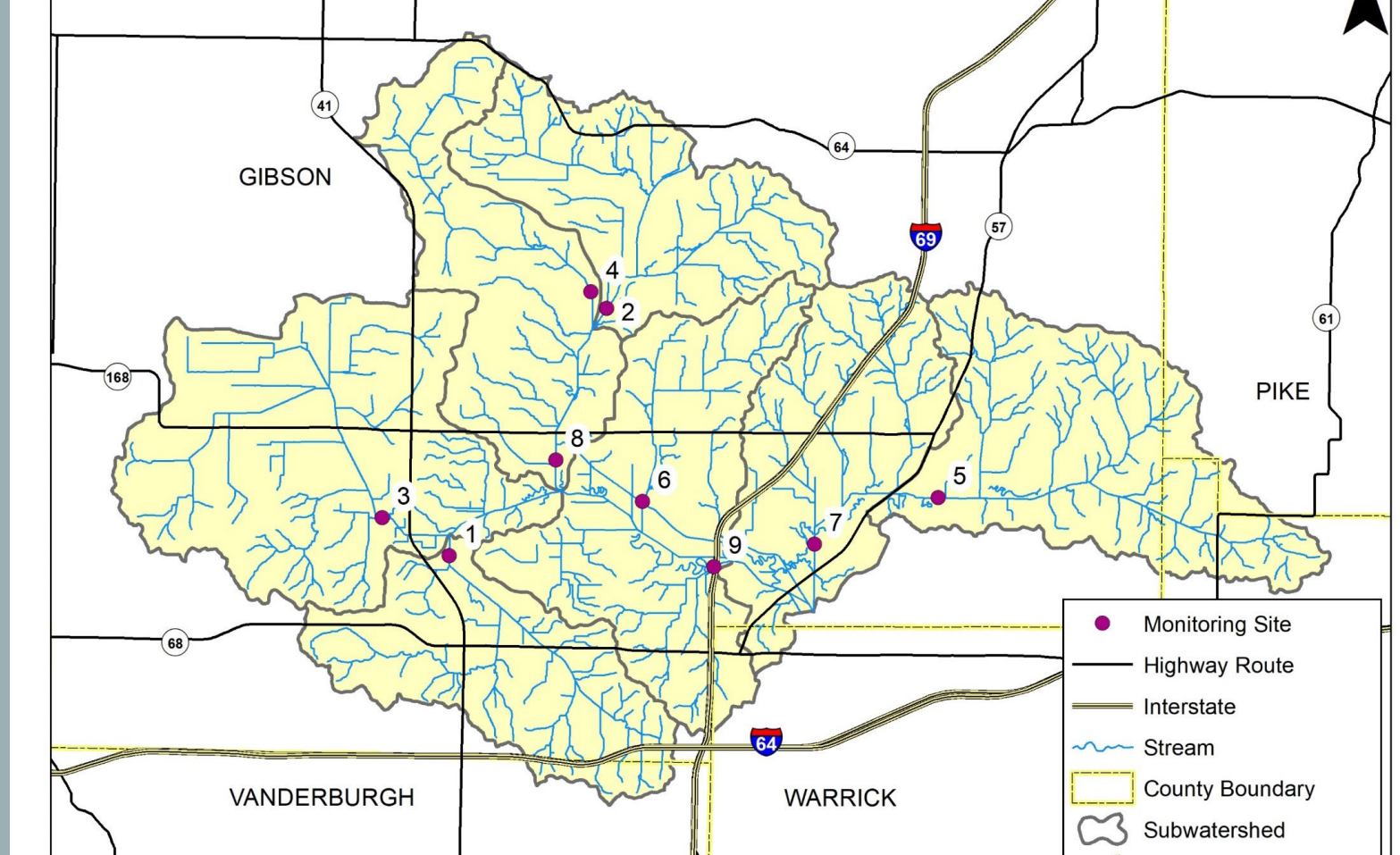
- Pike – too few acres to lead.
- Warrick – considered 319 grant but not yet ready to apply.
- Posey - opted out, mainly floodplains along Ohio River with few conservation farming acres.

# DIVIDING UP THE WATERSHED

- Vanderburgh SWCD awarded a 319 to implement.
- Gibson applied for 319, but WMP not yet completed, so denied.
- Gibson applying for 319 again this year.







# GIBSON PIGEON SAMPLING SITES

Seven subwatersheds. Nine sampling sites.

## GIBSON PIGEON WATER QUALITY PROBLEMS

- Land use - large number of acres in ag production
- Highly erodible lands.
- Hydric soils, indicating historic wetlands.
- Poor riparian corridor habitat and macroinvertebrate populations.
- Low water quality indexes
- High nutrients including N and P, TSS and NTU

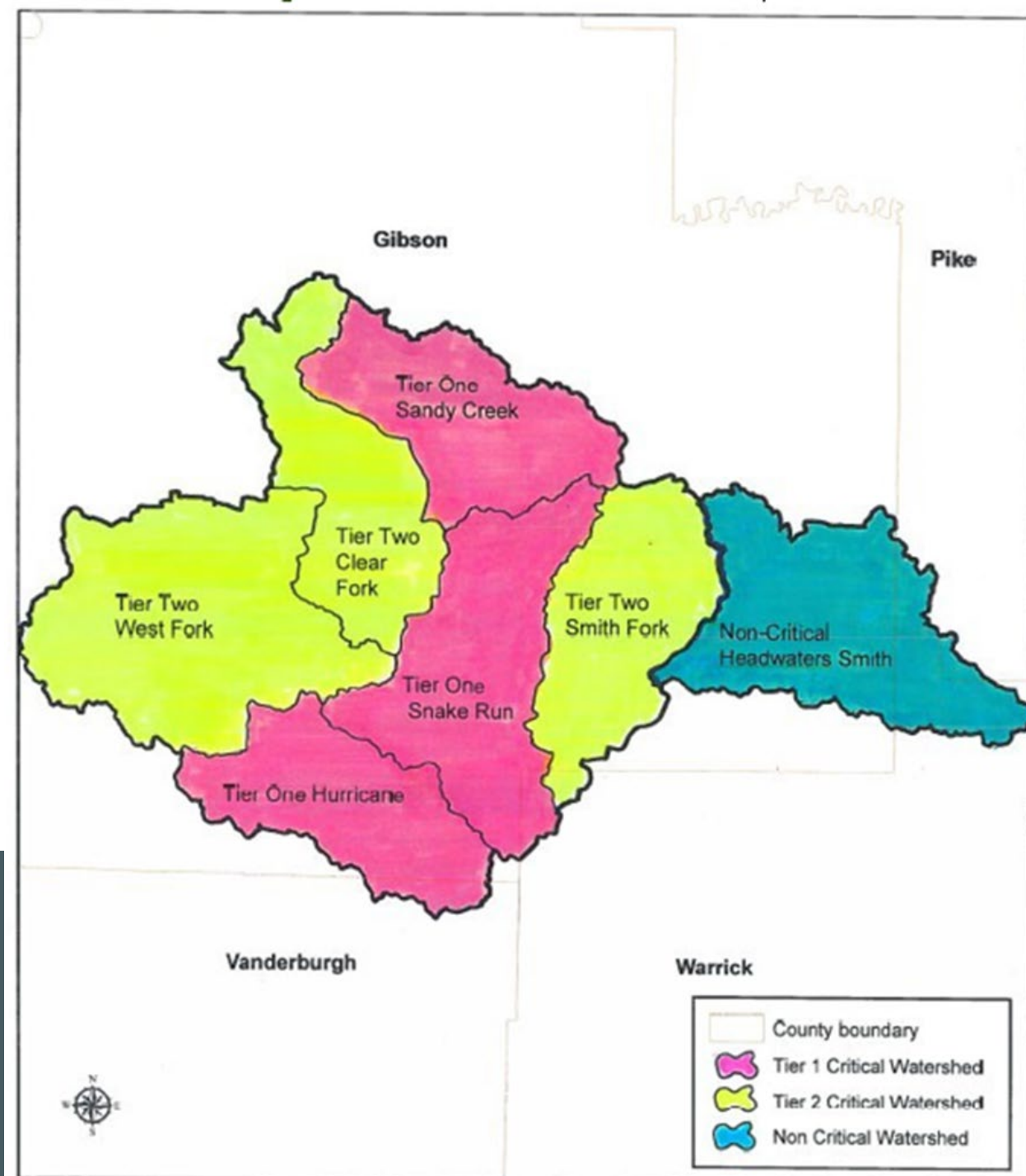


The headwaters smith subwatershed was the least critical. This was an interesting result as most of that subwatershed is coal mine lands.



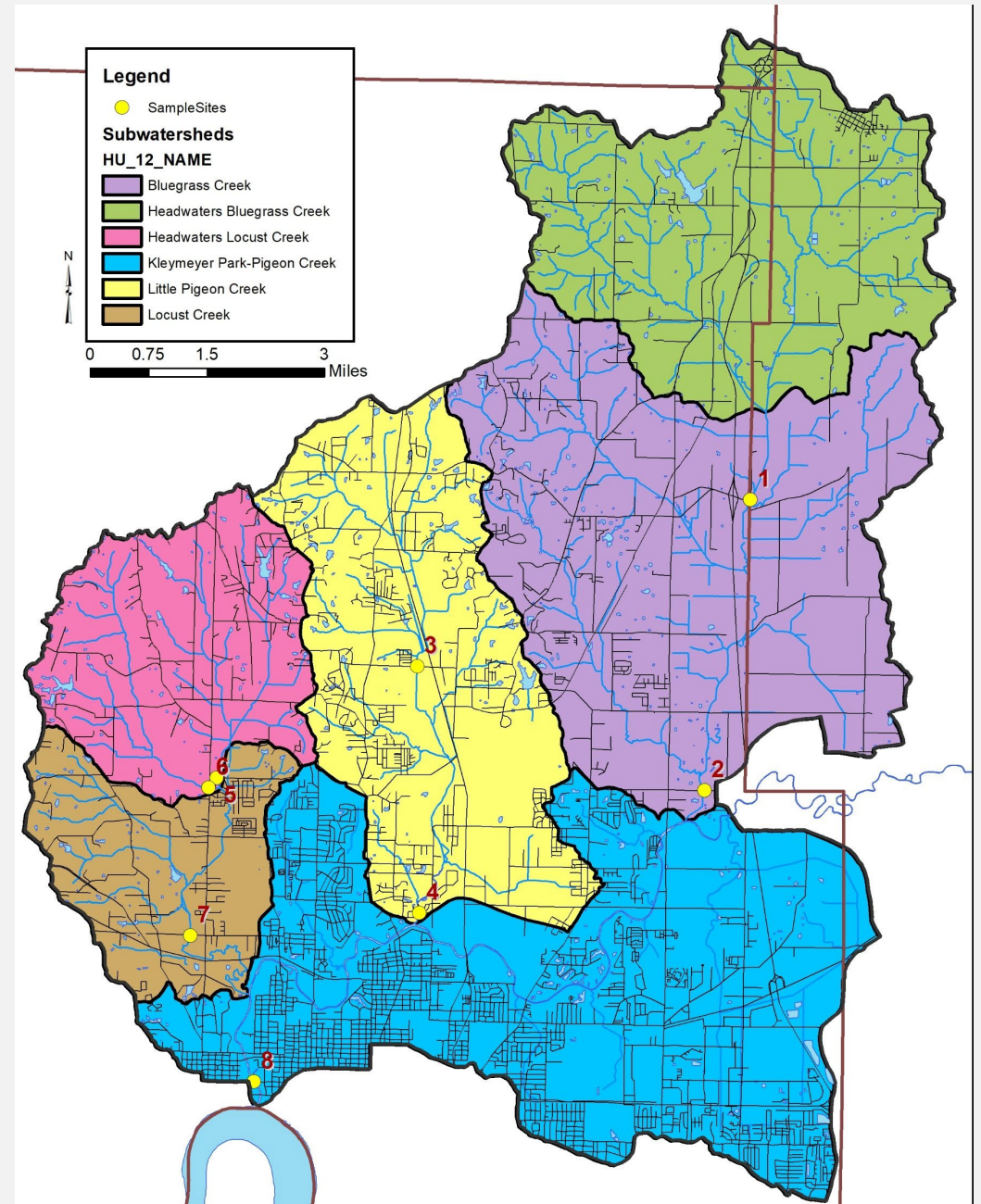
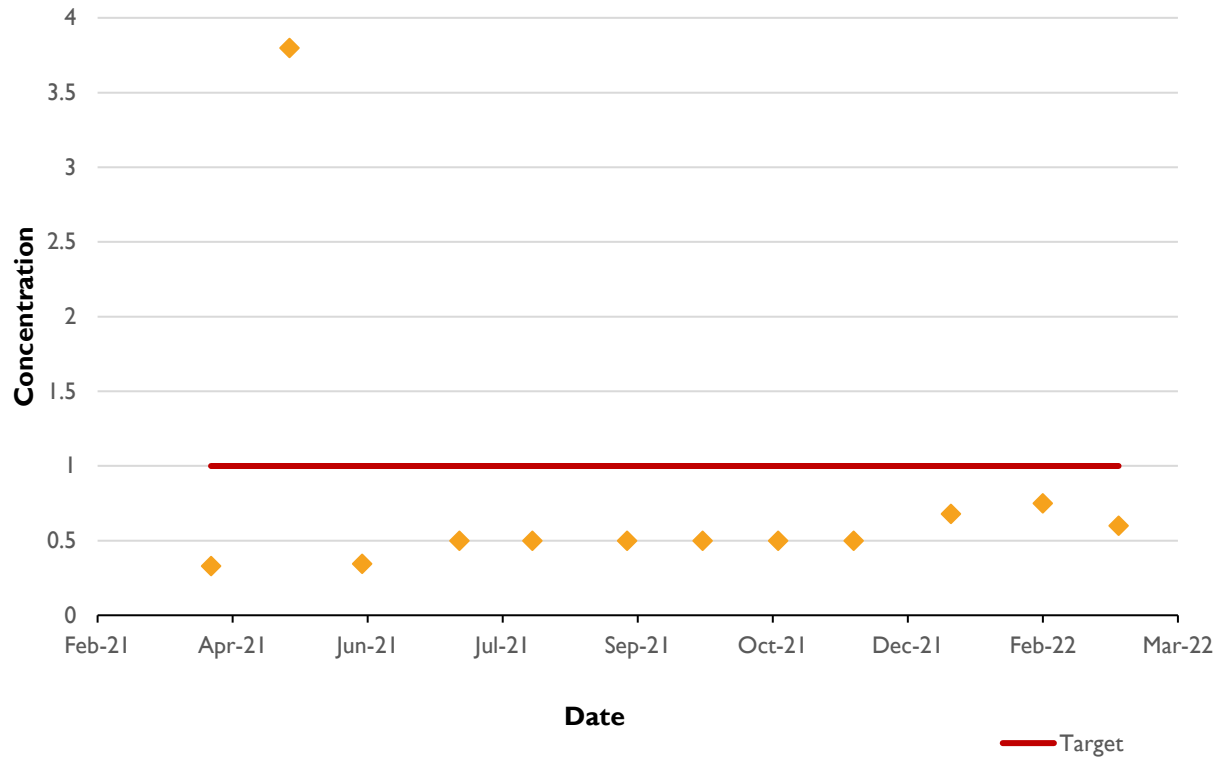
“Big Kate” working in Gibson County

# GIBSON PIGEON CRITICAL AREAS



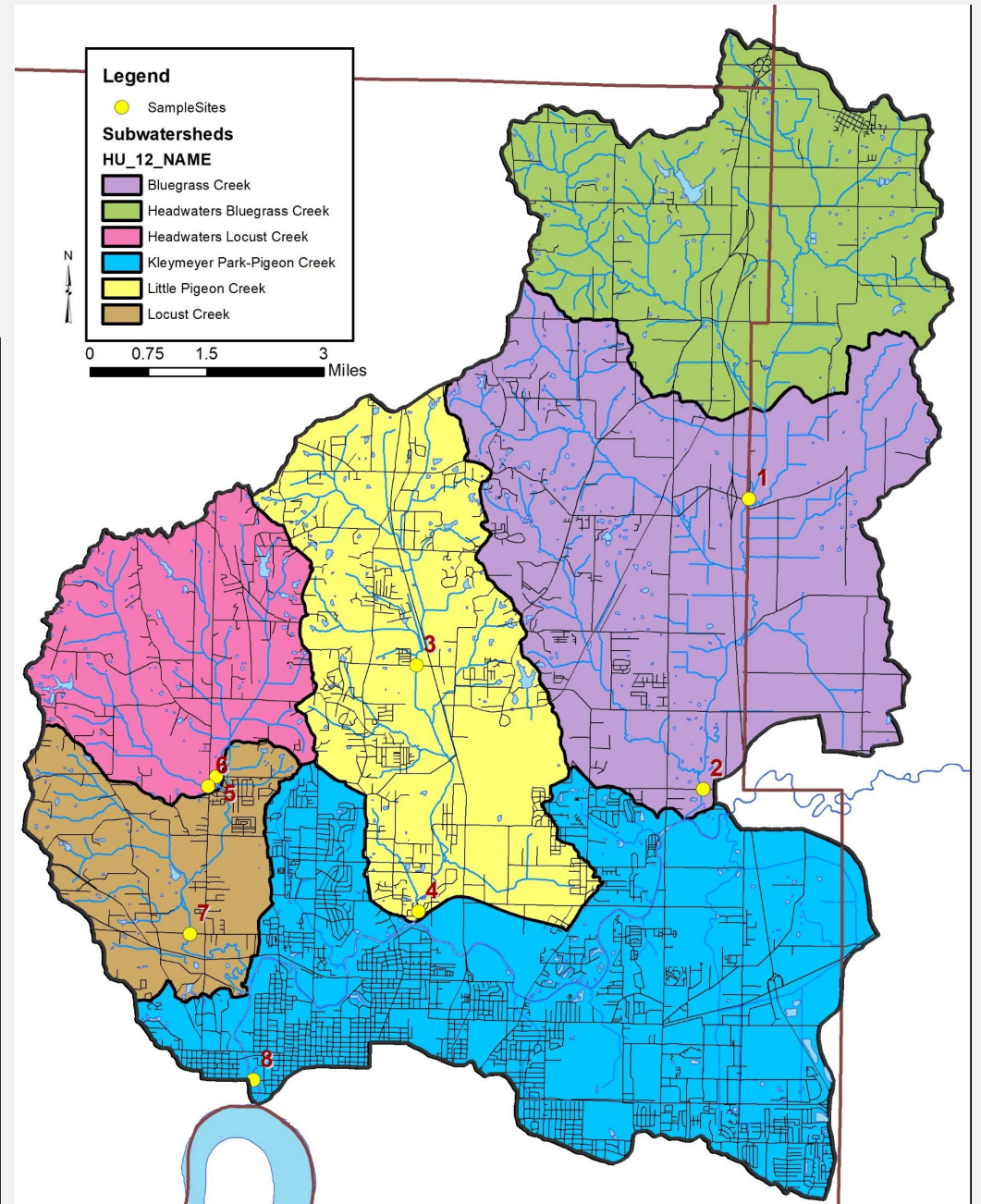
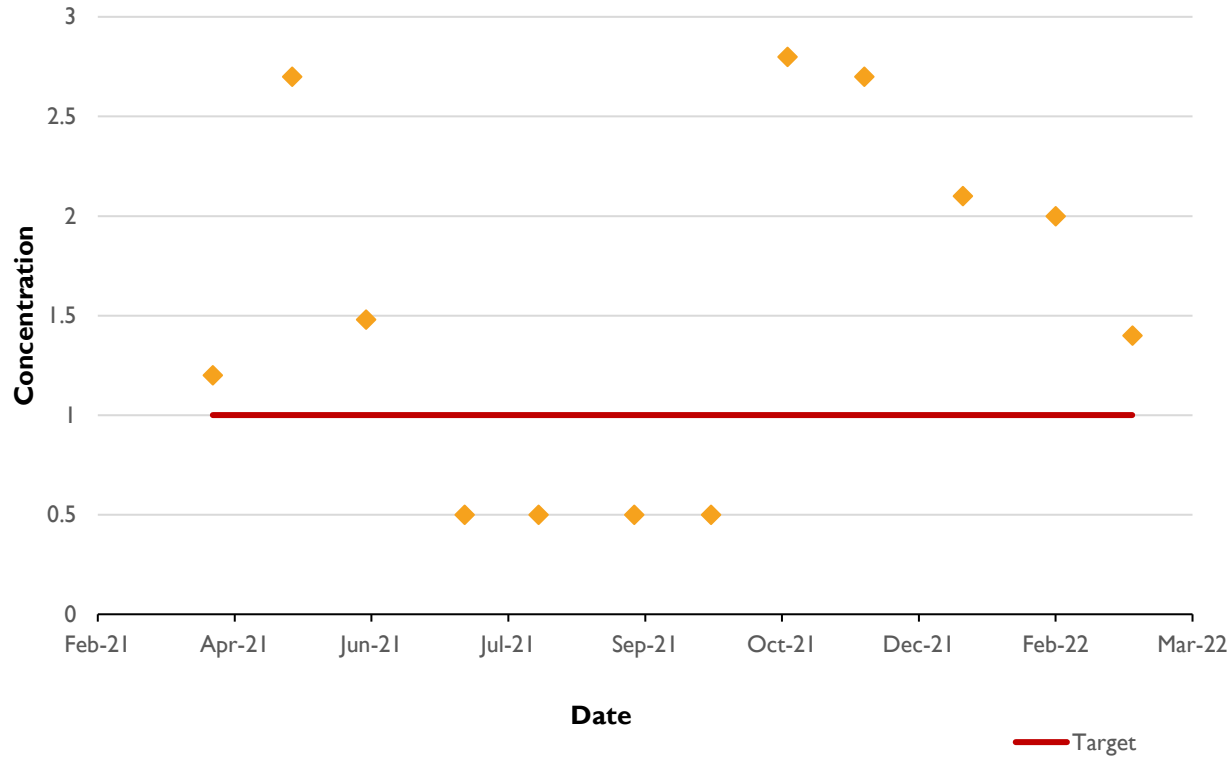
# LOWER PIGEON SAMPLE SITES AND RESULTS

## Site 2 - Nitrate



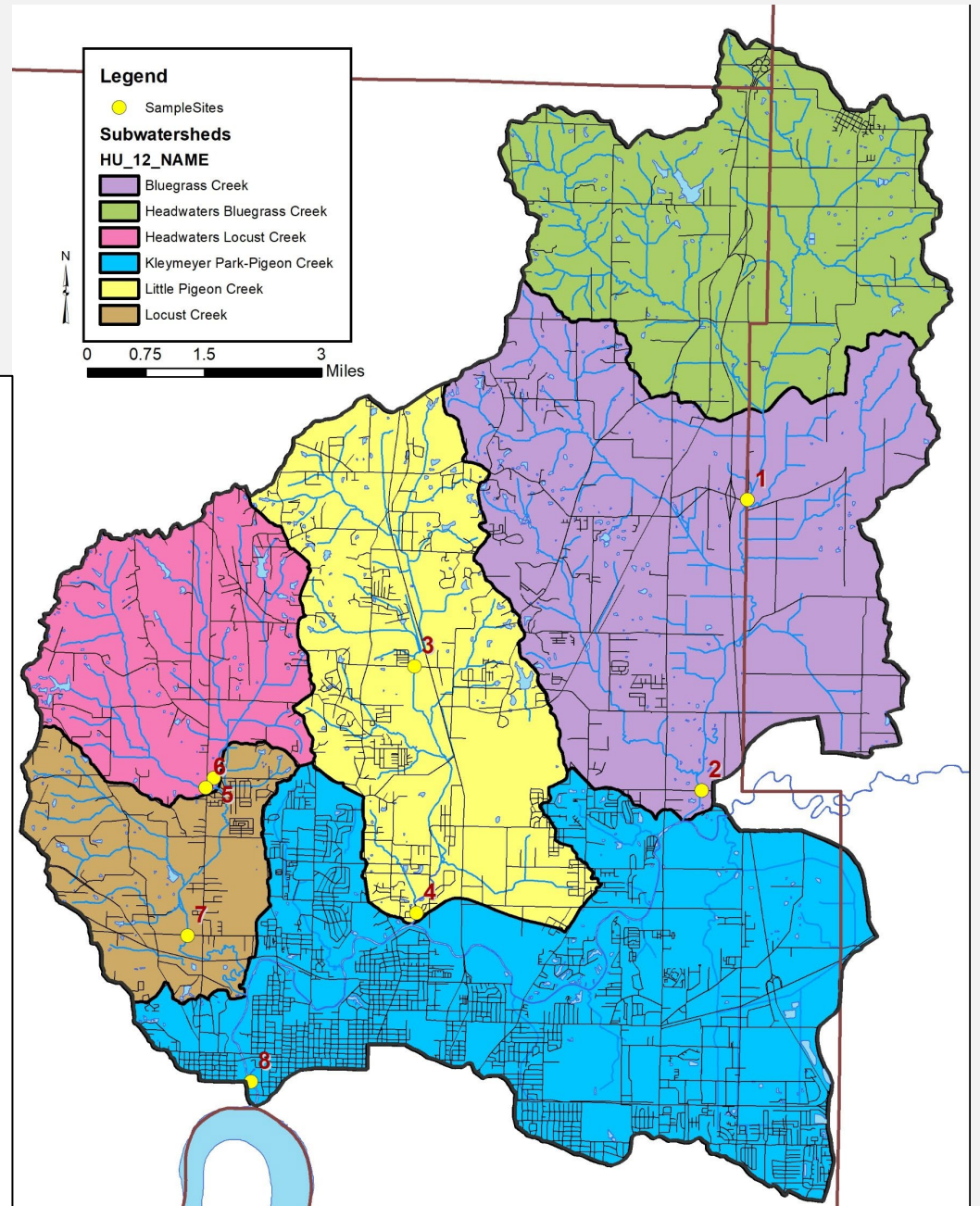
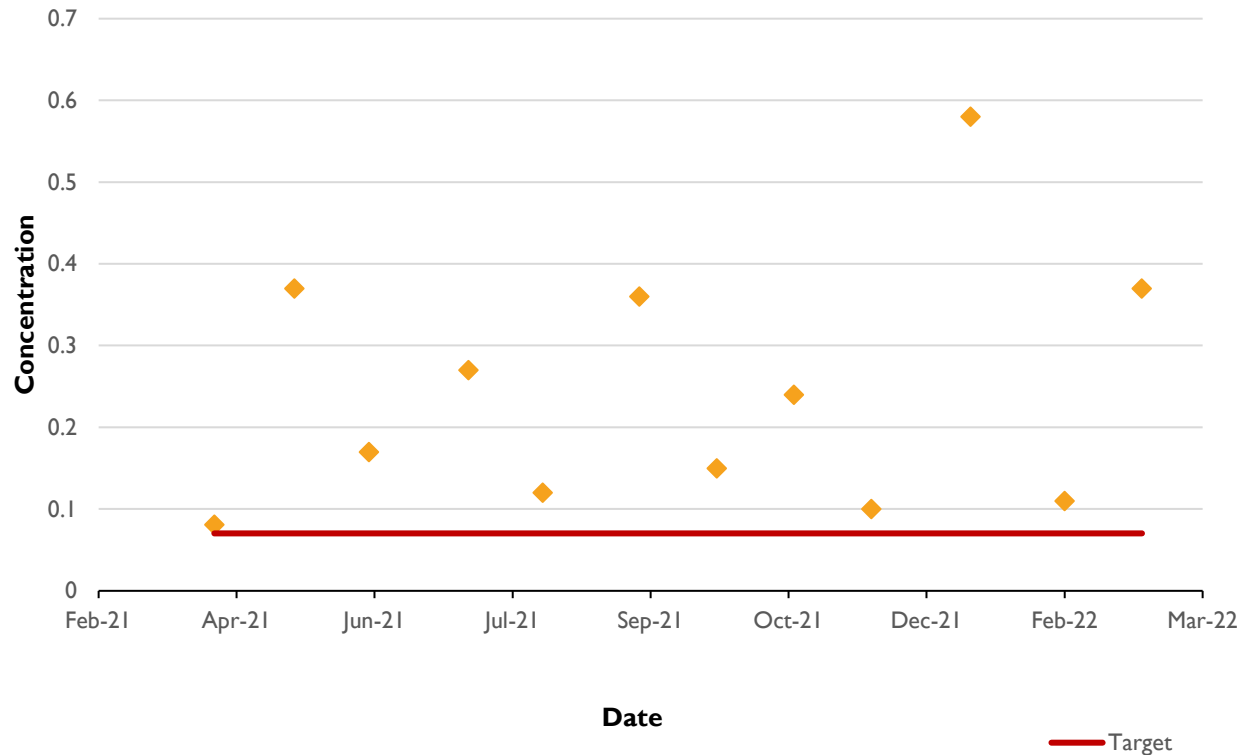
# LOWER PIGEON SAMPLE SITES AND RESULTS

## Site 6 - Nitrate



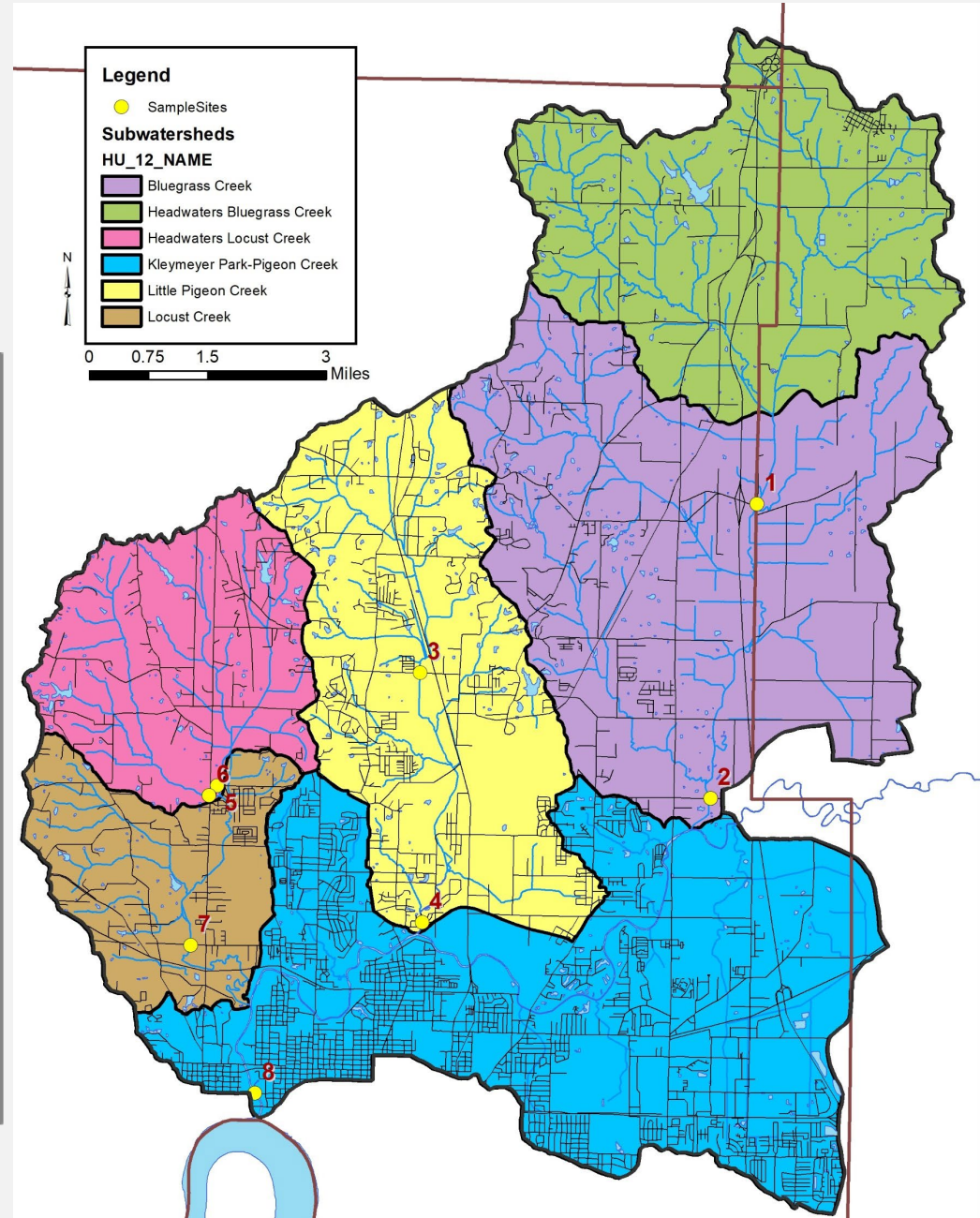
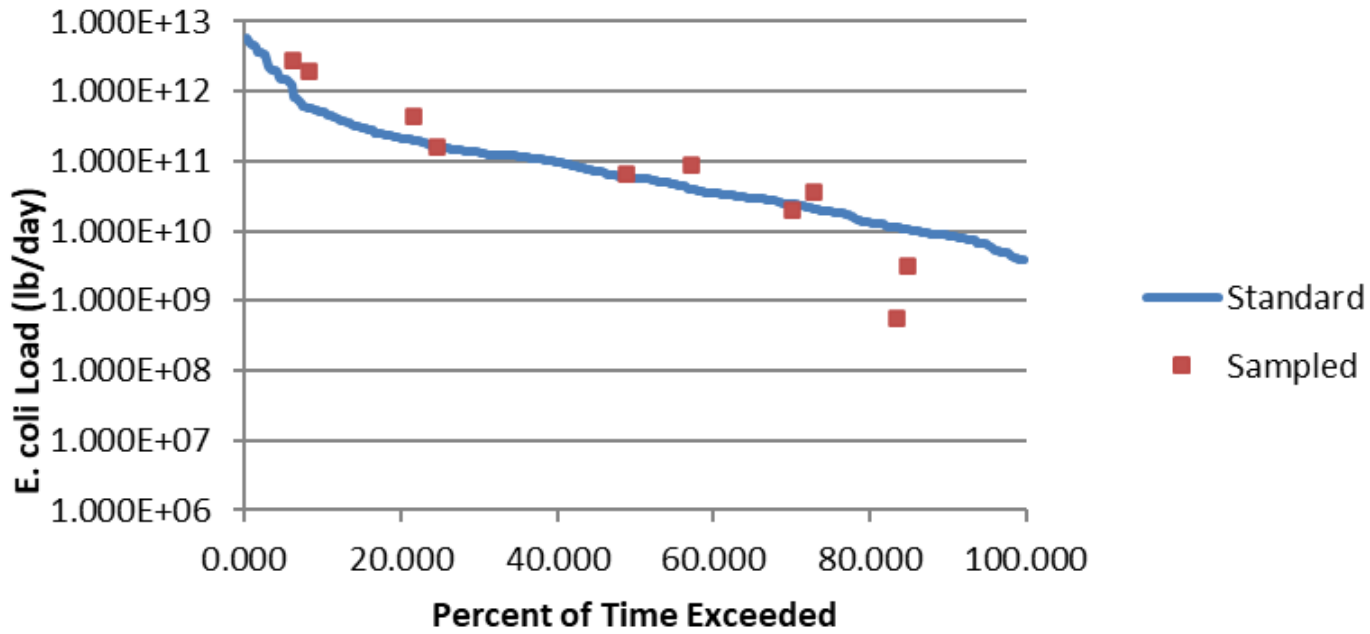
# LOWER PIGEON SAMPLE SITES AND RESULTS

## Site 8 - Phosphorus



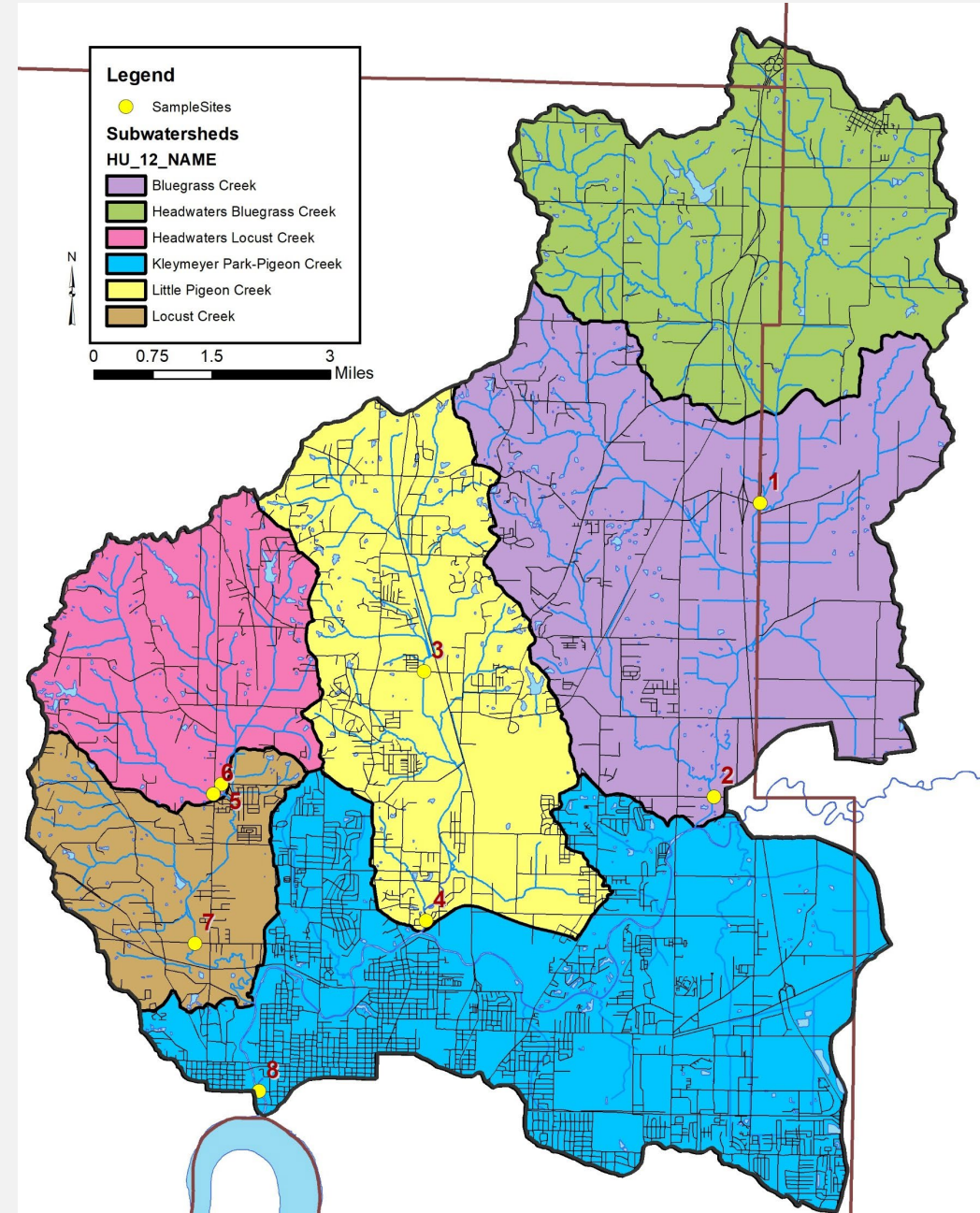
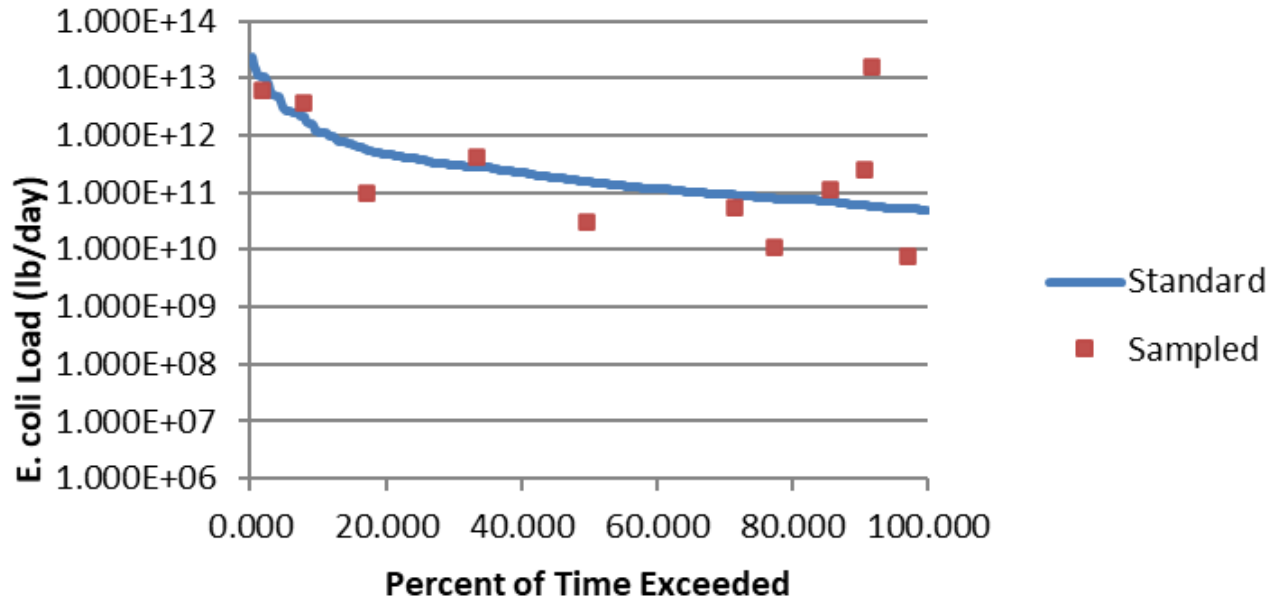
# LOWER PIGEON SAMPLE SITES AND RESULTS

## S1 - E. coli



# LOWER PIGEON SAMPLE SITES AND RESULTS

## S5 - E. coli



# Critical Area Decision Making

Steering Committee selected pollution sources:

Agricultural land

Highly erodible land

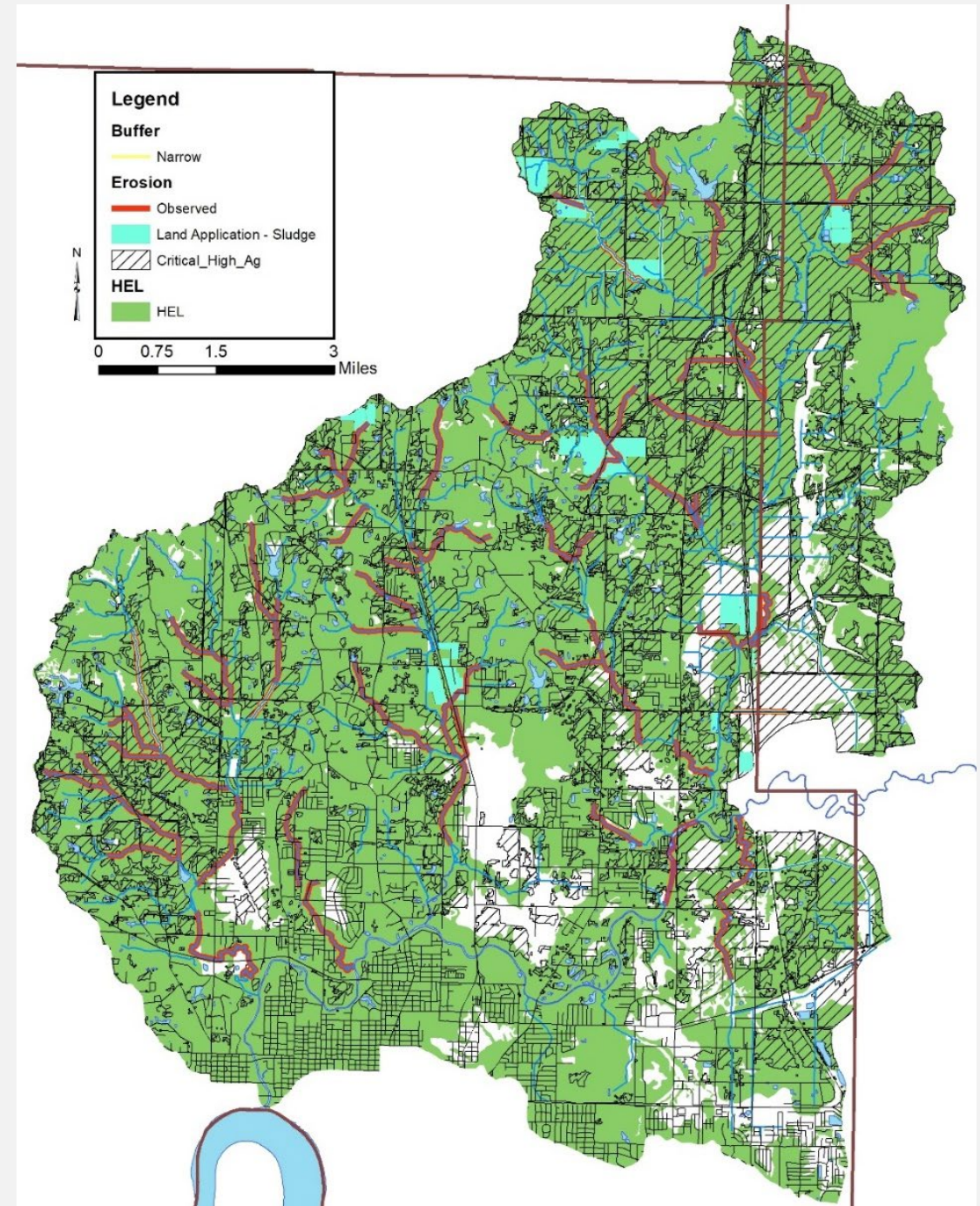
Manure volume

Combined sewer overflows

Septic soil limitation

Streambank erosion

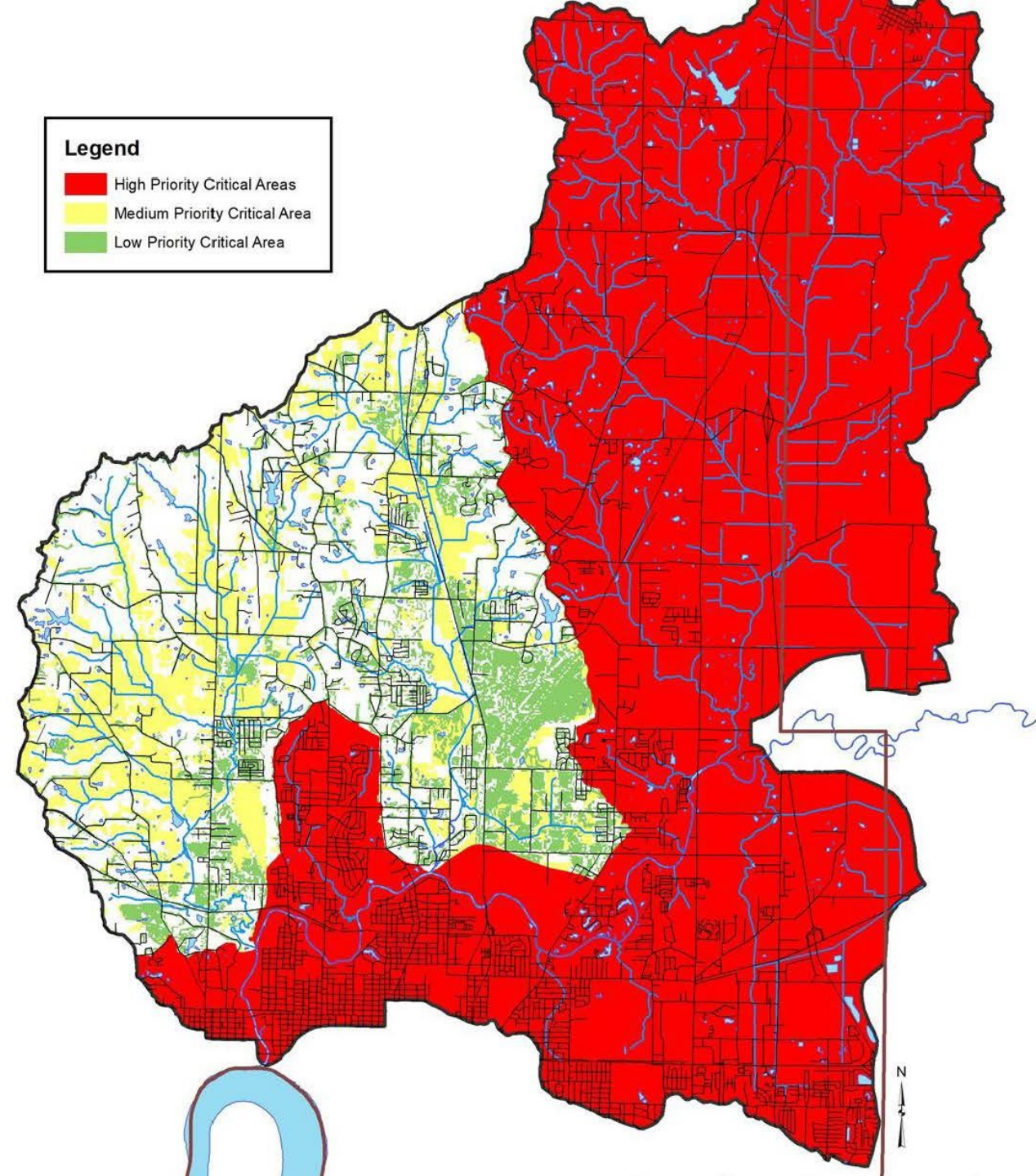
Narrow buffers



# LOWER PIGEON CRITICAL AREAS

Added water quality  
information:

- E. coli impairment by  
stream miles
- Historic and current  
water quality data





# VANDEBURGH COUNTY PROJECT PARTNERS

- SWCD staff
- Health Dept.
- University Professors
- Surveyor
- Storm Water Coordinator
- MS4 Coordinator
- Local producers / farmers
- Water and Sewer
- NRCS
- Purdue Ext.
- ISDA
- Non-Profits

Need a potential partner list? Please let us know.

# Main Objectives of Supplemental Grant

## I) Marketing Materials:

- Digital promotions
- Mailings
- Press releases



Photo: National Postage Museum

# Main Objectives of Supplemental Grant

2) Train local residents and landowners to support environmental initiatives.

- One targeting agriculture community
- One targeting urban community



# Main Objectives of Supplemental Grant

3) Reduce sediment and nutrients entering the Lower Pigeon Creek Watershed through the implementation of a cost share program.



# Main Objectives of Supplemental Grant

4) Promote volunteer opportunities for Alcoa employees, retirees, or their family members

- Earth Team Volunteer
- Weed Wrangles®



Photo: Vanderburgh CISMA Weed Wrangle® volunteers

## **MOVING FORWARD:**

Continue to implement and apply for funding opportunities from private and public sectors.

Partnering with other counties and governmental agencies to further protection of water resources.



# MOVING FORWARD:

Vanderburgh Surveyor's Office finalizing Pigeon Creek Corridor Flood Risk Management Plan.

Discussions on developing Watershed Development Commission.

## PIGEON CREEK CORRIDOR FLOOD RISK MANAGEMENT PLAN

Evansville, IN | April 2023



Christopher B. Burke Engineering, LLC  
888.463.1974  
cbbel-in.com