



## Raccoon Creek; Biological Recovery and Scenic River Designation

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Environmental Specialist

ODNR Division of Mineral Resources Management

Abandoned Mine Land Program

Amy Mackey

Raccoon Creek Watershed Coordinator

Project Manager – Energy and Environmental Programs

Ohio University Voinovich School of Leadership and Public Service

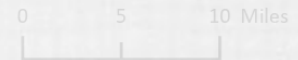


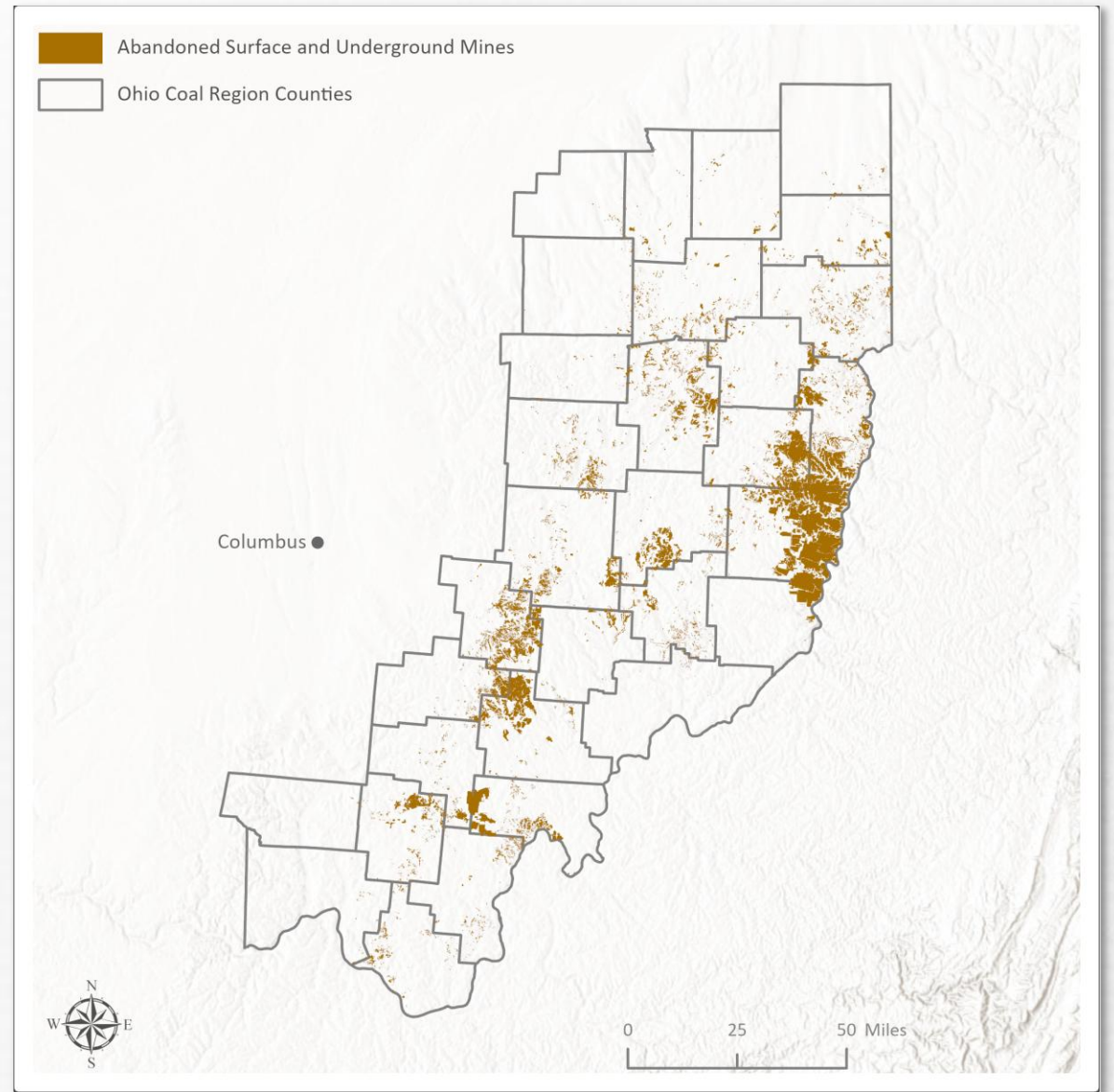
## **Part 1**

1. *Ohio AMD program*
2. *Raccoon creek historic AMD impacts*
3. *AMD abatement projects*
4. *Biological restoration*
5. *Current aquatic life use designation*

## **Part 2**

1. *Formation of Raccoon Creek Partnership*
2. *Scenic river designation*





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*Abandoned Mine Land Program*



*Science based program:*

- *rely on water quality and **aquatic biology data to make program decisions***

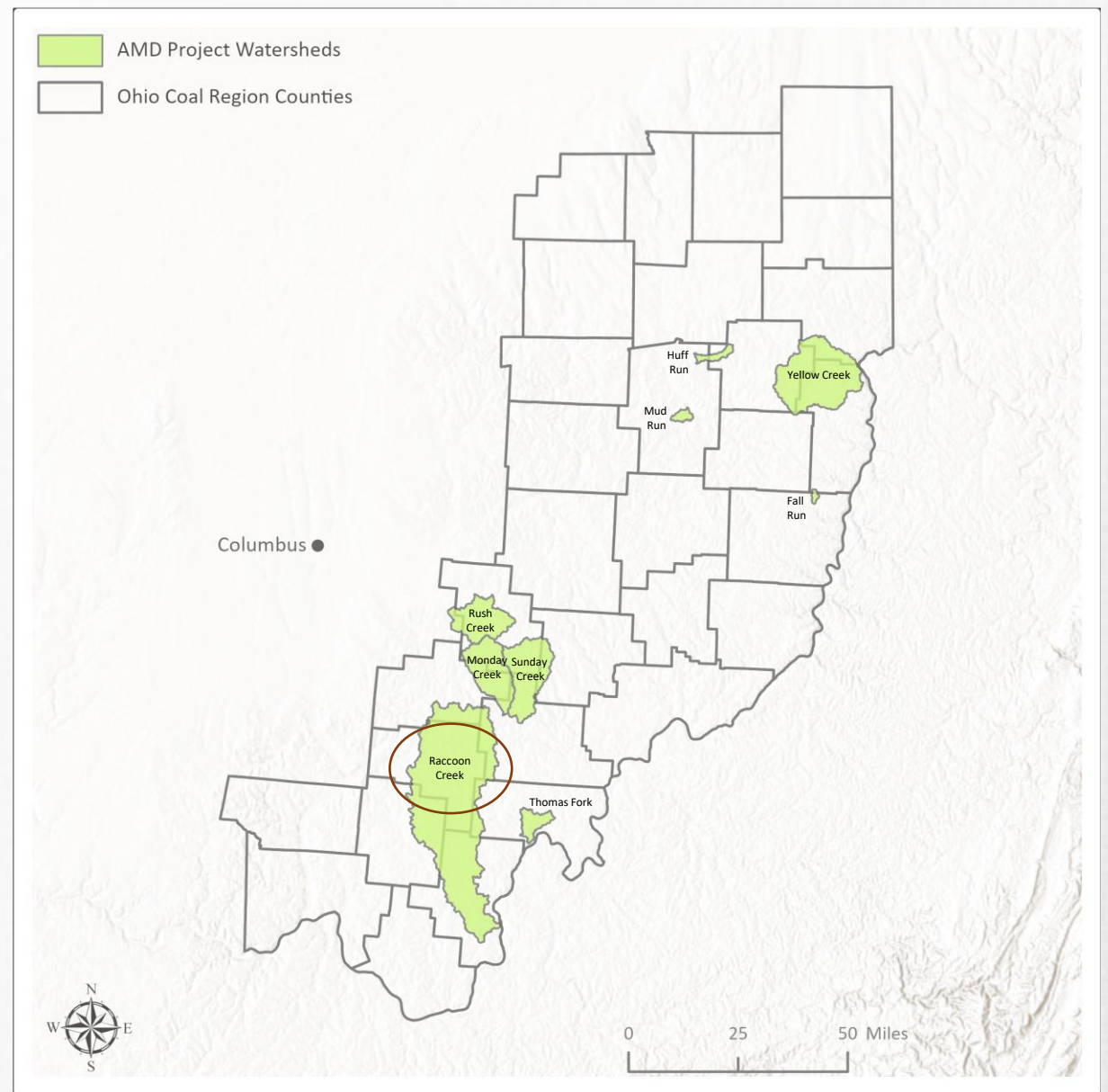
*Mission Statement:*

- *to restore, to the greatest extent possible, Ohio's acid mine drainage polluted streams to a healthy condition that will **support a normal assemblage of aquatic life***

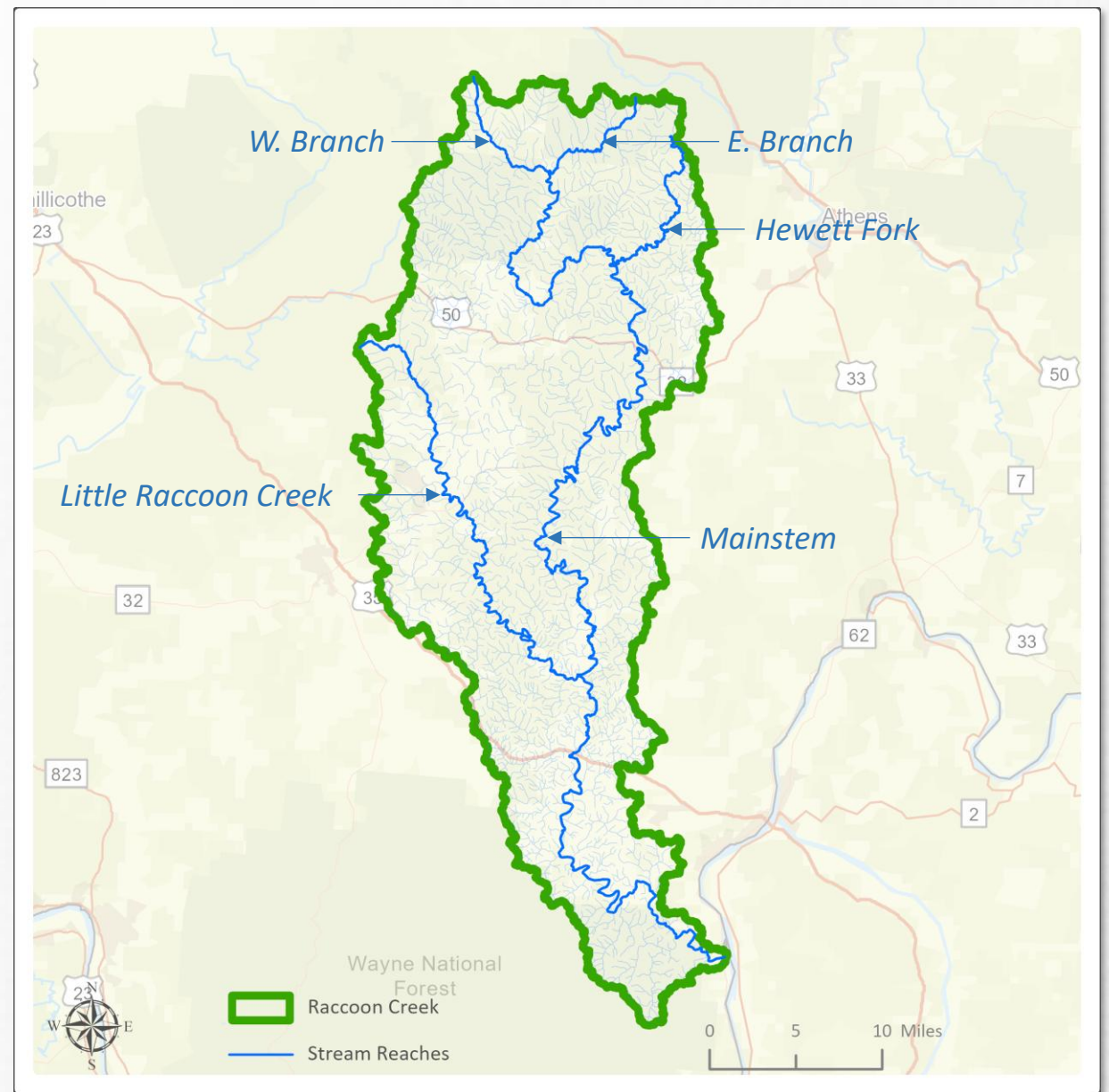




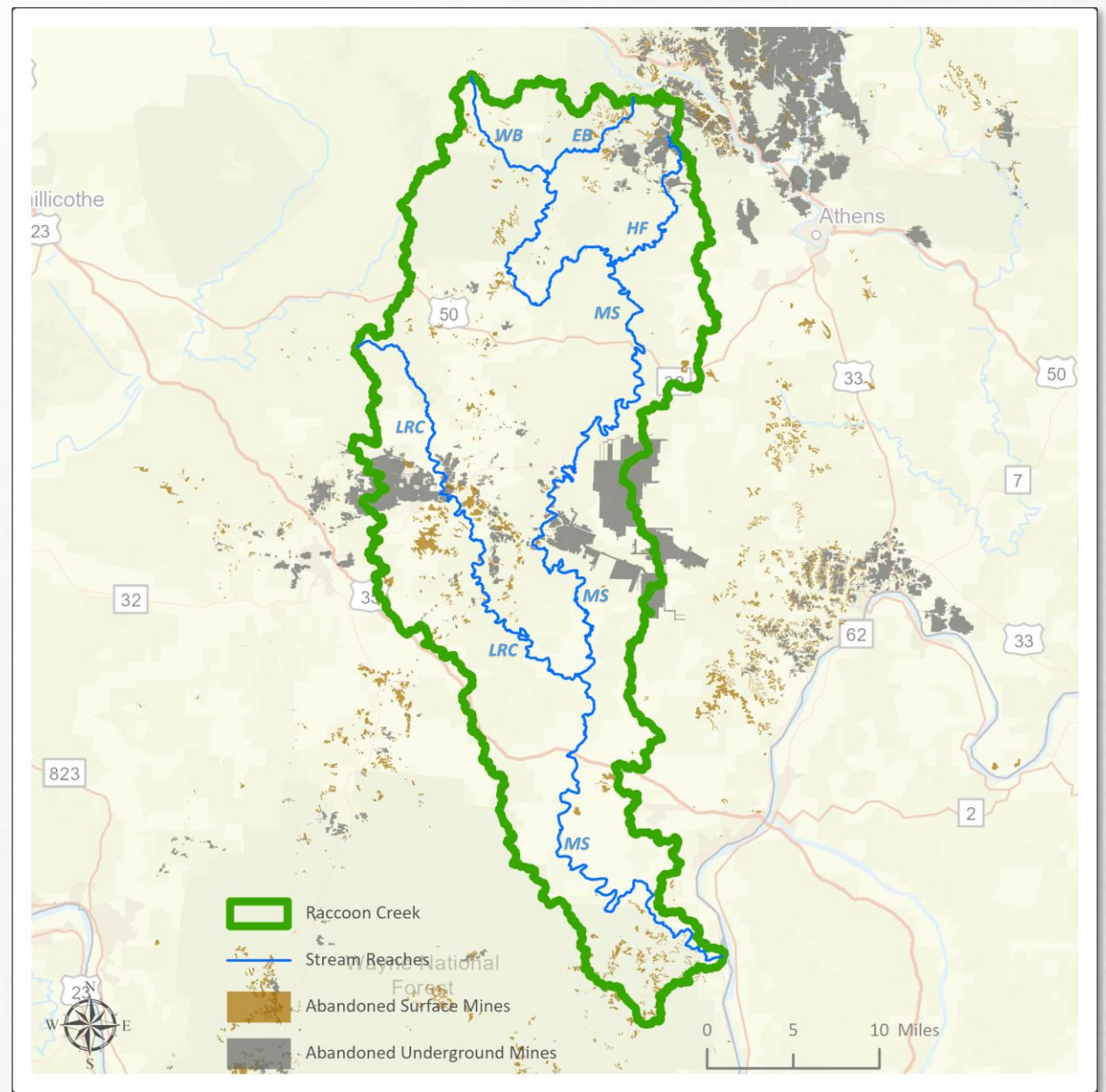
- **68** AMD Projects
- **9** Watersheds
- **\$40** Million
- **250** Stream Miles Meeting pH Target



- **Watershed: 684 sq mi**
- Mainstem: 112 miles
- LRC: 41 miles
- Hewett Fork: 17 miles
- East Branch: 8 miles
- West Branch: 7 miles
- **185 “mainstem” miles**



- Since **1840s**
- **21,550 acres** surface mining
- **25,610 acres** underground mines

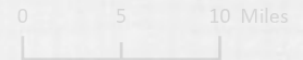


- **1976:** Ohio Biological Survey (Classification IV designation)
- **1982:** Gwin et al. (Subwatershed AMD impact ranking study)
- **1983:** U.S. Geological Survey (Wilson, 1985)
- **1984–1986:** U.S. Geological Survey (Wilson, 1988)
- **1985:** Water-Resources Investigations Report 85-4060: “Surface Water Quality of Coal-Mine Lands in Raccoon Creek Basin, Ohio”
- **1988:** Water-Resources Investigations Report 88-4022: “Chemical Quality, Benthic Organisms, and Sedimentation in Streams Draining Coal-Mined Lands in Raccoon Creek Basin”
- **1994:** USDA (Reference to Ohio Biological Survey data)
- **1995:** Palone / U.S. Forest Service Report (Resource and threat documentation)
- **1996:** Hughes et al.: “Water Quality Assessment of the Raccoon Creek Watershed” (Raccoon Creek Watershed Monitoring Project)
- **1997:** Ohio EPA (East and West Branch impact study)



## 1976 Ohio Biological Survey designation:

Raccoon Creek is “grossly polluted and requiring extensive renovation....”



# 2000-2003

## ACID MINE DRAINAGE ABATEMENT AND TREATMENT (AMDAT) PLAN FOR THE **LITTLE RACCOON CREEK** WATERSHED, JACKSON COUNTY, OHIO

by

**Brett Laverty**  
**Mia Painter**  
**Mary Stoertz**

Ohio University, Department of Geological Sciences, Athens, Ohio

**J.B. Hoy**  
**Rachael Hoy**

Ohio University, Institute for Local Government Administration and Rural Development

**Jennifer Last**

Ohio University, Masters of Science and Environmental Studies Program

**Chip Rice**

Coordinator, Raccoon Creek Improvement Project

**Mitchell Farley**

Ohio Department of Natural Resources, Division of Mineral Resources

June 2000

## ACID MINE DRAINAGE ABATEMENT AND TREATMENT (AMDAT) PLAN FOR THE **HEADWATERS** OF THE RACCOON CREEK WATERSHED

by

**Chip Rice**  
**J.B. Hoy**  
**Rachael Hoy**

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**Mitchell Farley**

Ohio Department of Natural Resources, Division of Mineral Resources Management

**Jim Grow**  
**Marty Knapp**

Ohio Environmental Protection Agency

**Kurt Simon**

Ohio Valley Resource Conservation And Development

January 2002

## ACID MINE DRAINAGE ABATEMENT AND TREATMENT (AMDAT) PLAN FOR THE **MIDDLE BASIN** OF THE RACCOON CREEK WATERSHED

by

**Chip Rice**  
**Liza Flemming**  
**J. B. Hoy**

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Ohio Department of Natural Resources, Division of Mineral Resources Management

**Ed Rankin**

Center for Applied Bioassessment and Biocriteria

**Scott O'Dee**

**Tony Minamyer**

Midwest Biodiversity Institute

September 2003

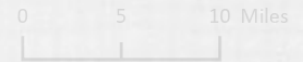


## Oreton Seep

- pH: 2.72 s.u.
- Net Acidity: 676 mg/l



- net acidic conditions
- metal loadings
- flow-dependent AMD sources
- biological impairment

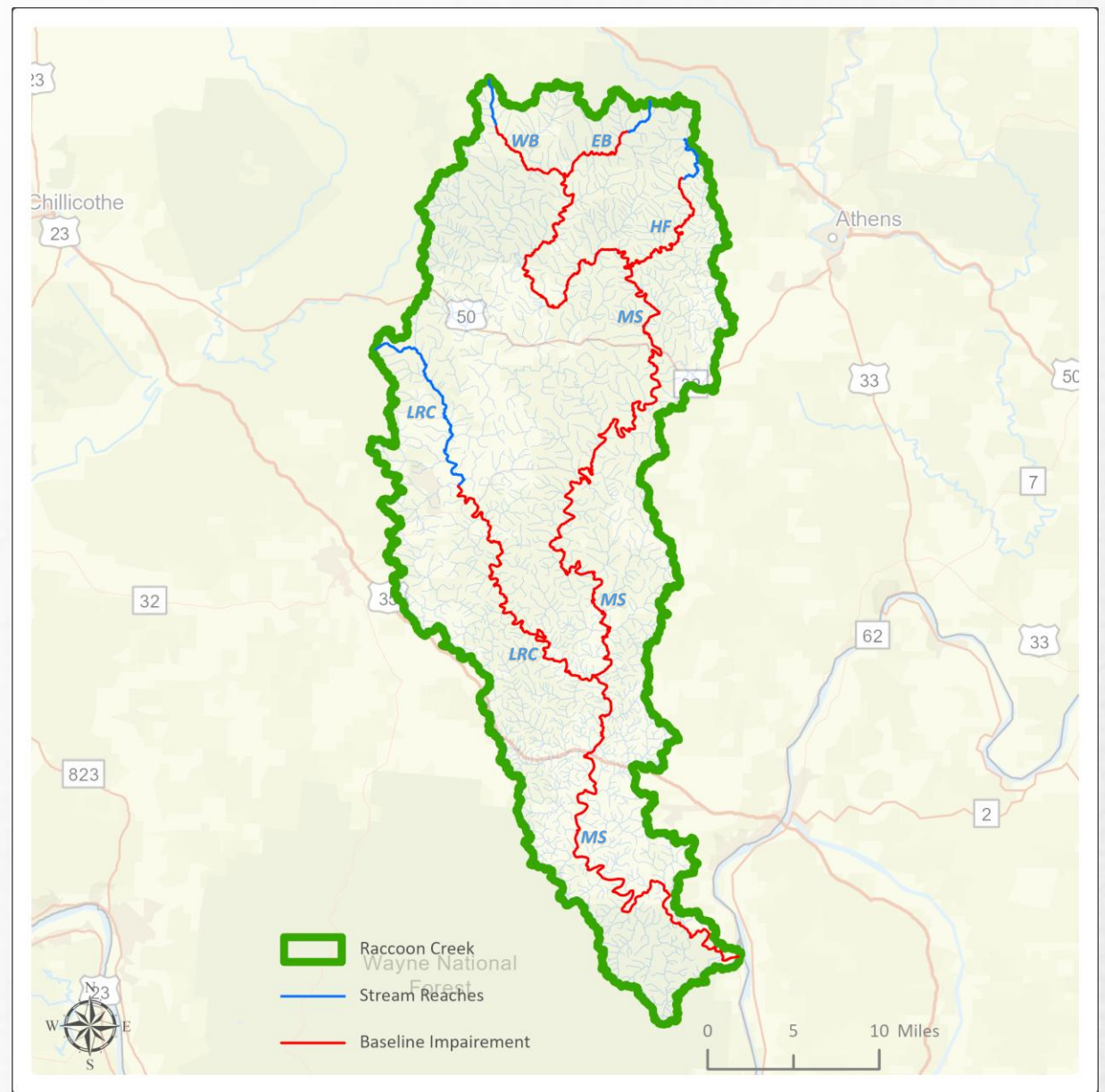


*“Raccoon Creek was dead  
as a bag of hammers”*

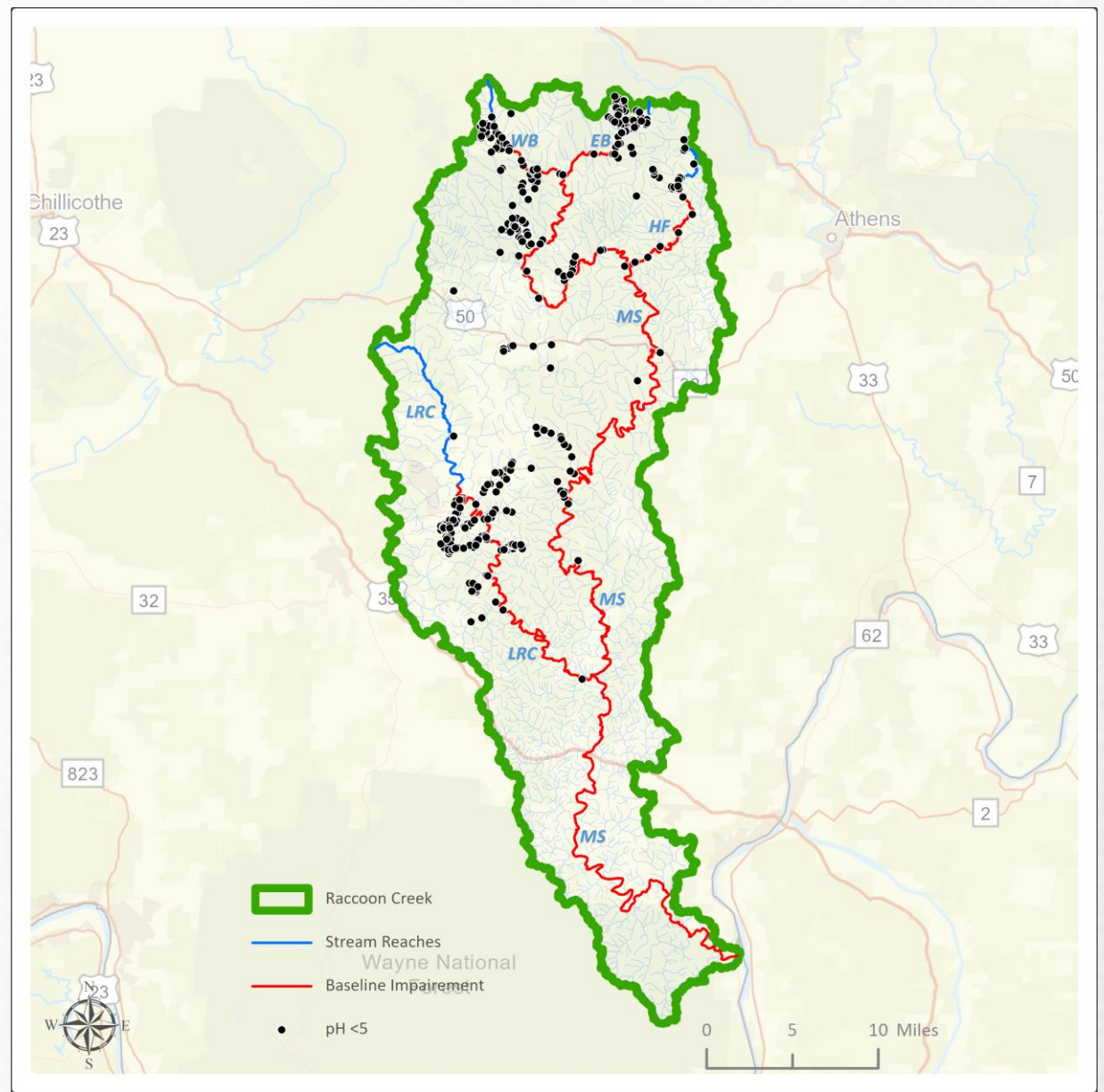
*Mitch Farley*



- Total Mainstem Miles Characterized: 185 miles
- Impairment: **158 miles (85%)**



- Sample sites w/ **pH <5.0**





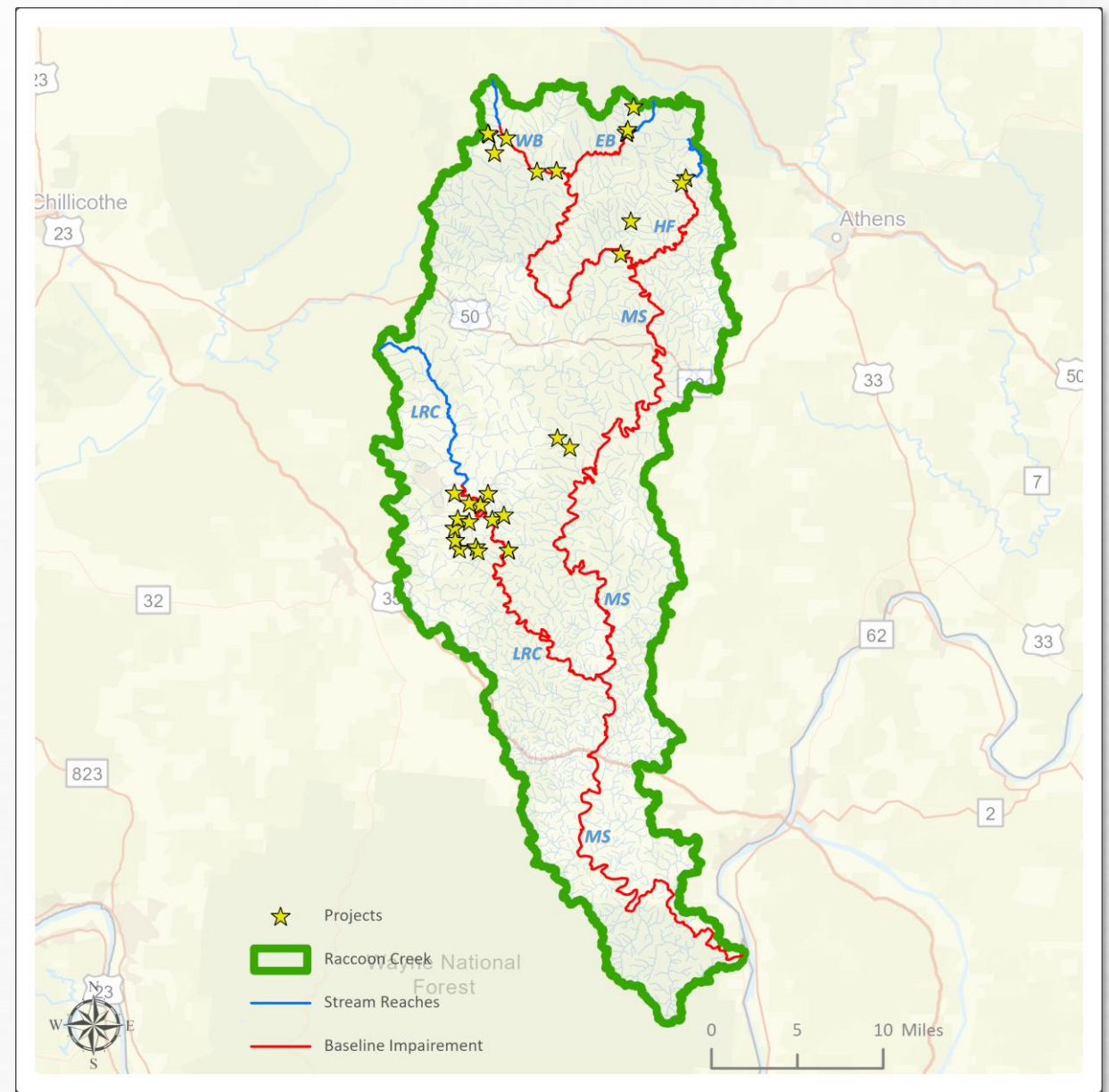
- No Fish
- Low numbers of fish
- Low diversity
- High % tolerant species
- High % omnivores

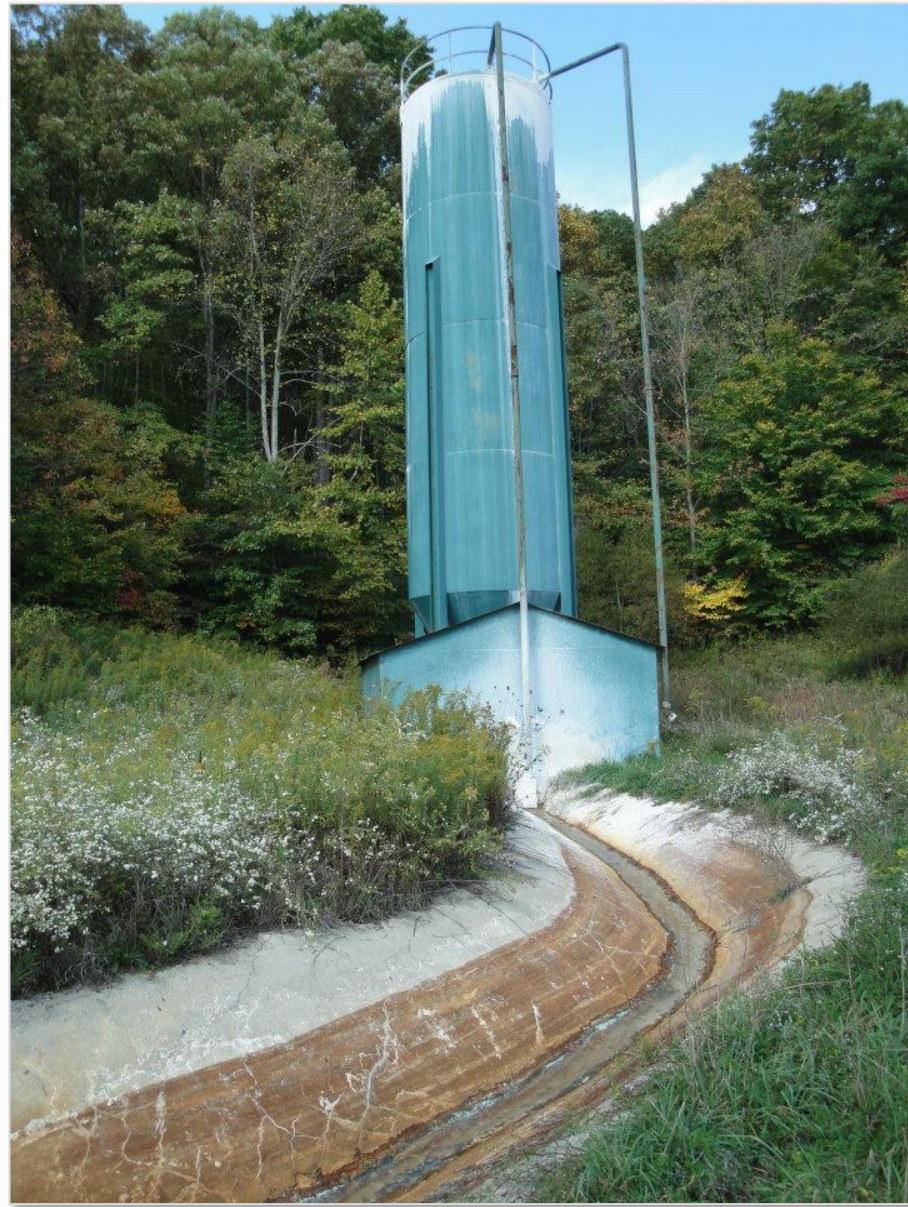


# 20 Projects

## 27 Years

- 1999 Buckeye Furnace & Buffer Run
- 2001 SR 124 Seeps
- 2004 Mulga Run
- 2004 Carbondale Doser
- 2005 Hope Clay
- 2005 Salem Road/Middleton Run
- 2006 Lake Milton
- 2007 East Branch Phase I
- 2011 East Branch Phase II & III
- 2012 Harble Griffith
- 2012 Orland Gob Pile
- 2012 Pierce Run
- 2014 Lake Morrow
- 2015 Flint Run East
- 2015 Flint Run Wetland
- 2015 Middleton Run Reclamation II
- 2018 Daniels Reclamation
- 2019 Sandy Run
- 2021 Ilesboro Road Reclamation
- 2024 Lapp Reclamation





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*Raccoon Creek AMD Projects*





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*Raccoon Creek AMD Projects*



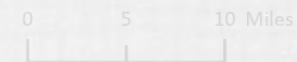


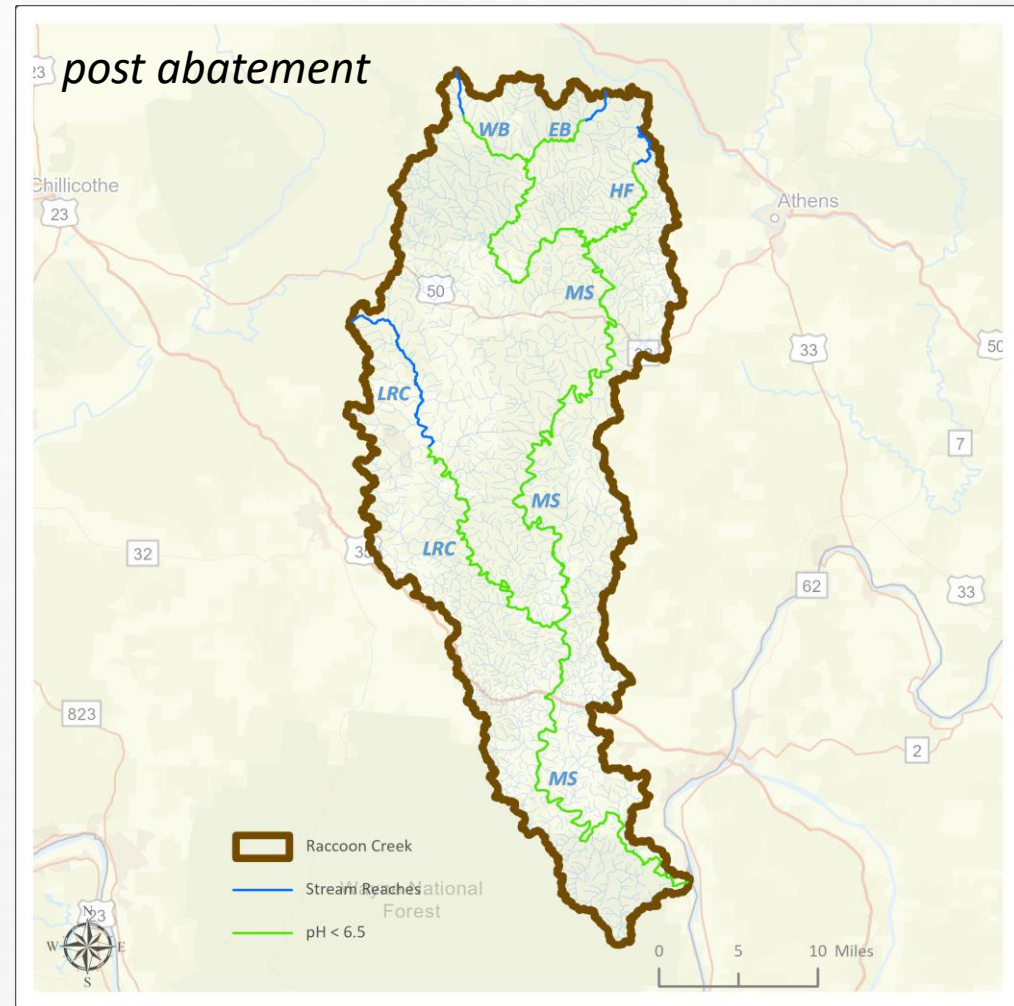
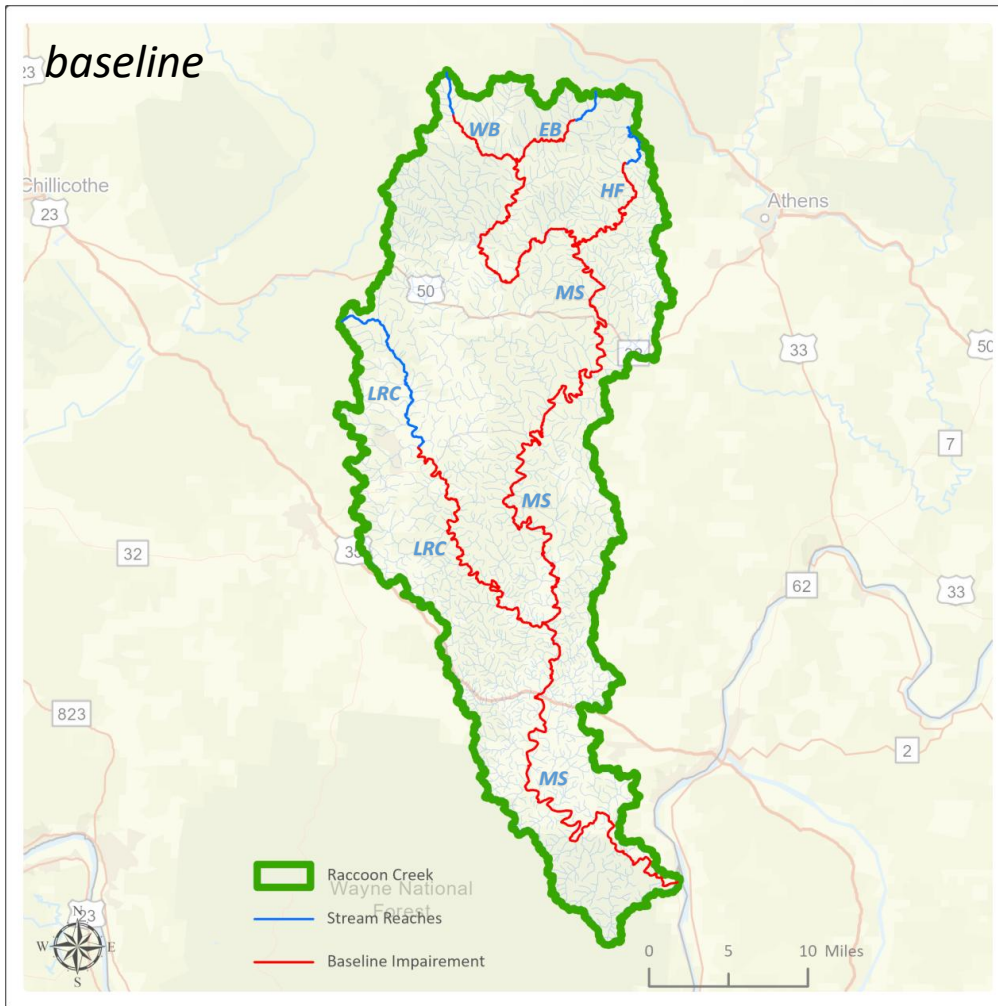
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*Raccoon Creek AMD Projects*



# of AMD Projects	Acid Load Reduction	Metal Load Reduction
20	83%	55%





***158/158 stream miles monitored now meet pH target  $\geq 6.5$  s.u.***



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*Raccoon Creek Recovery*



# Ohio AMD Program Goals

Chemical

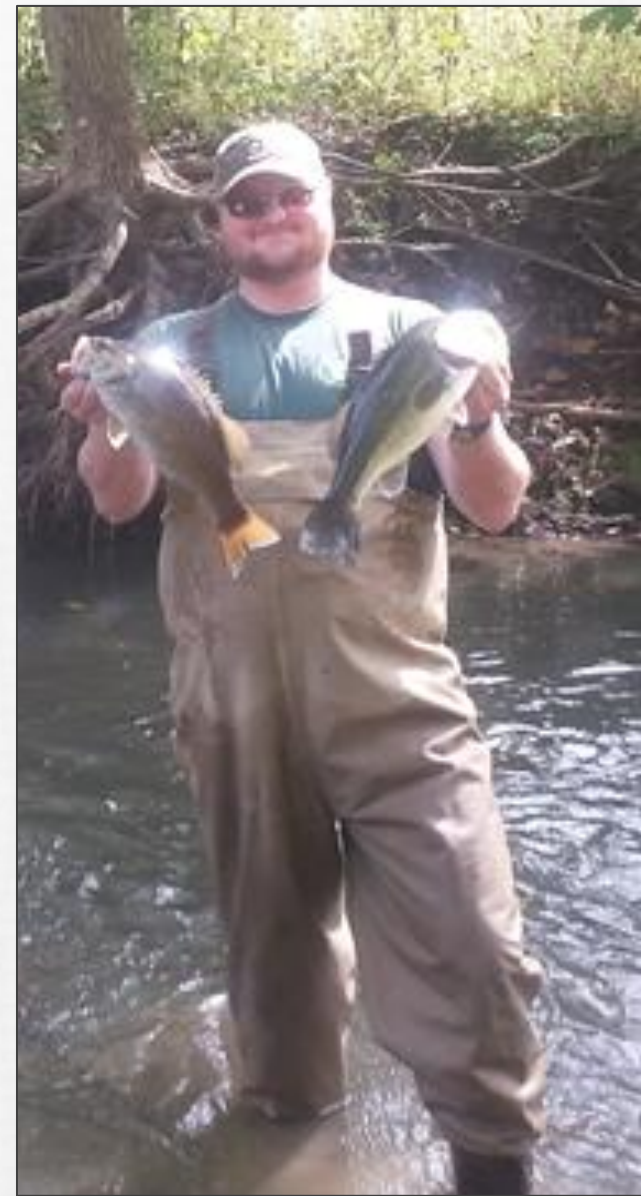
Biological

- IBI (fish): WWH ALU
- MAIS (Macros) :  $\geq 12$

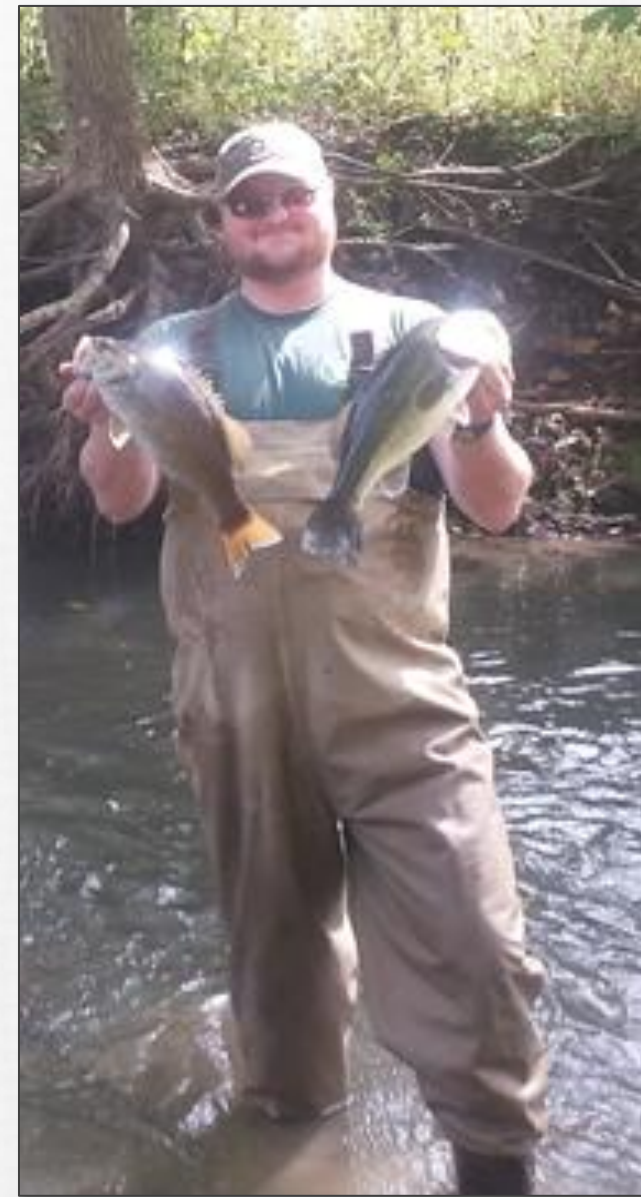
Physical Habitat



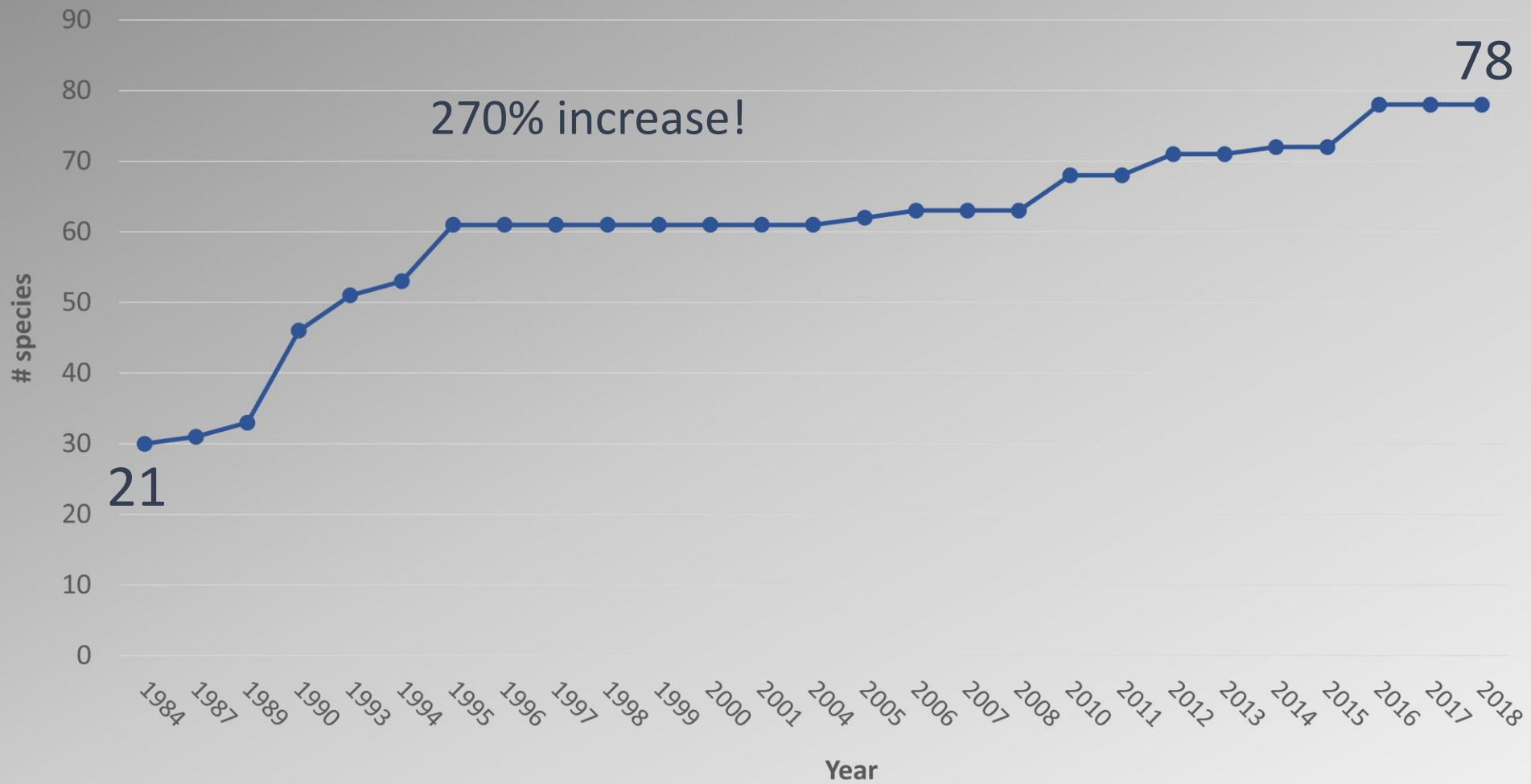
*“The IBI increased from a 28 to a 44, and now meets the warmwater habitat aquatic life use designation”*



*Make recovery / improvements more  
relatable to the public: show **what fish  
species have been able to return***

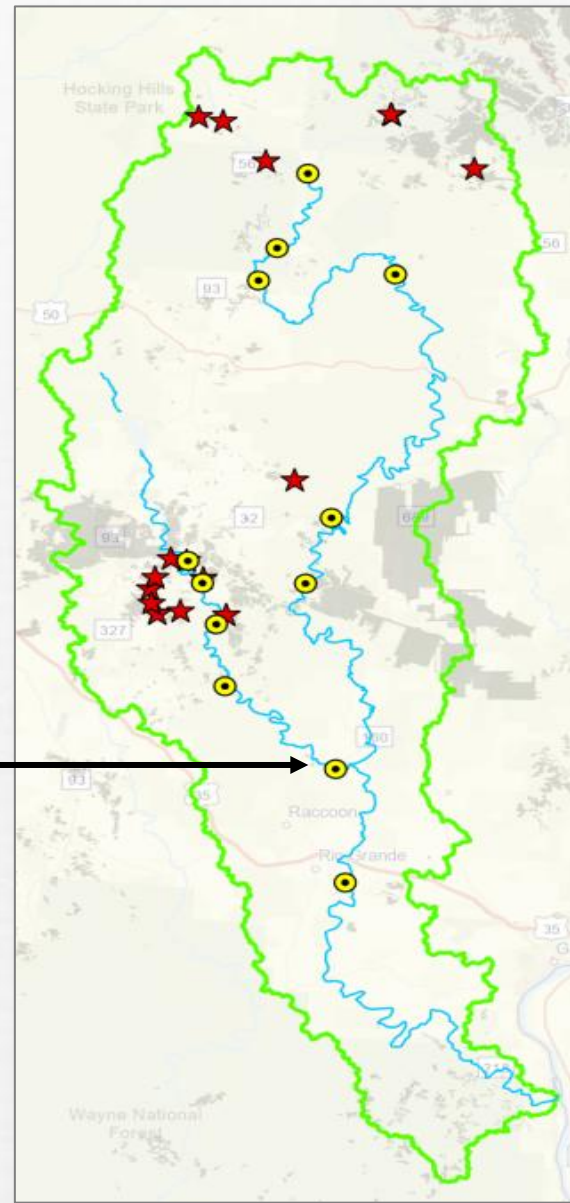


Raccoon Creek Cummulative Number of Fish Species in Watershed by Year



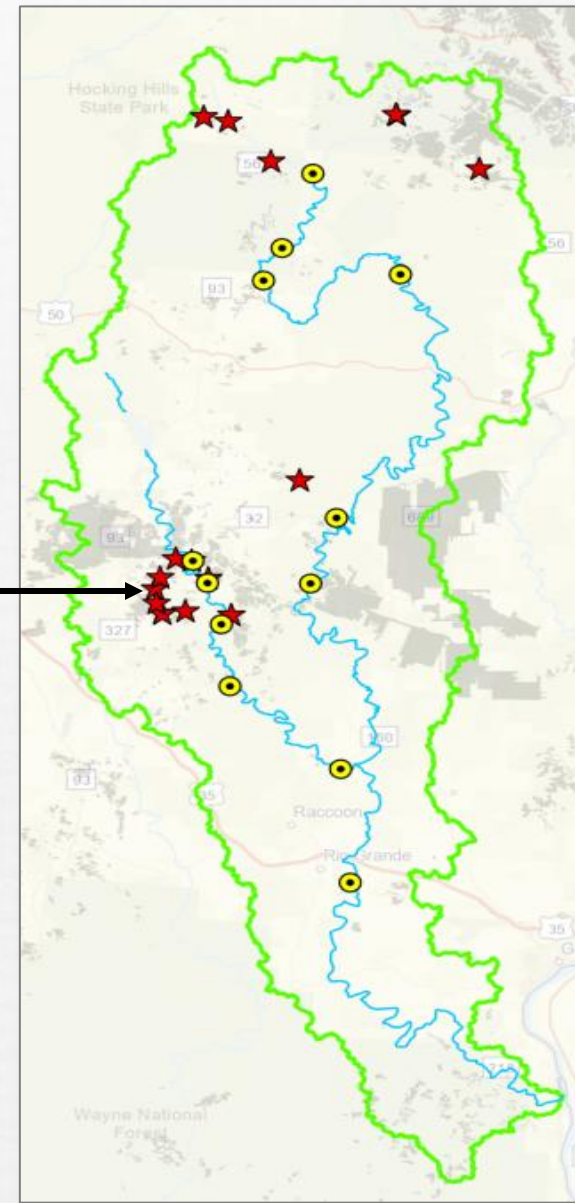
1. Blackside darter
2. Bluegill sunfish
3. Channel catfish
4. Dusky darter
5. Golden redhorse
6. Green sunfish
7. Longear sunfish
8. Northern hog sucker
9. Rock bass
10. Sauger
11. Spotfin shiner
12. Spotted bass
13. Warmouth sunfish

**LRC (mouth)**  
**2005 = 13 species**



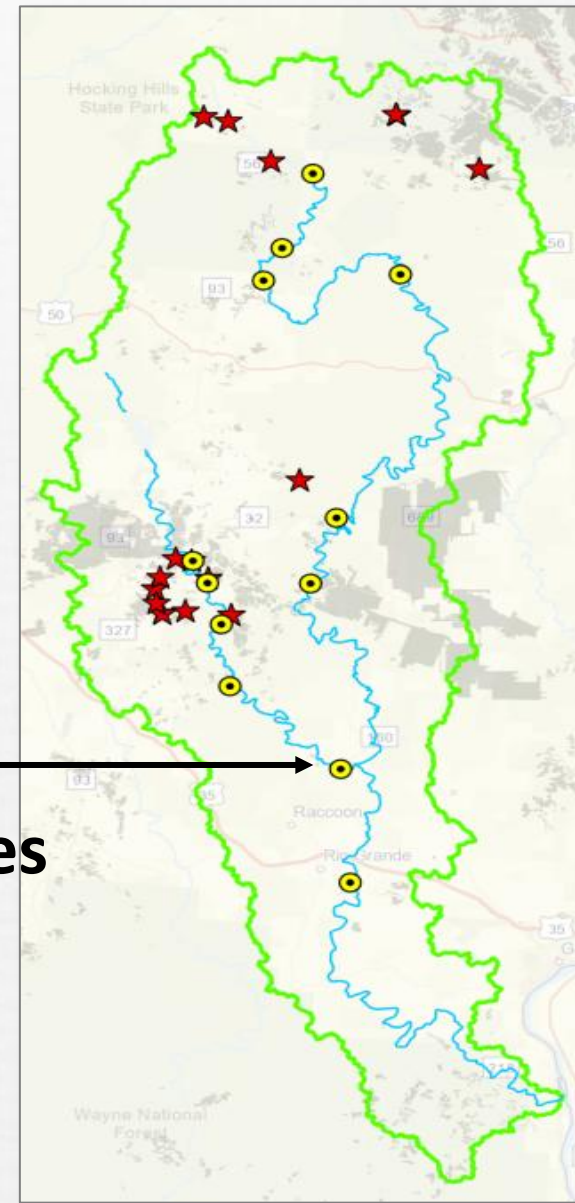
- 1999 Buckeye Furnace & Buffer Run
- 2001 SR 124 Seeps
- 2004 Mulga Run
- 2005 Salem Road/Middleton Run
- 2006 Lake Milton
- 2014 Lake Morrow
- 2015 Flint Run East
- 2015 Flint Run Wetland
- 2015 Middleton Run Reclamation II
- 2018 Daniels Reclamation

**LRC Projects**  
**10 Projects**  
**over 19 years**



- |                         |                         |
|-------------------------|-------------------------|
| 1. Blackside darter     | 20. Channel catfish     |
| 2. Dusky darter         | 21. Rock bass           |
| 3. Johnny darter        | 22. Sauger              |
| 4. Logperch             | 23. Spotted bass        |
| 5. Fantail darter       | 24. Largemouth bass     |
| 6. Greenside darter     | 25. Yellow bullhead     |
| 7. Banded darter        | 26. Flathead catfish    |
| 8. Eastern sand darter  | 27. Redfin pickerel     |
| 9. Bluegill sunfish     | 28. Bluntnose minnow    |
| 10. Green sunfish       | 29. Brook silverside    |
| 11. Longear sunfish     | 30. Striped shiner      |
| 12. Warmouth sunfish    | 31. Mimic shiner        |
| 13. Redear sunfish      | 32. Sand shiner         |
| 14. Golden redhorse     | 33. Spotfin shiner      |
| 15. Spotted sucker      | 34. Freshwater drum     |
| 16. Northern hog sucker | 35. Least brook lamprey |
| 17. Shorthead redhorse  |                         |
| 18. Silver redhorse     |                         |
| 19. Smallmouth redhorse |                         |

**LRC (mouth)** →  
**2018 = 35 species**



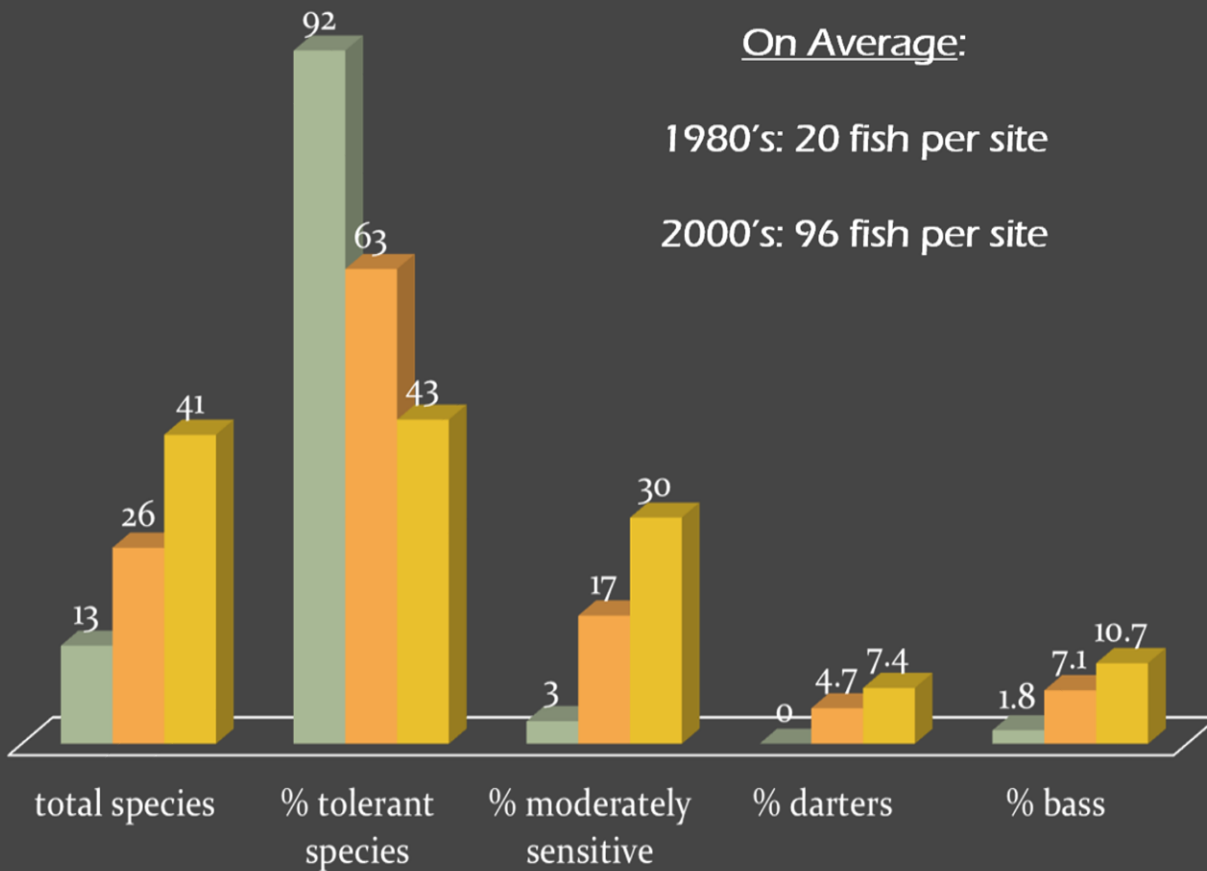
# Little Raccoon Creek - Fish Community Recovery

■ 1980s ■ 1990s ■ 2000s

On Average:

1980's: 20 fish per site

2000's: 96 fish per site



## OEPA TMDL Study 2016/2017

- **32 miles exceptional warm water habitat** (dst. Vinton Dam)
- **71 miles warm water habitat** (upst. Vinton Dam)
- Habitat would likely support **exceptional warm water habitat** above Vinton Dam

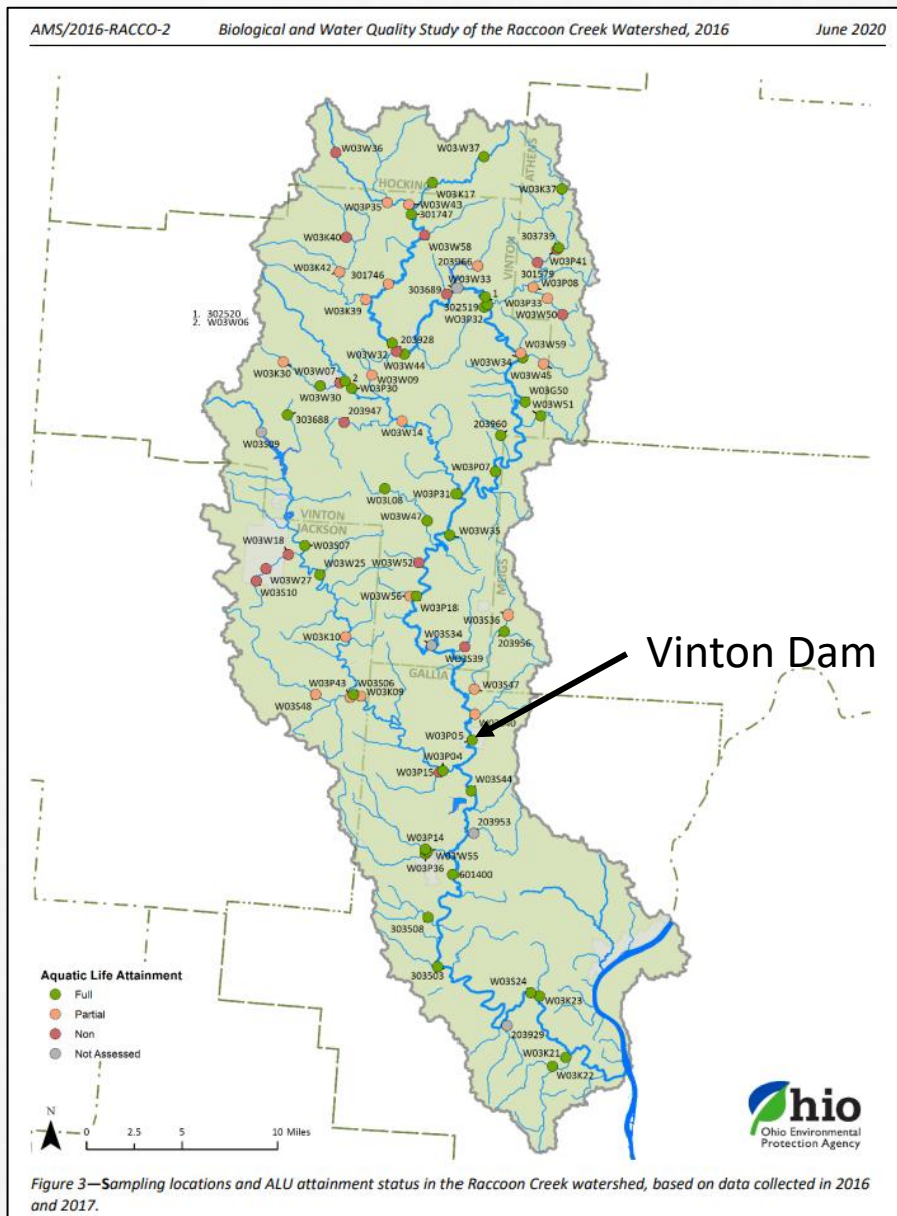


Figure 3—Sampling locations and ALU attainment status in the Raccoon Creek watershed, based on data collected in 2016 and 2017.



## Raccoon Creek

- Status: recovered
- Next steps: maintain success monitoring and maintenance



# Epic Monitoring Effort

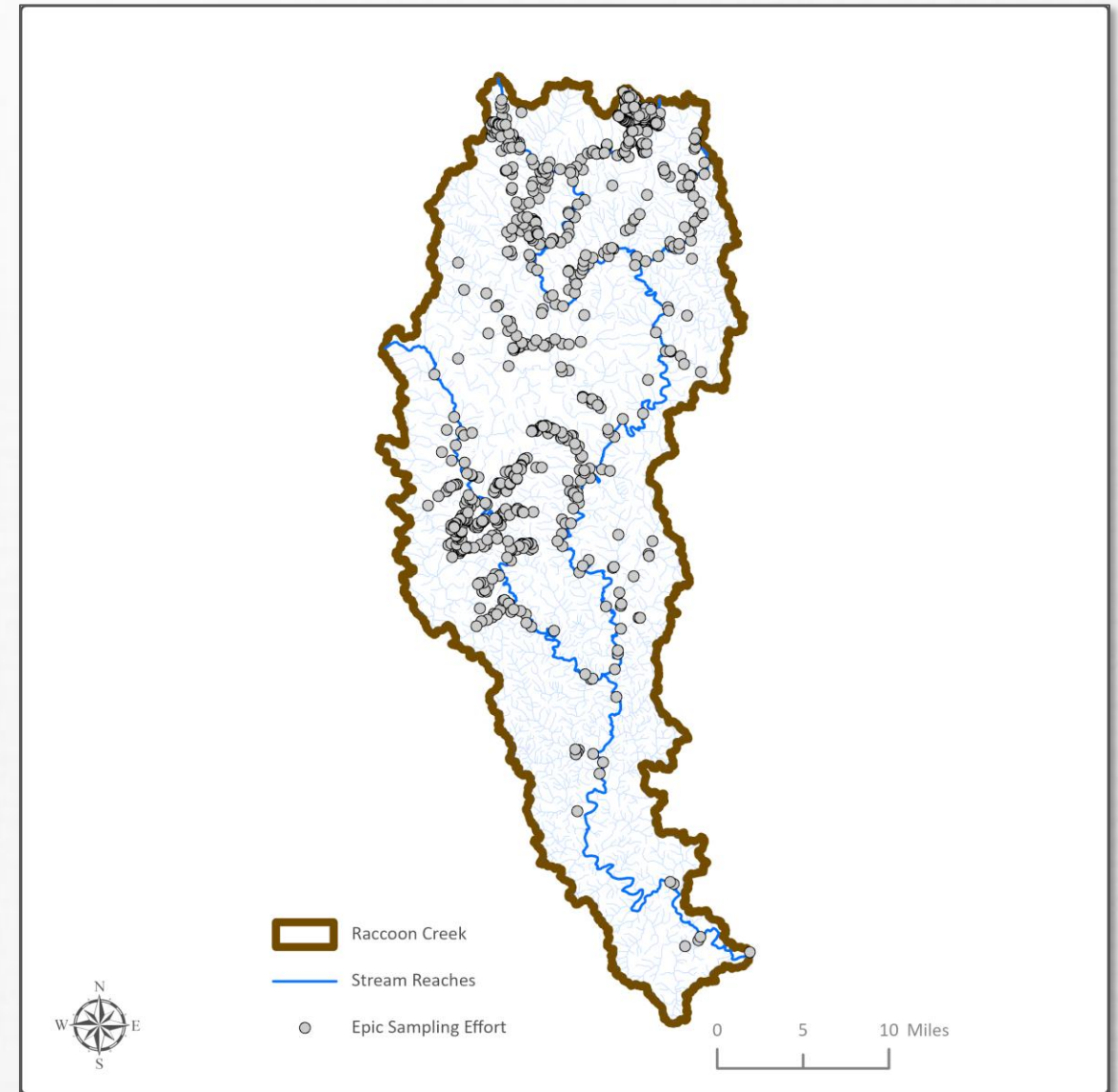
Sample sites: 839

Chemical records: 6,759

Biology Records: 860

**Total records: 7,619**

<https://watersheddata.com/>





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*Raccoon Creek Monitoring*





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Search:

Watershed:  Project:

Date Start:  End:

SEARCH CLEAR

Status Project:  Group List View Data List View Export

Add new record Refresh

	Project Name	Inspector	Affiliation	Date	Watershed	Date Modify	Active	Flag
<b>Status Project:: Active (Showing 10 of 521 items. Group continues on the next page.)</b>								
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Mulga	Kaabe Shaw	ODNR-DMRM	09/20/17	Raccoon Creek	11/13/17	<input checked="" type="checkbox"/> Active	
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Flint Run East	Amy Mackey	Ohio University	10/31/25	Raccoon Creek	10/31/25	<input checked="" type="checkbox"/> Active	Follow Up Amy Mackey 10/31/2025 9:11:06 AM
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Flint Run East	Kaabe Shaw	ODNR-DMRM	09/11/19	Raccoon Creek	09/19/19	<input checked="" type="checkbox"/> Active	
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Flint Run East	Kaabe Shaw	ODNR-DMRM	05/19/20	Raccoon Creek	10/22/20	<input checked="" type="checkbox"/> Active	
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Flint Run East	Kaabe Shaw	ODNR-DMRM	09/16/20	Raccoon Creek	10/22/20	<input checked="" type="checkbox"/> Active	
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Flint Run East	Kaabe Shaw	ODNR-DMRM	09/25/20	Raccoon Creek	10/22/20	<input checked="" type="checkbox"/> Active	
<a href="#">+ Edit/View</a> <a href="#">+ Delete</a>	Flint Run East	Kaabe Shaw	Meigs Soil and Water Conservation	10/20/20	Raccoon Creek	10/22/20	<input checked="" type="checkbox"/> Active	



# Governor DeWine Designates Raccoon Creek as Ohio's 16th State Scenic River

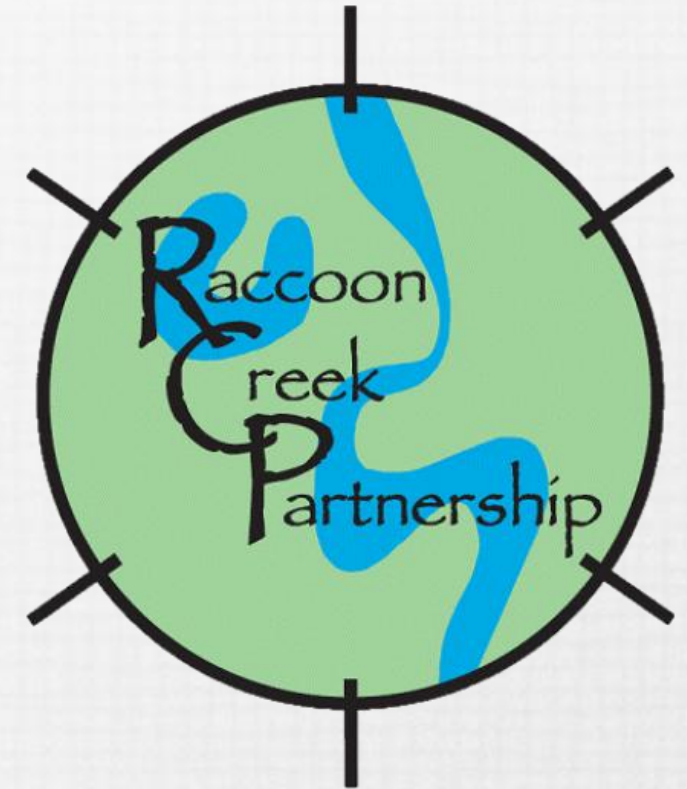
November 12, 2024



(MCARTHUR, Ohio)— During a ceremony today at Lake Hope State Park, Ohio Governor Mike DeWine and Ohio Department of Natural Resources (ODNR) Director Mary Mertz officially designated Raccoon Creek as Ohio's newest state scenic river.



- Raccoon Creek Improvement Committee formed in Gallia County in the 1980s – *concerned citizens* who wanted to help!
- Gained support from community members in all 6 counties of the watershed.
- Raccoon Creek was considered TOO FAR GONE...UNRECOVERABLE!
- Finally got agency attention in the 1990s.
- Projects began in the late 1990s.
- Raccoon Creek Partnership 501 (c) 3 was formed in 2007
  - 7-member board of directors
  - Hosts 2 AmeriCorps members / yr
  - Partner with agencies, landowners, and community members for projects and watershed outreach



- AML funds administered by ODNR Division of Mineral Resources
  - Federal grant funds are allocated to ODNR Abandoned Mine Land Program as part of the Infrastructure Investment and Jobs Act that spans from 2022-2036. ODNR is awarded a \$46.4 million grant to fund abandoned mine reclamation and acid mine drainage treatment throughout the state's coal mining region.
  - Primary funding source for AML/AMD reclamation and treatment projects.
  - Nearly \$13.5 in Raccoon Creek projects. Also supports staffing for monitoring, maintenance, etc.



- 319 Non-Point Source grants administered by OEPA
  - Supplemental funding for AML/AMD projects and fund other watershed restoration projects (low-head dam removal, riparian restoration, etc).
  - Nearly \$2 million in Raccoon Creek
- Watershed Cooperative Agreement Program grants administered by Office of Surface Mining
  - Supplemental funding for AMD/AMD projects.
  - \$1.5 million in Raccoon Creek



# Bonus...Increased Recreational Opportunities!



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*Raccoon Creek Recreational Opportunities*



# Raccoon Creek - The 1<sup>st</sup> Scenic River in Southeast Ohio!



Originally approached DNAP in 2018 and began the conversation about the lack of Scenic Rivers in SE Ohio.



# Designation Process Summary



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*Raccoon Creek Scenic River Designation*



# Designation Process Summary

- The successful restoration of Raccoon Creek made the watershed an ideal candidate for designation.
- RCP and OU worked closely with DNAP personnel to gather data for and complete a designation study for Raccoon Creek. Raccoon Creek met or exceeded the designation criteria for Scenic River Status.
- DNAP and RCP met with County Engineers, County Commissioners, Twp Trustees, SWCD districts, park districts, conservation clubs, Farm Bureau, etc to discuss the designation and what it would mean / how it could impact them.
- Director Mertz made the final choice to designate, and we (OU & RCP) worked with DNAP to plan the official designation, a very small ceremony held at Lake Hope State Park on November 12, 2024.
- A public designation celebration was held at Lake Hope on June 14, 2025 with over 100 people in attendance!



# OFFICIALLY DESIGNATED November 12, 2024!



## RACCOON CREEK

Designated Scenic November 12, 2024.

Scenic segment

- From headwaters in New Plymouth downstream to the confluence of the Ohio River south of Gallipolis.

Miles designated: 111.9 river miles



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*Raccoon Creek Scenic River Designation*



# What does Scenic River Designation Mean?



The three different classifications — Wild, Scenic, and Recreational — are a means to recognize the unique characteristics of a stream so that river preservation activities among diverse state and local governments, organizations, and individuals can be coordinated. When combined with statutory authority to review and approve publicly funded projects on designated rivers, designation helps ensure that decisions and activities that may impact a river are conducted in an environmentally sensitive and responsible manner.

## Wild

Wild rivers are generally inaccessible, the flood plain is undeveloped, the river is free flowing, and 75 percent of the adjacent corridor is forested to a depth of at least 300 feet.

## Scenic

Scenic river designation is representative of a waterway that retains much of its natural character for the majority of its length. Shorelines are, for the most part, undeveloped, but the river may exhibit signs of disturbance by human activities. The adjacent corridor must be forested to a minimum depth of 300 feet for 25 percent of the stream's length.

## Recreational

Recreational rivers do not possess the same degree of natural qualities found in wild or scenic rivers, yet warrant protection due to unique cultural and/or important historical attributes. The influence of human activities is much more apparent on rivers with this classification.

<https://ohiodnr.gov/discover-and-learn/safety-conservation/about-ODNR/nature-preserves/scenic-rivers/scenic-river-classifications>



# Next Steps?

- ODNR appointed a Scenic River Advisory Council that meets quarterly (or as needed) to discuss environmental issues, potential projects, outreach, events, etc.
- Work will continue in Raccoon Creek to restore and protect the watershed from past, present, and future impairments.



# Huge thanks to all our partners who support, fund & manage projects, monitoring & outreach!

- Ohio Department of Natural Resources (DMRM and others)
- Ohio University Voinovich School
- Ohio & US EPA
- Office of Surface Mining
- Wayne National Forest
- County Soil and Water Conservation Districts
- Schools and Universities
- Department of Agriculture
- Local Landowners
- Mining Companies
- Local non-profits and conservation clubs
- The list goes on and on!!





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*Questions?*

