

Performance Monitoring for TMDLs and Alternatives in Indiana



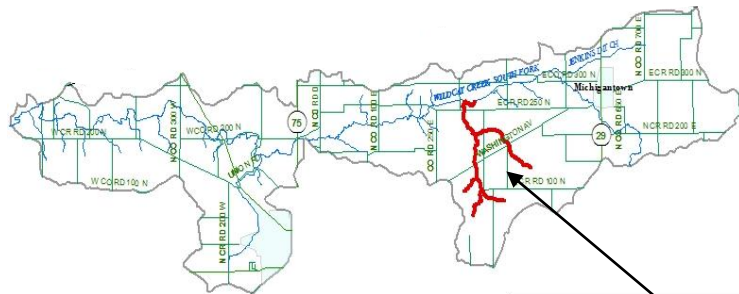
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The Landscape

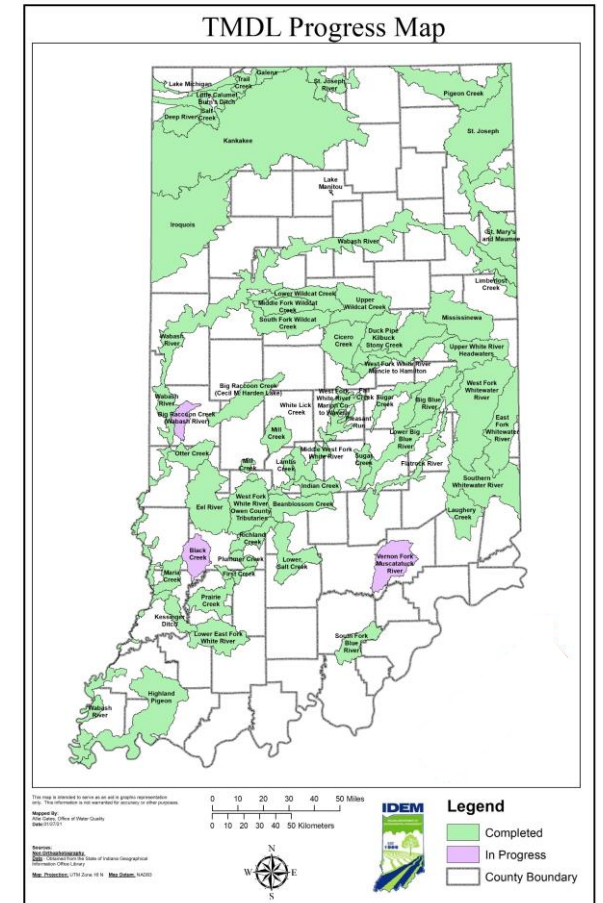
Indiana's Monitoring, Assessment, Listing and TMDL Program

- Statistical surveys and targeted sampling
- List based on stream reaches (AUID)

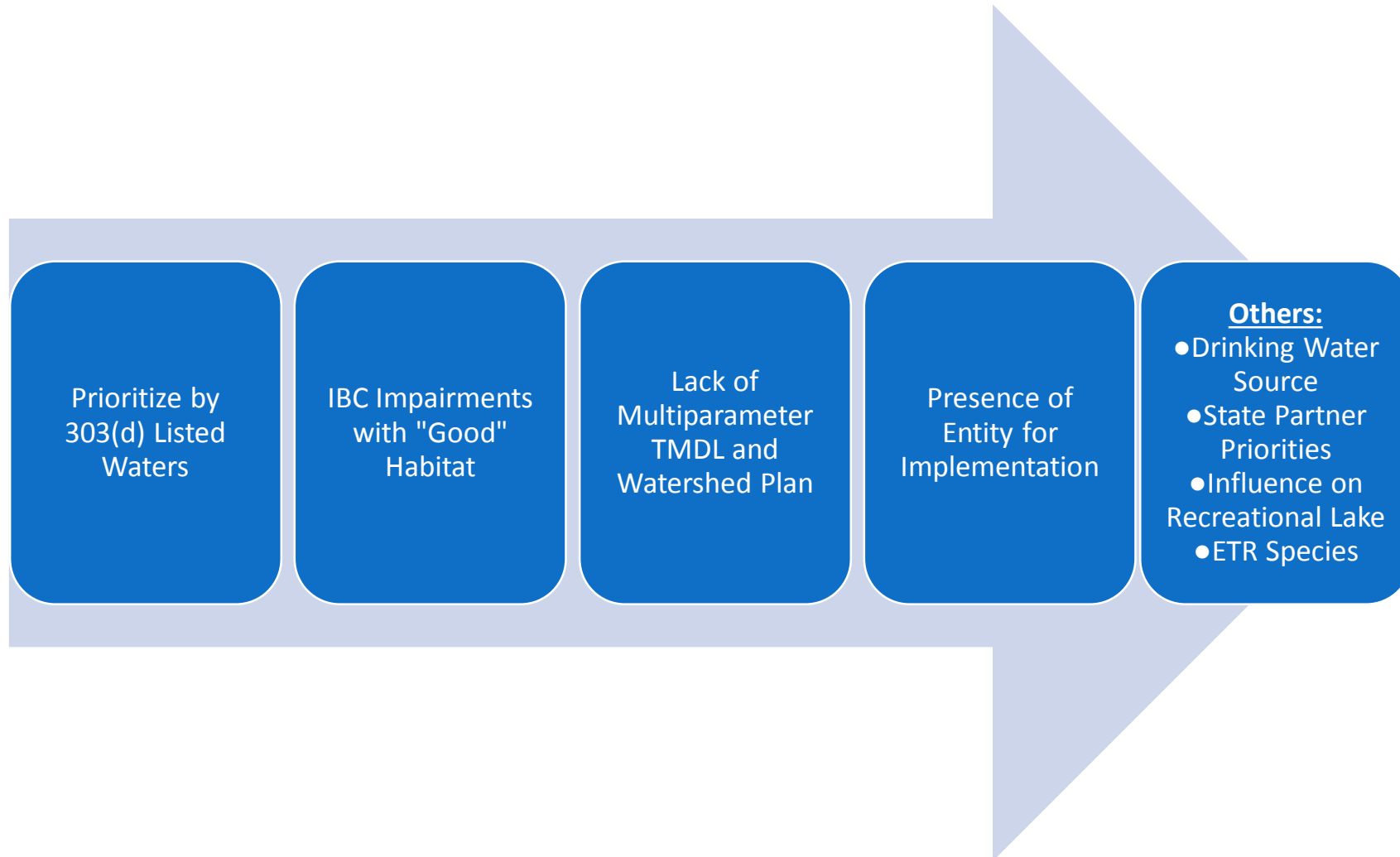


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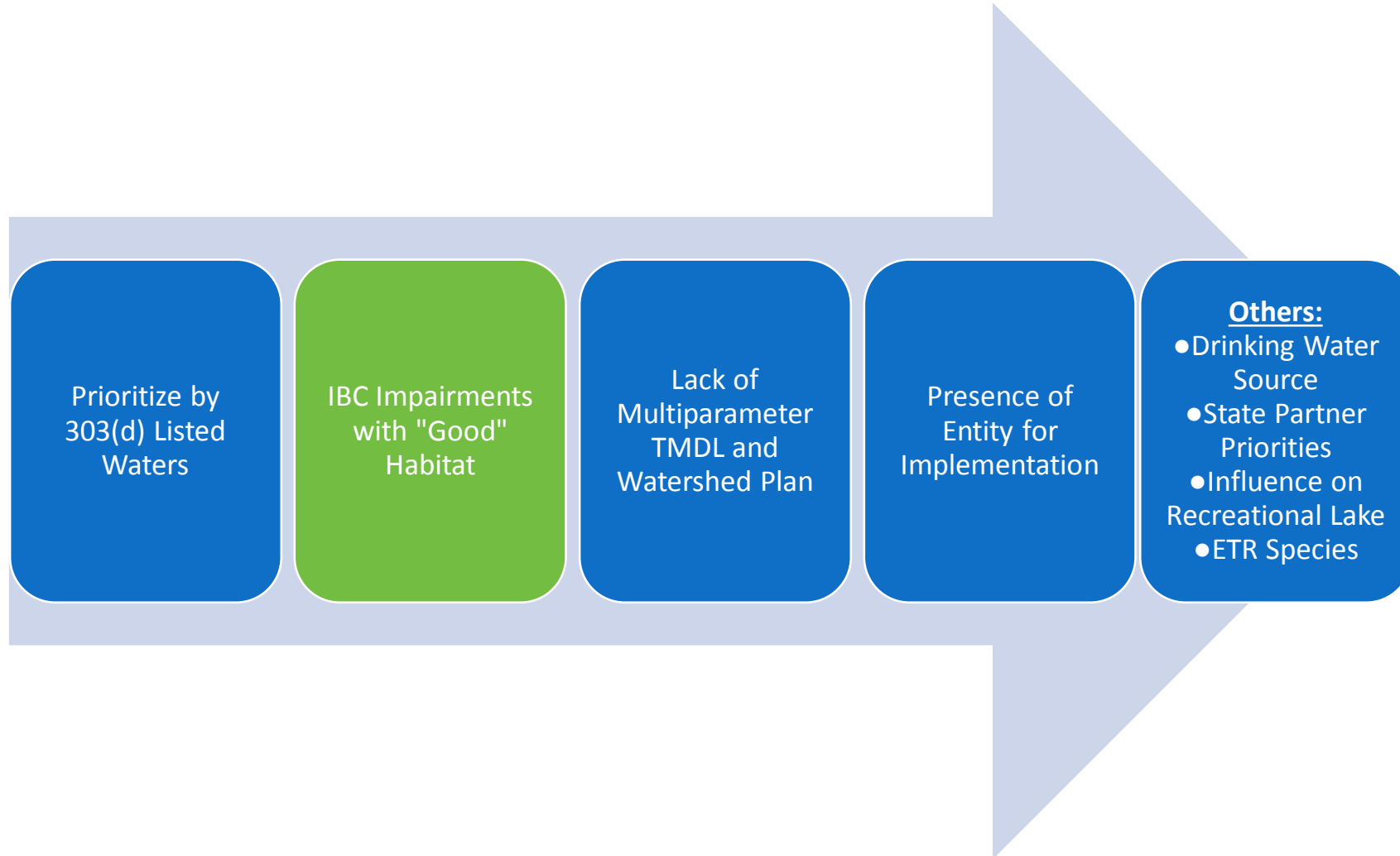
- Early TMDLs focused on stream reach/pollutant combinations
- Since 2012, TMDL program develops watershed TMDLs on the 10-digit HUC scale
 - Majority pollution attributed to nonpoint source
- Current TMDL coverage for at least one parameter in the state
 - 1746 TMDLs addressing *E. coli*, impaired biotic communities, nutrients, dissolved oxygen, silt, and pH impairments



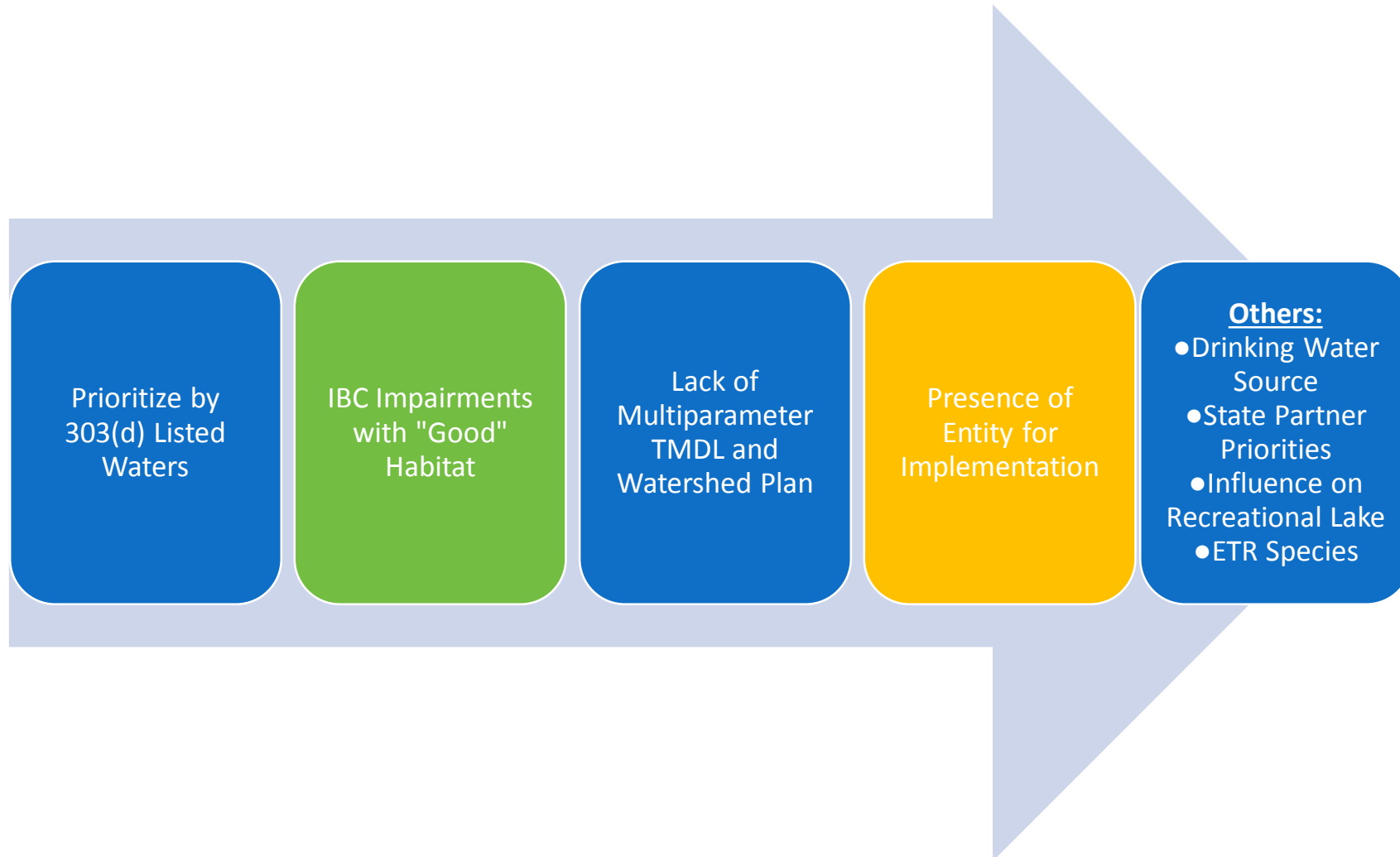
TMDL Priority Selection Process



TMDL Priority Selection Process

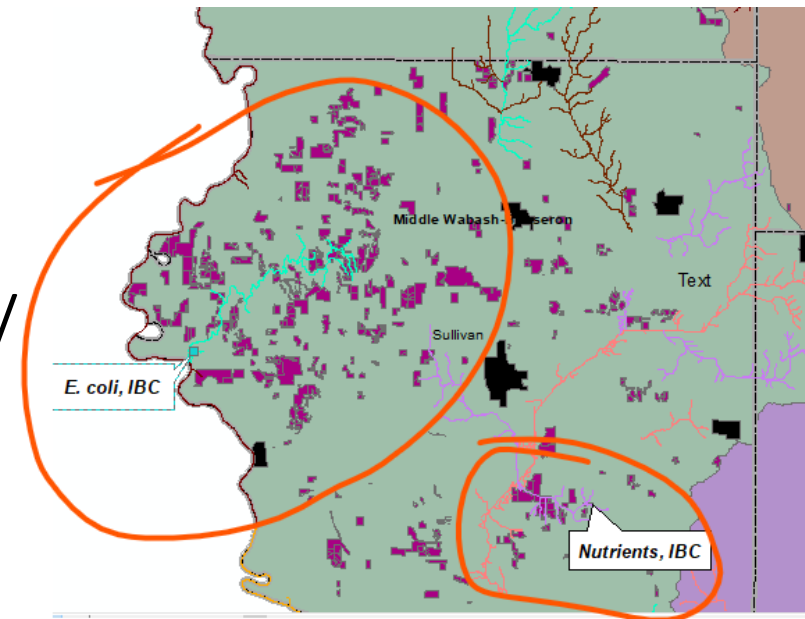


TMDL Priority Selection Process



Current Approach

1. Look for delistings detected from statistical sampling
2. Actively monitor a subset of TMDL/NPS projects
 - Associate 303(d)-listings of IBC, dissolved oxygen, nutrients, *E. coli* with NPS restoration activities
 - Research the data that resulted in the listing and §319-funded BMPs installed, search for more recent data
 - Discuss candidate list with Watershed Specialists and ICP partners for additions/revisions (e.g. funding timelines, national priorities)



Logistics

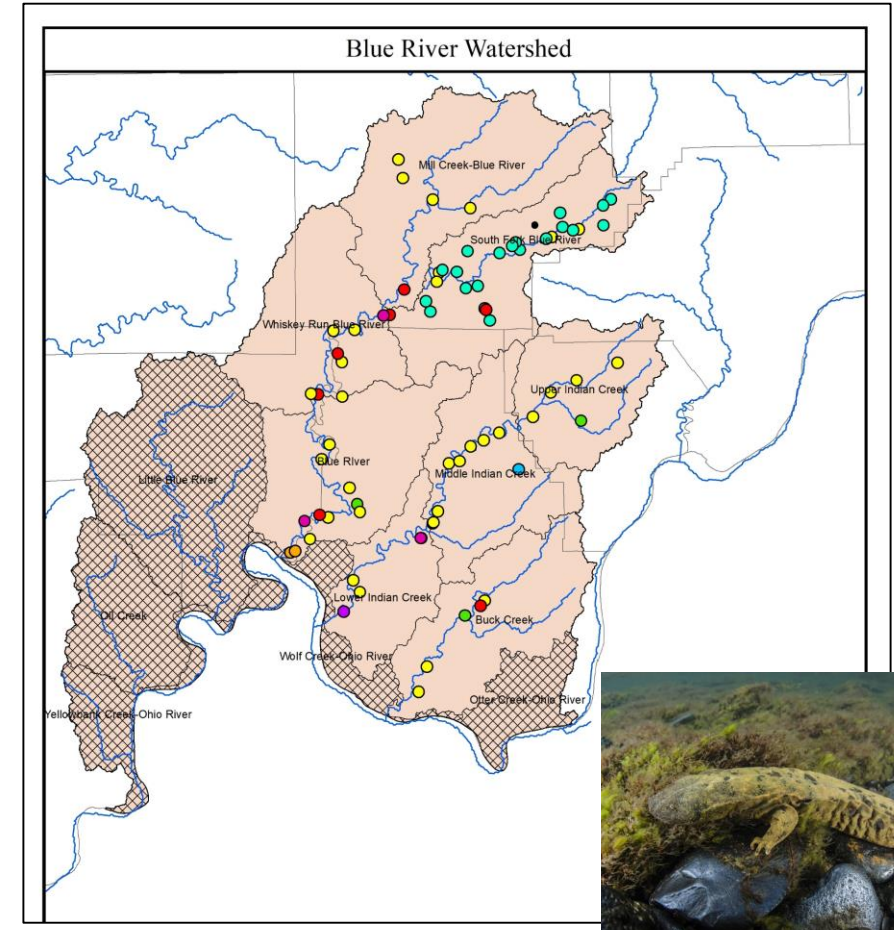


- Multiple watersheds annually
 - Ex: 2022 – 10 HUC-12 watersheds will be sampled; 4 are re-evaluations of watersheds that were sampled earlier but not delisted
- Identify watersheds October-November before sampling
- Funded by Performance Partnership Grant (PPG) and state funding
- Timeframes are important
 - Indices of biotic integrity are calibrated to particular seasons
 - Build in time for BMPs to grow in/become effective



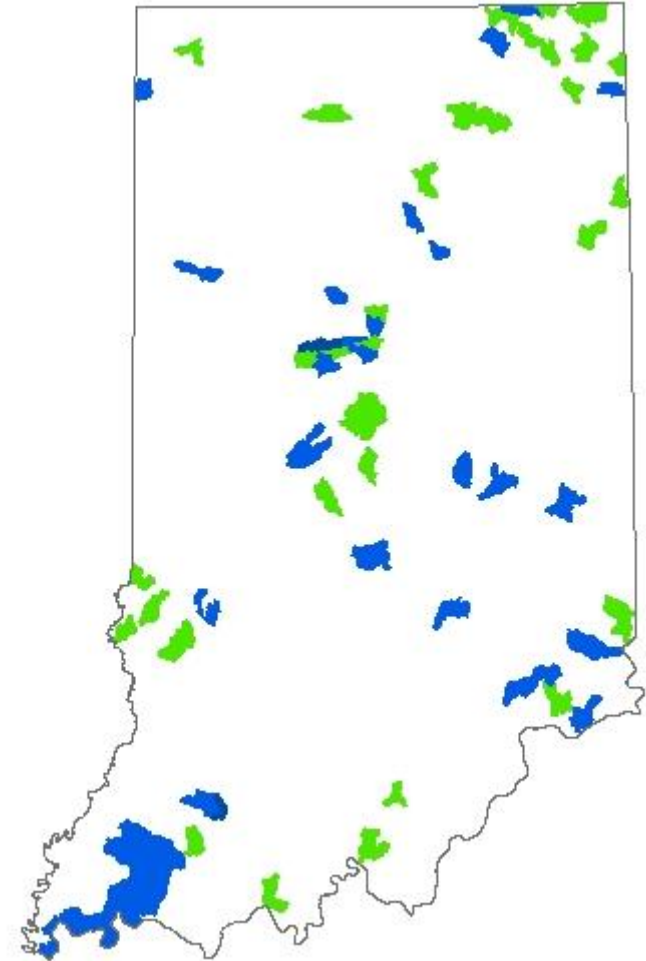
Case in Point – Blue River Proposed Monitoring 2023 Sampling Season

- The Nature Conservancy interest due to endangered species and springs/sinkholes/karst geology for at least 20 years
- IDEM completed a TMDL for the South Fork Blue River for *E. coli* in 2017
- Washington County SWCD created a watershed management plan for the South Fork Blue River that was completed in 2017
- IDEM has awarded \$200,000 in 205(j) grants and nearly \$2,000,000 in 319(h) grants for planning and implementation in the watershed
- A USDA-NRCS National Water Quality Initiative Readiness Assessment was completed for the SFBR and implementation has begun to occur
- Purdue University has been rearing juvenile hellbenders for release in partnership with regional zoos, Dept of Natural Resources, The Nature Conservancy and has applied for further USDA funding to reduce sediment and nutrients in the watershed
- IDEM to participate in before and after sampling for new Purdue project. Before sampling will be good evaluation of where we are now.



Sampled Watersheds

- 66 HUC-12 watersheds sampled to date
- TMDLs or alternative restoration measures
- Improvements/delistings found in 50 of the watersheds sampled
- Typical improvements found in
 - Fish community
 - Macroinvertebrate community
 - Dissolved oxygen concentration
 - Nutrients
 - *E. coli*



Questions?

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