

Riffles & Pools

Office of Water Quality

idem.IN.gov



Greetings Riverwatchers!

Another workshop season is in the books! We had a great year of engagement with new volunteers. In 2025, 24 workshops were conducted including two instructor trainings and the first-ever advanced macroinvertebrate workshop (see *Amazing Macroinvertebrates* on page 3). Over 220 individuals attended these workshops to become certified Hoosier Riverwatch volunteers. Additionally, 15 individuals received a grant or loaner equipment kit.

Perhaps the most exciting part of 2025 was the release of our Hoosier Riverwatch Junior curriculum. This activity guide introduces the concepts of watersheds and water quality to K-12 students. Read more about Hoosier Riverwatch Junior on page 2!

It is not just Hoosier Riverwatch that is taking great strides in 2025. Through efforts of IDEM and various local watershed groups, Indiana now ranks as the national leader in U.S. EPA Success Stories for the year. These success stories detail restoration projects that lead to measurable water quality improvements. We often highlight these stories in this newsletter as they become published, however, Indiana currently has seven success stories available! Look for success stories in future newsletters and read more on this impressive Indiana accomplishment below.

Grab a cup of apple cider or a slice of pumpkin pie and enjoy our Fall issue!

Dylan Allison, Hoosier Riverwatch Coordinator

Fall 2025

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in 2026!

Hoosier Riverwatch
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Introducing Hoosier Riverwatch Junior!

Hoosier Riverwatch has been educating adults on water quality monitoring for nearly three decades. There has been a growing demand and need for similar education geared toward youth in grades K-12. This sparked the idea for Hoosier Riverwatch Junior, an activity guide that explores the world of water. Our adult workshops are typically free to attend and there are avenues for obtaining equipment kits at no cost to our volunteers. It was important for our Junior curriculum to avoid any cost barriers for educators, so modules within the activity guide are designed to be low- or no-cost. Additionally, each module is directly tied to Indiana State Education Standards and is color-coded to the appropriate grade level.

Topics mirror those taught in adult workshops, introducing students to watersheds and non-point source pollution. Participants are invited to conduct activities outdoors and/or at a local stream. However, we recognize that not all educators have access to safe outdoor spaces for their students. Therefore, many modules include indoor and virtual options for activities. The curriculum was designed to be a tool for any K-12 educator in Indiana regardless of their circumstances.

All students who participate in Hoosier Riverwatch Junior activities are eligible to receive a program sticker. Educators, parents, or other group leaders can request stickers by completing a program survey.

For more information and to download the activity guide, visit idem.IN.gov/Riverwatch/home/junior.



Watershed Tarp K-5 6-8 9-12

Duration: < 1 hour | State Standards: 2-ESS2-1, 2-ESS2-2, 2-ESS2-3, MS-ESS2-4, MS-ESS2-5, HS-ESS2-4, HS-ESS2-5, HS-ESS2-6, HS-ESS2-7, HS-ESS2-8, HS-ESS2-9, HS-ESS2-10, HS-ESS2-11, HS-ESS2-12

Summary:
Students will visually delineate watersheds and their features while becoming aware of how pollutants accumulate within watershed boundaries.

Materials:
2 tarp(s); plastic tablecloth(s) or other water resistant covers; spray bottle with water; newspaper(s); bag(s) of household items to create topography; toy animals; balloons; balloons; household items to represent pollutants.

Examples:
Brown sprinkles (dog waste), cocoa powder (dirt), green food coloring (herbicide), red food coloring (toxic waste), vegetable oil or honey (fertilizer), etc. (to be used on the tarp.) (Tip: Place most of these items toward the center of the tarp away from the edges.) Place the second tarp on top resulting in a "catcher" of hills and valleys.

Directions:
Lay the first tarp on the ground with students standing around the outside. Have students throw crumpled up newspaper/plastic bags/ etc. onto the tarp. (Tip: Place most of these items toward the center of the tarp away from the edges.) Place the second tarp on top resulting in a "catcher" of hills and valleys.

FACT:
Water is the only substance naturally found naturally in three states: solid (ice), liquid, and gas (water vapor, steam).

Who Polluted the Creek? K-5 6-8 9-12

Duration: < 1 hour | State Standard: K-ESS3-3, 2-ESS2-2, MS-ESS3-3, HS-ESS2-7, 1.RC.1, 1.RC.6

Summary:
Students will visualize sources of pollution and gain awareness of its effect on water.

Materials:
Jar of clean water, at least 12 containers (i.e. clear condiment cups, film canisters, etc.) labeled and containing the following materials:

1. "Construction Site" – Gravel, sand, or dirt
2. "Trees" – Leaves and sticks
3. "Wrappers" – Candy wrappers
4. "Livestock" – Water with mixed food coloring (brown)
5. "Farms" – Sugar or salt with blue or green food coloring
6. "Parking Lots" – Water with blue food coloring
7. "Electricity" – Hand sanitizer or cooking oil
8. "Wash the Car" – Water with dish soap
9. "Fishing Poles" – Fishing line
10. "Phonics" – Straws, rappers, etc.
11. "Gardeners" – Water with yellow food coloring
12. "Mysterious Liquid" – Water with red food coloring

Explain to the students that you are going to tell a story about our watershed. Explain to students that the jar of water sitting in the middle of the group represents [local waterbody].

Students will play a part in the story. Pass out the 12 containers labeled with the parts. (Consider pairing students together or providing a container for each student so everyone can participate.) Tell them they may NOT open the canisters yet. When they hear the name of their canister read in the story (bolded words), they are to open it and dump the contents into the jar of water.

Before starting the story, ask students: "This water looks clean, doesn't it? Would you boat in it? Swim in it? Eat the fish from it? Do you think it is safe for wildlife?"

Read the story:
A girl named Riley is riding the school bus early one morning. From the bus, Riley watches as it begins to rain. The bus passes a CON-

Creekside Chemistry (Continued) K-5 6-8 9-12

Duration: 2+ hours | State Standards: MS-ESS3-3, HS-ESS3-4, HS-ESS2-7, HS-ESS2-8, K.NS.6, K.NS.6, K.MF.1, 3.M.2, 4.OA.1, 5.OA.2, 6.NS.2, 6.NS.3, 6.OA.3

Dissolved Oxygen Levels

Time	Dissolved Oxygen (mg/L)
0	0
1	2
2	4
3	6
4	7.5
5	8
6	7.5
7	7
8	6.5
9	6
10	5.5

Temperature and oxygen are just two of the many chemical parameters measured within water. Other parameters include pH, nutrients, and turbidity. Many of these measures are interconnected to one another. For example, the eutrophication of organic waste into the ecosystem can increase harmful bacteria of organic waste into the water. Growth of algae can increase nutrient loads such as E. coli. In addition, water, while decreasing oxygen during decomposition (breakdown of dead organisms by bacteria or other microbes).

C. Have the students complete the THINK, PAIR, SHARE worksheet on the resource page link. [Link to resource page](#)

Justify: First, allow students time to write down answers for themselves. Next, have students pair up or in pairs to compare answers. Lastly, allow the students to share and discuss the parameters as a class. Compare their answers to those on the backside of the page.

Amazing Macroinvertebrates!

The first ever Advanced Macroinvertebrate workshop was hosted in Greenwood in September. The workshop was created as a continuing education opportunity for trained Riverwatch volunteers. It joins the Advanced *E. coli* workshop as two opportunities for learning more about water quality topics.

Basic Hoosier Riverwatch training introduces volunteers to macroinvertebrates but is limited to simplified identification, *i.e.*, “mayfly” and “caddisfly.” This equates to exploring no further than the Order level in regard to taxonomy. Identifying to the species level is challenging, even for our IDEM macroinvertebrate biologists. There are over 140 species of mayfly in Indiana! This training finds a middle ground, exploring families and sometimes genera of these aquatic organisms. The workshop focuses on the feeding habits and behaviors of different macroinvertebrates while introducing the scientific names for specific families.

Similar to the basic Riverwatch training, participants sample a local stream with kick nets and D-nets. Volunteers have the added opportunity, however, to examine these creatures under a microscope. Participants observe key characteristics and learn how to differentiate between “look-alikes.” If you are interested in participating in an Advanced Macroinvertebrate workshop, keep an eye on the HRW calendar for 2026 events at hoosieriverwatch.com/#cal. Basic Riverwatch training is a prerequisite for this workshop.



Indiana Success Stories

Indiana now ranks as the 2025 national leader in water quality “Success Stories” recognized by the U.S. EPA. This year, Indiana contributed *seven* Success Stories, which detail restoration efforts that have led to documented water quality improvements. The next closest states have two.

Success Stories are U.S. EPA-designated case studies that highlight measurable water quality improvements in waters that were previously designated as impaired. These successes are often a result of collaboration with local partners and funding from IDEM’s non-point source pollution grants.

"These projects are especially challenging because there are multiple impacts to water quality, usually from several sources," said IDEM Watershed Planning and Restoration Section Chief Caleb Rennaker. "Federal grants, guidance from IDEM, and the dedication of Indiana farmers, watershed groups, and local leaders make these Success Stories happen."

IPB News recently published an article on these successes [here](#). The U.S. EPA is currently reviewing six more success stories from Indiana so the positive trend is poised to continue. Read about one of the seven recent success stories below.



Illustration of watersheds in Indiana. Darker green refers to higher number of success stories. Image: U.S. EPA.



NONPOINT SOURCE SUCCESS STORY

Indiana

Successfully Implementing Best Management Practices Improves Fish Community at Prairie Creek

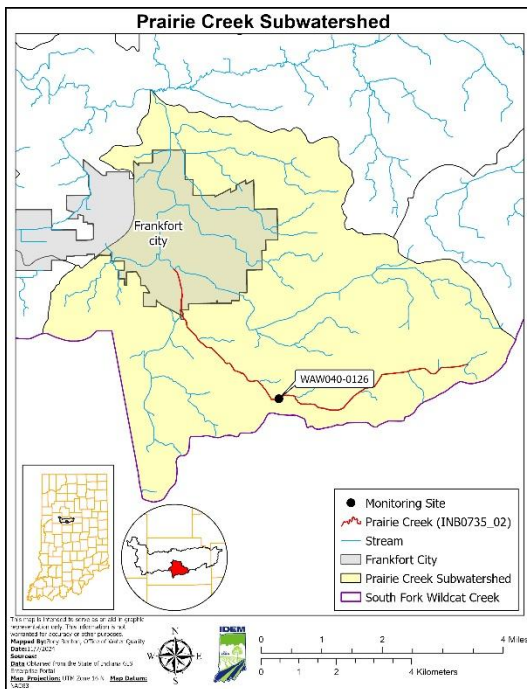
Waterbody Protected

In 2006, the Indiana Department of Environmental Management (IDEM) listed the Prairie Creek (INB0735_02) stream segment on the Clean Water Act (CWA) Section 303(d) List of Impaired Waters for impaired biotic communities (IBC). This problem, as well as many others in the South Fork Wildcat Creek watershed, led to the development of the South Fork Wildcat Creek Watershed Management Plan in 2012. Since the development of the watershed management plan, several agricultural and urban best management practices (BMPs) have been implemented across the watershed. After years of BMP implementation, IDEM’s 2021 Performance Monitoring results showed biological improvements on Prairie Creek. As a result, IDEM removed the Prairie Creek (INB0735_02) stream segment from the impaired waters list.

Water Quality Challenge

The 6.69-mile-long Prairie Creek (INB0735_02) stream segment flows northwest from the southeast portion of the Prairie Creek subwatershed toward the city of Frankfort (Figure 1). The Prairie Creek subwatershed lies along the southern boundary of the South Fork Wildcat Creek watershed. In all, Prairie Creek drains a watershed area of roughly 17,178 acres containing approximately 21 miles of waterways. The primary waterways include Mann Ditch and Prairie Creek. All open waterways within the Prairie Creek subwatershed are classified as open drains. The Prairie Creek subwatershed contains most of the developed area associated with Frankfort. Even with the city-related development, most of the subwatershed consists of cultivated cropland.

The IBC impairment on Prairie Creek (INB0735_02) was identified based on fish sampling that took place as part of IDEM's 2004 IBC South Fork Wildcat Creek Study. Results from the 2004 study indicated a total Index of Biotic Integrity (IBI) score of 32 and a Qualitative Habitat Evaluation Index score of 49 at site WAW040-0126. In Indiana, an IBI score of less than 36 indicates that a stream is not supporting aquatic communities.



Project Highlights

In 2009, IDEM awarded the Clinton County Soil and Water Conservation District (SWCD) with \$166,000 in CWA Section 205(j) funding for developing the South Fork Wildcat Creek Watershed Management Plan. Once the watershed management plan was completed in 2012, Clinton County SWCD began working on the South Fork Wildcat Stewardship Initiative (SFW-SI). The goal of SFW-SI was to begin implementing the actions established by the watershed management plan. IDEM awarded \$320,950 in CWA Section 319 grant funding to Clinton County SWCD to begin implementing the SFW-SI. This grant covered approximately 4% of the South Fork Watershed in BMPs. In total, 50 water quality improvement projects were implemented across the watershed that required planning, coordination and communication with 28 local producers, Ivy Tech Community College, Mulberry Library, county commissioners, Frankfort city officials, the county surveyor, Clinton County SWCD, the Lebanon Natural Resources Conservation Service technical team and subcontractors. Of those 50 projects, five were urban BMP implemented within the city, including a rain garden, bioswale, conservation cover, and pervious pavement and underground storage. In addition to BMPs, the Section 319 grant funding helped support public education and participation, such as a demonstration to showcase how blind inlets are constructed (Figure 2). Clinton County SWCD received Section 319 grant funding again in federal fiscal years 2017 and 2021 to implement SFW-SI Phase 2 and SFW-SI Phase 3, respectively. Clinton County SWCD received \$158,250 for Phase 2 of the SFW-SI. This funding funded the implementation of 30 agricultural BMPs, most of which were cover crops (4433.4 acres), and continued support for public education and participation. Most recently, \$177,989 in Section 319 grant funding was awarded to Clinton County SWCD for Phase 3 of the SFW-SI. This phase of the project is still in progress. Funding for phase 3 will also go toward implementing BMPs and public education and participation.

Best Management Practice	Number Installed	Units	Comments
Raingarden/ bioretention basin	1500	SQUARE FEET	
Conservation Cover	.5	ACRES	
Grassed Waterway	1160	FT	
Nutrient Management	654	ACRES	
Pasture & Hayland Planting	12.4	ACRES	
Heavy Use Area Protection	3	INDIVIDUAL UNITS	
Cover Crop	7920	ACRES	3487 acres in Phase I. 4433 acres in Phase II.
Riparian Forest Buffer	20.5	ACRES	
Grade Stabilization Structure	1	INDIVIDUAL UNITS	
Watering Facility	3	INDIVIDUAL UNITS	

Results

Overall, most of the BMPs on or near Prairie Creek (INB0735_02) consisted of cover crop implementation. These efforts have successfully benefited the fish community. Performance monitoring conducted by IDEM in 2021 resulted in an improved IBI score of 50, making the Prairie Creek (INB0735_02) stream segment eligible for removal from the CWA Section 303(d) List of Impaired Waters (Figure 3). Additionally, the Qualitative Habitat Evaluation Index score for site WAW040-0126 increased from 49 in 2004 to 52 in 2021. According to results from SFW-SI phases 1 and 2, cover crop implementation reduced the total suspended solids loads by 5,695 tons/year during Phase 1 and 7,027 tons/year during Phase 2. The reduction of total suspended solids loads likely contributed to an improved IBI score. Suspended sediment can clog the gills of fish, inhibit their growth, decrease their resistance to disease and prevent proper egg and larval development (IDEM, 2024).



Figure 3. Upstream view from site WAW040-0126 during 2021 monitoring.

Partners and Funding

Partner Type	Agency	Funding	Notes
Federal	Clean Water Act Section 319	\$657,189	
Federal	Conservation Stewardship Program, Environmental Quality Incentives Program, and Wildlife Habitat Incentive Program	\$36,008	
Federal	Conservation Reserve Program and Conservation Reserve Enhancement Program	\$11,088	
Federal	Clean Water Act Section 205j	\$166,000	

Riverwatch in the Community

In September, IDEM staff and Hoosier Riverwatch Coordinator Dylan Allison attended the annual Bloomington BugFest. The event was hosted at Karst Farm Park and saw dozens of exhibitors showing off a variety of “creepy crawlers.” The mission of Bugfest is to educate the public about “bug” biology while bringing awareness to their vital benefits. One local apiary showed off an observation hive with live honeybees. At another exhibitor, attendees were able to observe monarch butterflies emerging from their chrysalis. They were also giving away cricket lollipops to anyone with a daring appetite.



Photo Courtesy of IDEM



Photo Courtesy of IDEM

IDEM’s Mitchell Owens and Dylan Allison staffed a table exhibiting aquatic macroinvertebrates. Live macroinvertebrates were collected from a local stream that morning and placed into a container for participants to explore. Children excitedly sifted through the water to find critters such as crayfish, caddisflies, and more. A microscope aided in the close-up observation and identification of a variety of species. It was reported that 1,500 visitors attended the event.

Fifth graders from Jefferson Elementary in Warsaw were able to put Hoosier Riverwatch methods into action this fall. With guidance from volunteer and Indiana Master Naturalist Chuck Harvuot and Watershed Foundation Executive Director Lyn Crighton, students collected samples from Cherry Creek. After incubation, students concluded that the stream exhibited elevated *E. coli* levels. The methods for *E. coli* sampling involve a combination of science and math, while investigating potential sources of the pollution tie into writing and problem-solving skills.



Photo Courtesy of Ink Free News



Students in the program take on the role of STEM ambassadors that help teach younger students about stream monitoring later in the school year. Chuck Harvuot was recently awarded a Hoosier Riverwatch grant kit to be utilized at Jefferson Elementary. With this equipment, students will have the capabilities to assist in collecting other data such as nutrient loads, dissolved oxygen, and macroinvertebrate surveys. If you are interested in applying for a grant kit for your organization, you can reach out to Riverwatch@idem.IN.gov.

Photo Courtesy of Ink Free News



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Mark Your Calendars

Check back in 2026 for workshops and volunteer opportunities!

IDEM Office of Water Quality Mission

The Office of Water Quality's mission is to monitor, protect and improve Indiana's water quality to ensure its continued use as a drinking water source, habitat for wildlife, recreational resource and economic asset.

The office achieves this by developing rules, guidance, policies and procedures; assessing surface and groundwater quality; regulating and monitoring drinking water supplies and wastewater facilities; protecting watersheds and wetlands; and providing outreach and assistance to the regulated community and the public while supporting environmentally responsible economic development.

Hoosier Riverwatch Mission

The mission of Hoosier Riverwatch is to involve the citizens of Indiana in becoming active stewards of Indiana's water resources through watershed education, water monitoring and clean-up activities. Hoosier Riverwatch is a water quality monitoring initiative sponsored by the **Indiana Department of Environmental Management's** Office of Water Quality.

For more information, go to idem.IN.gov/riverwatch.