

Riffles & Pools

Office of Water Quality www.idem.IN.gov



Spring's arrival is heralded by wildflowers such as the trillium, anemones, and others seen here. Seeing these along your creek site is a sign of little disturbance.

McCormick's Creek State Park, Owen County, Indiana

Greetings Riverwatchers!

So glad things have greened up again! It is certainly a welcome sight. Our thoughts go out to many who are experiencing challenging floods this year in our fair state and all across the nation and globe.

We have had four great workshops so far this year; three more by the time this edition reaches you. With 18 more instructors trained to teach *E. coli* workshops now, those of you who have or will soon be trained in a basic workshop should find it easier to get trained in advanced stream monitoring.

Watch for an updated 2019 training manual coming out soon. It will be hitting workshops and be downloadable from the website this summer, containing just a few corrections and a handful of updates.

There are always more good things going on with regard to water quality in Indiana than there is space to mention here. But a shout-out to say "Thanks!" to all who find the time to volunteer (with Hoosier Riverwatch and elsewhere) to make the world a healthier, safer place to live and raise our families.

– Carol Newhouse, Hoosier Riverwatch Coordinator

Summer 2019

In this Issue:

- Lower Clifty Creek Success Story
- 2019 IDEM Interns
- Hello and Goodbye
- Thank You, Water Stewards
- HRW Crossword
- Sampling Kit Reminders
- Workshop Schedule

MARK YOUR CALENDARS!

Upcoming Workshops

June 1 – Dubois
June 3 & 10 – Bloomington
June 15 – Fort Wayne
June 20 – North Webster
June 22 – Beverly Shores
June 22 – Greenwood
June 28 – Rochester

Advanced Workshop

June 8 – *E. coli* in Greenwood

Hoosier Riverwatch is administered by



Watershed Success Stories: Lower Clifty Creek

The 6th installment in [stories of watershed success](#) efforts collected by IDEM staff and grant recipients over the years:

Lower Clifty Creek flows through south central Indiana in Bartholomew County, just southeast of Columbus. Agriculture is the watershed's primary land use. Two small streams, Sloan Branch and an unnamed tributary from Suhre Lake, contribute flow to lower Clifty Creek, which in turn empties into the East Fork White River.

Exceedances of *E. coli* (i.e., recreational use standard) limits in 2002 were traced back to nonpoint source run-off from manure spread on pastures and crops, livestock operations, leaking and failing septic systems, and wildlife. Additional point sources of *E. coli* in the basin included three small community wastewater treatment plants. However, the plants have no history of violations, which supports IDEM's assertion that nonpoint sources were the cause of the *E. coli* impairments in the lower part of Clifty Creek.

To address this and other concerns, watershed stakeholders teamed up with local and state agencies to develop and implement a [comprehensive watershed management plan](#) (WMP).

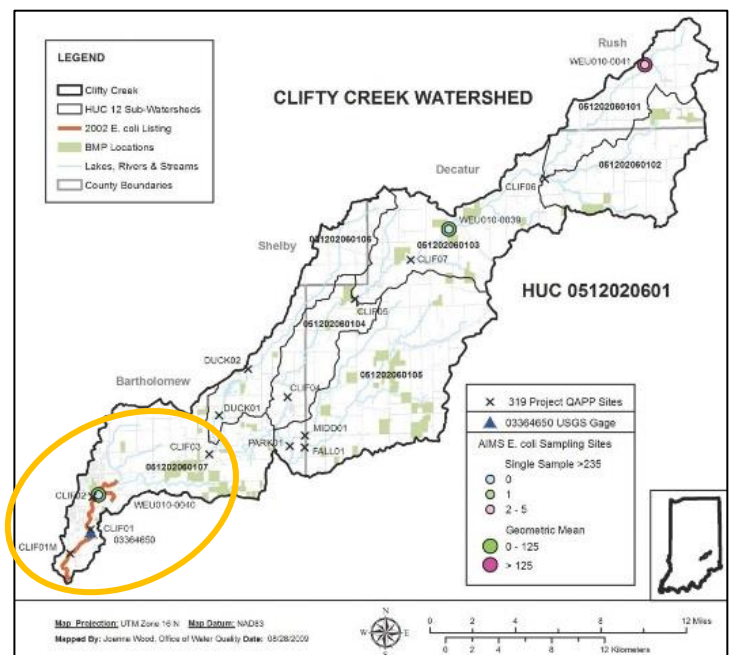
Toward this end, the partners secured the following funding:

- \$1.09 million in [Sec. 319 grants](#) from IDEM
- \$533K in matching funds from Bartholomew County
- \$140K in [Clean Water Indiana](#) funding divided equally between Decatur and Bartholomew County Soil and Water Conservation District (SWCD) offices
- \$105.4K in emergency conservation assistance program grants from the Indiana State Department of Agriculture

Additionally, the Natural Resources Conservation Service (NRCS), working with the SWCDs and the watershed project, provided technical support to producers managing more than 106,000 acres in



Clifty Creek in south central Indiana



Monitoring stations and CWA Section 319-funded BMPs in the Clifty Creek watershed

Watershed Success Stories: Lower Clifty Creek (cont.)

The levels of *E. coli* bacteria in Indiana rivers and streams determine whether or not waters meet the state's recreational use standards. *E. coli* are used as indicators that other, more serious pathogens may be present due to fecal contamination.

To meet this standard, the geometric mean of at least five *E. coli* samples (equally spaced over a 30-day period) must be less than 125 colony-forming units (cfu) /100 mL.

Otherwise, a single grab sample must be less than 235 cfu /100 mL.

the larger Clifty Creek watershed. NRCS's Environmental Quality Incentives Program supported water quality improvement projects on 46,729 acres, including nutrient management plans on 15,562 acres, pest management on 13,701 acres, and 8,745 acres of residue management.

Farmers also used funds from NRCS's Conservation Reserve Program to create 54 acres of riparian zones, 185 acres of grassed waterways, and 152 acres in filter strips.

Overall, implementation of best management practices prescribed in the WMP occurred on nearly 10 percent of the lower Clifty Creek surface area. Follow-up sampling by IDEM and the U.S. Geological Survey showed *E. coli* levels were within safe limits and that lower Clifty Creek was no longer impaired for full-body contact recreational use.

In addition to those already mentioned here, participants in these efforts included both county health departments, the Indiana Department of Natural Resources, Hope Hardwoods, Bartholomew County Cattlemen's Association, Strand Associates, kidsCommons Children's Museum, Sand Creek Watershed Project, Friends of the Muscatatuck River, Indiana University-Purdue University Columbus, Columbus City Utilities, Columbus East High School, and the Southside, Rockcreek and LF Smith elementary schools.

IDEM Welcomes 2019 Water Assessment Interns



Torrey Blevins hails from New Haven, Indiana. He just finished a bachelor's degree from Ball State University in aquatic biology and fisheries and is no stranger to aquatic invertebrates.



Megan Casey comes to us from Mason, Ohio. She studies agricultural engineering at Purdue University. Megan enjoys competing in the steeplechase event. Yeah, I didn't know people did that without horses either. Look it up. It's cool.



Theresa Ingermann is from Yorktown, Indiana. About to enter her final year of agricultural engineering at Purdue University, she is a musician and plant enthusiast. New look up word for me this edition was mellophone; one of several brass instruments this young lady plays.



Payton Kittaka is from Columbia City, Indiana. He is three years into a chemistry degree at Franklin College, minoring in environmental science. His interests include researching alternative plant products as sources of biodiesel, outdoor sports, and traveling.



Cameron Yeakle comes from Upland, Indiana, where he studies environmental science at Taylor University. Like several of his IDEM predecessors, he spent time working with the Muncie Sanitary District's Bureau of Water Quality learning skills he will use at IDEM this summer, namely electrofishing, fish I.D., water monitoring, analysis and assessment.

Photos courtesy of respective interns listed.

IDEM Welcomes 2019 Water Assessment Interns (*cont.*)

Water assessment staff at IDEM are pleased to again welcome five Governor's Public Service Internship Program participants. This program allows bright, motivated college students to 'get their feet wet' learning how the many agencies and departments of state government operate.

They are a great asset for staff needing an enthusiastic 'hand' in accomplishing tasks and projects during the summer. As introduced on the previous page, the interns assisting IDEM with water sampling, biological, and other monitoring efforts in 2019 include: Torrey Blevins, Megan Casey, Theresa Ingermann (who are already on hand), as well as Payton Kittaka and Cameron Yeakle (arriving soon).



Megan Casey, Torrey Blevins and Theresa Ingermann pose with a northern hog sucker, golden redhorse, and white sucker (respectively) during a training event.

Megan and Theresa received their first electrofishing training with IDEM employees recently; which was more of a refresher for Torrey. For IDEM staff, knowing that your team can handle a variety of electrofishing equipment safely and with confidence under various stream depths and conditions is important. As is learning to accurately sort, identify, weigh, and measure fish; all of which ensures that this year's crews will be sampling efficiently and in a way that best represents the entire fish community present in a river or stream at the time of sampling.

A total of 21 species of fish were collected and identified from Buck Creek during this May 9 training event at Southeastway Park in Indianapolis.



Theresa and Megan don backpack shockers during electrofishing training with IDEM.



Male golden redhorse with breeding tubercles on its snout. This was one of 21 species of fish collected from Buck Creek at Southeastway Park on the May 9 training day.



Doing a rough sort by types of fish, then by family, then learning identification characteristics. After weighing and measuring, fish were released back into the waterbody from which they were collected.



Beautiful male rainbow darter from Buck Creek showing off his breeding colors.

Hello and Goodbye

We here at Riverwatch send a hearty “Welcome back!” to instructor Sharon Partridge whose career moves have brought her into the HRW program in Allen County once again! She is gearing up for her next workshop in Metea Park, Fort Wayne as I type; much to the delight of many who are interested in water monitoring efforts in that area. Sharon started as an instructor shortly after my arrival in 2015. She is pictured (right) upon completion of her instructor training at that time. She is a knowledgeable and skilled coordinator/teacher of various environmental education and stewardship programs.



Meanwhile we say farewell to instructor Joe Exl (pictured left) of the Northwest Indiana Regional Planning Commission, who was trained by Lyn Crighton as a volunteer HRW instructor in 2006. Along with all of his regular duties, he has been an inspiring and innovative instructor of this program in NW Indiana for 12 productive years. Feedback received about Joe is that he can teach an entire workshop streamside without so much as a podium or a PowerPoint projector. Keep up the good work in northwest Indiana, Joe! And thanks for all you have done and will continue to do!

HRW also says goodbye to instructor Sarah Brichford (pictured right) as she recently retired from her position with the stormwater district of Howard County. She received her training from Lisa Ritter-McMahon in 2008. From her I learned to, “Just teach from the manual,” whenever the PowerPoint file locked up or other technical difficulties arose. “Everything they need to know is in the manual,” she would say. Lately, Sarah had become key in helping HRW support the General Motors staff in mentoring students at Maple Crest Middle School in Kokomo. She will be missed. But, we thank her and wish her all the best in her future endeavors in a well-deserved retirement!



Other HRW instructors who have moved on recently include: Corky Prast (Johnson County), Jessica Hoehn and Shelbie Stephenson (Washington County), Andrew Smith (Warrick County), Matt Jones (Allen County), and Jordan Beehler (Elkhart County). Many thanks for your time and service!

Thank You, Water Stewards

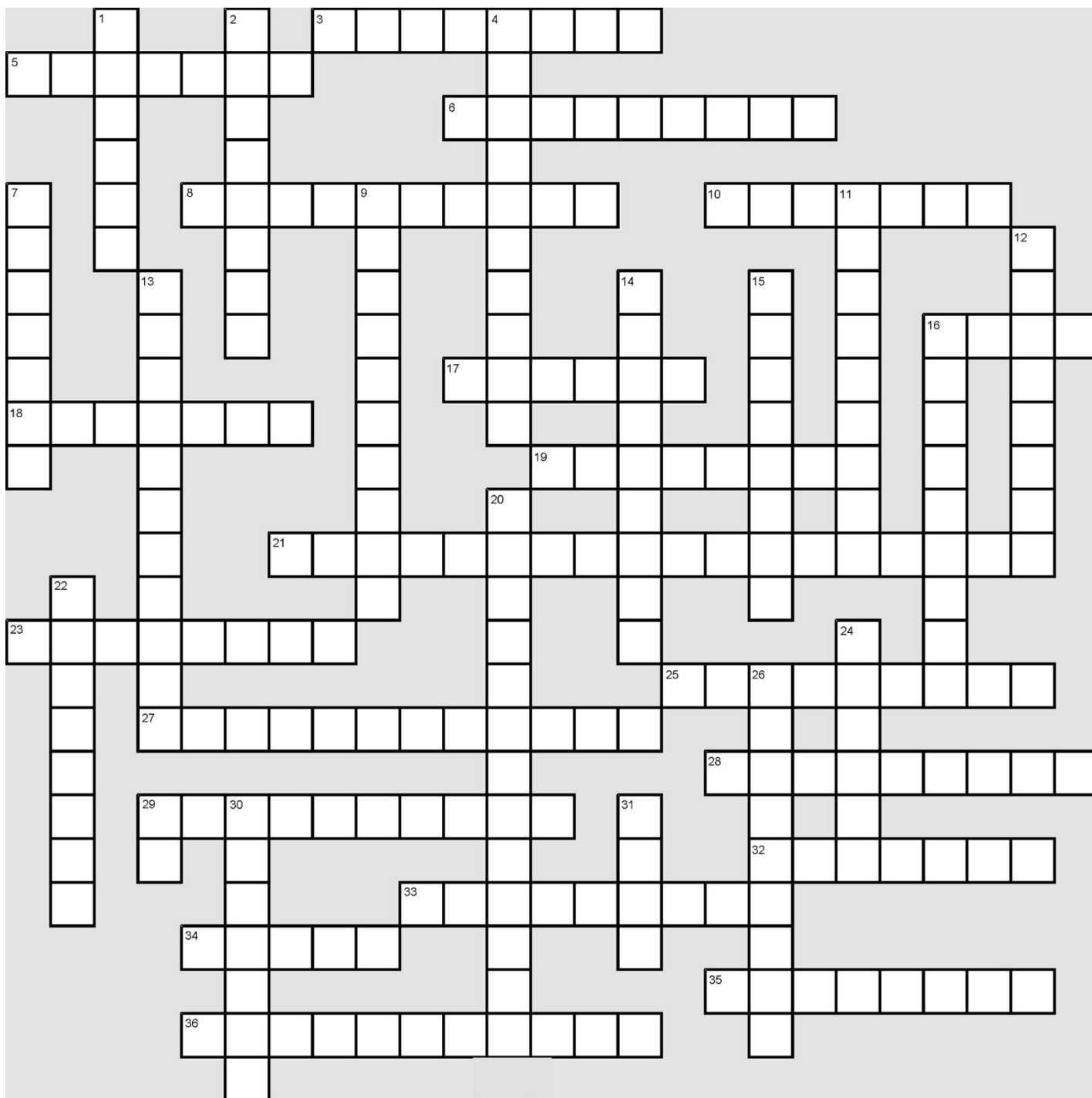
Riverwatch sends a big shout-out to [The Watershed Foundation](#), which recruited droves of school students and adult volunteers to plant over 5,000 native plants along 500' of lakeshore at [Winona Lake Limitless Park](#) in May (photos below). They are already planning for their third annual [Shapshot Water Monitoring Day](#) across the Upper Tippecanoe River Watershed.



Students and citizens pitch in over two days in May 2019 to plant over 5,000 native plants along the shoreline of Winona Lake Limitless Park in Kosciusko County. Native vegetation has extensive root systems that will filter out nutrients, slow erosion, protect the shore from wave action, and deter access and soiling of the property by Canada geese.

Photos courtesy of The Watershed Foundation

Hoosier Riverwatch Crossword Puzzle



ACROSS CLUES

- 3 Electronic storage system of related items, allowing them to be sorted and retrieved
- 5 Of the water

Continued on next page

DOWN CLUES

- 1 A double-shelled animal that, in Indiana, is illegal to have in your possession due to its endangered status

Continued on next page

Hoosier Riverwatch Crossword Puzzle *(cont.)*

ACROSS CLUES *(cont.)*

- 6 A place or time when training occurs, often as a group (plural)
- 8 Invertebrate animals with exoskeletons that are often segmented and with paired, jointed appendages
- 10 Physical environment in which something lives
- 16 A deep, slow-moving area of a stream, usually occurring between riffles
- 17 Common name for insects in the order ephemeroptera
- 18 To sample or keep an eye on
- 19 A type of pollution that comes from ubiquitous sources
- 21 Animals without a backbone that can be seen by the naked eye
- 23 Able to walk in without floating away
- 25 Chemical components that feed plants, such as phosphates and nitrates
- 27 Water clarity
- 28 An odonate that, as an adult, is a strong flyer and rests with its wings flat
- 29 Has the chemical formula of PO₄
- 32 Arthropods that have six legs
- 33 Land wherein all the water drains to a common point
- 34 Shelled animal that moves with a slimy foot and can indicate water quality depending on the direction that its shell rotates (i.e., left- or right-handed, etc.)
- 35 Common name for insects in the order of plecoptera

DOWN CLUES *(cont.)*

- 2 The vegetated edges of a waterbody
- 4 Having to do with plants and animals
- 7 Smaller watercourses than rivers
- 9 A program for citizens who monitor local creeks and streams
- 11 A thing used to show visibly or by representation the condition of something else; from the Latin word meaning "one who points out"
- 12 Nickname for people from Indiana
- 13 The natural world or area where humans, plants, and animals live and operate
- 14 To donate time and effort towards
- 15 Has the chemical formula NO₂
- 16 Usually synthetic things that degrade water or environmental quality
- 20 Clawed coleoptera and their larvae which both indicate clean water
- 22 Microscopic life
- 24 A common name for insects in the family chironomidae
- 26 The opposite of transparency (i.e., cloudiness of water)
- 29 The negative log of hydrogen ions within water, the measurement scale of which indicates if something is more or less acidic or basic/alkaline
- 30 The order that contains dragonflies and damselflies
- 31 Another name for Pisces or ichthys

- 36 The responsibility or action of taking care of something shared in common with others

Hoosier Riverwatch Stream Sampling Kit Reminders

IDEM is now accepting applications for **2019 Riverwatch sampling equipment kits**. If you have taken—or are registered to attend—a Riverwatch basic training workshop and are part of a school, government, or nonprofit group that is interested in stream sampling in Indiana, you and your group are eligible to apply for a kit.

IDEM's website provides [application guidelines](#) and the Hoosier Riverwatch Water Monitoring Equipment Application (State Form 55220, available on the [IDEM forms](#) page).

To keep your Hoosier Riverwatch gear and sampling supplies in good working order, please:

- Make certain that your chemicals and test strips have not expired. Contact us for [refills](#) if they have expired.
- Replace the lid on your pH and NO₃-NO₂ bottles quickly because the test strips love water. The desiccant pack inside the bottle will also assist in keeping your unused strips from reacting ahead of your actual sampling event.
- Dispose of old, expired test strips in a trash receptacle. Keep the bottle and the desiccant if you like. It comes in handy if you need to split supplies between sampling groups. This will give you a second set with watertight lid, desiccant pack, and the all-important color chart. Be sure to label the old bottle with the correct expiration date whenever you use it in this way.
- Keep your spirit- or alcohol-filled thermometers in an upright or semi-upright position when not in use. This will ensure that the liquid inside does not separate during transport and storage. You can reuse any hard plastic container to do this. Simply secure it to the corner of a sampling trunk or kit with the opening facing up and close enough to the trunk lid so that the thermometer will not fall out.
- Close CHEMetrics DO and PO₄ kits when not in use so they do not fade in the sunlight. Rinse the sampling cup and lid properly, especially the one for PO₄ testing, as the activator solution will degrade the cup/lid. Leave the lid off of the sampling cup when storing so that mold/mildew will not grow inside the cup. (Be sure to triple rinse the cup again with sample water to take a reading.)
- Store your supplies and chemicals in an area that does not experience extreme hot or cold temperatures (i.e., not in a car).



Hoosier Riverwatch Stream Sampling Kit Reminders *(cont.)*



Here's more on keeping your sampling gear and supplies in good working order:

- Clean all nets and organism sampling/viewing equipment thoroughly with hot water and dry well between sampling sites to reduce the risk of transporting exotic/unwanted species or diseases from place to place. Clean and dry sample bottles, boots, and turbidity tubes also.
- Use a couple of drops of dish soap and a soft clean cloth (pushed down with the end of a broom handle) to clean the insides of a turbidity tube that has become cloudy. Fit the stopper back into the bottom of the tube securely. Keep the release valve on the discharge tube uncrimped when not in use.
- Store *E. coli* testing supplies as instructed, be it via refrigerator, freezer, or sealed on a shelf until your sampling date arrives. Incubate all samples per training instructions for best results.

Mark Your Calendars

2019 Training Workshop Schedule

A Hoosier Riverwatch Basic Training workshop will introduce you to hands-on water quality monitoring methods. You will learn about aquatic habitat and practice chemical and biological assessment techniques. Each workshop is held both indoors and outdoors unless weather or water conditions prohibit otherwise. All interested persons age 18 and over are welcome to attend. Once trained, certified educators are qualified to teach these methods and topics to their students.

Saturday, June 1

Dubois, IN – Patoka Regional Water District Office (9 AM – 3 PM EST). Instructor will be Nicholas Servis. Contact Judi Brown at 812-482-1171 (x3446) or judi.brown@in.nacdnet.net to register.

**Monday, June 3 &
Monday, June 10**

Bloomington, IN – Karst Farm Park (5:30 PM – 8:30 PM). Must attend both sessions to receive certification. Instructors will be Cathy Meyer, Kriste Lindberg, and Sandy Belth. Contact Monroe County Parks and Recreation at 812-349-2800 or parks@co.monroe.in.us to register.

Saturday, June 15

Fort Wayne, IN – Metea County Park (8:30 AM – 3:30 PM). Instructor will be Sharon Partridge. Contact Sharon at ssp2655@gmail.com or 260-755-8111 to register.

Continued on next page

Mark Your Calendars (*cont.*)

2019 Training Workshop Schedule (*cont.*)

- Thursday, June 20** **North Webster, IN** – North Webster Community Center, 301 N. Main St. (8:30 AM – 4:30 PM). Instructors will be Lyn Crighton and Darci Zolman. Contact Paige at The Watershed Foundation at 574-834-3242 or admin@watershedfoundation.org to register.
- Saturday, June 22** **Beverly Shores, IN** – The Community House on Service Avenue behind/ west of the Town Hall Building located at 500 S. Broadway (8:30 AM – 4:30 PM CST). Instructor will be Candice Smith. Contact Candice at 812-272-9135 or cmsmith2@indiana.edu to register.
- Saturday, June 22** **Greenwood, IN** – Greenwood Nature Center (8 AM – 4 PM). Instructors will be Carol Newhouse and Deanna Garner. Contact Mike Weaver at 317-887-4711 or stormwater@greenwood.in.gov to register.
- Friday, June 28** **Rochester, IN** – Rochester Fire Department Training Room (9 AM – 5 PM). Instructor will be Seth Harden. Contact Seth at seth.harden@tnc.org or 765-414-5861 to register.
- Tuesday, July 23** **Battle Ground, IN** – Brier Environmental Education Center, Tippecanoe Battlefield (8:30 AM – 4:30 PM). Instructors will be Mary Cutler and Darci Zolman. Contact Mary at 765-567-2993 or mcut@msn.com to register.
- Friday, September 6** **Bristol, IN** – Baldwin Schoolhouse, Bonneyville Mill County Park (9 AM – 4 PM). Instructor will be Krista Daniels. Contact Krista at 574-875-7422 or kdaniels@elkhartcounty.com to register by September 3. You may also register online at www.elkhartcountyparks.org.

2019 Advanced *E. coli* Workshops

Advanced workshops are typically half-day in length. Participants must have completed a full-day, basic training workshop prior to signing up for an advanced workshop.

- Saturday, June 8** **Greenwood, IN** – Greenwood Nature Center (9 AM – Noon). Instructors will be Carol Newhouse and Deanna Garner. Contact Mike Weaver at 317-887-4711 or stormwater@greenwood.in.gov to register. Workshop will include background and hands-on practice with *E. coli* sampling only.
- Saturday, Oct. 12** **Zionsville, IN** – SullivanMunce Cultural Center (9 AM – Noon). Instructor will be John Ulmer. Contact John at hoosierwatersheds@gmail.com or 317-769-3500 to register. Workshop will include background and hands-on practice with *E. coli* sampling, as well as introduction to the Hoosier Riverwatch online database.



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Hoosier Riverwatch Database:
www.hoosierriverwatch.com



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Do unto those downstream as you would have those upstream do unto you.

— Wendell Berry

IDEM Office of Water Quality Mission

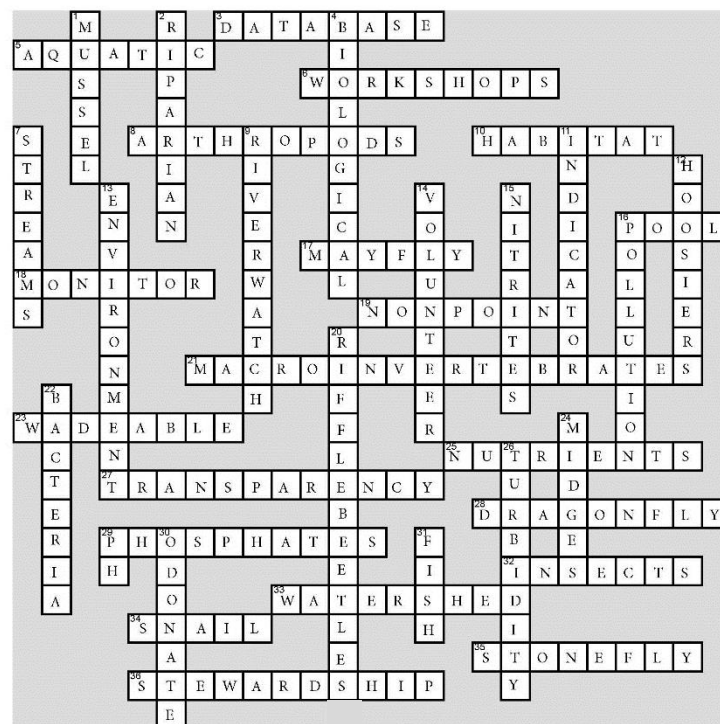
The Office of Water Quality's mission is to monitor, protect, and improve Indiana's water quality to ensure its continued use as a drinking water source, habitat for wildlife, recreational resource, and economic asset.

The office achieves this by developing rules, guidance, policies, and procedures; assessing surface and ground water 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 cleanup activities. [Hoosier Riverwatch](http://www.hoosierriverwatch.com) is a water quality monitoring initiative sponsored by the Indiana Department of Environmental Management's *Office of Water Quality*.

Hoosier Riverwatch Crossword Puzzle



ANSWER KEY

Crossword
Puzzle
(pgs. 6-7)

So
how
did
you
do?