



Perennial & Intermittent Stream Classification

The Importance of Flow by Chris Spoelstra, Water Quality Bureau, IDNR

Iowa has many waterbodies, ranging from large rivers, lakes and wetlands to the vast network of small streams. Waterbodies do not need to be large to support aquatic life, nor do they need flowing water throughout the year to provide enough habitat for plants and animals. In Iowa, stream segments are classified as either “perennial” or “intermittent,” classifications that are based primarily on flow regimes of particular stream segments – perennial streams have water nearly all of the time while intermittent streams tend to dry up on an annual basis.

Iowa Administrative Rules Chapter 61 defines surface waters in Iowa on the basis of “general uses” and “designated uses.” Beneficial uses include waters designated for primary contact recreation, such as swimming and water skiing, aquatic life use, or drinking water sources. Only about 17 percent of Iowa’s total stream/river miles, and approximately 46 percent of perennial stream miles, are designated in the Iowa Water Quality Standards for beneficial uses as defined by the Iowa 305(b) report. Remaining streams are classified as general use streams.

General uses include livestock and wildlife watering, non-contact recreation (i.e., waters that are not meant for swimming, boating, etc.), crop irrigation, and industrial, domestic, agricultural, and other incidental water uses. These streams are typically the intermittent headwater reaches of larger perennial streams and flow only for short periods of time following precipitation events, or flow as a result of discharge from wastewater treatment facilities.

Perennial streams can be defined as a body of water flowing in a natural or man-made channel year-round, except during periods of drought. Lakes and ponds that form the source of a perennial stream, or through which a perennial stream flows, are all characteristics of the stream. Generally, the water table is located above the streambed for most of the year and groundwater is the primary source for stream flow. In the absence of pollution or other human disturbances, a perennial stream is capable of supporting a variety of aquatic life. The wet season, which is typically March through May, represents the optimum time period during which you will be able to observe biological species under normal flow conditions. A stream that contains normal flow during the dry period is likely to be a perennial stream assuming that there are normal precipitation conditions.

Intermittent streams contain flowing water for only part of the year. During the dry season and periods of drought, these streams will not exhibit flow and are often completely dry. The flow of intermittent streams is influenced by many factors, both natural and human. The stream may be located above the water table, and therefore lacks the continuous presence of ground-

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IOWATER 2003 AWARD RECIPIENTS



PROFESSIONAL OF THE YEAR
Ed Askew



VOLUNTEER OF THE YEAR
Vicki Wilson



EVENT OF THE YEAR
O'Brien County Snapshot
Terry Janssen & Scott Osborn



CLASSROOM OF THE YEAR
Environmental Science & Biology – Cedar Rapids Prairie High School
Teacher: Sharon Bender
Amanda Percy, Laura Volesky, Kendra Gregor, & Sharon Bender



WATERSHED GROUP OF THE YEAR
Maquoketa River Water Quality Team
Virginia Parker, Lois Banse, Sue Behrns, John Behrns, Marilyn Schnittjer, Roger Schnittjer, & Jack Newton

...from IOWATER'S Coordinator

Volunteerism is the epitome of selfless service. Oftentimes, volunteers do not receive the recognition they deserve or the respect they earn. They can be taken for granted, overworked, and under-appreciated, yet they continue to dedicate their time and service, quietly and without applause, thanklessly, unselfishly, and generously, satisfied and proud of the job they do and of the goals they accomplish. For that unparalleled dedication, IOWATER extends a sincere, heartfelt "Thank You" to all of our volunteers.

Due to the modesty and humbleness of volunteers, we are seldom made aware of their magnificent accomplishments. Therefore, in order to recognize individuals and groups who truly embody the spirit of volunteerism, we turn to you – we want you to nominate your projects, groups, peers, and even yourselves for consideration for IOWATER awards. Nomination forms can be found online at www.iowater.net, and they can be submitted year round. Award recipients will be announced and presented with their award each fall at a Volunteers in Natural Resources event.

As Maurice Switzer once said, "There's a lot to be said for the fellow [woman] who doesn't say it himself [herself]." We'd like to hear it.

Brian Soenen

Brian Soenen

4TH ANNUAL WATER MONITORING CONFERENCE

February 18-19, 2004
Scheman Building
Iowa State University
Ames, Iowa

- ❖ IOWATER Roundtable Discussions
- ❖ Gulf of Mexico Hypoxia
- ❖ Volunteers in Action
- ❖ Drinking Water Quality
- ❖ Urban and Wastewater Quality
and much more!

Poster Displays Welcome.

Deadline for registration is Feb. 13, 2004.

Sponsored by the Iowa Department of Natural Resources – Water Monitoring Program.

To register for the conference, visit <http://wqm.igsb.uiowa.edu> and look for the link on the front page.

For additional information or to reserve your poster display space, contact Sarah Masengarb. (319) 335-1571 smasengarb@igsb.uiowa.edu

Money for your Monitoring!

We are now seeking proposals for our mini-grants program to help IOWATER volunteers fulfill the mission of protecting and improving Iowa's water quality. One-time grants of up to \$1,000 are available to individual volunteers and watershed groups who meet applicable criteria and submit an IOWATER grant application form.

For more information and application forms, please contact Jackie at Jacklyn.Neely@dnr.state.ia.us or (515) 281-4476.



IOWATER Action!

Press releases, events, & news articles involving IOWATER monitors – Many thanks to all of you for your continued efforts.



- **Black Hawk County** – Black Hawk County Soil and Water Conservation District Commissioners and Basic Materials Corp. sponsored an Earth Science Week Field Day.
- **Buena Vista** – Melanie Hjelm and the Sioux Central Environmental Science Class monitored the Little Sioux River.
- **Ida County** – Steve Hummel, Ida County Naturalist, involved Ida County residents and Carol Sadler's Battle Creek-Ida Grove 10th Grade class in IOWATER monitoring.
- **Linn County** – Iowa Limestone Producers Association involved several educators in the 2003 Geology for Iowa's Teachers Workshop.
- **Polk County** – Debra Lyons, Lisa Horsch and Des Moines Water Works involved Johnston Middle School students in a water unit that included the IOWATER program.
- **Sioux County** – Todd Tracy, a Northwestern College professor, involved his Biology class in the IOWATER program.
- **Statewide** – Several local snapshot samplings were completed across Iowa, as well as the October 18 National Water Monitoring event. Special thanks go to the organizers and participants.

Compiled by Jacklyn Neely, IOWATER Field Coordinator

If we missed your happenings, please call or email Jackie with an update.

IOWATER Classifieds

WANTED – Your expired monitoring equipment to use for educational purposes.

WANTED – Dedicated members to join exclusive Monthly Monitors Club. Registration is necessary, but membership is free! Only requirement is monthly monitoring at your site (as weather conditions allow – SAFETY FIRST!)

WANTED – E-mail addresses. E-mail is the easiest and most cost-efficient way to disseminate information. If you want to stay informed, please help us keep our records up to date.

REMINDER – Check expiration dates on your test kits! Visit www.iowater.net to order new supplies online.

FOR ADOPTION – Former Project AWARE sites along the Maquoketa River.

FOR SALE – Benthic Flash Cards, \$30 a set (18 full-color ID cards).

For more information contact Jackie Neely at (515) 281-4476 or Jacklyn.Neely@dnr.state.ia.us

IOWATER Volunteer Water Quality Monitoring

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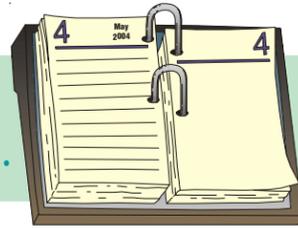
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IOWATER Web Site: www.iowater.net

Upcoming Events

... snapshot sampling & more.



Saturday, May 15

IOWATER Spring Statewide Snapshot
 Contact: Lynette Seigley (319) 335-1598
 lseigley@igsb.uiowa.edu

Tuesday, May 25

Scott County Snapshot
 Contact: Carol Border (563) 326-6150
 cjb@ci.davenport.ia.us

Saturday to Saturday, June 19-26

Project AWARE (A Watershed Awareness and River Expedition)
 Des Moines River – Fort Dodge to Des Moines
 Contact: Tom O'Neill (515) 281-4539
 tom.oneill@dnr.state.ia.us

Sign up & join us at the event(s) nearest you!

IOWATER 2004 Workshop Schedule

Date	Location	Contact	Phone	E-mail
April 16, 5 - 9 pm April 17, 8 am - 2 pm	Johnston Crown Point Center*	Steven Witmer	(515) 727-7765	switmer@ci.johnston.ia.us
* This workshop will be followed by a 4-hour Bacteria Monitoring workshop (April 17, 2-6 pm). Contact Steven for details.				
April 23, 5 - 9 pm April 24, 8 am - 2 pm	Jefferson County Jefferson County Park (Fairfield)	Jack Eastman	(641) 469-5760	jacktoni@kdsi.net
April 30, 5 - 10 pm May 1, 8 am - 1 pm	Ames McFarland Park**	Jerry Keys	(515) 232-2516	jkeys@storycounty.com
** This workshop will be followed by a 4-hour Benthic Macroinvertebrate Indexing workshop (May 1, 2-6 pm). Contact Jerry for details.				
May 7, 5 - 9 pm May 8, 9 am - 3 pm	Davenport Davenport Public Works in Quad Cities	Carol Border	(563) 326-6150	cjb@ci.davenport.ia.us
June 4, 5 - 9 pm June 5, 9 am - 3 pm	Worth County Keunnen's Quarry	Jeremy Johannsen	(641) 584-2211	Jeremy.Johannsen@ia.usda.gov
June 11, 5 - 9 pm June 12, 9 am - 3 pm	Wright County Lake Cornelia	Charlie Bray	(515) 532-3185	cbray@co.wright.ia.us
July 9, 5 - 9 pm July 10, 9 am - 3 am	Burlington Starr's Cave Nature Center	Kim Perlstein	(319) 753-5808	starcave@interl.net
July 30, 5 - 9 pm July 31, 9 am - 2 pm	Oxford F.W. Kent Park	Brad Freidhof	(319) 645-2315	conservation@co.johnson.ia.us

Got data?

We do! IOWATER data are summarized in a status report that covers 2000-2002. Download your copy of the IOWATER Status Report 2003 at www.iowater.net under "Publications" on the menu bar.

Streams (cont)

water that provides flow within perennial streams. Human modification to the stream channel or the watershed may also disrupt the flow. In the absence of external limiting factors, such as pollution and human modification of the hydrology, there is a low diversity of aquatic organisms, and those present are tolerant to the constantly fluctuating conditions. The dry season, which is July through September, represents the ideal time to observe low flow conditions. A stream observed to have no flow from the months of July through September is likely to be an intermittent stream section assuming that there were normal rain events throughout the year.

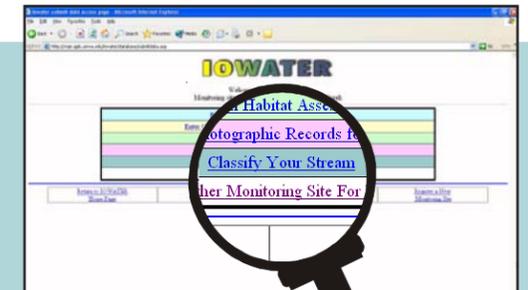
Intermittent streams may be particularly important as nursery areas for fish and amphibians because they support fewer predators than perennial

channels. Some species may rear in the intermittent channels and then move downstream as they mature. Because intermittent channels form a high proportion of the channel system, they can strongly influence downstream ecosystems through the input of sediment, water, woody debris, and nutrients to the rest of the channel system. These channels are also important contributors to downstream plants and animals.

Understanding the functions that intermittent streams serve can help Iowa fulfill its obligation to the Clean Water Act. One of the problems that we face as a state is a lack of data on many of our stream miles. Data gathered by IOWATER volunteers helps fill in gaps, and by providing information on these smaller, headwater, and oftentimes intermittent streams, the state can more accurately assess the status of our waters and move forward with field methodologies and protocol that will help ensure healthy aquatic systems well into the future.

Classify your stream.

If you feel comfortable labeling your stream as perennial or intermittent based on the definitions presented in Chris's article, log on to the IOWATER database, select your monitoring site, and prepare to classify!



NEW DNR BOOK EXPLORES IOWA'S GROUNDWATER

Iowa's Groundwater Basics

A Geological Guide to the Occurrence, Use, and Vulnerability of Iowa's Aquifers

While 80% of Iowans rely on groundwater for their drinking water supplies, few are aware of the underground conditions that supply water to wells or affect its vulnerability to contamination. This new 83-page, full-color book published by the Iowa Department of Natural Resources takes a statewide, in-depth look at the geological basics of Iowa's groundwater resources – what they are; where they occur; how they behave; where they are vulnerable; and how they are used. The book is illustrated with numerous photographs, maps, and illustrations and is designed to meet the need for increased public understanding of the state's vital but largely unseen groundwater resources.

Iowa's Groundwater Basics is free. Cost for shipping is \$2.00.

For further information contact:

Iowa Geological Survey/Iowa Dept. of Natural Resources ♦ 109 Trowbridge Hall ♦ Iowa City, IA 52242-1319 ♦ (319) 335-1575 ♦ www.igsb.uiowa.edu

Volunteer Viewpoints

... in their own words.



River Cleanup

article and photo by Ray Hardin

On a beautiful morning five men got in two canoes and two kayaks and started off down the Raccoon River. Gordon Klatt of Perry, Mike Modlin of Minburn, Dick Howard from Van Meter, David Beason of Johnston and I launched the boats at county road P58 south of Perry. The destination was the bridge on road F31 west of Minburn.

The goal was to spend a few hours enjoying a float trip and to pick up trash that the recent high water uncovered. The group was also hoping that they might find Native American artifacts and other interesting items.

Five stops were made on sandbars in this section of the Raccoon River. At the first stop, Gordon Klatt found a large section of stovepipe with a damper still inside one of the sections. A later find was an old coalscuttle bucket. Mike Modlin found a child's tricycle in a pile of logs. He tied it to the front of his kayak for a hood ornament.



A large assortment of junk and trash was collected. Since I had the largest canoe, most of the trash was deposited in the center section of my boat. The pile of junk grew as the group added a section of barbed wire, broken glass, bottles and rusty tin cans. We had to leave a large white kitchen cabinet for a future trip. The largest numbers of items picked up were pop cans and beer cans. It seemed as if Mountain Dew and Budweiser were the brands that were usually thrown in the river.

These beverage cans were not in good enough shape to return for a deposit, but the group was glad that Iowa's "bottle bill" charges a deposit on beverage containers. If

Iowa did not have this law, many more pop and beer cans would have been added to the pile.

The trash that we picked up that day on the sandbars of the Raccoon River helped make it a little cleaner, but our efforts were only treating the visible symptoms. The worst pollution could not be seen. We could not pick up the particles of silt, nitrates, phosphates, and other chemicals that were dissolved in the water. However, the chemicals are being watched by hundreds of IOWATER volunteer monitors across the state.

Citizens must realize that Iowa's water resources are finite and what is dumped in the streams or allowed to seep into the groundwater will later end up as someone's drinking water. I am hopeful that some progress can be made.

We Learned – Community Awareness by Participation

by Dave Ratliff

Submitted in regards to the September 20, 2003 Snapshot Sampling event on Old Mans Creek and Clear Creek in Iowa and Johnson Counties.

In the short four hours that stretched to six, we met many and learned much. We met new friends, learned new skills and many of us learned the difference between North and East. We learned that 14-inch boots can fill in 15 inches of water, and it takes a team of three to remove the leg of one member from a foot of mud. We learned freshly washed cars collect dirt from old dirt roads, and their interiors are able to remove mud from the shirts, pants and boots fresh from the creek. We learned there are two 8:00's on Saturday mornings and that mothers all want to know how their kids got so muddy.

We learned there is no difference between the terms "discharge" and "flow" because they will both get your butt wet when too high. We learned the definitions of terms such as Nitrate, Chloride, Transparency, *E. coli* Bacteria and 'wash your hands before you eat.' We learned all these skills from the teachers who had taught us before and who taught us again that day. We learned from IOWATER, USGS, EPA, Boy and Girl Scout leaders, school teachers and so many volunteers, without whose time and talents none of this would have been possible.

Mostly we learned what little we really know about the water that flows down the stream.

To Old Mans Creek, Clear Creek, Ralston Creek, Snyder Creek, Muddy Creek and those other watersheds we waded into: We learned more about you. Your veil of secrecy has been removed. We have started to learn how the water moves into and through your watersheds. We have seen the beauty of your water and the trees, flowers and grasses that grace your banks, and we have seen the birds, butterflies, deer, raccoons and others that call you home.

We learned how wastes and man-made chemicals affect you. We learned how our neglect has eroded your banks, silted your bottom and polluted your waters. We learned that all of us are responsible for your future. We learned that people's desire for more land has straightened your meandering channels. We learned that the loss of buffers has created more silt to choke your streambeds. We learned that the wastes of our towns and homes are changing you. We learned that our lack of respect and our lack of knowledge of your water is hurting you.

But we are learning. The small group of people who entered your waters on the 20th of September is going to be back to learn more. Next Spring we will once again invade your waters with our students, teachers, children and other volunteers to learn more about your waters. We will return with improved skills based on the knowledge of our last experience, with more volunteers and more questions. We will be returning with a quest of more knowledge.

We'd like to hear from you, so send us a note... about your IOWATER activities, thoughts, and ideas ...in your own words.