



Office of Water Management  
Indiana Department of  
Environmental Management

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## 11th Indiana Lake Management Conference

The 11th Annual Indiana Lake Management Conference will be held at the Fourwinds Resort on Lake Monroe on April 8-10, 1999. The Indiana Department of Environmental Management and the Indiana Lakes Management Society (ILMS) sponsors the conference. The two-day conference features an exchange of ideas for solutions to the problems affecting Indiana's lakes through case studies, presentations and exhibits. Hands-on workshops each afternoon provide participants the opportunity to take an active role. Workshop topics include: *Grant Writing, Bacteria Monitoring, Aquatic Plant Identification, Volunteer Stream Monitoring, Algae Identification, Fundraising for Lake Associations, Limnology for Beginners, and Volunteer Lake Monitoring.*

Lake Monroe, Indiana's largest lake at 10,700 acres in size, is nestled among the wooded hills of southern Indiana. The Fourwinds Resort & Marina provides a panoramic view of the lake and an opportunity to enjoy a variety of water sports. Many of the Resort's newly remodeled guestrooms overlook the lake. Room reservations can be made by calling (812) 824-9904.

Pre-registration for the conference is required. The registration fee of \$35 for ILMS members (\$45 for non-members) includes admittance to all conference sessions and exhibits, materials, coffee breaks, Friday night reception and banquet, and Saturday morning breakfast. For more information, contact Greg Bright, ILMS President-elect, telephone: 317-887-5855; e-mail: <water\_quality@tcon.net>.

Lake Monroe



Got a question about your lake? Or lakes in general? Or about something you've read? Write to us at the *Water Column* and we will do our best to answer it.

## Volunteer Lake Monitoring— New Activities for 1999

As we approach the summer lake monitoring season, we want to mention several new features of the program. For the first time, volunteer lake monitors will be able to measure temperature and dissolved oxygen profiles on their lakes with state-of-the-art electronic meters. IDEM has purchased five new meters for use in the Volunteer Lake Monitoring Program.

The meters will be headquartered at five SWCD offices around the state. Volunteer monitors may sign out a meter for use on their lake. SWCD staff will train the volunteer and will maintain the instruments.

Temperature profiles define the boundaries of thermal stratification in lakes. Dissolved oxygen measurements can detect areas of intense algal growth or areas where oxygen is absent due to excessive bacterial decomposition. Such anoxic areas, often in the deeper waters of stratified lakes, reduce the available habitat for aquatic organisms, including fish.

Training with the new temperature/oxygen meters will be included in the *Volunteer Lake Monitoring Workshop* held in conjunction with the annual Indiana Lakes Management Conference. In addition, new volunteers will also be trained in the use of a Secchi disk. Existing volunteers who wish to join the expanded program can also receive training and the necessary equipment at the workshop.

If you are interested in becoming a volunteer lake monitor, or if you are an existing monitor who would like training with the new meters or with phosphorus and chlorophyll sampling procedures, plan to attend this workshop. You must register for the conference and call either Steve Lundt or Bill Jones at (812) 855-4556 to register for the *Volunteer Lake Monitoring Workshop*.

### **WATER COLUMN**

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## Indiana's First Alum Application at Lake Shakamak

On Wednesday, November 18, a strange-looking watercraft moved slowly back and forth across the waters of Lake Shakamak. The water directly behind the craft turned milky white. What was happening here?

Lake Shakamak is a shallow, 56-acre reservoir that was constructed in 1930. It is one of three lakes within Shakamak State Park, which is located one mile west of Jasonville in Greene and Sullivan counties. Both Lake Shakamak and Lake Lenape drain into Lake Kickapoo, the largest and newest of the three lakes.

A 1989 study of the lakes prepared by Indiana University documented the eutrophic condition of Lake Shakamak. High phosphorus concentrations in the lake's water promote dense algae growth. A significant source of phosphorus to Lake Shakamak is the sediments, which are highly enriched with the nutrient. The shallow water depth and silty sediments further provide ideal conditions for rooted macrophytes, which cover about one-half of the lake's surface area. Summertime Secchi disk transparencies are in the 3- to 4-foot range.

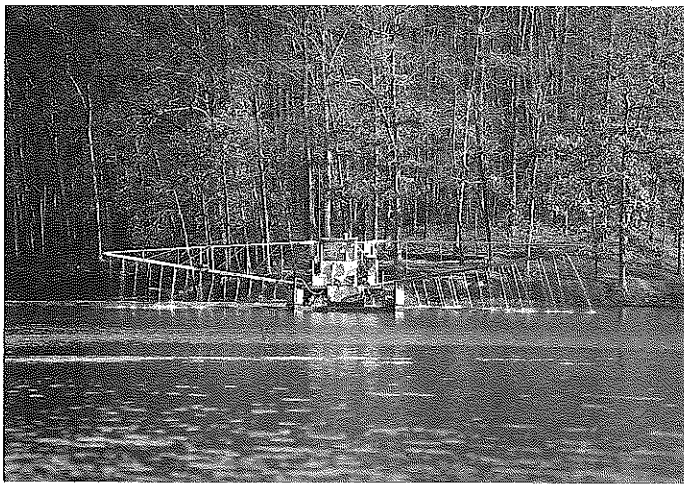
The IU study recommended a lake renewal technique for Lake Shakamak called nutrient precipitation and inactivation. The technique uses liquid alum (aluminum sulfate). When alum is added to well-buffered lake water, flakes of aluminum hydroxide floc form. As these flakes settle down through the water, phosphorus is attracted to them and is removed too. This reaction is called phosphorus *precipitation*. If enough alum is used, the settled floc blankets the lake bottom, forming a barrier that prevents the sediment phosphorus from "leaking" out into the water. This reaction is called phosphorus *inactivation*.

Over 21,000 gallons of liquid alum were precisely applied to Lake Shakamak with a computer-controlled application vessel. While this technique is widely accepted as an important lake management tool, this is the first lake in Indiana to receive an alum treatment.

The alum is working already. The total phosphorus concentration the day before the treatment was 200 µg/l (parts per billion) but only 80 µg/l the day after—a 60% reduction. Soluble phosphorus (phosphate) concentrations were reduced from 117 to only 5 µg/l—a 96% reduction. Secchi disk transparency improved from 4 feet to 7 feet.

The real test of the alum treatment will occur next summer—the time when phosphorus release from the sediments is greatest. The alum floc is expected to retard the release of phosphorus





Application vessel applies alum to Lake Shakamak



enough to reduce phosphorus concentrations throughout the lake, thereby resulting in less algae growth.

Monitoring the lake will help lake managers evaluate the performance of this technique on Lake Shakamak. Lessons learned at Lake Shakamak could be applied to other lakes in Indiana.

## Better Site Design: Changing the Rules to Protect the Environment

by Tom Schueler  
Center for Watershed Protection

Few nonpoint source management practices can simultaneously reduce pollutant loads, conserve natural areas, save money, and increase property values. One might think that if such a "wonder practice" were ever developed, its use would spread across the nation. As it turns out, such a practice has existed for years: better building site design. Despite its proven benefits, however, the use of

better building site design is often discouraged or even prohibited in many communities.

Better site design is a term that describes a fundamentally different approach to the design of residential and commercial development. The approach seeks to accomplish three goals at every development site: (1) to reduce the amount of impervious cover, (2) to increase the amount of land conserved, and (3) to use pervious areas for more effective stormwater treatment. To do so, designers scrutinize every aspect of a site plan—streets, parking spaces, setbacks, lot sizes, driveways, and sidewalks—to see if they can be made smaller. At the same time, creative grading and drainage techniques are employed to prevent stormwater from concentrating into runoff. Lastly, land "saved" from being paved is then used to conserve forests and stream buffers.

When all of these techniques are applied together, the cumulative benefits can be impressive. For example, recent studies in Delaware, Maryland, and Virginia have demonstrated that better site designs can reduce impervious cover by 25 to 40 percent for a range of residential subdivisions. Other studies have shown that better site designs reduce impervious cover by about 20 percent in shopping centers and office parks. Less impervious cover translates directly into smaller pollutant loads. Recent studies have shown that better site designs produce 40 to 65 percent less phosphorus and nitrogen loads than conventional site designs—roughly the equivalent to what can be removed by a well-designed stormwater pond. The same studies have also documented that better site designs cost 5 to 20 percent less to build than conventional site designs.

Why, then, is it so hard to actually implement better site design in so many communities? The major reason is the outdated development rules that collectively shape how development happens—the bewildering mix of subdivision codes, zoning regulations, parking and street standards, and other regulations. Few developers are willing to experiment with better site design as they are not inclined to invest in something that may not be approved.

A new movement may make it easier. Developers, water quality managers, and planners are reforming land development rules to permit better site development. Recently, transportation, public works, safety, planning, and engineering organizations that strongly influenced past development rules participated in a national site planning roundtable and developed a nationally accepted set of model principles that foster better

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site development. (The principles are on the Center for Watershed Protection's website:  
<[www.pipeline.com/~mrrunoff/](http://www.pipeline.com/~mrrunoff/)>.)

Changing local development rules is not easy. Progress towards better site development will require local governments to examine current practices in their communities and satisfy a broad range of concerns, such as how the changes will impact the cost of development, local liability, property values, public safety, and a host of other factors. Advocates of better site design are going to have to answer some hard questions from fire chiefs, lawyers, traffic engineers, developers, and many others in the community. Will the proposed changes make it more difficult to park? Lengthen response times for emergency vehicles? Heighten risks to the community's children? Increase the cost of development? Real change can happen only when these questions are thoroughly addressed and community concerns are fully satisfied.

Based on the principles resulting from the national roundtable, the Center for Watershed Protection has produced an approach for communities that want to change the way they are developing land. Known as a local site planning roundtable, the process can be long, arduous, and even contentious, but it can be a very wise investment, given the many economic, environmental, and quality of life benefits that it can produce.

[For more information, contact the Center for Watershed Protection, 8391 Main Street, Ellicott City, MD 21043. Phone: (410) 461-8323; fax (410) 461-8324; e-mail: <[mrrunoff@pipeline.com](mailto:mrrunoff@pipeline.com)>; web site: <[www.pipeline.com/~mrrunoff/](http://www.pipeline.com/~mrrunoff/)>.]

#### Two state records broken

### Indiana Anglers Recognized for Record Catches

Indiana anglers landed two Indiana Record Fish and 15 Fish of the Year in 1998. The Indiana Record Fish program recognizes anglers for new state record fish. The Fish of the Year program recognizes anglers for the largest fish, short of a new state record, caught each year in the state.

Jeremy Vincent, of Williams, IN, set a new state record with the catch of a 35.88-pound, 43.50-inch bighead carp caught in the White River. This broke the previous record of a 25.19-pound fish caught last year by Henry Willerbrink Jr. of Louisville, KY. Charles Powers of Booneville, IN, landed a state

record 8.16-pound, 26.25-inch saugeye while fishing Huntingburg Lake in Dubois County.

Award recipients for the Indiana Record Fish and Fish of the Year programs receive a certificate and embroidered jacket patch recognizing their achievement. The Division of Fish and Wildlife annually recognizes Indiana Record Fish holders in the *Indiana Fishing Guide*.

"Indiana enjoys a year round sport-fishery. As a division, it is our goal to provide Indiana anglers with an abundance of diverse fishing opportunities. We are pleased to recognize their achievements," said Bill James, fisheries chief for the Division of Fish and Wildlife.

## Meetings

**March 13-15, 1999.** *Midwest Aquatic Plant Management Society Conference.* Sheraton-Westin Hotel, Indianapolis. Contact: MAPMS, P.O. Box 100, Seymour, IN 47274.

**March 24-27, 1999.** *Southeastern Lake Management Conference - Developing Watershed Solutions: Community Partnerships.* Clemson University, Clemson, SC. Contact: Dr. Barbara Speziale, tel: (864) 656-1398; e-mail: <[bjspz@clemson.edu](mailto:bjspz@clemson.edu)>

**April 8-10, 1999.** *11th Annual Indiana Lake Management Conference.* Fourwinds Resort, Lake Monroe near Bloomington, Indiana. Contact: Greg Bright, tel: (317) 887-5855; e-mail: <[water\\_quality@tcon.net](mailto:water_quality@tcon.net)>

**April 21-23, 1999.** *12th Annual National Conference on Enhancing the States' Lake Management Programs - Nutrient Management Strategies for Lakes and Reservoirs.* Congress Plaza Hotel, Chicago, Illinois. Contact: Bob Kirschner; tel: (312) 454-0401, ext. 303; e-mail: <[bobkirs@nipc.org](mailto:bobkirs@nipc.org)>

**May 18-20, 1999.** *Effective Partnerships for Wetlands Protection, Management and Restoration, National EPA State, Tribal and Local Wetlands Program Symposium.* Regal Harvest House Hotel, Boulder, CO. Contact: CTIC, tel: (765) 494-9555

**May 23-28, 1999.** *Sustaining the Global Farm - 10th International Soil Conservation Organization Conference.* Purdue University, West Lafayette, IN. Contact: tel: (765) 494-8683; e-mail: <[isco99@ecn.purdue.edu](mailto:isco99@ecn.purdue.edu)>

## Be Prepared for Spring Floods

Spring is just around the corner and with it comes the possibility of spring floods. If you live in a low-lying or flood-prone area, you should prepare for flooding *before* the waters rise. Here are some things you can do during and after a flood that can reduce the likelihood of tragedy:

### *During a Flood—*

- Turn off all utilities at the main power switch and close the main gas valve if evacuation appears necessary. Do not touch any electrical equipment unless it is in a dry area, or you are standing on a piece of dry wood while wearing rubber-soled shoes or boots and rubber gloves.

- Move contents to higher elevations. Appliances, furniture, food, valuables, clothing, and other items can be saved by moving them to upper floors or higher ground. Outdoor possessions such as lawn furniture, garbage cans and other moveable objects should be moved inside or they should be securely anchored.

- Move to a safe area before access is cut off. If it is safe to evacuate by car, stock the car with nonperishable foods (like canned goods), a plastic container of water, blankets, first aid kit, flashlights, dry clothing and any special medication needed by your family.

- Do not drive where water is over the road. Parts of the road may already be washed out; you could be stranded or trapped.

- If your car stalls in a flooded area, abandon it immediately and climb to higher ground. Floodwaters can engulf and sweep away a car and its occupants. Many deaths have resulted from attempts to move stalled vehicles.

### *After a Flood—*

If your home has been damaged by a flood, there are a number of steps you can take to speed the recovery process.

- Wait until officials assure you that the flood danger has passed before re-entering any area.

- Before entering the building, make sure it is not in danger of collapsing. Allow it to air out to remove foul odors or gas.

- Use flashlights, not lanterns or torches, when entering a building because of the possibility of gas. Watch for live electrical wires. Make certain the main power switch is turned off. Do not turn on any

lights or appliances until an electrician has checked your system.

- Begin clean-up as soon as possible. Open windows and doors to dry out the building. Shovel out mud while it is still moist. Throw out perishable foods. Scrub and disinfect walls, floors, and household items. Clean, air, and dry clothing, rugs, and bedding quickly and thoroughly. Don't overexert yourself in your clean-up efforts.

- Pump a third of the water out of a flooded basement each day. Further structural damage can occur by pumping water out too quickly.

- Photograph damaged areas and keep good records of contractors or workers who helped in flood prevention and repair activities. The information will be useful in settling insurance claims and in reporting losses to the IRS.

- Cover broken windows and holes in the roof or walls to prevent further weather damage. The expense of these temporary repairs is usually covered under your flood insurance policy (subject to the policy deductible). Therefore, it is important to save receipts.

[Excerpted from *Washington Coastal Currents*, December 1990]

## Sea Grant's Baird Welcomes Presidential Invasive Species Directive

WASHINGTON, D.C. "This is clearly a national issue of the first magnitude, and one that should be an integral part of our national agenda," said NOAA National Sea Grant College Program Director Ronald Baird following the recent announcement of President Clinton's signing of an Executive Order dealing with the threat of non-indigenous species.

Clinton's order directs "federal agencies to expand and coordinate their efforts to combat a serious environmental threat: the introduction and spread of plants and animals not native to the United States." The order creates an Invasive Species Council to be chaired by the cabinet secretaries of Interior, Agriculture and Commerce, and will work in cooperation with a variety of groups including states, tribes, scientists, universities, environmental groups, farm organizations, shipping interests and the business community.

The Great Lakes' Basin has been particularly hard hit by aquatic invasive species. These species

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include the lamprey, zebra mussel, Eurasian ruffe, round goby, and spiny water flea. It is believed that some of these species were transported and released by ocean-going ships that dumped ballast water, containing the organisms, into the St. Lawrence Seaway. The introduced species have moved into inland waters by themselves or in boats used both in the Great Lakes and inland waters. New rules now prevent the release of ballast water within the Great Lakes and St. Lawrence River areas.

## Web Site Worth a Look

Want to take a training course in stream corridor restoration, watershed management or wetlands evaluation procedures? A new web site sponsored by the U.S. Environmental Protection Agency includes one-page summaries of 180 watershed-related training courses available around the country. Federal and state agencies, as well as the private sector sponsor the courses. The web site is located at:

[www.epa.gov/OWOW/watershed/wacademy/catalog.html](http://www.epa.gov/OWOW/watershed/wacademy/catalog.html)

## PERSPECTIVES

*The test of an adventure is that when you're in the middle of it, you say to yourself, "Oh, now I've got myself into an awful mess; I wish I were sitting quietly at home." And the sign that something's wrong with you is when you sit quietly at home wishing you were out having lots of adventure.*

—Thornton Wilder (1897-1975)

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