Waterworks

Spring 1993 Volume 9 Number 2

WHY MONITORING?

So...you have all those data, with no place to go.....While your situation may be enviable to some, there can still be great frustration after spending long hours and short dollars collecting data, only to find it sitting on some shelf, collecting cobwebs and quickly depreciating. To some degree, there may be little you can do to dust off the data. Most data collection programs, whether they be water monitoring projects, user surveys, mappings, or developing a lake scrapbook, are initiated with a specific objective. These objectives serve as compasses, directing lake associations through forests of information. Without these bearings, this forest can be quite daunting. However, several lake communities have blazed a path before you, and by following their breadcrumbs, it is possible to see your way out of the woods. Here are just a few of the ways that lake monitoring programs have worked for others:

Education

First and foremost, data serves to provide additional information to the lake manager. Many a disagreement among lakefront neighbors, lake association members, and town officials has resulted from a shortage of information about the lake issue at hand. Monitoring data, and the interpretation thereof, can be invaluable in providing the lake community with the background information necessary to determine the correct course of action. This has been done in many ways, such as through presentation of monitoring data at lake association meetings and circulation of formal reports to the appropriate board members. The most common means, however, has been through newsletters. Many lake associations, such as the Shore Owners' Association of Lake Placid, the Conesus Lake Association, and the Lake Oscawana Civic Association (the 1992 FOLA newsletter contest winner), have regularly included discussions of the Citizens' Statewide Lake Assessment Program (CSLAP) results and other monitoring activities within their newsletters. Whether the education takes the form of explaining why weeds serve a purpose or showing precisely how a green lawn makes a green lake, it becomes more effective and credible when it stems from correct information.

Long Term Data Trends

Although not developed to specifically identify and target sources of problems, baseline data collection programs such as CSLAP can be beneficial to determine the present status of water quality conditions in the lake. Such information is necessary to determine if the objective of lake management should be restoration (if water quality has degraded) or preservation (if water quality is stable or has improved). While both objectives should ultimately be a part of lake management, the economics and alternatives in management differ with each objective. The Seneca Lake Pure Waters Association has been collecting CSLAP data throughout their lake for two years, and has worked with the local academic community for much longer, in hopes of understanding the condition of their lake. Their intensive sampling has investigated the interaction of various sections of the lake, to determine how limnological patterns can be equated with land use activities in sub-drainage basins within the watershed. Local and state governments also use monitoring data to determine the condition of the State's lakes, to gain a greater understanding of both spatial and temporal changes in water quality and public perception of lakes. This is probably the most common objective of a lake monitoring program.

A Basis For Further Studies

Monitoring data is but one piece to the management puzzle. Any program specific enough to address some management objectives will almost certainly be less valuable in addressing other objectives. However, once one objective is met, such as determining the present status of the lake, other objectives can be

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Water Quality Studies: *A Success Story*

The dream was created in a boy about 35 years ago whose curiosity forced him to search for crayfish in a local stream and whose enjoyment of water kept him swimming in the mighty Hudson during the dog days of summer. The dream continued to grow with the child who was a sophomore in high school during the original Earth Day and who, as a teacher 20 years later, took his Student Environmental Action Club to Bear Mountain to celebrate its anniversary. It finally manifested itself during the summer of 1992 in a program that involved governmental agencies, schools, businesses, local lake associations and countless other concerned people. This article is an attempt to explain how one boy's dream of working with water through patience, persistence, and prayers became a reality.

Mahopac High School is located in Putnam County, a small, rapidly developing county in southeastern New York. The County's numerous lakes were once the focal point of summer cottage communities. As the demand for housing in the region moved northward, many of these cottages were converted to year-round use and many new residences were built. The County relies on individual water supply wells and septic systems to support this new development. As a result, development has caused accelerated rates of eutrophication in many of the County's lakes, thus threatening the ecological, recreational, and aesthetic benefits of our most valuable natural resource.

Jason DeNiro (left) and Jim Sullivan on Lake Secor, Putnam County, collecting water samples.

As a teacher, I saw this as an opportunity for high school students to work with the local community and government in trying to manage the watersheds and lakes. I also wanted to implement a program that would use hands-on experience to teach science. A student program was then designed as an after school activity, known as the Student Environmental Action Club (SEAC). When the school district provided the use of several Hach and Lamotte kits, the students began their program by conducting water testing at various locations.

This group later expanded as word got out about our activities. Money to replenish the test kits was found in the school science budget. Our studies left little time to make up rules and by-laws, so the local 4-H Cornell Cooperative Extension agents provided help. By becoming a 4-H club, we were able to use their resources and assistance, and received a handbook that would later help to develop organization within the club. 4-H also provided insurance for club activities and offered an opportunity to educate the public about our environmental pursuits. 4-H, in turn, was looking for ways to involve older students in their educational programs.

The club received an additional boost when SUNY Purchase offered to provide a dissolved oxygen and a salinity-conductivity-temperature meter, along with training. A call to Dr. Barbara Dexter helped me understand about Project RiverWatch and how she planned to create a volunteer water quality monitoring network of citizens, educators, students and interested groups. This turned out to be a great resource. This, along with excellent limnology courses provided by Dr. Peter Siver and Western Connecticut State University, helped me to create an overview of what could be done with lake studies and students.

The club was later enhanced by a call from Andy Labruzzo, the director of the Environmental Management Council of Putnam County, who offered financial assistance with our water quality monitoring activities. Putnam County had developed a program that involved monitoring the water quality of county lakes. Initially, this financial assistance created summer jobs for me and a student.

This county Lake Management Program is now providing up to four, $2,500 grants for schools interested in developing aspects of water quality monitoring and education and $40,000 in matching grants for associations who need funding for lake management and restoration projects. Last year, Mahopac High School was a recipient of one of these county grants, and also received monies from the Dorr Foundation in Armonk, N.Y. and the U.S. EPA. In all, $25,800 was provided for the running of our grant, now titled, "Using A Limnology Laboratory In A Secondary School In Order To Monitor The Water Quality Of Lake Ecosystems In Putnam County, N.Y.", alias, "the dream".

We were very grateful that Andy Labruzzo was willing to dedicate his time and grant writing talents to our cause. This grant program supplemented the supplies and equipment already provided by the Mahopac Central School District. It also eventually provided jobs for six high school students and myself. Two highschool volunteers and a college student were also involved with the lake studies. We started testing on three local lakes in June 1992. The lake associations provided the boats needed for our field work and helped us locate old reports.

There are a few lessons we could share with other school groups. First, get a book on water quality and lake management. Two

publications that helped us were, "The Lake and Reservoir Restoration Manual" (U.S.EPA) and "Field Manual for Water Quality Monitoring" (Mitchell and Stapp). "Diet for a Small Lake" (NYS DEC and FOLA) is another excellent book.

Second, determine your budget and evaluate how handy you and your peers are. A lot of the equipment can be built or modified with creative minds and talented hands.

Third, look at your surroundings and try to determine ways to involve the talents and resources of other groups. Our group became involved with the following organizations:

1) Rensselaer Polytechnic Institute has a Macrophyte Identification Program. SEAC collects aquatic plants and sends them to the RPI Freshwater Institute for positive identification.

2) One of our lakes was experiencing erosion problems from a lake tributary. Help was provided from the Soil and Water Conservation District (SWCD) who worked with the SEAC and community members on developing a stream stabilization program. The SEAC will also be helping the SWCD with a Tree Planting Program, designed to help reduce some of the erosion problems in our county.

3) At one of the construction sites near another lake, SEAC members noticed erosion and septic problems. A Department of Environmental Conservation officer checked the first problem and explained to us what was and was not a violation. In the second instance, a member of the County Health Department came to the school to review development site plans, and explained to our students the cause of, and solutions to, the problems.

4) As mentioned earlier, 4-H Cooperative Extension and our school district provided assistance in educating the public. Our students were asked to speak at their yearly meeting, we set up a booth at the 4-H Fair, and we filmed the students in action and broadcasted it over the school's cable TV station. I will also be presenting information about our project at the Northeast Youth and Citizen Watershed Monitoring Workshop at Casowasco Conference Center. 4-H has also helped us to identify aquatic invertebrates.

5) Dr. Dexter and Project RiverWatch are presently involved with developing a set of surface water sampling and analytical protocols for community volunteers that are realistic, scientifically rigorous and acceptable to regulatory and governmental agencies.

6) Teatown Lake Reservation, a local nature preserve and education center, helps students understand the local ecology. It also prepares students for the Envirothon, which is a competition sponsored by the New York State Power Authority and presented by the NYS Conservation Districts Employees Association.

7) The data the students collect is used by the local lake associations to locate areas of concern. This data also helps them decide on lake management practices which are often partially funded by the Putnam County Lake Management Program.

As you can see the list can go on and on. The important thing to realize hear is that no matter what walk of life you are from, or what you do for a living, clean water is vital to all of us and the joint efforts and sacrifices made today will be rewarded by the looks of your grandchildren as they swim in a lake you helped protect.

There is one other thing. SEAC also spent the summer studying Peekskill Hollow Creek. This stream is very special to me for three reasons. It is a home for trout; it is a drinking water source for the City of Peekskill; and finally, it is a tributary of the river that a boy swam in 35 years ago during the dog days of summer.

by Robert Connick, Teacher, Mahopac High School

Waterworks is published four times a year. Individuals who wish to submit articles, calendar items, artwork, or photography to *Waterworks* are welcome to contact the editor, Anne Saltman at 2175 Ten Eyck Avenue, Cazenovia, NY 13035 (315) 655-4760. Points of view expressed in this newsletter do not necessarily reflect the views of the Federation of Lake Associations, nor does any mention of trade names and commercial products constitute endorsements of their use.

Low Volume Toilets: Flushing Out The Facts

Save Water, Save Money, Save the Lake

A typical family of four discharges more than 100 gallons per day of wastewater, 40% of which goes down the toilet!

For decades the conventional American toilet used 7 gallons of water per flush, although some homes on the lake still have even larger gallon capacities. In the late 1970's, new "water conserving" toilets came on the market using 3.5 gallons per flush. Today's low-flush models are designed to use only 1.6 gallons or less with each flush.

"So what!", you may say. "I live on a lake and have my own water supply which is plentiful." True now, but cutting down on water use in your home can preserve the health and longevity of your septic system and therefore protect your lake. The less water used in the home, the better a septic system or any on-site wastewater disposal system will work. Heavy water use overloads a septic tank, resulting in solids being pushed into the absorption field rather than being settled into the tank. This clogs the drain field soil and could cause seepage of wastewater into the lake. The less water that moves through the absorption field, the more porous the soil will remain and the longer the system will perform. Effectiveness of treatment is improved because solids have more time to settle and microorganisms have more time to purify wastes.

If you are on a municipal water supply, water conservation can ward off the necessity of costly new wastewater facilities. More immediate, switching to low-flush toilets can save on your annual water and sewer bills. As all of us have already experienced, the cost of supplying water is not diminishing and will most likely continue to increase in the future.

Can I really save money by spending money?

If you spend $200 on a new 1.6 unit to replace a 5-gallon toilet, Consumer Reports estimates the new unit would pay for itself in 3 to 12 years, depending on your water and sewer rates. Their calculation assumes a three-person family whose members each flush at home four times a day. If your water rates increase significantly or if you have a larger family or know you flush more than four times a day, you'd get your money back faster.

For those not on municipal water, the savings comes in less stress on wells, septic systems and drainfields as explained above.

Does New York Mandate Low-Volume Toilets?

The necessity of saving water prompted New York State to pass a law requiring 1.6 gallon toilets and other water saving fixtures in new construction. The plumbing-fixture industry, however, is permitted to clear their existing inventory. If you are contemplating remodeling or construction, then, be sure to ask specifically for a true low-flush toilet (1.6 gallon), so you don't end up with the 3.5 gallon variety which are sometimes advertised as "water miser" or "water saver", but not necessarily low-flush.

Conserve Water with Existing Toilet

Short of trying not to flush the toilet so often, a water-filled jug, plastic bag, or flexible panels in a 5-gallon toilet's tank will reduce volume but not height of stored water. With this method, total flow reduction is 4 - 8% less than normal. Don't use a brick as a displacement device as it can disintegrate and jam the works.

Another option which can be owner installed is a dual flush device which clips in the tank to let you choose from two flush volumes based on solid or liquid waste materials. Be sure such a device is compatible with your existing tank. Different cycles are initiated by a short, sharp pull on the flush handle for a smaller amount of water and a longer, more persistent pull for a larger amount of water. A local plumber, however, reports frequent toilet clogging with dual flush toilets in a large office building. He feels that the device simply does not allow enough water to flush satisfactorily. The user ends up by flushing more than once which destroys the purpose. Perhaps in a home environment with fewer users and more control over what is put in the toilet, dual flush toilets might have a better chance. Although hard to find in the Adirondacks, dual flush devices, ranging from about $30 to $40, can be obtained through your plumber or wholesale plumbing supply houses. If functioning properly, a 6 - 15% total flow reduction could be realized here.

Periodic inspections to insure proper positioning (not interfering with the flush mechanism) are necessary in each of the above owner installations.

Replace Toilet with Low-Volume Model

To reduce total flow most substantially (50 to 70%), one must consider interchanging the old commode with a low-volume variety. Most low-volume toilets look like conventional ones and are even offered in designer colors and styles. The Lake George Association (Rt. 9N West, one minute off Exit 21 of the Northway or I-87) invites you to have a "pit stop" and experience its water saving toilet in action!

The gravity flush and the pressurized flush are the two basic varieties of low volume toilets in which every ounce of water is put to work. For the user, however, operation and maintenance is essentially the same as for a conventional unit.

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Stressed Stream Analysis

It may be a lake association, a Soil and Water Conservation District, or a county planning department concerned over the future of either a large Finger Lake, a bay/ lake on Lake Ontario, such as Port Bay, or a small body of water such as Lake Neahtahwanta near Fulton, New York. Home owners, fishermen and recreational users are complaining or concerned over the "health" of their lake. Aesthetically displeasing conditions, such as algal blooms, taste and odor problems, decreases in water clarity, increased "weed production" or decreases in oxygen in the summer bottom layers of the lake that may impact a fishery, may be prompting the calls for action. Many of the problems that bodies of water have are associated with an excess of nutrients, such as phosphorus. Phosphorus can be found in fertilizer, human sewage and cow manure. However, even if we know that phosphorus is the ultimate cause of the problems encountered, we may not know where the phosphorus is originating from in the watershed of your lake. It is not necessarily the whole watershed that is polluting the lake. It could be a point source, such as a pipe from a sewage treatment plant. It could be a non-point source, such as surface runoff carrying nutrient laden water from a field recently applied with cow manure. How do we find these sources so that remediation can begin?

Within an entire lake basin, stressed stream analysis is an approach that identifies impacted sub-watersheds and their associated streams. Within a stream, stressed stream analysis is an approach for determining how and where a stream and its ecological community are adversely affected by a pollution source or other disturbances. Stressed stream analysis is an integrative, comprehensive approach for determining the environmental health of a watershed and its constituent streams. It is a technique that identifies the sources, extent, effects and severity of pollution in a watershed. In its fullest use, it combines elements of the sciences of hydrology, limnology, ecology, organismal biology and genetics in an integrated approach to analyze cause and effect relationships in disturbed stream ecosystems.

Within a sub-watershed, the stream(s) is used to monitor the "health" of the watershed. Because nutrients are easily dissolved in waters they can be traced to their source by systematic geographic monitoring of the stream. Stressed stream analysis is a technique that divides the impacted sub-watershed into small distinct geographical units. Samples are taken at the beginning and end of each unit of the stream to determine if a nutrient source occurs within that reach. At this point, the cause and extent of pollution has been identified. If needed, the severity of the pollution within the impacted sub-watershed and or the entire watershed can then be evaluated by spatial analysis of the quantity and quality of biological indicators, such as fish and invertebrates, and by biological examination of structural and functional changes in individual organisms and populations in affected communities. This aspect will not be evaluated in this article.

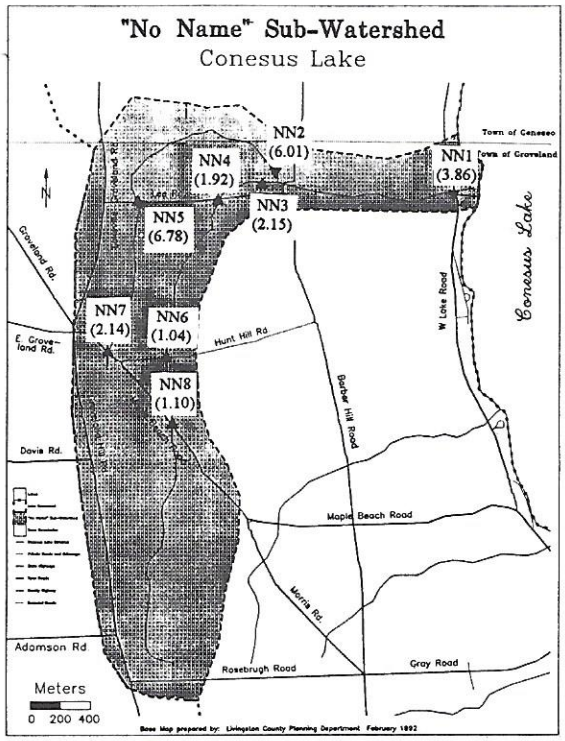

Figure 1 Results of stressed stream analysis for nitrate on "No-Name" creek. NN1 refers to the sampling site. The number in parentheses is the nitrate concentration in mg/L.

The following are a few examples of stressed stream analysis used by several communities in the western New York area assisted by scientists from the Center for Applied Aquatic Science and Aquaculture at SUNY Brockport. Sodus Bay is a bay/lake system that empties into Lake Ontario and is a major recreational area for sailing, fishing and swimming. There were growing concerns that Sodus Bay was being impacted by agriculture and development within the watershed. But where were the sources of the problems? Where do we start in a watershed that consists of 30,000 acres? In 1990 and 1991, seven streams representing the various sub-watersheds making up the Sodus Bay basin were monitored during meteorological events and non-event periods as described by Rob Williams in the winter issue of "Waterworks". The purpose of the two-year exercise was to identify impacted sub-watersheds and their streams. This was done by considering the total amount of phosphorus entering the bay from all streams. We determined that Sodus Creek - East delivers the majority of this nutrient of concern into Sodus Bay. Annually, over 60% of the phosphorus entering the Bay was from this one stream. Thus a priority for remediation can be established. With limited financial resources, the decision on where to concentrate remediation efforts is now clearer.

But what is the cause of the high levels of phosphorus entering the Bay from within this sub-watershed and its associated stream? The next step would be to systematically sample geographically in the watershed using the stream to point us toward the source. In Livingston County at Conesus Lake, we have performed this step. Just as with Sodus Bay, annual monitoring of nutrients and

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FEDERATION OF LAKE ASSOCIATION'S 10TH ANNUAL CONFERENCE "STRATEGIES FOR I

CONFERENCE AGENDA

Friday, June 11
5:00 to 9:00 **Registration**
8:00 **Premiere** of FOLA's new video "Managing Lakes Through Community Participation," followed by an open discussion lead by members of the "cast." Everyone welcome.

Saturday, June 12
7:30 **Breakfast**
8:30 **Exhibitor displays open**
8:00 **Registration**
8:45 **Introductions and Welcome**
9:00 **A Statewide Lake Management Plan: How Do We Get Started?**
Local Government Program, Allee
The Lake Association Perspective,. Schaefer
Applications to a Lake Problem, Beebee
New York State perspective, Bloomfield
Wisconsin's Lake Management Program, Aron.
10:30 **Morning Break**
11:00 **A Statewide Lake Management Plan**. small group discussions.
11:30 **Summary Presentations** of discussion groups
12:30 **Lunch**
1:30 **Watershed Watchdogs: How to spot potential problems in your watershed**, Kortmann
2:15 **CONCURRENT SESSION #1 - Watershed Monitoring Workshop**
Introduction to Tributary Sampling: Chemical and biological sampling to check tributary water quality, Connors, Monostory, Soracco
CONCURRENT SESSION #2 - Introduction to Limnology & Lake Science
How Lakes Work, Kishbaugh
3:00 **Afternoon Break**
3:30 **CONCURRENT SESSION #1** continued
Hands-on Workshop in Watershed mapping. Those wishing to participate are to bring USDA 7.5 quadrangle topical map(s) of their lake watershed. Long, Morton
CONCURRENT SESSION #2
Interpretation of Basic Lake Data, Kisbaugh, Mantai, Gillman
4:15 **CONCURRENT SESSION #1**
Watershed Information Applications, watershed mapping and tributary sampling data, Brower
CONCURRENT SESSION #2
Aquatic Plants: Everything You Need To Know, Gillman
5:00 **Annual Meeting** of the Federation and Presentation of Awards
6:00 **Social Hour** - followed by the **Famous FOLA Barbecue** on the Quad
8:00 **Keynote Address**, Dan Reicher
9:00 to 11:00 Relax and listen to Ballads and Songs by John & Jim Savage - Cash bar.

Sunday, June 13
7:30 **Breakfast**
8:45 Announcements
9:00 **CONCURRENT SESSION #1**
Field trip to Oriskany Creek for "hands-on" sampling. Dress accordingly.
CONCURRENT SESSION #2
Yards & Gardens on the Shoreline, Briggs
The Economic Value of Lakes, Landry
10:30 **Morning Break**
11:00 **Where Do You Go From Here** How to use lake monitoring information to your advantage .
12:00 Conference conclusion

Box lunches will be available on Sunday. Please sign up at the registration desk upon arrival.

'ROTECTING WATER QUALITY" JUNE 11 — 13 HAMILTON COLLEGE, CLINTON, NY

CONFERENCE SPEAKERS

David Allee, Professor, Cornell University
Kathy Aron, Chairman, Wind Lake Management District, past president, Wisconsin Association of Lakes
Mary Arthur Beebe, Executive Director, Lake George Association, Coalition of Lakes Against Milfoil
Jay Bloomfield, Chief, Lake Services Section, NYS Department of Environmental Conservation
Robert Brower, Director, Cayuga County Planning Board
M. Elizabeth Connors, Ichthyological Associates, Inc.
Jim Briggs, Cornell Cooperative Extension, Hamilton County
Bob Brower, Cayuga County Planning Board, Water Resources Board
Bruce Gilman, Professor, College of the Finger Lakes
Scott Kisbaugh, CSLAP Coordinator, NYS Department of Environmental Conservation
Robert Kortmann, Ecosystems Consulting Services
Peter Landre, Project Director, Keuka Lake Watershed Project
Dean Long, Consultant, LA Group
Ken Mantai, Professor, State University of New York, Fredonia
Les Monostory, SOS Program, Izaak Walton League of America
Bill Morton, Bureau of Water Quality Management, NYS Department of Environmental Conservation
Dan Reicher, Attorney, Clinton-Gore Transition Team (Natural Resources)
Margaret Schafer, President, Black Lake Association
Reg Soracco, professor, Rochester Polytechnic Institute

NEWSLETTER CONTEST There is still time to enter the Newsletter Contest. Please submit a copy of your latest edition along with the editor's name to the Federation of Lake Association's office before **June 1**. Newsletters are judged on readability (understandable without being dull), information (that which is pertinent to your readership), and interest (the appeal that makes it unique). Newsletters will NOT be judges on style of publication, number os issues a year, or fancy graphics and layouts.

Awards will be presented at the Annual Meeting of the Federation on June 12. All newsletters submitted will be displayed in the exhibits area of the conference.

Environmental Achievement Award Here's a chance to honor someone you know who has made a significant contribution to environmental protection. Please write a brief description of the person or the group and the project with which they were involved. Nominations will be accepted until **June 7.** Please send to the Federation office and include your name and address.

DIRECTIONS: Hamilton College is located in Clinton, near Utica. From the NYS Thruway, take **Exit 32,** go South on Route 233 for about five miles. At the **blinking red light**, take a right and follow the FOLA signs.

Registration Form

Name_____

Address_____

Affiliation_____

Conference Options

_____**#1** two nights (single or double) all meals Saturday breakfast through Sunday breakfast. . .$95.00 per person
_____**#2** one night (single or double) all meals as above. ( ) Friday or ( ) Saturday .. . . . . 75.00 " "
_____**#3** **no** campus lodging, all meals as above. . . . . 55.00 " "
Registration Fee. . .20.00 " "

Total Enclosed $_____

Please make check payable and mail to:
Federation of Lake Associations, 2175 Ten Eyck Ave., Cazenovia, NY 13035

Reservations must be in by June 1. **No refunds given after June 1**

( ) Please check if you plan to attend the Oriskany Creek workshop on Sunday morning
( ) Please check if you plan to attend the Saturday afternoon Watershed Monitoring Workshop

MONITORING *continued from page 1*

addressed, such as determining which activities have caused the measured degradation. To paraphrase slightly, "it takes data to make data". Several CSLAP lake associations, such as the DeRuyter Lake Association and the Findley Lake Property Owners Association, have used data suggesting high ("normally" or unusually) nutrient concentrations to initiate investigation of nutrient loadings from tributaries to the lakes. Other lake associations have used long-term monitoring information as a data "seed" to hire consultants to provide more intensive monitoring, and even provide the "kick in the butt" needed to open up the town's back-pocket wallet.

TRIBUTARY SAMPLING KITS

In response to interest from FOLA members about watershed monitoring and tributary sampling, the Scientific Advisory Board is designing a basic "kit" for chemical sampling of streams and tributaries. This kit will include those tests and equipment most useful and reliable for volunteer use. It will include data forms, guidelines, and equipment for monitoring chemical parameters such as temperature, pH, dissolved oxygen, turbidity, and conductivity (TDS). The anticipated cost of each kit is between $200 and $400. Chemical sampling using these kits will be discussed and demonstrated at the June FOLA meeting during the Saturday afternoon Watershed Monitoring workshop and the Sunday morning field trip. If your association is interested in the purchase of a kit, or if you have any questions, contact Liz Connors at (607)533-8801 or the Federation office at (315) 655-4760.

A Means to Prompt Local Action

In some instances, the results from a simple monitoring program are sufficient to convince local officials that identified problems must be addressed. The Twitchell Lake Fish and Game Society has used the results from their dye testing program to initiate a cooperative program between the individual landowners, the lake association, and the town health officials to correct or replace faulty wastewater facilities. Lake associations and local and regional planning authorities, such as the Canaan Lake Restoration Association and the Madison County Planning Department, have presented monitoring data, as part of a complete information base, to local officials to prompt development of local management plans. Many of the management plans developed from simple monitoring data have served as templates for local planning models throughout the state.

To Evaluate Impacts of Existing Management

While an ideal lake monitoring program is initiated proactively, to gather sufficient information before management alternatives are instituted, lake monitoring can be equally effective as a reactive agent. Water monitoring data can be used to evaluate the benefits of management activities recently developed, whether they be in-lake restoration techniques such as hypolimnetic withdrawal, or watershed management strategies, such as buffer strips for nutrient control. Several lake associations, such as the Copake Lake Conservation Society and the Nassau Lake Association, have used monitoring data to evaluate the effectiveness of copper sulfate treatments to reduce algae concentrations. Monitoring data can also be beneficial in determining the impact of sewage discharges to lakes, whether from individual systems or larger public or private facilities. Other communities look at changes in the biological community of streams to determine the effectiveness of best management practices employed within the stream basin.

To Establish Credibility

When a citizen complaint comes to face with a skeptical official or scientist, the burden of "proof" typically falls on the citizen. Public addresses beginning with "We think this is a problem..." are frequently not given their proper accord. To more effectively state their case, volunteer groups are relying more heavily on documented, quantifiable accounts of their concerns. Volunteer monitors throughout the country are increasingly using their data to make their voices heard. While some officials still consider only Caesar's wife to be a credible advocate, most lake associations have managed to improve their credibility when armed with sufficient "evidence". The Lake Lucille Property Owners Association and the Silver Lake Cottage Owners Association have forged positions of authority not previously available prior to collecting data. The former has convinced town officials to consider a long-standing dredging proposal, while the latter now provides valuable input to a watershed planning authority once exempt from their influence.

To Support Other Actions

This is the generic "miscellaneous" category, that consists of activities such as using monitoring data to calibrate or verify water quality models used by consultants or local/regional planning authorities; filling in the data gaps or validating other monitoring programs conducted on the lake; satisfying sampling requirements promulgated by the grantees of research or restoration dollars; a recruiting tool to get lake association members interested in lake management; or simply an excuse to spend more time on the lake (and less time cleaning the garage).

This is certainly an incomplete list of the benefits of a lake monitoring program. Suffice it to say that while a well-planned, clearly defined sampling project will reap many benefits to the lake community, even an ill-planned program will not be a complete waste of time (though this is no excuse to do the latter). Within the membership rolls of the Federation of Lake Associations can be found many lake communities who have much better reasons for monitoring than are outlined above. Discover their secrets, and divulge a few of your own.

by Scott Kishbaugh, CSLAP Coordinator, NYS Department of Environmental Conservation, Lake Services Section

Additional information about the Citizens Statewide Lake Assessment Program (CSLAP) or other monitoring programs is available by contacting Scott Kishbaugh at (518) 457-7470 or the Federation office at (315) 655-4760.

IMPORTANT NOTICE

At the September board of directors meeting of the Federation of Lake Associations, a committee was apppointed to investigate the possibility of the Federation becoming a State Chapter of the North American Lake Management Society (NALMS). Throughout the fall and winter, committee members attended the NALMS annual conference, arranged a meeting with the president of NALMS, met with the membership chairman, and have had many telephone conferences. After reviewing all the data, the NALMS membership committee recommends that the Federation become the NYS Chapter of NALMS.

What is NALMS?

A non-profit organization with members in the US and Canada, as well as worldwide, its goals are the understanding, protection and restoration of lakes, ponds, reservoirs and their watersheds. Members are from academia, state and federal government, private business, lake associations and individual citizens. NALMS is a society of volunteers, with one paid staff person, governed by a board of directors. Except for the broader geography, NALMS ' goals, objectives and operations are very similar to the Federation.

Why Should the Federation join NALMS?

The committee believes that becoming a State Chapter will strengthen the Federation by becoming a participant in a much larger arena. All members of the Federation will have access to a much larger base of information and expertise. By becoming a chapter of NALMS, the Federation will have more legislative insight at the national and state level. It presents a valuable opportunity to network with other state chapters and experts from other states.

According to a NALMS spokesman, "As NALMS evolves and more chapters are formed, the chapters will be determining what the larger international organization should be doing for services for the chapters. NALMS will be a union of Chapters, but Chapters will remain autonomous as we all believe that the local individuals know what is best for their region."

Your opinion matters.

At the Annual Meeting of the membership on June 12, 1992 at 5 pm. all those attending will be asked to vote on the proposal that the Federation of Lake Associations become a State Chapter of the North American Lake Society. If you can **not** attend this meeting, which is being held during the annual conference, we ask that you return this form to the Federation office before June 8.

Voting members are those who represent an organization, an association or themselves as individual members.

Name_____

Address_____

Affiliation_____

___ In favor of joining NALMS ___ Opposed

Comments_____

_____

Return to: Federation of Lake Associations, 2175 Ten Eyck Avenue, Cazenovia, NY 13035

SAVE THE RIVER!
IT'S NOT A SEWER!

CLAYTON, N.Y. - It started out as a simple enough idea: let's get people to stop discharging their sewage into the St. Lawrence River. It developed into a campaign: Save the River! It's Not a Sewer! It ended up as an all-out effort to assist riverfront property owners in correcting faulty sewage disposal systems that have been polluting the river for years.

What started out as a small, grassroots effort by the Clayton-based environmental group, Save the River, to help clean up sewage in the Thousand Islands area of the St. Lawrence River, has snowballed into a successful major project now being recognized by many other environmental groups and state agencies. Most importantly, it has been very well received by the public.

The Kingfisher Alternative Sewage Project was undertaken by Save the River in 1988 when the non-profit group was awarded a $20,000 grant by the New York State Department of State's Coastal Management Program.

The purpose of the project is to eliminate the many sewage discharge pipes that currently flow directly into the river causing a health hazard, especially in some of the smaller, shallow bays where swimming areas are adjacent to sewage outflow pipes. Many of the residences in this area are summer homes or cottages located on islands which have little or no soil, steep slopes and are often not even large enough to support a proper leach field. It was these private homeowners that we targeted with our campaign.

Save the River took on this role primarily because, from our point of view, the state was not enforcing sewage discharge laws currently on the books and, due to a lack of boats, manpower and funding, it does not seem likely that they ever will.
Using the grant funds, Save the River developed a four-color brochure called "Save the River - It's Not a Sewer" to inform the public about our project. It was directly mailed to over 3,000 waterfront property owners in our area.

We used the brochure to promote our "sewage hotline" which people could call for information about laws pertaining to sewage disposal or to receive information on alternative systems, such as aerobic tanks, low-flush, composting and incinerating toilets. Most importantly, we offered free, on site sewage system surveys to riverfront property owners. We stressed that these surveys were strictly voluntary, designed to assist the property owner, not to bring enforcement action against someone who was found to be not in compliance with the law. In fact, that is the theme of our entire project: education first.

We trained a team of volunteers to conduct the surveys. Eventually, however, as the program grew in size and popularity, we were forced to hire several surveyors to complete the inspections during the summer months. Three years ago we also hired a coordinator to coordinate the survey teams, the sewage "hotline" and compile and organize all the data we were accumulating. This we paid for through an annual grant we were able to obtain from a private foundation.

We developed a four-page survey form that was used in each instance. The survey includes an interview with the homeowner about his current system, usage, etc., the flushing of tracer dye down the toilet and sinks, and an inspection of the septic tank. We asked people to dig up the access hole to their septic tank, but if they didn't, we did it ourselves. The survey teams watched the river and surrounding land for signs of tracer dye appearance, which is an obvious signal the system is not working properly.

The survey team checks the septic tank to make sure it isn't rusted out, leaking or clogged. They also check to make sure the waste is flowing in and out of the tank properly. The survey team then discusses, in detail, deficiencies of the system with the home owner. The Save the River workers make on-the-spot recommendations on possible and practical corrective actions the homeowner can take. This is followed up by written recommendations on the survey form and a copy of a qualified contractor list, which we developed after extensive interviews with local contractors on what services they perform.

The homeowner "passes" the survey if Save the River determines 1.) no sewage or greywater is entering the river, 2.) sewage is not seeping to the ground's surface, 3.) sewage is not backing up into the home, and 4.) there are no apparent health hazards. If all these conditions are met, the homeowner receives the Save the River Clean Water Award, a 12 inch hand crafted Great Blue Heron, which we devised as an incentive to sign up for a survey. It was good incentive. Some who have failed the survey took immediate corrective action so they could get their heron!

To date, we have done over 800 surveys and we have a constant waiting list. As it turned out, people were very receptive to Save the River staff and volunteers coming on their property and often provided assistance in identifying sewage disposal problems.

Over the last two years we have put more effort into follow-up contacts with people who have "failed" the survey. We continue to offer assistance and encouragement to take corrective action and attempt to monitor the number of people who voluntarily make improvements. For more information on our program, please write to: Save the River, Box 322, Clayton, NY 13624, or call (315) 686-2010.

by Laurie Marr, Executive Director, Save the River!

SHORELINE MANAGEMENT AT THE "GRASSROOT" LEVEL

Watershed management encompasses a variety of measures intended to control the influx of nutrients, sediments and other pollutants to lakes. Some of these measures are costly, require sophisticated design, and their implementation usually involves an array of legal and institutional arrangements. As such, most lake front owners perceive their role in watershed management to be minor. However, there are far less complicated watershed management measures that can be implemented by every individual living in a lake community. These "grassroot" techniques are intended to address the relatively small innocuous contributions of pollutants that, on a cumulative scale, can impact the quality of a lake.

One aspect of watershed management, definitely within the capabilities of individual lake community members, pertains to the care and maintenance of lawns. This includes not only fertilization and pesticide use, but mowing strategies, the disposal of grass clippings and leaves, and irrigation practices.

Mowing

From research conducted at numerous agricultural field stations, a recommended mowing strategy has been developed for lake communities. This involves setting the mowing deck at a height of about 2 1/2 inches or higher, and cutting only the top 1/3 of the grass blade. Although it may be necessary to mow more frequently, on average, this results in only 5 more cuts per season.

Leave all or most of the clippings on the lawn. This is best accomplished using mowers equipped with mulching blades. The clippings generate a source of nitrogen for the lawn and also help conserve water.

Aeration and Irrigation

Aerate your lawn using a roller at least once a year. This helps promote a healthy root zone environment and improves water uptake and the assimilation of fertilizers. Irrigate no more than 2" every 2 to 3 weeks. In a lake front situation, where the watertable is high, it may be possible to further decrease the frequency of irrigation. Water at dusk or in the early morning as opposed to mid-day.

Remember that most, if not all, of your lawn's nutrient needs can be satisfied by leaving the clippings on the lawn.

Fertilizer/Pesticide Use

Before you fertilize your lawn, have the pH of the soils tested. The ability of soils to maximally bind fertilizers, particularly phosphorus, is directly effected by soil pH. Typically, it is desirable to maintain pH levels around 6.5. Based on the outcome of the soil test, determine the liming needs of your lawn and have the pH adjusted accordingly.

If you really need to fertilize your lawn, try to use non-phosphorus or very low phosphorus formulations. Also, use controlled release forms of nitrogen such as sulfur coated and natural organics. Note that cool season lawns should be fertilized in the *fall* not in the spring. Carefully adhere to the manufacturers suggested application rate and *do not* over apply fertilizer. Remember that most, if not all of your lawn's nutrient needs can be satisfied by leaving the clippings on the lawn. Finally, take care when applying fertilizer to keep it off of paved or semi-pervious areas such as walkways and driveways.

Before any pesticide is used be sure you have properly identified the pest and have selected the appropriate product. As with fertilizer use, do not over apply pesticides and keep them off of impervious or semi-impervious surfaces. Make sure the dose rate is appropriate for soil conditions. Note that some plants such as marigold, garlic, and various herbs naturally repel insects. Integrate these into your landscaping design to minimize pesticide use in flower or vegetable gardens.

Leaves

Never rake leaves or grass into a lake. These materials can contribute to the nutrient and organic load of the lake. Instead, collect and compost leaves and excess grass clippings. Shredding of the leaves helps speed the composting process. The final compost can be recycled back into your lawn, flower garden or vegetable garden.

In conclusion, the measures outlined above are simple to implement, and constitute a common sense approach to lawn care. More importantly, they exemplify how each individual member of a lake community can actively decrease watershed-related pollutant inputs to their lake at the "grassroot" level.

by Dr. Stephen Souza,
Director of Aquatic Programs
Coastal Environmental Services

LOW FLUSH *(continued from page 4)*

In the gravity flush, water is precipitated through the bowl and trap by the following: 1) the rim wash (top of toilet bowl) comes through an open slot rather than little holes, 2) the bowl has steeper sides and a narrowed trap opening, 3) the amount of water in the bowl is lower, making a pool of 4x5 inches rather than 8x9 inches. The smaller water spot does mean more frequent cleaning with a toilet brush.

The pressurized flush is another way to increase the water's velocity. Compressed air may come from an outside source, such as a compressor or compressed-air tank or a vessel within the toilet tank. Upon flushing, the compressed air propels water into the bowl at increased speed. The pressurized flush makes more noise than gravity flush or conventional toilets.

What kind should I get?

In spite of various ratings, what others may tell you, or what you read here or elsewhere, consultation with your plumber is essential. Consumer Reports 1991 Buying Guide Issue, for example, gives highest ratings to Kohler Wellworth Lite priced at $152, Sears Cat. No. 5560 (Universal Rundle) at $130 and Ifo Cascade at $204. These three models are all gravity-flush, although the pressurized-flush models of Crane ($342), Gerber ($283) and American Standard Aquameter ($325) rank just under the top choices. The 1993 Buying Guide reveals no more recent testing results, although costs quoted above have been updated to 1993 list prices. (Prices never include the seat cover.)

Consumer Reports uses even more severe tests than the standards developed by the American National Standards Institute (ANSI) to rate toilet performance. Both Organizations, however, test basically for ability to dispose of solid wastes and to clean the bowl.

In spite of Consumer Reports preference for the gravity-flush models, a north-country plumbing professional who is experienced in installing low volume toilets opts for the pressurized units. He mentions two important points. First, Consumer Reports testing conditions are close to ideal. The plumbing set-up in many homes is not perfect. In some lakeside homes plumbing has been adapted by professionals, caretakers and "do-it-yourselfers" to size, site and economic restrictions. The use of compressed air can often compensate for less than ideal conditions. Secondly, if a home is seasonal, draining water from a toilet is easier with a pressurized unit.

To reiterate then, make your plumber your partner. He has had invaluable practical experience. The "best" toilet in one case may not be the right one for you. Choosing the least expensive model may cause repeated visits from your plumber if it is not suited to your drainage, pipes, etc., thus wasting your original savings in "call backs."

With careful choices, you don't have to flush it all down the toilet. Your conservation practices will benefit you and your lake.

by Linda Friedlander
Executive Secretary, Shore Owners' Association of Lake Placid

(Note: The Federation of Lake Associations' office may be contacted for a copy of the Consumer Reports information that was listed in this article. The April '93 issue of the Small Flows Clearinghouse newsletter is another excellent source of information .)

The Federation of Lake Associations, Inc.

MEMBERSHIP CATEGORIES

Lake associations with less than 50 members.....$30.00/year
Lake associations with 50 to 99 members.....$50.00/year
Lake associations with 100 to 199 members.....$75.00/year
Lake associations with more than 200 member....$150.00/year
Individuals.....$20.00/year Corporations.....$100.00/year
Additional copies of *Waterworks*.....$.50 each

Membership dues over $5.00 are tax deductible contributions to the Federation of Lake Associations, and will be used for educational, scientific, and public information activities of the Federation.

APPLICATION FOR MEMBERSHIP

THE FEDERATION OF LAKE ASSOCIATIONS, INC., 2175 TEN EYCK AVENUE, CAZENOVIA, NY 13035

Type of Membership (please check) ☐ Association ☐ Individual ☐ Corporate

Association Name: _____

Assoc. Address: Street _____ City _____ State _____ Zip _____ County _____

President/Contact Person: _____

Summer Address _____ Winter Address _____

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ANNOUNCING...

"Managing Lakes Through Community Participation"

A Video Produced by
the Federation of Lake Associations
In Cooperation with
the Audio/Visual Services
New York State Department of
Environmental Conservation
Funded by a Grant From
the United States
Environmental Protection Agency

Groups Highlighted:
Ballston Lake, Cazenovia Lake, Conesus Lake, Keuka Lake, Madison County Planning Department, Seneca Lake, Tuscarora Reservoir,Twitchell Lake

Topics Discussed in the Video

* Overview of Lake Uses and Limitations
* Why Lake Associations are Formed
* How Lake Associations Get Started
* How Lake Associations Effectively Tackle Priority Issues
* Effective Problem Resolution
* Maintaining Ties With Local Government
* Educating the Lake Community

Cost per Video: $15.00
Send requests to the Federation of Lake Associations, 2175 Ten Eyck Avenue, Cazenovia, New York 13035

STREAMS *(continued from page 5)*

discharge allowed us to prioritize the subwatersheds and their streams to identify the stream having the greatest impact on the lake. In this case an unnamed stream "No Name Creek" was found to deliver high amounts of nitrate annually. systematic sampling of the watershed was undertaken to determine the origin of the nitrate in the watershed. Referring to Figure 1, the major source of nitrate is located on the eastern most branch between Maple Beach Road and Lee Road, between sites NN7 and NN5. The highest value for nitrate occurred at site NN5 (6.8 mg N/L). Upstream from NN5 at site NN7, the nitrate value is 2.1 mg N/L, which strongly suggests a nitrate source exists between sites NN5 and NN7 and is the source of nutrient to the stream and eventually to Conesus Lake. These results occurred on several dates and with several other nutrients.

What is the cause of the elevated nitrate levels between sites NN5 and NN7? This small area between sites is bound entirely by land used in agriculture, including fields of corn, wheat and hay and a dairy farm. Farming practices within sites NN5 and NN7 are the most likely causes of the high nitrate loadings to "No Name Creek" and ultimately to Conesus Lake. Although there was no visible evidence of manure spreading on the dates sampled, a measure of organic nitrogen (total Kjeldahl nitrogen) was very high in the same area indicating that an organic source, such as manure, was likely. The fact that total suspended solids are low at both sites indicates that the elevated nutrient concentrations in the stream are not caused by soil loss. During high flow periods, the runoff is mobilizing dissolved nutrients from the agricultural fields and transporting them to Conesus Lake. This field would thus be a target for implementation of Best Management Practices. A simple change in farming practices may lead to significant decreases in the nutrient load to Conesus Lake.

By following the stressed stream approach, researchers and managers are able to determine the most cost effective means by which to manage a pollution source. This strategy also reduces the likelihood of costly miscalculations based on the assumption of sources rather than their actual identification. As a whole, the stressed approach represents the fundamental need to clearly define a problem prior to its remediation.

by Dr. Joseph C. Makarewicz, Department of Biological Sciences, Center for Applied Aquatic Science and Aquaculture, SUNY Brockport

Federation of Lake Associations, Inc.
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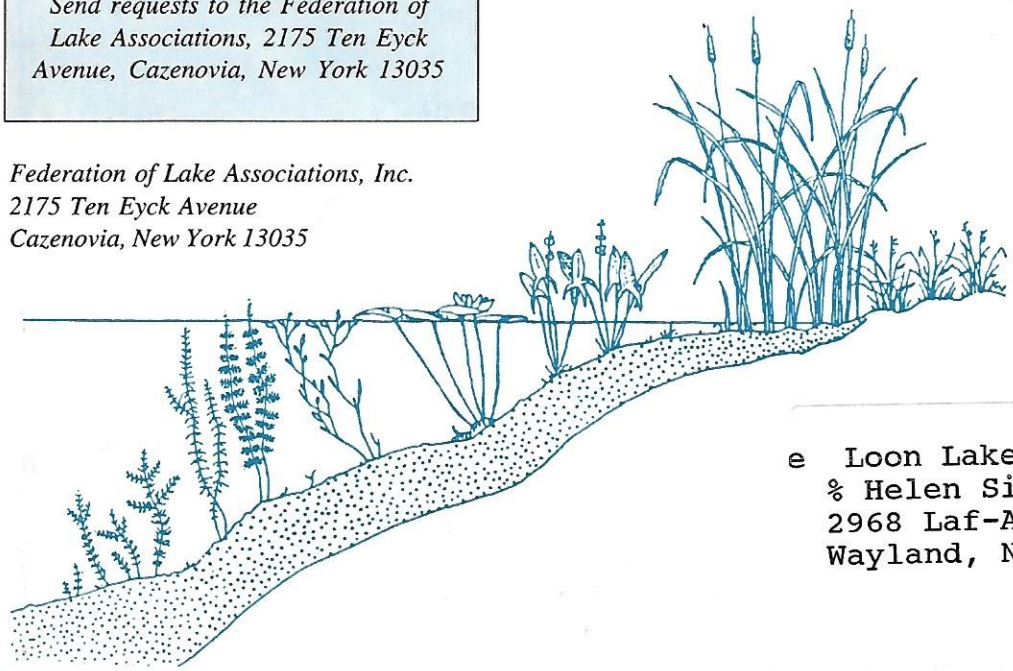

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% Helen Sick
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Artwork by Kirt Weiskotten

FEDERATION OF LAKE ASSOCIATIONS CONFERENCE
"Strategies for Protecting Water Quality" ***(See Pages 6 & 7)***