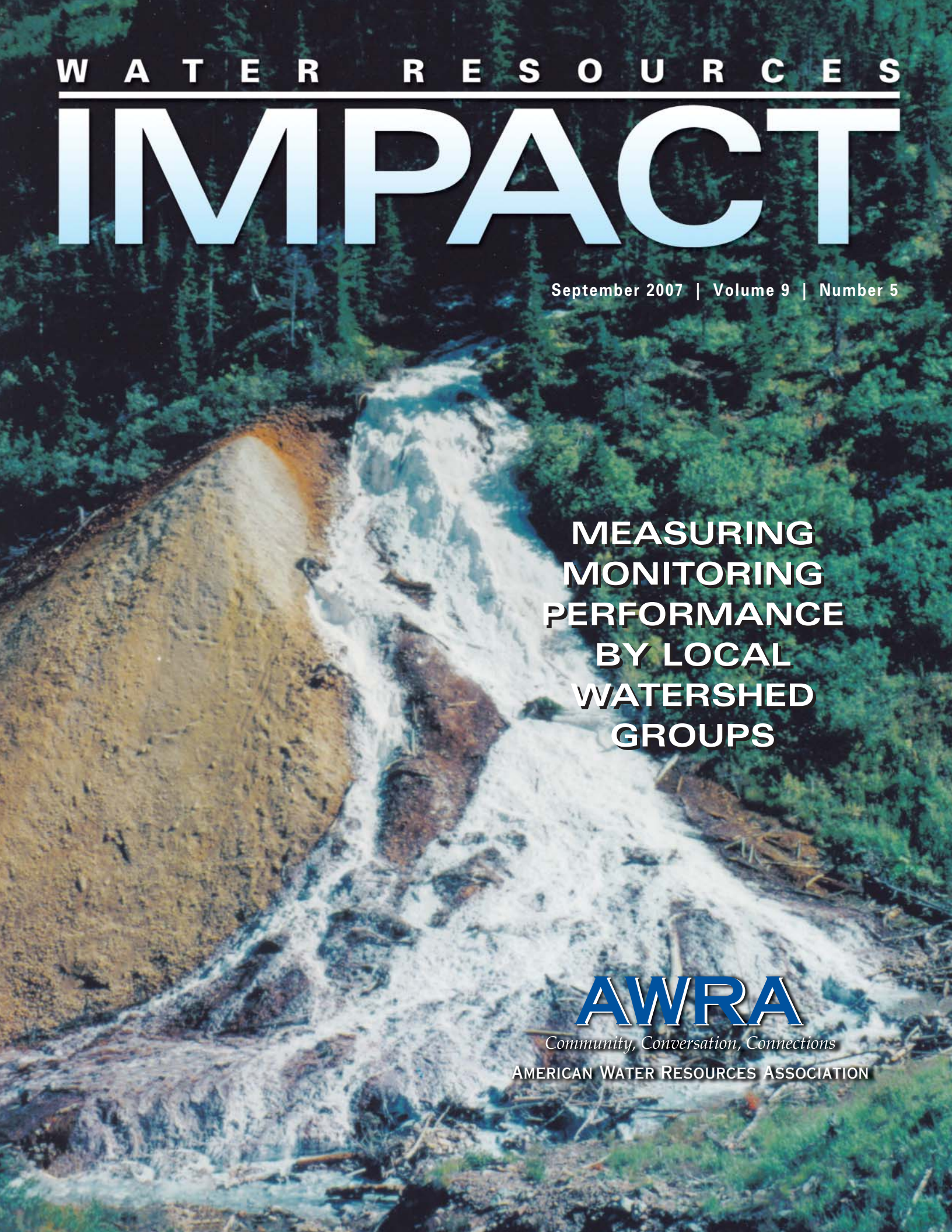

# WATER RESOURCES IMPACT

September 2007 | Volume 9 | Number 5

## MEASURING MONITORING PERFORMANCE BY LOCAL WATERSHED GROUPS

AWRA

*Community, Conversation, Connections*

AMERICAN WATER RESOURCES ASSOCIATION

## MEASURING MONITORING PERFORMANCE BY LOCAL WATERSHED GROUPS

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**Guest Associate Editor ~ Winfield G. Wright ~ wgwright@frontier.net**

In January 2006, the White House Office of Management and Budget released a memorandum indicating that the U.S. Environmental Protection Agency had not demonstrated results under the Clean Water Act Section 319 Program. The memorandum indicated a need to provide proof that water-quality and ecosystem improvements have been made through the efforts of watershed groups, and that the improvements are measurable. This issue of *Water Resources IMPACT* describes success stories from selected watersheds across the nation. The social aspects of volunteerism are placed into perspective, proposed legislation is described that could help clean up watersheds, and the importance of quality assurance is emphasized.

### INTRODUCTION



### FEATURE ARTICLES



Cover Photo: The Paradise Portal, an abandoned mine in Middle Fork Mineral Creek, upper Animas River watershed, known locally by scientists as the "White Death," discharges acid mine drainage with high concentrations of aluminum. The waste-rock pile is more than 100 feet high with thick deposits of aluminum hydroxysulfate mineral (basaluminite), which has precipitated from the mine drainage (photo by Win Wright).

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## Other features in this issue ...



***(Opinions expressed by our columnists are their own and do not represent the opinion or position of AWRA.)***

## Scheduled Topics for Future Issues ...

**NOVEMBER 2007**
**WATER RESOURCES DISASTER RECOVERY**
**ERIC J. FITCH (FITCHE@MARIETTA.EDU)**

**JANUARY 2008**
**GIS AND WATER RESOURCES**
**LORRI PELTZ-LEWIS (GUEST EDITOR)**
**(LPELTZLEWIS@MP.USBR.GOV)**

**MARCH 2008**
**SUPPORTING WATER SUPPLY AND DISTRIBUTION**
**MICHELLE HENRIE (MHENRIE@BHFS.COM)**
**CLAY J. LANDRY (LANDRY@WATEREXCHANGE.COM)**

All of the topics listed above are subject to change. For information concerning submitting an article to be included in the above issues, contact the designated Associate Editor or the Editor-In-Chief N. Earl Spangenberg at (espangen@uwsp.edu).

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# IMPORTANCE OF QUALITY ASSURANCE PLANNING FOR LONG-TERM MONITORING PROGRAMS: THE VOLUNTEER MONITORING EXPERIENCE

**Jo A. Latimore and Ric Lawson**

Scientific, credible, reliable … these are just some of the terms applied to the data generated by the Huron River Watershed Council's (HRWC) Adopt-A-Stream volunteer monitoring program, widely regarded as the premier volunteer river and stream monitoring program in Michigan. Our Adopt-A-Stream program has earned these accolades over the past 15 years through a commitment to collecting high-quality information that can be used for natural resource management and land use planning. Ensuring that the data resulting from the efforts of volunteers are of the same quality as that collected by professionals is not without its challenges. Volunteer data is especially likely to be scrutinized for reliability, and as such, must set and follow strict quality-assurance standards if it is to be considered valid. We have developed monitoring methods over the past 15 years that have led to our data being used by federal, state, and local agencies and researchers with the ultimate goal of protecting the watershed.

Volunteer data is especially likely to be scrutinized for reliability, and as such, must set and follow strict quality-assurance standards if it is to be considered valid.

## PROFESSIONAL METHODS

Most volunteer monitoring programs begin with an emphasis on educating the community about local natural resources through hands-on activities, and the Huron River Watershed Council's Adopt-A-Stream program was no different. What was different, however, was an equally important emphasis from the very beginning on collecting credible, accurate data for resource protection.

In order to collect data that could be used by agencies like the Michigan Department of Environmental Quality (MDEQ), we looked to the methods that agency staff use to assess the health of rivers and streams, and we adopted those methods for our volunteer monitoring program. This meant asking our volunteers to collect more highly technical information about the physical quality of the streams and identifying stream life to a finer taxonomic level than is typical for volunteer monitoring programs. To reach this level of accuracy while keeping Adopt-A-Stream appealing to volunteers with no technical background, we developed a program with a broad variety of activities that ranged from requiring no training at all (and no need to get wet!), to those that require some level of HRWC training, to our "ID Experts" who bring their existing knowledge of aquatic entomology when they volunteer to identify the invertebrate specimens that our volunteer teams collect from the Huron River and its tributaries.

As a result, we have provided MDEQ with monitoring data from over 70 sites in the watershed that are the same as their staff biologists would collect during their field assessments. With the limited resources and staff that the state is able to dedicate to river and stream monitoring, Adopt-A-Stream volunteers are providing a valuable source of long-term information about the status and trends in the Huron River system.

## PLANNING FOR QUALITY

In order to verify that Adopt-A-Stream volunteer data were reliable and accurate enough for use in river and stream protection, the steps to assure data quality have been documented. A comprehensive Quality Assurance Project Plan (QAPP) was developed, reviewed, and approved by MDEQ. This QAPP lays out the goals of our monitoring work, how we choose our monitoring sites, the details of our field methods, and the way we handle, analyze, and report our data. Within each section, methods are described to ensure that volunteers follow instructions, how problem data are handled (including guidelines for resampling or rejecting samples altogether), and how the accuracy of our aquatic invertebrate identifications are ensured. This documentation is a valuable resource for Adopt-A-Stream staff, as it provides a framework for the program and guidance for handling the large amount of data that our volunteers generate. For the agencies and researchers using our data, the QAPP provides reassurance that the data are reliable, accurate, and valid for their intended use.

The process of developing a QAPP for a monitoring program should begin prior to the collection of data. Although writing a complete and thorough QAPP can be time consuming, the process forces the program manager to carefully consider the reasons for collecting the data; the objectives for using the data; the needs and limitations of the methods, equipment, and personnel; and the need for contingency plans. Working through the QAPP development process at the beginning of the project will help to ensure that the monitoring work will result in data that can be used with confidence to track the status and changes in the water body being studied, hence eliminating wasted effort.

Michigan's Governor Jennifer M. Granholm issued an executive order creating the Michigan Clean Water Corps (MiCorps).

## TAKING IT STATEWIDE

In September 2003, Michigan's Governor Jennifer M. Granholm issued an executive order creating the Michigan Clean Water Corps (MiCorps) – a program to foster, assist, and support volunteer monitoring programs in Michigan. The contract to administer and support the program was awarded to the Great Lakes Commission in partnership with the Huron River Watershed Council, largely due to the experience of both agencies with surface-water stewardship, volunteer monitoring, and emphasis on quality assurance.

We have accomplished a great deal in the past several years, including providing standardized data-collection methods; implementing quality-assurance practices to produce quality data; creating an online data-exchange system to facilitate data sharing; and creating forums for education, communication, and support. MiCorps staff work with volunteer groups at a range of levels. We provide hands-on training; help encourage and cultivate leadership and stewardship within new and existing programs; and provide assistance in meeting specific challenges.

In order for monitoring data generated by MiCorps volunteer programs to be useful to both the member programs and MDEQ, we have developed a number of quality-assurance requirements and guidelines. First, all MiCorps member programs must follow the same basic sampling protocols and data forms, developed by MDEQ and adapted for volunteer use by MiCorps staff. Program managers attend MiCorps training to learn both monitoring techniques and how to develop a thorough QAPP. Prior to collecting data, all member programs must submit a QAPP for MiCorps approval. To facilitate the development of this document, which can be intimidating for those new to the process, we have created detailed QAPP guidance for MiCorps based on U.S. Environmental Protection Agency (USEPA) and MDEQ standards. MiCorps staff further assure data quality by joining in data collection side-by-side with volunteers in the field to assure that field protocols are being followed and results are comparable, and by reviewing all monitoring data entered into the MiCorps online database before making it publicly available.

At the heart of the Adopt-A-Stream program and MiCorps are the volunteers.

## VOLUNTEERS: THE HEART OF IT ALL

Of course, at the heart of the Adopt-A-Stream program and MiCorps are the volunteers. Their desire to learn about their local streams and lakes, and to contribute to their protection, has allowed these long-term monitoring programs to continue and grow. We have found that it is possible to enforce quality-assurance standards in volunteer monitoring programs while still keeping the protocols reasonable, understandable, and fun for the volunteers. Many quality-assurance standards can be built into the protocols and data forms. For example, our streamflow measurement data form for the Adopt-A-Stream program has a list of questions that the volunteers must answer such as, "Was the flow probe held at arm's length (Yes or No)?" (to ensure that measured stream flow was not influenced by the sampler's body). The MiCorps online Data Exchange system has a number of quality control checks built in that will return an error message if a value entered is outside of reasonable bounds. We also have learned not to ask too much of new volunteers, so that they can focus on enjoying the experience. New participants in the Adopt-A-Stream aquatic macroinvertebrate collection event are not required to have training, but join a team with trained leaders who show them how to look for biota in streambed material that a trained collector brings to shore, and ensure they are doing a thorough job of picking through the sample. Volunteers who have experience with our monitoring events can later choose to participate in a training session where quality-assurance standards are introduced. As a result, it is possible to balance the joy of experience without becoming overwhelmed. Without volunteer involvement, most of the decisions about land use planning and water resource management that affect Michigan's surface waters would be made with limited information and best guesses, rather than with the support of the rich volunteer-monitoring datasets.

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