



United States  
Environmental Protection  
Agency

Office of Water  
Washington DC 20460

September 1988  
EPA 503/9-89-001



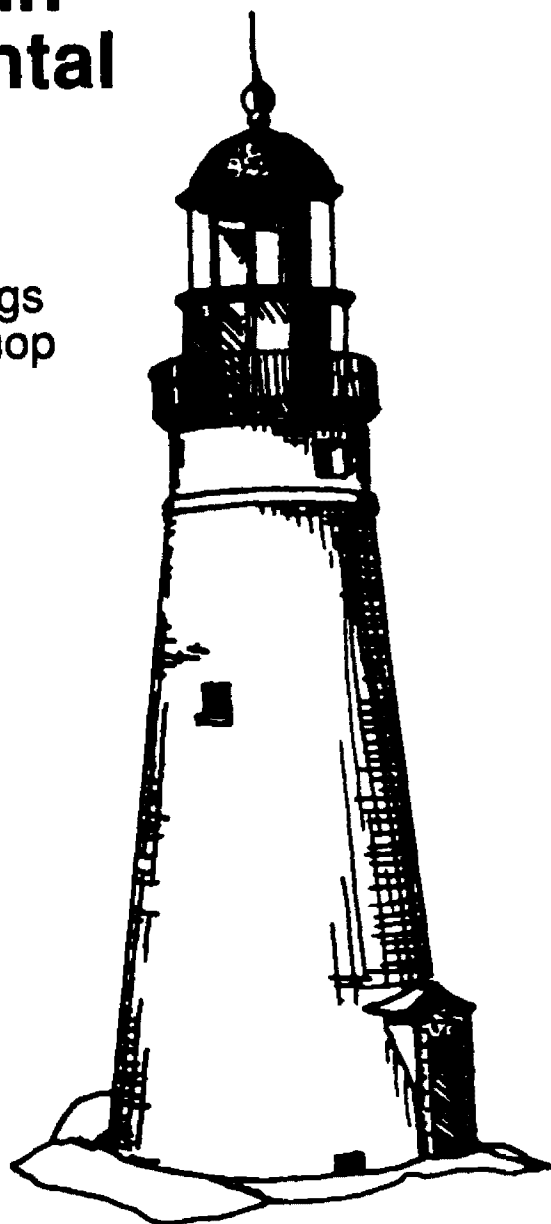
Rhode Island  
Sea Grant Program

Narragansett RI 02882

U.S. EPA Headquarters Library  
Mail code 3201  
1200 Pennsylvania Avenue NW  
Washington DC 20460

# Citizen Volunteers in Environmental Monitoring

Summary Proceedings  
of a National Workshop





---

# **Citizen Volunteers in Environmental Monitoring**

**Summary Proceedings  
of a National Workshop**

## **TABLE OF CONTENTS**

<b>3</b>	<b>Workshop Goals and Objectives</b>
<b>4</b>	<b>Workshop Agenda</b>
<b>6</b>	<b>Charge to the Workshop from Sponsors</b>
<b>8</b>	<b>Abstracts of Overview Papers</b>
<b>12</b>	<b>Keynote Address</b>
<b>14</b>	<b>Workshop Findings</b>
<b>15</b>	<b>Workshop Recommendations to EPA</b>



# Workshop Goals and Objectives

There is a growing awareness of the value of using volunteers to gather useful environmental data. The U.S. Environmental Protection Agency Office of Water and the Rhode Island Sea Grant Program jointly sponsored a national workshop on "The Role of Citizen Volunteers in Environmental Monitoring" from May 23-25, 1988, at the Narragansett Bay Campus of the University of Rhode Island.

The workshop was designed to explore the potential uses for and the successful ingredients of citizen monitoring programs. It was also intended to foster a network of volunteer monitoring programs and to provide a vehicle for information exchange among a variety of existing programs around the country, some many years old, others in their infancy.

The EPA was interested in determining how citizen monitoring programs can help develop and evaluate pollution control strategies. Sea Grant is the major coastal zone research agency, with a strong education and outreach program as well. Sea Grant saw the conference as a chance to bring together coordinators to communicate problems and to seek solutions.

A complete proceedings of the workshop will be published in late 1988 and will include the major presentations, an overview of all the known volunteer monitoring projects, and results of the discussions that took place during the workshop. Major findings and recommendations to EPA are included in this interim document.

Workshop participants included representatives of some 80 monitoring programs from around the U.S. These programs range from international to local efforts, and have been organized by universities, private labs, governmental agencies, nonprofit organizations, and watershed associations.

The first day of the workshop introduced the wide variety of citizen monitoring projects that have been carried out to 1) establish long-term trends for science and management; 2) provide "watch dogs" for enforcement of environmental regulations; and 3) carry out short-term monitoring for specific issues and education.

The second and third days of the workshop focused on identifying the essential ingredients for successful monitoring programs, including: 1) identifying useful information; 2) obtaining funding and reducing costs; 3) providing credible information; and 4) maintaining motivation and positive feedback.

---

# Workshop Agenda

## INTRODUCTION TO CITIZEN MONITORING PROGRAMS

### VOLUNTEER MONITORING ON A NATIONAL LEVEL

- National Weather Service—100 Years of Citizen-Measured Climate Trends, Tom Blackburn
- Earthwatch—Short-Term Use of Citizens in Diverse Research Projects, Blue Magruder
- Monomet Bird Observatory—International Shorebird Survey, Linda E. Leddy

### ESTABLISHING LONG-TERM TRENDS FOR SCIENCE AND MANAGEMENT

- Illinois Lake Monitoring, Janet Hawes
- Rhode Island Salt Pond Watchers, Virginia Lee
- New Hampshire Lakes Lay Monitoring, Jeff Schloss
- Adopt A Stream, Delta Labs, Stephen Raines
- Maine's Volunteer Anglers, Forrest Bonney
- Massachusetts Acid Rain Monitoring, Paul Godfrey

### MONITORS AS WATCH DOGS FOR ENFORCEMENT

- Minnesota Citizens Lake Monitoring, Judy Bostrom
- Hudson River Keeper, John Cronin
- Maryland's "Save Our Streams," Bruce Van Dervort
- National River Watch Network, Jack Byrne

### SHORT-TERM MONITORING FOR SPECIFIC ISSUES AND EDUCATION

- CEE, Texas Coastal Cleanup, Linda Maraniss
- TVA Surface Water Network, Linda Fowler
- Michigan Volunteer Lakes, Rob McLennan
- Ohio's "Scenic Rivers," John Kopec
- Washington's "Adopt a Stream," Tom Murdoch
- Kentucky Water Watch, Ken Cooke

## POSTER SESSIONS AND FILM EXHIBITS

## KEYNOTE ADDRESS

Rebecca Hanmer, Acting Assistant Administrator for Water, U.S. EPA

## **IDENTIFYING BASIC INGREDIENTS FOR SUCCESS**

### **I. IDENTIFYING USEFUL INFORMATION: WHAT INFORMATION IS NEEDED AND HOW CAN IT BE USED?**

Overview by Ken Pritchard, Washington "Adopt a Beach" Program

- What can volunteers realistically accomplish?
- Characterization of a water body
- Planning management strategies
- Monitoring effectiveness of implementation

### **II. OBTAINING FUNDING AND REDUCING COSTS**

Overview by Betsey Johnson, Massachusetts Audubon Society, Boston

- Program evaluation and streamlining
- Networking private and public funding
- In-kind contributions from laboratories and other innovations

### **III. PROVIDING CREDIBLE INFORMATION**

Overview by Kathy Ellett, Chesapeake Citizen Monitoring Program

- How to pick parameters, station locations, and field and laboratory locations
- How to assure quality control, adequate training, and accurate measurements in the field, in the lab, and in the data summary
- How to safeguard data management

### **IV. MAINTAINING MOTIVATION AND POSITIVE FEEDBACK**

Overview by John Tiedeman, New Jersey Sea Grant Program

- Packaging information for maximum use in planning, building consensus, and public education
- Handling attrition and recruitment of new people
- Networking with the community
- Good press and media relations

## **DISCUSSION IN WORKING GROUPS**

---

# Charge to the Workshop from Sponsors

## OPENING REMARKS

*Scott Nixon, Director  
Rhode Island Sea Grant*

Scott Nixon, Director of the Rhode Island Sea Grant College Program, emphasized Sea Grant's strong education and outreach program as well as its interest in coastal zone research. He saw the conference as a chance to bring together coordinators to communicate problems and to seek solutions. Sea Grant is interested in how far we can go with volunteer efforts. He talked about the value of long-term data sets and gave the example of a major volcanic eruption in Indonesia causing lower temperatures in New England. We were able to make the connection between these two events because of these long-term records. He also pointed out that long-term data sets may provide unforeseen insights into future environmental conditions.



## OPENING REMARKS

*Torn DeMoss, Director  
Technical Support Division  
EPA Office of Marine and Estuarine Protection*

The Environmental Protection Agency is very interested in exploring the feasibility of using citizen monitoring programs to support its mission of protecting and improving water quality in the nation's estuaries and near coastal waters. We believe that this conference will provide us with a better understanding of the value of citizen monitoring and the factors to be considered in establishing a volunteer monitoring program.

The success and benefits of establishing citizen monitoring programs have been demonstrated in a number of different locations around the country. In the Chesapeake Bay, a citizen monitoring program has demonstrated that trained volunteers can collect quality-controlled and assured data. In Rhode Island, the Salt Pond Watchers have been collecting data measuring a number of commonly accepted parameters of pollution. Two of these, bacteria and dissolved oxygen, provide the basis for classification of coastal tidal waters. Citizen volunteers in the Chesapeake and elsewhere have also demonstrated their ability to collect important observational data and to respond quickly and with more flexibility than the states to unusual events such as hurricanes and floods. Citizen monitoring can help the public understand why it is difficult for scientists to make a direct link between living resources and water quality. It can also add greatly to public understanding of the complexity of aquatic ecosystems, and form the foundation for effective long-term public support and cooperation.

We believe that volunteer monitoring activities can augment monitoring programs already in existence at the federal, state, and local levels. Volunteers can support and encourage work to address difficult environmental problems like land use management and urban runoff. Two types of environmental programs can be supported by volunteer monitoring: enforcement and compliance monitoring programs that require excellent quality assurance and quality control measures in order to provide useful data, and programs that achieve results through consensus building. Increasing public awareness of environmental problems through citizen involvement can serve both types of programs. Citizen monitoring can play a key role in building public support for action and ultimately the political will to accomplish environmental goals.

The EPA's Office of Marine and Estuarine Protection is particularly interested in understanding how citizen volunteer monitoring programs can assist the Agency and the states in five areas:

- 1) How can volunteer monitoring programs provide data to characterize our water resources?
- 2) How can volunteers provide data to assist in planning and policy development?
- 3) How can volunteers function as watch dogs for enforcement and assist in the implementation of regulations?
- 4) What is the role of citizen monitoring in educating the public about environmental problems and promoting public awareness of environmental issues?
- 5) How can volunteers provide useful data for special research projects designed to address specific problems?

We ask that you give special consideration to these questions during the discussion sessions at this conference. With your help we can build relationships among citizens, the states, and the EPA in these areas. We need to establish trust and cooperation among regulators and citizen volunteers in order to work together toward our common goal of environmental protection.

# Abstracts of Overview Papers

## IDENTIFYING USEFUL INFORMATION: WHAT INFORMATION IS NEEDED AND HOW CAN IT BE USED?

*Overview by Ken Pritchard  
Washington "Adopt a Beach" Program*

This paper is a discussion based on interviews with water quality project designers, the experience of a Puget Sound community-based program called "Adopt a Beach," and the results of a survey among participants at this workshop.

Part One explores common ingredients that help provide useful information and improve the quality of a citizen monitoring project:

- The experience must be rewarding to the volunteers.
- Data analysts must have confidence in the data and must value the information.
- Once analyzed, the data must contribute to action or provide a direct benefit to the volunteers.
- The volunteer effort results must reach out to the community.

Some practical hints that help in implementing these ingredients include:

- Volunteer groups should not take on monitoring projects where the information cannot or will not be used.
- Synchronize the monitoring period to coincide with the period you can commit to supporting the volunteers.
- Select the simplest monitoring method that will do the job.
- Select the right volunteers for the job—probe the ranks of the retired community, scientists, technicians, teachers who care about their local resources.
- Invest time to assist your volunteers in the beginning and throughout the project.

- Delegate some of the coordination to the volunteers themselves.

- If you represent a community group that wants to initiate a project, get expert input and do not embark on a project if no one has committed to use your data in a way that is satisfactory to the group.

There are no across-the-board inherent problems in using volunteers for monitoring projects that proper project selection, volunteer recruitment, and management cannot overcome. The sharing of responsibility in environmental protection is the ultimate purpose of citizen monitoring.

Part Two describes ways to identify needed projects and briefly discusses three promising areas of monitoring: habitat ground truthing, field inventories, and diagnostic monitoring. Information uses can be defined in broad terms: 1) baseline (where no prior data exist); 2) on-going formal monitoring; and 3) early warning (to alert authorities to a problem that needs verification). The end purposes of the uses fall into four categories: 1) general fact finding; 2) direct assistance for zoning or regulatory planning; 3) enforcement; and 4) public safety.

**ENVIRONMENTAL PROTECTION IS EVERYONE'S BUSINESS.** Citizens are not an adjunct voluntary service of an agency; rather, they are partners to help protect the environment. What keeps the volunteers together is no longer a single monitoring task, but their expanded role as the guardians and stewards of their local natural resources. It is this type of cooperation between regulators, resource trustees, and citizens at the local level that is our best guarantee for environmental protection.

## OBTAINING FUNDING AND REDUCING COSTS

*Overview by Betsy Johnson  
Massachusetts Audubon Society, Boston*

Funding is needed by all volunteer environmental monitoring programs for personnel, equipment, training, data management, reporting, and volunteer recruitment and motivation. A survey of existing programs finds six main funding sources: government, contributions for services, university program budgets, nonprofit organization operating budgets, private foundation and corporate contributions, and other sources, including legal fees and sale of items.

A number of state-run programs use funds available under sections 106 and 205(j) of the Clean Water Act. These funds may be passed on to private organizations. Public/private partnerships have been expanded with some states providing grant funds for local programs. States are using industrial fine monies and tax check-off programs to obtain funding for such local programs.

Other programs are conducted with no government monies, but rely on fees for service, and university and nonprofit organization program budgets. Nonprofits traditionally obtain funding from a variety of sources: dues, contributions, special events, foundation grants, corporate contributions, and in-kind services.

The long-term success of programs depends on diversifying funding sources. Funding is being provided if the value of the program is well recognized. Funding success is closely tied to assuring clearly stated program goals, collection of meaningful data, quality control, regular program evaluations, and adequate publicity.

## PROVIDING CREDIBLE INFORMATION

*Overview by Kathy Ellett  
Chesapeake Citizen Monitoring Program*

Despite many and varied successful experiences with volunteer monitoring around the country, there is still skepticism in the scientific and technical community about the positive contribution that volunteers can make to environmental data bases. Those of us who have been involved in volunteer monitoring projects know that we can collect credible data and provide useful information. Our goal is to get this message across to the relevant people in such a way that our efforts will be more readily accepted and our information used by those who need it.

Ecological monitoring can be defined as repetitive measurements or observations recorded over time for the purpose of determining a condition or tracking change. Citizen monitoring can be defined as the scheduled sampling of selected environmental and biological variables by unpaid citizen volunteers.

Citizen monitoring can be divided into two categories: formal technical monitoring, and nontechnical monitoring. Formal technical monitoring is performed for scientific, technical, or legal purposes. For such monitoring: 1) the quality of all data must be assured; 2) the data must have identified value; and 3) the data must meet all criteria for inclusion in the relevant data base or requested by the data user(s). Nontechnical monitoring includes all other types of citizen monitoring.

The essential ingredients needed to plan a successful volunteer monitoring project and to provide credible information to the appropriate user(s) are:

- 1) Have a clear purpose established for the use of the data. Your data should be collected in answer to a question or in response to a stated hypothesis.

2) Establish your Data Quality Objectives (DQOs) in concert with the data user(s). DQOs are formal statements of the quality (level of uncertainty) of environmental data required to support program decisions or actions.

3) Write a Quality Assurance Project Plan (QAPP) or its equivalent. This step is essential for formal technical monitoring projects. Non-formal projects can also benefit from careful attention to quality assurance. Guidelines on the elements included in such plans can be obtained from the Quality Assurance Officer at any U.S. EPA Regional Office.

4) Implement all the elements of your quality assurance plan. Pay particular attention to the data management element—archived, never-reported data is not much good. Properly documented data sets can be used in the future.

Finally, keep in mind that the project should be fun and interesting as well as useful from a scientific point of view.

## **MAINTAINING MOTIVATION AND POSITIVE FEEDBACK**

*Overview by John Tiedeman  
New Jersey Sea Grant Program*

Volunteers and volunteer organizations are part of the American lifestyle. Recent citizen involvement in environmental issues can trace its roots back to the first Earth Day in 1970, when it was acknowledged to the nation that our ecological future was in jeopardy and in need of serious attention. In the past decade Americans have become more involved in participating in the management of our natural resources.

The ingredients for effective management of volunteer programs include:

- 1) organizing for action by focusing your program in areas where there will be a good chance of success and impact from your activities;
- 2) planning a strategy that entails setting objectives (collecting data, monitoring conditions, etc.) and goals (time frame for collection, quantity of data sought, etc.);
- 3) recruiting effective volunteers, including some professionals who possess a variety of special skills, education, and experience that will benefit the program. (Important sources of volunteers are organized clubs, associations, and societies—particularly affected user groups.)

The ingredients for maintaining motivation in volunteer programs include:

- 1) recognizing their accomplishments through awards, letters of appreciation, and certificates;
- 2) providing sound training and ongoing learning opportunities;
- 3) giving experienced volunteers increased responsibility;
- 4) providing opportunities for personal growth and development;

- 
- 5) providing accessibility to program managers;
  - 6) communicating the importance of the data being collected or work being performed through publications, meetings, phone networks, reports, press releases, and newsletters.

The feeling of being in tune with the whole is of prime importance to volunteers. Tenacity is of prime importance to successful management. By working closely together, managers and citizens can produce results that meet and often exceed the goals and objectives of environmental monitoring programs.

# Keynote Address

## THE ROLE OF CITIZEN MONITORING IN SUPPORTING EPA PROGRAMS

*Rebecca Hanmer*

*Acting Assistant Administrator for Water, U.S. EPA*

I am honored to be here today to join your national conference on citizen monitoring. I know that the Office of Marine and Estuarine Protection is particularly interested in establishing citizen monitoring as a component of new estuary programs. I am pleased that a number of estuary program managers from the EPA regions and states could attend this conference to learn from the experiences of established citizen monitoring programs.

The EPA is anxious to explore the role that volunteer monitoring may play in supporting the Agency's efforts to improve water quality in the nation's streams, lakes, and near coastal waters. EPA is pleased to be cosponsoring this conference with NOAA's Sea Grant Program. This first national conference of citizen volunteers has brought together a diverse group of talented people who share concern for the environment. Some of you are managers of volunteer monitoring programs, while others are citizen experts who have participated in volunteer programs to gather environmental data.

We are meeting here to exchange ideas and seek answers to some questions of considerable importance to the environmental community: How can data collected by volunteers be used to characterize problems and understand the long-term trends in a water body? How can the regulatory community use data collected by citizen volunteers to support planning and policy development? How can citizen volunteers collect data to support the regulatory community's enforcement and compliance programs? I am confident that the proceedings of this conference will answer some of these questions and begin to provide direction as we look to citizens for assistance in supplying the information we will need to make difficult decisions. I am here to listen and participate in this conference because I feel that citizen involve-

ment in the state and EPA decision-making process, through monitoring and other public participation activities, is extremely important.

The new focus of EPA's water quality management activities will require the collection of new types of data. We believe that citizen volunteers may be able to provide some of these data. In the 1970s and early 1980s, the focus of EPA's effort to manage water quality was on technology-based control of conventional point source pollutants. EPA is now moving toward water-quality-based control of conventional pollutants and toxics, and the Agency has recognized the importance of controlling nonpoint source pollutants as well. State and EPA managers are confronted with a daunting array of data needs as they meet a number of challenges posed by the complex decision environment. These data needs have been identified in the Agency's recently completed study on surface water monitoring.

EPA and the states require data on the ecological effects of toxic discharges. In the past few years, EPA and other environmental organizations have recognized that toxic contamination is a widespread and serious threat. In addition to the priority pollutants listed in the 1977 amendments to the Clean Water Act, EPA has identified more than 600 hazardous or toxic chemicals that may require regulation, not only in surface waters but also in ground waters and finished drinking water.

Data are needed to determine "acceptable" levels of waste that can be discharged into water bodies. Because technology-based permit limits do not sufficiently protect the quality of receiving waters, an increasing number of discharge permittees are being required to go beyond the capabilities of best available technology to protect water bodies. This approach requires states to collect new data to determine the levels of waste to be discharged into certain stream or near coastal water body segments.

New data must be collected to identify and characterize nonpoint sources of pollutants. In many of the nation's waterways, point source pollution is not the paramount threat. Six of EPA's ten regional offices reported in 1986 that nonpoint sources were the principal cause of their water quality problems. Many states have longstanding problems with urban and agricultural nonpoint source pollutants. Other nonpoint source threats include toxic chemicals from pesticide runoff and seepage from hazardous waste sites. Nonpoint sources of all kinds also contribute heavily to the degradation of estuaries and other near coastal waters.

Data must also be collected to demonstrate the environmental results of our nation's pollution control investments. The EPA wants to manage for environmental results, basing control decisions on an analysis of the degree of expected improvement in environmental quality. This type of decision making requires evaluation of past control actions to see whether they have had the intended effect. Surface water programs generally do not conduct follow-up monitoring to assess the effectiveness of control actions. EPA has therefore found it difficult to assemble evidence showing the efficacy of the nation's multibillion-dollar investment in grants to states for construction of wastewater treatment plants.

It is clear that the EPA's new data needs are not limited to a single office within the water program. The Office of Water Enforcement and Permits requires data to support and implement permitting decisions. The Office of Water Regulations and Standards requires data to support the development of water quality criteria and standards. The Office of Marine and Estuarine Protection requires data to support the National Estuary Program, Near Coastal Waters Program, and Ocean Dumping Program. Other water offices—Ground Water Protection, Drinking Water, Municipal Pollution Control, and Wetlands Protection—all have unmet data needs. Data collected by citizen volunteers may fill some of the gaps.

How can citizen volunteers help? This conference is a first step in organizing a network of citizen volunteers who can work with the states to meet their data needs. Citizen groups can support state and EPA efforts in several ways. Citizens can provide environmental data. They can educate people about the dimensions of pollution problems that affect their lives, and they can serve as facilitators for open discussion about water pollution problems. Citizen groups can also help build the local and regional political will needed to support effective actions.

EPA wants to develop guidelines to encourage the formation of new citizen volunteer monitoring programs. This conference will help us put together guidelines by identifying: what has worked well and what hasn't; how the most effective programs are organized, funded, and managed; and what problems have been encountered and how they have been overcome.

EPA is interested in assessing the likely costs and benefits of well-run citizen monitoring programs. We are interested in determining how these programs contribute to improved cost effectiveness in problem identification and trend assessment. We also want to investigate the feasibility of incorporating citizen monitoring groups into the states' formal water body assessment process.

One of our major projects for 1989 is to develop guidance for model state water monitoring programs, and this would be a great opportunity to outline specifically the role of citizen monitoring. The proceedings of this conference will provide state and EPA managers with better understanding of how volunteer data can be used to support their decisions. I encourage you to think hard over the next day of this conference, to engage your colleagues in discussion and debate on how citizen monitoring programs can be structured to meet our data needs and involve the public in environmental decision making. I welcome your interest and I look forward to hearing the results of your conference.

# Workshop Findings

1) Citizen volunteers can be a valuable resource for many types of monitoring as long as they are well managed and the program is thoroughly planned. They can assist government agencies and researchers by:

- collecting information for the characterization of a resource, i.e., baseline data to identify waters of exceptional quality for protection or to determine seasonal changes;
- providing more frequent sampling and time-variable sampling of storms and algae blooms;
- recording observations on number and size of fish kills, amount of precipitation, number of fish caught by recreational fishermen;
- ground truthing of remote sensing data;
- collecting and/or delivering samples for laboratory analysis;
- helping to assess water bodies that are not being monitored when samples or observations are needed from remote locations or from private property.

2) Volunteer monitoring programs are not a substitute for government agency responsibilities. However, citizens can be involved in planning and policy development and can assist national, state, and local officials by:

- critiquing local proposals for development;
- acting as "expert witnesses" using trend data and information on past practices and conditions in a given area;
- focusing attention on emerging issues;
- forming constituencies for legislative initiatives or political actions;
- influencing local action or ordinances.

3) Citizens can act as "watch dogs" to ensure full implementation and enforcement of environmental regulations. They can:

- inventory or "red flag" illegal pipes or discharges, dumping sites, etc.;

- provide observations of excessive erosion, failed sediment control structures, etc.;
- compile data collected for compliance with NPDES permits.

4) Volunteer monitoring provides a valuable link to the local community and an opportunity for raising public awareness of environmental issues. Adopt a Stream, Beach, Lake, etc. projects can instill a sense of stewardship and a conservation ethic in participants and help make the environment cleaner and safer.

5) Citizen volunteers can be very effective in conducting special projects such as shoreline cleanups, ground truthing for submerged aquatic vegetation, wetland inventories, and other surveys. They can help researchers by collecting samples in remote locations and by making observations at frequent intervals.

6) Volunteer monitoring is cost-effective but is not free. A well-coordinated and quality-controlled project requires dedicated professional staff support.

7) Information exchange among citizen monitoring groups can enhance current programs and facilitate expansion of new ones. Information needs include:

- a list of volunteer monitoring programs, updated annually;
- a newsletter that describes new programs, new techniques, and new educational material with a complete watershed focus that includes upland and coastal habitats;
- a standard methods manual for sampling procedures that can be used by volunteers and that meet U.S. EPA specifications;
- a coordinator handbook that includes start-up information, financing suggestions, strategies for media relations, etc.;
- a biennial national conference;
- regional workshops;
- a bibliography of materials, references, videos, films, slide shows, etc.



# ● Recommendations to EPA

1) Publicly endorse and encourage the use of citizen volunteers to collect and process information for assessing the status of the nation's environment.

2) Adopt policies that encourage states to develop and utilize citizen monitoring programs to help carry out their mandates for environmental monitoring as delegated from EPA under the Clean Water Act and the MARPOL Act.

3) Direct regional offices and research laboratories to support citizen monitoring activities by offering technical assistance: providing quality assurance/quality control for sampling programs; training citizen volunteers in the areas of sampling techniques and protocols, data reduction, and analysis; and establishing a communication network among volunteer programs within a region.

4) Validate its endorsement and unify its approach to citizen monitoring by establishing a full-time staff position, directly reporting to the Administrator of the Office of Water, with the primary responsibility for coordinating and enhancing citizen monitoring programs throughout the country.

To carry out these recommendations, EPA should take the following actions:

## **Public Endorsement**

1) Highlight successful citizen monitoring programs through national promotions. This could involve press releases, feature articles in resource management magazines and journals as well as in-house publications, and other types of recognition.

2) Commend current citizen monitoring programs by issuing letters of commendation recognizing each program's contributions to the knowledge and understanding of the environment.

3) Sponsor annual conferences for information exchange among citizen monitoring programs. This should alternate from year to year between a national conference focusing on professional development of program managers, and a series of regional workshops to provide training and encourage networking among programs in the same region in the country.

4) Sponsor a national networking newsletter with briefs on new programs and techniques, and notices of workshops and meetings.

## **Policy Development**

1) Authorize states to use some portion of the federal funds provided under appropriate sections of the Clean Water Act for developing and implementing citizen monitoring programs. Encourage states to use volunteer monitoring results as part of the biennial State of States' Waters Reports.

2) Request each state to designate a contact person to work with volunteer citizen monitoring program coordinators in that state, and encourage the states to recognize that this is more than a nominal designation—that a substantial amount of effort is required to develop and manage citizen monitoring programs and effectively utilize the data generated by such programs.

3) Develop a guidance document for state program managers with practical advice to assist them in successful recruitment of volunteers and management of citizen monitoring programs.

### **Technical Support**

- 1) Request that the Office of Research and Development provide guidance to regional ESD laboratories and research laboratories on the types of activities that are appropriate for citizen monitoring programs. Such technical support activities may include training volunteer program coordinators, demonstrating lab techniques, providing statistical analysis and data management, analyzing samples, assisting with quality assurance, and developing new techniques.
- 2) Develop training manuals and seminars for training citizen volunteers in sample collection and analysis; data reduction, analysis, and interpretation; and effective communication of results to resource managers and the public.
- 3) Develop a standard methods manual that is appropriate for volunteer sampling and analytical procedures and is written in clear, concise language.

### **National Coordinator**

The person filling the position of national coordinator for citizen monitoring programs should have a formal background in environmental sciences and experience in community organizing for public service. This person would be more than a public participation staff person. His/her responsibilities would include:

- 1) enhancing opportunities for citizen monitoring programs within EPA headquarters and among the regional offices;
- 2) fostering communication among citizen monitoring projects and among federal agencies (i.e., EPA, NOAA, Fish & Wildlife Service, Army Corps of Engineers, TVA, Department of Agriculture, and others);
- 3) Forging new links between citizen monitoring and EPA program initiatives in fresh water, estuarine, and marine environments around the country;
- 4) Providing technical assistance to states and EPA regional offices. Upon request, working with local managers to help them plan, structure, and initiate volunteer monitoring programs that are tailored to the needs of the local region.