Department of Environmental Protection and the Environmental Protection Agency Sample Flyers and Brochures

Starting Out in Volunteer Water Monitoring

What is volunteer water monitoring?

Across the country, volunteers monitor the condition of streams, rivers, lakes, reservoirs, estuaries, coastal waters, wetlands, and wells.

They do this because they want to help protect a stream, lake, bay or wetland near where they live, work, or play. Their efforts are of particular value in providing quality data and building stewardship of local waters.

Volunteers make visual observations of habitat, land uses, and the impacts of storms; measure the physical and chemical characteristics of waters; and assess the abundance and diversity of living creatures—aquatic insects, plants, fish, birds, and other wildlife. Volunteers also clean up garbagestrewn waters, count and catalog beach debris, and become involved in restoring degraded habitats. The number, variety, and complexity of these projects are continually on the rise.

Volunteer monitoring programs are organized and supported in many different ways. Projects may be entirely independent or may be

associated with state, interstate, local, or federal agencies;

ederal agencies;
with environmental organizations;
or with schools and universities.
Financial support may come from government grants, partnerships with business, endowments, independent fundraising efforts, corporate donations, membership dues, or a combination of these sources.

Volunteers Provide Quality Data

Many volunteer groups collect data that supplements the information collected by state and local resource management or planning agencies. These agencies might use the data to:

- screen water for potential problems, for further study or for restoration efforts
- establish baseline conditions or trends for waters that would otherwise go unmonitored
- evaluate the success of best management practices (BMPs) designed to mitigate problems

In general, the volunteer monitoring program should work cooperatively with state and local agencies in developing and coordinating its technical components. To ensure that its data are used, the monitoring program should also develop a strong *quality assurance project plan* (QAPP) that governs how volunteers are trained, how samples are collected and analyzed, and

Volunteers Most Commonly Monitor	
Water temperature Flow/water level	
Dissolved Oxygen Turbidity	
Macroinvertebrates Secchi transparency	- - -
Phosphorus Bacteria	
Source: Directory of Volunteer Environmental	

Source: Directory of Volunteer Environmental Monitoring Programs, 5th Edition



Participating in a volunteer program that provides data to be used by government agencies will usually require that you take part in formal training sessions and commit to a regular schedule of sampling.

If you are interested in learning about your local waterway and educating others, your time commitment may be less and any training will probably be less formal. how information is stored and disseminated.

Volunteers Build Stewardship of Local Waters

By educating volunteers and the community about the value of local waters, the kinds of pollution threatening them, and how individual

and collective actions can help solve specific problems, volunteer monitoring programs can:

- make the connection between watershed health and our individual and collective behaviors
- build bridges among various agencies, businesses, and organizations
- create a constituency for local waters that promotes personal and community stewardship and cooperation

Volunteer groups whose primary purpose is education and constituencybuilding generally adopt simple, easy-to-use assessment methods and may not need to develop a stringent quality assurance project plan.

How do you get started as a volunteer monitor?

Determine your personal goals.



Ask yourself why you want to become a volunteer monitor. Do you want to provide high-quality data to be shared with state and local government agencies, or are you more interested in helping local students . learn about the environment? Do you want to monitor a specific stream in your neighborhood or are you willing to be assigned a site by your county resource management agency?

Participating in a volunteer program that provides data to be used by government agencies will usually require that you take part in formal training sessions and commit to a regular schedule of sampling (usually weekly, monthly, or seasonally, depending on the project). If you are more interested in learning about your local waterway and educating others, your time commitment may be less and any training will probably be less formal.



The National Directory of Volunteer Environmental Monitoring Programs, published by the U.S. Environmental Protection Agency (USEPA), can help you locate existing groups nearby and around the country and help you learn about the kinds of monitoring taking place. In addition, USEPA's Adopt Your Watershed site on the World Wide Web can help you link up with volunteer groups in your watershed (see back page).

Another good place to start is with your local or state environmental protection, natural resource, parks, or fish and game agency. Even if it does not sponsor a volunteer program, the agency may be aware of other programs or groups you can join. Other potential sponsors or sources of information include:

- local community-based groups such as civic or watershed associations, garden clubs, universities, and activist organizations
- national environmental organizations with chapters in your area
- regional offices of federal agencies such as USEPA, the US Department of Agriculture's Extension Service, the U.S. Park Service, and the U.S. Fish and Wildlife Service

Once you locate volunteer monitoring groups, you will probably find that they offer a variety of opportunities. You might become involved in collecting samples, analyzing the results in a laboratory, developing ways to present data, writing reports, speaking to local groups about water resource issues and the volunteer project, producing a newsletter, fundraising, or recruiting and training new volunteers. You might also become involved in organizing stream cleanups, planting trees, and other habitat restoration activities. Chances are you will find opportunities that suit your interests and skills.

If you can't locate a local group, consider starting one yourself.

If you decide to start your own program, you'll need to do some basic research to determine how to proceed. To help your research, develop a list of questions that you can discuss with other volunteer program coordinators. For example:

- what relationships does the program have with state and local agencies, local businesses, schools and colleges, other groups?
- what kind of monitoring does the program conduct?
- what are the program's monitoring costs? How is the program funded?
- how are volunteers recruited, trained, and retained?
- how is the quality of the data ensured? Does the program have an approved quality assurance plan?
- what reference materials, training aids, and methods manuals do they recommend?

Starting a volunteer monitoring program is not a simple task. You will need money for equipment and possibly for staff; appropriate meeting, training, and lab facilities; a network of knowledgeable people (such as educators, extension agents, local government representatives, etc.) who are interested in your project and willing to advise and help out; connection to (or sponsorship by) potential data users who can help you plan your project so that it meets *thei*r needs as well as your own; and organizational skills to manage and maintain the project. Most of all, you will need time to make contacts in the community, design your monitoring plan, develop training sessions, recruit volunteers, revise the program as it matures, raise funds, analyze the data, and report back to the volunteers and the community.

Here are some of the lessons learned by other volunteer programs:

Start small. A pilot project that serves to test out methods, training sessions, and organizational skills can keep you from being overwhelmed and allows you to evaluate and refine your project before moving on to more ambitious efforts.

Keep your goals—and those of your volunteers—realistic. Chances are slim that your data will ever be used in court to stop a polluter. Data collected for such regulatory purposes requires a very high degree of quality assurance. Most volunteer data is used to educate the community and to screen for potential problems.

Planning pays off. Beware of collecting a year's worth of data and then finding that you have no idea how to analyze it, that the methods you used are not consid-

ered valid, or that you sampled sites in the wrong locations.

Make connections. The more people you talk to in your community and within local and state agencies, the more friends and supporters your program will have. Include potential data users in all phases of your project's development.

Develop volunteer leadership. Volunteer leaders within a project provide the vision for setting goals and the commitment to achieve them. They also enable a



As you start out, connect with potential users of your data to ensure that your project meets their needs as well as yours.

Some USEPA resources on theWorld Wide Web...

Office of Water Homepage: www.epa.gov/ow

Wetlands, Oceans, and Watersheds Homepage: www.epa.gov/owow

Monitoring Water Quality Homepage: www.epa.gov/owow/monitoring

Volunteer Monitoring Homepage: www.epa.gov/owow/monitoring/ vol.html

Adopt Your Watershed: www.epa.gov/surf/adopt/ SEPA The volunteer Monitor's Guide To Audity Assurance

Project Plans

Various USEPA documents, such as this quality assurance guide, can help programs that are starting out in volunteer monitoring. project to develop and grow without stagnating. Build into your monitoring project plenty of opportunities for volunteers to develop as leaders.

Pamper your volunteers. Volunteers give up their free time to come to meetings, attend training sessions, and trudge out to monitoring sites. Provide social opportunities and reward

volunteers for a job well done.

Use your data. Report findings to volunteers and to the community. Help volunteers present monitoring results at fairs and town meetings. Send your findings to your contacts in state and local government. Create a newsletter or data report and let the world see what you've accomplished.

Volunteer Monitoring Resources

USEPA supports volunteer monitoring by sponsoring national conferences. publishing methods manuals, producing a nationwide directory of volunteer programs, and funding a national newsletter. The Volunteer Monitor (see resource box for information on subscribing to this publication). Volunteer coordinators in the 10 EPA Regional offices provide some technical assistance for local programs and help coordinate regionwide conferences. The Regions are also responsible for grants to the states that can be used, in part, to support volunteer monitoring programs that help assess nonpoint sources of pollution or that serve to educate the public about nonpoint source issues.

For more information on USEPA's volunteer monitoring program, or to obtain any of the documents listed in the resource box, contact Volunteer Monitoring Coordinator, USEPA (4503T), 1200 Pennsylvania Avenue NW, Washington, DC 20460.

Volunteer monitoring resources available from USEPA

National Directory of Citizen Volunteer Environmental Monitoring Programs, Fifth Edition. EPA 841-B-98-009.

Proceedings of the Sixth National Citizen's Volunteer Water Monitoring Conference: EPA 841-R-01-001, June 2001.

Volunteer Estuary Monitoring: A Methods Manual. Available only on the Web at www.epa.gov/owow/estuaries/ monitor

Volunteer Lake Monitoring: A Methods Manual. EPA 440/4-91-002, December 1991. Available only on the Web at www.epa.gov/owow/monitoring/ lakevm.html.

Volunteer Monitor's Guide to Quality Assurance Project Plans. EPA 841-B-96-003, September 1996. Volunteer Stream Monitoring: A Methods Manual. EPA 841-B-97-003, November 1997

Volunteer Wetland Monitoring: An Introduction and Resource Guide. EPA 843-B-00-001, December 2001.

The Volunteer Monitor, newsletter, partially funded under cooperative agreement by the USEPA, is published twice yearly. This newsletter facilitates the exchange of ideas, monitoring methods, and practical advice among volunteer monitoring groups across the country. Subscriptions are free. Available on the Web at www.epa.gov/ owow/monitoring/volunteer/ vm_index.html or contact the editor at ellieely@earthlink.net.

United States Environmental Protection Agency

Office of Water (4503T) Washington, DC 20460

EPA 841-F-02-004 August 2002



GIVE YOUR LAKE THE BLUES!

Protecting Your Lake from Nonpoint Source Pollution

Lake Water Quality, Watersheds, and Nonpoint Source Pollution

A lake's water quality reflects what is happening in its surrounding watershed. A watershed includes all the land, or drainage area, that drains into a stream, lake or other waterbody. Nonpoint source (NPS) pollution occurs when water (i.e. stormwater, snowmelt, water from a garden hose) flows throughout the watershed, picking up pollutants and depositing them into water resources. Common types of NPS pollutants include phosphorus and nitrogen in lawn and garden fertilizers, pet waste, phosphorus and bacteria from septic systems, oil and grease from parking lots, and sediment from construction activities and soil erosion.



How Does NPS Pollution Affect Lake Water Quality?

The combined effect of NPS pollutants such as phosphorus, sediment and bacteria result in degraded water quality and loss of recreational use and wildlife habitat. This accelerated degradation as a result of human activity in the watershed is called "cultural eutrophication".

- Excessive nutrients such as phosphorus stimulate algal and plant growth, limiting the recreational use of the lake (fishing, swimming and boating) and degrading wildlife habitat.
- Sediment can cause serious damage to the lake by causing turbidity and filling-in sensitive habitat that is needed for aquatic life. It also transports phosphorus.
- Bacteria from failing or substandard septic systems, pet waste, and waterfowl often cause swimming beach closures.

This information is available in alternative format by calling our ADA Coordinator at (617) 574-6872. Produced by the Massachusetts Department of Environmental Protection, Division of Watershed Management, Nonpoint Source Program.

Is There a Solution to NPS Pollution?

Cumulatively, watershed residents can have the greatest impact on the health of a lake. Steps to prevent or reduce NPS pollution can be simple and inexpensive. Preventing and reducing NPS pollution is the key to improving lake water quality. Every little bit helps!

Best Management Practices (BMPs) are activities that prevent nonpoint source pollution or mitigate the effects of NPS. It is easier and more cost effective to prevent pollution than to restore a degraded resource. BMPs can be structural, such as planting a buffer strip, or non-structural, such as analyzing lawn soils prior to applying fertilizer. Some simple and cost effective BMPs for residents include:

Encourage Infiltration and Control Sedimentation

- Minimize impervious surfaces such as driveways and parking lots to encourage infiltration.
- Slow or divert stormwater runoff toward vegetated areas where water can seep into the ground.
- Mulch and seed exposed soils to eliminate erosion.
- Wash cars over pervious surfaces, such as lawns, not over driveways, and wash undercarriages at a commercial car wash facility.

Reduce and Eliminate Nutrients and Bacteria

- Plant vegetation around driveways, shorelines and on slopes. The vegetation will absorb nutrients, filter out pollutants and trap sediment.
- Keep yard waste such as grass clippings and leaves out of the lake, storm drains, and off streets. Although yard waste is natural, when it decomposes it becomes high in nutrients.
- Reduce or eliminate fertilizer application, use organic, no-phosphate or slow-release fertilizer. To determine the phosphorus content in a fertilizer, look at the middle number in the formula on the package (i.e. Formula 16-4-8). Also, have your soil tested (Call the UMASS Extension Soil Testing Lab at (413) 545-2311 or download a soil test order form at http://www.umass.edu/plsoils/soiltest). You may not need to add fertilizer.
- Use phosphate free or low phosphate (less than 1%) automatic dishwashing detergents. Phosphate content in various dishwashing detergents sold in Massachusetts ranges from 0% up to 8.7% by weight. Gel detergents tend to have less phosphorus than powder detergents.
- Maintain septic tanks with regular pumping and inspection at least every 3-5 years.
- Pick up pet waste and dispose of it in the trash.
- Establish a vegetated buffer strip along shorelines to discourage waterfowl, such as geese, and avoid feeding them. The average goose will produce one pound of droppings a day!

For more information contact DEP's Regional Nonpoint Source Coordinators:

Northeast: Rosalia Barber (978) 661-7816 rosalia.wollenhaupt@state.ma.us

Central: Brian Duval (508) 849-4027 <u>brian.duval@state.ma.us</u> Southeast: Jeff Brownell (508) 946-2702 jeffrey.brownell@state.ma.us

Western: Tracey Miller (413) 755-2162 tracey.miller@state.ma.us

When you fertilize the lawn, <u>Remember</u> you're not just fertilizing the lawn.



It's hard to imagine that a green, flourishing lawn could pose a threat to the environment, but the fertilizers you apply to your lawn are potential pollutants! If applied improperly or in excess, fertilizer can be washed off your property and end up in lakes and streams. This causes algae to grow, which uses up oxygen that fish need to survive. So if you fertilize, please follow directions and use sparingly.



The Massachusetts Department of Environmental Protection, One Winter Street, Boston, MA 02108

It's up to all of us to make it happen. In recent years, sources of water pollution like industrial wastes from factories have been greatly reduced. Now, more than 60 percent of water pollution comes from things like cars leaking oil, fertilizers from farms and gardens, and failing septic tanks. All these sources add up to a big pollution problem. But each of us can do small things to help clean up our water too—and that adds up to a pollution solution!

Why do we need clean water?

Having clean water is of primary importance for our health and economy. Clean water provides recreation, commercial opportunities, fish habitat, drinking water, and adds beauty to our landscape. All of us benefit from clean water—and all of us have a role in getting and keeping our lakes, rivers, streams, marine, and ground waters clean.

What's the problem with fertilizers?

Fertilizer is a "growing" problem for lakes, rivers, and streams, especially if it's not used carefully. If you use too much fertilizer or apply it at the wrong time, it can easily wash off your lawn or garden into storm drains and then flow into lakes or streams. Just like in your garden, fertilizer in lakes and streams makes plants grow. In water bodies, extra fertilizer can mean extra algae and aquatic plant growth. Too much algae causes water quality problems and makes boating, fishing, and swimming unpleasant. As algae decay, it uses up oxygen in the water that fish and other wildlife need.

Clean Water Tips: How can you fertilize and help keep our waters clean?

Use fertilizer sparingly. Many plants don't need as much fertilizer or need it as often as you might think.

Don't fertilize before a rain storm.

Consider using organic fertilizers. They release nutrients more slowly.

Have your soil tested before applying fertilizers to your lawn and gardens. A standard soil test costs \$8.00. You may not need to add any fertilizer. (Call the UMass Extension Soil Testing Lab at 413/ 545-2311 or download a soil test order form at www.umass.edu/ plsoils/soiltest.)

To find out more about the impacts of nonpoint source pollution and what you can do to prevent it, call the numbers listed below.







617/626-1540

617/626-1700

SEPA New England 617/918-1111



617/626-1395





617/626-1000

This information on nonpoint source pollution is brought to you by the Department of Environmental Protection, the Executive Office of Environmental Affairs³ Massachusetts Watershed Initiative, Coastal Zone Management, the Department of Environmental Management, the Department of Fisheries, Wildlife, and Law Enforcement, the Department of Food and Agriculture, and the Metropolitan District Commission working to reduce nonpoint source pollution through public education. This project was funded by the U.S. Environmental Protection Agency with a federal 104(b)(3) grant.

When your pet goes on the lawn <u>Remember</u> it doesn't just go on the lawn.



When our pets leave those little surprises, rain can wash pet waste and bacteria into our storm drains that can pollute our waterways. So what to do? Simple! Dispose of it properly. Then that little surprise gets treated like it should.



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What's the problem with pet waste?

It's a health risk to pets and people, especially children. It's a nuisance in our neighborhoods. Pet waste is full of bacteria that can make people sick. If it's washed into the storm drain and ends up in a lake, stream, or marine water, the bacteria ends up in shellfish. People who eat those shellfish can get very sick. The waste produced by cats and dogs in the Charles River Watershed adds up to nearly 3 tons per day! Unless people take care of it, the waste enters our water with no treatment.

Clean Water Tips: How can you get rid of pet waste and help keep our waters clean?

Never dump pet waste into a storm drain or catch basin, since the average dog dropping produces **3** *billion* fecal coliform bacteria.

If your community doesn't regulate pet waste, (e.g. "scooper" law), try to make it a priority of your local governing body. Encourage your community to adopt a "pooperscooper" ordinance.

Scoop up and seal pet wastes in a plastic bag. Dispose of properly, in the garbage.

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When you wash your car in the driveway, <u>Remember</u> you're not just washing your car in the driveway.



All the soap, scum, and oily grit runs along the curb. Then into a storm drain and directly into our lakes, rivers, and streams. And that causes pollution which is unhealthy for everyone. So how do you avoid this whole mess? Easy! Wash your car on the grass or gravel instead of the street. Or better yet, take it to a car wash where the water gets treated or recycled.

 \ddot{r} The Massachusetts Department of Environmental Protection One Winter Street Boston, MA 02108

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What's the problem with car washing?

There's no problem with washing your car. It's just how and where you do it. The average driveway car wash uses a total of 116 gallons of water! Most commercial car washes use 60 percent less water in the entire washing process than a simple home wash uses just to rinse off a car. Most soap contains phosphates and other chemicals that harm fish and water quality. The soap, together with the dirt and oil washed from your car, flows into nearby storm drains which run directly into lakes, rivers, or marine waters. The phosphates from the soap can cause excess algae to grow. Algae look bad, smell bad, and harm water quality. As algae decays, it uses up oxygen in the water that fish and other wildlife need. Clean Water Tips: How can you wash your car and help keep our waters clean?

Use soap sparingly. Use a hose nozzle with a trigger to save water.

Pour your bucket of soapy water down the sink when you're done, not in the street. Or wash your car on a grassy area so the ground can filter the water naturally.

Best of all, take your car to a commercial car wash, especially if you plan to clean the engine or the bottom of your car. Most car washes reuse wash water several times before sending it to the sewer system for treatment.

To find out more about the impacts of nonpoint source pollution and what you can do to prevent it, call the numbers listed below.



617/626-1250



617/626-1540



617/626-1700





617/626-1395





617/626-1000

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When your car leaks oil on the street, <u>*Remember*</u> it's not *just* leaking oil on the street.



Leaking oil goes from car to street. Then it gets washed from the street into the storm drain and into our lakes, rivers, and streams. Now imagine the number of cars in the area and you can imagine the amount of oil that finds its way from leaky gaskets into our water. So please, fix oil leaks.

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What's the problem with motor oil?

Oil doesn't dissolve in water. It lasts a long time and sticks to everything from beach sand to bird feathers. Oil and petroleum products are toxic to people, wildlife, and plants. One quart of motor oil can pollute 250,000 gallons of water, and one gallon of gasoline can pollute 750,000 gallons of water! Oil that leaks from our cars onto roads and driveways is washed into storm drains, and then usually flows directly into a lake or stream. Used motor oil is the largest single source of oil pollution in lakes, streams, and rivers. Americans spill 180 million gallons of used oil each year into the nation's waters. This is 16 times the amount spilled by the Exxon Valdez in Alaska!

Clean Water Tips: How can you fertilize and help keep our waters clean?

Check for oil leaks from your vehicle regularly and fix them promptly!

Never dispose of oil or other engine fluids down the storm drain, on the ground, or into a ditch, Recycle used motor oil. For more information on recycling, contact the closest DEP regional office.

Buy recycled oil to use in your car,

Use ground cloths or drip pans beneath your vehicle if you have leaks or are doing engine work. Clean up spills!

To find out more about the impacts of nonpoint source pollution and what you can do. to prevent it, call the numbers listed below.







617/626-1540

617/626-1700





617/626-1395



617/292-5500

Untershed

617/626-1000

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