

2010 Massachusetts Envirothon
Current Issue Problem

Groundwater Protection

Background

Groundwater is perhaps the least well-known part of the water cycle. Yet it plays a vital role in the health of ecosystems and the sustainability of human communities.

Groundwater moves slowly compared to water on the surface and in the atmosphere. As a result, the consequences of our use and abuse of groundwater can take a long, long time to become apparent. Good stewardship requires planning.

Protecting groundwater quality and quantity is an increasing concern in communities around the globe. In your Envirothon presentation you will focus on groundwater issues right in your own community.

Massachusetts municipalities often undertake planning processes to guide decisions. Protection of water resources is often an integral part of this planning. Plans are important documents to consider in developing a proposal for groundwater protection. Your town's Comprehensive Plan (sometimes called a Master Plan) is one example. Some cities and towns in urbanizing watersheds have also begun to develop plans to mitigate the effects of land uses on the watershed's water budget in response to the EPA Stormwater Phase II regulations.

In 2007, the Massachusetts Department of Environmental Protection (MassDEP) published *Water Resource Management Planning: A Guide for Towns and Communities* (<http://www.mass.gov/dep/water/laws/iwrmp.pdf>) to help municipalities in the planning process. This Guide presents considerations for "integrated water resource management planning" that addresses three ways that human communities interact with the watershed's water cycle: **drinking water, wastewater, and stormwater**. The guide will also be a valuable resource as you plan your recommendations for how your community should address human and ecosystem needs.

MassDEP offers an array of grants and loan assistance to municipalities that want to protect groundwater resources. Your town or city could apply for such assistance.

The Problem

Your team has been asked to help your municipality to decide whether to apply to the MassDEP for a low-interest loan that will address local needs related to groundwater protection.

The town finance committee is deciding whether it makes sense to apply for a loan. They are weighing needs for groundwater protection against other current needs in the budget. Your job is to provide them with information about the groundwater resource in town that will help them with this decision. This includes providing background on local groundwater resources and associated issues and identifying next steps that would address what you believe to be the highest priority issue.

Your presentation to the Envirothon judges is the presentation you would give to members of your town's finance committee.

Because groundwater resources are poorly understood by the public, and because the finance committee knows finances but knows very little about water resources, part of your task will be to educate them about the nature of groundwater resources and their importance for ecological health as well as for human use.

Even though the town will get a good deal on the loan, the loan will still have to be paid back. You know that the finance committee is sympathetic to the idea of protecting water resources for the long term, but because of the weak economy, they also think that the town should only take out a loan if there is a real, pressing need this year. You will have to look for the most critical needs, and make a compelling case for any actions you believe are warranted.

In your presentation, you should:

Provide an overview of the watershed's surface and geological characteristics and groundwater resources, including the importance of groundwater for ecological health and human use.

Explain how human activities -- including drinking water withdrawals and handling of wastewater and stormwater -- affect the water budget and water quality in your watershed.

Identify the most critical groundwater protection issue, and identify next steps that should be taken to address it for which a loan or grant might be sought. Your recommendations should:

Show that you are familiar with local plans for groundwater resource protection (e.g. municipal comprehensive (master) plan, EPA Phase II Stormwater Plan, and/or Water Supply Plan). Your recommendations should either be aligned with the relevant plan(s), or identify needed changes in the plan(s).

Show that you are familiar with the MassDEP's *Water Resources Management Planning* guide. In particular, you should explain how the actions you propose would affect drinking water, wastewater, stormwater, and water dependent ecosystems.

Show that you are aware of other pressing issues the town must address in its budget this year.

Show that you have considered long-run energy and climate change implications of groundwater issues as well as long-run economic considerations.

Provide your best judgment on how the community should prioritize this issue in a year of very tight budgets.

Some Tips for Your Presentation

How it works:

- You will make your presentation to a panel of five to eight judges. Their job is to listen, ask good questions, assess your work, and give you feedback on your research, your proposal, and your presentation.
- You will have 15 minutes for your presentation, followed by a 10 minute period when the judges can ask you questions.
- Five of the judges will give you a number score. An average will be generated to give you a score for the competition.
- All the judges are asked to give you helpful comments. Copies of the score and review sheets will be sent to your coach.
- Your coach and team alternate will be able to observe the presentation.
- You will be presenting in a tent, outdoors. The day of the Envirothon is often surprisingly windy and cold. Dress accordingly!

Practice your presentation! Practice makes it easier for you to be poised and at ease in your presentation, including being able to make good eye contact and speak naturally with the judges.

Show the judges how you know what you know, and how you came to your conclusions. Tell them about where you visited, who you talked to, what documents you researched.

Use visual aids, especially maps, to introduce the judges to your community and its resources and issues. Mount your visual aids on sturdy boards in case of wind.