

MASSACHUSETTS GROUND WATER CONDITIONS

Ground Water Importance: Massachusetts has had a strong commitment to water supply protection since the early 1980s. One-third of the state's population, more than 2 million people, is served by 1,600 community public supply wells. The Massachusetts Department of Environmental Protection (DEP) has had an EPA approved wellhead protection plan in place since 1990 and was the first state to receive EPA approval of a Comprehensive Source Water Protection Program in 1995.

Since the 1980s, the development of all new potable ground water sources, as well as the expansion of existing sources, has required the completion of Wellhead Protection Area delineations and the implementation of local protection measures. Ground water systems meeting DEP's most stringent wellhead protection criteria have had three times fewer detections of volatile organic compounds (VOCs) than other ground water systems.

Where is it? The greatest quantity of ground water is withdrawn from unconfined sand and gravel aquifers of less than 150 feet in depth.

How good is the water? Massachusetts provides good quality drinking water to its residents. However, it is a densely populated state with a long industrial history and the shallow, transmissive aquifers are vulnerable to contamination. More than 101 communities have shut down or rehabilitated 243 sources due to contamination, most often from VOCs. Industrial land uses and commercial activities such as gas stations, dry cleaners and machine shops have all threatened public supply wells with VOC contamination. This experience has fostered strong support for water supply protection at the local level.

Costs of Contamination: The following information represents costs documented for four projects by DEP's Water Supply Contamination Correction (WSCC) Program.

| Costs to Treat Contamination | |
|------------------------------|--|
| Templeton | \$350,000 for treating 432,000 gpd |
| Easthampton | \$1.7 million for treating 5 mgd |
| Shrewsbury | \$1 million for piping to treatment plants |
| Millis | \$750,000 for treating 1.5 mgd |

The New England Interstate Water Pollution Control Commission (NEIWPCC) in a 1996 study, found that construction estimates for developing a well to serve a population of 1,000 – 3,300 (0.8 mgd) range from \$500,000 to \$1.5 million.

The estimated cost of source protection in Massachusetts, not including land acquisition, ranges from \$10,000 to \$100,000 for large ground water systems and up to \$200 for small ground water systems.

Efforts to Protect Ground Water: Massachusetts also places a great emphasis on incentives for voluntary protection, such as the monitoring waiver program and annual Drinking Water Awards Program, as well as outreach, including on-site assistance, partnerships with various organizations, DEP's *In The Main* newsletter, and the agency's Web site. Stricter standards and/or requirements for drinking water protection areas are incorporated into other state regulations, such as hazardous waste cleanup, solid waste disposal, wastewater discharge, Underground Injection Control, and Stormwater Policy.

Information from the Source Water Assessment and Protection Program (SWAP) is being used to focus and prioritize at-risk systems for early intervention source protection assistance.

The Massachusetts Watershed Initiative, a multi-agency, five-year cyclical program based on the state's 27 river basins, is assessing water resources and impacts to water resources and implementing actions to protect and improve them. Ground water withdrawals and SWAP are being integrated into the Watershed Initiative.

What Else is Needed? Despite a strong commitment to water supply protection at both the state and local levels in Massachusetts, much work remains.

We have noticed an increase in trace amounts of VOCs overall due to historical land uses in the state. SWAP is identifying potential contaminant sources of VOCs and updating GIS databases to map that information.

In 2002 drought conditions existed in many areas of Massachusetts due to low precipitation levels. Expanded water conservation efforts are needed.