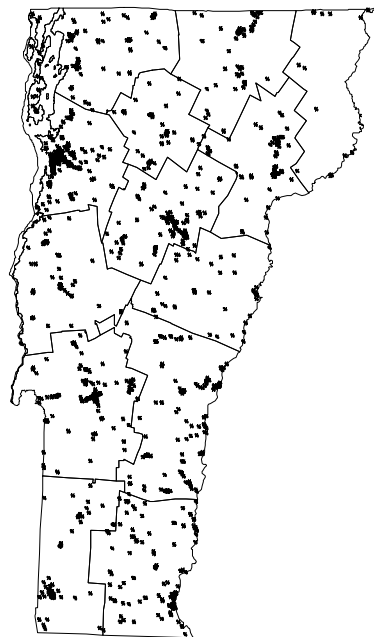


VERMONT GROUND WATER CONDITIONS

Ground Water Importance: Ground water is vital to Vermont's livelihood. Although Lake Champlain supplies water to approximately 19% of the population, the majority of drinking water is supplied from ground water sources. Furthermore, ground water is used to support a variety of commercial, industrial, and agricultural activities, including ski resorts and family farms.

How Good Is It? The quality and quantity of ground water varies due to both natural and human influences. No comprehensive studies have been completed on the quality of the ground water. Generally the quality is considered to be excellent and this is supported by the limited number of public water supplies which have detected contamination. Although Vermont's historically rural landscape has precluded large-scale contamination of ground water, nearly 2,500 contaminated sites have been identified which threaten Vermont's ground water. As the population and industrial development increase, the ground water quality and quantity will be threatened further unless the ground water is properly protected.



Hazardous Waste Sites in Vermont

Costs of Contamination: Each year, an estimated \$5-10 million is spent for cleanup of contaminated ground water at publicly and privately funded cleanup sites. Over 75% of the sites are associated with above ground and underground storage tanks (UST). At one site, a leaking UST has contaminated 27 private wells and threatens an additional 80 wells.

Several well-known examples of contaminated ground water exist in the state: the Pine Street Barge Canal in Burlington, the Unifirst site in Williamstown, and unlined landfills across the state. Many of these hazardous sites have not only contaminated ground water, but also private and public drinking water sources. The cleanup of public drinking water supplies is especially costly due to the difficulties in locating ground water in adequate quantities to serve the community. As an example, the Unifirst Site in Williamstown required the replacement of a public water supply well, extending water lines to several homes served by private wells which were contaminated, and the installation of a ground water collection and treatment system. The operation and maintenance costs of the collection and treatment system alone totals \$75,000 per year. The cost of developing and installing a new ground water source for a public water supply is estimated between \$500,000 and \$1,000,000.

Although historic industrial practices have polluted ground water, other activities, such as improper disposal of household hazardous waste, leaking home heating oil tanks, inappropriate use of pesticides and fertilizers, excessive road salting, and failing septic systems can also lead to ground water pollution. Many of these problems can be prevented through education and improved management practices.

Efforts to Protect Ground water: Vermont is working hard at the state, regional, and local level to protect ground water. Many communities have local zoning ordinances to protect public drinking water supplies. The majority of Public Community Water Systems have plans in place to protect their water sources. Regional planning commissions are

working to provide information on ground water protection to their communities. At the state level, the Agency of Natural Resources administers permit programs designed to protect ground water and public health, provides education on ground water issues, and manages the cleanup of contaminated sites. The Department of Agriculture, Food, and Markets have established Acceptable Agricultural Practices to protect ground water and surface water. They also monitor numerous drinking water wells for pesticide and nitrate contamination to protect public health and determine ground water vulnerability to contamination. Numerous other state agencies, such as the Department of Health, also provide services to protect ground water and public health. The coordination of many of these activities occurs through the Ground water Coordinating Committee, an inter-agency organization, which is managed through the Agency of Natural Resources.

What Else is Needed? Vermont's major needs are for a statewide ground water quality and quantity monitoring network, geologic maps (i.e., fracture traces, bedrock and surficial geology, and aquifer maps), ground water education and outreach for schools and planning commissions, and GIS locations of potential and actual sources of ground water contamination. Many of these activities are being pursued; however, they have an extremely long timeframe for completion or are limited in scope.

Although the state has the necessary statutory and regulatory authority to complete these activities, it is hampered by the lack of adequate funding and in turn the personnel to carry out these tasks. A dedicated source of long-term funding for ground water projects would allow Vermont to identify and prioritize ground water projects with state, regional, and local entities.

To Protect ground water, additional monetary and personnel resources are needed to:

- ◆ Establish a monitoring and evaluation program of the ambient ground water quality and quantity
- ◆ Assist municipalities and regional planning commissions with plans and programs to protect ground water and drinking water
- ◆ Educate children and the general public on ways to protect and conserve ground water resources
- ◆ Map ground water and geologic characteristics to provide for protection and planning at the state, regional, and local level
- ◆ Improve existing GIS data layers and create new data layers on potential contaminants, geology, etc.
- ◆ Provide Internet access to all of this information!

Preliminary estimates for completing this work are \$250,000 annually.