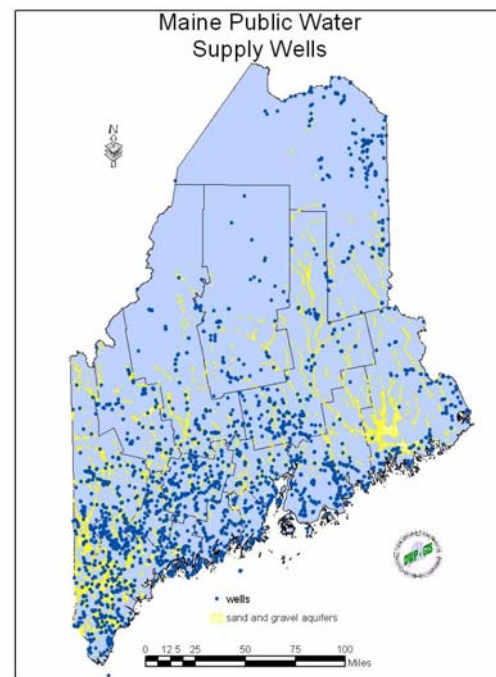


## MAINE GROUND WATER CONDITIONS

**Ground Water Use in Maine:** Ground water is one of Maine's most important natural resources. Maine is largely a rural state, with hundreds of small towns and "villages" separated by dense woods, deep rivers, and mountains or hills, so large public water suppliers are rare. Approximately 750,000 (60%), of Maine's residents and a large percentage of its annual visitors (Maine is, after all, "Vacationland") rely on ground water for drinking water, sanitary uses, and fire protection. Private wells supply drinking water to approximately 533,000 people, about 42% of Maine's residents, while 217,000 people (about 18% of Maine's population) are served by community water supplies that utilize ground water as a primary source. Ground water is also a valuable resource for irrigating crops and golf courses, for bottled water, and for production waters in industrial and commercial processes. Most of Maine's public water supplies use ground water as their primary source. There are currently 561 wells serving community systems, 426 serving non-transient water systems (mostly schools), and 1493 wells served by transient systems. Over 400,000 wells provide water for private homes and other non-public uses.

**Ground Water Occurrence:** Maine's geology is one of generally bedrock overlain by up to 300 feet of surficial material – glacial till or outwash, or marine sediments deposited during the last retreat of glacial ice. Maine has two basic types of water supply wells: bedrock wells and surficial wells. Bedrock wells are usually between 150 and 800 feet deep with yields ranging from less than 1 gallon per minute to over 200 gpm, with lower yields being more common. Surficial wells are dug or drilled into the unconsolidated sediments overlying the bedrock. When drilled into sand and gravel, these wells are excellent sources of high-quality drinking water. The most productive sand and gravel deposits are esker segments – linear ridges of well-sorted sand and gravel deposited in glacial rivers that flowed beneath melting glacial ice. As illustrated on the map at right, many of these sand and gravel deposits parallel Maine's largest rivers. Yields are typically high

in these aquifers, ranging from 10 to nearly 3,000 gallons per minute for properly developed wells in coarse sediment. Some private homes and small public water systems utilize dug wells or driven points that draw water from surficial deposits. Yields from these wells can be surprisingly high but such wells are more commonly low yielding (<10 gallons per minute) and these wells can run dry in late summer.



**Ground Water Quality:** Ground water quality has historically been excellent in Maine. Given Maine's geology, and the absence of large, regional aquifer systems, contaminated wells are generally located relatively close to the pollution sources that impact them. Improperly stored or disposed chemicals, leaking underground and above ground storage tanks, landfills and other sources of contaminants, have affected many aquifers. Some wells in Maine have also been found to contain high levels of radon, uranium, antimony, iron, manganese and arsenic, generally from naturally occurring sources.

**Efforts to Protect Ground Water:** Maine has been actively protecting ground water for many years. The lead agency for ground water protection is the Maine Department of

Environmental Protection, which has regulatory authority over ground water and sources of contamination, including solid and hazardous wastes, storage of hazardous materials, including petroleum products, discharges of wastewater to ground water or surface water, and large developments, including many that store or use potential contaminants such as pesticides, fertilizers, and petroleum products. As part of a statewide GIS-linked ground water database project, the DEP has developed the Maine Ground Water Resource Database. This project ties water quality information to a spatial database. This effort includes identification and location of activities that may affect ground water quality, known contamination sites, and populations served by public and private water supply wells. The database is used to satisfy requests for water quality data, review applications submitted under the state's environmental laws, to evaluate cumulative impact, and to provide a base of potential threats to ground water quality for the DHS Drinking Water Program's Source Water Assessment Plan (SWAP).

The Maine Legislature passed two laws that enhance the protection of ground water supplies. The first, PL 761, provides public water suppliers with abutter status for local land use projects within their source water protection areas. This law included a mandate that all towns receive maps showing the location of all public water supplies and their source water protection areas; so accurate notification can take place. The second law, Chapter 302, prohibits installation of new petroleum underground storage tanks over "geologically sensitive areas". These areas include wellhead source protection areas, sand and gravel aquifers, and areas within 300 feet of an existing private well.

In addition, the Department of Human Services regulates discharges of sanitary wastewater to ground water, and oversees the State's Wellhead Protection and Source Water Assessment Programs (SWAP) through its Drinking Water Program.

Maine began implementation of a Wellhead Protection Program in 1994. Nearly all of the Non-Transient Non-Community and Community systems are participating in the Program.

Participation is voluntary, but required for any system applying for monitoring waivers. Management and contingency plans, originally planned for the final implementation period, have been delayed until the Source Water Assessments are complete.

The Drinking Water Program is completing the Source Water Assessment Program this year. It is founded on the fact that decisions about land uses near public water supplies are made locally. The purpose of the program is to ensure that when a water supply is at risk of contamination, the citizens of Maine are made aware so that appropriate steps can be taken at the local level to minimize or eliminate the risk. By implementing SWAP, the Drinking Water Program is evaluating each of the 2500 public water supply wells, assessing for each the likelihood of contamination by existing or future activities, and making the results of these studies widely available to the public. Draft Assessments have been completed for all supplies. Preliminary indications are that most sources have moderate current risk, while many have high potential future risk because they do not have ownership or legal control of their source water protection areas.

***Drought*** Maine, like much of the Northeast, suffered from an agronomic and hydrologic drought for much of the past two years. The impact of the drought was quite variable, with the most severe problems occurring to shallow public and private wells and a few coastal communities' public water supplies. Maine well drillers and DWP staff worked hard to locate and install replacement wells for many small systems whose wells went dry as water levels dropped. A survey conducted in March 2002, estimated that about 17,000 private wells had gone dry at some time during the previous nine months. Dug wells were twice as likely to have gone dry, because of their dependence on the shallow water table. Many of the rural residents whose wells were affected had very limited resources, and could not afford to have a well drilled.