

# MICHIGAN GROUND WATER CONDITIONS

**Ground Water Importance:** The state of Michigan has abundant ground water which is used for drinking, irrigation, and industrial processing. Michigan's ground water is part of the hydrologic system, and is interconnected with lakes, rivers, streams, and wetlands. Ground water baseflow sustains cold water trout streams and some small lakes, which in turn, are essential to Michigan's recreation, hunting and fishing industries.

About half of all Michigan residents depend on ground water as their primary source of fresh drinking water - either through public water supply systems or private drinking water wells. For many communities, ground water is the only possible source of fresh water for drinking. Michigan has more than 12,000 public water supplies with over 18,000 sources. Of these, approximately 10,650 are noncommunity, public water supplies with ground water as their source. There are approximately 1,150 community type systems that utilize ground water as the primary drinking water source.

Numerous industries, including food processing and other types of manufacturing, depend on ground water. Foreign companies considering Michigan locations often comment on the attractiveness of the state's water resources and the importance of clean water. Clean ground water is also important to Michigan's tourism industry. Out-of-state visitors, as well as Michigan residents, tend to avoid areas associated with pollution. For the large number of communities that market their lakes, rivers, and parklands as part of their visitor attractions, the connection between clean ground water and tourism is very direct.

In view of the importance of ground water for the state's economy and quality of life, it is essential that state, county, regional and local agencies, as well as private sector representatives, work together to protect Michigan's ground water for future generations.

**Where is it?** A vast supply of ground water traverses practically the whole state of Michigan. Of the enormous number of water supply sources in Michigan, only 65 drinking water sources have surface water intakes. However, these 65 sources provide drinking water to over 75 percent of the persons served by public water systems or about 50 percent of the state's population.

**How Good is the Water?** Ground water quality is a major concern in Michigan. While there has been some water quality degradation from point sources

and non-point sources throughout the state, water quality remains very good. This is due in part to Michigan's very aggressive environmental clean-up and remediation programs, and the state's extensive efforts to protect ground water. To date, ground water contamination has resulted in the need to replace 8,500 drinking water wells. From 1986 to present, as many as 1,559 1,899 households have had to be supplied with bottled water. Currently only 287 households require bottled water supplies. These numbers are fairly small compared to number of actual ground water drinking water supplies, but Michigan's goal is to ensure that no drinking water supplies are impacted by point sources or non-point sources of contamination.

**Cost of Contamination:** From 1989 to 2003, Michigan has authorized \$733 million for expenditures on environmental contamination activities excluding Superfund Funds. The state is proposing to spend approximately \$21 million on environmental cleanups in 2003. While most of these response actions result in the protection of ground water, they are not all ground water cleanups. The project cleanup activities range from redevelopment projects where sites of environmental contamination have redevelopment potential, to acute health and environmental projects which may include treating or removing contaminated soil and concentrated wastes or replacing contaminated water supplies. In most cases, the sites have an acute public health and/or environmental problem that need to be addressed.

**Efforts to Protect Ground Water:** Michigan has recently passed legislation (Act 148 and Act 177, P.A. 2003) designed to:

- ◆ Inventory the ground water resources of the state
- ◆ Require large volume withdrawals of ground water to be reported to the state
- ◆ Resolve disputes over ground water usage within the state

To date, however, Michigan has never enacted a single, comprehensive law which regulates all land uses with a potential for affecting ground water quality. Instead, various laws have been enacted to address specific land use activities and/or environmental features. State agencies which administer programs which help protect ground water include the following:

Department of Environmental Quality

- ◆ Environmental Science and Services Division

- ◆ Geological and Land Management Division
- ◆ Remediation and Redevelopment Division
- ◆ Waste and Hazardous Materials Division
- ◆ Water Division

Michigan Department of Agriculture

- ◆ Pesticide & Plant Pest Management Division
- ◆ Environmental Stewardship Division

Cooperative efforts are ongoing among state agencies to assure that programs complement each other but do not overlap. Efforts to link together diverse programs among state agencies for the purpose of ground water protection date back to 1984.

Michigan has two primary laws which together provide a broad legal framework and umbrella for water resources protection and environmental response: (1) Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 P.A. 451, as amended, (NREPA); and (2) Part 201, Environmental Remediation, of the NREPA. In addition, the Michigan Legislature has, over the past decades, enacted a series of environmental laws directed toward specific sources of contamination and/or types of water resources. For example, two specific laws address underground storage tanks and leaking underground storage tanks.

Part 31 of the NREPA is Michigan's primary water pollution control statute, directed to the prevention of water pollution. Part 31 of the NREPA has, in effect, a dual purpose: to protect water quality and to regulate waste disposal.

The objective of the law is to control pollution in any water, including ground water and surface water. Part 31 of the NREPA prohibits the direct or indirect discharge into the waters of the state of any substance that is or may become injurious to (1) the public health, safety, or welfare; (2) domestic, commercial, industrial, agricultural, recreational, or other uses that are being made or may be made of the waters; (3) the value or utility of riparian lands; or (4) livestock, wildlife, or plants. A state permit is required to discharge waste or waste effluent into surface water or ground water.

Part 201 of the NREPA sets forth the state of Michigan legal framework for responding to environmental contamination sites. The Environmental Remediation and Redevelopment Division is responsible for the identification, risk assessment, evaluation, and remedial actions at such sites.

The following principles are recommended for Michigan as a guide for the long-term development of state, regional, county, and local ground water protection programs:

- ◆ Citizens should have a basic understanding of ground water resources and potential sources of ground water contamination. Citizens should be directly involved in the policy-making process.
- ◆ Protecting ground water should be part of a larger process of ecosystem protection and management.
- ◆ Ground water resources should be managed in a manner that sustains their quality and quantity over the long-term, to support a sustainable state economy and quality of life.
- ◆ Future ground water management should focus on the prevention of aquifer degradation and contamination, prevention of resource depletion, and maintenance of efforts to cleanup contaminated aquifers.
- ◆ Federal, state, and local governments, as well as private organizations, should be empowered and funded to participate in ground water protection.

These principles recognize the fundamental importance of ground water protection for the future of Michigan's economy.

***What else is needed?*** Michigan Act 148, P.A. 2003 will initiate a statewide groundwater inventory in Michigan. Such an analysis for the state of Michigan will be very complex and likely very costly. It is estimated that the cost to complete an initial assessment could range from \$1.5 to \$2.0 million. Additional resources are also needed to fully implement the state's primary ground water protection program under Part 31 of the NREPA. The state estimates \$1.5 million is needed in addition to current funding for the program.