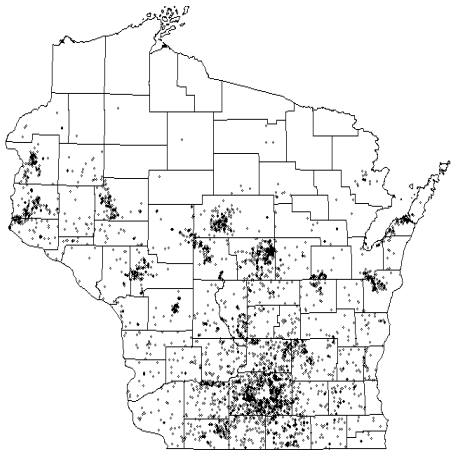
WISCONSIN GROUND WATER CONDITIONS

Importance of Ground Water to Wisconsin: About 70% of Wisconsinites rely on ground water as their only source of drinking water. At last count there were over 800,000 private wells in Wisconsin. Municipalities provide 329 million gallons of groundwater per day for domestic, commercial and industrial uses. Private wells supplying businesses and homes provided 96 million gallons per day. Wisconsin's dairy, cattle and other livestock industries use 100 million gallons of ground water per day. During the growing season, irrigation equipment withdraws about 196 million gallons of ground water every day. It all adds up to over 800 million gallons of ground water withdrawn daily. Ground water also supplies baseflow to 2,444 trout streams, 5,002 warm water streams, 15,057 lakes and 5,331,391 wetland acres. Currently, Wisconsin is experiencing declining water tables in Green Bay, Southeastern Wisconsin, and in Dane County.

Where does Wisconsin's Ground Water come from? Wisconsin's ground water reserves are held in four aquifers: the sand gravel aquifer, the eastern dolomite aquifer, the sandstone and dolomite aquifer and the crystalline bedrock aquifer. The quality and quantity of ground water varies throughout the state. For example: the north central and northeastern third of Wisconsin receive the most precipitation in the state but the area is underlain by crystalline bedrock that yields only small quantities of water. The crystalline bedrock aquifer often cannot provide adequate quantities of water for larger municipalities, large dairy herds or industries. Many of the irrigated agricultural lands in central, southern and northwestern Wisconsin use the sand and gravel aquifer – one of the best aquifers in Wisconsin. Unfortunately, because the top of the sand and gravel aquifer is also the land surface for most of Wisconsin, it is highly susceptible to human-induced pollutants such as nitrate and pesticides. In the Central Sand plain, groundwater quality is degrading baseflow in streams. Groundwater with high concentrations of nitrate is causing an increase in stream concentrations of this contaminant.

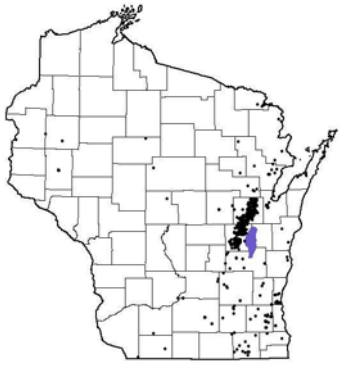
Ground Water Quality and Contamination: Nitrate is the most widespread ground water contaminant in Wisconsin. Statewide, 10% of private wells have nitrate-nitrogen levels that exceed Wisconsin's ground water enforcement standard (ES) of 10 ppm. In agricultural areas, 17-26% of wells had nitrate-nitrogen levels exceeding the ES. Fifteen municipal well systems have been required to install nitrate treatment systems at a total cost to taxpayers of over 10 million dollars.

Over 95 million dollars has been spent cleaning up hazardous waste sites in Wisconsin. Currently the state tracks over 13,000 leaking underground storage tank sites, 4,000 waste disposal facilities and 700 Environmental Repair sites. About 1200 spills are reported annually. In 1998, approximately 65% of the spills were petroleum products; another 20% were agrochemicals. The pesticide most commonly detected in Wisconsin ground water is atrazine. Forty two percent of wells sampled showed detections of triazine based compounds.



Triazine detects in Wisconsin

Naturally occurring Arsenic and radioactivity in ground water have become a concern in Wisconsin in recent years. In 2000, the WDNR sampled 3,182 public wells for arsenic. Private wells in Outagamie and Winnebago counties were also tested for arsenic in 2000. Town based results showed that 20 percent of the wells in these counties had arsenic levels greater than 10 ppb.



Arsenic Detects in private and public drinking water wells.

In Wisconsin, 52 municipal systems exceed the Maximum Contaminant Level for the radionuclides gross alpha, gross Beta, combined

radium and uranium. A population of about 525,000 is exposed to this contaminant.

Ground Water Protection Efforts

- Wellhead Protection Program: Wellhead protection areas have been delineated for all municipal wells through a statewide vulnerability assessment program. Approximately 187 wellhead protection plans have been approved in Wisconsin.

- Source Water Assessment Program: Wisconsin is in the process of delineating source water protection areas and identifying and locating potential contaminant sources for all public water supply systems. A susceptibility analysis will be done made available to all public systems.

- Nonpoint Source Program: Nutrient and pest management is promoted through the use of state funded cost share agreements with farmers. Stormwater infiltration practices standards are being developed.

- Atrazine Prohibition Areas: Farmers located within one mile of a well having atrazine levels greater than the groundwater ES are prohibited from using the pesticide.

- Wisconsin Pollutant Discharge Elimination system: Land treatment of domestic, animal or industrial waste is regulated by permit to prevent runoff to surface water or leaching of nutrients and pollutants to ground water.

- Wisconsin Groundwater Law: Comprehensive groundwater legislation passed in 1984 says that all state agencies must comply with numerical groundwater quality standards. The Groundwater Law also requires coordination of groundwater activities by different state agencies via the Groundwater Coordinating Council.

- Joint Solicitation for Groundwater Monitoring and Research Projects: Three state agencies and the University of Wisconsin System work together to select, fund and administer projects to advance groundwater understanding and protection efforts.

What Else is Needed?

- Increased ground water education throughout the state.

- Long term funding for periodic updating of Susceptibility Assessments for source water assessments program.

- Long term funding to implement a statewide groundwater monitoring strategy including surface water gauging stations.

- Additional funding targeted at determining ground water/surface water interactions and impacts on water quality and quantity.

- Funding to determine the mobility and spatial distribution of naturally occurring substances such as Arsenic or radionuclides.

- Funding for updating/improving/enhancing electronic data availability, and mapping capability, for the public.

- Funding and staff assistance for the state to inventory and properly abandon wells that are no longer used.

- Development of laboratory methods for detection of metabolites for high use pesticides.

- Development of water conservation programs.

- Funding for problem-assessment, at-risk and management practice monitoring.

- Funding to support local source water and wellhead protection efforts.

- Development of options for addressing groundwater quantity concerns in the state.

- Research to determine whether pharmaceuticals and other household chemicals are of concern in Wisconsin's groundwater.

- Research to look at the extent of viruses in groundwater and gain an understanding of how viruses in groundwater affect human health.