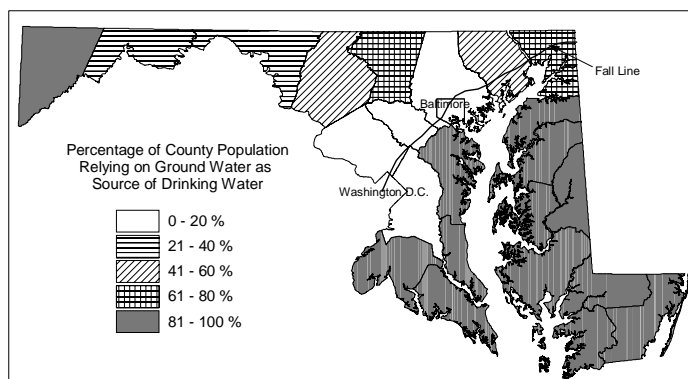


AN OVERVIEW OF MARYLAND GROUND WATER CONDITIONS

A large number of Marylanders rely on ground water to meet their water supply needs. Almost one-third of the State's 5.5 million citizens obtain their drinking water from underground sources. Public water supply systems depending on ground water serve about 850,000 persons. An equal number of residents use private wells. Regional differences shown in the map help illustrate the dependence on ground water by county. In particular, the availability of ground water in the Coastal Plain counties (the area south and east of the Fall Line) is reflected by the high percentage of their populations using this resource. Most municipalities outside of metropolitan Baltimore and Washington area rely on ground water. Ground water is an important source of irrigation and livestock water for farmers. Approximately 20% of statewide withdrawals are for agricultural uses. Approximately 50% of all stream flow in Maryland originates as ground water. Cool ground water sustains stream flow during hotter summer months, provides important habitat for fish and fresh water aquatic ecosystems and enables public water systems using surface water supplies to continue their withdrawals. A significantly lower than normal precipitation from September 2001 through August 2002 resulted in record low ground water levels in most of the unconfined aquifers of Maryland. Three to five times as many wells failed during this period when compared to the previous year in areas west of the Fall Line. Shallow dug wells and low yielding wells in fractured rock aquifers were most commonly replaced. Mandatory water restrictions were implemented in most regions of the State to reduce water use.



Ground water Importance: Ground water is an essential part of the lives of Marylanders, providing drinking water, irrigation for agricultural uses, water for livestock and supporting aquatic ecosystems.

How good is the Water? Ground water quality is an important issue in Maryland. Naturally occurring ground water is often of potable quality straight from the well. The needs for treatment of ground water are dependent on the aquifer being used and site-specific conditions. The most common treatments employed by public water systems are pH adjustment, iron removal and softening. Precipitation in Maryland is acidic, and affects the water quality of many aquifers. Additional acidity may be added through decomposition of organic material and oxidation of iron minerals. Softening is used for iron removal and reducing hardness.

Ground water in the shallow unconfined aquifers of the Coastal Plain and fractured bedrock aquifers of central and western Maryland is sensitive to how people manage and use the overlying land. Elevated nitrates are common in shallow aquifers under cropland, feedlots or in areas of concentrated development served by on-site wastewater disposal systems. Improper disposal of commercial and industrial wastes and leakage of petroleum products has led to localized contamination. MTBE is detected in many unconfined public supply wells, normally at levels below taste and odor thresholds. Extensive surveys for pesticides in ground water have revealed very little

contamination above health standards. Well water supplies in the karst area of western Maryland (particularly the Great Valley) are often subject to fecal contamination. Recent surveys of naturally occurring radionuclides in ground water have shown that portions of the Magothy and Patapsco aquifers in the Coastal Plain are subject to high levels of radium. The Piedmont aquifers of central Maryland often have elevated radon levels. Naturally occurring arsenic at levels above EPA's Maximum Contaminant Level of 10 parts per billion have been found in the Aquia and Piney Point aquifers in Southern Maryland and the central Eastern Shore.

Costs of Contamination: In Maryland, millions of dollars have been spent removing contamination, treating contaminated supplies, and controlling potential sources of contamination. Experience has demonstrated that it is more cost effective to prevent aquifer contamination than to clean previously contaminated sites. Efforts to alleviate clean up costs while still protecting public health and the environment have been initiated through Maryland's Voluntary Clean Up and Brownfields Program.

Efforts to Protect Ground Water: Protection of ground water is critical and is the focus of the State's ground water strategy. In 1985 the Maryland Legislature adopted a Resolution mandating the development of a Comprehensive Ground Water Protection Strategy for the State. Maryland Department of the Environment (MDE) coordinates these protection efforts. The State strategy encompasses both quantity and quality for the greatest benefit of the citizens of the State. In 2002 the Governor signed an executive order to establish a Water Resource Management Advisory Committee to recommend revised and/or new actions and policies necessary to assure the long-term use and protection to Maryland's ground waters. By working with local governments and water suppliers, MDE has assisted over 100 communities in developing wellhead protection programs to protect their water supplies, benefiting more than 150,000 residents. In addition, over 450 source water assessments for public water supplies have been completed. Statewide standards for well construction and on-site sewage disposal protect individual well owners from pathogenic organisms. Water appropriation permits ensure that withdrawals do not deplete the resource and do not harm other users. Pumping rates in coastal aquifers is managed to prevent the intrusion of salt water.

The risk of contamination from specific pollutant sources has been reduced significantly in recent years. Examples include stricter standards for underground tanks that store petroleum products, liners and leachate collection systems for landfills and rubblefills, and permitting of animal feedlot operations. Additional requirements are currently being implemented to reduce the impact of nutrients from agricultural lands. Annually the State hosts a Ground Water Symposium, providing education to State and local officials involved in ground water protection.

What else is needed?

- Continued emphasis on prevention of contamination.
- Increased education concerning the importance and sensitivity of ground water resources.
- Increased knowledge about the safety of ground water as a drinking water source.
- Increased assistance to water suppliers and local governments to protect valuable drinking water resources.
- Improved data management and accessibility to ground water data.

