FLORIDA'S HYDROGEOLOGIC ENVIRONMENT



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Florida's population growth creates ever-increasing pressures on the state's springs and other fragile water resources. This drawing illustrates many of the complex relationships that exist between a Florida community and the environment which sustains it. Water for various uses is withdrawn from subsurface limestones which are extremely porous and permeable. Ground water which resides in these limestones is naturally protected from various types of contaminants by a widespread confining layer (intermediate confining unit) which is predominantly clay. The situation is complicated by the presence of discontinuous carbonate lenses (the intermediate aquifer system) and fractures within the confining layer. Limestone is vulnerable to extensive dissolution leading to the development of sinkholes which may breach the confining unit in the process of their formation. This same dissolution process results in the formation of large springs and the conduit systems that supply water to them. Springs are highly prized features of Florida's environment that discharge large amounts of ground water. The spring pictured here includes as part of its recharge mechanism, a newly formed sinkhole, ostensibly distant from it. Precipitation over a large area moves down through soil and sand into fractures that eventually are connected to spring-feeding conduits. Surficial sands and clayey sands which blanket the confining layer are subject to major impacts resulting from human activities. Subsurface storage tanks will be buried within them, municipal solid waste will be disposed into them and locally, small domestic wells may be drilled into them where their permeability and porosity make them a viable surficial aquifer (surficial aquifer system). At the same time, precipitation moving down into these shallow materials may locally enter sinkholes or fractures within the confining layer, contributing to recharge of the underlying Floridan (limestone) aquifer system and the abundant water that flows from Florida's springs.

The Florida Geological Survey may be contacted at 903 W. Tennessee St., Tallahassee, Florida, 32304; telephone (850) 488-4191, or accessed on the web through the www.MyFlorida.com or http://www.dep.state.fl.us/geology websites for a list of survey publications and additional information on hydrogeological relationships and environmental geology in Florida. The reference list provided here gives examples of Florida Geological Survey publications which address topics related to hydrogeology and the environment.

REFERENCES

Bond, P. A., 1987, Geology and Waste Disposal in Florida: Florida Geological Survey Map Series 112.

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