Exploring the Water Withdrawal Assessment Tool For Large Quantity Withdrawals

Background

In 2006, legislation was enacted to manage large water withdrawals in the state. The Groundwater Conservation Advisory Council (Council), originally formed in 2003, was appointed to develop a water withdrawal assessment screening tool that could be used to protect and conserve the waters of the state and assess the impact of large capacity water withdrawals on local water resources and associated ecosystems. The tool, designed to be used by individuals preparing a new or increased water withdrawal, was jointly developed by the Council, US Geological Survey, Department of Natural Resources, the Department of Environmental Quality, and Michigan State University.

What’s behind the Tool?

The Water Withdrawal Assessment Tool consists of several science-based models that use watershed characteristics, summer low flow stream measurements (baseflow or index flow), resident fish communities in streams throughout the state and groundwater modeling to assess whether a water withdrawal will have an adverse resource impact on a nearby stream. The term "adverse resource impact" or the ARI was defined in the 2006 legislation as decreasing that part of the index flow to a degree that the stream's ability to support characteristic fish populations will be functionally impaired. The tool uses the Michigan Department of Natural Resources fish survey data collected at more than 1700 survey sites across the state, and uses 11 different fish response curves for 11 habitat types. Gaging data from 132 gaged streams with at least 10 years of records, over 22,000 flow measurements, and 3,690 miscellaneous measurements were used to determine the base flow conditions for 9000 small watersheds across Michigan.

How does the tool work?

A user can enter a proposed location of where a well might be placed, and input information on well depth, pumping capacity, and whether the well is in bedrock or glacial materials. Default values, which can be changed, will be provided based on the current wells located within the area. Based on the data, the user is provided with the screening results and receives either a "Proceed," a "Caution," or a "Warning". Various options, such as increasing the proposed well distance from the stream or increasing the well depth are provided if the user does not pass the screening. A request can also be made for a site specific evaluation. If the user does pass the screening, he/she can register the proposed water withdrawal with the Department of Environmental Quality.

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