

DESIGN OF A SURFACE-WATER-QUALITY MONITORING NETWORK FOR MICHIGAN

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ABSTRACT

In November 1998, the citizens of Michigan passed the \$675 million Clean Michigan Initiative designed to clean up, protect, and enhance Michigan's environmental quality and infrastructure. As part of the Initiative, the Michigan Department of Environmental Quality (MDEQ) and the U.S. Geological Survey designed a comprehensive surface-water-quality network to (1) address issues of contaminant loading from tributaries to the Great Lakes, (2) assess the current status and condition of individual waters of the State and determine whether the standards are being met, (3) measure spatial and temporal trends in the quality of Michigan surface-water, (4) provide data to support MDEQ water-quality protection programs and evaluate their effectiveness, and (5) identify new and emerging water-quality issues. The network consists of six components or tiers each with its own set of sampling sites and suite of analytes.

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The Bay and Connecting Channels components of the network focus on water-quality conditions in the Great Lakes that result from complex interactions among land-use factors, point sources, and geological and other natural influences. The integrator, indicator, and minimally impacted components are designed around 45 watershed-monitoring units and a 5-year sampling cycle presently used by MDEQ. The integrator and minimally impacted sites will focus on fixed station sampling whereas the indicator sites will focus on specific problems and incorporate flexibility in design. The status component will be used to assess the State's water quality to prepare the bi-annual 305(b) report and incorporate probabilistic design.