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## **Applications of Geo-Information Systems to Assess Water Quality Trends in The Mid Atlantic Region Within An Agricultural Watershed**

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### Abstract Text:

This paper adopts geo information systems based method and primary data to assess the status of water quality in an agricultural watershed in the Mid Atlantic region. Emphasis is on the issues, factors, current efforts and a case study to demonstrate the trend and future line of actions. The applications of geo information system can be helpful in detecting land use practices that threaten the quality of agricultural watersheds. It has the potentials to enhance the design of viable framework for the efficient management of water resources in stressed environments with the latest advances in spatial technologies. Over the years, the applications of agricultural fertilizers, manure and pesticides continue to degrade the quality of streams in different areas of the country. In some areas, nutrient concentrations are not only at elevated levels in agricultural areas, but pesticides especially herbicides remain widespread in agricultural watershed areas. While higher levels of these substances can be harmful to humans and biodiversity. The issues of accumulation of sedimentation in watersheds are becoming prominent with disturbances in the hydrology and soil productivity with some impacts on the economic and environmental profile of water systems in the region. The transportation of nutrients into watersheds result in altered hydrological conditions and pollution that threaten fisheries and other living organisms. Compounding the matter for managers and decision makers is the role of several socio-economic factors in fuelling the problems and the lack of access to spatially referenced information on the extent of threats to stressed watersheds ecosystems. The results of geo based analysis in the region point to declines in water quality and other environmental resources in the study area. Notwithstanding meager efforts to deal with the problems, knowledge of the dangers posed by degradation in water quality and declines in biodiversity demonstrate the need for geo based assessment of management practices within agricultural watersheds. For an effective agro-watershed management in the region, a geo spatial system needs to be developed. Such a system can provides managers spatially referenced data with opportunities to locate stressors and changes in agro-watersheds.

### Impact Statement:

At a time when governments are grappling with the problems posed by the widespread degradation of watersheds, the study helps to improve water resource management in two ways. Firstly, it displays spatial location of stressors and management practices that inhibit water quality but not previously known by managers and stakeholders whose land use activities trigger the problem. Secondly, managers and land users benefit from the design of a viable tool that not only enhances education and best management but also acquisition of knowledge on threats to water quality and how efficient management practices can mitigate the problems within agricultural watersheds.