

A Storm Water Sampling Comparison Study: The Search for the Perfect Storm

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Biographical Sketches of Authors

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Abstract

In order to determine the most accurate and efficient methodology to collect in-stream storm water samples the Mecklenburg County Water Quality Program (MCWQP) and Charlotte Storm Water Services the Mecklenburg County Water Quality Program devised a storm water sample collection methodology comparison study. Quarterly storm water samples have been collected at seven locations throughout the City of Charlotte and Mecklenburg County since 1995 to satisfy a requirement of Charlotte's Phase I NPDES Permit. These historic samples were collected using a four-hour flow weighted composite method. However, recent comparison of the sample collection data with USGS stream flow records revealed that only a small portion of the hydrographs for sampled runoff events were represented using the current method. The study called for the sampling of individual runoff events at a unique site with three different collection methods: 1. Four-hour flow weighted composite method; 2. Full runoff event flow weighted composite method; and 3. Individual aliquots collected hourly over the entire runoff event. Runoff event pollutant loads were calculated for each sample collection method utilized. For smaller runoff events the results tended to indicate a reasonable similarity between the sample methods for most parameters analyzed, however sediment load values varied considerably. It is possible that the current method's inability to capture pollutant loading during the highest flows may have a significant impact in the accuracy of pollutant load estimates.

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