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Continuous *in situ* characterization of particulate sizes in urban stormwater: Method testing and refinement

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ABSTRACT

Understanding the size distribution of stormwater particulates and the pollutants associated with each size fraction is becoming an increasingly important aspect of stormwater management. Traditional approaches to measuring stormwater particle size distribution are limited by the need to collect multiple samples and transport them to the lab for analysis. *In situ* laser refractometry offers an attractive alternative to traditional approaches for near real time, continuous analysis of stormwater particle size distribution. However, the high velocity, turbulence, and turbidity of urban stormwater present limitations for the application of current *in situ* particle size analysis instruments. This study evaluated and refined application of the Laser *In Situ* Scattering and Transmissometry (LISST 100X) particle analyzer for use in urban stormwater assessment. To ensure that the LISST provided meaningful results, the following tests were conducted: 1) the accuracy of the instrument to sample particles sizes expected to occur in urban stormwater was tested, 2) the method was refined to accommodate for the low transmissivity typically associated with urban stormwater, 3) potential artifacts associated with aeration and bubbles in the sample tubing were addressed, and 4) potential bias associated with pumping, which may differentially sample particle sizes in a non-representative manner was evaluated. With application of protocols outlined in this study, the LISST provides a new tool for continuous *in situ* analysis of stormwater particulates.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2009AnnualReport/AR09_183_193.pdf