PERISTALTIC PUMP AUTOSAMPLERS FOR SOLIDS MEASUREMENT IN STORMWATER RUNOFF

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ABSTRACT

Regulatory agencies approve automatic samplers containing peristaltic pumps as a sample collection method for stormwater characterization and for treatment-device evaluation. Autosampler performance, as discussed in the limited available literature, can vary across the entire particle size range typically found in stormwater from different source areas and outfalls – a more consistent performance for particle sizes <250 µm but much less consistency for particles >250 µm. A series of experiments was undertaken to quantify the likely magnitude of errors that may occur with sampling stormwater suspended sediment and particulate-bound pollutants. These experiments found that autosamplers used in stormwater monitoring were not capable of repeatedly and effectively capturing particles greater than 250 µm from a simulated stormwater whose particles have a specific gravity of 2.65. However, the data showed the height of the sampler above the sampling location had no influence on the sampler’s ability to capture solids that entered the sampler inlet.