Inclined Plate Settlers to Treat Storm-Water Solids

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Abstract: Many pollutants in storm-water runoff associate with the particulate fraction, as well as cause receiving water degradation themselves. Therefore, removing a substantial amount of the solids, such as all particles above a critical particle size, can reduce the concentrations of many pollutants. Enhanced sedimentation methods have been encouraged to reduce the footprint of treatment devices and meet the 80% suspended solids reduction goal established in many locations. Inclined plates/tube settlers, where overlapping plates result in large settling areas and small device footprints, treated multiple contaminants when operated in laminar flow conditions (Pitt et al. 1999). This project extends that work by investigating the potential of inclined plate settlers to treat runoff when Reynolds numbers ranged from 7.5 to 50,000. These settlers achieved high removals for particles with a density of sand over the range of Reynolds’ numbers. The influent-to-effluent median particle-size reduction in field testing was 80–11 µm.