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Metals and bacteria partitioning to various size particles in Ballona Creek stormwater runoff

Jeffrey S. Brown, Eric D. Stein, Drew Ackerman*, John H. Dorsey¹, Jessica Lyon¹ and Patrick M. Carter^{1*}

¹Loyola Marymount University, Department of Natural Sciences, Los Angeles, CA

*Current address: Tetra Tech, Research Triangle Park, NC

ABSTRACT

Based on the well documented association between stormwater particles and pollutants associated with urban runoff, many stormwater Best Management Practice devices (BMPs) function primarily by capturing particulate matter. The hydrodynamic separation or settling methods used by most BMPs are most effective at capturing medium to large particles; however, these may not be the most predominant size particles associated with urban runoff. This research examined particle size distribution in stormwater runoff from an urban watershed in southern California and investigated the pollutant-particle associations of metals (Cu, Pb, Ni, Zn) and bacteria (enterococci, *Escherichia coli*). During small storm events (<0.3" rain), the highest concentration of pollutants were associated with a <6 µm filter fraction, which accounted for 70% of the per storm contaminant mass, but made up <20% of the total particle mass. The pollutant-particle association changed with storm size, as most pollutant mass was associated with >35 µm size particles during a 2" rain event. These results suggest that much of the contaminant load in stormwater runoff will not be captured by the most commonly used BMPs, since the majority of these devices (e.g., hydrodynamic separators) are unable to capture particles <75 µm.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2011AnnualReport/ar11_049_060.pdf