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Effluent discharges to the Southern California Bight from small municipal wastewater treatment facilities in 2005

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ABSTRACT

Twenty-three municipal wastewater treatment facilities (publicly owned treatment works; POTWs) discharge treated effluent directly to the Southern California Bight (SCB). Nineteen of these are small POTWs, each discharging less than 25 million gallons per day (mgd). Small POTW effluent characteristics have been analyzed periodically since 1971 to estimate total contaminant loading, to evaluate discharge trends, and to facilitate comparisons between pollutant sources within the SCB. This study continues the assessment of small POTW effluent by analyzing discharges from 2005. Total effluent volume, contaminant mass emissions, and annual average concentrations were calculated and compared to the previous assessments of discharges. Small POTW emissions were also compared to the largest point source of contaminants to the SCB, large POTWs. Total effluent volume from small POTWs was 245 L x 109 in 2005. Discharge volume has more than doubled since 1971, while mass emissions of most constituents have decreased during the same period. Although the long term trend in mass emissions has decreased, loads of many constituents were higher in 2005 than in 2000. The increased contaminant loading observed in 2005 was influenced by three factors: flow from four additional facilities that were not discharging into the SCB in 2000, increased flow due to record rainfall and associated infiltration in sewage systems in 2005, and higher constituent concentrations at individual facilities. In particular, the International WWTP (which was not included in the 2000 assessment) discharged relatively high concentrations of a range of constituents including suspended solids, BOD, oil/grease, ammonia-N, turbidity, toxicity, and phenols. Although mass emissions from small POTWs increased in 2005, they remain a relatively minor source of contaminants to the SCB relative to large POTWs; effluent volume and contaminant mass from all small POTWs combined is generally less than from any individual large POTW.

Full Text

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