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COMBINED SEWER OVERFLOWS (CSOs) AS SOURCES OF SEDIMENT CONTAMINATION IN THE LOWER PASSAIC RIVER, NEW JERSEY. I. PRIORITY POLLUTANTS AND INORGANIC CHEMICALS

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ABSTRACT

Ten surficial sediment samples were collected adjacent to each of four combined sewer overflow (CSO) outfalls along the lower Passaic River in New Jersey and analyzed for priority pollutant organic and inorganic chemicals. The objectives of this investigation were to (1) characterize chemical contamination in sediments impacted by these CSOs, (2) evaluate the spatial distribution of contaminants, and (3) evaluate the possible sources of contaminants within the respective CSO districts. The results indicate that sediments proximate to the CSO outfalls are contaminated with a range of chemicals including toxic metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticides, and other organic chemicals. The spatial distribution of these contaminants strongly suggest that the CSOs are the primary source of contamination in sediments near these outfalls. While the contribution of residential waste and stormwater may be substantial, evaluation of the industries operating with the CSO districts provides a link between the facilities that discharge wastes to the combined sewer system and chemical contaminants found in the sediments. Until adequate controls are implemented, CSOs will continue to be on-going sources of contamination affecting the water and sediment quality of the Passaic River.