

Assessing Changes in Contaminant Fluxes Following Dam Removal in an Urbanized River

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Restoration of rivers and their associated ecosystems is a growing priority for government agencies (e.g., NOAA, USEPA), as well as conservation organizations. Dam removal is a major component of many restoration projects credited with reintroducing fish species, improving water and habitat quality, and increasing recreation potential. Many proposed locations for restoration, however, have been impacted by past discharges of chemical pollutants. As a result, the potential exists for the release of sequestered contaminants following dam removal or other restoration activities. Few, if any, dam removal projects have studied the changes in contaminant fluxes following removal. In this study, we measured dissolved and particulate concentrations of polynuclear aromatic hydrocarbon (PAHs) and polychlorinated biphenyls (PCBs) before and after removal of an existing low head dam in the Pawtuxet River, an urbanized river in Cranston, RI. Preliminary results indicate that dissolved concentrations of PAHs decreased at one site above the dam location following removal, while concentrations remained unchanged below the dam at the mouth of the river which discharges to Narragansett Bay. Dissolved concentrations of individual PCB congeners were very low overall, remaining below 1 ng L^{-1} at all sites. At all sites, total dissolved PCB concentrations were lower in the second post-removal sampler deployment compared to before dam removal. Total particulate concentrations of PAHs and PCBs collected in sediment traps showed a decrease following dam removal at all sites. Results from this study will be used to evaluate methods under development to assess the short and long-term impact of ecological restoration activities such as dam removal.

Keywords: Dam removal; Contaminated Sediment; resuspension; Habitat restoration

PURPOSE STATEMENT

Dam removal is becoming a regular activity in the effort to restore riverine habitats and ecosystems. Many locations with dams have contaminated sediments that may be susceptible to release during removal and restoration activities. This presentation presents results on the release and remobilization of previously sequestered contaminants from the Pawtuxet River, an urbanized river in Rhode Island, during dam removal and ecosystem restoration activities.