

TRACKING THE PATH OF CONTAMINANTS IN WESTERN AND CENTRAL LONG ISLAND SOUND

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The impact of physical processes on sediments in Long Island Sound (LIS) is observed in sediment core samples from transects in western LIS and sediment grabs samples in central LIS. Previous literature information on tidal distributions and storms are used to examine these processes on the sediments. Surficial sediments from central LIS reveal trends in heavy-metal lead (Pb) content, total organic carbon (TOC), total nitrogen (TN), and sediment grain sizes gravel, sand, and mud related to tidal speed distribution and storms as previously measured in the estuary.

A general 3rd order trend surface analysis result supports a trend that the sediment, metal, and organic distribution in central LIS is caused by physical processes. Linear regression analysis shows inverse relationships between heavy-metal Pb and grain size content, and TOC and grain size. Facies distributions, found in western and central LIS sediments, are characterized by low, medium, and high energy. Lithological facies distributions also parallel with grain size and energy regimes affected by variability in tidal current speeds caused by local bathymetric features such as shoals and channels. Average TOC (dry weight %) for transects and cores from east to west of the western region of LIS increase from 1.92% in Transect 1 to 2.646% in western cores near Throggs Neck, New York.

Foraminifer abundance shifts are also examined in the estuary. An increase in *Ammonia beccarii* species abundances in the top of sediment cores collected from western LIS relative to *Elphidium excavatum clavatum* is found suggesting, as in previous studies, a change in pollution entering the ecosystem.