

Using FEMA FIS, HAZUS and WMOST to evaluate effectiveness of GI in moderating flood-related risks

The ability to accurately assess flood-related risks and costs as well as the effectiveness of green infrastructure on moderating those risks is critical for both emergency management and long-term planning. Potential flooding depths, land use and building conditions are needed to obtain a complete estimation of potential losses. While hydrologic modelling studies will result in the most accurate flood depth grids, the complexities are generally beyond the expertise of most land use planners and town officials. Simple geospatial processes were used with publicly available data to estimate flood damages for a range of event frequencies. We used the Plymouth County Flood Insurance Study along with LiDar elevation data to delineate the 10, 50, 100 and 500 year flood depth grids and flooding extents. In order to obtain an accurate assessment of potential building losses, building footprints and land use/zoning were obtained from the Massachusetts Office of Geographic Information and a site specific user-defined building inventory was compiled. The flood grid and user-defined building inventory were imported into HAZUS and flood losses were analyzed. To evaluate the impact of green infrastructure in moderating flood-related risks and associated costs, the Watershed Management Optimization Support Tool (WMOST), an EPA, public-domain software application designed to facilitate integrated water resources management will be used. This tool allows water resources managers to evaluate a broad range of management options within a watershed such as conservation options for source water protection, infiltration of stormwater, green infrastructure stormwater BMPs, and other water-related management options.