Superstorm Sandy:

During this unprecedented storm the towns of Moonachie and Little Ferry were hardest hit. The damage, caused by the upwelling storm surge from the Atlantic Ocean up the Hackensack River, struck residential and commercial areas of the towns with inland flood water levels over 3 feet. Meadowlands Environmental Research Institute (MERI) water sensors on the Hackensack River in Carlstadt recorded a depth of 9 feet of water lasting six hours during the night of the storm. Water levels at this height and duration overtopped many earthen berms in the Meadowlands District. These berms are mainly legacy Mosquito Commission dikes not intended as flood control structures. In an effort to assist the towns MERI is studying and identifying these soft edge areas and their effect on the ingress of storm surge water from the Hackensack River.

Using elevation rasters, hydrology rasters and vector data MERI is attempting to locate these soft edges. Information on the location of soft edges and studying their impact on the topography will be used for further analysis on flooding in the Meadowlands and the next potential storm surge.

This analysis used a digital elevation model (DEM), a slope raster, a slope aspect raster and a curvature raster. The data from these rasters were combined into a four band raster for use in a classification analysis. Each individual raster being one band in a single composite raster which was then processed for classifications of similar patterns. The idea being that soft edges share similarities:

- Located at low elevations
- High degree of uphill slope on the either side
- Low degree of slope on the top
- Weak points having a concave linear profile
- Breaks in elevation

The results from this ongoing study will be used in combination with our existing flood prediction maps for use in emergency management and preparedness.

Mapping Earthen Berms in the Meadowlands

Soft Edges Around the Hackensack River Watershed

Initial Response:

Within Bergen and Hudson County. District includes sections of 14 municipalities within Bergen and Hudson county.

The Meadowlands region sits less than five miles from the heart of Manhattan. The 30.4 square mile District spans sections of 14 municipalities within Bergen and Hudson county.