

# Federal Emergency Management Agency

## Letter of Map Revision

### Scraggy Neck, Bourne, Massachusetts

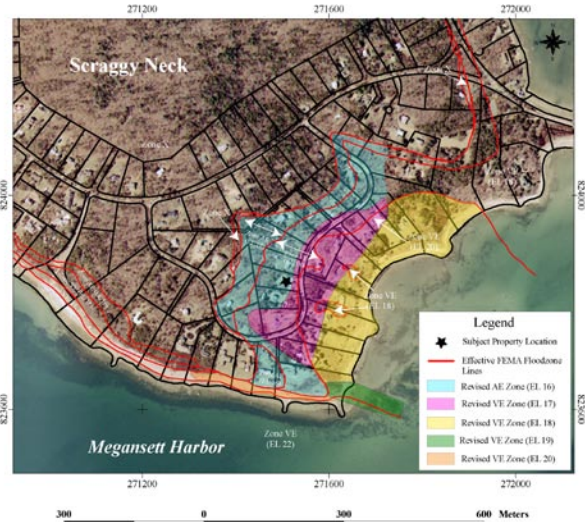
#### Project Characteristics:

- *Flood Zone Mapping*
- *Wave Transformation and Run-Up Models*
- *Wave Prediction Modeling*
- *Geographic Information System (GIS)*

Woods Hole Group completed a Federal Emergency Management Agency (FEMA) Letter of Map Revision (LOMR) project to evaluate the location and accuracy of the effective flood zone designations (1999) for the southeast-facing portion of Scraggy Neck. Scraggy Neck is located on the northeastern side of Buzzards Bay within Megansett Harbor. The project site is exposed to a portion of refracted wave energy approaching from the long axes of Buzzards Bay, and also to more locally generated waves formed over shorter fetches (and shallower water depths) within Megansett Harbor. Woods Hole Group utilized more detailed topographic information, wave and storm surge inputs to evaluate the locations of the existing flood zone boundaries.

This project involved utilizing the US Army Corps of Engineers Automated Coastal Engineering System (ACES) application to run the wave prediction model for **Wind Speed Adjustment and Wave Growth**. The resultant wave heights and wave periods predicted by the ACES model were then used as the input conditions for FEMA's standard models, WHAFIS3 and RUNUP2.

These standard FEMA models were used to estimate the nearshore wave transformation and wave runup elevations' occurring over shore normal transects that were chosen to produce the most severe 100-year wave conditions at the site.



The modeling results, along with more detailed topographic data, were used to construct a series of coastal transect profiles. These profiles were utilized to modify the existing flood hazard zone boundaries on the effective Flood Insurance Rate Map (FIRM).

All mapping was conducted using a Geographic Information System (GIS) and submitted to FEMA as a digital FIRM. The results of the localized study were used by FEMA to issue a LOMR, showing revised flood hazard designations that incorporate storm surge, wave effects and wave run-up.