are realistically controllable. As a result, it would appear that restricting boat speed in the inlet would constitute a possible solution for reducing shoreline erosion and bulkhead failure due to boat wakes.

Waves caused by boats act as shallow-water waves when their Froude number ($V/\sqrt{gd}$), either due to an increase in the boat speed (V) or a decrease in the water depth (d), exceeds 0.6. At this point, the waves become affected by the inlet bathymetry; the wave speed (celerity), wavelength, and wave height become dependent on depth. As the Froude number increases further, the boat-generated waves increase in size until they reach a maximum value when the Froude number is equal to 1.0. The boat velocity corresponding to a Froude number of 1.0, for a given depth, is the critical velocity. It is at this critical velocity that the boat-generated waves are the largest; the waves become smaller for larger velocities (Froude numbers greater than 1.0). It becomes obvious from this phenomenon that, in order to attenuate shoreline erosion due to boat wakes, boat speeds would have to be regulated at less than the critical velocity.

Figure 5.10 provides data obtained by Sorensen (1967) for various sized boat prototypes relating boat velocities and the resulting wave heights due to these velocities. These waves were measured at various distances from the sailing line, the range of which encompasses those distances from the channel to the shoreline at various locations in the inlet. The waves were measured in water depths varying from 1 to 2 meters which corresponds well to depths along the north bank of the main channel. A correction factor, denoted by k_s in Fig. 5.10, should be applied to the breaking wave height estimations for the shoreline along the Intracoastal Waterway to account for shoaling effects (Sorensen,