Panel on Climate Change, 2001). This rate of rise would be nearly double the rate of rise observed at Boston Harbor over the past 80 years. Areas most susceptible to rising sea levels are coastal aquifers, such as Cape Cod, which raises concerns of potential effects of sea-level rise on coastal habitats and drinking-water supplies (Intergovernmental Panel on Climate Change, 2001; Moore and others, 1997).

**Sea-Level Rise and Coastal Habitats**

The primary concerns about the effects of sea-level rise on coastal habitats include increased erosion rates, damage from higher storm-surge flooding (Gornitz, 1991; Theiler and Hammar-Klose, 2000), and landward intrusion of seawater in coastal wetlands (Donnelly and Bertness, 2001). Damage from increased storm-surge flooding is a concern on Lower Cape Cod because of the potentially severe effects these storms can have on the coastal areas along the CCNS. During the “Perfect Storm” of October 31, 1991, the storm surge breached the barrier dune separating the Pamet River from the Atlantic Ocean and forced seawater up to several feet deep onto the low-lying flood plain (fig. 13). Tidal restrictions near the mouth of the Pamet River (fig. 1) since 1869 have converted the upper Pamet River plant community from salt marsh to salt-intolerant wetland species. After the breach in 1991, seawater persisted for over a week in the river proper, and for months in the sediment. Extensive mortality of current freshwater-wetland vegetation was averted only because plants were dormant at that time (Portnoy, 2001).

**Sea-Level Rise and Drinking-Water Supplies**

A concern for Lower Cape Cod water managers is the potential adverse effect of sea-level rise on the depth to the freshwater/saltwater interface near public-supply wells (fig. 11). Pumping from public-supply wells in coastal aquifers underlain by saltwater can lower the water table relative to sea level, decrease the depth to the freshwater/saltwater interface beneath the pumping well, increase the potential for saltwater intrusion, and thereby limit the yield of potable water from the well. Successive increases in the pumping rate can decrease the depth of the freshwater/saltwater interface until a critical distance between the well screen and the top of the interface is achieved, at which point saltwater may be drawn into the well (fig. 11) (Reilly and Goodman, 1985; Reilly and others, 1987).

In the mid-1950s, overpumping of wells in the Knowles Crossing well field in North Truro (fig. 1) caused saltwater intrusion, creating the need for additional water-supply wells (Masterson, 2004). In 1955, the Provincetown Water Department began pumping from the South Hollow well field in the center of the Pamet flow lens to meet the increased water demand (fig. 1).

Sea-level rise may exacerbate the effects of increased pumping, as was done in the 1950s, and increase the potential for saltwater intrusion into a pumping well. As sea level rises over time, the water table will rise along with it so that the height of the water table relative to sea level will not change. Under these conditions, the depth to the freshwater/saltwater interface below the water table also will not change. However, if the aquifer system were additionally stressed by a high pumping rate, the water table near the well may remain constant or decline even as sea level rises. In this case, the height of the water table above sea level would decrease, as would