National Park Service
U.S. Department of the Interior

Cape Cod National Seashore

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Ballston Beach and the Upper Pamet River:

a perspective for long-term management

October 31, 1991 the Atlantic Ocean breaks through at Ballston Beach.

On Halloween Day of 1991 a massive and intense North Atlantic hurricane (aka "The Perfect Storm") surged over the Ballston Beach barrier dunes to flood the upper Pamet River with seawater. Solid-fill dikes at Route 6 and Castle Road impeded drainage and held this seawater on the Pamet wetlands, diked and freshened since 1868, for weeks causing great concern for low-lying properties, domestic wells, and for the health of the wetlands themselves. Thus this major, albeit natural, overwash event stimulated intense thought, discussion and research into the options for the long-term management of the upper Pamet River ecosystem.

The Long-term Problem of the Diked Upper Pamet

The diking off of seawater from the upper Pamet 130 years ago allowed freshwater to replace salt water and freshwater wetland plants to replace the original salt marsh grasses. The elimination of tides also lowered the average wetland water level, causing the wetland peat to dry out and subside; and the diking blocked the marine supply of sediment from Cape Cod Bay, an important

input that had helped keep the wetland ahead of sea-level rise for thousands of years. Now the wetland surface is about two feet below where it would be if it had been undisturbed; that is, it's two feet out of equilibrium with modern sea level.

The freshwater wetland plant community cannot tolerate seawater and only survived the 1991 overwash because it occurred when plants were dormant; therefore, a summer overwash will cause extensive plant mortality. Of course, if the Pamet were to be restored to a tidal marsh by removal of the restrictions at Route 6, as investigated by a Corp of Engineers and Cape Cod Commission study (Kedzierski 1998), salt-tolerant plants would over time become re-established east of Route 6. Removal of tidal restrictions would also allow seawater that overwashed the Ballston dune to discharge rapidly during low tide into Pamet Harbor and re-establish the connection with the Bay as an important source of sediment. Incidentally, the Corp/Commission study showed little potential for saltwater intrusion into domestic wells.

Millions of gallons of overwash seawater flood the Pamet River, October 31, 1991.

Current Status

Future overwashes are inevitable. In accordance with the park's General Managment Plan, the National Park Service will consult with local land managers on the risks and appropriate remedies. In general, the National Park Service prefers to allow natural processes to proceed unimpeded.

References

Kedzierski,J., H. Sullivan & C. Demos. 1998. Pamet River Investigation, Truro, Mass. U.S. Army Corps of Engineers, New England District

Portnoy, J.W. 2001.Truro's Upper Pamet River: Environmental History and Future Prospects. Environment Cape Cod. 4(1):1-9