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Future Trends in Shore Protection Innovation: Preliminary Observations from the National Shoreline Erosion Control Development and Demonstration Program

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The National Shoreline Erosion Control Development and Demonstration Program of the US Army Corps of Engineers was established by Section 227 of the US Water Resources and Development Act (WRDA) of 1996 with initial funding appropriated in FY00. Section 227 will evaluate the functional and structural performance of innovative or non-traditional approaches for abating coastal erosion and improving sediment retention via field demonstration. Numerous shore protection methods and approaches are being considered, monitored and evaluated at sites representing varying energy conditions and shoreline morphologies.

Section 227 has been structured to assess the current condition and advance the state of the art of shoreline erosion control technology, encourage the development of innovative solutions, and provide technical and public information designed to further the use of well-engineered alternative approaches. Demonstrated technologies are being considered both from the perspective of functional and structural performance and will include bioengineered approaches. Unlike the earlier "Low Cost Shore Protection Demonstration Program (Section 54)" of the 1970's, the Section 227 Program is not solely a "device" demonstration, but rather a vehicle for further engineering and prototype experimentation of promising shore protection concepts or approaches.

A minimum of seven primary demonstration projects will be constructed (two on the Atlantic coast, one on the Gulf Coast, two on the Pacific coast, and two on the Great Lakes) with some supplementary, smaller scale prototype demonstration sites being developed to test specific technologies in a limited context. Planned supplementary projects, for example, tend to be focused on problems such as wetland restoration, modification of an existing structure to improve performance, and dune stabilization. The program is also sponsoring the monitoring of sites where others are installing innovative shore protection approaches that could have value in advancing shore protection technology. Finally, a database is being developed to document installations and case examples. This database and information on individual study demonstration sites will be accessible through the internet at:
http://chl.wes.army.mil/research/cstructures/section227/.

Examples being developed and demonstrated through the program provide a touchstone for identifying future trends in shore protection approaches and technologies. A workshop held at the National Beach Preservation Conference 2000 in Hawaii reviewed the last 20-years of shore protection trends. This presentation will discuss findings from that workshop, but also will include observations on future trends as they are evolving through the Section 227 program. Trends to be discussed include: advances in construction material (i.e., geotextiles, pre-cast concrete, and composites), local project treatment within the context of the regional system (i.e., improved management of sand supply, ground water control, wave field manipulation), geomorphic "tuning" of the shore planform (onshore hardpoints, nearshore bathymetric modifications), solutions for non-sandy coastlines (i.e., cohesive bluff, wetlands, berock-controlled), and softer, subtler manipulations that build upon recent advances in understanding the coastal system and improved predictive tools.