



Fact Sheet

US Army Corps of Engineers
U.S. Army Engineer Research and Development Center

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Risk Analysis of Coastal Structures

Purpose: Develop standardized methods and associated computer programs for life-cycle analysis of rubble mound coastal structures. Create coastal structure-focused web page.

Background: As a rubble-mound structure degrades, the sedimentation and/or transmitted wave energy in the lee of the structure may show significant increases. This results in increased dredging and unacceptable motion for vessels in navigation channels and/or at berth. Accurate life-cycle engineering analyses (LCA) are required in order to establish funding priorities for planning, design, and maintenance of these structures. Predicting damage rates over the entire life cycle is central to any LCA and damage formulas have not historically been available. Because both engineers do not have standardized methods for LCA for new structure design or for maintenance evaluation for existing structures, the uncertainty in such an analysis is unnecessarily high and unpredictable.

Facts: Initial products from this research effort have included personal computer programs for predicting the reliability and the life cycle response of rubble mound structures. Damage prediction formulas developed in the R&D work unit Prediction and Prevention of Breakwater Damage form the cornerstone of these models. These design tools provide a significant improvement in the Corps' ability to predict life-cycle costs of rubble mound coastal structures. The impact of the application of this new technology is improved planning for Operations and Maintenance and, as a result, improved structural performance. This results in better coastal protection and safer navigation channels and harbors. In addition, an initial version of a web page with general coastal structure design information has been completed. The web page includes electronic versions of Corps publications summarizing the history of all Corps coastal structures. In addition, the web page includes a link to an online database of all Corps coastal projects. These products will be enhanced during this research and distributed through Corps publications, classes, and workshops.



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