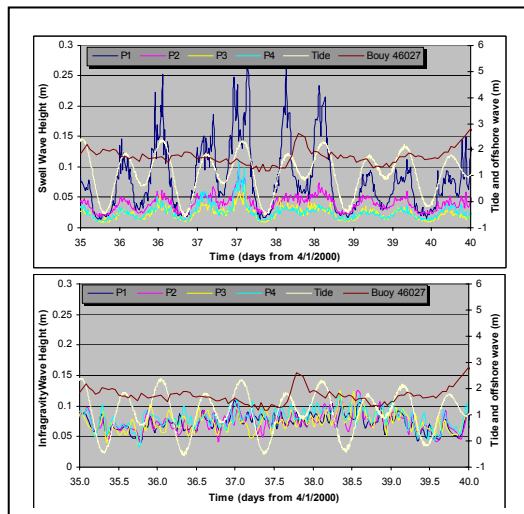
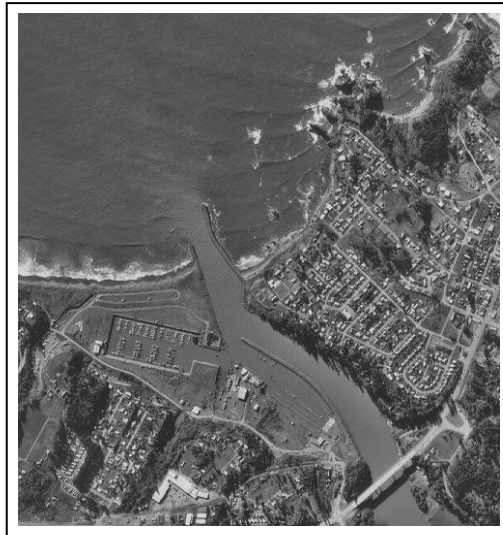


Brookings Section 107 Wave Surge Analysis

WEST Consultants, Inc. assisted the Portland District, Corps of Engineers, in conducting a study to assess, and possibly reduce, a reported surge problem in the harbor of Brookings, in southern Oregon. Observations about the wave conditions inside Brookings harbor by port officials, dockworkers, fishermen, recreational boat users, and the US Coast Guard indicated that there may be an episodic surge event that causes damage to the boats, docks, and supporting structures.

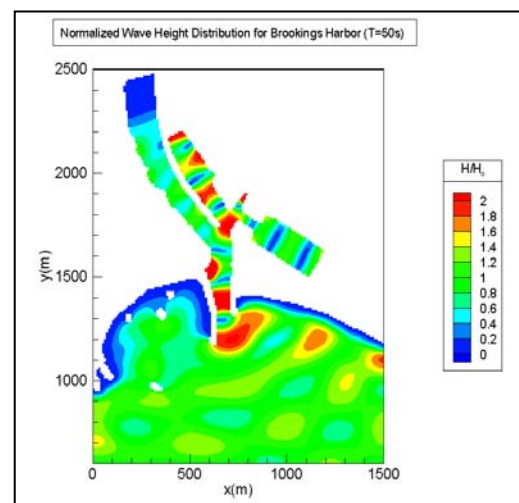
The study included a review of previous studies, a description of the surge problems, and an analysis of the five reported damage “events”. The configuration of the Sports and Commercial boat basins, and the distribution of vessels, ranging from small yachts to large fishing boats, was reviewed to determine if the size and shape of the basins might contribute to resonance effects and reported damages to vessels. Wave data, collected during April and May 2001, were analyzed to examine both the short (“gravity”) wave and longer (“infragravity”) wave components of



the total waves observed in the basins. The analysis confirmed visual observations that large, short waves offshore were being transformed into longer-period waves in the basins, and that these waves resonate in at least the Commercial basin. The results of CGWAVE modeling, conducted by the Corps’ Engineering and Research Center, were reviewed and analyzed against the observed wave data to draw conclusions about the possible mode of surge generation in the harbor.

In the second phase of the study, various mitigation alternatives were evaluated to reduce or eliminate the reported surge.

The “preferred” alternative was to relocate the harbor entrance further upstream on the Chetco River, and block the existing entrance. Quantities were calculated.



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