

Simulation of storm-tide dyke burst flooding based on zoning of flooding and water logging characteristics

RU AN, XINGNAN ZHANG, WENTIN ZHANG & RENZONG RUAN

1 State Key Laboratory of Hydrology, Water Resources and Hydraulic Engineering, Hohai University, No.1 Xikang Road, Nanjing 210098, China

2 Department of Geo-informatics, College of Hydrology and Water Resources, Hohai University, No.1 Xikang Road, Nanjing 210098, China

anrunj@163.com

Abstract Based on flood zoning, the simulation of flooding caused by bursting of a coastal dyke during a storm tide was investigated. First, the study area was divided into geographical units at several levels in terms of the properties of the underlying surface, the distribution of major rivers and roads, topography and the zoning of water resources. Then, flooding simulation was made according to the theory of water balance based on the real manner of water flow. Using Changxin Island of Shanghai as an example, the submerged area was calculated on the supposition that the quantity of incoming water was known. The results showed that the submerged area generated by simulation was reasonable and the model is feasible. The simulation results in the paper are significant to the mapping of flood risk and provide a sound scientific basis for flood management.

Key words storm-tide dyke burst; flood simulation; flood zoning; water flow retarding structure; coastal area; Shanghai
