

THESIS

**EVALUATION AND MANAGEMENT OF FLOOD HAZARDS IN BASANTAR
NULLAH BY DAMBRK COMPUTER MODEL**



Submitted by

**RAO ZULFIQAR ALI
(2001-PG-WRE-07)**

For the Degree of
MASTER OF PHILOSOPHY

IN

WATER RESOURCES ENGINEERING

CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING
University of Engineering and Technology, Lahore, Pakistan

2005

ABSTRACT

This study was carried out to evaluate and manage the flood hazardous caused in Basantar Nullah by using DAMBRK Computer Model. The DAMBRK computer programme is of less than 200 lines and about 75 variables are used in the programme. The programme uses the hydrological methods of flood routing both for reservoir as well as channel routing. The programme can easily run on a micro-computer and does not reflect any instability or non-convergence problem.

Economic growth in the areas of Districts of Silakot, Narowal and Gujranwala has suffered serious set back due to hazardous floods in Basantar Nullah. Vast area of paddy crop, roads and other infrastructures are shattered making life miserable for majority of people in flooding seasons. The problem can be solved through effective management of floods in Basantar Nullah. The 200 year return period flood was selected for designing flood protection measures.

The flood hazardous are directly related to water surface elevation. DAMBRK Model was used to compute the water surface profiles for 50, 100 and 200 year return periods. The model results provided the extent of flooding over the banks of the reach of the stream. DAMBRK Model was calibrated for roughness coefficient 'n' value of 0.04 for the flood event of 1992. The model calibration was found satisfactory. Model simulations were carried out for different return periods i.e. 50, 100 and 200 year. The area liable to flooding was determined as 1074, 1845 and 2973 hectares for 50, 100 and 200 year floods.