THESIS

OPTIMAL OPERATION OF RESERVOIR

(A CASE STUDY OF KHANPUR RESERVOIR)

Submitted By

Imran Sadiq Afridi

(98-PG-WRE-25)

For the Degree of

MASTER OF SCIENCE

in

WATER RESOURCES ENGINEERING

CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING

UNIVERSITY OF ENGINEERING AND TECHNOLOGY,

LAHORE, PAKISTAN

2001

ABSTRACT

Khanpur Dam is situated in the Tahsil Haripur of District Hazara in the province of NWFP. It is located between latitude 33°48' and longitude 72°56'. The dam is about 31 mile from the Islamabad capital of Pakistan. The purpose of Khanpur Dam Project is to create a reservoir across Haro River, to provide irrigation water for agricultural lands of NWFP and Punjab Provinces and to fulfil drinking water requirement of Industrial area of Wah, Islamabad and Rawalpindi.

Originally the Khanpur Project was approved in 1963 for 137 feet high dam for irrigation purpose only. Project was revised in 1973 due to growing need of municipal and industrial water supply and for irrigation. Primary objective of irrigation converted into irrigation and water supply; therefore dam was redesigned raising the height from 137 to 167 ft.

At present, supply of water for Islamabad & Rawalpindi is from Simli & Rawal Dam, which are not meeting the water demand of both the cities, due to the limited water production from these dams. Water shortage often occurs especially in May and June resulting in intermittent supply in some sectoral area. To meet the demand of water there is great need to supply the shortage of water from Khanpur Dam. Therefore Khanpur water supply project as a regional Development scheme will contribute more to meet the human needs of people in the areas.

Khanpur reservoir is being operated to fulfill the planned irrigation requirements and partial water supply demand presently. Khanpur reservoir has to be operated for full water supply requirement, near future as the water supply system of twin cities is near completion.

The purpose of the present study is to analyze historic operation of reservoir using inflow and outflow pattern of the dam and also on the basis of future water supply demand. The study also aims to suggest the optimal operation of reservoir if inflow of water to the reservoir is deficit; or if water availability is in excess than the required demand from reservoir.

Imran Sadiq Afridi