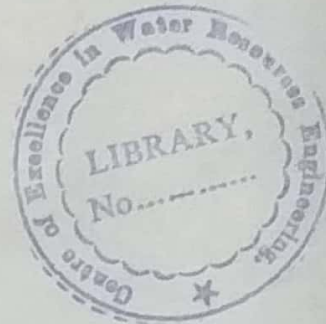# AN APPROACH FOR EFFICIENT OPERATION OF IRRIGATION CANALS IN PAKISTAN

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A THESIS SUBMITTED

FOR THE PARTIAL FULFILMENT OF THE DEGREE OF

M.PHIL

IN

WATER RESOURCES MANAGEMENT

CENTRE OF EXCELLENCE IN WATER RESOURCES ENGINEERING
UNIVERSITY OF ENGINEERING AND TECHNOLOGY
LAHORE.

JUNE, 1989

A B S T R A C T

This study has focussed on different aspects of canal opera-
tion and distribution of canal water which plays a pivotal role
in overall water management in the country. A canal operation
model is developed to run the canals and distribute the water
among distributaries on equitable and reliable basis as close to
varying needs of crops as possible. To varify the model, data of
Pakpattan Canal (U) was used of irrigation water requirements and
canal releases. Canal operation characteristics, operational and
distributional constraints and water balance in the canal command
area were studied. Pattern of canal releases and operation of
distributaries w.r.t. reliability and equitability of supplies
were analysed. Limitations and constraints to run the canals on
crop water demand were also identified.

Irrigaion requirements were found considrable greater than
canal supply and capacities of canals. The total average annual
canal supply in Pakpattan Canal (U) command per acre of CCA was
2.65 ft while irrigation requirements were found 7.57 ft. The
canal capacity can meet 49.61 percent irrigation requirements, if
canal runs whole year on capacity while it is only 36 percent of
maximum daily average requirements. Canal releases were observed
to be neither equitable nor reliable. Agriculture is being prac-
tised with "under irrigation" condition. The total water supply
(canal and pumpage) meet 77.89 percent of full delta requirements
of crops.

Numerous constraints i.e. inadequate water availability, canal

capacity, insufficient physical control facilities, technical
limitations, lack of management capabilities and modern
technology, economic and social factors and unfavourable on-farm
conditions do not allow the canal systems in the country to
operate "on demand basis". However, improvements in canal opera-
tion and distributaries deliveries were observed when canal
operation and regulation models were applied using the data of
Pakpattan Canal (U). 51 percent cropped area in Kharif and 39
percent in Rabi got assured water supply throughout the seasons
according to varying need of crops. Distributaries take supply at
capacity with almost equal number of running periods at the end
of year.