

THESIS

TECHNICAL ASPECTS OF PROPOSED MANGLA - MARALA  
LINK CANAL



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## ABSTRACT

By constructing a series of dams on Chenab River and its tributaries, India can easily control the flows in Chenab River, and in turn can effectively dry up the canal systems off-taking from Marala Head Works. The mal-operation of Indian planned dams/hydroelectric projects upstream of River Chenab will affect the total flow downstream of Chenab River. To eliminate the mal-operation effect completely for about 51 days, the total additional net storage required is 2,14, 891 A. F. This implies that the storage at Marala should be supplemented through a link canal with Mangla reservoir to offset this shortage at Marala. The proposed Mangla - Marala Link Canal (MMLC) would feed the canal systems downstream of Marala Head Works (MHW) in case of emergencies resulting from stoppage of water by India as well as to safeguard against the probable threats from India.

Keeping in view of above, the present study was conducted, the main objectives being i) to determine water availability from Mangla Dam, ii) establish shortest route and iii) prepare design for construction of MMLC. The water availability study was carried out to ensure availability of water from Mangla Dam for off taking MMLC. The study shows that Mangla reservoir has been quite efficient in filling i.e its present chances of filling are 4 in every 5 years. The possibility of filling of raised Mangla comes out to be 50% or once every two years. By raising of Mangla dam, the water availability will increase due to regaining the reservoir storage capacity lost due to sedimentation.

The most desirable and economical route (shortest route) was selected based on topographic sheets, aerial photographs, statistical information, and published reports of the area. Out of the four identified alignments for the proposed MMLC, the fourth alignment, which takes off from Jari Dam and outfalls upstream of Marala Head Works, seem to be the best option. This alignment is also the shortest route and its length would be about 50 miles including a tunnel length of 2.5 miles. Also it will act as a defense canal and cover this corridor against enemy attack.

The suggested design parameters of cross-section of proposed Mangla – Marala Link Canal (MMLC), based on Lacey's Method & Modified Kirmani Section was computed by using Computer Package "Design Channels for Windows (DCW)".

To meet the shortage at the Marala Head Works due to mal-operation of Indian Dams/Hydroelectric projects, potential storage sites such as at Bhimber Nullah should be explored. Remodeling of Marala Head Works, Marala - Ravi Link Canal and BRBD Canal should be carried out at the earliest. The Government of Pakistan should approach the World Bank, the guarantor of the Indus Basin Treaty, to ask India to stop the violation of the Treaty and halt all planned or under-construction Projects which stores water and only run-of-river projects should be allowed on the western rivers.

This study will serve as a pre-feasibility report and based on this pre-feasibility study, a more detailed feasibility study can be carried out by WAPDA, Punjab Irrigation & Power Department and consulting firm/s for executing this project of national importance.