Panuwat Klinbubpha 2014: The Study of Potential Improvement to Increase Water Capacity Conveyance of MWA Western-Bank Raw Water Canal. Master of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Associate Professor Suwatana Chittaladakorn, Ph.D. 133 pages

The objective of this study is to find the guide for enhancing conveyance capability of the western raw-water canal of the MWA. The MIKE 11 mathematical model was used for hydraulic simulation of the canal, starting from Mae-Klong dam to Mahasawat water treatment plant with the total canal length of 107 km. The simulations were tested by present and future possible conditions.

The results of calibration and validation of MIKE 11 flow simulation for the current condition showed that the values of Manning's roughness coefficient (n) of the concrete canal is in the range of 0.017 to 0.018, and of the earth canal is 0.026. As for future condition, the simulation was made for water conveyance at the rate of 45, 60, and 75 cu.m./sec, respectively, for the simulated condition that there is no gate control at the Banglen bypass channel. The simulation result for 45 cu.m./sec was found sufficient capability of the current canal condition. However, as for the 60 and 75 cu.m./sec, insufficient capabilities of the canal were found. The result showed that in order to convey the 60 cu.m./sec, it need to improve five (5) canal structures. While to convey 75 cu.m./sec, the total of twenty (20) canal structures along the channel need to be improved and also adding another Banglen bypass canal with the same original side, in order that the conveyed water in all cases will not over-flow the top bank of the canal.

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