



University of Zabol

Graduate School

Faculty of Water and Soil

Department of Water Engineering

The Thesis Submitted for the Degree Of Master of Science

(in the Field of water Resources Engineering)

**Hydraulic analysis of chahnemeh 4 channel and its related structures using
MIKE11 software**

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Winter2021

Abstract:

Unsteady flow in an irrigation network influences the hydraulic performance of canals and the hydraulic structures. It impacts the temporal and spatial changes in flow rate and depth throughout the channel network and hydraulic structures. In this study, using the hydrodynamic model MIKE11 the performance of a part of the outlet channel of the Chahnimeh-4 reservoir and the structures along the canal were modelled and analyzed under unsteady flow condition. Calibration and validation of the model were performed using observed flow in the two periods of 29 November to 7 December 2018 and 17 December 2018, respectively. The model was calibrated by applying changes in the channel roughness coefficient of Manning between 0.02 and 0.03 and the 0.0218 showed the lowest RMSE in both the calibration and validation steps. Thus, the efficiency of the model for hydraulic analysis of the canal was proved. The canal from point 0 to 2/320 km along its path were examined in different operating conditions and the best operating condition to provide the design flow for the two intakes in this part of the canala was found to be related to the scenario of having a closed gate at kilometer 2.23. Overall, MIKE11 was proved effective for simulation and hydraulic analysis of the case study under the defined unsteady flow condition, and it can also be used by the water authorities in this sector for studying the canal hydraulics under different managerial acts.