Proceedings of Civil and Water Resources Engineering Conference
3-4 November 2017, BIAM Foundation, 63 Eskaton, Dhaka, Bangladesh
ISBN: 978-1-925488-52-4

Hydrological and Hydraulic Consideration for Design and Construction of Closure Dam on Little Feni River

Mehanaz Moshfika[1*] and Ataur Rahman[2]

The Little Feni River is a trans-boundary river. Scarcity of fresh water in dry season and salinity intrusion in the surrounding area by the river makes the soil infertile. In order to reduce saline water intrusion a closure has been proposed to be constructed on Little Feni River at Musapur site. The study has been carried out in order to assess the hydrological condition of this river, to assess the advantages and fresh water conservation of the river due to construction of closure dam and to simulate the critical hydraulic condition by considering three different openings in the middle. The hydrological assessment has been done by reviewing previous study on the river. This river has maximum average monthly flow of 104.789m^3/s at August and minimum average monthly flowof 4.903m^3/s at December. Tidal range is above 4m. A previous study reveals that the fresh water storage due toconstruction of closure in this river is about 41.90 Mm^3. HEC-RAS model has been set up to simulate the critical hydraulic condition during the final closing of the dam considering three different sizes opening (80m, 100m and 120m) as final closing. After the simulation, the maximum velocity is observed as (-)1.75 m/s, (-)2.05 m/s and (-)1.43 m/s for 100m, 80m, 120m openings respectively. The negative (-) sign means the velocity direction is from downstream to upstream during flood tide. And the minimum velocity is observed as (+) 0.16m/s for 100m, 80m, 120m opening. The positive (+) sign means the velocity direction is from upstream to downstream during ebb tide. Model result shows that most favorable hydraulic condition for final closing of the dam develops at the proposed dam site during mid of the January at low tide condition.

Keywords: Closure dam, Hydrological condition, Fresh water conservation, HEC-RAS.

---

[1] *Graduate Student, Institute of Water and Flood Management, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh, e-mail: mehanaz.wre09@gmail.com*

[2] *Professor, Department of Water Resources Engineering, Bangladesh University of Engineering and Technology, Dhaka-1000, Bangladesh, e-mail: mataur@wre.buet.ac.bd*