1. **Experimental study of increasing energy dissipation on stepped spillway**

**ABSTRACT**

An experimental study was conducted on flat sloped and stepped spillways in order to specify the efficiency of energy dissipating of flow and then trying to improve that as a new and novel study. Twelve spillways were constructed from plywood and tested to compare between flat sloped and stepped spillways first, and as a conclusion in this study and many previous papers (which is when increasing discharge the energy dissipation decreasing), so it can be choosing the most effective one that dissipate energy at high discharges and try to modify it using two cases of blocks and one case of cascade for increasing energy dissipation secondly , so three downstream slopes of stepped face (θ = 27 o, 32 o , and 40 o) were tested with flat sloped, stepped having two steps, and stepped having four steps. The results showed that when decreasing both number of steps and downstream slops stepped face of the spillway will cause an increase of the ratio of flow energy dissipation, and the stepped spillways are more efficient in flow energy dissipation compared with flat sloped spillways, also when using cascade spillway the energy dissipation will decrease compare with original step spillway that have the same characteristics and increased when using blocks.