

Study of Suspended Sediment Transport at Tigris River- upstream Kut barrage (Iraq)

Mohammed S. Shamkhi, Ahmed F. Noori

1. Assistant Professor, Civil Engineering Department/ Wasit University,

msewan@uowasit.edu.iq

ahmedf227@uowasit.edu.iq

2. MSc. Student, Civil Engineering Department/ Wasit University,

Abstract

Estimation of suspended load for Tigris River upstream of Kut Barrage is very important issue because of the large amount of sediments that accumulate upstream the barrage. The study includes field and laboratory work, five cross sections allocated with study reach for the purpose of field sampling and measurement of hydrodynamic parameters. The result show that all bed samples are silt clay and suspend about Bagnold on shield diagram.

The comparison between predicted suspended sediment discharge by Bagnold formula and field observation of suspended sediment discharge show good agreement with equal R^2 of 1.0 and RMSE range from 0.9 to 2.4.

Key words: Sediment transport, Suspended load, Tigris River, Bagnold

1. Introduction

Sediments are fragments of rocks and minerals that are broken down by erosion or weathering, and are subsequently transported by water, wind, or ice. Sediments have a higher density than water and the sediments will therefore sink in still standing water. In a river, the sediments will be acted by the forces from water and turbulence. Sediments are picked up and carried by the river either in suspension or as bed load. The sediment transport capacity is dependent on the discharge of the river. High water speeds lead to more sediments. When water velocities are lowered, the heaviest sediments will settle [1]. The quantity of sediment flows through the natural alluvial rivers or which is the reliable sediment transport model that can be recommended, are the main problem usually faced by the scientists and engineers who are engaged in many projects related to sediment control [2]. Many physical phenomena generated in the river due to the sediment scour and deposition, such as reservoir sedimentation, river bed degradation, local scour or deposition around hydraulic structures, impairing the protection of sensitive turbines in a hydroelectric power station, effect on the level of water and performance of any structure such as regulator, lateral channel [3].