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Sedimentation and water quality deterioration problems at Terengganu River Basin, Terengganu, Malaysia

Noorjima Abd Wahab[a], Mohd Khairul Amri Kamarudin[a,*], Mohd Ekhwan Toriman[b], Hafizan Juahir[a], Muhammad Hafiz Md Saad[a], Frankie Marcus Ata[a], Adiana Ghazali[a], Abdul Rahman Hassan[a], Hanif Abdullah[a], Khairul Nizam Maulud[c], Marlia Mohd Hanafiah[d], Hazamri Harith[e]

[a]*East Coast Environmental Research Institute (ESERI), Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Nerus, Malaysia, Tel. +609-6688698; Fax: +609-6688707; email: mkhairulamri@unisza.edu.my (M.K.A. Kamarudin), Tel. +609-6663410; email: jima_jumaaries@yahoo.com (N. Abd Wahab), Tel. +609-6687949; email: hafizanj@gmail.com (H. Juahir), Tel. +609-6688070; email: hafizsaad_ukm@yahoo.com (M.H. Md Saad), Tel. +609-6688691; email: frankiemarcusata@gmail.com (F.M. Ata), Tel. +609-6688694; email: adiana.ghazali@gmail.com (A. Ghazali), Tel. +609-6688690; email: rahmanhassan@unisza.edu.my (A.R. Hassan), Tel. +609-6688692; email: hanif9106@gmail.com (H. Abdullah)*
[b]*School of Social, Development and Environmental Studies, Faculty of Social Sciences and Humanities, National University of Malaysia, 43600 Bangi Selangor, Malaysia, Tel. +603-89252836; email: ikhwan@ukm.edu.my*
[c]*Earth Observation Center, Institute of Climate Change, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia, Tel. +603-89216767; email: knam@ukm.edu.my*
[d]*School of Environmental and Natural Resource Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor 43600, Malaysia, Tel. +603-89215865; email: mhmarlia@ukm.edu.my*
[e]*CNH Advantech SDN. BHD., No. 88 Jalan Selasih 5, 47000 Sungai Buloh, Selangor, Malaysia, Tel. +6012-2028361; email: cnhadvantech@gmail.com*

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ABSTRACT

Rivers, which provide 90% of the readily available freshwater, are key components of global water resource system. Terengganu River experienced deterioration in water quality, resulting from the sedimentation, anthropogenic, geomorphology problems and unsustainable development management around the river basin. This study was implemented to prove the sedimentation problem especially the formation of total suspended solid (TSS) and annual sediment load (SL). The technique of analysis of primary data obtained which determine according with the procedure TSS and SL. The results showed that the highest average of TSS (mg/L) is 67.2 (wet season) and 128.2 (dry season) which are class III. While the highest turbidity is 43.57 (wet season) and 21.57 (dry season) which are Class II based on National Water Quality Standard (NWQS). The highest annual average estimation for annual SL flow out from the Terengganu River Basin is 6,846.709 tonnes/km^2/year (Manir River Basin) the lowest in the Pauh River Basin is 2.850 tonnes/km^2/year. The statistical analysis proved the weak regression relationship between TSS, river discharges (Q), SL and area of catchment caused by the anthropogenic factors and uncertain climate changes. Furthermore, the water in the Terengganu River was classified under class III caused by the active land use activities especially industrial and development but it is still suitable for recreational activities and safe for body contact because its water quality index is not less than 65% which early stage of Class II. The contributors of sedimentation problems are from unsustainable land use such as sand mining activities which effectively trap the bed sediments, backflow that carries out high sediments, as well as sedimentation produced due to the river bank erosion. This study suggests the sedimentation management methods including land use settlement, cliff erosion problems, settlement and negotiable of uncontrolled development operations in Terengganu River and the integration of river management methods based on integrated river basin management in Terengganu River Basin is recommended.

Keywords: Sedimentation; Total suspended solid (TSS); Annual sediment load (SL); National water quality standard (NWQS); Terengganu River basin

* Corresponding author.