A STUDY OF RIVER FLOW IN KERTEH RIVER, TERENGGANU USING ARC VIEW SOIL AND WATER ASSESSMENT TOOL (AVSWAT)

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A Study of River Flow in Kerteh River, Terengganu Using ArcView Soil and Water Assessment Tool (AVSWAT)

By

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Research Report submitted in partial fulfillment of the requirements for the degree of Bachelor of Science (Marine Science)

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DEPARTMENT OF MARINE SCIENCE
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DECLARATION AND VERIFICATION REPORT

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled:

A Study Of River flow in Kerteh River, Terengganu Using ArcView Soil and Water Assessment Tool (AVSWAT) by **Muhammad Fakhrurazi Bin Kamaruddin**, Matric No. **UK15772** have been examined and all errors identified have been corrected. This report is submitted to the Department of Marine Science as partial fulfillment towards obtaining the Degree **of Science (Marine Science)**, Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu.

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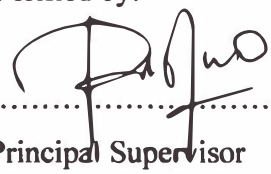

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ABSTRACT

The area for this study is Kerteh River catchment area that located at Kemaman, Terengganu which have the total area of the watershed is approximately 27 500 hectares. The catchment area consists of rural area, urban area, agriculture area and industry area. The industry activities and the behavior of urbanization bring much strain on utilization of land and river system in Kerteh River catchment. Oil and gas industries area that nearby the catchment area give a significant impact on the generation of runoff and other water fluxes, pollutant transport to water courses and rates of erosion. The main aim of this study was to determine the river flow rate of Kerteh River catchment area and to create a new model of river flow simulation of Kerteh River. The study was done by using in-situ sampling where a current meter was deploy in two sampling station to get the data of flow in Kerteh River. This study also needs the Soil and Water Assessment Tool (SWAT) to predict the impact of land use on water flow. The SWAT model were simulated the watershed process for 10 years (2000-2009). The correlation analysis is being analyzed from the In-situ data and data from AVSWAT. The analysis show that the good relationship which is 0.91. This model is very important for study and predicts the river flow in the future.

KAJIAN ALIRAN SUNGAI DI SUNGAI KERTEH, TERENGGANU MENGGUNAKAN KAEDAH PENILAIAN AIR DAN TANAH (AVSWAT)

ABSTRAK

Kawasan kajian dalam penyelidikan ini ialah kawasan tadahan Sungai Kerteh, Terengganu yang mempunyai jumlah luas kawasan aliran sungai kira-kira 27 500 hektar. Kawasan tadahan dilitupi oleh kawasan penempatan, bandar, kawasan pertanian dan kawasan industri. Aktiviti industri dan aktiviti urbanisasi mendatangkan kesan terhadap penggunaan air di kawasan tadahan. Kawasan industi gas dan petroleum juga memberikan kesan kepada penggunaan air,hakisan dan pencemaran. Matlamat kajian ini adalah untuk menentukan kadar aliran air sungai di Sungai Kerteh dan mencipta simulasi aliran air Sungai Kereteh. Kajian dijalankan dengan melakukan kaedah in-situ dimana dua Current Meter telah diletakkan di dua stesyen iaitu Station 1 dan Station 2 untuk mengambil bacaan data bagi arus Sungai Kerteh. Kajian ini juga memerlukan model SWAT(Soil and Water Assessment Tool) untuk meramalkan kesan penggunaan tanah terhadap aliran air sungai. Model SWAT ini mensimulasi proses aliran air sungai menggunakan data dari tahun 2000 hingga 2009. Analisis menunjukkan keputusan daripada kajian in-situ dan data dari AVSWAT menunjukkan hubungan yang baik iaitu dengan korelasi sebanyak 0.91. Model ini sangat berguna dalam kajian mengenai aliran air sungai pada masa akan datang.