

Soil Loss and sediment yield assessment from 1974-2012 in the some west-coast river catchments, Penang Island Malaysia

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Soil erosion is a worldwide problem because of its economic and environmental impacts. Many human-induced activities, such as mining, construction, and agricultural activities disturb land surface, resulting in accelerated erosion. There are many land clearing activities in catchment areas that could add an enormous amount of sediment to rivers. Nowadays, land has become one of limited resources in Penang due to the topography of the hilly and flat area. Penang Island is a city of rapid industrialization and density, and in order to face future challenges caused by rapid economic development, there is a high demand for flat land requirements. Land clearing activities contributes to the total concentration of sediment, affecting the health of the catchment area. To estimate soil loss, soil erosion model such as Universal Soil Loss Equation (USLE) is used to estimated average soil loss generated from splash, sheet and rill erosion. Use of the USLE has recently been extended for predicting soil losses and plan control practices in the agricultural catchment by effective integration of Geographic Information Systems (GIS) based on procedures to estimate the factor values in a grid cell basis. This study was performed to predict soil loss by USLE/GIS and the factor to calculate soil loss is Rainfall erosivity (R), Soil erodibility factor (K), Topographic factor (LS), Land cover management factor (C) and Conservation practices factor (P). Result shows that soil loss was 100.7 t/ha/year and sediment yield was 2336 t/km²/year in 2012, 84 t/ha/year and 1907 tan/km²/year in 2004; 144 t/ha/year and 1889 tan/km²/year in 1984 and 1974 the soil loss was 61 t/ha/year and the sediment yield was 1272 tan/km²/year.

Keywords: Soil Erosion, Soil loss and sediment yield assessment, USLE, GIS, Penang Island, Malaysia