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ASSESSMENT EFFECT OF RAINFALL ON SEDIMENTATION AT WATERSHED AREA USING REMOTE SENSING

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Thesis submitted to the Universiti Teknologi MARA Malaysia
in partial fulfilment for the award of the degree of the
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DECLARATION

I declare that the work on this project/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA (UiTM). This project/dissertation is original, and it is the result of my work, unless otherwise indicated or acknowledged as referenced work.

In the event that my project/dissertation be found to violate the conditions mentioned above, I voluntarily waive the right of conferment of my degree of the Bachelor of Surveying Science and Geomatics (Honours) and agree be subjected to the disciplinary rules and regulations of Universiti Teknologi MARA.

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ABSTRACT

Rainfall and sediment movement are important for knowing how watersheds work, especially in terms of sediment levels and water quality. Muda Dam, located in northern Peninsular Malaysia, serves as freshwater storage for water supply. The dam's catchment area is mostly covered by natural forest and has recently seen increased logging activity. This study investigates sedimentation and land cover changes in the watershed using remote sensing techniques, specifically the Normalized Difference Suspended Sediment Index (NDSSI) and Normalized Difference Vegetation Index (NDVI) derived from Sentinel-2 images. The goal is to understand how rainfall patterns and land cover changes influence sediment movement in the watershed. The research has three objectives which are to identify monthly rainfall data for 2018 and 2023, to analyze sediment and land cover changes using Sentinel-2 images, and to determine the correlation of rainfall and land cover changes using NDVI method on sedimentation at watershed area. Correlation analysis for 2018 and 2023 reveals a significant positive relationship between rainfall and NDVI on sedimentation, with values ranging from 0.4 to 0.8. This study concludes that rainfall has a significant impact on sedimentation, demonstrated by the strong positive relationship between rainfall and sediment levels.

Keyword: Rainfall, Sediment, Land cover changes, Normalized Difference Suspended Sediment Index (NDSSI), watershed area, Remote sensing, correlation

TABLE OF CONTENTS