عنوان مقاله:

Geological and Petrophysical Studies of Some Soil Erosion-Prone Zones within Okigwe and Umuahia Areas, Southeastern Nigeria

محل انتشار:

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خلاصه مقاله:

Geological and petrophysical studies of some erosion prone soils around Okigwe and Umuahia area, southeastern Nigeria was carried out to determine the erodibility and erosivity characteristics of the study area. Soil samples were collected with a soil auger at a depth range of ۰-۲m. Analyses carried out include the determination of petrophysical properties (porosity, permeability), and sieve analysis. Grain size analysis revealed sorting coefficients of ۰.۳۶-۱.۳۲, and graphical kurtosis of ۰.۵۱-۱.۴۹. The soils are predominantly well to moderately sorted, strongly coarsed skewed and leptokurtic. The sand/sandstone is ۸۷-۱۰۰% sand with little or no fines with the percentage moisture content ranging from ۳.۸-۲۶.۷%. Estimated permeability values ranges between ۰.۱۲-۰.۴۶cm/s while the porosity values are between ۳۲.۲-۳۷.۸%. Result of this study thus revealed that the area is characterized by an interlaying of clay/shale and sandstone units. The accumulation of water at the contact of the shale/sandstones units decreases the shear strength of the sandstone which further reduces the stability and results in the slipping off of the sandstone unit. The slipped sandstone is later carried away by runoff thereby leading to gully development.

کلمات کلیدی:

Geological, Soil erosion, Erodibility, Shear strength, Grain size