

ABSTRACT

SAKKA, Shoreline Changes Model at Jeneberang Around River Delta, Makassar, South Sulawesi. Under direction of MULIA PURBA, I WAYAN NURJAYA. HIDAYAT PAWITAN AND VINCENTIUS P. SIREGAR.

The study of shoreline changes during 1990 - 2008 around the delta of the River Jeneberang, Makassar was conducted by evaluating sediment transport into and out of a cell. The wave heights and periods at deep water offshore of the coast were predicted using wind data recorded at Potere Stasiun, Makassar in 1990 - 2008. Wave transformation as these deep water waves propagated toward the coast were analyzed by considering the effect of shoaling and refraction to determine changes of wave patterns (wave directions and heights) and the breaking of the waves near the coast. Longshore sediment transport was computed by considering the influence of heights and angles of the breaking waves. Generally the height of breaking wave that coming from southwest and west were higher than those from northwest. Results of calculation of sediment transport show that the dominant of sediment transport was to the north during the arrival of the southwest and west waves, and to the south when the wave coming from the northwest. Comparison between shore profiles resulting from model and coastline satellite imagery showed similarity. The difference between the two tended to be occurred at the head land part of the shoreline. This was due to complexity of coastal dynamic at the area. The results of the 19 years shoreline simulation showed that there was a tendency of abrasion at the upstream head land part as the wave energy tend to converge and accretion at the bay part as the wave energy tend to diverge. Abrasion mainly occurred at Tanjung Bunga (head land) where the coast retreat 181.1 m. This was caused by the closure of the Jeneberang River and Bilibili Dam development. Therefore, the sediment supply to the coast of Tanjung Bunga was decreased while the wave heights were very large. Accretion occur in the bay area (Tanjung Merdeka) where the coast advance to the sea for about 59.8 m. The shoreline tend to be stable when the profile is straight such as Barombong Coast. Result of simulation model showed that about 24.5 ha faced abrasion (with abrasion rate about 10585.1 m³/year) while about 6.2 ha faced accretion (with sedimentation rate about 900.4 m³/year) during 1990 – 2008.

Keywords: abrasion, accretion, sediment transport, shoreline changes.