

SINTA IGA FADMALA NPM. 15.03.4.1.1.00015. *Pemodelan Transport Sedimen di Perairan Estuari Porong, Sidoarjo. Dibawah bimbingan Dr. Zainul Hidayah, S.PI., M.App.Sc.*

ABSTRAK

Sungai Porong berfungsi untuk mengalirkan sebagian debit dari Sungai Brantas, kemudian membawa angkutan sedimen yang akan berpengaruh terhadap proses sedimentasi terutama di bagian estuari dan mengakibatkan terhambatnya aliran sungai serta majunya posisi muara sungai. Tingginya sedimentasi dipengaruhi proses transport sedimen yang terjadi di estuari Porong. Faktor – faktor yang mempengaruhi proses transport sedimen antara lain adalah pasang surut, arus, angin dan debit sungai. Akhir bulan Mei 2006 terjadi semburan lumpur panas di lokasi PT. Lapindo Brantas dan membuang semburan lumpur panas tersebut ke Sungai Porong, yang secara langsung akan menambah jumlah pasokan sedimen yang mengalir di Sungai Porong dan mempengaruhi besarnya sedimentasi yang terjadi. Untuk itu diperlukan suatu penelitian tentang pemodelan transport sedimen di estuari Porong yang dapat digunakan untuk mengetahui pola aliran sedimen, besar konsentrasi sedimen dan laju deposisi sedimen yang terjadi di estuari Porong. Pemodelan transport sedimen menggunakan software berupa Mike 21 selama bulan Desember sampai Maret dengan menggunakan Hydrodynamic Modul dan Mud Transport Modul. Dari hasil simulasi pemodelan diperoleh nilai kecepatan arus maksimum sebesar 1.55 m/s. Nilai konsentrasi sebaran sedimen selama bulan Desember sampai Maret baik fase neap ataupun spring tide diperoleh nilai konsentrasi sebaran sedimen maksimum sebesar 0.55 kg/m³ dan nilai laju deposisi sedimen maksimum sebesar 0.00041 kg/m²/s.

Kata kunci : *Pemodelan, Transport Sedimen, Estuari Porong*

SINTA IGA FADMALA NPM. 15.03.4.1.1.00015. Sediment Transport Modelling in Estuary Waters of Porong, Sidoarjo. Under the Supervision **Dr. Zainul Hidayah, S.Pi., M.App.Sc.**

ABSTRACT

The Porong River serves to drain a portion of the discharge from the Brantas River, then carry sediment transport which will affect the sedimentation process, especially in the estuary section and result in the obstruction of the river flow, also the advancement of the embouchure position. The high of sedimentation is influenced by the sediment transport process occurred in the Porong estuary. Factors that influence the sediment transport process include tides, currents, wind and river discharge. At the end of May 2006 there was a hot mudflow at the location of PT. Lapindo Brantas and disposed the hot mudflow into the Porong River, which would directly increase the amount of sediment supply flowing in the Porong River and affected the amount of occurred sedimentation. Therefore, it is needed a study of sediment transport modeling in the Porong estuary which can be used to determine the pattern of sediment flow, the amount of sediment concentration and the rate of sediment deposition occurred in the Porong estuary. Sediment transport modeling used a software in the form of Mike 21 during December 2018 to March 2019 which used the Hydrodynamic Module and Mud Transport Module. According to the results of modeling simulations the maximum current velocity value is 1.45 m/s. The value of the sediment distribution concentration during December to March both the neap and spring tide phases obtained the maximum sediment distribution concentration of 0.5 kg/m³ and the maximum sediment deposition rate of 0.00045 kg / m² / s.

Keywords: Modeling, Sediment Transport, Estuary Porong