

ABSTRAK

Dalam menjaga kualitas air irigasi di Sungai Ular dikonstruksikan bangunan kantong lumpur (*settling basin*) tepat setelah bangunan pengambilan, sistem pembilasan sedimen dilakukan secara hidraulik dengan cara membuka pintu saluran pembilas sehingga sedimen terbilas dengan aliran air, oleh karena itu untuk mengetahui proses jalannya aliran air di dalam kantong lumpur perlu menganalisis untuk mengetahui fraksi sedimen, menghitung estimasi sedimen masuk, kecepatan aliran dan kehilangan tinggi energi air pada saluran. Dalam pengerjaan skripsi ini disusun tahapan penelitian berupa pengumpulan data primer berupa dokumentasi lokasi penelitian, kemudian data sekunder berupa gambar, data dan laporan teknis, melakukan studi pustaka yang berasal dari text book, jurnal dan catatan kuliah, menganalisa secara hidraulis data teknis eksisting yang berkaitan dengan bangunan settling basin Daerah Irigasi Sungai Ular yang meliputi analisa angkutan sedimen dan volume tampungan, analisa elevasi muka air dan kehilangan tinggi energi serta mengetahui efisiensi pengendapan dan frekuensi pembilasan. Untuk mengetahui dan memperkirakan jumlah angkutan sedimen digunakan tiga metode yaitu Lane and Kalinske, Einstein, dan Seksi Hidrometri. Besar sedimen yang mendekati hasil analisa angkutan sedimen adalah metode Lane and Kalinske dengan angkutan sedimen per hari yang masuk ke intake memiliki volume sedimen $0,867 \text{ m}^3/\text{hari}$, dengan kecepatan aliran rata – rata pada proses pembilasan di saluran pembilas $2,658 \text{ m/detik}$, hal ini sesuai dengan ketentuan bahwa pada saat pembilas sedimen secara hidraulis kecepatan harus mempunyai aliran superkritis.

Kata kunci : Kolam lumpur, sedimen, aliran air.

ABSTRACT

In maintaining the quality of irrigation water in the Ular River, a mud bag building (settling basin) was constructed right after the collection building, the sediment flushing system was carried out hydraulically by opening the flushing channel door so that the sediment was rinsed with the flow of water, therefore to determine the process of the flow of water in the river. In the mud bag, it is necessary to analyze to determine the sediment fraction, calculate the estimated sediment inflow, flow velocity and high energy loss of water in the channel. In working on this thesis, the research stages were arranged in the form of primary data collection in the form of research location documentation, then secondary data in the form of images, technical data and reports, conducting library research from text books, journals and lecture notes, hydraulically analyzing existing technical data related to building settling basin for the Snake River Irrigation Area which includes analysis of sediment transport and storage volume, analysis of water level elevation and loss of high energy as well as knowing the efficiency of deposition and frequency of flushing. Three methods are used to determine and estimate the amount of sediment transport, namely Lane and Kalinske, Einstein, and the Hydrometry Section. The amount of sediment that is close to the results of the sediment transport analysis is the Lane and Kalinske method with sediment transport per day entering the intake having a sediment volume of 0.867 m³/day, with an average flow velocity during the flushing process in the flushing channel 2.658 m/second, this is in accordance with provided that when flushing the sediment hydraulically the velocity must have a supercritical flow.

Key words : Mud pond, sediment, water flow.