

## INTISARI

Sungai Winongo mengalir tiga kabupaten/kota di Provinsi Daerah Istimewa Yogyakarta yaitu Kabupaten Sleman, Kota Yogyakarta, dan Kabupaten Bantul. Berdasarkan Peraturan Gubernur D.I. Yogyakarta Nomor 22 Tahun 2007, kategori mutu air Sungai Winongo termasuk dalam kelas satu. Kondisi kualitas air tersebut mengalami penurunan menjadi sungai tercemar ketiga setelah Code dan Belik. Penelitian ini bertujuan untuk menentukan nilai beban pencemar yang masuk ke sungai dan daya tampung beban pencemaran sehingga dapat ditentukan alokasi beban pencemar tiap segmen sungai.

Penelitian ini menerapkan metode kuantitatif deskriptif. Penentuan titik pengambilan sampel dilakukan secara *purposive* berdasarkan aktivitas manusia yang tercermin dari penggunaan lahan dan berpotensi menghasilkan limbah. Sampel air diambil secara *grab sampling* di tujuh titik sepanjang Sungai Winongo kemudian dilakukan uji laboratorium untuk parameter BOD. Estimasi beban pencemar BOD yang digunakan sebagai *input* dalam simulasi model berasal dari inventarisasi data instansi terkait. *Water Quality Analysis Simulation Program* (WASP) digunakan untuk mengolah data dengan *input* kualitas air, morfologi, dan debit sungai. Program WASP berfungsi untuk menyimulasikan data agar menghasilkan model beban pencemar dan daya tampung beban pencemar.

Hasil penelitian menunjukkan bahwa Sungai Winongo masih mampu menampung beban pencemar baik secara keseluruhan maupun tiap segmen. Hasil pemodelan beban pencemar total sebesar 51,78 kg/hari dan daya tampung beban pencemar total sebesar 139,08 kg/hari. Segmen enam menghasilkan beban pencemar tertinggi sebesar 20,11 kg/hari dengan daya tampung beban pencemaran sebesar 79,13 kg/hari. Beban pencemar terendah sebesar 2,57 kg/hari dengan daya tampung beban pencemaran sebesar 4,56 kg/hari. Berdasarkan hasil tersebut, tidak terdapat beban pencemar yang perlu dikurangi di masing-masing segmen karena selisih daya tampung dengan beban pencemar bernilai positif.

Kata Kunci: Beban Pencemar, Kualitas Air, BOD, Winongo, WASP

## ABSTRACT

The Winongo River flows through three regencies/cities in the Province of the Special Region of Yogyakarta, namely Sleman Regency, Yogyakarta City, and Bantul Regency. Based on the Regulation of the Governor of D.I. Yogyakarta Number 22 of 2007, the category of water quality of the Winongo River is included in the first class. The water quality condition has decreased become the third polluted river after Code and Belik. This study aims to determine the value of the pollutant load entering the river and the capacity of the pollution load so that the allocation of the pollutant load for each section of the river can be determined.

This research applies descriptive quantitative method. Determination of sampling points is done purposively based on human activities which are reflected in land use and the potential to produce waste. Water samples were taken by grab sampling at seven points along the Winongo River and carried out laboratory tests for BOD parameters. The estimated BOD pollutant load that is used as input in the model simulation comes from the data inventory of the relevant agencies. Water Quality Analysis Simulation Program (WASP) is used to process data with inputs of water quality, morphology, and river discharge. The WASP program functions to simulate data to produce a pollutant load model and pollutant load capacity.

The Winongo River is still able to accommodate the pollutant load both in its entirety and individually. The result of modeling the total pollutant load is 51.78 kg/day and the total pollutant load capacity is 139.08 kg/day. The six cut produces the highest pollutant load of 20.11 kg/day with a pollution load capacity of 79.13 kg/day. The lowest pollutant load is 2.57 kg/day with a pollution load capacity of 4.56 kg/day. Based on these results, there is no pollutant load that needs to be reduced in each section because the difference between the capacity and the pollutant load is positive.

**Keywords:** Pollutant, Water Quality, BOD, Winongo, WASP