

PENGARUH MORFOMETRI SUNGAI TERHADAP KEMAMPUAN SELF-PURIFICATION DI SUNGAI TAMBAKBAYAN, DAERAH ISTIMEWA YOGYAKARTA

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INTISARI

Sungai Tambakbayan merupakan salah satu sungai yang melewati kawasan perkotaan, sehingga akan memiliki sumber pencemar yang bersifat kompleks. Badan sungai memiliki kemampuan untuk memurnikan kualitas airnya dari zat pencemar yang masuk. Proses tersebut disebut dengan *self-purification*. Tujuan dari penelitian ini adalah (a) mengetahui persebaran potensi sumber pencemar di DAS Tambakbayan, (b) mengetahui karakteristik kualitas airnya berdasarkan parameter fisika (warna, bau, suhu, DHL) dan parameter kimia (pH, DO, BOD, COD), dan (c) mengetahui pengaruh morfometri sungai terhadap kemampuan *self-purification* (kemiringan dasar sungai, sinousitas, dan material dasar sungai).

Metode pengambilan sampel dilakukan dengan metode *systematic sampling*, dimana pemilihan sampel diambil pada interval jarak tertentu, yaitu 2 km. Sungai Tambakbayan yang memiliki panjang alur sungai 27 km dibagi menjadi 10 titik pengamatan. Metode penelitian yang digunakan adalah metode observasi dan analisis laboratorium, sehingga pada setiap titik sampel dilakukan pengukuran morfometri dan pengambilan sampel air untuk selanjutnya dianalisis lebih lanjut di laboratorium. Metode analisis data yang dilakukan adalah deskriptif, statistik, dan keruangan.

Hasil penelitian menunjukkan bahwa morfometri sungai dapat mempengaruhi proses *self-purification*. Kemiringan dasar sungai, sinousitas, dan kekasaran dasar sungai dapat mempercepat proses aerasi yang kemudian dapat meningkatkan kemampuan air dalam proses *self-purification*. Sungai Tambakbayan mengalami pemulihan dari segi kualitas air namun belum mampu mencapai kondisi yang sama pada saat sebelum menerima beban pencemar. Kondisi ini mengindikasikan bahwa Sungai Tambakbayan membutuhkan waktu dan jarak yang lebih panjang agar dapat mencapai fase yang sempurna.

Kata kunci: *self-purification*, kualitas air, morfometri, pencemaran sungai

THE EFFECT OF RIVER MORPHOMETRY ON SELF-PURIFICATION ABILITY IN TAMBAKBAYAN RIVER, SPECIAL REGION OF YOGYAKARTA

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ABSTRACT

Tambakbayan River is one of the urban areas passing rivers, consequently, it will possess a complex source of pollutants. River bodies can purify the quality of their water from incoming pollutants. This process is called self-purification. The purpose of this study is (a) to discover the distribution of potential source of pollutants in the Tambakbayan River flow area, (b) to discover the character of the water quality based on physical parameters (color, smell, temperature, Electrical Conductivity) and chemical parameters (pH, DO, BOD, COD), and (c) to discover the outcome of the river morphometry towards its self-purification ability (gradient, sinuosity, and river bed material)

The sampling method was carried out by a systematic method, where sample selection was taken at a certain interval of 2 km. The 27 km of the Tambakbayan River channel was divided into 10 observation points. Observatory method and laboratory analysis were used as research methods. Therefore, morphometry measurement and water sampling were performed on every observation point for further laboratory analysis. Descriptive, statistic and spatial were utilized as data analysis methods.

The result of the study exhibited that the river morphometry can influence the process of self-purification. The slope of the river bed, the sinuosity, and the abrasiveness of the river bed can accelerate the aeration process that can further increase the water's ability in the process of self-purification. The Tambakbayan River water quality experienced a recovery, however, it had not yet capable of achieving the same condition before receiving any pollutants. This condition indicated that the river requires a longer time and distance to reach a perfect phase.

Keywords: self-purification, water quality, morphometry, river pollution