

KAJIAN STATUS MUTU AIR DAN DAYA TAMPUNG BEBAN PENCEMARAN DI SETU BABAKAN JAKARTA

INTISARI

Status mutu air dan daya tampung beban pencemaran dapat mencerminkan tingkat pencemaran pada suatu badan air. Kondisi tersebut dapat diketahui melalui pemantauan kualitas air. Pemantauan kualitas air sangat penting dilakukan untuk mengetahui apakah sumberdaya air dapat dimanfaatkan untuk memenuhi kebutuhan manusia atau tidak. Setu Babakan terletak di daerah perkotaan Jakarta Selatan. Penggunaan lahan di sekitarnya didominasi oleh permukiman. Hal tersebut berpotensi untuk mempengaruhi kualitas air di Setu Babakan. Penelitian ini bertujuan untuk (1) mengetahui sumber pencemar di Setu Babakan, (2) menganalisis kualitas air di Setu Babakan berdasarkan baku mutu air kelas II menurut PP No.82 Tahun 2001, (3) mengetahui status mutu air di Setu Babakan, dan (4) mengetahui daya tampung beban pencemaran di Setu Babakan.

Data sumber pencemar diperoleh dari pengamatan penggunaan lahan di sepanjang sungai yang menjadi *input* di Setu Babakan. Data kualitas air Setu Babakan diperoleh dengan melakukan pengukuran langsung di lapangan dan uji laboratorium. Parameter yang diukur yaitu suhu, *Total Dissolved Solid* (TDS), *Total Suspended Solid* (TSS), pH, *Biochemical Oxygen Demand* (BOD), *Chemical Oxygen Demand* (COD), nitrat (NO₃), fosfat (PO₄) dan detergen. Pengambilan sampel air dilakukan secara *purposive sampling* yaitu sebanyak 4 titik pengambilan sampel yang terletak di bagian *inlet* 1, *inlet* 2, tengah dan *outlet* Setu Babakan. Sampel air diambil sesuai dengan pedoman SNI 6989.57:2008 yakni secara komposit. Waktu pengambilan sampel yaitu pada tahun 2019 bulan Agustus, Oktober, Desember, dan tahun 2020 bulan Februari. Status mutu air dihitung menggunakan metode *Canadian Council of Ministers of the Environment* (CCME) dan daya tampung beban pencemar menggunakan rumus matematis berdasarkan Permen LH No. 28 tahun 2009.

Hasil penelitian ini menunjukkan bahwa sumber pencemar yang mempengaruhi kondisi perairan Setu Babakan bersumber dari limbah domestik, industri, perikanan, peternakan dan wisata. Kualitas air Setu Babakan berdasarkan baku mutu kelas II pada PP No. 82 Tahun 2001 menunjukkan bahwa beberapa parameter yang melampaui baku mutu yaitu pH (6-9), TSS (50 mg/L), BOD (3 mg/L), COD (25 mg/L), fosfat (0,2 mg/L) dan detergen (0,2 mg/L), sedangkan parameter suhu (deviasi 3), TDS (1000 mg/L) dan nitrat (10 mg/L) sudah memenuhi baku mutu air. Status mutu air Setu Babakan menggunakan metode CCME terbagi menjadi dua kategori yaitu cukup baik (65 – 79) dan buruk (45-64). Setu Babakan tidak dapat menampung beban pencemar parameter TSS, BOD, dan COD karena alokasi beban pencemar negatif atau sudah melebihi baku mutu.

Kata Kunci: Kualitas Air, Status Mutu, CCME, Daya Tampung Beban Pencemaran, Setu Babakan.

WATER QUALITY INDEX AND POLLUTION LOADING CAPACITY OF SETU BABAKAN, JAKARTA

ABSTRACT

Water quality index and pollution loading capacity reflect the level of pollution in the water body. That condition can be known by water quality assessment. Water quality assessment is necessary to find out whether or not water resources can be used to fulfill human needs. Setu Babakan is situated in an urban area, precisely at Serengseng Sawah Subdistrict, Jagakarsa District, the City of Jakarta Selatan. Land use around Setu Babakan is mostly used as residential buildings. That activities potentially affects its water quality. This research was intended to: (a) identify the source of pollutants of Setu Babakan, (b) analyze the water quality based on the Class II water quality standard issued in the Governmental Regulation No. 82 of 2001, (c) determine the water quality index of Setu Babakan, and (d) assess the pollution loading capacity of Setu Babakan

The source of pollutants in Setu Babakan was identified by observing the land utilization around the inlet. The water quality data were measured directly in the field and further tested in the laboratory. The parameters measured were temperature, Total Dissolved Solid (TDS), Total Suspended Solid (TSS), pH, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), nitrate (NO₃), phosphate (PO₄), and detergents. Water was collected from four points determined by purposive sampling technique (namely: Inlet 1, Inlet 2, center, and outlet of Setu Babakan) following the guidelines proposed in SNI 6989.57:2008. Water sampling was carried out at four different times, namely August, October, and December 2019 and February 2020. The water quality index was determined using the Canadian Council of Ministers of the Environment (CCME) method and the pollution loading capacity of Setu Babakan was computed using a mathematical formula proposed in Permen LH No. 28 of 2009.

The results showed that the pollutants came from domestic and industrial wastes, aquaculture practices, livestock farming, and tourism activities. Several water quality parameters have exceeded the Class II water quality standard issued in the Governmental Regulation No. 82 of 2001, namely pH (6-9), TSS (50 mg/L), BOD (3 mg/L), COD (25 mg/L), phosphate (0,2 mg/L) and detergent (0,2 mg/L), while temperature, TDS (1000 mg/L), and nitrate (10 mg/L) meets the quality standards for Class II. The water quality index of Setu Babakan was categorized as fair (65-79) and marginal (45-64). Setu Babakan could no longer carry pollutant loads that contributed to high TSS, BOD, and COD levels due to negative pollutant load allocations. This negative value is associated with the exceeded thresholds in the water quality standard.

Keyword: Water quality, water quality index, CCME, Pollution Loading Capacity, Setu Babakan.