## Assessment of the lower reaches of Tigris River by a development of a water quality index (WQI)

Sajad Abdul-Geni Abdullah, Naeem Shanad Hammadi, Yasser Wassfi Ouda

sajadgeni@yahoo.com, yasser-8884@yahoo.com, nae71em@yahoo.com

Address: Sajad Abdul-Geni Abdullah1, Naeem Shanad Hammadi2\*, Yasser Wassfi Ouda1 1Department of biology, College of Education–Qurna, University of Basrah, Basrah, Iraq 2Department of Fisheries & Marine Resources, College of Agriculture, University of Basrah, Iraq \*Corresponding Author

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## **ABSTRACT:**

Water samples were collected monthly from three stations along of Tigris River northeast of Basra city from October 2015 to September 2016. Eight of the ecological parameters were used to assess of water quality, temperature of water (T), electric conductivity (EC), dissolved oxygen (DO), total dissolved solids (TDS), total hardness (TH), chloride (Cl-), turbidity and hydrogen ion (pH). The mean value of temperature was  $24.8^{\circ}C \pm 10.4$ . Low rate of electric conductivity was (1.39) mS/cm) recorded in February and highest (3.27 mS/cm) in July with mean value 2.15mS/cm  $\pm$ 0.559. The average value of dissolved oxygen was  $7.5 \text{mg/l} \pm 0.951$ . Total dissolved solid was varied from 966mg/l in February to 1710mg/l in July with average 1454.7 mg/l  $\pm$  282.4. The results of TH ranged from 675 mg/l in February to1258.33 mg/l in July and mean value 948.8  $mg/l \pm 104.9$ . Minimum value of Chloride was (183.30 mg/l) obtained in February, while the maximum value was (496.50 mg/l) observed in December and averaged 298.07 mg/l  $\pm$  104.9. The mean value of turbidity was  $75.62 \text{ NTU} \pm 38.33$ . The pH values were always within alkaline direction and mean  $7.9 \pm 0.315$ . The monthly variations of water quality index were different among months and the seasons in study stations, with a general mean of 2.02, noted that water in Tigris River can be considered acceptable. In the seasons, the best level of WQI indicated in the winter (2.53) and spring (2.16) was seasons were good.

## **KEYWORDS:**

Water Quality Index, Freshwater, Tigris River, Basrah, Iraq.

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