

CHANGES OF THE WATER QUALITY PARAMETERS ALONG THE NEW JAYA GANGA TRANCE BASIN CANAL WITH RELATION TO DIFFERENT LAND USES

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Assessment of water quality is vital for the sustainable management of irrigation and drinking water resources. The New *Jaya Ganga* trance basin canal is one of the major irrigation and drinking water supply canals in the northern dry zone of Sri Lanka. This study was conducted to evaluate temporal and spatial variability of water quality parameters along the canal from *Kala wewa* to *Thisa wewa* in different locations and to map existing land uses along the new *Jaya Ganga* trance basin canal. Ten water sampling locations were selected, and sampling was done in two-week intervals for a three-month period. Water quality parameters such as pH, electrical conductivity (EC), total dissolved solids (TDS), nitrate nitrogen ($\text{NO}_3\text{-N}$), phosphorus (P), potassium K, alkalinity, turbidity, salinity, and hazardous elements such as cadmium Cd and arsenic (As) concentrations were determined. The land use map of the study area was developed using Google Earth Pro software and Arc GIS (version 10.4) software. The result of this study showed all the water quality parameters were within permissible levels of FAO and WHO drinking water standards. However, nitrate N content varied from 2.0–5.4 mg L^{-1} , and dissolved P content was within the range of 0.02–4.7 mg L^{-1} . Nitrate N content was within the FAO reference levels of 0–30 mg L^{-1} . Low concentrations of Cd (0.003–0.007 mg L^{-1}), and As (0.011–0.04 mg L^{-1}) were detected. The permissible range of As and Cd in irrigation water is 0.005 mg L^{-1} and 0.05 mg L^{-1} respectively. A temporal variation of water quality parameters was observed in the canal during the study period. Even though no relationship between land use and water quality was observed, anthropogenic activities such as regular use of chemical fertilizers and landfills by domestic waste could be alarming sources for the changes of water quality parameters in the future.

Keywords: Anthropogenic activities, Hazardous element, *Kala wewa* basin, *Thisa wewa* basin