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Development of water quality index (WQI) for the Juskei River catchment, Johannesburg.

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ABSTRACT

Water quality monitoring is a key component of integrated water resources management. Information generation from the data produced during this monitoring exercise is therefore critical in the process of deciding which rehabilitation or pollution control measures need to be undertaken. Water quality index (WQI) is useful in achieving this through simplifying complex water quality data into a single value that can therefore be classified to indicate the water quality.

The objectives of the research were as follows:

- To evaluate water quality data analysis and interpretation methods being employed in the City of Johannesburg (COJ),
- To develop a water quality index (WQI) for Jukskei catchment in the COJ as a practical method of presenting complex water quality data simply,
- To apply the developed index to evaluate the water quality data,
- To determine the levels of pollution in the Jukskei catchment using the index and identify the highly polluted locations,
- To determine the water quality trends in the Jukskei catchment using the WQI.

The methodologies used to achieve the above objectives consisted of literature review, data analysis and determination of appropriate water quality index and determination of trend on highly polluted areas identified using the water quality index determined.

The current data analysis methods being employed by the City of Johannesburg and associated problems were discussed. The study also brings to the fore the benefits of using the water quality index in analysing the data and producing the simple water quality status report on monthly and quarterly basis to align it with City of Johannesburg reporting periods. The study recommends that the City of Johannesburg employs the proposed water quality index to complement existing methods of analysing and interpreting water quality data and reporting this information. This could improve the understanding of surface water quality conditions and decision making.