

173
JOS

ay

**A STUDY OF THE WATER QUALITY OF DIYAWANNA OYA
CONDUCTED DURING THE SOUTH-WEST MONSOON PERIOD**

A PROJECT REPORT PRESENTED BY

JOYCE SHIRANI JOSEPH

to the Board of Study in Environmental Sciences of the
POSTGRADUATE INSTITUTE OF SCIENCE

*in partial fulfillment of the requirement
for the award of the degree of*

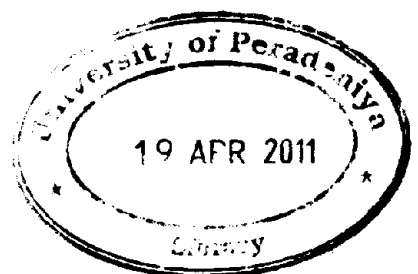
MASTER OF SCIENCE IN ENVIRONMENTAL SCIENCE

of the

UNIVERSITY OF PERADENIYA

SRI LANKA

2009



A STUDY OF THE WATER QUALITY OF DIYAWANNA OYA CONDUCTED DURING THE SOUTH-WEST MONSOON PERIOD

Joyce Shirani Joseph

Postgraduate Institute of Science

University of Peradeniya

Peradeniya

Sri Lanka

ABSTRACT

Diyawanna Oya located in the Greater Colombo area comprises a network of large open drainage canals, smaller tributary canals and low lying marshes functioning as natural water retention areas. However, pollution of this waterway has been a serious concern due to various anthropogenic activities, though no published literature is still available to document the pollution status. Therefore, this report provides an insight in to the current water quality status of this waterway assessed during the south-west monsoonal period (May-September, 2009). pH was found to be within the Central Environmental Authority (CEA) enacted Inland Water Quality Standards (6-8.5). TSS content was relatively high (though there are no standards enacted in Sri Lanka) with the highly urbanized areas showing higher levels due to urban runoff, disposal of wastewaters and solid wastes. BOD and COD levels exceeded the CEA limits for ambient water quality. Also the COD/BOD₅ ratios were higher than the COD/BOD₅ ratio of 1:2-1:4 for domestic wastewaters indicating industrial wastewater disposal is a possible major point source of non-biodegradable organics, though heavy rains possibly caused a considerable dilution of the waters.

Additionally, the study showed that oil and grease contamination is significant (especially at the highly urbanized areas) with levels exceeding the maximum permissible levels for Class II Waters and Class III Waters and most of the time period ammonical nitrogen levels exceeded CEA enacted limits of 0.94 mg/L and 0.91 mg/L under $\text{pH} < 7.5$ for Class II Waters (fish and aquatic life survival) and Class III Waters (minimum quality), respectively with the pristine areas showing consistently higher levels due to the availability of more N rich detritus. However, there was no evidence of contamination by Pb, Cd and As. Nevertheless, further studies are required to evaluate the heavy metal levels in sediments and biota and also to conduct water quality analysis during the drier periods.