

Sedimentary Characteristics and Status of Water Quality in Polwatta River and Weligama Bay in Sri Lanka

A. A. D. Amarathunga^{1,#}, S. U. P. Jinadasa² and S. A. M. Azmy³

¹Research Officer, Environmental Studies Division

²Research Officer, National Institute of Oceanography Marine Sciences

³Head, Environmental Studies Division

National Aquatic Resources Research and Development Agency (NARA)

Crow Island, Mattakkuliya, Colombo 15, Sri Lanka

Corresponding Author: Email: deeptha.amarathunga@gmail.com, deeptha@nara.ac.lk

ABSTRACT

The Weligama Bay is a one of the rocky shorelines in the coastline of Sri Lanka and Polwatta River is the major river which enters to south part of the Bay. The study objectives were to find out the sedimentary characteristic, and water quality status in Polwatta River and Weligama bay. Results indicated that, mean water temperature, pH, NO₃⁻-N, PO₄⁻³, and NH₄⁻-N, in Polwatta River and Weligama Bay are 28.2 °C ± 1.8, 6.7 ± 0.3, 0.11 ± 0.04 mg/l, 0.73 ± 0.1 mg/l, 0.46 ± 0.1 mg/l and 28.5 ± 1.0 °C, 7.57 ± 0.1, 0.51 ± 0.04 mg/l, 0.40 ± 0.1mg/l and 0.20 ± 0.1 mg/l in respectively. The, mean suspended sediment concentrations were recorded in Polwatta River was 241.1 ± 150 mg/l. However, mean gravel, sand and silt percentages in the Weligama Bay are 1.42 ± 1.4, 96.33 ± 0.5 and 2.25 ± 0.3 in respectively. The study of current patterns shows the direction is west to east of the Bay and surface current is 12 cm/s. Results reveal that, nutrients in the Polwatta River and Weligama Bay are within the acceptable limits published by Sri Lanka Standard Institute and draft CEA ambient water quality standard. Also, high concentration of suspended sediment load coming through the Polwatta River during south-west monsoon period and part of that remain in the estuary and other discharge to the Bay. Also, due to currents sediment traverse to southern part of the coast in Weligama.

KEY WORDS: *Polwatta river, Sedimentary characteristics, Sediment transportation, Weligama Bay*

Introduction

The Weligama Bay

The Weligama Bay is located in southern Sri Lanka, the coastline between Galle and Matara. The inner bay is highly abundant with coral habitats and rocky outcrops (Rajasuriya *et al*, 1998). The entire Southern Coastal Zone is underlain by