Studies on Waste Load Allocation and Waste Assimilative Capacity of Ennore Creek and North Chennai Coastal Waters

Sundararajan. S, Rajaguru.* S, Price. P.J.K, Raghumaran. S and Rajat R.C.

National Institute of Ocean Technology, Ministry of Earth Sciences, Chennai, India
**Email: rguru@niot.res.in, cell - 9488536126*

The present research work is the first attempt to conduct a comprehensive Waste Load Allocation (WLA) and Waste Assimilative Capacity (WAC) study in coastal and estuarine waters of India. The objective of the study is to develop a conceptual design for treatment and management of wastewater inputs into the Ennore Creek and North Chennai water, such that water quality standards in these receiving waters are met. The approach adopted was to conduct comprehensive, synoptic field studies for hydrographic measurements, water quality and biological characteristics such that deterministic models capable of predicting the fate and transport of pollutants could be simulated. Three field surveys representing different seasons were completed in 1999 _ 2000. The field studies revealed that the Ennore Creek is a typical metropolitan water body. The creek receives wastewater from numerous sources including untreated wastewater from sewered and ansewered areas, treated effluents from industrial sources.The study reveals that permitted discharges account for less than 40% of the total BOD load measured in the creek. The water quality and sediment studies highlighted the low DO and excessive BOD, pathogenic and nutrient loads into the Ennore Creek, suggesting the need for treatment / relocation of the wastewater discharges and the need for solid waste management. The major discharge into the North Chennai is the Royapuram sewage outfall. The field study revealed that the littoral drift transports the effluent plume alongshore, thus violating water quality criteria for pathogens along the beach. Failure to remove the excessive nutrient load will result in eutropication, eventually leading to DO, biomass and odor problems. Perceptible improvement in water quality may be marginal. Therefore the most viable long term alternative would be to discharge the effluents in deep ocean waters through marine outfalls. The coastal cities with high population growth, the option to dispose treated effluents to open coastal waters would be the most appropriate. Thus multiple ocean outfalls in deeper depths are recommended for disposal of waste waters draining to Chennai waterways and into the North Chennai coastal waters.