



ABSTRACT

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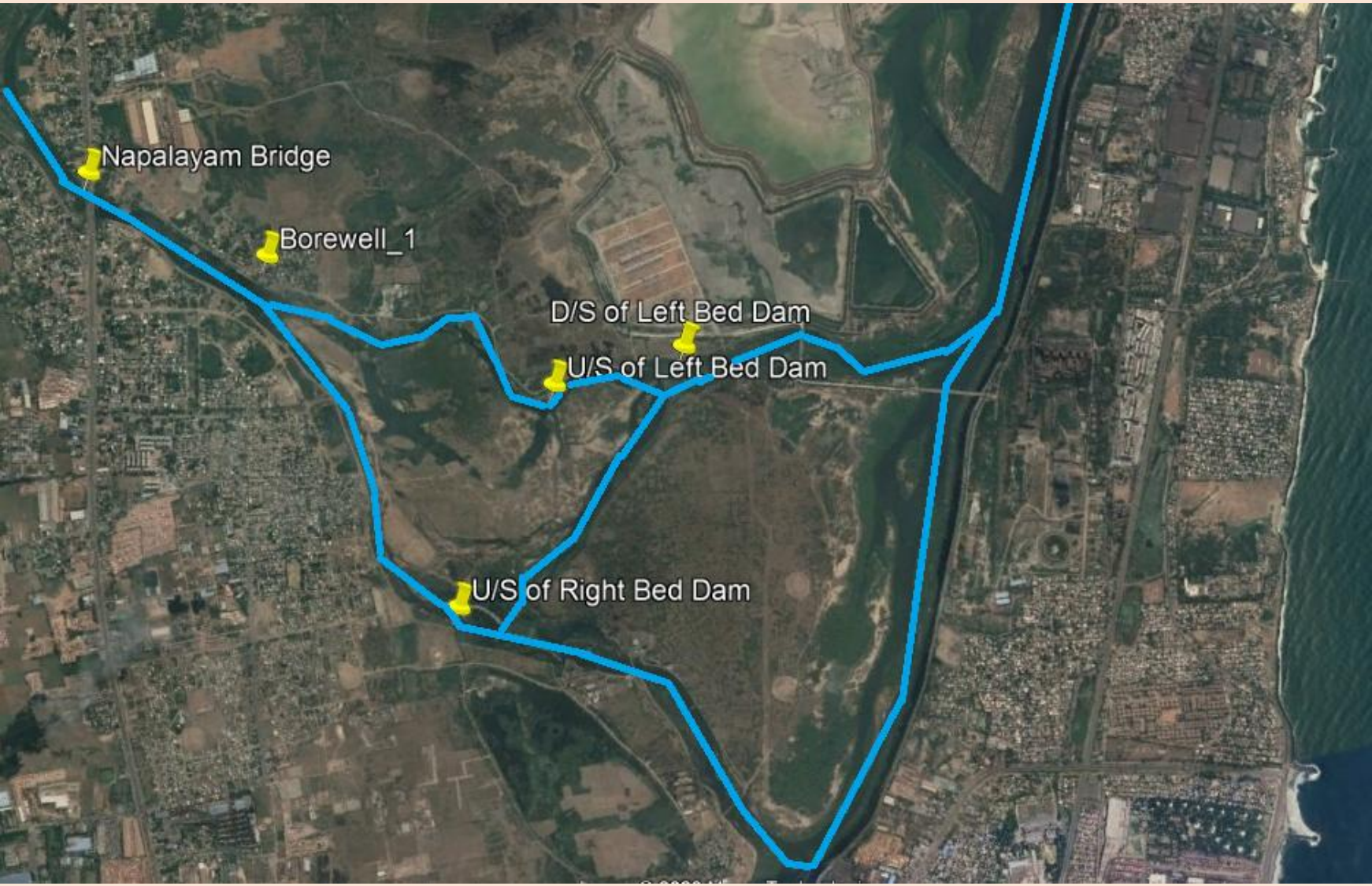
Climate change is the issue of great concern to a developing coastal region that threatens the quality and sustainability of ground water resources of coastal aquifer. Sea water intrusion is caused by two sources: climatic stress such as sea level rise, drought and tide, and human factors such as groundwater pumping and mariculture. The rise in seawater level, a tidal dynamics and other factors causes the ingress of sea water into the river mouths. Tamil Nadu a maritime state of India in which the rivers originate from Western ghats and runs into Bay of Bengal. The state comprises of 17 major river basins. In the present study, the site investigations are carried out at the tail reaches of 13 river basins to find out the extent of sea water ingress into the river and the salinity level. The surface water and ground water samples are analyzed for salinity levels. It is found that the salinity level ranges from 5000 to 100000 ppm in the study basins. Also, it is observed that the tidal influence ranges from minimum of 1.0 Km in Mudavanar sub basin to a maximum of 28 Km in Vellar basin. Based on this analysis, the suitable locations for tail end regulator are proposed by considering the field conditions such as Coastal Regulation Zone, salt pans, Mangroves, prawn culture, nearby villages and Coastal Regulation Zone for the study basins.

INTRODUCTION

Climate change accelerates sea-level rise which intensify the Tidal level which in turn accelerates the seawater ingress in the River mouths. Tamil Nadu's 1,076 km coastline faces seawater ingress due to the increased Tidal trend threatening the freshwater availability for domestic and agricultural use.

Tail-end regulators are essential that provide the physical barriers to prevent seawater ingress in coastal rivers. The objective of this study was to assess the range of seawater ingress and tidal influence in 13 river basins of Tamil Nadu. The extent of Tidal activity and salinity of the river and groundwater near the last check dam are investigated to recommend the Tail End Regulator for the River Basins.

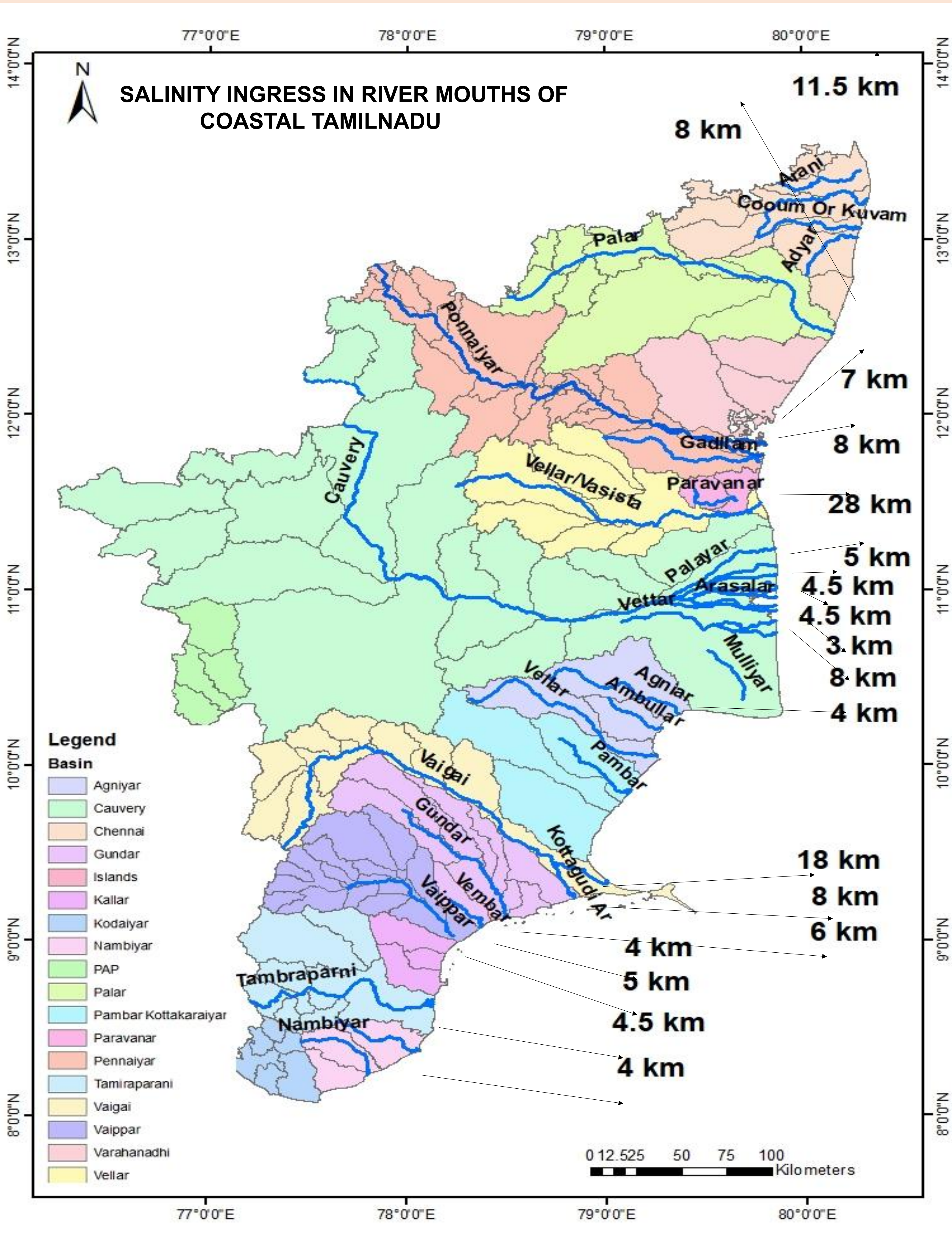
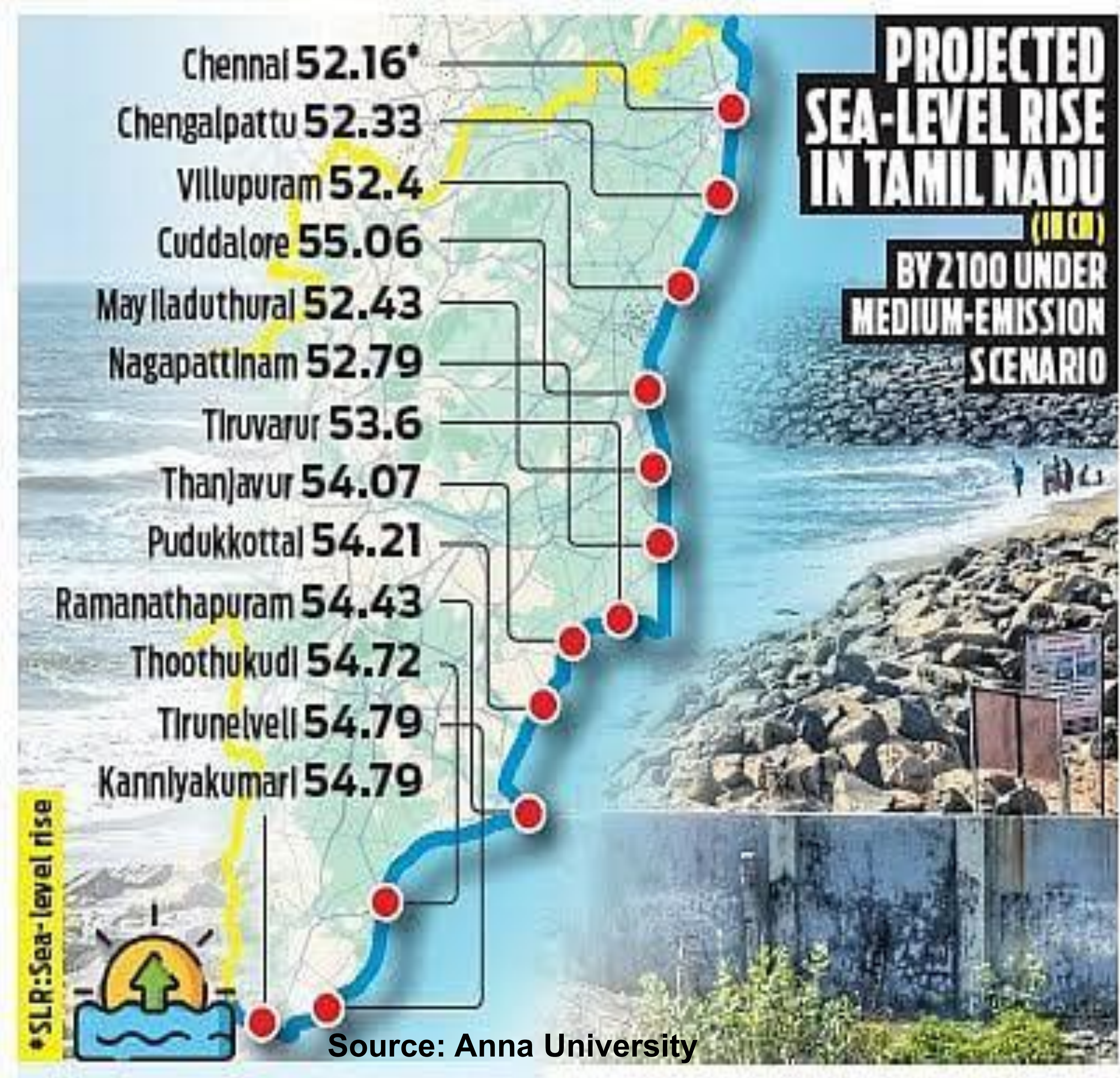
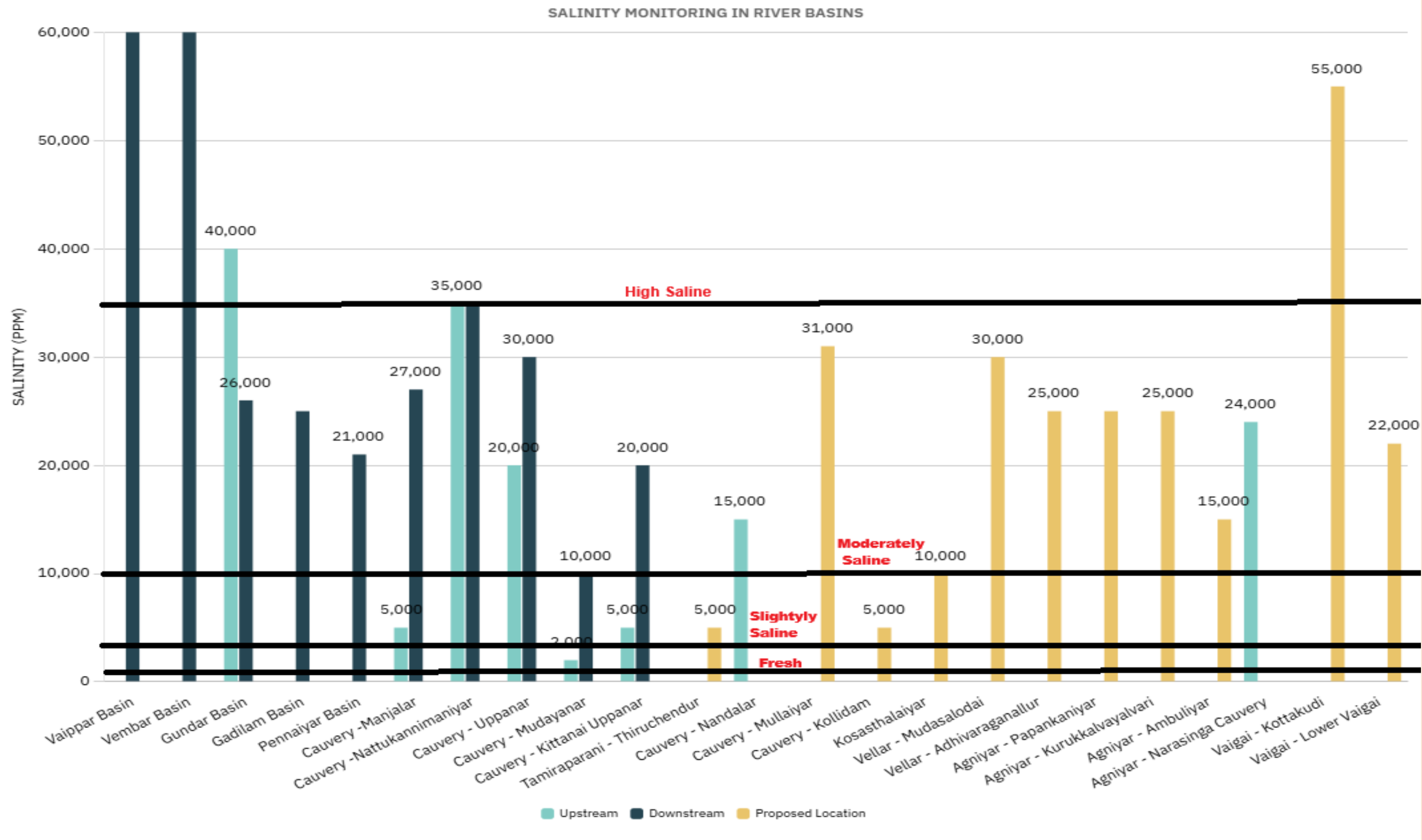
WATER SAMPLING



SITE VISIT



RESULTS



RECOMMENDATION OF TAIL END REGULATORS TO CONTROL SEAWATER INGRESS

Saltwater Ingress is ranging from 3 km to 28 km inland with salinity up to 55,000 ppm in certain river tail reaches of 13 river basins. Hence Tail end Regulators are essential that provide the physical barrier to prevent the Sea Water Ingress through the mouth of Coastal Rivers.

Tail-end regulators are recommended where high salinity and tidal ingress extend beyond last check dams in Tamirabarani, Nandalar, Kollidam, Mudasalodai, Kosasthalaiyar basins.

Existing check dams which are very close to the Sea can be modified with shutters over them in various Tail branches of Agniyar basin to block the seawater flow to upstream due to Tides.

Tail-end regulators are not needed in Vaippar, Vembar, Pennaiyar, Manjalar, Nattukannimaniyar, Uppanar, Mudavanar, Kittanai Uppanar and Gadilam basins where tidal influence is contained within the last check dam and freshwater exist in their upstream.

Tail-end regulators are not viable where intensive aquaculture or salt pans are practiced in Kottakudi River and Nadhipalam of Vaigai basin respectively.

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