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IDENTIFICATION OF ALTERNATIVE WATER SUPPLY SYSTEM FOR VELANAI AND KAYTS DSD AREAS IN JAFFNA DISTRICT

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Abstract

One of the pressing issues in the Jaffna peninsula is scarcity of drinking water. The main reason is pollution of groundwater and unavailability of perennial freshwater sources. But the seasonal rainfall brings adequate fresh water to the peninsula. This is the only way to recharge natural ponds and aquifers situated in the area. Rainwater can be used alternatively to fulfil total water demand. But an efficient system to harvest and store rainwater is not available. On that reason most of the rainwater flows to the sea or percolates to the ground immediately without any utilisation. In the district some considerable number of small ponds and shallow lagoons are available to find alternatives to collect and store rainwater for domestic needs. However, due to the lack of available studies on this area, the study mainly focused to identify suitable ponds and lagoons for conversion to use as rainwater collection storages. *Velanai* and *Kayts* Divisional Secretariat Divisions in Jaffna district were selected as the study area. Further, Geographic Information System (GIS) and Global Positioning System (GPS) techniques such as spatial analysis and watershed delineation were employed as main tools to identify locations for constructing rainwater collection reservoirs. Based on the GIS analysis, the study found that fifty-two ponds and three lagoons which can be converted as large freshwater storages. Moreover, ten suitable locations are identified to establish rainwater retention tanks. This research will be important in the process of mitigating a critical part of the drinking water issue in Jaffna district.

Keywords: Geographic Information Systems (GIS), rainwater harvesting, groundwater pollution, sustainable drinking water supply