

# An Integrated Remote Sensing and GIS Approach for Pre-Monsoon and Post-Monsoon Groundwater Quality Monitoring for Reclamation of Wasteland in Gomukhi Nadhi Sub Basin, South India

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## **Abstract**

*India holds 17.5% of the world's population but has only 2% of the total geographical area of the world where 27.35% of the area is categorized as wasteland due to lack of or less groundwater or poor groundwater quality. So there is a demand for monitoring groundwater quality to avoid further degradation of land and also for the effective management of wasteland to balance its growth rate. Taking this into consideration, an attempt has been made to find the groundwater quality in Gomukhi Nadhi sub basin of Vellar river basin, South India covering an area of 1146.6 Km<sup>2</sup> consists of 9 blocks from Peddanaickanpalayam to Virudhachalam fall in the sub basin. To study the quality of groundwater, the geochemical results for both pre-monsoon and post-monsoon observation wells were collected and analyzed. For better assessment of groundwater quality, the adjoining wells were also considered. By integrating the thematic maps of chloride (Cl), magnesium ion concentration (Mg), incrustation, total hardness (TH) and total dissolved solids (TDS), the groundwater quality distribution maps were prepared on the basis of WHO [16] standards for both pre-monsoon and post-monsoon seasons and classified viz., suitable, moderately suitable, unsuitable with its aerial extent of 11.34, 67.41, 21.25 Km<sup>2</sup> & 22.04, 70.15, 7.81 Km<sup>2</sup> respectively. The wasteland map is prepared for the study area using IRS P6 [4] data. To identify the zones of reclamation of wasteland specifically in the suitable quality, the groundwater quality map of pre-monsoon and post-monsoon and the map of wasteland was integrated and classified. Results indicated that water quality parameters have improved tremendously in post monsoon season when comparing to the pre-monsoon season of the study area which shows that the recharge of groundwater plays a major role in improving the quality of groundwater. Appropriate methods for reclaiming the wasteland in the affected areas have been suggested.*

**Keywords:** Groundwater, Wasteland, Water Quality, Recharge.