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# Development of Groundwater Management Model Using Groundwater Sustainability Index

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**Abstract :** Development of a groundwater management model is an important step in the exploitation and management of any groundwater aquifer as it assists in the long-term sustainable planning of the resource. The current study was conducted in Central Limpopo province of South Africa with the overall objective of determining how much water can be withdrawn from the aquifer without producing nonreversible impacts on the groundwater quantity, hence developing a model which can sustainably protect the aquifer. The development was done through the computation of Groundwater Sustainability Index (GSI). Values of GSI close to unity and above indicated overexploitation. In this study, an index of 0.8 was considered as overexploitation. The results indicated that there is potential for higher abstraction rates compared to the current abstraction rates. GSI approach can be used in the management of groundwater aquifer to sustainably develop the resource and also provides water managers and policy makers with fundamental information on where future water developments can be carried out.

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