

## **Abstract**

The study mapped soil loss hotspots and slope angles in the Upper Runde sub-catchment (URSC) with particular concentration on Gweru water sources. The catchment assessment to estimate the severity of soil loss risk was necessary for basin monitoring and possible protection for water security for the city of Gweru. The soil loss estimation model for southern Africa (SLEMSA) was used to compute soil loss hotspots and produce maps in a GIS environment. Landsat imagery, soil database, rainfall data and field observation were used for the study. The SLEMSA model output obtained showed that there is moderate to high soil loss risk around Gwenhoru and Amapongogwe because of grass cover and gentle slopes that alter the runoff rate. Land cover was predominantly grassland with patches of thickets to dense vegetation. The slope angles around the water sources were below 20° (0–5). The findings showed that the application of the Vetiver System for erosion control and slope stabilisation would be a feasible and proactive action towards city water security. This is particularly in light of small-scale farming and mining activities that are arbitrarily appearing in the catchment. It is therefore recommended that catchment management authorities implement the use of vetiver technology, especially on relatively steep slopes and bare soils to control erosion and minimise possible sediment deposition into water sources.