

# APPLICATION OF EPANET IN OPTIMIZATION OF SPRINKLER IRRIGATION SYSTEM

## CASE STUDY: UGUDU IRRIGATION SCHEME, ZOMBO DISTRICT

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### Abstract

Analysis of the pipe network aims to determine the pressure drops and flow rates in the individual parts of the network. In this case study, the EPANET software was used automatically solving problems of the network. The main objective of this study was to analyze the irrigation network of proposed Ugudu irrigation scheme using hydraulic simulation software in order to study distribution of pressure, velocity and head on the pipe network to ensure the operation of the network efficiency and improve quality of water distributed through the piping system.

Sprinkler discharge rate was **0.34lps** and application rate was **5.54mm/hr** for sprinkler type **AQ20AF** and at riser height of **1.5m**. The result also indicated variation in sprinkler discharges.

Variation in discharge can be adjusted via use of uniform risers, and nozzles. This study further recommends an incorporation of an automatic mini weather station to aid in monitoring the condition irrigation area for better management of the scheme.

EPANET can give designers power over their designs and also enhance decision making concerning pressurized networks. Modeling a simple irrigation network helps engineers supervising a project to verify whether the required equipment of pump has been installed. Further sensitivity analysis can be done quickly on this network.