

WILSON MCNEIL, Honors EXCEL Program and Dept Civil and Environmental Engineering, West Virginia University, Morgantown, WV, 26506, and LESLIE HOPKINSON, Dept of Civil and Environmental Engineering, Morgantown, WV, 26506. The application of WEAP in water quantity demand modeling of population centers along the Monongahela River.

The Water Evaluation and Planning System (WEAP) has practical applications in rural areas such as modeling water resources and demand while considering varying population and climate. The goal of this study was to use WEAP to model water resources along the Monongahela River through the year 2025 and check for any instances of unmet demand. WEAP was used to analyze the demand placed on the river by the population centers of Morgantown, Fairmont, and Monongah in West Virginia, as well as by industrial large quantity users. Population change in each of the centers was modeled through 2025 using census data. Three different scenarios were modeled: wet, dry, and average, which account for different possibilities in climate effects over time. Results found little variation in demand and flow under average conditions. While wet and dry years experienced variation in supply over time, results indicated that there were no instances of unmet demand in any scenario. This indicates that available water resources are projected to meet demand placed by the public water supply through 2025. The study showed that WEAP was effective as a water modeling tool in West Virginia. This model will serve as the basis for an expanded simulation in the future. Sources of support for this project include the Honors EXCEL program at West Virginia University and by Grant/Cooperative Agreement Number G16AP00091 from the United States Geological Survey. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USGS.