

REVIEWER'S REPORT

Manuscript No.: IJAR- 58877

Title: "HYDROLOGIC-HYDRODYNAMIC ASSESSMENT OF DESIGN PEAK DISCHARGES USING THE EPA SWMM"

Recommendation:

Accept

Rating	Excel.	Good	Fair	Poor
Originality	Yes			
Techn. Quality	Yes			
Clarity	Yes			
Significance		Yes		

Reviewer Name: Dr. Ashish Yadav

Detailed Reviewer's Report

Reviewer's Comment for Publication.

Acceptance Comment are mentioned below suitable for the paper titled "HYDROLOGIC-HYDRODYNAMIC ASSESSMENT OF DESIGN PEAK DISCHARGES USING THE EPA SWMM"

Reviewer Comments: Accept

Reviewer Comments –

1. Introduction

The manuscript addresses an important and practical topic concerning the hydrologic-hydrodynamic assessment of design peak discharges using the EPA SWMM model. The introduction establishes the importance of accurately estimating rainfall-runoff processes and peak flows for the safe and efficient design of drainage and hydraulic infrastructure. The application to the new Vhora Airport provides a relevant engineering case study with practical significance. The manuscript clearly identifies the need for reliable determination of time of concentration and peak discharge.

2. Literature Review

The literature review provides an appropriate background on rainfall-runoff modelling and the application of dynamic hydrologic and hydrodynamic simulation techniques. The description of EPA SWMM demonstrates an adequate understanding of its capabilities for representing precipitation, runoff generation, and hydraulic routing. The model's ability to simulate flows through pipes, channels, storage

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facilities, pumps, and gates is particularly relevant to complex drainage systems. The review establishes the suitability of SWMM for urban and infrastructure-related applications.

3. Solution Approach

The proposed solution approach is technically appropriate and clearly structured around the application of EPA SWMM for integrated hydrologic–hydrodynamic analysis. The division of the study area into subcatchments and the simulation of rainfall-induced runoff provide a suitable basis for estimating design flows. The routing of runoff through hydraulic components enables the interaction between hydrologic generation and drainage-system performance to be assessed. The approach provides an improved representation of the time of concentration and corresponding peak discharge compared with simplified estimation procedures.

4. Results and Discussion

The results and discussion demonstrate the practical applicability of EPA SWMM for assessing design peak discharges in a complex infrastructure environment. The hydrodynamic modelling of the new Vlora Airport provides a useful example of how rainfall–runoff processes and hydraulic routing can be integrated within a single computational framework. The approach allows flow rates and depths to be evaluated over successive simulation time steps, supporting more informed hydraulic design decisions. The improved assessment of peak discharge contributes to the appropriate sizing and evaluation of relevant drainage structures.

5. Conclusion

The conclusion appropriately highlights the effectiveness of EPA SWMM as a tool for integrated hydrologic and hydrodynamic assessment of design peak discharges. The study demonstrates that dynamic rainfall–runoff and hydraulic routing simulations can provide useful information for determining time of concentration and peak flow characteristics. The application to the Vlora Airport illustrates the practical relevance of the modelling framework for infrastructure drainage design. The methodology can also provide a valuable basis for evaluating hydraulic performance under different rainfall and flow conditions.