

**Abstract:**

Lack of attention to water, as the key to sustainable development, has led to emerging crisis in water issues in Iran, considered as the greatest factor in marginalizing the long-term management planned for water. In order to adopt some policies of sustainable development for managing water sources in Iran, it is necessary to consider different management areas, each of them requiring coherent scientific programs. Beside, paying attention to the water safety of city residents when raining and atmospheric events and at the same time reducing the risk of flooding in suburb agricultural lands are included in the pillars of operation management of municipalities. In this research, a new model has been presented for the optimal designing of surface waters collection network. Civil Storm V8 software has the ability to merge up the hydrologic and hydraulic parameters and to model the surface runoff collection network in most stable and unstable scenarios. At the moment, this model serves as the latest one. Also, using the AHP multi-criteria decision-making technique beside these types of models could bring up the best option for designing than the criteria considered by experts. The results of this survey obtained for two parts, one for the multi-criteria decision-making technique and the other for the modeling of the surface runoff collection network of Ghahderijan, Isfahan. Moreover, the Buried rectangular channels selected as the paramount option among the options for designing channel and was implemented into Civil Storm V8 software. Regarding the findings of the surface runoff collection network model, the following parameters were obtained in six separated networks, respectively: stable and unstable rainfall, discharge for each of sub-basins, dimensions and designed paths within the main passageways, determination of the levels of channel bed, and the final discharge of runoff.

**Key words:** surface runoff collection network design, Civil Storm V8 software, AHP model, stable state, unstable state, Ghahderijan city.



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