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*HYDROLOGY AND
HYDRAULICS*

HYDROLOGY AND HYDRAULICS

The purpose of this section of this manual is to establish the design hydrology methods and procedures currently in use in the City of Hemet and Riverside County.

The materials contained in this section are intended for the use of both City staff and engineers submitting hydrologic and hydraulic computations to the City. The methods presented are considered to produce hydrologic design parameters acceptable for use during the planning and design of underground storm drains, open channels, retention and detention facilities and debris basins, as well as subdivision revision and floodplain mapping.

Prior to continuing with this section, the engineer should become thoroughly familiar with the Riverside County Flood Control and Water Conservation District Hydrology Manual and the Riverside County Flood Control and Water Conservation District.

5.1 HYDROLOGY

The City of Hemet utilizes the Riverside County Flood Control and Water Conservation District's Hydrology Manual, which is located here: <https://rcflood.org/engineering-tools>. The manual documents the design methods and criteria currently used by RCFC&WCD.

RCFC&WCD utilizes two primary methods to determine design discharges: the Rational Method and the Synthetic Unit Hydrograph Method. Both of these methods are described in the RCFC&WCD Hydrology Manual, and the approved software for modeling is also provided at the link above.

5.1.1 RATIONAL METHOD

Rational Method calculations are utilized for the sizing of storm drain facilities, including catch basins, inlets, and storm drains, as well as determining storm drain inlet locations based upon street design criteria. The calculations must be performed utilizing the Riverside County Flood Control and Water Conservation District Hydrology Manual methodology and input parameters. Software utilized for performing rational method calculations must be one of the District Approved Softwares listed on the rcflood.org website.

5.1.2 SYNTHETIC UNIT HYDROGRAPH

The Synthetic Unit Hydrograph is utilized for flood control facilities in excess of 300 to 500 acres, sizing retention basins and other facilities used to address increased runoff mitigation (see Section 7). Additionally, unit hydrograph calculations are utilized for addressing the Hydrologic Conditions of Concern

(HCOCs) for the current Water Quality Management Plan requirements (this may be subject to change pending updates to the MS4 Permit). The unit hydrograph calculations must be prepared per the Riverside County Flood Control and Water Conservation District Hydrology Manual methodology and input parameters. Software utilized for performing unit hydrograph calculations must be one of the District Approved Softwares listed on the reflood.org website.

5.2 HYDRAULICS

Hydraulic calculations are performed to demonstrate that proposed facilities have been designated to adequately convey, retain, or intercept the design flow rate tributary to the system. District Approved Software on the reflood.org website include programs currently accepted for hydraulic modeling. The following are typical calculations required:

1. Inlet calculations need to be provided that include interception, flow-by and upstream tributary flows.
2. Storm drain calculations need to be performed, typically with the WSPG (Water Surface Profile Gradient) program.
3. Any other hydraulic calculations necessary to demonstrate that facilities have been designed appropriately.

Hydraulic calculations must be performed per the Riverside County Flood Control and Water Conservation District Hydraulic Design Manual.