

Flood Modeller Pro

Case Study

Double Hammock Creek Watershed Evaluation, Florida, USA

As part of the Southwest Florida Water Management District's Watershed Management Program, the District contracted with CH2M to deliver a Watershed Evaluation and Management Plan for the watershed.

The Double Hammock Watershed is approximately 13 square miles in size, located north of the City of New Port Richey in Pasco County, Florida. The watershed is relatively flat, highly urbanized and features many closed-basin systems. The main thrust of the Watershed Evaluation was to collect and evaluate data and identify any missing gaps before undertaking detailed modeling evaluations (Watershed Management Plan) to assess flood risk.



To help deliver an accurate, terrain based watershed evaluation, multiple topographic data sets from a variety of sources were edited. An extensive review to identify data gaps and assess the available data for breakline issues (e.g. missing or raised breaklines), filtering issues (e.g. vegetation remaining within the surface), and tie edge effects was also performed.

CH2M's extensive knowledge of LiDAR datasets allowed them to place particular focus on identifying tie edge issues using: transects, visual review of generated catchments, and Digital Elevation Model (DEM) difference grids. The terrain model used in the study comprised of LiDAR from different flight years. The DEM was adapted when developing the network connectivity and catchment data. The network connectivity included nearly 480 structures inventoried by the County with an additional 104 structures surveyed by CH2M.

The 2D FAST solver within Flood Modeller Pro, a rapid flood inundation mapping tool developed by CH2M, was applied to the watershed. The 2D FAST solver provided both a preliminary set of flood extents and also depth grids and flow directions.

The speed with which it calculates water depths and other outputs gave CH2M's modelers the flexibility to identify critical areas and improve the targeting of detailed survey during site reconnaissance.

Field work at the time of Tropical Storm Debby successfully corroborated the 2D FAST solver flood inundation mapping output in many areas based on an initial 100yr/24hr recurrence interval. In some areas, the lack of corroboration highlighted where additional structure data needed to be collected. The outputs from the 2D FAST solver were also used to facilitate communications with the public and garner additional institutional knowledge regarding areas that flood.

Following successful delivery of the Watershed Evaluation, CH2M developed hydrologic and hydraulic watershed parameters and is preparing a verification analysis. This will be followed by delivering floodplain delineations, flooding level-of-service analysis, surface water resource assessment and BMP alternative analysis.

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With a legacy stretching back 40 years, Flood Modeller allows users to model rivers, floodplains and urban areas, using our powerful 1D and 2D solvers.