



## INTEROFFICE COMMUNICATION PALM BEACH COUNTY

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Verdenia C. Baker

**TO:** Mayor Dave Kerner and Members of the Board of County Commissioners

**THRU:** Patrick Rutter, Assistant County Administrator 

**FROM:** Jeremy McBryan, County Water Resources Manager 

**DATE:** September 15, 2020

**RE: REVIEW AND EVALUATION OF FEMA'S COASTAL FLOOD RISK STUDY**

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The National Flood Insurance Program (NFIP) is a voluntary federal program intended to reduce future flood damage through community floodplain management activities and provide protection for property owners by enabling the purchase of federally-backed flood insurance. The Federal Emergency Management Agency (FEMA) is responsible for administering the NFIP. Flood Insurance Study (FIS) reports and Flood Insurance Rate Maps (FIRMs), prepared by FEMA, provide flood hazard information that is used in conjunction with property characteristics to establish flood insurance premium rates.

In December 2019, FEMA published preliminary FIRMs and associated FIS reports for eastern Palm Beach County (County). In January 2020, the County initiated an effort to review and evaluate the accuracy and appropriateness of the data and methods used by FEMA for the preparation of the preliminary FIRMs. On September 22, 2020, staff will provide an overview of the effort, present information on FEMA's process to finalize the FIRMs and request direction from the Board of County Commissioners on future County activities.

Key findings from the County's review and evaluation of FEMA's data and methods and other relevant information are summarized below:

- Differences between the County's ground surface elevation data (from 2016-2017) and the elevation data used by FEMA (from 2001 to 2007) were observed. While 74 percent of the area within the preliminary 2019 FIRM panels was within  $\pm 0.5$  feet of the County's elevation data, County elevations were  $\geq 0.5$  feet above FEMA elevations for 18 percent of the area and County elevations were  $\geq 0.5$  feet below FEMA elevations for 8 percent of the area.

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- There was a net increase of 1,900 acres of land added to the Special Flood Hazard Area (SFHA). Properties with mortgages that are within the SFHA are required to have flood insurance.
- FEMA defines base flood elevations (BFEs) within the SFHA. BFEs are elevations to which the surface water is anticipated to rise to or exceed during the base flood (aka the 1 percent annual chance flood or 100-year flood) and can have significant impacts on building requirements. While BFEs decreased in some areas of the County, many areas have higher BFEs as compared to the 2017 FIRMs.
- FEMA's modeled 1 percent annual chance stillwater elevations (SWELs) are used by FEMA to define BFEs within the SFHA. While BFEs increased and decreased as compared to the 2017 FIRMs, FEMA's SWELs may not have sufficiently represented storm surge due to issues identified with FEMA's model validation and setup.
- The design elevation is the elevation that all new and substantially improved buildings must be elevated to in order to lower the risk of flood damage. Design elevations are typically higher than the BFE.
- Higher BFEs can result in non-conforming structures that may prevent property owners from making improvements to their existing structures. Non-conforming structures also face significant increases in flood insurance premium rates.
- The hurricanes selected by FEMA to validate the storm surge model [Betsy (1965), David (1979), Andrew (1992), Georges (1998), and Wilma (2005)] may not have been appropriate given the magnitude of the storm surge generated, the regional extent of the storm surge, the locations of water level measurements and the limited measured data.
- Agreement between measured water levels and water levels simulated for the five validation storms was less than favorable and suggests the processes associated with storm surge may not be sufficiently represented by FEMA's model.
- The cumulative contributions of FEMA accepting increased model uncertainty during model validation and including west coast (exiting) storms were estimated to have increased FEMA's SWELs by approximately 1.3 feet.
- The wind and pressure field model grid resolution was insufficiently coarse for the northern 32 miles of the County which limited the FEMA model's ability to accurately simulate storm surge.
- There were several locations in the County where FEMA's model was insufficient to accurately model hydrodynamic and coastal flooding processes.

As final deliverables are completed, they are posted for stakeholder review and download to the County's Flood Information webpage located at:

<https://discover.pbcgov.org/pzb/building/Pages/Flood-Information.aspx>