Florida Floodplain Managers Association
2019 Annual Conferences
Abstracts

Title: Leveraging ArcGIS for Floodplain Model Development and Mapping

Length: 90 minutes

Subject: Floodplain Mapping

Target Audience: H&H Modelers, Engineers and GISPs

Presenter Name: Frank McKinnie, PE, CFM
Senior Water Resources Engineer
Streamline Technologies, Inc.

Biography: Mr. McKinnie has over 15 years of experience in the water resources field. He has been directly involved with numerous stormwater master plans and watershed studies throughout the State of Florida varying in size (up to 600 sq. mi.) and complexity (spanning 5 counties; multiple stakeholders with varying interests). His experience includes stormwater modeling (1-D and 2-D), hydraulic analysis of erosion and sedimentation countermeasures, floodplain analysis, water quality analysis, groundwater modeling, secondary drainage system analysis, level of service analysis, and GIS. He has extensive knowledge integrating stormwater infrastructure data with GIS applications for asset management as well as H&H model development.

Co-Presenter: None

Biography:

Abstract: When developing H&H models for floodplain mapping, consistency in the data structure is important. Especially if there are multiple consultants and agencies involved in the model development. Luckily, the Southwest Florida Water Management District (SWFWMD) and ESRI developed the GWIS1.6 data model which is the SWFWMD implementation of ArcHydro. GWIS1.6 is a file geodatabase that stores the H&H model data used for floodplain mapping. This data model has been used throughout the SWFWMD for the past several years to develop H&H models in ICPR3 in order to maintain consistency between the SWFWMD's consultants.

Since the release of ICPR4, SWFWMD and Streamline Technologies have developed the next generation of the data model named GWIS2.1. GWIS2.1 is an enhancement to the original data model and incorporates several new model elements concentric with the ICPR4 data structure. In addition, several custom ArcGIS tools were created to exchange data between GWIS2.1 and ICPR4.

This presentation will walk through floodplain model development and mapping using GWIS2.1 for a pilot study area. Topics that will be discussed include the hydro network creation/development for basin delineation, hydraulic element point (HEP) network creation for hydraulic features such as pipes and structural weirs, and the ICPR4 model network development in GWIS2.1. The data will then be migrated to ICPR4 for further parameterization. The finalized model data will then be migrated back to GWIS2.1 so the ICPR4 model data and geodatabase data are identical. Finally, the 100-year 24-hour simulation will be simulated and results will be used to develop 100-year floodplains for

the pilot study area.