



# Flood Modeller Pro

## Flood Modeller Pro Benchmarking for Forsyth County, Georgia, USA

As part of a countywide study, CH2M has modelled and mapped the existing and future conditions floodplains for all flooding sources with a drainage area of 100 acres or greater on a watershed by watershed basis. Parts of this study have been included in the Chattahoochee River Watershed Flood Insurance Rate Map update of 2010, with others to be included in future updates.

Forsyth County, Georgia, USA has been preparing a Countywide update to its Flood Insurance Studies (FISs) and Flood Insurance Rate Maps (FIRMs) for existing and future conditions. As the County's contractor, CH2M performed several studies as part of this project, including those in the Etowah River and Bannister Creek, which have been run and benchmarked using Flood Modeller Pro.

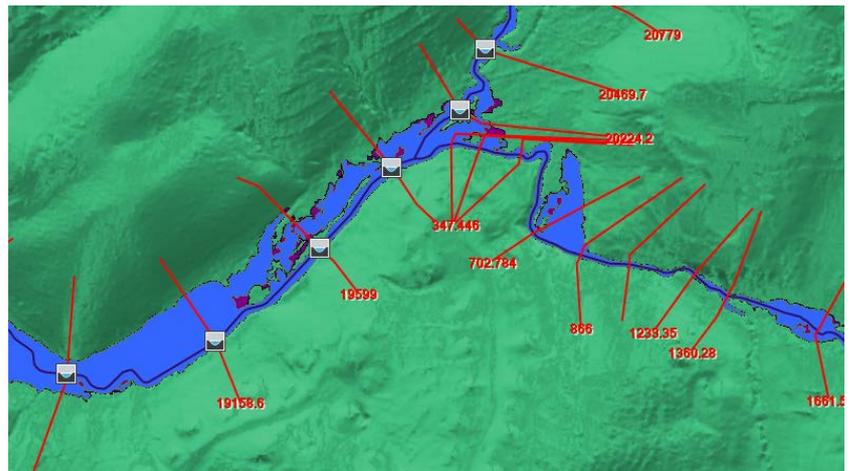
The County adopted a phased approach to complete the mapping work over several years within a limited annual budget. The approach was to re-study the streams within the County on a watershed basis, beginning with the Big Creek watershed, followed by the Etowah River watershed in the Northwest corner of the County. Each major watershed was submitted to the Federal Emergency Management Agency (FEMA) to update the County's FIS and FIRM as it was completed.

The Big Creek basin was started in 2007 and completed in 2009. It was then submitted for inclusion into the Chattahoochee River Watershed Flood Insurance Rate Map (FIRM) update in 2010. This included the mapping for all of the tributaries to Lake Sidney Lanier and the Chattahoochee River outside of the Big Creek watershed.

Work on the modeling and mapping for the Etowah River basin began in 2010, and was completed in 2014. This work will be included in the upcoming FIRM update for the Etowah River watershed.

Flood Modeller Pro can be used for a range of applications, including:

- 1D and 2D floodplain modelling
- Floodplain mapping
- Flood forecasting
- Hydrological analysis
- Embankment/levee failure
- Dam breach analysis
- Options' appraisal
- Detailed design
- Structure blockage



Mapped outputs calculating the inundated areas in Forsyth County

### Contact us

Sales: +44 (0)845 094 7990  
Support: +44 (0)845 094 7994  
[www.floodmodeller.com](http://www.floodmodeller.com)



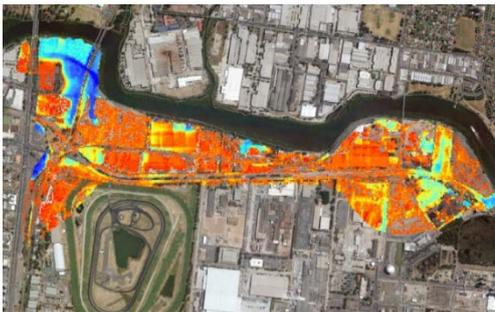
With a legacy stretching back 40 years, Flood Modeller allows users to model rivers, floodplains and urban areas, using our powerful 1D and 2D solvers.

“The industry-leading 1D and 2D solvers in Flood Modeller Pro have been applied to flood mapping projects across the globe, including Boston, New York, London and Sydney.”

Vijay Jain  
Sales Manager, CH2M



Floodplain mapping in London, England



Floodplain mapping in Sydney, Australia

## Model development and flood mapping

During the benchmarking process, Flood Modeller Pro excelled due to its robust 1D and 2D solvers, user-friendly GIS-like interface and streamlined workflows. It also allowed the user to efficiently model, map and analyze data in a single application, without having to switch to an external GIS solution.

The interactive tools within the software allowed the user to seamlessly interrogate the underlying digital terrain model (DTM) to extract ground elevation data for each cross section location.

The automation tools within Flood Modeller Pro calculated the “distance to next” chainage data for each cross section, allowing the cross sections to be viewed on a map. This, alongside background mapping, made the visualisation of the Etowah River and Bannister Creek within the software much more effective as it allowed the modeller to fully understand the surrounding terrain.

The cross section information was then automatically imported into the 1D model using functionality within the Flood Modeller Pro ‘Toolbox’, allowing the upstream and downstream boundaries to be added.

A 2D model domain was then drawn onto the map and “snapped” to the edges of the 1D cross sections. Using the link line generator tool, a link line was automatically created, providing the boundary between the 1D and 2D models.

Extracted time series, water level cross sections and maximum flood extent maps were then derived from the model results.



Stream modelling and mapping within the Etowah Basin and Bannister Creek was compared with the Flood Modeller Pro results. Since the initial models were 1D, initial comparisons were performed in 1D. Later review of the models identified areas where 2D modelling might be used to better represent shallow overland flow.

The flood extents calculated by the Flood Modeller 1D solver were very similar to those generated by HEC-RAS. In locations modelled in Flood Modeller 2D, the additional information generated on local flood routes and floodplain velocities demonstrated the advantages of the 2D approach.

## Contact us

Sales: +44 (0)845 094 7990  
Support: +44 (0)845 094 7994  
[www.floodmodeller.com](http://www.floodmodeller.com)

**JACOBS**

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.