Maryland Flood Mapping Website
FEMA Region 3

CHALLENGE
A Maryland State law issued in 1933, required permits for activities that cause physical changes in the course, current, or cross-section of any (riverine) waters of the State. After the National Flood Insurance Program (NFIP) was implemented, the Federal process of modifying Flood Insurance Rate Maps did not match well with the Maryland permitting process.

SOLUTION
When Maryland became a Cooperating Technical Partner (CTP) with the Federal Emergency Management Agency (FEMA) in the early 2000s, State officials worked with the FEMA to update digital Flood Insurance Rate Maps in a way that aligned with the Maryland stream permitting information. This project also provided an opportunity for the State to collect updated data on bridges and culverts in the floodplain.

Using a combination of statewide Light Detection and Ranging (LiDAR) topographic data and State-generated stream flow data, Maryland initiated a flood map revision process through the Cooperating Technical Partner program. This process involved developing flood study engineering models that incorporated updated data for almost all of the road crossings in the State.

BENEFITS
1. Flood elevations have been established or are being prepared for almost all of the rivers and streams in the State. These models include information on the bridges and culverts on the streams that were studied, cross-section information (Maryland plans to incorporate a cross-section viewer this year), and flow characteristics.

2. The flood study engineering models are available via a clickable map on a publicly accessible website. The data include the current FEMA engineering models (HEC-RAS), stream flows and cross sections, and photographs of bridges and culverts associated with the waters of the State of Maryland. The models and supporting information have all been georeferenced and are shown on the website in their actual mapped locations. With this information, staff can respond to engineering data requests and FEMA Letter of Map Amendment processing in less time and at less cost.

3. The State is currently working to incorporate submitted data, updates, and information into day-to-day permitting operations. An email exchange system communicates to local officials that a State permit application has been received for changes in a floodplain in their community.

Maryland Department of Natural Resources
RISK MAPPING, ASSESSMENT, AND PLANNING PROGRAM (RISK MAP) PHASES

This project involved the following Risk MAP phases:

- Discovery
- Data Development and Sharing
- Risk Awareness and Mitigation Outreach
- Proposed NFIP Map Changes and Impacts
- Preliminary Map Release and Mitigation
- Due Process and Path Forward

RISK MAP GOALS ADVANCES

The Risk MAP goals that were advanced through this project included:

- Increased Deployment
- NVUE Initiated or Achieved
- Advancing Action
- Increasing Awareness

LESSONS LEARNED

One noteworthy ancillary benefit of providing open access to flood study data is that the data are available to other agencies. For example, the Annapolis office of the U.S. Fish and Wildlife Service is now using these data in the design and planning for stream restoration projects. The engineering models used in the design of wetlands and riparian vegetation stream restoration projects can be downloaded. The Service is in the process of providing the more detailed stream field survey data developed for these projects to the State of Maryland so that the engineering models can be enhanced and updated. Open access to the engineering models enables a robust process for improving the accuracy of the engineering models associated with the flood hazard mapping in Maryland. The U.S. Fish and Wildlife Service is also proposing to use the Maryland data as part of the Environmental Protection Agency’s Watershed Resource Registry to predict stream stability through Geographic Information Systems. These predictions will then be used to identify and prioritize locations for stream restoration and protection projects.

RESOURCES

The link to the State of Maryland flood risk data application is available here:
http://www.mdfloodmaps.net/dfirmimap/index.html

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Figure 1 - Screen Capture of Webpage Showing How Users Access an Effective Engineering Model