



Modeling, FEMA Guidelines to Go: 2D or Not 2D – Part 2

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2016 FMA Annual Conference

Capitol View Room

9:00 a.m. – 10:30 a.m.

Thursday, September 8, 2016



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NFIP Model Requirements for FIS

- ▶ 44 CFR 65.6 (a)(6) computer program requirements
 - Reviewed, tested, and acceptance by governmental agency
 - All models must be well-documented and source codes available to FEMA
 - All models, source code, documentation must be freely available to parties impacted by map revisions so they can appeal the determinations
 - For non-Federal models, must have written review, testing, and acceptance from a flood control agency.



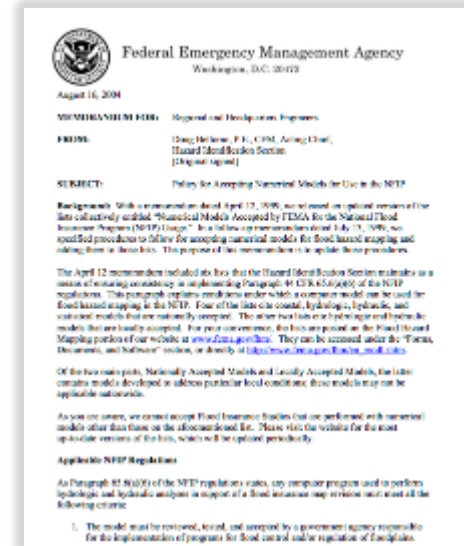
See <https://www.fema.gov/numerical-models-meeting-minimum-requirements-national-flood-insurance-program>



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What does model “acceptance” mean ?

- ▶ FEMA does not **review or test** models. It **accepts** models the meet regulatory requirements
- ▶ Memo “Policy for Accepting Numerical Models for Use in the NFIP”
 - Acceptance must be requested by software developer and flood control agency
 - FEMA will examine the supporting documentation for:
 - Evidence model will actually be used for NFIP studies
 - Evidence model provides for new capabilities beyond any non-proprietary model on current list
 - Modeling inconsistencies with NFIP regulations
 - Proof that review and testing occurred by responsible agency
 - Proof that model developer has provided legal releases to FEMA of source code and user’s manuals, in case those should be necessary in the future
- ▶ POC: Brian Koper, FEMA HQ. brian.koper@fema.dhs.gov



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RiskMAP
Increasing Resilience Together

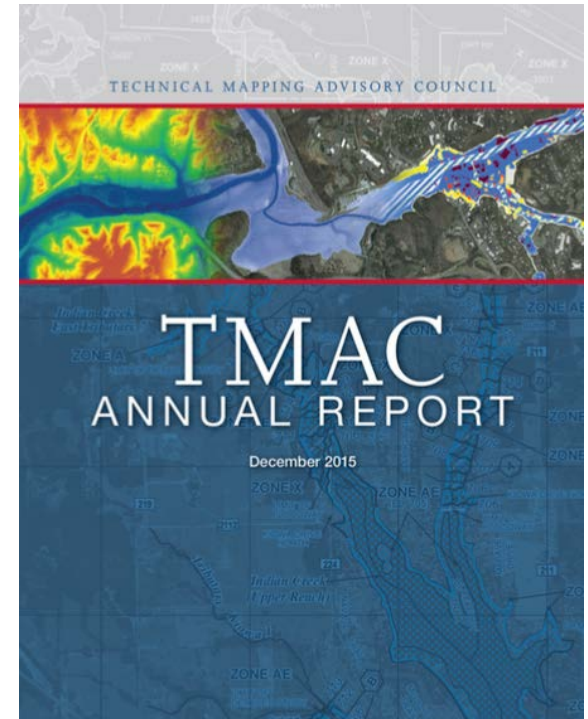
2D models and NFIP

- ▶ FEMA has long accepted 2-D models for NFIP use
 - Riverine and Coastal modeling
- ▶ Most new FEMA coastal models are based on 2-D modeling
 - The entire populated coastline is under study or recently mapped
- ▶ Only 873 of the 1,161,364 total inland modeled miles are currently based on 2-D
 - FEMA is embracing and conducting large scale 2-D modeling



2D models and NFIP

- ▶ Technical credibility is paramount
- ▶ The Technical Mapping Advisory Council (TMAC) is asking FEMA to develop additional guidance on 2-D modeling
 - <https://www.fema.gov/technical-mapping-advisory-council>
- ▶ FEMA is revising and updating 2-D guidance now in response to TMAC



FEMA Guidance and Standards

- ▶ Risk MAP guidelines and standards are organized in a hierarchy
- ▶ Guidance- A recommended approach to meet the standard. Accepted approaches are not limited to this recommended approach; mapping partners may use other methods to meet or exceed the standards



Plan for FEMA Fall 2016 Updates to 2-D Guidance

▶ Revised and Updated Topics (references to other Fed Agency Guidance)

- Topographic Information
- Hydraulic Structures
- Non-Conveyance Areas
- Energy Loss Coefficients
- Hydrologic Inputs
- Initial & Boundary Conditions
- Flow Paths
- Alluvial Fan Analysis
- Calibration of Hydraulic Models
- Floodway Determination
- Hydraulic Review Requirements
- Deliverable Products

▶ New Topics in Guidance

- Selection of 2D vs 1D Modeling methods (for FEMA purposes)
 - Appropriate Use of 2D model
 - Minimum Data Requirements for 2D model use
- Model Verification and Maintenance
 - Model Verification: Minimum levels of verification acceptable for FEMA use
 - Model Maintenance: Building models so they can be maintained by others



How to comment on FEMA 2D Guidance



If you are interested in reviewing any of the documents, submit your request to FEMA.GS@riskmapcds.com.



Comments received by October 7, 2016 will be considered for incorporation.



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Informational Summary

Risk MAP Guidelines and Standards (G&S) 2016 Fall Maintenance Cycle

The Federal Emergency Management Agency (FEMA) maintains guidelines and standards to support the Risk Mapping, Assessment and Planning (Risk MAP) Program. These guidelines and standards define the specific implementation of the statutory and regulatory requirements for the National Flood Insurance Program (NFIP). These also outline the performance of Flood Risk Projects, processing of Letters of Map Change (LOMCs) and related Risk MAP activities. More information is available at FEMA.gov.

FEMA has a maintenance plan for the Risk MAP guidelines and standards and issues updates on a semi-annual basis. This notice provides information about the fall semi-annual update, expected to be released in November 2016.

This update includes routine updates and ongoing transformation of legacy guidelines and specifications to produce new guidance documents that align with the current structure of the Risk MAP Program.

In addition to this routine maintenance, FEMA plans to issue new and updated standards, guidance documents, technical references and related templates to address recommendations from the Technical Mapping Advisory Council (TMAC), a Federal Advisory Committee that advises FEMA on the flood mapping program. The TMAC changes for November will address the recommendations that FEMA:

- document the accuracy of elevation data used for modeling and mapping in a way that is easily accessible to users;
- periodically review new publicly available statistical models;
- provide more guidance on the selection and use of various models for flood mapping; and,
- assess the cost impact of new requirements and provide guidance to consistently address the impact. This will be accomplished mainly through process changes in the standards and guidelines maintenance process.

Listed below is a summary of the proposed changes to standards, guidance and related documents.

The *Policy for Flood Risk Analysis and Mapping*¹ comprises the standards for practitioners of the Risk MAP program. As part of the guidelines and standards maintenance cycle, FEMA provides an opportunity for stakeholders to review and comments on proposed changes to standards. There are 13 proposed changes to standards included in the summary of changes below. The proposed language for the standards is included below after the overall summary of proposed changes. Instructions for commenting on the draft language are provided.

If you have feedback about FEMA's guidelines and standards, submit comments or suggestions by e-mail to FEMA.GS@riskmapcds.com.

TMAC Changes

Item #	Document Type	Subject	Description
1	Guidance / Technical Reference	Elevation Accuracy	Address the recommendation that FEMA document the accuracy of elevation data used for modeling and mapping in a way that is easily accessible to users.
5	Standard /	Acceptable	Address the recommendation that FEMA periodically review



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