

GENERAL FLOOD STANDARDS

GF-1 Scope of the Flood Model and Its Implementation

- A. The flood model shall project loss costs and probable maximum loss levels for primary damage to insured personal residential property from flood events.**
- B. The modeling organization shall maintain a documented process to assure continual agreement and correct correspondence of databases, data files, and computer source code to slides, technical papers, and modeling organization documents.**
- C. All software and data (1) located within the flood model, (2) used to validate the flood model, (3) used to project modeled loss costs and probable maximum loss levels, and (4) used to create forms required by the Commission in the Report of Activities shall fall within the scope of the Computer/Information Standards and shall be located in centralized, model-level file areas.**

Purpose: This standard gives a high level view of the scope of the flood model to be reviewed, namely projecting flood loss costs and flood probable maximum loss levels for primary damage to insured personal residential property from flood events. The definition of flood as used in this standard is based on Section 627.715(1)(b), Florida Statutes. The scope of the flood model applies to all types of flooding determined to be scientifically feasible at a location (that is, where frequencies and severities of such events are available and can be projected) and is not limited to any specific subsets or types of flood peril. ~~Nothing in the flood standards or purpose statements shall preclude a model from projecting loss costs and probable maximum loss levels from the flood peril using separate sub-models for various components of the peril (e.g., inland precipitation flood is modeled separately from storm surge flooding).~~

~~It is recognized that "models" are complex and may include models within models which can be known as "sub-models" or "component models." This would be expected for some approaches to flood modeling, although not a necessary requirement. And, it is recognized that such models, sub-models, or component models may be part of other models such as hurricane models or wave models, etc. This would not preclude their use as "part" of the flood modeling process. The Commission will take a broad view of the process or methodology that "ties" together the various models, sub-models, or component models. As such, the broader and more general model will be considered as the "flood model" under review given that it should result in one set of loss costs and one probable maximum loss curve. It is important that the general modeling approach be found acceptable and that any~~

~~failure to meet a standard by the various models, sub-models, or component models necessary to model the nature of the flood peril would be viewed as unacceptable for flood modeling purposes. Therefore, a model, sub-model, or component model capable of modeling one aspect of the flood peril, such as coastal storm surge flooding or inland flooding, and otherwise meeting all the Commission standards could not be found acceptable without being combined with other models, sub-models, or component models that in their entirety accurately or reliably model the full scope and nature of the flood peril.~~

Relevant Form: GF-1, General Flood Standards Expert Certification

Disclosures

1. Specify the flood model version identification. If the flood model submitted for review is implemented on more than one platform, specify each flood model platform. Specify which platform is the primary platform and verify how any other platforms produce the same flood model output results or are otherwise functionally equivalent as provided for in the “Process for Determining the Acceptability of a Computer Simulation Model” in VI. Review by the Commission, J. Review and Acceptance Criteria for Functionally Equivalent Model Platforms.
2. Provide a comprehensive summary of the flood model. This summary should include a technical description of the flood model, including each major component of the model used to project loss costs and probable maximum loss levels for insured primary damage to personal residential property from flood events causing damage in Florida. Describe the theoretical basis of the flood model and include a description of the methodology, particularly the meteorology/hydrology components, the vulnerability components, and the insured flood loss components used in the flood model. The description should be complete and is not to reference unpublished work.
3. Provide a flowchart that illustrates interactions among major flood model components.
4. Provide a comprehensive list of complete references pertinent to the submission by flood standard grouping using professional citation standards.
- ~~5. Provide a list and description of any potential interim updates to underlying data relied upon by the flood model. State whether the time interval for the update has a possibility of occurring during the period of time the flood model could be found acceptable by the Commission under the review cycle in this *Report of Activities*.~~
65. Identify and describe the modeling organization specified, predetermined, and comprehensive exposure dataset used for projecting personal residential flood loss costs and flood probable maximum loss levels.

Audit

1. All primary technical papers that describe the underlying flood model theory and implementation (where applicable) should be available for review in hard copy or electronic form. Modeling organization specific publications cited must be available for review in hard copy or electronic form.
2. Compliance with the process prescribed in Standard GF-1.B in all stages of the flood modeling process will be reviewed.
3. Items specified in Standard GF-1.C will be reviewed as part of the Computer/Information Flood Standards.
4. Maps, databases, and data files relevant to the modeling organization's submission will be reviewed.
5. The following information related to changes in the flood model, since the initial submission for each subsequent revision of the submission, will be reviewed.
 - A. Flood model changes:
 1. A summary description of changes that affect, or are believed to affect, the personal residential flood loss costs or flood probable maximum loss levels,
 2. A list of all other changes, and
 3. The rationale for each change.
 - B. Percentage difference in average annual zero deductible statewide flood loss costs based on a modeling organization specified, predetermined, and comprehensive exposure dataset for:
 1. All changes combined, and
 2. Each individual flood model component and subcomponent change.
 - C. Color-coded maps by rating area or zone reflecting the percentage difference in average annual zero deductible statewide flood loss costs based on the modeling organization specified, predetermined, and comprehensive exposure dataset for each flood model component change:
 1. Between the initial submission and the revised submission, and
 2. Between any intermediate revisions and the revised submission.
7. The modeling organization specified, predetermined, and comprehensive exposure dataset used for projecting personal residential flood loss costs and flood probable maximum loss levels will be reviewed.

GF-2 Qualifications of Modeling Organization Personnel and Consultants Engaged in Development of the Flood Model

- A. Flood model construction, testing, and evaluation shall be performed by modeling organization personnel or consultants who possess the necessary skills, formal education, and experience to develop the relevant components for flood loss projection methodologies.**
- B. The flood model and model submission documentation shall be reviewed by modeling organization personnel or consultants in the following professional disciplines with requisite experience: hydrology and hydraulics (advanced degree or licensed Professional Engineer with experience in coastal and inland flooding), meteorology (advanced degree), statistics (advanced degree), structural engineering (licensed Professional Engineer with experience in coastal and inland flooding), actuarial science (Associate or Fellow of Casualty Actuarial Society or Society of Actuaries), and computer/information science (advanced degree). These individuals shall certify Forms GF-1 through GF-6, Expert Certification forms, as applicable.**

Purpose: This standard requires professional disciplines with requisite experience necessary to develop the flood model to be represented among modeling organization staff and consultants. Academic or professional designations are required but not necessarily sufficient for the personnel involved in flood model development, implementation, and preparation of material for review by the Commission.

Relevant Forms:

- GF-1, General Flood Standards Expert Certification
- GF-2A, Meteorological/Hydrological Flood Standards Meteorologist Expert Certification
- GF-2B, Meteorological/Hydrological Flood Standards Hydrologist Expert Certification
- GF-3, Statistical Flood Standards Expert Certification
- GF-4, Vulnerability Flood Standards Structural/Hydraulic/Coastal Engineer Expert Certification
- GF-5, Actuarial Flood Standards Expert Certification
- GF-6, Computer/Information Flood Standards Expert Certification

Disclosures

1. Organization Background

- A. Describe the ownership structure of the modeling organization engaged in the development of the flood model. Describe affiliations with other companies and the nature of the relationship, if any. Indicate if the organization has changed its name and explain the circumstances.

- B. If the flood model is developed by an entity other than the modeling organization, describe its organizational structure and indicate how proprietary rights and control over the flood model and its components is exercised. If more than one entity is involved in the development of the flood model, describe all involved.
 - C. If the flood model is developed by an entity other than the modeling organization, describe the funding source for the development of the flood model.
 - D. Describe any services other than flood modeling provided by the modeling organization.
 - E. Indicate if the modeling organization has ever been involved directly in litigation or challenged by a governmental authority where the credibility of one of its U.S. flood model versions for projection of flood loss costs or flood probable maximum loss levels was disputed. Describe the nature of each case and its conclusion.
2. Professional Credentials
- A. Provide in a tabular format (a) the highest degree obtained (discipline and university), (b) employment or consultant status and tenure in years, and (c) relevant experience and responsibilities of individuals currently involved in the acceptability process or in any of the following aspects of the flood model:
 - 1. Meteorology/Hydrology
 - 2. Statistics
 - 3. Vulnerability
 - 4. Actuarial Science
 - 5. Computer/Information Science
 - B. Provide visual business workflow documentation connecting all personnel related to flood model design, testing, execution, maintenance, and decision-making.
3. Independent Peer Review
- A. Provide reviewer names and dates of external independent peer reviews that have been performed on the following components as currently functioning in the flood model:
 - 1. Meteorology/Hydrology
 - 2. Statistics
 - 3. Vulnerability
 - 4. Actuarial Science
 - 5. Computer/Information Science
 - B. Provide documentation of independent peer reviews directly relevant to the modeling organization's responses to the current flood standards, disclosures, or forms. Identify any unresolved or outstanding issues as a result of these reviews.

- C. Describe the nature of any on-going or functional relationship the organization has with any of the persons performing the independent peer reviews.
4. Provide a list of rating agencies and insurance regulators that have reviewed the flood model. Include the dates and purpose of the reviews.
 5. Provide a completed Form GF-1, General Flood Standards Expert Certification. Provide a link to the location of the form [insert hyperlink here].
 6. Provide a completed Form GF-2A, Meteorological/Hydrological Flood Standards Meteorologist Expert Certification. Provide a link to the location of the form [insert hyperlink here].
 7. Provide a completed Form GF-2B, Meteorological/Hydrological Flood Standards Hydrologist Expert Certification. Provide a link to the location of the form [insert hyperlink here].
 8. Provide a completed Form GF-3, Statistical Flood Standards Expert Certification. Provide a link to the location of the form [insert hyperlink here].
 9. Provide a completed Form GF-4, Vulnerability Flood Standards Structural/Hydraulic/Coastal Engineer Expert Certification. Provide a link to the location of the form [insert hyperlink here].
 10. Provide a completed Form GF-5, Actuarial Flood Standards Expert Certification. Provide a link to the location of the form [insert hyperlink here].
 11. Provide a completed Form GF-6, Computer/Information Flood Standards Expert Certification. Provide a link to the location of the form [insert hyperlink here].

Audit

1. The professional vitae of personnel and consultants engaged in the development of the flood model and responsible for the current flood model and the submission will be reviewed. Background information on the professional credentials and the requisite experience of individuals providing testimonial letters in the submission will be reviewed.
2. Forms GF-1, General Flood Standards Expert Certification, GF-2A, Meteorological/Hydrological Flood Standards Meteorologist Expert Certification, GF-2B, Meteorological/Hydrological Flood Standards Hydrologist Expert Certification, GF-3, Statistical Flood Standards Expert Certification, GF-4, Vulnerability Flood Standards Structural/Hydraulic/Coastal Engineer Expert Certification, GF-5, Actuarial Flood Standards Expert Certification, GF-6, Computer/Information Flood Standards Expert Certification, and all independent peer reviews of the flood model under consideration will be reviewed. Signatories on the individual forms will be required to provide a description of their review process.

3. Incidents where modeling organization personnel or consultants have been found to have failed to abide by the standards of professional conduct adopted by their profession will be discussed.
4. For each individual listed under Disclosure 2.A, specific information as to any consulting activities and any relationship with an insurer, reinsurer, trade association, governmental entity, consumer group, or other advocacy group within the previous four years will be reviewed.

GF-3 Insured Exposure Location

~~The geographic location, topography, and elevation methodology shall be consistent and scientifically justified.~~

1. Mirror geocoding language in hurricane standards (Note: A below is the language from hurricane)
2. Estimation of elevation for building location

A. Geocoding methodology shall be consistent and justifiable.

B.

Explanation of problem:

The language in flood on geocoding should mirror hurricane language as the same process is used, so standard requirement should be the same.

Elevation data should be in the Meteorological/Hydrological Standards to address the hazard, not the exposure location.

See next page for Del Schwalls' recommendations.

Purpose: Flood model outputs, including flood loss costs and flood probable maximum loss levels, are sensitive to insured exposure locations, topography, and elevations. Accurate insured exposure locations are necessary for projecting flood loss costs and flood probable maximum loss levels. This standard requires that appropriate methods must be used in converting street addresses to geocode locations (latitude-longitude). The methodology to determine the elevation of the insured exposure should be scientifically appropriate.

Relevant Form: GF-1, General Flood Standards Expert Certification

Disclosures

Disclosures 1-4 should mirror hurricane standards.

1. Describe the method for determining the insured exposure locations and elevations.
2. Provide the granularity of the geographical grid modeled for flood damage. Explain the reason for the spatial distribution of the grid locations. Discuss if there is any variation for populated versus unpopulated areas.
3. Describe the modeling organization's use of Global Information Systems (GIS) in the flood modeling process.
4. Describe the data, methods, and process used in the flood model to convert among street addresses and geocode locations (latitude-longitude) and elevation.

5. List and provide a brief description of each database used in the flood model for determining location and corresponding elevation.
6. Describe the process for updating flood model location and corresponding elevation databases.

Audit

Audit 1 & 2 should mirror hurricane standards.

1. Geographic displays for all geographic grids or non-grid formats for display of the spatial distribution and geographic characteristics of insured exposures will be reviewed. The treatment of any variations for populated versus unpopulated areas will be reviewed.
2. Third party vendor information, if applicable, and a complete description of the process used to create, validate, and justify geographic grids will be reviewed.
3. The treatment of geographic grids over water or other uninhabitable terrain will be reviewed.
4. Examples of geocoding for complete and incomplete street addresses will be reviewed.
5. Flood model location and elevation databases will be reviewed.

Del Schwalls recommendation:

GF-3 Insured Exposure Location

A. Address databases used in the flood model shall not be older than 24 months at the date of the submission of the model. Address information shall originate from the United States Postal Service.

B. Address information purchased by the modeling organization shall be verified by the modeling organization for accuracy and appropriateness.

C. If any hazard or any flood model vulnerability components are dependent on address databases, the modeling organization shall maintain a logical process for ensuring these components are consistent with address database updates.

D. Geocoding methodology shall be consistent and justifiable.

Purpose: Flood model outputs, including flood loss costs and flood probable maximum loss levels, are sensitive to insured exposure locations, and topography, ~~and elevations~~. Accurate insured exposure locations are necessary for projecting flood loss costs and flood probable maximum loss levels. This standard requires that appropriate methods must be used in converting street addresses to geocode locations (latitude-longitude). The methodology to determine the elevation of the insured exposure should be scientifically appropriate.

Relevant Form: GF-1, General Flood Standards Expert Certification

Disclosures

1. List the current address databases used by the flood model and the flood model components to which they relate. Provide the effective (official USPS) date corresponding to the address databases.
2. Describe in detail how invalid addresses are handled.
- ~~1.3. Describe the method for subdividing the address databases to ~~determining~~ determine the insured exposure locations ~~and elevations~~, and the treatment of any variations for populated versus unpopulated areas.~~
- ~~2. Provide the granularity of the geographical grid modeled for flood damage. Explain the reason for the spatial distribution of the grid locations. Discuss if there is any variation for populated versus unpopulated areas.~~
- ~~3. Describe the modeling organization's use of Global Information Systems (GIS) in the flood modeling process.~~
4. Describe the data, methods, and process used in the flood model to convert among street addresses and geocode locations (latitude-longitude) ~~and elevation~~.
5. Describe the use of geographic information systems (GIS) in the process of converting among street address and geocode locations, and the generation of insured exposure locations.
- ~~5.6. List and provide a brief description of each database used in the flood model for determining geocode location ~~and corresponding elevation~~.~~
- ~~6.7. Describe the process for updating flood model geocode locations ~~and corresponding elevation~~ as address databases are updated.~~

Audit

1. Geographic displays ~~for all geographic grids or non-grid formats for display~~ of the spatial distribution ~~and geographic characteristics~~ of insured exposures will be reviewed. The treatment of any variations for populated versus unpopulated areas will be reviewed.

2. Third party vendor information, if applicable, and a complete description of the process used to create, validate, and justify geographic grids will be reviewed.
3. The treatment of geographic grids over water or other uninhabitable terrain will be reviewed.
4. Examples of geocoding for complete and incomplete street addresses will be reviewed.
5. Flood model [geocode](#) location ~~and elevation~~ databases will be reviewed.

GF-4 Independence of Flood Model Components

The meteorology/hydrology, vulnerability, and actuarial components of the flood model shall each be theoretically sound without compensation for potential bias from other components.

Purpose: This standard requires that each of the primary components of the flood model be individually sound and operate independently. For example, the flood model should not allow adjustments to the vulnerability components to compensate for apparent deficiencies in other components (e.g., compensation which could inflate damage). A flood model would not meet this standard if an artificial calibration adjustment has been made to improve the match of historical and flood model results for a specific flood event. In addition to each component of the flood model meeting its respective standards, the interrelationship of the flood model components as a whole must be reasonable, logical, and scientifically justified.

Relevant Form: GF-1, General Flood Standards Expert Certification

Audit

1. The flood model components will be reviewed for adequately portraying flood phenomena and effects (damage, flood loss costs, and flood probable maximum loss levels). Attention will be paid to an assessment of (1) the theoretical soundness of each component, (2) the basis of the integration of each component into the flood model, and (3) consistency between the results of one component and another.

GF-5 Editorial Compliance

The submission and any revisions provided to the Commission throughout the review process shall be reviewed and edited by a person or persons with experience in reviewing technical documents who shall certify on Form GF-7, Editorial Review Expert Certification that the submission has been personally reviewed and is editorially correct.

Purpose: This standard requires that the modeling organization engaged in the development of the flood model maintain a quality control process with regard to creating, maintaining, and reviewing all documentation associated with the flood model.

Person(s) with experience in reviewing technical documents for grammatical correctness, typographical accuracy, and accurate citations, charts, or graphs must have reviewed the submission and certify that the submission is in compliance with the acceptability process.

Relevant Forms: GF-1, General Flood Standards Expert Certification
GF-2A, Meteorological/Hydrological Flood Standards Meteorologist Expert Certification
GF-2B, Meteorological/Hydrological Flood Standards Hydrologist Expert Certification
GF-3, Statistical Flood Standards Expert Certification
GF-4, Vulnerability Flood Standards Structural/Hydraulic/Coastal Engineer Expert Certification
GF-5, Actuarial Flood Standards Expert Certification
GF-6, Computer/Information Flood Standards Expert Certification
GF-7, Editorial Review Expert Certification

Disclosures

1. Describe the process used for document control of the submission. Describe the process used to ensure that the paper and electronic versions of specific files are identical in content.
2. Describe the process used by the signatories on Forms GF-1 through GF-6, Expert Certification forms, to ensure that the information contained under each set of flood standards is accurate and complete.
3. Provide a completed Form GF-7, Editorial Review Expert Certification. Provide a link to the location of the form [insert hyperlink here].

Audit

1. An assessment that the person(s) who has reviewed the submission has experience in reviewing technical documentation and that such person(s) is familiar with the

submission requirements as set forth in the Commission's *Report of Activities as of November 1, 2017* will be made.

2. Attestation that the submission has been reviewed for grammatical correctness, typographical accuracy, completeness, and no inclusion of extraneous data or materials will be assessed.
3. Confirmation that the submission has been reviewed by the signatories on Forms GF-1 through GF-6, Expert Certification forms, for accuracy and completeness will be assessed.
4. The modification history for submission documentation will be reviewed.
5. A flowchart defining the process for form creation will be reviewed.
6. Form GF-7, Editorial Review Expert Certification, will be reviewed.

**Form GF-1: General Flood Standards
Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the General Flood Standards (GF1-GF5) in accordance with the stated provisions.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Flood Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the General Flood Standards (GF1 – GF5);
- 2) The disclosures and forms related to the General Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession;
- 4) My review involved ensuring the consistency of the content in all sections of the submission; and
- 5) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the flood model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-1, General Flood Standards Expert Certification, in a submission appendix.

**Form GF-2A: Meteorological/Hydrological Flood Standards
Meteorologist Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Meteorological/Hydrological Flood Standards (MHF1-MHF7) in accordance with the stated provisions from the meteorologist perspective.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Meteorological/Hydrological Flood Standards (MHF1 – MHF7);
- 2) The disclosures and forms related to the Meteorological/Hydrological Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-2A, Meteorological/Hydrological Flood Standards Meteorologist Expert Certification, in a submission appendix.

**Form GF-2B: Meteorological/Hydrological Flood Standards
Hydrologist Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Meteorological/Hydrological Flood Standards (MHF1-MHF7) in accordance with the stated provisions from the hydrologist perspective.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Meteorological/Hydrological Flood Standards (MHF1 – MHF7);
- 2) The disclosures and forms related to the Meteorological/Hydrological Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-2B, Meteorological/Hydrological Flood Standards Hydrologist Expert Certification, in a submission appendix.

**Form GF-3: Statistical Flood Standards
Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Statistical Flood Standards (SF1-SF6) in accordance with the stated provisions.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Statistical Flood Standards (SF1 – SF6);
- 2) The disclosures and forms related to the Statistical Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-3, Statistical Flood Standards Expert Certification, in a submission appendix.

**Form GF-4: Vulnerability Flood Standards
Structural/Hydraulic/Coastal Engineer Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Vulnerability Flood Standards (VF1-VF4) in accordance with the stated provisions.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Vulnerability Flood Standards (VF1 – VF4);
- 2) The disclosures and forms related to the Vulnerability Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-4, Vulnerability Flood Standards Structural/Hydraulic/Coastal Engineer Expert Certification, in a submission appendix.

**Form GF-5: Actuarial Flood Standards
Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Actuarial Flood Standards (AF1-AF6) in accordance with the stated provisions.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Actuarial Flood Standards (AF1 – AF6);
- 2) The disclosures and forms related to the Actuarial Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the Actuarial Standards of Practice and Code of Conduct; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-5, Actuarial Flood Standards Expert Certification, in a submission appendix.

**Form GF-6: Computer/Information Flood Standards
Expert Certification**

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Computer/Information Flood Standards (CIF1-CIF7) in accordance with the stated provisions.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the 2017 Standards adopted by the Florida Commission on Hurricane Loss Projection Methodology and hereby certify that:

- 1) The model meets the Computer/Information Flood Standards (CIF1 – CIF7);
- 2) The disclosures and forms related to the Computer/Information Flood Standards section are editorially and technically accurate, reliable, unbiased, and complete;
- 3) My review was completed in accordance with the professional standards and code of ethical conduct for my profession; and
- 4) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-6, Computer/Information Flood Standards Expert Certification, in a submission appendix.

Form GF-7: Editorial Review Expert Certification

Purpose: This form identifies the signatory(s) who have reviewed the current flood model submission for compliance with the Commission’s Notification Requirements and General Flood Standard GF-5, Editorial Compliance, in accordance with the stated provisions.

I hereby certify that I have reviewed the current submission of _____
(Name of Flood Model)

Version _____ for compliance with the “Process for Determining the Acceptability of a Computer Simulation Model” adopted by the Florida Commission on Hurricane Loss Projection Methodology in its *Report of Activities as of November 1, 2017*, and hereby certify that:

- 1) The model submission is in compliance with the Commission’s Notification Requirements and General Flood Standard GF-5, Editorial Compliance;
- 2) The disclosures and forms related to each standards section are editorially accurate and contain complete information and any changes that have been made to the submission during the review process have been reviewed for completeness, grammatical correctness, and typographical errors;
- 3) There are no incomplete responses, inaccurate citations, charts or graphs, or extraneous text or references;
- 4) The current version of the flood model submission has been reviewed for grammatical correctness, typographical errors, completeness, the exclusion of extraneous data/information and is otherwise acceptable for publication; and
- 5) In expressing my opinion I have not been influenced by any other party in order to bias or prejudice my opinion.

Name

Professional Credentials (Area of Expertise)

Signature (original submission)

Date

Signature (response to deficiencies, if any)

Date

Signature (revisions to submission, if any)

Date

Signature (final submission)

Date

An updated signature and form is required following any modification of the model and any revision of the original submission. If a signatory differs from the original signatory, provide the printed name and professional credentials for any new signatories. Additional signature lines shall be added as necessary with the following format:

Signature (revisions to submission)

Date

Note: A facsimile or any properly reproduced signature will be acceptable to meet this requirement.

Include Form GF-7, Editorial Review Expert Certification, in a submission appendix.