

**Recommendations of the DRBC
Flood Advisory Commission (FAC) for
More Effective Floodplain Management
in the Delaware River Basin**

**Interstate Flood Mitigation Task Force
December 15, 2009**

Delaware River Basin Flood Advisory Committee (FAC)

- The FAC was established in 1999. The committee meets quarterly.
- Since numerous organizations within the Delaware River Basin share flood loss reduction responsibilities, a Flood Advisory Committee can provide a forum for coordination of activities and promote efficient use of technical and financial resources for the benefit of the Delaware River Basin Community.

Flood Advisory Committee

Members:

- Delaware Department of Natural Resources and Environmental Control
- New Jersey Department of Environmental Protection
- New York Department of Environmental Conservation
- Pennsylvania Department of Environmental Protection
- New York City Department of Environmental Protection
- Delaware Emergency Management Agency
- New Jersey Office of Emergency Management
- New York Office of Emergency Management
- Pennsylvania Emergency Management Agency
- Federal Emergency Management Agency
- U.S. Department of Agriculture - Natural Resources Conservation Service
- U.S. Geological Survey
- National Weather Service
- U.S. Army Corps of Engineers
- National Park Service
- Delaware River Joint Toll Bridge Commission
- Electric Generation Industry (Hydropower and Off-Stream Storage)
- County Water Resources Agency
- Local/County Emergency Management Representatives

Delaware Flood Mitigation Interstate Task Force July 2007 Report:

- FR-1: Catalog, Evaluate and Update Existing State and Local Floodplain Regulations in the Basin

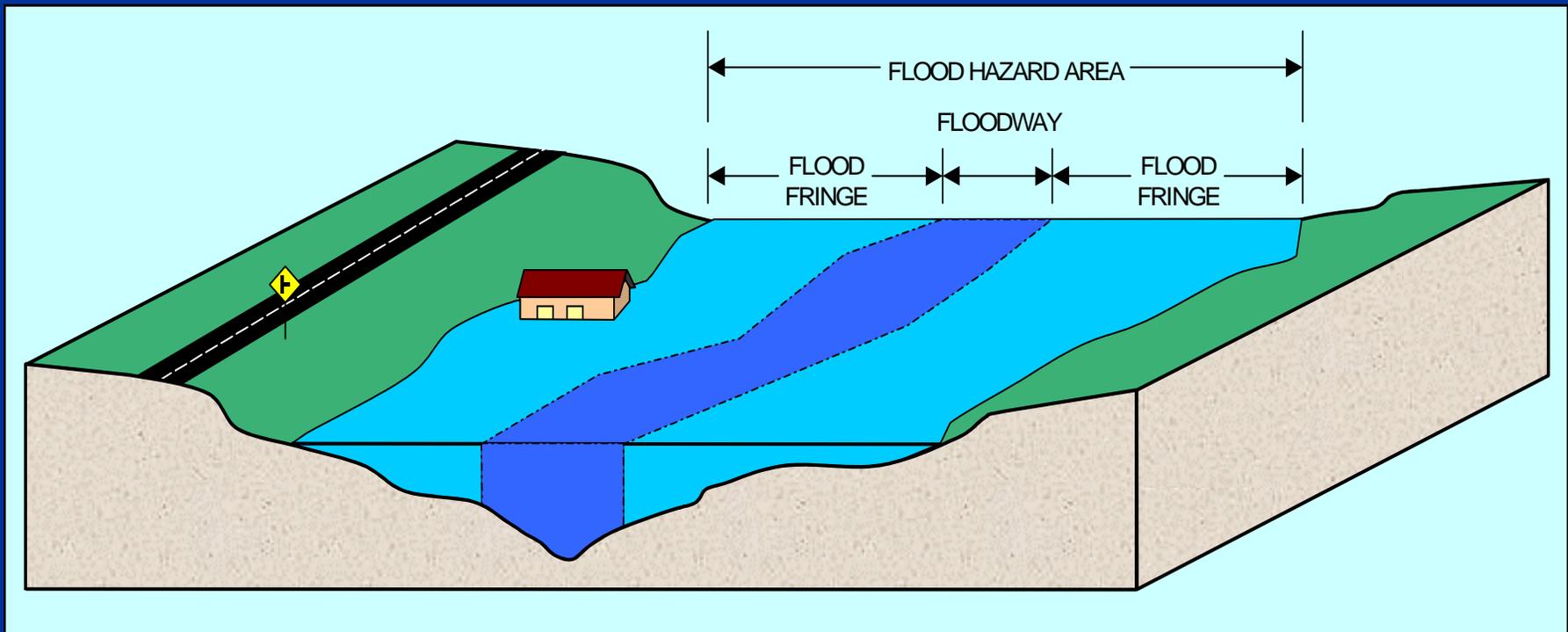


FIGURE A THE FLOOD HAZARD AREA IS COMPRISED OF THE FLOODWAY AND FLOOD FRINGE

Floodplain Regulation Evaluation Subcommittee

November 2008: DRBC Floodplain Regulations Evaluation Subcommittee (FRES) was formed.

Charge to FRES:

“To review and evaluate the similarities and differences in floodplain regulations throughout the Delaware River Basin, and to develop and present recommendations on the potential for more effective floodplain management throughout the basin to the FAC.”

Composition of FRES

Co-chairs: Joseph Ruggeri, NJDEP & Dan Fitzpatrick, PADCED

- Basin states (6 total, all 4 states represented)
 - Federal government (2)
 - Environmental and citizen groups (3)
 - environmental
 - riverbank property owners
 - education and outreach
 - Builders, Agriculture and Commerce (3)
 - builders association
 - farm bureau
 - chamber of commerce
 - Flood mapping consultants (2)
 - Local officials (4 total, 1 per state - designated by state)
- Total: 20 individuals representing varying interest groups

Timeline

- November 12, 2008: First DRBC FRES meeting
- May 19, 2009: DRBC FRES releases report on recommendations on more effective floodplain management.
- August 26, 2009: DRBC FAC considers & approves recommendations on more effective floodplain management.
- October 22, 2009: DRBC FAC reports their findings to the DRBC Commissioners.



Subcommittee Considerations

- Diversity of Stream Character across the Basin
 - Main stem vs. tributary
 - Urban vs. rural
 - Tidal/ Non-tidal
 - Agricultural Lands
- Floodplain Restoration
- Floodplain Mapping
- Implementation
- Socio/economic Impacts
- Permitting/Enforcement
- Education

Subcommittee Recommendations

- A. Regulatory Floodplain Definition
- B. Floodway definition
- C. Development/ Fill in the Flood Fringe
- D. Development/ Fill in the Floodway
- E. Stream/riparian Corridors and Vegetation Disturbance
- F. Adopted Building Code
- G. Standards for the Lowest Floor of Structures
(Freeboard)
- H. Enclosed Areas below Flood Elevation
- I. Substantial Damage/Improvement to Structures
- J. Dams and Flood Damage Risk
- K. Bridge/Culvert Construction or Reconstruction and
Flood Damage Risk
- L. Stormwater Regulations –New and Redevelopment

A. Regulatory Floodplain Definition

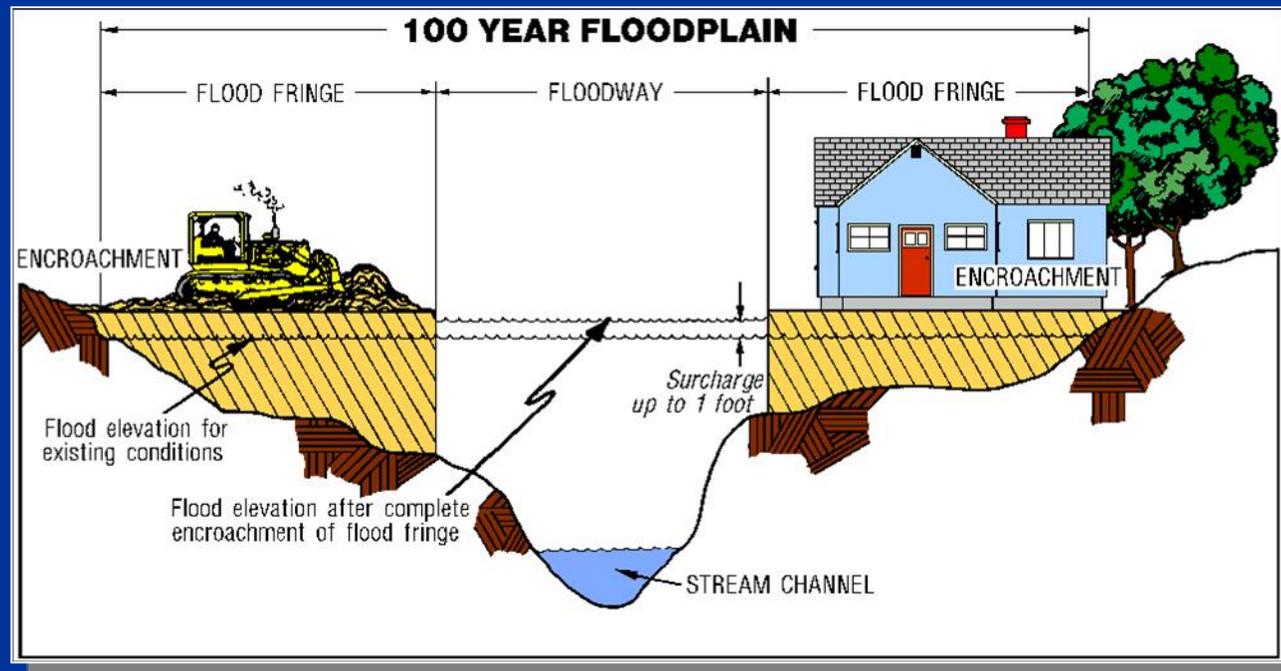
Recommendations:

- A) The regulatory floodplain for waterways in the Delaware River Basin should be greater than the 1% annual chance floodplain.
- B) Unmapped waterways of the Basin need a mechanism for identifying the regulatory floodplain.

B. Floodway definition

Recommendation:

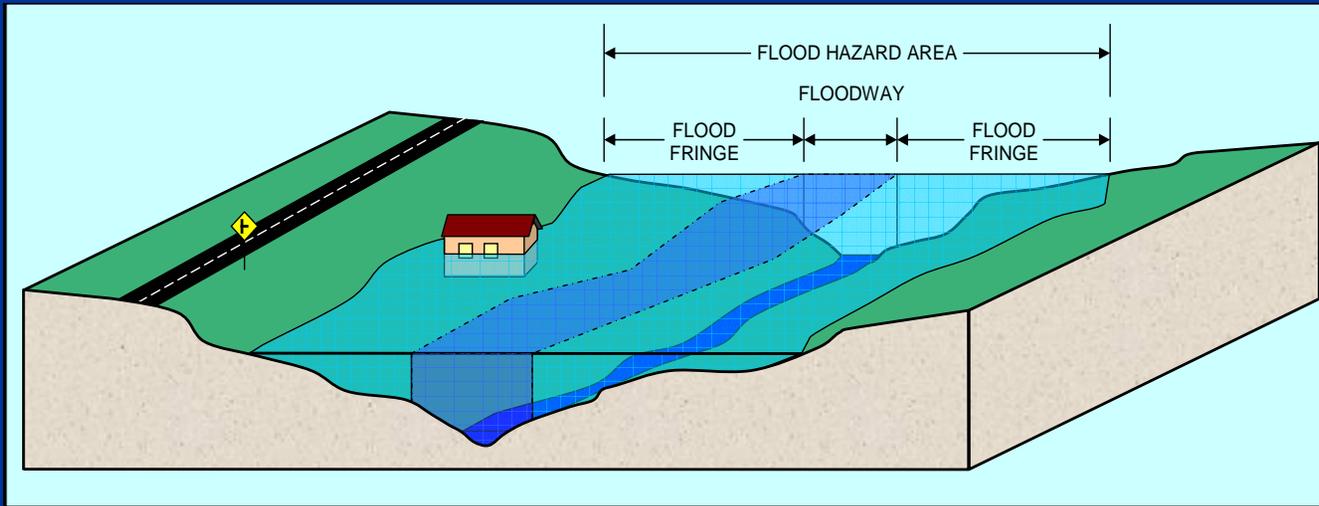
The floodway in the Delaware River Basin should be defined by a 0.2-foot rise standard for the main stem Delaware River and all other streams and rivers within the basin.



C. Development/ Fill in the Flood Fringe

Recommendation:

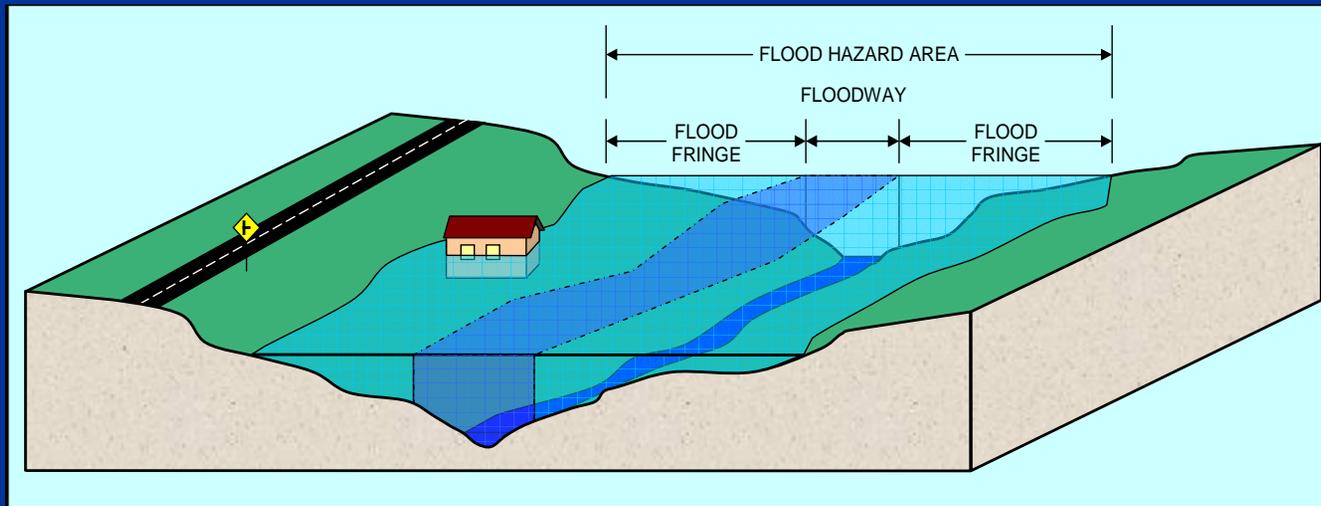
Protect the flood fringe in a naturally vegetated state and limit development including, but not limited to, structures, infrastructure, impervious surfaces, fill, grading and removal of vegetation.



D. Development/ Fill in the Floodway

Recommendation:

New development in floodways should be prohibited.



E. Stream/riparian Corridors and Vegetation Disturbance

Recommendation:

Incorporate the buffer concept as part of a comprehensive floodplain management program to protect communities from flood damage.



F. Adopted Building Code

Recommendation:

Continue the use of International Code Council standards in the floodplain, except in cases where the recommendations proposed by FRES are more restrictive.

G. Standards for the Lowest Floor of Structures (Freeboard)

Recommendation:

All new or substantially improved residential, institutional and commercial structures within the Delaware River Basin should be constructed two (2) feet above the 1% annual chance base flood elevation within the flood fringe. This recommendation should apply to all structures within the 1% annual chance floodplain and those outside of it that are less than two feet higher than the base flood elevation.

Example 2: A Zone building, slab or crawlspace foundation (no basement). \$200,000 building coverage, \$75,000 contents coverage.

Floor Elevation above BFE	Reduction in Annual Flood Premium*
1 foot	39%
2 feet	48%
3 feet	48%
4 feet	48%

Reference: NAHB. September 2007

H. Enclosed Areas below Flood Elevation

Recommendation:

- A) At time of construction, a deed restriction should be required for enclosures.

- B) Structural requirement: If the enclosure below the flood elevation is greater than 6 feet in height measured from floor to floor, at least 25 percent of the surface area of the outer wall of enclosures should be left permanently open.

I. Substantial Damage/Improvement to Structures

Recommendation:

A) A cumulative loss determination should be applied in the basin following the Increased Cost of Compliance (ICC) definition of cumulative loss, two flood losses over a ten year period with an average damage of 25% of the structure's market value at the time of each damage event.

B) Track cumulative substantial improvements or damages to structures in special flood hazard areas to ensure that flood protection measures are incorporated.

J. Dams and Flood Damage Risk

Recommendation:

- (A) Monitoring and inspection of all existing dams should be increased.
- (B) States should seek to increase funding and technical assistance to small dam owners.
- (C) Preparation and implementation of Emergency Action Plans (EAPs) for high and significant hazard potential dams must be prioritized.
- (D) Require the evaluation of downstream flooding impacts as part of a permit application for either (1) dam decommissioning or (2) dam repair which may increase spillway discharges. This evaluation should detail the effects of a breach or change in spillway configuration on the downstream channel demonstrating that the project will not adversely affect flooding conditions downstream during the 10-, 50-, and 100-year storm events.



K. Bridge/Culvert Construction or Reconstruction and Flood Damage Risk

Recommendation:

1. Design new bridges and culverts to ensure that flooding to existing buildings or facilities is not exacerbated upstream or downstream. Design should be based on the results of updated flood models using recent climate data that incorporates changing precipitation trends.
2. Floodplain mapping should be updated for new crossings through the LOMR process if there is any change in the base flood elevation.



L. Stormwater Regulations –New and Redevelopment

Recommendation:

The goal of stormwater design within the Delaware River Basin should mimic pre-development hydrology at a minimum

