



Commonwealth of Virginia  
Office of the Governor

## Executive Order

NUMBER FORTY-FIVE

### FLOODPLAIN MANAGEMENT REQUIREMENTS AND PLANNING STANDARDS FOR STATE AGENCIES, INSTITUTIONS, AND PROPERTY

#### **Importance of the Initiative**

Executive Order 24 “Increasing Virginia’s Resilience to Sea Level Rise and Natural Hazards,” issued in November 2018, set the Commonwealth on a course towards addressing its risk and resilience to natural hazards, including flooding. A key element of that Order required an analysis of flooding and flood preparedness in the Commonwealth. Based on that analysis, the Commonwealth must establish new policies and directives to ensure that necessary actions are taken to protect state property from the risk of floods.

#### **Background**

Flooding remains the most common and costly natural disaster in Virginia and the United States. With more than 100,000 miles of streams and rivers, as well as 10,000 miles of estuarine and coastal shoreline, Virginia’s flood risk is statewide, comes in many forms, and is increasing because of climate change and increased development in flood-prone areas. In 1987, in order to improve Virginia’s flood protection programs and to consolidate all related programs in one agency, responsibility for coordination of all state floodplain programs was transferred from the State Water Control Board to the Department of Conservation and Recreation (DCR). Section 10.1-602 of the *Code of Virginia* names DCR as the manager of the state’s floodplain program and the designated coordinating agency of the National Flood Insurance Program (NFIP). The Code stipulates that the Director of DCR or his designee shall serve as the State Coordinator for the NFIP.

DCR’s Floodplain Management Program was created to minimize Virginia’s flood hazards. In particular, it aims to prevent loss of life, reduce property damage, and conserve natural and beneficial values of state rivers and coastal floodplains. To achieve these goals, DCR promotes

NFIP compliance and participation, offers technical assistance and community education, coordinates with other local, state and federal agencies, and provides funding through the Dam Safety, Flood Prevention and Protection Assistance Fund (§ 10.1-603.16 *et. seq.* of the *Code of Virginia*).

Participation in the NFIP allows the Commonwealth to receive many types of disaster assistance, development loans, and other financial resources. The continued availability of these resources is dependent on compliance with the NFIP. Lack of compliance with the NFIP could result in the Commonwealth's suspension from the program, increased flood insurance costs, loss of NFIP flood insurance policies, inability to secure federally-backed mortgages and loans, and increased unreimbursed disaster costs for the Commonwealth.

The floodplain management policies identified in this Order are intended to avoid unnecessary costs from flooding, to reduce risks to human health, safety, and welfare, and to protect, preserve, and enhance the natural and beneficial uses of properly-managed floodplains to property and development under state ownership.

Virginia state government agencies have been operating under Executive Memorandum 2-97. Much has changed since then-Governor George Allen issued that memorandum. Now, in light of those changed conditions, it is necessary to establish clear policies and standards for state agencies.

### **Requirements for State-owned Properties in Flood-Prone Areas**

Participation in the NFIP is contingent on a community voluntarily adopting floodplain management regulations that meet NFIP minimums as established by the Federal Emergency Management Agency (FEMA). In order to ensure the Commonwealth, as a participating community, complies with the NFIP as outlined in 44 CFR § 60.11-13 and is prepared for current and future flood conditions, this Order establishes mandatory standards for development<sup>1</sup> of state-owned properties in Flood-Prone Areas, which include Special Flood Hazard Areas,<sup>2</sup> Shaded X Zones,<sup>3</sup> and the Sea Level Rise Inundation Area.<sup>4</sup> These standards shall apply to all state agencies<sup>5</sup>.

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<sup>1</sup> Development for NFIP purposes is defined in 44 CFR § 59.1 as “Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.”

<sup>2</sup> The Special Flood Hazard Area may also be referred to as the 1% annual chance floodplain or the 100-year floodplain, as identified on the effective Flood Insurance Rate Map and Flood Insurance Study. This includes the following flood zones: A, AO, AH, AE, A99, AR, AR/AE, AR/AO, AR/AH, AR/A, VO, VE, or V.

<sup>3</sup> The Shaded X Zone may also be referred to as the 0.2% annual chance floodplain or the 500- year floodplain, as identified on the effective Flood Insurance Rate Map and Flood Insurance Study.

<sup>4</sup> The Sea Level Rise Inundation Area referenced in this Order shall be mapped based on the National Oceanic and Atmospheric Administration Intermediate-High scenario curve for 2100, last updated in 2017, and is intended to denote the maximum inland boundary of anticipated sea level rise.

<sup>5</sup> “State agency” shall mean all entities in the executive branch, including agencies, offices, authorities, commissions, departments, and all institutions of higher education.

## 1. Development in Special Flood Hazard Areas and Shaded X Zones

- A. All development, including buildings, on state-owned property shall comply with the locally-adopted floodplain management ordinance of the community in which the state-owned property is located and any flood-related standards identified in the Virginia Uniform Statewide Building Code.
- B. If any state-owned property is located in a community that does not participate in the NFIP, all development, including buildings, on such state-owned property shall comply with the NFIP requirements as defined in 44 CFR §§ 60.3, 60.4, and 60.5 and any flood-related standards identified in the Virginia Uniform Statewide Building Code.
  - (1) These projects shall be submitted to the Department of General Services (DGS), for review and approval.
  - (2) DGS shall not approve any project until the State NFIP Coordinator has reviewed and approved the application for NFIP compliance.
  - (3) DGS shall provide a written determination on project requests to the applicant and the State NFIP Coordinator. The State NFIP Coordinator shall maintain all documentation associated with the project in perpetuity.
- C. No new state-owned buildings, or buildings constructed on state-owned property, shall be constructed, reconstructed<sup>6</sup>, purchased, or acquired by the Commonwealth within a Special Flood Hazard Area or Shaded X Zone in any community unless a variance is granted by the Director of DGS, as outlined in this Order.

## 2. Variance Process

- A. The Director of DGS may consider a variance to the requirements listed above if the following conditions are met:
  - (1) It has been demonstrated that granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or in the case of NFIP participating communities, conflicts with their existing local floodplain ordinances.
  - (2) The design of the building or structure complies with the freeboard standards adopted in this Order.

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<sup>6</sup> “Reconstructed” means a building that has been substantially damaged or substantially improved, as defined by the NFIP and the Virginia Uniform Statewide Building Code.

- (3) Buildings or structures are demonstrated to be a functionally dependent use, such as water treatment facilities, boat houses, fish hatcheries, and other similar uses, or
- (4) Buildings or structures are historic and require repair or rehabilitation and it has been demonstrated that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure, or
- (5) Buildings or structures are demonstrated to be necessary to protect public health, safety, and welfare.

B. The Director of DGS shall not approve any variance to the requirements set forth in Section 1 until the State NFIP Coordinator has reviewed and approved the application for NFIP compliance.

C. A variance to the requirements set forth in Section 1 does not waive the requirement to comply with a local floodplain ordinance, Virginia Uniform Statewide Building Code, or the requirements outlined in 44 CFR §§ 60.3, 60.4, or 60.5, as applicable.

D. The Director of DGS shall provide written rulings on variance requests to the applicant, the local community, and the State NFIP Coordinator. The State NFIP Coordinator shall maintain all documentation associated with the variance in perpetuity.

E. Any state agency that has received a variance prior to this Order shall provide the variance documentation to the State NFIP Coordinator to be maintained in perpetuity.

### 3. Freeboard<sup>7</sup> Standards for State-Owned Buildings in Flood-Prone Areas

#### A. Riverine Areas

- (1) All new state-owned buildings located in a Special Flood Hazard Area shall be constructed so that the top of the lowest floor, including all equipment, is no less than three (3) feet above the Base Flood Elevation (or Flood Depth if an AO Zone), based on the effective Flood Insurance Rate Map and Flood Insurance Study for that area.
- (2) All new state-owned buildings located in a Shaded X Zone shall be constructed so that the top of the lowest floor, including all equipment, is no less than three (3) feet above the Water Surface Elevation or the Base

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<sup>7</sup> "Freeboard" is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management, as defined by FEMA.

Flood Elevation of the adjacent Special Flood Hazard Area, whichever is less, based on the effective Flood Insurance Rate Map and Flood Insurance Study for that area.

#### B. Coastal Areas

- (1) All new state-owned buildings located in a Special Flood Hazard Area shall be constructed so that the bottom of the lowest horizontal structural member of the lowest floor, including all equipment, is no less than three (3) feet above the Base Flood Elevation (or Flood Depth if an AO Zone), based on the effective Flood Insurance Rate Map and Flood Insurance Study for that area.
- (2) All new state-owned buildings located in a Shaded X Zone shall be constructed so that the bottom of the lowest horizontal structural member of the lowest floor, including all equipment, is no less than three (3) feet above the Water Surface Elevation or the Base Flood Elevation of the adjacent Special Flood Hazard Area, whichever is less, based on the effective Flood Insurance Rate Map and Flood Insurance Study for that area. Wave action must be accounted for in the Water Surface Elevation.

#### C. Sea Level Rise Inundation Areas

- (1) All new state-owned buildings located in a Sea Level Rise Inundation Area and any Special Flood Hazard Area shall be constructed so that the bottom of the lowest horizontal structural member of the lowest floor, including all equipment, is no less than eight (8) feet above the Base Flood Elevation (or Flood Depth if an AO Zone), based on the effective Flood Insurance Rate Map and Flood Insurance Study for that area.
- (2) All new state-owned buildings located in a Sea Level Rise Inundation Area and any Shaded X Zone shall be constructed so that the bottom of the lowest horizontal structural member of the lowest floor, including all equipment, is no less than eight (8) feet above the Water Surface Elevation or the Base Flood Elevation of the adjacent Special Flood Hazard Area, whichever is less, based on the effective Flood Insurance Rate Map and Flood Insurance Study for that area. Wave action must be accounted for in the Water Surface Elevation in coastal areas.
- (3) All new state-owned buildings located in a Sea Level Rise Inundation Area but not in a Special Flood Hazard Area or Shaded X Zone shall be built so that the bottom of the lowest horizontal structural member of the lowest floor, including all equipment, is no less than five (5) feet above the mean sea level to account for future flood conditions. This freeboard standard is based on the Sea Level Rise Planning Standards identified in Section 4 below.

(4) The freeboard standards outlined in paragraphs 3C(1) and 3C(2) above is to account for future flood conditions and is based on three (3) feet of freeboard and the Sea Level Rise Planning Standards identified in Section 4 below.

D. If a Base Flood Elevation or Water Surface Elevation is not available, the state agency constructing the new state-owned building or structure shall have this elevation determined by a professional engineer in accordance with current hydrologic and hydraulic engineering analyses.

E. To reduce flood damages and allow for future adaptation opportunities, all new state-owned buildings located in Flood-Prone Areas shall be built using adaptive designs below the lowest floor.

F. The freeboard standards identified in this section shall apply to all new state-owned buildings receiving funding authorization on or after January 1, 2021.

#### 4. Sea Level Rise Planning Standards

A. Based on recommendations from the Virginia Institute of Marine Science and the Commonwealth Center for Recurrent Flooding Resilience, the Commonwealth shall use the National Oceanographic and Atmospheric Administration (NOAA) Intermediate-High scenario curve, last updated in 2017, as the state standard for predicting sea level rise.

B. When scoping, designing, siting, and constructing state-owned buildings, a 50-year mid-life estimate for building longevity shall be used, which, under the NOAA Intermediate-High scenario curve, last updated in 2017, equates to nearly four (4) feet of sea level rise by 2070. This standard has been incorporated into the freeboard standards above, with an additional one (1) foot added to account for high tide.

C. The sea level rise planning standards identified in A and B of this section shall apply to all new state-owned buildings receiving funding authorization on or after January 1, 2021.

D. Additional studies and periodic updates of these planning standards shall be at the discretion of the Chief Resilience Officer.

#### 5. Establishing Guidance Documentation

A. The Department of Conservation and Recreation, after consulting with DGS, shall develop a guidance document by October 1, 2020 to provide state agencies the methodology for complying with the freeboard standards and sea level rise planning standards adopted in this Order.



## **Establishing State-level Floodplain Management Standards for State Agencies**

The Chief Resilience Officer shall convene a workgroup to establish state-level, NFIP compliant requirements for all development activities by state agencies on state-owned property within Flood-Prone Areas. The Secretaries of Administration, Commerce and Trade, Education, Natural Resources, Agricultural and Forestry, Public Safety and Homeland Security, Transportation, and Health and Human Resources, as well as the Special Assistant to the Governor for Coastal Adaptation and Protection or their designees, and any additional state officials designated by the Chief Resilience Officer shall comprise the members of the workgroup. The requirements and standards developed by the workgroup and approved by the Chief Resilience Officer shall replace the requirements in paragraphs 1A and 1B and shall incorporate the standards for state-owned buildings adopted in this Order.

1. As the state NFIP coordinating agency, the Department of Conservation and Recreation shall serve as lead staff to the workgroup.
2. The workgroup shall develop mandatory standards applicable to all state development in order to conform such development to the minimum requirements of the NFIP. The workgroup may also develop standards that exceed NFIP minimums that will enhance protection of life and property after analyzing short and long term costs to the Commonwealth.
3. Such standards shall include a process for permitting development in accordance with the established standards, a process for enforcing the established standards, and a process for documenting and maintaining records of any variances and development.
4. Such standards will incorporate the freeboard and sea level rise planning standards adopted in this Order.
5. Such standards shall include a process by which agencies may seek a variance from the standards developed by this workgroup. The process shall include a final review and approval process of any requests for a variance, which shall be done by the Department of Conservation and Recreation.

**Effective Date of the Executive Order**

This Executive Order rescinds Executive Memorandum 2-97: Floodplain Management Program for State Agencies, issued by Governor George Allen.

This Executive Order shall be effective November 15, 2019, and shall remain in full force and effect until superseded or rescinded by further executive action.



Handwritten signature of Ralph S. Northam in black ink.

Ralph S. Northam, Governor

Attest:

Handwritten signature of Kelly Thomasson in black ink.  
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Kelly Thomasson, Secretary of the Commonwealth