

## **Dam Safety Regulations**

### Summary

Virginia Dams are regulated by the Virginia Dam Safety Act. The Virginia Soil & Water Conservation Board (the “Board”) is tasked with overseeing the regulation of the Virginia Dam Safety Act and Chapter 20 of the Code of Virginia – which deals with Impounding Structure Regulations. The actions of the Board are administered by the Department of Conservation and Recreation's Division of Dam Safety and Floodplain Management.

At their February, 2008 meeting, the Board unanimously approved amendments to Chapter 20 in regards to the regulation of Virginia Dams and Impounding Structures; this change was in response to changes on the state level to the Virginia Dam Safety Act in 2006. The changes became effective in September 2009.

### Regulatory Changes (as they pertain to Peacock Hill)

The new regulations modified the classification system for Dams in the State of Virginia. The formerly four category system was reduced to three hazard classifications (High, Significant & Low Hazard). The new system combined formerly category III and IV dams as Low Hazard. Peacock Hills’ Dam is considered a Low Hazard Dam.

The new regulations also more clearly defined the existence of a “hazard” for each type of classification. In order to be considered a Low Hazard dam there must be “no threat to loss of human life and minimal threat to of economic damage is anticipated”.

Inundation zone mapping is required to be submitted by a professional engineer to support the classification of the Dam during the re-certification process. The Board requires re-certification of Low Hazard Dams every six years, however, unless significant changes occur to the dam between certification, the inundation mapping system can be re-used.

An Emergency Preparedness Plan is required to be submitted with the application for re-certification.

Peacock Hill’s dam is currently up for re-certification. The inundation study is now required to support the classification as a low hazard dam.

### Review of Code Sections

4VAC50-20-40. Hazard potential classification of impounding structures

B. ...hazards pertain to potential loss of human life or damage to the property of others downstream from the impounding structure in the event of failure or faulty operation of the impounding structure or appurtenant facilities.

3. Low Hazard Potential is defined where an impounding structure failure would result in no expected loss of life and would cause no more than minimal economic damage.

“No expected loss of life” means no loss of human life is anticipated.

C. The hazard potential classification shall be proposed by the owner and shall be subject to approval by the board. To support the appropriate hazard classification, dam break analysis shall

be conducted by the owner's engineer. Present and planned land-use for which a development plan has been officially approved by the locality in the dam break inundation zones downstream from the impounding structure shall be considered in determining the classification.

#### 4VAC50-20-54. Dam break inundation zone mapping

- A. Dam break inundation zone maps shall be provided to the department to meet the requirements set out in Hazard Potential Classifications of Impounding Structures...and Emergency Preparedness for Low Hazard Potential Impounding Structures...and Emergency Preparedness for Low Hazard Potential Impounding Structures...
- C. All inundation zone map(s), except those utilized in meeting the requirements of Emergency Preparedness for Low Hazard Potential Impounding Structures, shall be signed and sealed by a licensed professional engineer.
- D. For determining the hazard potential classification, a minimum of the following shall be provided to the department:
  - 1. A sunny day dam break analysis utilizing the volume retained at the normal or typical water surface elevation of the impounding structure;
  - 2. A dam break analysis utilizing the spillway design flood with a dam failure;
  - 3. An analysis utilizing the spillway design flood without a dam failure; and
  - 4. For the purposes of future growth planning, a dam break analysis utilizing the probable maximum flood with a dam failure.
- E. To meet the requirements of Emergency Preparedness set out in 4VAC50-20-177, all Low Hazard Potential impounding structures shall provide a simple map, acceptable to the department, demonstrating the general inundation that would result from a dam failure. Such maps do not require preparation by a professional licensed engineer, however, it is preferred that the maps be prepared by a licensed professional engineer.

#### Explanation of Code Sections

##### Part 1 – Hazard Potential Classification

In submitting to the Board evidence to support our engineer's determination that the dam is a Low Hazard structure, the inundation mapping will be required. Illustration of the dam break analysis is done through inundation mapping.

##### Part 2 – Inundation Zone Mapping

Section A specifically requires that inundation zone mapping be provided to meet the requirements of hazard potential classification. The additional efforts need to create the Emergency Preparedness Plan are minimal and can be added very simply to the inundation mapping. The efforts involved with satisfying section D require the completion of the inundation study.

Conversations with DCR and Schnabel Engineering have provided feedback and support the requirement of the inundation zone mapping.