

**Dam Safety Regulatory Advisory Panel**  
**Tuesday, August 27, 2024**  
**Department of Environmental Quality, Piedmont Regional Office, Glen Allen, Virginia**

**TIME AND PLACE**

The meeting of the Dam Safety Regulatory Advisory Panel (RAP) took place at 9:00 a.m. on Tuesday, August 27, 2024, at the Department of Environmental Quality's Piedmont Regional Office in Glen Allen, Virginia.

**DAM SAFETY REGULATORY ADVISORY PANEL MEMBERS PRESENT**

Jacob Compton, Department of Wildlife Resources  
Drew Hammond, Department of Transportation  
David Krisnitski, AMT Engineering  
Amanda Lothes, Newport News Waterworks  
Lisa Ochsenhirt, AquaLaw  
Maridee Romero-Graves, Schnabel Engineering  
Adrienne Shaner, Hazen and Sawyer  
Elfatih Salim, Fairfax County

**DAM SAFETY REGULATORY ADVISORY PANEL MEMBERS NOT PRESENT**

James Lang, Pender & Coward

**DCR STAFF PRESENT**

Darryl Glover, Deputy Agency Director  
Taylor Melton, Executive Assistant to the Director's Office  
Brent Payne, Dam Safety Regional Engineer  
Andrew Smith, Chief Deputy Director  
Christine Watlington-Jones, Policy and District Services Manager  
Charles Wilson, District Dam Engineer

**OTHERS PRESENT**

Chris Lynch, Innovo Geoengineering  
Wheeler Wood, Virginia Commonwealth University

**WELCOME**

Mr. Glover welcomed the group and introduced Mr. Wood who has been hired to assist with these meetings as well as the Dam Safety Act Workgroup.

## **MEETING NOTES FROM BOTH JULY 23, 2024 STAKEHOLDER MEETINGS**

Mr. Glover responded to a question that was received after the last meeting related to how DCR assess the conditions of dams. Mr. Payne said that DCR uses FEMA's guidance on the condition assessments. There are 1,106 dams in Virginia that have had a condition assessment. The condition assessment categories are satisfactory, fair, poor, unsatisfactory, and not rated. A satisfactory assessment means no existing or potential dam safety deficiency is recognized, and acceptable performance is expected under all loading conditions. A satisfactory assessment is typically a prerequisite for obtaining a regular operation and maintenance certificate. A fair assessment means no existing dam safety deficiencies are recognized for normal loading conditions; rare or extreme hydrologic or seismic events may result in a dam safety deficiency. This potential deficiency, may warrant further action by the owner. A poor assessment means a deficiency is recognized for loading conditions which may realistically occur, and remedial action is necessary. Poor may also be used when uncertainties exist as to the critical analysis parameters which identify potential dam safety deficiencies; further investigation and studies are necessary. Unsatisfactory means a dam safety deficiency is recognized that requires immediate or emergency remedial action. Not rated simply means that an analysis of the dam condition has not been conducted.

Ms. Lothes asked whether a dam that is in fair condition would be unlikely to obtain a regular certificate. Mr. Payne responded that, depending on the timing of the application, and depending on the issue identified, a regular certificate could be issued or a one-year conditional certificate could be issued to provide time to resolve the issue.

### **I. 4VAC50-20-51 (Special criteria for certain low hazard impounding structures) – New tiered low hazard dam concept based on prior meeting**

Mr. Glover read the definition of low hazard potential classification per 4VAC-50-20-40, which states that "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."

At the last meeting, the RAP discussed tiering low hazard dams under the special low hazard provisions that exist in the regulations in 4VAC50-20-51. The RAP also heard concerns from the Department of Wildlife Resources (DWR) about how doing so would affect them. After internal discussion, DCR is proposing to qualify all low hazard dams for general permits under a tiered structure. The first tier would reflect the current provisions for special low hazard dams. The second tier would be for low hazard dams whose failure would not interrupt the function of any public facility or service that would affect the public, and these dams would qualify for a 50-year design flood spillway without an incremental damage analysis (IDA). The third and highest tier would be for low hazard dams whose failure would interrupt the function of any public facility or service. These dams would qualify for a 100-year design flood with the option to conduct an IDA to reduce the spillway capacity to a 50-year design flood. This approach is designed to minimize the need for IDAs on low hazard dams.

## **COMPARISON OF GENERAL PERMIT VS. CERTIFICATE REQUIREMENTS FOR LOW HAZARD DAMS**

### **I. §10.1-605.3 (General permit for certain impounding structures)**

Mr. Glover noted that this Code section describes the requirements to obtain a general permit for a low hazard dam. §10.1-605.3(B)(e) requires “a certification from the owner that the impounding structure is classified as low hazard pursuant to a determination by the Department or the owner’s professional engineer”. This is important because it means the hazard classification must be verified, either through the Department or by a professional engineer (PE). §10.1-605.3(B)(2) would need to be amended because it says that a 100-year spillway design flood requirement can only be reduced to 50 years after conducting an IDA. This legislative amendment would need to occur prior to the regulatory changes mentioned earlier. §10.1-605.3(B)(3) requires an emergency preparedness plan.

§10.1-605.3(E) requires an owner to file a dam break inundation zone map with their locality in order to be eligible for the provisions established in §10.1-606.3. If a development were to occur downstream of a dam, and the owner of the dam has filed a dam break inundation zone map with the locality in accordance with §10.1-606.3, the developer would be required to pay for 50% of any upgrades that the dam needs as a result of the downstream development. If no map is filed with the locality, then the dam owner would not receive this protection. Under current law, the simplified studies performed by DCR do not meet the criteria of a dam break inundation zone map and do not grant the owner protection under this section. Ms. Romero-Graves said that, as an engineer, she would like to see an inundation zone map before signing off on a hazard classification for a dam, and that producing a map is not as expensive as a dam break inundation zone study. Mr. Wilson suggested maybe the shape file, rather than the full inundation zone study would be sufficient for localities. Mr. Krisnitski noted that the presence of any kind of map should trigger some sort of study from developers, so that they know that the development is not in an inundation zone. Ms. Watlington-Jones clarified that it is actually DCR that reviews this on behalf of the locality, not the developer. The locality takes the results of DCR’s review back to the developer for further action if further action is needed by the developer; typically either either a redesign of the development or safety upgrades.

Mr. Krisnitski suggested that a shape file from would be sufficient for developers, and that a shape file without the study documentation may not be as in depth but could still be adequate. Ms. Romero-Graves said that a map would be fine as long as it provides enough information to ensure the dam is low hazard before certifying.

Mr. Wilson added that shape files are very functional; localities, emergency services, and the Dam Safety Information System (DSIS) all rely on them. Paper maps are not as reliable and user-friendly as shape files are. Mr. Krisnitski said that almost every locality has GIS and so the shape file should be the most useful to localities.

Mr. Glover said he is hearing that the RAP’s suggestion is to amend §10.1-605.3(E) to require a map or shape file be filed. After some discussion he clarified that we would add an “or” after “map,” . Ms. Shaner suggested “inundation limits in a format the Department requests.” All low hazard dams owners

would provide some kind of map or shape file to their locality in order to obtain protections established in §10.1-606.3.

In §10.1-605.3(F) there is an affirmation of what constitutes a special low hazard dam. Mr. Wilson suggested that “in lieu of coverage under the general permit” should be changed to “included under the general permit coverage” and Mr. Glover agreed.

## **II. 4VAC50-20-101 (General permit requirements for low hazard potential impounding structures)**

In 4VAC50-20-101(1), which details spillway design requirements, DCR would like to establish tiers based on what would be interrupted in a failure event and whether or not the interruption would be to a public or private facility. Based on those impacts, a reduction of the spillway requirement from 100 to 50 year design flood for tier three low hazard dams contingent on the performance of an IDA, would be possible. 4VAC50-20-101(2) deals with emergency preparedness plans. 4VAC50-20-101(3) mandates the owner perform annual inspections over the six-year term of the general permit, after the initial inspection by the engineer proving the dam should be designated low hazard. 4VAC50-20-101(4) lists the specifics of what should be included in the inspections.

Upon review, 4VAC50-20-101(5) appears to be in conflict with current statute. It states that “the owner shall file a dam break inundation zone map developed in accordance with 4VAC50-20-54 with the department and with the offices with plat and plan approval authority or zoning responsibilities as designated by the locality for each locality in which the dam break inundation zone resides.” Mr. Glover suggested that this section should mirror the language the RAP agreed to for §10.1-605.3(E). Mr. Krisnitski said we could start by changing “shall” to “may”. Ms. Watlington-Jones mentioned that there may be some flexibility to amend the existing regulatory language as it appears to conflict with existing statutes.

4VAC50-20-101(6) requires the owner to “notify the department immediately of any change in circumstances that would cause the impounding structure to no longer qualify for coverage under the general permit,” and to immediately notify DCR, VDEM, and the local emergency services coordinator when a failure occurs or is imminent. Mr. Krisnitski asked whether any mechanism currently exists whereby an owner could ensure year-after-year that no developments have occurred downstream that would cause a change the dam’s hazard classification. Mr. Glover responded that there is no such mechanism. However, dam owners do typically notify DCR of dam failures. Mr. Krisnitski said that when his team conducts inspections, they investigate whether there has been any development downstream or upstream of a dam and that it is highly important to do so. Ms. Watlington-Jones said that both of those questions are already asked as part of the owner’s annual inspection form.

## **III. 4VAC50-20-105 (Regular operation and maintenance certificates)**

Mr. Glover said that all low hazard dams will receive general permits, but DCR wants to ensure there are no provisions in the regular operation and maintenance certificate requirements that should be included as part of the general permit requirements. Both the general permit and the regular operations certificate are subject to a six-year renewal period.

Mr. Payne mentioned that it may be valuable to require a PE inspection every six years and requiring that inspection records are submitted by the owner upon reapplication. Another possibility would be requiring the owner to submit their most recent annual inspection to DCR if it revealed a change in the dam's condition since the last inspection.

Mr. Glover said that finding the proper response to risk is key. One concern is the number of dams with unknown hazard classification. DCR is working through these, but it is suspected that approximately 65-70% of these dams will be classified as low hazard.

Mr. Payne noted that it is exceedingly rare for any dam to go directly from a regular certificate to another regular certificate. It is very common for dams to operate under a two-year conditional certificate before returning to a regular operations certificate for various reasons. Dam owners need time to address issues that arise and the two-year conditional certificate provides that time. Ms. Watlington-Jones suggested that certain conditions and deadlines could be placed on general permits without compromising DCR's compliance presence and effectiveness.

Responding to a question, Mr. Glover clarified that DCR was discussing only issuing general permits for low hazard dams, rather than continuing to issue certificates.

Mr. Glover asked if the RAP was comfortable duplicating the language in 4VAC50-20-105(E)(1)(c) into the general permit requirements, which would require annual owner inspections for low hazard dams as well as PE inspections every six years. The RAP was in favor of duplicating this requirement. The RAP was asked if the information required in a PE inspection was also needed; however, the RAP did not think the individual requirements were needed as the inspection form already contains all of the required information. A change in the Dam Safety Act will be needed to require the PE inspection, as the law does not currently require such inspection.

Mr. Hammond suggested that adding a separate section for the low hazard general permit expansion that includes eligibility requirements would be wise because while there would be some repetition, any owners looking to apply for or renew a general permit could refer to that section rather than having to comb through the entire regulation. He also suggested adding a further section allowing continuation of general permit coverage to give staff enough time to approve permit renewals considering their increased workload and thereby prevent compliant owners from losing their coverage.

#### **IV. 4VAC50-20-177 (Emergency Preparedness Plans for low hazard impounding structures)**

Mr. Glover said that there were some additional suggestions for the RAP to consider related to 4VAC50-20-177. He recommended the language in 4VAC50-20-177(3)(b) be changed to "The Virginia Department of Emergency Management", and that language be added in 4VAC50-20-177(3)(c), which would read "the Virginia Department of Conservation and Recreation". Ms. Watlington-Jones noted that §10.1-605.3 requires low hazard dams to notify DCR, VDEM, and their local emergency services coordinator; these

changes would make the regulations consistent with the statute. The change to 4VAC50-20-177(3)(b) would also address the RAP's concerns with having to update the emergency preparedness plan every time there is a new local emergency services coordinator.

Mr. Glover asked whether the RAP had any additional changes to suggest for this section. Mr. Wilson recommended making 4VAC50-20-177(5) consistent with the previous discussion on inundation zone mapping.

Ms. Watlington-Jones asked whether 4VAC50-20-177(4) still needed to be modified, per discussions from the last meeting, to require owners notify local emergency management or 911 instead of downstream property owners. Mr. Wilson noted that in many instances, dam owners will simply include notification to the local emergency management offices as the notification for downstream owners, which is an acceptable procedure. After discussion of the potential impacts to downstream property owners such as public facilities, it was determined that the language should remain.

#### **PUBLIC COMMENT**

None.

#### **NEXT MEETINGS (AT THE DEQ PIEDMONT OFFICE)**

Mr. Glover stated that the next RAP meeting on September 17, 2024, will cover changes to the incremental damage process. The remaining RAP meetings will be held on October 29, 2024, and November 12, 2024.

#### **ADJOURNMENT**

There being no further business, Mr. Glover adjourned meeting at 11:00 a.m.