Dam Safety Regulatory Advisory Panel
Tuesday, November 12, 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, November 12, 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
Carmen Lepsch, Schnabel Engineering (alternate for Maridee Romero-Graves)
Amanda Lothes, Newport News Waterworks
Maridee Romero-Graves, Schnabel Engineering (participated via phone)
Ellen Egen, AquaLaw (alternate for Lisa Ochsenhirt)
Elfatih Salim, Fairfax County Watershed Planning and Evaluation Branch (Mr. Dipmani Kumar Alternate)

DAM SAFETY REGULATORY ADVISORY PANEL MEMBERS NOT PRESENT

Jim Lang, Waterfront Law
Adrienne Shaner, Hazen and Sawyer

DCR STAFF PRESENT

Darryl Glover, Deputy Agency Director
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

Wheeler Wood, Consultant, VCU Center for Public Policy

A. WELCOME

Mr. Glover welcomed members to the meeting; he thanked the members for their time on this panel. He also noted the statutory workgroup has completed their objectives and the Administration is currently reviewing the draft legislation.

Mr. Glover provided highlights of the proposed legislation including reducing the required financial match and standardizing references to the local emergency management coordinator to increase awareness and responsiveness when needed. Additionally, the legislation also establishes three tiers for low hazard dams:

- Special Low (Tier 3): no anticipated damage beyond the owner's property and assets;

- Tier 2: no impact to any public infrastructure, public highway, or access to a public utility. Spillway requirements would be reduced to 50 years and will no longer require the completion of an incremental damage analysis; and
- Tier 1: required to meet a 100 year flood unless they have an incremental damage analysis.

The proposed legislation requires a safety inspection for the dam with the initial application for the general permit coverage and reflects the use of general permit for all low hazard dams rather than issuing certificates. Mr. Glover reviewed the proposed legislative revisions to clarify the responsibilities if there is an imminent dam failure as well as the suggested changes to simplify the enforcement process.

B. REVIEW OF MINUTES FROM OCTOBER MEETINGS (RAP AND DAM SAFETY)

Mr. Glover noted the detailed presentation provided by Charles Wilson regarding the proposed incremental damage analysis (IDA) method that is being referred to as the Soil and Water Conservation method (SWC) versus the South Carolina IDA method presented by Brent Payne. This meeting will continue to discuss the alternatives that have been presented to the RAP.

C. INCREMENTAL DAMAGE ANALYSIS

Mr. Glover began the conversation on the SWC incremental damage analysis (IDA) methodology by highlighting that Dam Safety Regional Engineers have further reviewed the proposed methodology and developed case studies that highlight additional concerns.

Brent Payne discussed how the proposed methodology focuses on the maximum capacity flood versus an event where the flood overtops the dam crest. Analysis showed that when only the maximum capacity flood is considered, the methodology does not illustrate all the potential risk from crossing zones of the breach and the non-breach events. Based on analysis, the Regional Dam Safety Engineers do not believe the proposed SWC method aligns with the FEMA P-1015 guidance and does not account for damage to the crest.

Mr. Payne reviewed the proposed methodology which was based on the South Carolina method presented at an earlier meeting. The Regional Engineers propose using it in conjunction with the existing regulatory approach, the Rule of 7. Benefits of this combined methodology include it supporting an incremental damage approach as well allowing the grandfathering of existing Virginia dams previously assessed under the Rule of 7 methodology.

Discussion followed regarding the ability to include engineering judgment and the differences in how the Rule of 7 has been historically applied (as a threshold) versus how it will be used in the proposed methodology (for additional flow) which may result in different results.

Mr. Payne closed noting the SWC method has not been as thoroughly vetted as the South Carolina (SC) method and may not be in use by any state.

Charles Wilson presented additional analysis of the SWC method completed with the goal of addressing the Regional Dam Safety Engineers concerns, e.g., including one foot overtopping on the breach. Another revision was reducing the ACER-11 categories from 5 to 3: roadways (1 ft and 4 ft DV), residential commercial building (2 ft and 7), and outdoor impacts (adults and children). Mr. Wilson also noted incorporating engineering judgment into the methodology to support site specific conditions and circumstances. He reviewed several examples based on the revised methodology and including one where improvements were shown as being needed under the SWC method but not required under ACER-11.

Discussion followed regarding how this revised SWC methodology addresses FEMA's guidance. There was also discussion about the level of overtopping that has actually been seen by members of the RAP. Members thought the design of the dam should account for risk that has been seen versus never been seen as it was suggested that all risk cannot be eliminated.

In response to a member's question about the key difference between the methods, Brent Payne noted that based on his perspective, the SWC method only considers the maximum capacity flood. The South Carolina method finds a point where the flood without breach is already creating so much damage that any additional damage added by the breach is no longer significant. The Rule of 7evaluates the difference between breach and non-breach events for every known scenario. Charles Wilson noted the South Carolina method may result in upgrades that result in unintended consequences downstream and increased financial liability for the dam owners.

Given the discussion and debate on the proposed IDA methodologies, Mr. Glover suggested, and the panel agreed, that no decision on either model can be made at this time. Additional research is needed to determine if either model is appropriate to implement in the Commonwealth.

D. <u>REVIEW OF DRAFT REGULATORY AMENDMENTS</u>

Ms. Christine Watlington-Jones reviewed the draft regulatory amendments with many of the changes related to the Department's plan to issue general permits for low hazard dams. She reviewed proposed changes related to the panel's recommendations to simplify the emergency preparedness plan requirements. The panel recommended a conditional general permit should cost $200 for two years. Members suggested a need for consistency of language, e.g., conditional general permit and general permit used throughout the regulations. It was also suggested that 4VAC50-20-505.B be updated with a reference to 4VAC50-20-503 for clarification of limited terms and update 4VAC50-20-504 with clarification of registration statement versus review.

It was noted a general permit registration statement will need to be created if one does not already exist and added to Virginia Dam Safety Inventory System (DSIS). For dams already under a certificate, the dam owner will need to submit the general permit registration statement 90 days before its expiration to transition to a general permit.

As a cost benefit analysis is required when submitting regulatory amendments, members agreed to provide Ms. Watlington-Jones with engineering analysis cost information to include with the revisions.

E. PUBLIC COMMENT

None

F. NEXT MEETINGS

Future meetings may be held to discuss any regulatory changes that are needed if legislation is approved during the 2025 General Assembly Session or to include this RAP in the continued conversations about the incremental damage analysis procedures.

G. ADJOURNMENT

Mr. Glover noted the 2025 Dam Safety, Flood Prevention and Protection Assistance Fund grant manual would be presented to the Virginia Soil and Water Conservation Board for approval at the December 11, 2024 meeting. There will be $5 million available for this grant round and applications must be received by February 28, 2025.

The meeting was adjourned at 11:05am.

4VAC50-20-52. Incremental damage analysis.

<Language added to the section>

Once the owner's engineer has determined the required spillway design flood through application of Table 1, further analysis may be performed to evaluate if the downstream consequences with and without failure of the existing dam present an unacceptable risk. Site-specific conditions should be recognized and considered.

For the purpose of this analysis, the owner's engineer shall conduct a dam break inundation analysis with the non-breach condition beginning with the initial impoundment water surface elevation equal to the top elevation of the impounding structure, and the breach condition will have the breach occur when the impoundment water surface elevation is equal to the top elevation of the impounding structure plus one foot (1'). For dams with approved overtopping systems, the non-breach and breach condition analysis will be performed with the impoundment water surface elevation equal to the approved overtopping elevation.

The downstream consequences will be evaluated based on the results of the non-breach and breach simulations. The maximum depth ($D_{max)}$ and the product of the maximum depth and velocity (DV_{max}) will be determined at each structure that may be impacted downstream of the impounding structure for both the non-breach and breach events. The D_{max} and DV_{max} values will be evaluated using the criteria set forth in Table X. A significant consequence is presumed to exist when water depths **or** when the product of water depth (in feet) and discharge rate (in square feet per second) exceeds the values shown in Table X. A minor consequence is presumed to exist when the impact is not classified as a significant consequence.

Table X. Significant Consequence Criteria

Category	D_{max} (ft)	DV_{max} (ft2/s)
Roadway	≥1.0	≥4.0
Residential or Commercial Buildings or Mobile Homes	≥2.0	≥7.0
Adults or Children Outdoors	≥2	≥5.0

The consequences of each impact are compared for the non-breach and breach events. An unacceptable risk is presumed to exist anytime the non-breach and breach have a different consequence. An acceptable risk is presumed to exist anytime the non-breach and breach have the same consequence.

If the engineering analysis determines that existing conditions at the impounding structure do not present an unacceptable risk to downstream life or property, the spillway design flood can be reduced to the existing capacity of the dam.

If the engineering analysis determines that existing conditions at the impounding structure result in an unacceptable risk to downstream life or property, then the process will be repeated using higher inflow design floods until all impacts are classified as acceptable and this will be the new spillway design flood.

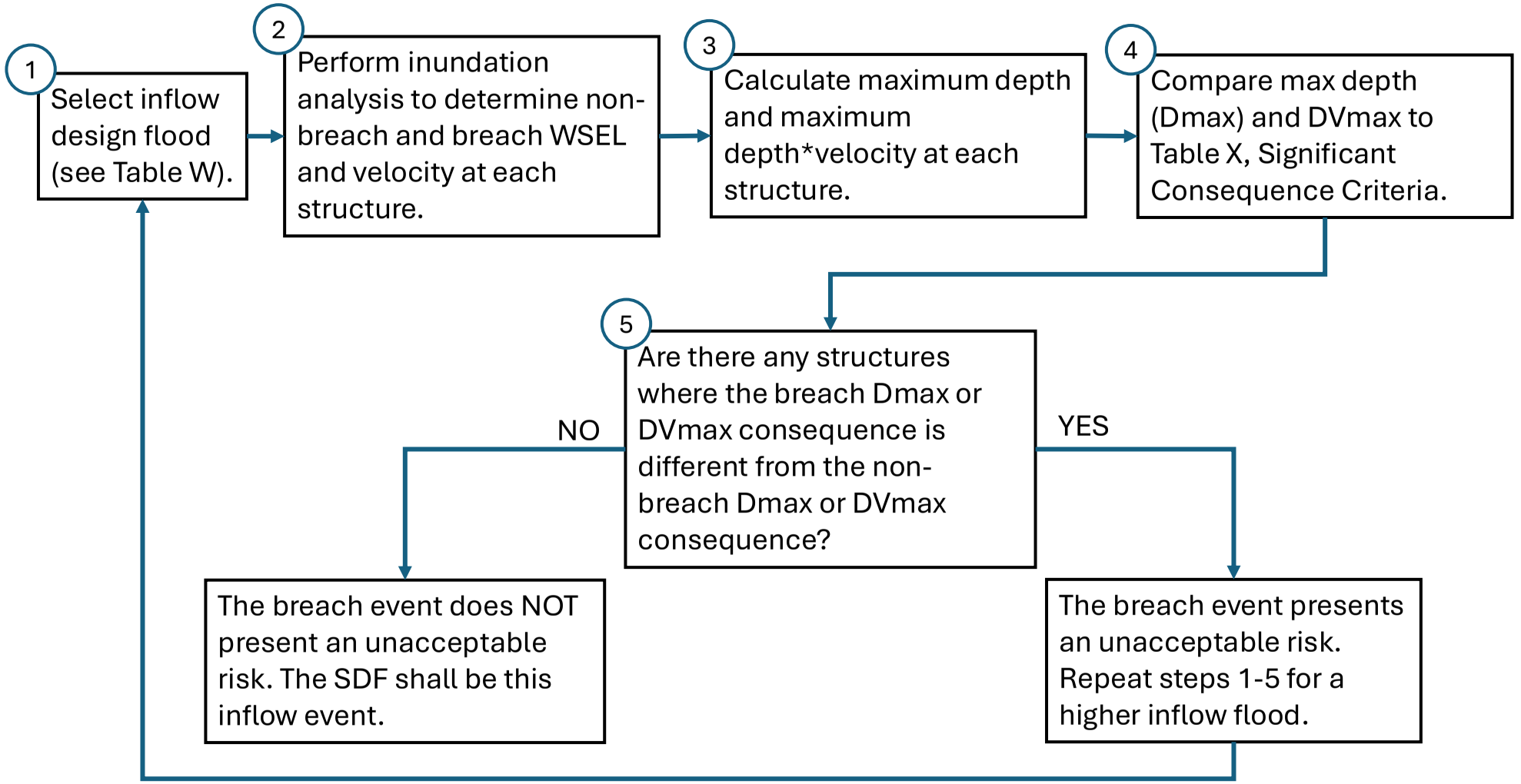


Table ___: Impoundment Water Surface Elevation Scenarios

Scenario	Non-Breach Condition	Breach Condition
1	Top of impounding structure	Top of impounding structure + 1 foot OR Approved overtopping elevation
2+	Next highest inflow design flood	Next highest inflow design flood

Definitions:

"Acceptable risk" means the non-breach and breach consequence classifications are the same at a specific structure.

"Maximum depth (D_{max})" means the maximum water depth at a structure as determined from the maximum water surface elevation and natural ground elevation occurring at a structure in an inundated area.

"Maximum velocity (Vmax)" means the maximum water velocity at a structure.

"Maximum depth times velocity (DV_{max})" is defined as the product of D_{max} and V_{max}.

"Minor consequence" means the results of a dam breach inundation analysis do not exceed the maximum depth and the product of the maximum depth and velocity values shown in Table X.

"Significant consequence" means the results of a dam breach inundation analysis exceed the maximum depth or the product of the maximum depth and velocity values shown in Table X.

"Unacceptable risk" means the non-breach and breach consequence classifications are the different at a specific structure.

References and Notes:

Per FEMA P-94 – Selecting and Accommodating Inflow Design Floods for Dams

Selection of an IDF can involve tradeoffs in trying to satisfy multiple objectives including:

1. Providing acceptable safety to the public.

2. Effectively applying the resources of the dam owner.

3. Maintaining the credibility of the regulator in representing the interest of the public.

4. Assessing the desire of the public for the benefits of a dam in exchange for the inherent risks that come from living downstream of a dam.

Incremental Consequence Analysis – The volume of many reservoirs may be small in comparison to the volume of the hydrologic events to which they may be subjected. In these cases, the IDF can be established by identifying the flood for which the downstream consequences with and without failure are not significantly different.

Adverse incremental consequences are defined as the difference in negative impacts that would occur due to failure or misoperation of a dam during a specified flood event over those that would occur without failure or misoperation. An incremental consequence analysis can be performed to select an appropriate IDF based upon the potential consequences of dam failure. The IDF selected using incremental consequence analysis is the flood above which there is a negligible increase in downstream water surface elevation, velocity, and/or consequences due to failure of the dam when compared to the same flood without dam failure.

Generally, acceptable consequences exist when evaluation of the area affected indicates one of the following: 1. There are no human habitations or major infrastructure, commercial, or industrial developments within the dam failure inundation area. 2. There are human habitations or major infrastructure, commercial, or industrial developments within the dam failure inundation area, but there would be no significant incremental increase in the threat to life or property.

There is much debate regarding what qualifies as a "significant incremental consequence." Methods of assessing the incremental increase in consequences vary from examining individual structures in the inundation zone to applying general criteria along the entire downstream inundation reach (FERC, 1993; Hoeft & Locke, 2010). Such criteria should not be viewed as absolute decision-making thresholds. Rather, sensitivity analyses and engineering judgment must be applied. Since dam failure analyses and flood routing studies do not provide certain results, evaluation of the consequences of failure should be reasonably conservative. The application of more detailed methods such as two-dimensional flow modeling may justify a less conservative conclusion. Other emerging technologies such as flood impact and life loss analysis software (e.g. HEC-FIA, LifeSim) may prove useful in consequence estimation and comparison (DHS, 2011). **More detailed evaluation criteria such as depth-velocity flood lethality relationships could also be considered.**

South Anna 52B - Significant Hazard Dam

0.391 PMP - Max Capacity	Non-Breach				Breach				Overall Risk
Impact	Depth	Velocity	DV	Consequence	Depth	Velocity	DV	Consequence	
RT676	10.9	1.2	13.08	Significant	26.7	4.8	128.16	Signficant	Acceptable
Howard Mills Road	8.5	4.7	39.95	Signficant	24.3	7	170.1	Signficant	Acceptable
RT675 - Auburn Mill Road	13.6	4	54.4	Signficant	26.1	6.7	174.87	Signficant	Acceptable
US33 - Mountain Road	11.5	6.1	70.15	Signficant	21.8	7.2	156.96	Signficant	Acceptable
RT657 - Greenwood Church	11.9	10.7	127.33	Signficant	24.7	11	271.7	Signficant	Acceptable
RT54 - W Patrick Henry	12.7	7.2	91.44	Signficant	23.9	8.2	195.98	Signficant	Acceptable
RT686- Horseshoe Bridge	21	5.5	115.5	Signficant	32.8	6.7	219.76	Signficant	Acceptable

Result :No Improvements Needed

Method with Acer11 Chart Result: No Improvements Needed

Approved IDA Result: No Improvements Needed

Willis River 6A - High Hazard Dam

0.623 PMP - Max Capacity	Non-Breach				Breach				Overall Risk
Impact	Depth	Velocity	DV	Consequence	Depth	Velocity	DV	Consequence	
RT608 - Elcan Road	3.7	3.8	14.06	Significant	11.5	8	92	Signficant	Acceptable
RT15 - James Madison Hwy	4.4	2.3	10.12	Significant	10.3	8.6	88.58	Signficant	Acceptable
House - 109 Lucy Lane	1.5	0.4	0.6	Minor	6.8	1.6	10.88	Signficant	Unacceptable
RT600 - Old Plank Road	4.1	2.3	9.43	Significant	12.4	8.6	106.64	Signficant	Acceptable

Result : IMPROVEMENTS REQUIRED

Method with Acer11 Chart Result: IMPROVEMENTS REQUIRED

2018 IDA Result: No Improvements Needed

2011 DBIZ: IMPROVEMENTS REQUIRED

Buffalo Creek 8 - Significant Hazard Dam

0.460 PMP - Max Capacity	Non-Breach				Breach				Overall Risk
Impact	Depth	Velocity	DV	Consequence	Depth	Velocity	DV	Consequence	
RT699 - Carter Road	2.6	2.3	5.98	Significant	8.5	6.3	53.55	Significant	Acceptable
RT666 - Douglas Church Road	4.6	2.7	12.42	Significant	8	4	32	Significant	Acceptable
RT665 - Darlington Heights	0	0	0	Minor	1.2	0.7	0.84	Significant	Unacceptable

Result : IMPROVEMENTS REQIRED

Method with Acer11 Chart Result: No Improvements Required

2021 IDA Result: IMPROVEMENTS REQUIRED (No IDA)

2011 DBIZ: IMPROVEMENTS REQUIRED (IDA = 0.49 PMF)

HIGH DANGER ZONE - Occupants of most houses are in danger from floodwater.

JUDGEMENT ZONE - Danger level is based upon engineering judgement.

LOW DANGER ZONE - Occupants of most houses are not seriously in danger from flood water.

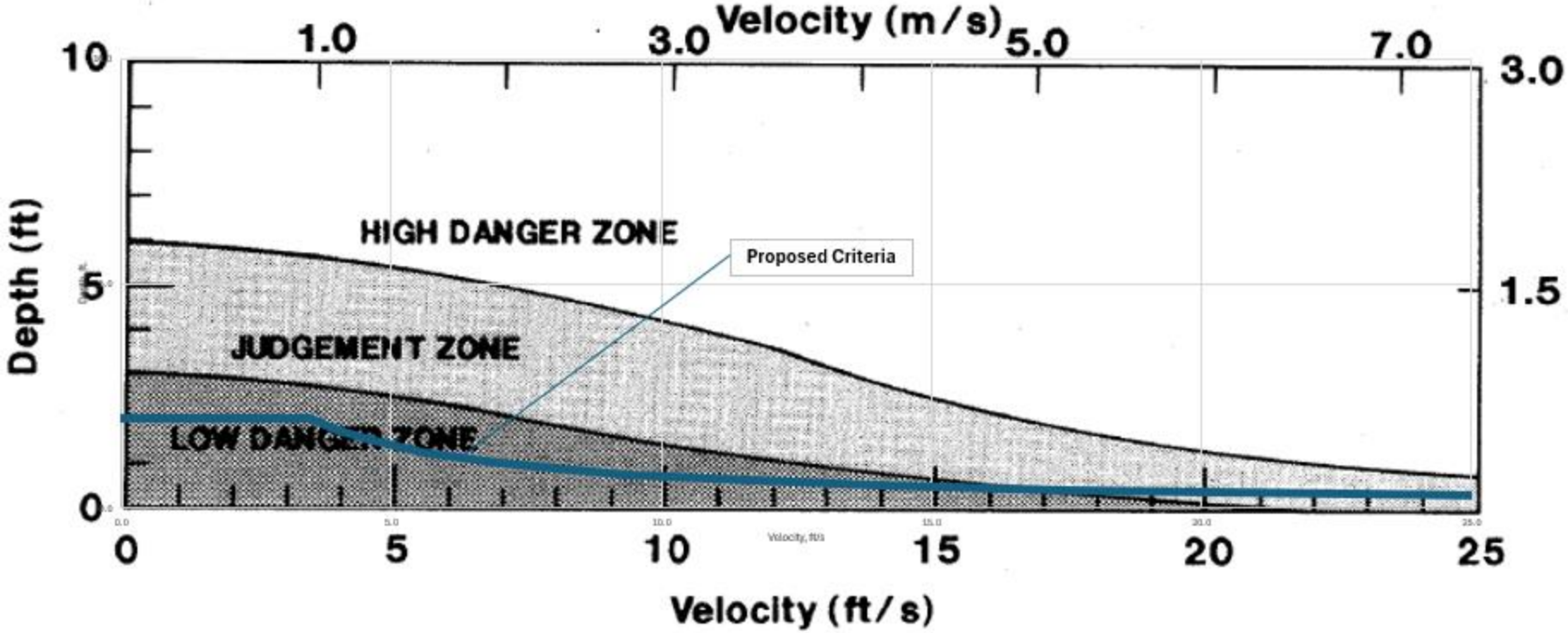


Figure 2. – Depth–velocity flood danger level relationship for houses built on foundations.

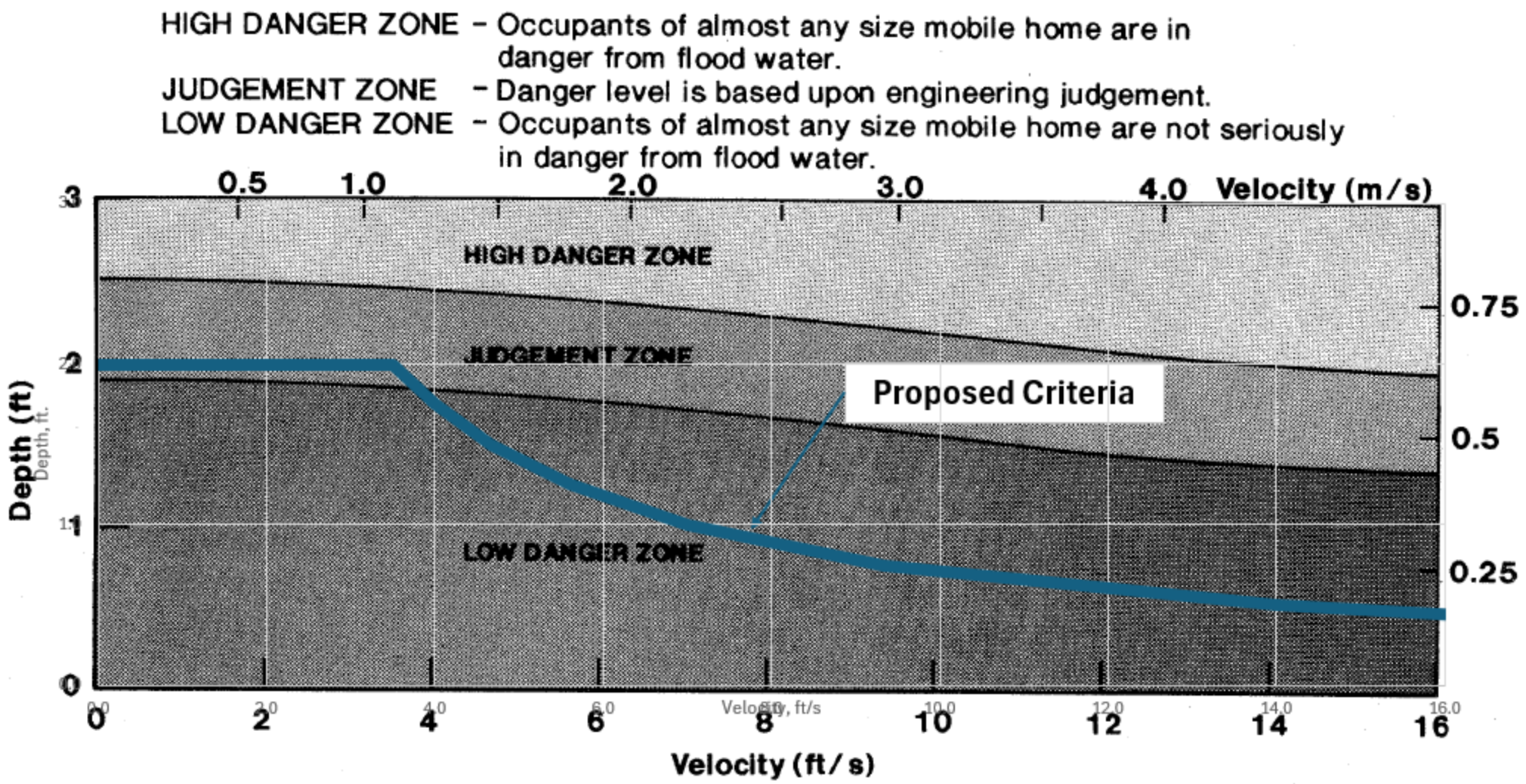


Figure 3. – Depth–velocity flood danger level relationship for mobile homes.

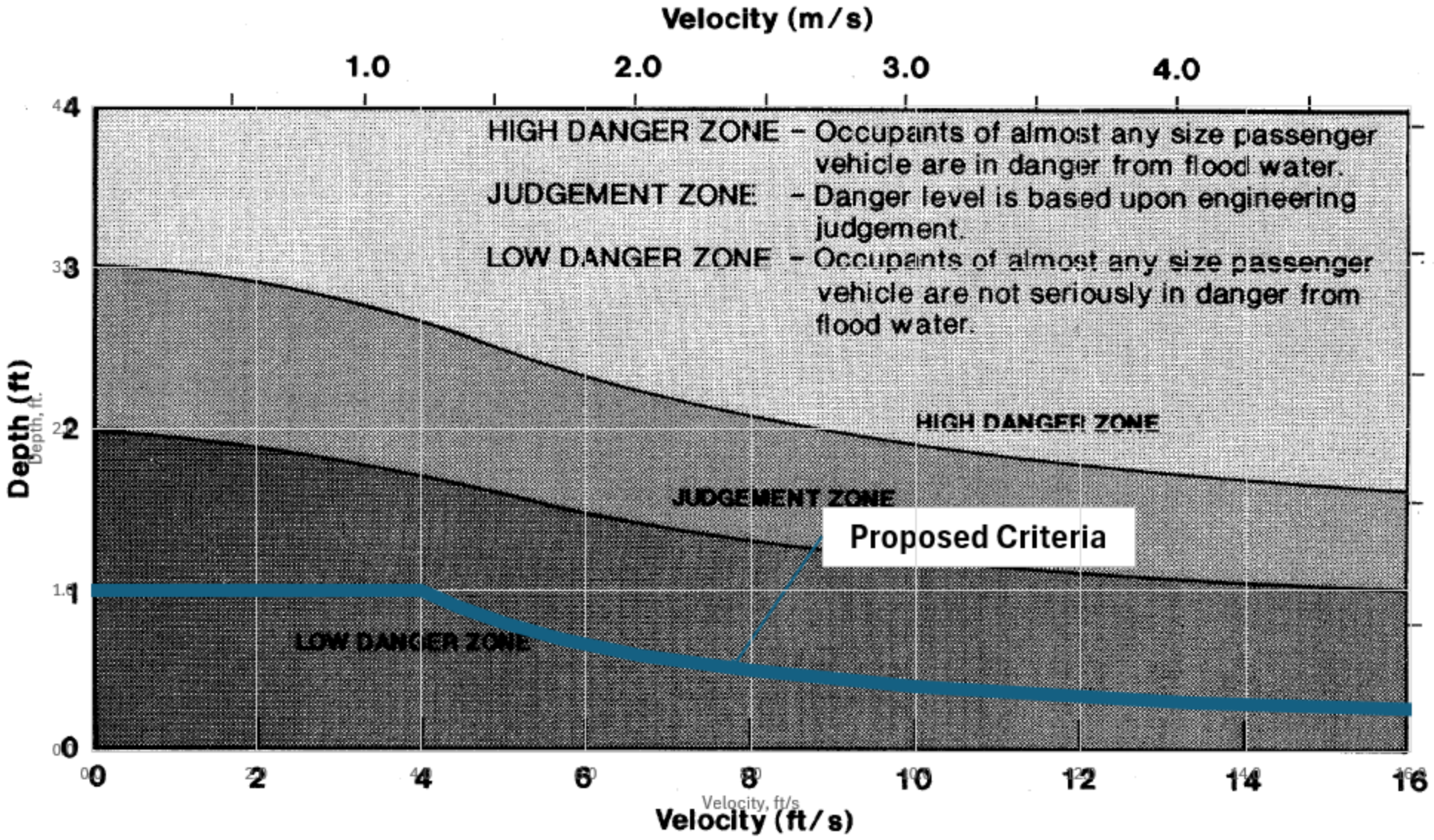


Figure 4. – Depth–velocity flood danger level relationship for passenger vehicles.

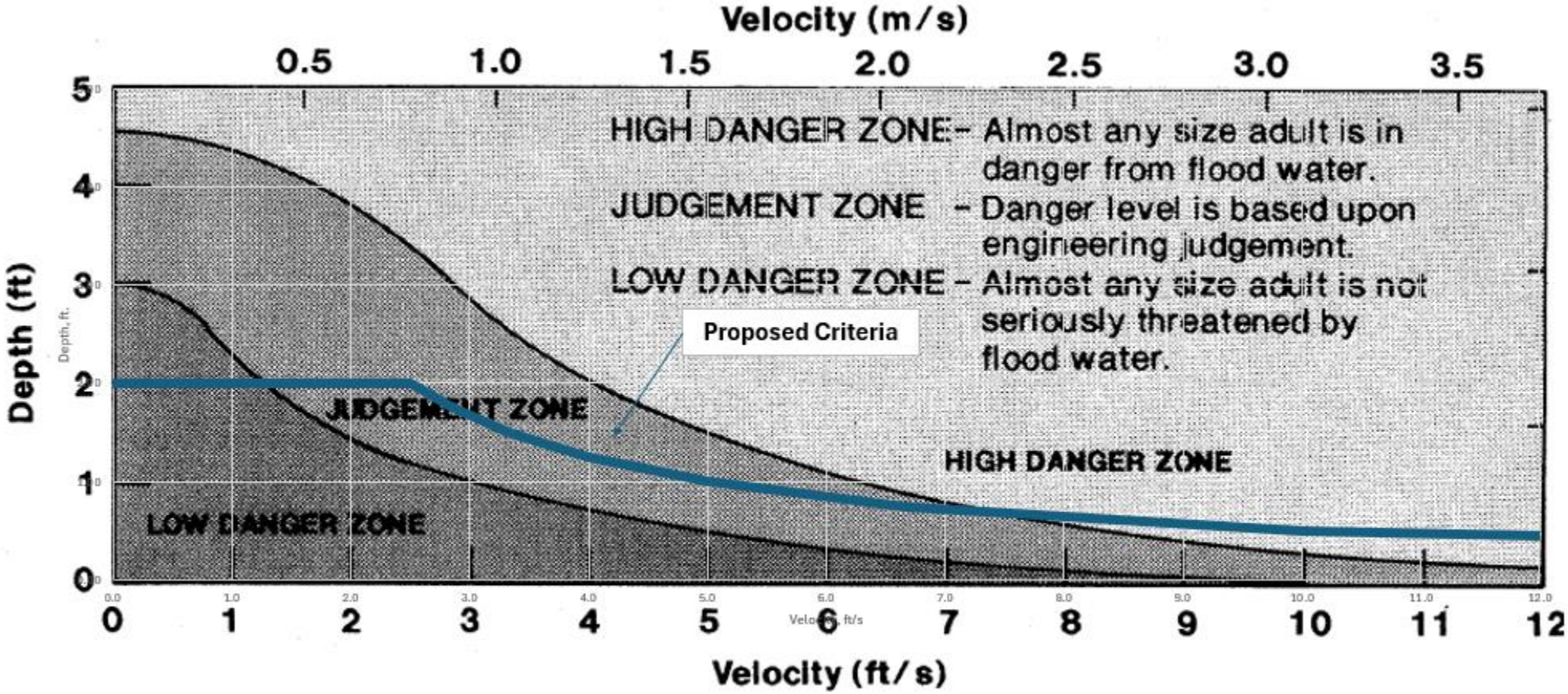


Figure 5. – Depth–velocity flood danger level relationship for adults.

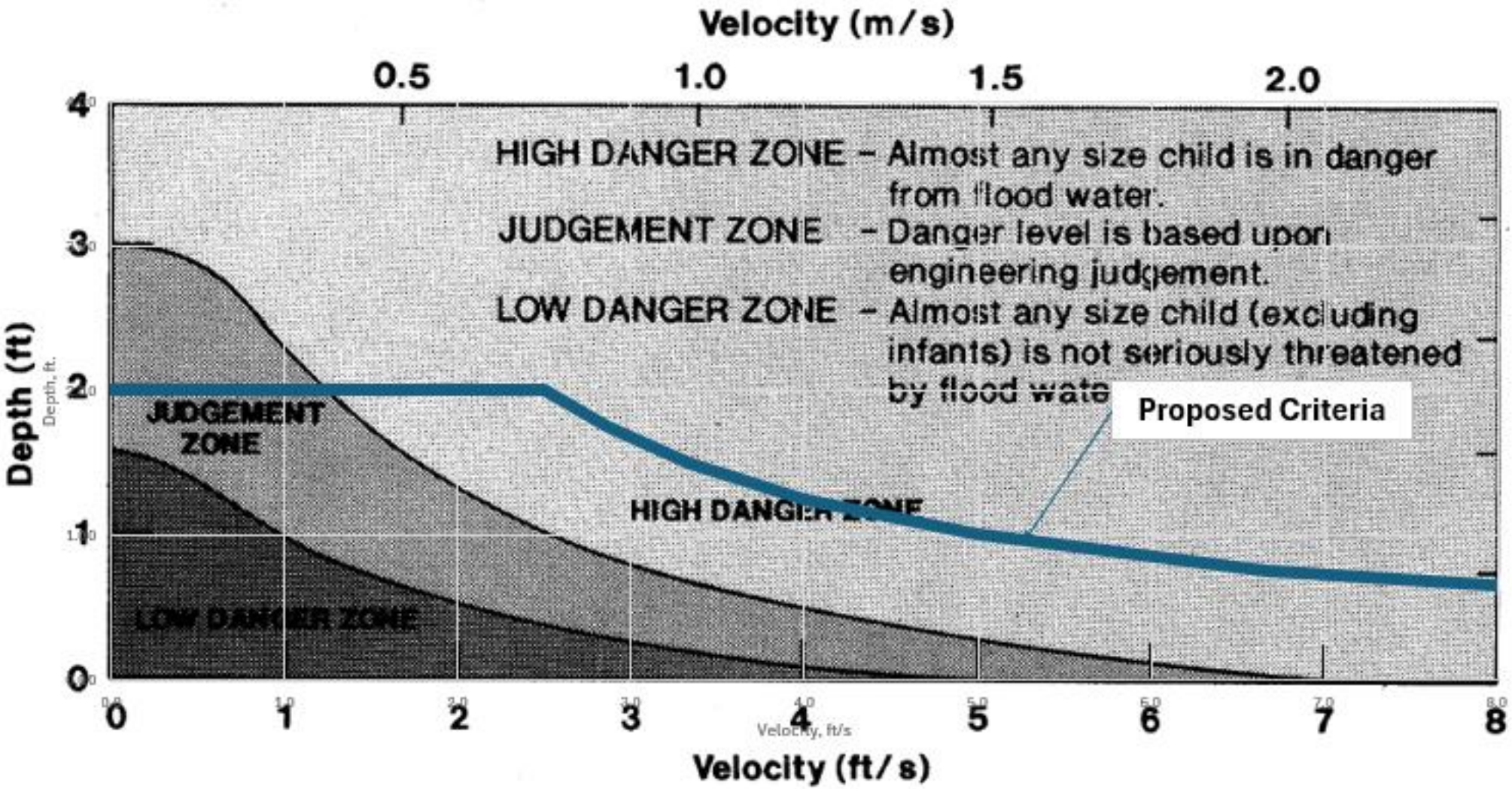


Figure 6. – Depth–velocity flood danger level relationship for children.

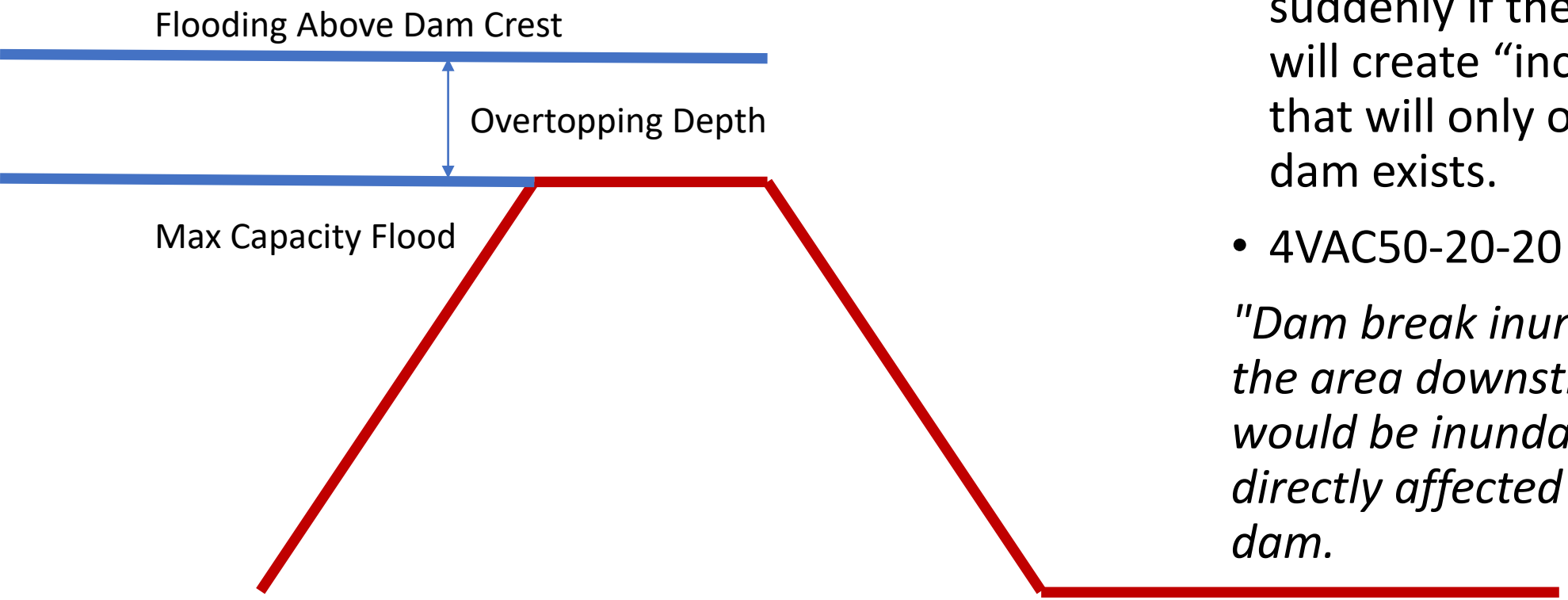
SDF Reduction

Brent Payne, P.E.

DCR Dam Safety

11/12/2024

Max Capacity Flood and Freeboard



- The stored volume within the “Overtopping Depth” will release suddenly if the dam breaches. This will create “incremental” damages that will only occur because the dam exists.
- 4VAC50-20-20

"Dam break inundation zone" means the area downstream of a dam that would be inundated or otherwise directly affected by the failure of a dam.

Illustrated Concern with SWC Method

- The SWC Method evaluates the Max Capacity Flood.
- Other floods show a change in risk down stream due to breach.
- The other floods will not be identified as part of the SWC analysis

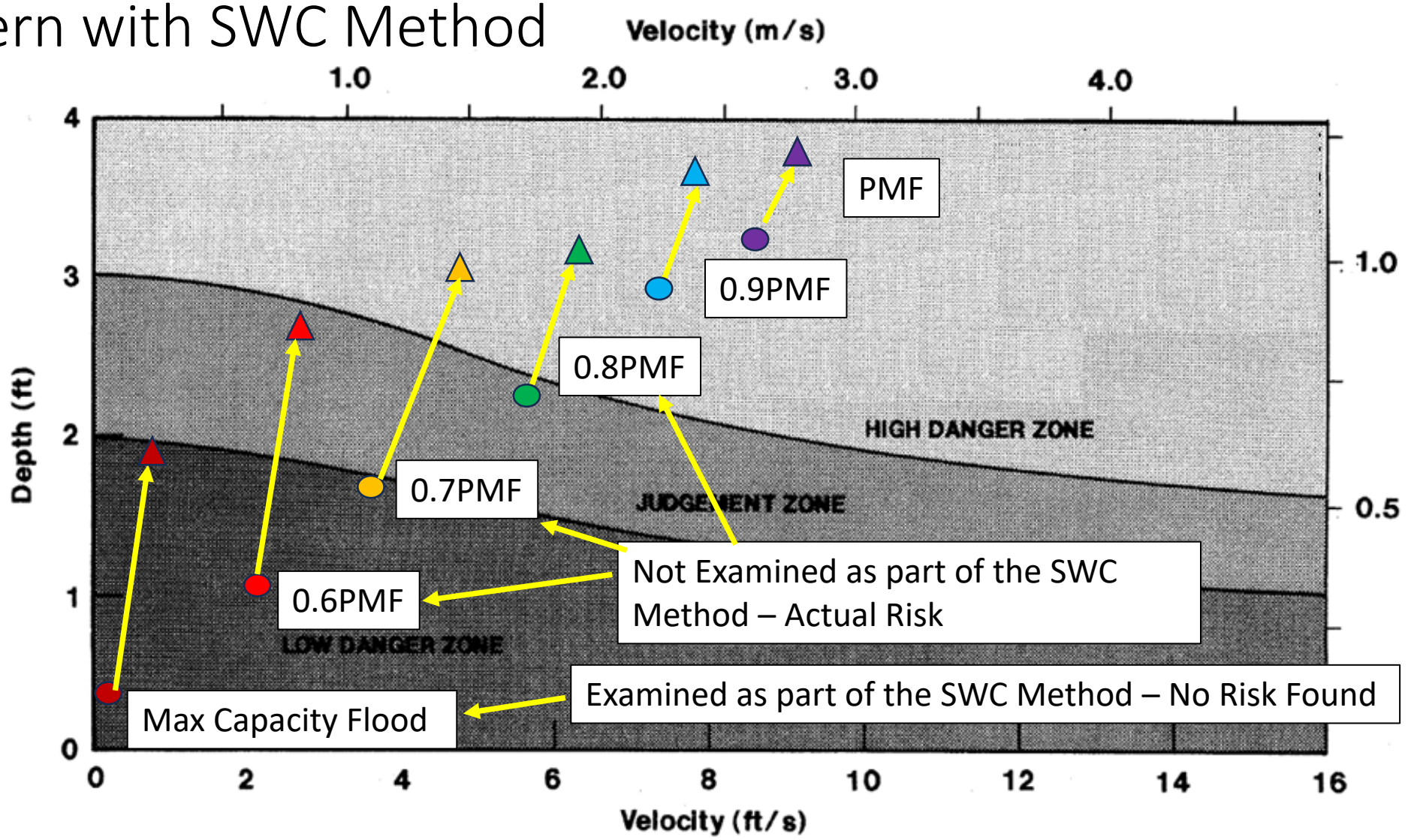


Figure 4. – Depth–velocity flood danger level relationship for passenger vehicles.

FEMA P-1015 Technical Manual: Overtopping Protection of Dams

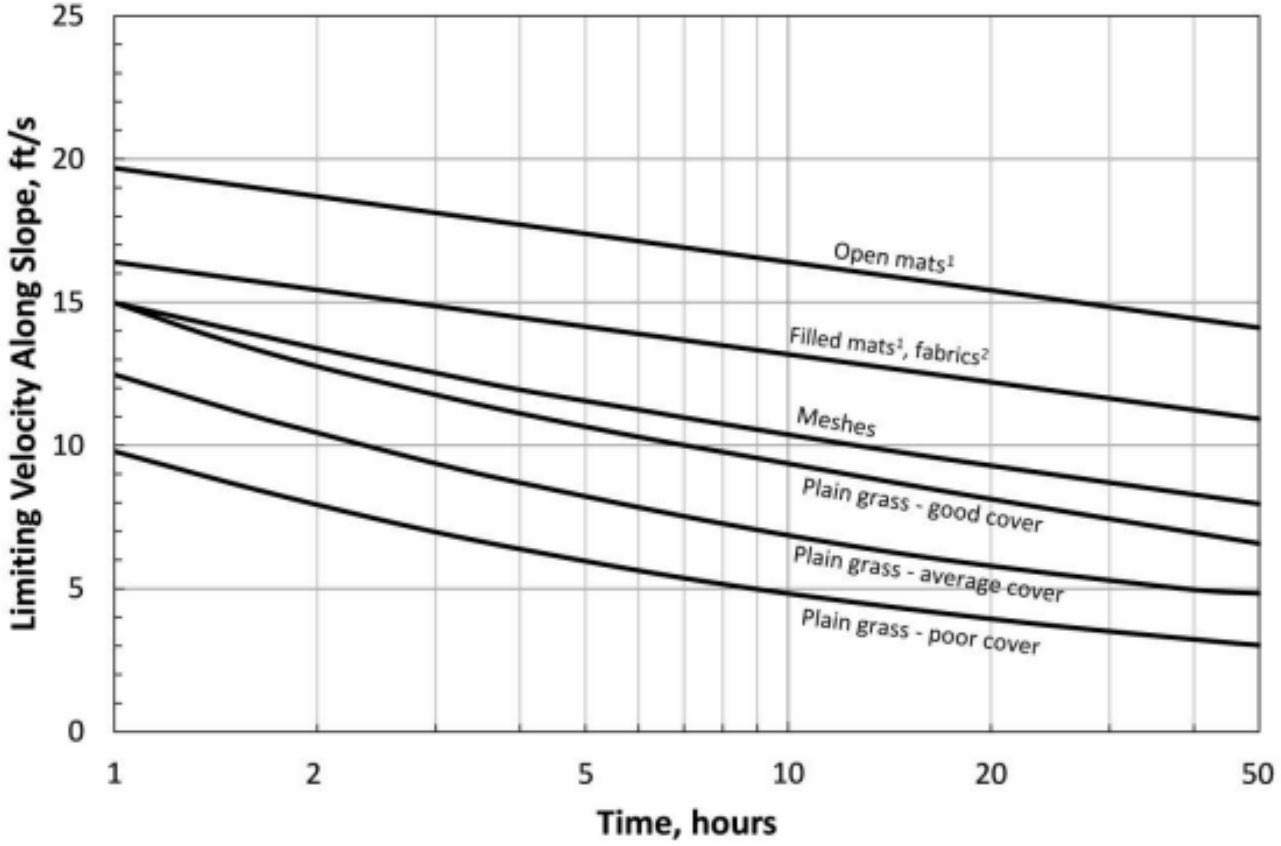
- Chapter 6 Overtopping Example, Virginia Kendall Dam
  - Overtopped by approximately 1 foot for 3 hours.
  - Partial failure without with breach.
  - Dam may have permitted shorter duration flood with greater depths without breach.

- Conclusion: Virginia Kendall Dam may breach with significant depths over the crest and release more water than the max capacity flood.

Figure 6-4.—Virginia Kendall Dam in Ohio after 3 hours of overtopping flow (Reclamation, 2003, courtesy of David Gillette).

FEMA P-1015 Technical Manual: Overtopping Protection of Dams

- Grass cover can sustain between 3 and 15 feet per second of flow.
- Earthen dams with good grass condition, 3:1 (or better) slopes and strong soil conditions may sustain significant overtopping depths before erosion and head cutting occurs.
  - The result is larger freeboard and therefor larger unknown effects downstream under the SWC Method.



[1] Minimum nominal thickness 0.75 inch.
[2] Installed within 0.75 inch below soil surface, or in conjunction with a surface mesh.

Figure 6-2.—CIRIA velocity-duration curves for plain and reinforced grass (Hewlett et al. 1987, Courtesy of CIRIA, all rights reserved).

FEMA P-1015 Calculating Overtopping Conditions

- Hanson and Temple, 1994, may be used to calculate depth and duration of flooding for a variety of overtopping conditions.
- FEMA P-1015 uses their method to determine earthen dams between can sustain between 6 and 24 cfs/ft prior to breach.
  - Examples are provided in the Manual

When embankment conditions allow adequate rooting of the vegetal cover, the allowable hydraulic attack involves both the erosionally effective hydraulic stress and the duration of flow, and is given by (Hanson and Temple, 1994) (Equations 6-6 and 6-7):

$$\int \tau_e dt \leq 0.2(PI) \quad + 1 \qquad \textbf{Eq. 6-6}$$

and

$$\tau_o \leq 13.5 \text{ lb/ft}^2 \qquad \textbf{Eq. 6-7}$$

Where:

PI = plasticity index of the soil in which the cover is rooted

t = time in hours

In all cases, τ_o is restricted to values of 13.5 lb/ft^2 or less. This represents a stress level sufficient to cause direct instantaneous destruction of the vegetal cover through uprooting or tearing and removal of the leaves and stems. Considering a range of typical grass properties and embankment dam slopes ranging from 2:1 to 4:1, this puts a practical upper limit on the overtopping unit discharge of about 6 to 24 ft^3/s/ft. Equation 6-6, which incorporates soil properties and duration of flow, could indicate that even lower unit discharges are allowable for long duration events or on soils with little plasticity.

FEMA P-1015 Design Limits

- FEMA P-1015 recommends up to four feet of overflow depth for dams with 3:1 slopes.
  - Shallower slopes may be able to exceed 4 feet of depth
- As a design limit, it is reasonable to assume that actual failure occurs at depths greater than the proposed design limits as a factor of safety.

Table 10-1.—Summary of design limits for overtopping protection systems

Protection system	Chapter	Dam height (feet)	Unit discharge ($ft^3/s/ft$)	Overflow depth (feet)	Flow velocity (ft/s)	Shear stress (lb/ft^2)
RCC	2	100-200	316-340	20	20-30+	
CRCS	3	150-200	240-280	20	80+	
Cable-tied ACBs	4	40	30	4.2	26	19+
Wedge blocks	4	50-60	42	5.5	45	
Gabions	5	25	30-40	4.5	24-30	35
Grass	6	25-50	6-24	1-4	9	13.5
Reinforced grass	6	40-50	32	5	20	
Synthetic turf	6	40-50	30	5	29	9+
Reinforced rockfill	7	140	153	10-14		
Rockfill	7	50	10-24	2-4		
Riprap	8	50	10-24	2-4		
Geo liners	9	25	2	1	26	
Geocells	9	25			29	16
Fabric-formed concrete	9	25				60

Notes:

- Typical embankment slopes assumed (1.5:1 to 3:1)
- See reference chapter for more information.
- Natural grass systems assume good cover and are time dependent (i.e., for short durations).
- Rockfill and riprap systems are size and gradation dependent (i.e., larger rock of uniform size performs best)

Summary

- The volume of water between the Max Capacity and Overflow Depth is impounded water that will create an incremental effect downstream due to breach.
- A real world example was provided to show that a dam does not immediately breach at the “max capacity flood”
- P-1015 indicates a dam may impound freeboard depths of up to 4 feet for 3:1 slopes and greater freeboard for 4:1 slopes.
- Hanson and Temple, 1994, may be used to calculate possible overtopping depths above “max capacity flood”

Conclusion

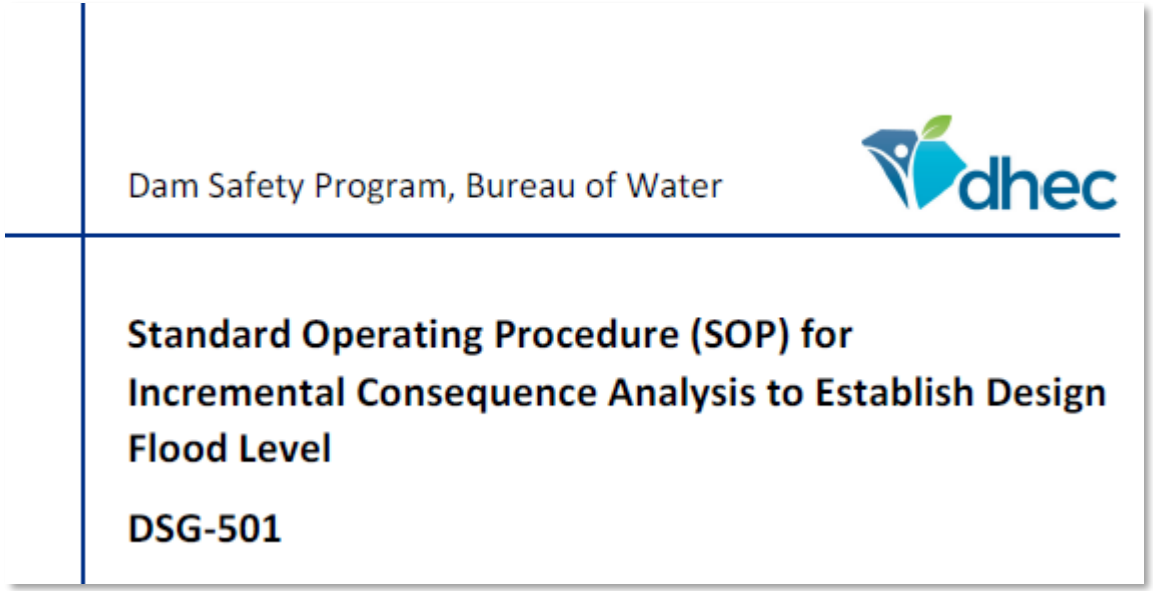
- The SWC Method does not align with current FEMA guidance and design standards by assuming that failure will only occur at the max capacity flood.
- The SWC Method does not account for incremental damages that will occur due to significant overflow depths over the crest.

Rule of Seven / SC Method

- Presented to SWC, external professional engineers and the Regulatory Advisory Panel in August, 2024.
  - No comments, concerns or objections have been provided by any stakeholder.
- Developed by Dam Safety staff over a 1 year period as part of an exhaustive alternatives analysis.
- Creates new opportunities for reduce Spillway Design Floods that does not currently exist. (Reduced regulations)
- Utilizes existing, proven methodologies without process changes.
- Dams that conform to existing regulation are “grandfathered” because Rule of Seven is retained in the process.

DCR Dam Safety Recommendation: Combined Rule of 7 and SC Method

- (1) If the dam breach for a flood does not change the risk to high hazard, then the breach is not regarded as a hazard
  - South Carolina Method DSG501
- (2) If the dam breach adds a small amount of depth and velocity, then the dam breach is not regarded as a hazard.
  - Rule of Seven (Existing VA Method)



Chapter 20. Impounding Structure Regulations

Part I
General

4VAC50-20-30. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Acre-foot" means a unit of volume equal to 43,560 cubic feet or 325,853 gallons (equivalent to one foot of depth over one acre of area).

"Agricultural purpose" means the production of an agricultural commodity as defined in § 3.2-3900 of the Code of Virginia that requires the use of impounded waters.

"Agricultural purpose dams" means impounding structures which are less than 25 feet in height or which create a maximum impoundment smaller than 100 acre-feet, and operated primarily for agricultural purposes.

"Alteration" means changes to an impounding structure that could alter or affect its structural integrity. Alterations include, but are not limited to, changing the height or otherwise enlarging the dam, increasing normal pool or principal spillway elevation or physical dimensions, changing the elevation or physical dimensions of the emergency spillway, conducting necessary structural repairs or structural maintenance, or removing the impounding structure. Structural maintenance does not include routine maintenance.

"Alteration permit" means a permit required for any alteration to an impounding structure.

"Annual average daily traffic" or "AADT" means the total volume of vehicle traffic of a highway or road for a year divided by 365 days and is a measure used in transportation planning and transportation engineering of how busy a road is.

"Board" means the Virginia Soil and Water Conservation Board.

"Conditional general permit" means the permit established pursuant to §10.1-605.3 that is required for the operation and maintenance of a low hazard potential impounding structure with deficiencies.

"Conditional Operation and Maintenance Certificate" means a certificate required for high or significant hazard potential impounding structures with deficiencies.

"Construction" means the construction of a new impounding structure.

"Construction permit" means a permit required for the construction of a new impounding structure.

"Dam break inundation zone" means the area downstream of a dam that would be inundated or otherwise directly affected by the failure of a dam.

"Department" means the Virginia Department of Conservation and Recreation.

"Design flood" means the calculated volume of runoff and the resulting peak discharge utilized in the evaluation, design, construction, operation and maintenance of the impounding structure.

"Director" means the Director of the Department of Conservation and Recreation or his designee.

"Drill" means a type of emergency action plan exercise that tests, develops, or maintains skills in an emergency response procedure. During a drill, participants perform an in-house exercise to verify telephone numbers and other means of communication along with the owner's response. A drill is considered a necessary part of ongoing training.

"Emergency Action Plan or EAP" means a formal document that recognizes potential impounding structure emergency conditions and specifies preplanned actions to be followed to minimize loss of life and property damage. The EAP specifies actions the owner must take to minimize or alleviate emergency conditions at the impounding structure. It contains procedures and information to assist the owner in issuing early warning and notification messages to responsible emergency management authorities. It shall also contain dam break inundation zone maps as required to show emergency management authorities the critical areas for action in case of emergency.

"Emergency Action Plan Exercise" means an activity designed to promote emergency preparedness; test or evaluate EAPs, procedures, or facilities; train personnel in emergency management duties; and demonstrate operational capability. In response to a simulated event, exercises should consist of the performance of duties, tasks, or operations very similar to the way they would be performed in a real emergency. An exercise may include but not be limited to drills and tabletop exercises.

"Emergency Preparedness Plan" means a formal document prepared for Low Hazard impounding structures that provides maps and procedures for notifying owners of downstream property that may be impacted by an emergency situation at an impounding structure.

"Existing impounding structure" means any impounding structure in existence or under a construction permit prior to July 1, 2010.

"Freeboard" means the vertical distance between the maximum water surface elevation associated with the spillway design flood and the top of the impounding structure.

General permit" means the permit established pursuant to §10.1-605.3 that is required for the operation and maintenance of a low hazard potential impounding structure.

"Height" means the hydraulic height of an impounding structure. If the impounding structure spans a stream or watercourse, height means the vertical distance from the natural bed of the stream or watercourse measured at the downstream toe of the impounding structure to the top of the impounding structure. If the impounding structure does not span a stream or watercourse, height means the vertical distance from the lowest elevation of the downstream limit of the barrier to the top of the impounding structure.

"Impounding structure" or "dam" means a man-made structure, whether a dam across a watercourse or structure outside a watercourse, used or to be used to retain or store waters or other materials. The term includes: (i) all dams that are 25 feet or greater in height and that create an impoundment capacity of 15 acre-feet or greater, and (ii) all dams that are six feet or greater in height and that create an impoundment capacity of 50 acre-feet or greater. The term "impounding structure" shall not include: (a) dams licensed by the State Corporation Commission that are subject to a safety inspection program; (b) dams owned or licensed by the United States government; (c) dams operated primarily for agricultural purposes which are less than 25 feet in height or which create a maximum impoundment capacity smaller than 100 acre-feet; (d) water or silt retaining dams approved pursuant to § 45.1-222 or 45.1-225.1 of the Code of Virginia; or (e) obstructions in a canal used to raise or lower water.

"Impoundment" means a body of water or other materials the storage of which is caused by any impounding structure.

"Life of the impounding structure" and "life of the project" mean that period of time for which the impounding structure is designed and planned to perform effectively, including the time required to remove the structure when it is no longer capable of functioning as planned and designed.

"Maximum impounding capacity" means the volume of water or other materials in acre-feet that is capable of being impounded at the top of the impounding structure.

"New construction" means any impounding structure issued a construction permit or otherwise constructed on or after July 1, 2010.

"Normal or typical water surface elevation" means the water surface elevation at the crest of the lowest ungated outlet from the impoundment or the elevation of the normal pool of the impoundment if different than the water surface elevation at the crest of the lowest ungated outlet. For calculating sunny day failures for flood control impounding structures, stormwater detention impounding structures, and related facilities designed to hold back volumes of water for slow release, the normal or typical water surface elevation shall be measured at the crest of the auxiliary or emergency spillway.

"Operation and Maintenance Certificate" means a certificate required for the operation and maintenance of ~~all~~ high or significant hazard potential impounding structures.

"Owner" means the owner of the land on which an impounding structure is situated, the holder of an easement permitting the construction of an impounding structure and any person or entity agreeing to maintain an impounding structure. The term "owner" may include the Commonwealth or any of its political subdivisions, including but not limited to sanitation district commissions and authorities, any public or private institutions, corporations, associations, firms or companies organized or existing under the laws of this Commonwealth or any other state or country, as well as any person or group of persons acting individually or as a group.

"Planned land use" means land use that has been approved by a locality or included in a master land use plan by a locality, such as in a locality's comprehensive land use plan.

"Spillway" means a structure to provide for the controlled release of flows from the impounding structure into a downstream area.

"Stage I Condition" means a flood watch or heavy continuous rain or excessive flow of water from ice or snow melt.

"Stage II Condition" means a flood watch or emergency spillway activation or impounding structure overtopping where a failure may be possible.

"Stage III Condition" means an emergency spillway activation or impounding structure overtopping where imminent failure is probable.

"Sunny day dam failure" means the failure of an impounding structure with the initial water level at the normal reservoir level, usually at the lowest ungated principal spillway elevation or the typical operating water level.

"Tabletop Exercise" means a type of emergency action plan exercise that involves a meeting of the impounding structure owner and the state and local emergency management officials in a conference room environment. The format is usually informal with minimum stress involved. The exercise begins with the description of a simulated event and proceeds with discussions by the participants to evaluate the EAP and response procedures and to resolve concerns regarding coordination and responsibilities.

"Top of the impounding structure" means the lowest point of the nonoverflow section of the impounding structure.

"Watercourse" means a natural channel having a well-defined bed and banks and in which water normally flows.

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

A. Impounding structures shall be classified in one of three hazard classifications as defined in subsection B of this section and Table 1.

B. For the purpose of this chapter, hazards pertain to potential loss of human life or damage to the property of others downstream from the impounding structure in event of failure or faulty operation of the impounding structure or appurtenant facilities. Hazard potential classifications of impounding structures are as follows:

1. High Hazard Potential is defined where an impounding structure failure will cause probable loss of life or serious economic damage. "Probable loss of life" means that impacts will occur that are likely to cause a loss of human life, including but not limited to impacts to residences, businesses, other occupied structures, or major roadways. Economic damage may occur to, but not be limited to, building(s), industrial or commercial facilities, public utilities, major roadways, railroads, personal property, and agricultural interests. "Major roadways" include, but are not limited to, interstates, primary highways, high-volume urban streets, or other high-volume roadways, except those having an AADT volume of 400 vehicles or less in accordance with 4VAC50-20-45.

2. Significant Hazard Potential is defined where an impounding structure failure may cause the loss of life or appreciable economic damage. "May cause loss of life" means that impacts will occur that could cause a loss of human life, including but not limited to impacts to facilities that are frequently utilized by humans other than residences, businesses, or other occupied structures, or to secondary roadways. Economic damage may occur to, but not be limited to, building(s), industrial or commercial facilities, public utilities, secondary roadways, railroads, personal property, and agricultural interests. "Secondary roadways" include, but are not limited to, secondary highways, low-volume urban streets, service roads, or other low-volume roadways, except those having an AADT volume of 400 vehicles or less in accordance with 4VAC50-20-45.

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. To support the appropriate hazard potential classification, dam break analysis shall be conducted by the owner's engineer or the department in accordance with one of the following alternatives and utilizing procedures set out in 4VAC50-20-54.

1. The owner of an impounding structure that does not currently hold a regular or conditional certificate or a conditional or general permit from the board, or the owner of an impounding structure that is already under certificate or general permit but the owner believes that a condition has changed downstream of the impounding structure that may reduce its hazard potential classification, may request in writing that the department conduct a simplified dam break inundation zone analysis to determine whether the impounding structure has a low hazard potential classification. The owner shall pay a fee to the department in accordance with 4VAC50-20-395 for conducting each requested analysis. The department shall address requests in the order received and shall strive to complete analysis within 90 days; or

2. The owner may propose a hazard potential classification that shall be subject to approval by the board. To support the proposed hazard potential classification, an analysis shall be conducted by the owner's engineer and submitted to the department. The hazard potential classification shall be certified by the owner.

D. Findings of the analysis conducted pursuant to subsection C of this section shall result in one of the following actions:

1. For findings by the department resulting from analyses conducted in accordance with subdivision C 1 of this section:

a. If the department finds that the impounding structure appears to have a low hazard potential classification, the owner ~~may be~~is eligible for general permit coverage in accordance with ~~4VAC50-20-103~~ 4VAC50-20-503.

b. If the department finds that the impounding structure appears to have a high or significant hazard potential classification, the owner's engineer shall provide further analysis in accordance with the procedures set out in 4VAC50-20-54 and this chapter. The owner may be eligible for grant assistance from the Dam Safety, Flood

Prevention and Protection Assistance Fund in accordance with Article 1.2 (§ 10.1-603.16 et seq.) of Chapter 6 of Title 10.1 of the Code of Virginia.

2. For findings by the owner's engineer resulting from analyses conducted in accordance with subdivision C 2 of this section:

a. If the engineer finds that the impounding structure has a low hazard potential classification, the owner ~~may be~~is eligible for general permit coverage in accordance with ~~4VAC50-20-103~~ 4VAC50-20-503; or

b. If the engineer finds that the impounding structure appears to have a high or significant hazard potential classification, then the owner shall comply with the applicable certification requirements set out in this chapter.

E. An incremental damage analysis in accordance with 4VAC50-20-52 may be utilized as part of a hazard potential classification by the owner's engineer.

F. Impounding structures shall be subject to reclassification by the board as necessary.

4VAC50-20-52. Incremental damage analysis.

A. The proposed potential hazard classification for an impounding structure may be lowered based on the results of an incremental damage analysis utilizing one of the following methodologies:

1. Section III of the United States Department of Interior, Bureau of Reclamation's ACER Technical Memorandum No. 11, 1988. An impact shall be deemed to occur where there are one or more lives in jeopardy as a result of a dam failure; or

2. An approach to determining hazard classification found in any document that is on the list of acceptable references set out in 4VAC50-20-320. The owner's engineer shall reference the methodology utilized in the submittal to the department.

B. The proposed spillway design flood for the impounding structure may be lowered based on the results of an incremental damage analysis. Once the owner's engineer has determined the required spillway design flood through application of Table 1, further analysis may be performed to evaluate the limiting flood condition for incremental damages. Site-specific conditions should be recognized and considered. In no situation shall the allowable reduced level be less than the level at which the incremental increase in water surface elevation downstream due to failure of an impounding structure is no longer considered to present an additional downstream threat. This engineering analysis will need to present water surface elevations at each structure that may be impacted downstream of the dam. An additional downstream threat to persons or property is presumed to exist when water depths exceed two feet or when the product of water depth (in feet) and flow velocity (in feet per second) is greater than seven.

The spillway design flood shall also not be reduced below the minimum threshold values as determined by Table 1.

C. The proposed potential hazard classification for the impounding structure and the required spillway design flood shall be subject to reclassification by the board as necessary to reflect the incremental damage assessment, changed conditions at the impounding structure, and changed conditions in the dam break inundation zone.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

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

A. Dam break inundation zone maps and analyses shall be provided to the department, except as provided for in 4VAC50-20-51, to meet the requirements set out in 4VAC50-20-40, and 4VAC50-20-175~~, and 4VAC50-20-177~~, as applicable. In accordance with subsection G of this section, a simplified dam break inundation zone ~~map and~~ analysis may be completed by the department and shall be provided to the impounding structure's owner to assist such owner in complying with the requirements of this chapter. All analyses shall be completed in accordance with 4VAC50-20-20 D.

B. The location of the end of the inundation mapping should be indicated where the water surface elevation of the dam break inundation zone and the water surface elevation of the spillway design flood during an impounding structure nonfailure event converge to within one foot of each other. The inundation maps shall be supplemented with water surface profiles showing the peak water surface elevation prior to failure and the peak water surface elevation after failure.

C. All inundation zone map(s) shall be signed and sealed by a licensed professional engineer.

D. 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.

E. For determining the hazard potential classification, an analysis including, but not limited to, those hazards created by flood and nonflood dam failures shall be considered. At a minimum, 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. A dam break analysis utilizing the probable maximum flood with a dam failure.

F. To meet the Emergency Action Plan requirements set out in 4VAC50-20-175 ~~and the Emergency Preparedness Plan requirements set out in 4VAC50-20-177~~, all owners of high or significant hazard potential impounding structures shall provide dam break inundation zone map(s) representing the impacts that would occur with both a sunny day dam failure and a probable maximum flood with a dam failure.

1. The map(s) shall be developed at a scale sufficient to graphically display downstream inhabited areas and structures, roads, public utilities that may be affected, and other pertinent structures within the identified inundation area. In coordination with the local organization for emergency management, a list of downstream inundation zone property

owners and occupants, including telephone numbers may be plotted on the map or may be provided with the map for reference during an emergency.

2. Each map shall include the following statement: "The information contained in this map is prepared for use in notification of downstream property owners by emergency management personnel."

~~Should the department prepare a dam break inundation zone map and analysis in response to a request received pursuant to 4VAC50-20-40 C, the owner shall utilize this map to prepare a plan in accordance with this subsection.~~

G. Upon receipt of a written request in accordance with 4VAC50-20-40 C and receipt of a payment in accordance with 4VAC50-20-395, the department shall conduct a simplified dam break inundation zone analysis. In conducting the analysis, a model acceptable to the department shall be utilized. The analysis shall result in maps produced as Geographic Information System shape files for viewing and analyzing and shall meet the other analysis criteria of this section.

Upon completion of the analysis, the department shall issue a letter to the owner communicating the results of the analysis including the dam break inundation zone map, stipulating the department's finding regarding hazard potential classification based on the information available to the department, and explaining what the owner needs to do procedurally with this information to be compliant with the requirements of the Dam Safety Act (§ 10.1-604 et seq.) and this chapter.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-58. Local government notifications.

For each certificate or general permit issued, the impounding structure owner shall send a copy of the certificate or general permit to the appropriate local government(s) with planning and zoning responsibilities. A project description and ~~the~~ any map(s) required under 4VAC50-20-54 showing the area that could be affected by the impounding structure failure shall be submitted with the certificate or general permit. The department will provide a standard form cover letter for forwarding the certificate copy or general permit and accompanying materials.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Part II
Construction and Alteration Permit Requirements

4VAC50-20-70. Construction permits.

A. Prior to preparing the complete design report for a Construction Permit, applicants may submit a preliminary design report to the department to determine if the project concept is

acceptable to the department. The preliminary design report should contain, at a minimum, a general description of subdivisions 1 through 12 of subsection B of this section and subdivisions 1 and 2 of this subsection:

1. Proposed design criteria and a description of the size of the impounding structure, ground cover conditions, extent of current upstream development within the watershed and the hydraulic, hydrological and structural features, geologic conditions and the geotechnical engineering assumptions used to determine the foundation, impoundment rim stability and materials to be used.

2. Preliminary drawings of a general nature, including cross sections, plans and profiles of the impounding structure, proposed pool levels and types of spillway(s).

B. An applicant for a Construction Permit shall submit a design report. A form for the design report is available from the department (Design Report for the Construction or Alteration of Virginia Regulated Impounding Structures). The design report shall be prepared in accordance with 4VAC50-20-240. The design report is a required element of a complete application for a Construction Permit and shall include the following information:

1. Project information including a description of the proposed construction, name of the impounding structure, inventory number if available, name of the reservoir, and the purpose of the reservoir.

2. The proposed hazard potential classification in conformance with Table 1 of 4VAC50-20-50.

3. Location of the impounding structure including the city or county, number of feet or miles upstream or downstream of a highway and the highway number, name of the river or the stream, and the latitude and longitude.

4. Owner's name or representative if corporation, mailing address, residential and business telephone numbers, and other means of communication.

5. Owner's engineer's name, firm, professional engineer Virginia number, mailing address, and business telephone number.

6. Impounding structure data including type of material (earth, concrete, masonry or other) and the following design configurations:

a. Top of impounding structure (elevation);

b. Downstream toe – lowest (elevation);

c. Height of impounding structure (feet);

d. Crest length – exclusive of spillway (feet);

e. Crest width (feet);

f. Upstream slope (horizontal to vertical); and

g. Downstream slope (horizontal to vertical).

7. Reservoir data including the following:

a. Maximum capacity (acre-feet);

b. Maximum pool (elevation);

c. Maximum pool surface area (acres);

d. Normal capacity (acre-feet);

e. Normal pool (elevation);

f. Normal pool surface area (acres); and

g. Freeboard (feet).

8. Spillway data including the type, construction material, design configuration, and invert elevation for the low level drain, the principal spillway, and the emergency spillway.

9. Watershed data including drainage area (square miles); type and extent of watershed development; time of concentration (hours); routing procedure; spillway design flood used and state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall duration (hours); and freeboard during passage of the spillway design flood (feet).

10. A description of properties located in the dam break inundation zone downstream from the site of the proposed impounding structure, including the location and number of structures, buildings, roads, utilities and other property that would be endangered should the impounding structure fail.

11. Evidence that the local government or governments have been notified of the proposal by the owner to build an impounding structure.

12. Maps showing the location of the proposed impounding structure that include: the county or city in which the proposed impounding structure would be located, the location of roads and access to the site, and the outline of the impoundment. Existing aerial photographs or existing topographic maps may be used for this purpose.

13. A report of the geotechnical investigations of the foundation soils, bedrock, or both and of the materials to be used to construct the impounding structure.

14. Design assumptions and analyses sufficient to indicate that the impounding structure will be stable during its construction and during the life of the impounding structure under all conditions of impoundment operations, including rapid filling, flood surcharge, seismic loadings, and rapid drawdown of the impoundment.

15. Evaluation of the stability of the impoundment rim area to safeguard against impoundment rim slides of such magnitude as to create waves capable of overtopping the impounding structure and evaluation of rim stability during seismic activity.

16. Design assumptions and analyses sufficient to indicate that seepage in, around, through or under the impounding structure, foundation and abutments will be reasonably and practically controlled so that internal or external forces or results thereof will not endanger the stability and integrity of the impounding structure. The design report shall also include information on graded filter design.

17. Calculations and assumptions relative to hydraulic and structural design of the spillway or spillways and energy dissipater or dissipaters. Spillway capacity shall conform to the criteria of Table 1 and 4VAC50-20-52.

18. Provisions to ensure that the impounding structure and appurtenances will be protected against unacceptable deterioration or erosion due to freezing and thawing, wind, wave action, and rain or any combination thereof.

19. Other pertinent design data, assumptions and analyses commensurate with the nature of the particular impounding structure and specific site conditions, including when required by this chapter, a plan and water surface profile of the dam break inundation zone.

20. A description of the techniques to be used to divert stream flow during construction so as to prevent hazard to life, health and property, including a detailed plan and procedures to maintain a stable impounding structure during storm events, a drawing showing temporary diversion devices, and a description of the potential impoundment during construction. Such diversion plans shall also be in accordance with applicable environmental laws.

21. A plan for project construction monitoring and quality control testing to confirm that construction materials and performance standards meet the design requirements set forth in the specifications.

22. Plans and specifications as required by 4VAC50-20-310.

23. Certification by the owner's engineer that the information provided pursuant to this subsection is true and correct in their professional judgment. Such certification shall include the engineer's signature, printed name, Virginia number, date, and the engineer's Virginia seal.

24. Owner's signature certifying receipt of the information provided pursuant to this subsection.

C. A plan of construction is a required element of a complete permit application for a Construction Permit and shall include:

1. A construction sequence with milestones.

2. Elements of the work plan that should be considered include, but are not limited to, foundation and abutment treatment, stream or river diversion, excavation and material fill processes, phased fill and compaction, testing and control procedures, construction of permanent spillway and drainage devices.

3. The erosion and sediment control plan, as approved by the local government, which minimizes soil erosion and sedimentation during all phases of construction.

4. The stormwater management plan or stormwater management facility plan, as approved by the local government, if the impounding structure is a stormwater management best management practice.

D. A Temporary Emergency Action Plan is a required element of a complete application for a Construction Permit and shall include:

1. A notification list of state and local emergency response agencies;

2. Provisions for notification of potentially affected residences and structures;

3. Construction site evacuation routes; and

4. Any other special notes particular to the project.

E. Within 120 days of receipt of a complete Construction Permit Application the board shall act on the application. If the application is not acceptable, the director shall inform the applicant within 60 days of receipt and shall explain what changes are required for an acceptable application. A complete Construction Permit Application consists of the following:

1. A final design report, submitted on the department form (Design Report for the Construction or Alteration of Virginia Regulated Impounding Structures), with attachments as needed, and certified by the owner and the owner's engineer;

2. A plan of construction that meets the requirements of subsection C of this section; and

3. A Temporary Emergency Action Plan that meets the requirements of subsection D of this section.

F. Prior to and during construction the owner shall provide the director with any proposed changes from the approved design, plans, specifications, or plan of construction. Approval shall be obtained from the director prior to the construction or installation of any changes that will affect the integrity or impounding capacity of the impounding structure.

G. The Construction Permit shall be valid for the plan of construction specified in the Construction Permit Application.

H. Construction must commence within two years after the permit is issued. If construction does not commence within two years after the permit is issued, the permit shall expire, except that the applicant may petition the board for extension of the two-year period and the board may extend such period for good cause with an appropriately updated plan of construction and Temporary Emergency Action Plan.

I. The board, the director, or both may take any necessary action consistent with the Dam Safety Act (§ 10.1-604 et seq. of the Code of Virginia) if any terms of this section or of the permit are violated, if the activities of the owner are not in accordance with the approved plans and specifications, if construction is conducted in a manner hazardous to downstream life or property, or for other cause as described in the Act.

J. Within 90 days after completion of the construction of an impounding structure, the owner shall submit:

1. A complete set of record drawings signed and sealed by a licensed professional engineer and signed by the owner:

2. A complete Record Report (Record Report for Virginia Regulated Impounding Structures) signed and sealed by a licensed professional engineer and signed by the owner that includes:

a. Project information including the name and inventory number of the structure, name of the reservoir, and whether the report is associated with a new or old structure;

b. Location of the impounding structure including the city or county, number of feet or miles upstream or downstream of a highway and the highway number, name of the river or the stream, and the latitude and longitude;

c. Owner's name or representative if corporation, mailing address, residential and business telephone numbers, and other means of communication;

d. Information on the design report, including who it was prepared by, the date of design report preparation, whether it was for new construction or for an alteration, and the permit issuance date;

e. Owner's engineer's name, firm, professional engineer Virginia number, mailing address, and business telephone number;

f. Impounding structure data including type of material (earth, concrete, masonry or other) and the following configurations:

(1) Top of impounding structure (elevation);

(2) Downstream toe – lowest (elevation);

(3) Height of impounding structure (feet);

(4) Crest length – exclusive of spillway (feet);

(5) Crest width (feet);

(6) Upstream slope (horizontal to vertical); and

(7) Downstream slope (horizontal to vertical).

g. Reservoir data including the following:

(1) Maximum capacity (acre-feet);

(2) Maximum pool (elevation);

(3) Maximum pool surface area (acres);

(4) Normal capacity (acre-feet);

(5) Normal pool (elevation);

(6) Normal pool surface area (acres); and

(7) Freeboard (feet).

h. Spillway data including the type, construction material, design configuration, and invert elevation for the low level drain, the principal spillway, and the emergency spillway; a description of the low level drain and principal spillway including dimensions, trash guard information, and orientation of intake and discharge to impounding structure if looking downstream; and a description of the emergency spillway including dimensions and orientation to impounding structure if looking downstream;

i. Watershed data including drainage area (square miles); type and extent of watershed development; time of concentration (hours); routing procedure; spillway design flood used and state source; design inflow hydrograph volume (acre-feet), peak inflow (cfs), and rainfall duration (hours); and freeboard during passage of the spillway design flood (feet);

j. Impounding structure history including the date construction was completed, who it was designed by and the date, who it was built by and the date, who performed inspections and dates, description of repairs, and confirmation as to whether the impounding structure has ever been overtopped;

k. A narrative describing the impounding structure procedures for operation, maintenance, filling, emergency action plan implementation, and structure evaluation;

l. A narrative describing the hydraulic and hydrologic data on the spillway design flood, hydrologic records, flood experience, flood potential, reservoir regulation, and comments or recommendations regarding these attributes;

m. A narrative describing stability of the foundation and abutments, embankment materials, and a written evaluation of each;

n. A complete set of record drawings signed and sealed by a licensed professional engineer and signed by the owner;

o. Certification by the owner's engineer that the information provided pursuant to subdivision J 2 of this section is true and correct in their professional judgment. Such certification shall include the engineer's signature, printed name, Virginia number, date, and the engineer's Virginia seal; and

p. Owner's signature certifying receipt of the information provided pursuant to subdivision J 2 of this section.

3. Certification from the licensed professional engineer who has monitored construction of the impounding structure during construction that, to the best of the engineer's judgment, knowledge and belief, the impounding structure and its appurtenances were constructed in conformance with the plans, specifications, drawings and other requirements approved by the board;

4. Operation and Maintenance Certificate Application (Operation and Maintenance Certificate Application for Virginia Regulated Impounding Structures) in accordance with 4VAC50-20-105 or a registration statement submitted in accordance with 4VAC50-20-502; and

5. Emergency Action Plan or Emergency Preparedness Plan in accordance with 4VAC50-20-175 or 4VAC50-20-177.

K. Upon completion of construction, the impoundment may be filled upon board issuance of an Operation and Maintenance Certificate or a general permit.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-90. ~~Transfer of permits.~~ (Repealed)

~~A. Prior to the transfer of ownership of a permitted impounding structure the permittee shall notify the director in writing and the new owner shall file a transfer notification with the department. A form for the transfer notification is available from the department (Transfer of Impounding Structure Notification form Past Owner to New Owner). The new owner shall amend the existing permit application as necessary and shall certify to the director that he is aware of and will comply with all of the requirements and conditions of the permit.~~

~~B. The transfer notification shall include the following required information:~~

~~1. Project information including the name and inventory number of the structure, name of the reservoir, and impoundment hazard classification;~~

~~2. Location of the impounding structure including the city or county, number of feet or miles upstream or downstream of a highway and the highway number, name of the river or the stream, and the latitude and longitude;~~

~~3. Type of certificates and permits to be transferred including effective date and expiration date of all certificates and permits;~~

~~4. Past owner's name, mailing address, and residential and business telephone numbers;~~

~~5. New owner's name, mailing address, and residential and business telephone numbers;~~

~~6. Request to transfer certification statement signed and dated by the past owner;~~

7. Certification of compliance with permit or certificate with all said terms and conditions signed and dated by the new owner; and

8. Contact information updates for Emergency Action Plan or Emergency Preparedness Plan provided by the new owner. Such updates shall include the name, mailing address, and residential and business telephone numbers for the impounding structure owner, impounding structure operator, rainfall and staff gage observer, and alternate observer.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

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

Any impounding structure owner whose registration statement is approved by the board will receive the following permit and shall comply with the requirements in it. If the failure of a low hazard potential impounding structure is not expected to cause loss of human life or economic damage to any property except property owned by the owner, the owner may follow the special criteria established for certain low hazard impounding structures in accordance with 4VAC50-20-51 in lieu of coverage under the general permit.

General Permit No.: Dam Safety 1

Effective Date: (Date of Issuance of Coverage)

Expiration Date: (6 years following Date of Issuance of Coverage)

GENERAL PERMIT FOR OPERATION OF A LOW HAZARD POTENTIAL IMPOUNDING STRUCTURE

In compliance with the provisions of the Dam Safety Act and attendant regulations, owners of an impounding structure covered by this permit are authorized to operate and maintain a low hazard potential impounding structure. The owner shall be subject to the following requirements as set forth herein.

1. The spillway design of the owner's impounding structure shall be able to safely pass a 100-year flood. When appropriate, the spillway design flood requirement may be further reduced to the 50-year flood in accordance with an incremental damage analysis conducted by the owner's engineer.

2. The owner shall develop and maintain an emergency preparedness plan in accordance with 4VAC50-20-177. The owner shall update and resubmit the emergency preparedness plan immediately upon becoming aware of necessary changes to keep the plan workable.

3. The owner shall perform an annual inspection of the impounding structure. The owner shall maintain such records and make them available to the department upon request. The department also shall conduct inspections as necessary in accordance with 4VAC50-20-180.

4. The owner shall ensure that the impounding structure is properly and safely maintained and operated and shall have the following documents available for inspection upon request of the department:

a. An operating plan and schedule including narrative on the operation of control gates and spillways and the impoundment drain;

b. For earthen embankment impounding structures, a maintenance plan and schedule for the embankment, principal spillway, emergency spillway, low-level outlet, impoundment area, downstream channel, and staff gages; and

c. For concrete impounding structures, a maintenance plan and schedule for the upstream face, downstream face, crest of dam, galleries, tunnels, abutments, spillways, gates and outlets, and staff gages.

Impounding structure owners shall not permit growth of trees and other woody vegetation and shall remove any such vegetation from the slopes and crest of embankments and the emergency spillway area, and within a distance of 25 feet from the toe of the embankment and abutments of the dam.

5. 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.

6. The owner shall 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. In the event of a failure or an imminent failure of the impounding structure, the owner shall immediately notify the local emergency services coordinator, the Virginia Department of Emergency Management, and the department. The department shall take actions in accordance with § 10.1-608 or 10.1-609 of the Code of Virginia, depending on the degree of hazard and the imminence of failure caused by the unsafe condition.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 29, Issue 2, eff. November 8, 2012.

4VAC50-20-102. ~~Registering for coverage under the general permit for low hazard potential impounding structures.~~ (Repealed)

A. Pursuant to § 10.1-605.3, an impounding structure owner may seek general permit coverage from the board for a low hazard potential impounding structure in lieu of obtaining a Low Hazard Potential Regular Operation and Maintenance Certificate in accordance with 4VAC50-20-105 or a Conditional Operation and Maintenance Certificate for Low Hazard Potential impounding structures in accordance with 4VAC50-20-150.

B. An owner shall submit a complete and accurate registration statement in accordance with the requirements of this section prior to the issuance of coverage under the general permit. A complete registration statement shall include the following:

1. The name and address of the owner;

2. The location of the impounding structure;

3. The height of the impounding structure;

4. The volume of water impounded;

5. An Emergency Preparedness Plan prepared in accordance with 4VAC50-20-101;

6. The applicable fee for the processing of registration statements as set out in 4VAC50-20-375;

7. A dam break inundation zone map completed in accordance with 4VAC50-20-54 and evidence that such map has been filed 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; and

8. A certification from the owner that the impounding structure (i) is classified as low hazard pursuant to a determination by the department or the owner's professional engineer in accordance with § 10.1-604.1 and this chapter; (ii) is, to the best of his knowledge, properly and safely constructed and currently has no observable deficiencies; and (iii) shall be maintained and operated in accordance with the provisions of the general permit.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 29, Issue 2, eff. November 8, 2012.

4VAC50-20-103. Transitioning from regular or conditional certificates to general permit coverage for low hazard potential impounding structures. (Repealed)

A. Holders of a regular certificate to operate a low hazard potential impounding structure shall be eligible for general permit coverage upon the expiration of their regular certificate. In lieu of a regular certificate renewal, registration coverage materials pursuant to 4VAC50-20-102 shall be submitted to the department 90 days prior to the expiration of the regular certificate.

B. Holders of a conditional certificate to operate a low hazard potential impounding structure shall be eligible for general permit coverage upon satisfying the registration requirements for a general permit pursuant to 4VAC50-20-102.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Historical Notes

Derived from Virginia Register Volume 29, Issue 2, eff. November 8, 2012.

4VAC50-20-104. Maintaining general permit coverage for low hazard potential impounding structures. (Repealed)

Provided that an impounding structure's hazard potential classification does not change, an owner's coverage under the general permit shall be for a six-year term after which time the owner shall reapply for coverage by filing a new registration statement and paying the necessary fee. No inspection of the impounding structure by a licensed professional engineer shall be required if the owner certifies at the time of general permit coverage renewal that conditions at the

~~impounding structure and downstream are unchanged. If such certification is made, the owner is not required to submit an updated dam break inundation zone map.~~

~~Statutory Authority~~

~~§ 10.1-605 of the Code of Virginia.~~

~~Historical Notes~~

~~Derived from Virginia Register Volume 29, Issue 2, eff. November 8, 2012.~~

Part III
Certificate Requirements

4VAC50-20-105. Regular Operation and Maintenance Certificates for high or significant hazard potential impounding structures.

A. A Regular Operation and Maintenance Certificate is required for ~~an~~ a high or significant hazard potential impounding structure. Such six-year certificates shall include the following based on hazard classification:

1. High Hazard Potential Regular Operation and Maintenance Certificate; or

2. Significant Hazard Potential Regular Operation and Maintenance Certificate~~; or~~

~~3. Low Hazard Potential Regular Operation and Maintenance Certificate~~.

B. The owner of ~~an~~ a high or significant hazard potential impounding structure shall apply for the renewal of the six-year Regular Operation and Maintenance Certificate 90 days prior to its expiration. If a Regular Operation and Maintenance Certificate is not renewed as required, the board shall take appropriate enforcement action.

C. Any owner of ~~an~~ a high or significant hazard potential impounding structure that does not have a Regular Operation and Maintenance Certificate or any owner renewing a Regular Operation and Maintenance Certificate for a high or significant hazard potential impounding structure shall file an Operation and Maintenance Certificate Application. A form for the application is available from the department (Operation and Maintenance Certificate Application for Virginia Regulated Impounding Structures). Such application shall be signed by the owner and signed and sealed by a licensed professional engineer. The following information shall be submitted on or with the application:

1. The application shall include the following required information:

a. The name of structure and inventory number;

b. The proposed hazard potential classification;

c. Owner's name or representative if corporation, mailing address, residential and business telephone numbers, and other means of communication;

d. An operating plan and schedule including a narrative on the operation of control gates and spillways and the impoundment drain;

e. For earthen embankment impounding structures, a maintenance plan and schedule for the embankment, principal spillway, emergency spillway, low-level outlet, impoundment area, downstream channel, and staff gages;

f. For concrete impounding structures, a maintenance plan and schedule for the upstream face, downstream face, crest of dam, galleries, tunnels, abutments, spillways, gates and outlets, and staff gages;

g. An inspection schedule for operator inspection, maintenance inspection, technical safety inspection, and overtopping situations;

h. A schedule including the rainfall amounts, emergency spillway flow levels or storm event that initiates the Emergency Action ~~or Preparedness~~ Plan and the frequency of observations;

i. A statement as to whether or not the current hazard potential classification for the impounding structure is appropriate and whether or not additional work is needed to make an appropriate hazard potential designation;

j. For newly constructed or recently altered impounding structures, a certification from a licensed professional engineer who has monitored the construction or alteration of the impounding structure that, to the best of the engineer's judgment, knowledge, and belief, the impounding structure and its appurtenances were constructed or altered in conformance with the plans, specifications, drawings and other requirements approved by the board;

k. Certification by the owner's engineer that the Operation and Maintenance Certificate Application information provided pursuant to subdivision 1 of this subsection is true and correct in their professional judgment. Such certification shall include the engineer's signature, printed name, Virginia number, date, and the engineer's Virginia seal; and

l. Owner's signature certifying the Operation and Maintenance Certificate Application information provided pursuant to subdivision 1 of this subsection and that the operation and maintenance plan and schedule shall be conducted in accordance with this chapter.

2. An Inspection Report (Annual Inspection Report for Virginia Regulated Impounding Structures) in accordance with subsection E of this section;

3. An Emergency Action Plan in accordance with 4VAC50-20-175 ~~or an Emergency Preparedness Plan in accordance with 4VAC50-20-177~~ and evidence that the required copies of such plan have been submitted to the local organization for emergency management and the Virginia Department of Emergency Management;

4. Any additional analysis determined necessary by the director, the board or the owner's engineer to address public safety concerns. Such additional analysis may include, but not be limited to, seismic stability, earthen spillway integrity, adequate freeboard allowance, stability assessment of the impoundment's foundation, potential liquefaction of the

embankment, overturning or sliding of a concrete structure and other structural stress issues; and

5. If applicable, a current certification from the dam owner in accordance with 4VAC50-20-53.

D. If the Operation and Maintenance Certificate Application submittal is found to be not complete, the director shall inform the applicant within 30 days and shall explain what changes are required for an acceptable submission. Within 60 days of receipt of a complete application the board shall act upon the application. Upon finding that the impounding structure as currently operating is in compliance with this chapter, the board shall issue a Regular Operation and Maintenance Certificate. Should the board find that the impounding structure as currently operating is not in compliance with this chapter, the board may deny the permit application or issue a Conditional Operation and Maintenance Certificate in accordance with 4VAC50-20-150.

E. Inspections shall be performed on an impounding structure annually.

1. Inspection Reports (Annual Inspection Report for Virginia Regulated Impounding Structures) signed and sealed by a licensed professional engineer shall be submitted to the department in accordance with the following schedule:

a. For a High Hazard Potential impounding structure, every two years;

b. For a Significant Hazard Potential impounding structure, every three years; or

c. ~~For a Low Hazard Potential impounding structure, every six years; or~~

~~d.~~ For a High Hazard Potential impounding structure, annually in accordance with 4VAC50-20-53, where applicable.

In years when an Inspection Report signed and sealed by a licensed professional engineer is not required, an owner shall submit the Annual Inspection Report for Virginia Regulated Impounding Structures.

2. The Inspection Report shall include the following required information:

a. Project information including the name and inventory number of structure, name of the reservoir, and purpose of the reservoir;

b. City or county where the impounding structure is located;

c. Owner's name or representative if corporation, mailing address, residential and business telephone numbers, and other means of communication;

d. Owner's engineer's name, firm, professional engineer Virginia number, mailing address, and business telephone number;

e. Inspection observation of the impounding structure including the following:

(1) Earthen embankment information including any embankment alterations; erosion; settlement, misalignments or cracks; seepage and seepage flow rate and location;

(2) Upstream slope information including notes on woody vegetation removed, rodent burrows discovered, and remedial work performed;

(3) Intake structure information including notes on deterioration of concrete structures, exposure of rebar reinforcement, need to repair or replace trash rack, any problems with debris in the reservoir, and whether the drawdown valve operated;

(4) Abutment contacts including notes on seepage and seepage flow rate and location;

(5) Earthen emergency spillway including notes on obstructions to flow and plans to correct, rodent burrows discovered, and deterioration in the approach or discharge channel;

(6) Concrete emergency spillway including notes on the deterioration of the concrete, exposure of rebar reinforcement, any leakage below concrete spillway, and obstructions to flow and plans to correct;

(7) Downstream slope information including notes on woody vegetation removed, rodent burrows discovered, whether seepage drains are working, and any seepage or wet areas;

(8) Outlet pipe information including notes on any water flowing outside of discharge pipe through the impounding structure and a description of any reflection or damage to the pipe;

(9) Stilling basin information including notes on the deterioration of the concrete, exposure of rebar reinforcement, deterioration of the earthen basin slopes, repairs made, and any obstruction to flow;

(10) Gates information including notes on gate malfunctions or repairs, corrosion or damage, and whether any gates were operated and if so how often and to what extreme;

(11) Reservoir information including notes on new developments upstream of the dam, slides or erosion of lake banks, and general comments to include silt, algae, or other influence factors;

(12) Instruments information including any reading of instruments and any installation of new instruments; and

(13) General information including notes on new development in the downstream dam break inundation zone that would impact hazard classification or spillway design flood requirements, the maximum stormwater discharge or peak elevation during the previous year, whether general maintenance was performed and when, and actions that need to be completed before the next inspection.

f. Evaluation rating of the impounding structure and appurtenances (excellent, good, or poor), general comments, and recommendations;

g. Certification by the owner and date of inspection; and

h. Certification and seal by the owner's engineer and date of inspection, as applicable.

F. The owner of an impounding structure shall notify the department immediately of any change in the use of the area downstream that would impose hazard to life or property in the event of failure.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-150. Conditional operation and maintenance certificate for high or significant hazard potential impounding structures.

A. During the review of any Operation and Maintenance Certificate Application (Operation and Maintenance Certificate Application for Virginia Regulated Impounding Structures) completed in accordance with 4VAC50-20-105 should the director determine that the impounding structure has nonimminent deficiencies, the director may recommend that the board issue a Conditional Operation and Maintenance Certificate.

B. The Conditional Operation and Maintenance Certificate for High~~,~~ or Significant~~, and Low~~ Hazard Potential impounding structures shall be for a maximum term of two years. This certificate will allow the owner to continue normal operation and maintenance of the impounding structure, and shall require that the owner correct the deficiencies on a schedule approved by the board.

C. A Conditional Certificate may be extended in accordance with the procedures of 4VAC50-20-155 provided that Inspection Reports (Annual Inspection Report for Virginia Regulated Impounding Structures) are on file, and the board determines that the owner is proceeding with the necessary corrective actions.

D. Once the deficiencies are corrected, the board shall issue a Regular Operation and Maintenance Certificate based upon the impounding structure's meeting the requirements of 4VAC50-20-105.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-170. Transfer of certificates.

A. Prior to the transfer of ownership of an impounding structure the certificate holder shall notify the director in writing and the new owner shall file a transfer notification with the department. A form for the transfer notification is available from the department (Transfer of Impounding Structure Notification from Past Owner to New Owner). The new owner may elect to continue

the existing operation and maintenance certificate for the remaining term or he may apply for a new certificate in accordance with 4VAC50-20-105. If the owner elects to continue the existing certificate, he shall certify to the director that he is aware of and will comply with all of the requirements and conditions of the certificate.

B. The transfer notification shall include the following required information:

1. Project information including the name and inventory number of the structure, name of the reservoir, and impoundment hazard classification;

2. Location of the impounding structure including the city or county, number of feet or miles upstream or downstream of a highway and the highway number, name of the river or the stream, and the latitude and longitude;

3. Type of certificates and permits to be transferred including effective date and expiration date of all certificates and permits;

4. Past owner's name, mailing address, and residential and business telephone numbers;

5. New owner's name, mailing address, and residential and business telephone numbers;

6. Request to transfer certification statement signed and dated by the past owner;

7. Certification of compliance with permit or certificate with all said terms and conditions signed and dated by the new owner; and

8. Contact information updates for Emergency Action Plan ~~or Emergency Preparedness Plan~~ provided by the new owner. Such updates shall include the name, mailing address, and residential and business telephone numbers for the impounding structure owner, impounding structure operator, rainfall and staff gage observer, and alternate observer.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-177. Emergency Preparedness Plan for Low Hazard impounding structures.
Low Hazard impounding structures shall provide information for emergency preparedness to the department, the local ~~organization for~~ emergency management coordinator and the Virginia Department of Emergency Management. A form for the submission is available from the department (Emergency Preparedness Plan for Low Hazard Virginia Regulated Impounding Structures). The information shall include, but not be limited, to the following:

1. Name and location information for the impounding structure including city or county and latitude and longitude;

2. Name of owner and operator and associated contact information including residential and business telephone numbers and other means of communication;

3. Contact information for ~~relevant~~ local emergency ~~responders including the following~~management coordinator~~:~~

~~a. Local dispatch center or centers governing the impounding structure's dam break inundation zone; and~~

~~b. City or county emergency services coordinator's name or names;~~

4. Procedures for notifying downstream property owners or occupants potentially impacted by the impounding structure's failure;

5. ~~A dam break inundation zone map completed in accordance with 4VAC50-20-54 and evidence that:~~
~~a. Such map has been filed 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; and~~
~~b. Required copies of such plan have been submitted to the local organization for emergency management and the Virginia Department of Emergency Management; and~~ Identification of any downstream roadways that would be impacted by the impounding structure's failure; and

6. Certification ~~of the accuracy of the plan~~ by the owner that the plan is accurate and that the owner understands the responsibilities included in the plan.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Part IV
Procedures

4VAC50-20-200. Enforcement.

The provisions of this chapter may be enforced by the board, the director, or both in any manner consistent with the provisions of the Dam Safety Act (§ 10.1-604 et seq. of the Code of Virginia). Failure to comply with the provisions of the general permit issued in accordance with ~~4VAC50-20-103~~ 4VAC50-20-503 may result in enforcement actions, including penalties assessed in accordance with §§ 10.1-613.1 and 10.1-613.2.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Part VI
Fees

4VAC50-20-350. Fee submittal procedures.

A. Effective September 26, 2008, fees for all application submittals required pursuant to 4VAC50-20-370 through 4VAC50-20-390 are due prior to issuance of a certificate or permit.

No application for an Operation and Maintenance Certificate, ~~or~~ a Construction Permit, or a general permit will be acted upon by the board without full payment of the required fee per § 10.1-613.5 of the Code of Virginia.

B. Fees shall be paid by check, draft or postal money order payable to the Treasurer of Virginia, or submitted electronically (if available), and must be in U.S. currency, except that agencies and institutions of the Commonwealth of Virginia may submit Interagency Transfers for the amount of the fee. All fees shall be sent to the following address (or submitted electronically, if available): Virginia Department of Conservation and Recreation, Division of Finance, Accounts Payable, ~~203 Governor Street, 4th Floor~~ 600 East Main Street, 24th floor, Richmond, Virginia 23219.

C. All fee payments shall be accompanied by the following information:

1. Applicant name, address and daytime phone number.

2. The name of the impounding structure, and the impounding structure location.

3. The type of application or report submitted.

4. Whether the submittal is for a new permit or certificate issuance or permit or certificate reissuance.

5. The amount of fee submitted.

6. Impounding structure identification number, if applicable.

D. No permit fees remitted to the department shall be subject to refund except as credits provided for in 4VAC50-20-390 C.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-360. Fee exemptions.

Impounding structures owned by Virginia Soil and Water Conservation Districts shall be exempt from all fees associated with this part in accordance with § 10.1-613.5 of the Code of Virginia. There will be no fee assessed for a low hazard impounding structure exempted from fees pursuant to 4VAC50-20-51or 4VAC50-20-501 or for the decommissioning of an impounding structure.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-375. Fee for coverage under the conditional or general permit for low hazard impounding structures.

A. The fee for processing registration statements from impounding structure owners seeking to obtain coverage under the general permit for low hazard impounding structures shall be $300.

B. There will be no fee assessed for a low hazard impounding structure exempted from fees pursuant to 4VAC50-20-51 and 4VAC50-20-501 .

C. The fee for processing registration statements from impounding structure owners obtaining coverage under the conditional permit for low hazard impounding structures shall be $200.

D. The board may allow a partial credit towards the general permit fee if the owner of the impounding structure has completed, to the director's satisfaction, the conditions of the conditional permit prior to its expiration.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

4VAC50-20-380. Regular Operation and Maintenance Certificate application fees.

A. Any application for a six-year Regular Operation and Maintenance Certificate after September 26, 2008, except as otherwise exempted, shall be accompanied by a payment as determined in subsection B of this section.

B. Fees for High~~,~~ or Significant~~, or Low~~ Hazard Potential impounding structures shall be as follows:

1. $600 for High Hazard Potential.

2. $600 for Significant Hazard Potential.

~~3. $300 for Low Hazard Potential.~~

C. Fees for extension of Regular Operation and Maintenance Certificates shall be $250 per year or portion thereof.

Statutory Authority

§ 10.1-605 of the Code of Virginia.

Part VII
General permit for low hazard potential impounding structure requirements

4VAC50-20-500. Registering for coverage under the general permit.

A. Pursuant to § 10.1-605.3, the owner of a low hazard potential impounding structure shall apply for general permit coverage from the board in accordance with 4VAC50-20-501, except as provided for in 4VAC50-20-501.

B. Holders of a either a regular or conditional operation and maintenance certificate for a low hazard potential impounding structure shall be transitioned to general permit coverage upon the

expiration of their certificate. In lieu of a certificate renewal, registration coverage materials pursuant to 4VAC50-20-502 shall be submitted to the department 90 days prior to the expiration of the certificate.

Statutory Authority

§ 10.1-605.3 of the Code of Virginia.

4VAC50-20-501. Exemption from general permit requirements for certain low hazard potential impounding structures.

A. In accordance with § 10.1-605.3, should the failure of a low hazard potential impounding structure cause no expected loss of human life and no economic damage to any property except property owned by the impounding structure owner, then the owner may choose to meet the following requirements instead of the requirements specified in the general permit for low hazard impounding structures:

1. A licensed professional engineer certifies that the impounding structure is a low hazard potential impounding structure that will cause no expected loss of human life and no economic damage to any property except property owned by the impounding structure owner;

2. The owner of an impounding structure shall notify the local emergency management coordinator in the event of a failure or emergency condition at the impounding structure; however, no emergency preparedness plan prepared pursuant to 4VAC50-20-177 shall be required; and

3. The owner of an impounding structure shall perform inspections of the impounding structure annually in accordance with the requirements of 4VAC50-20-105.

B. No specific spillway design flood is required for a dam that meets the criteria established in subsection A of this section, although the recommended minimum spillway design flood is a 50-year flood.

C. Any owner of an impounding structure electing to utilize the requirements of subsection A of this section shall otherwise comply with all other requirements of this chapter applicable to low hazard impounding structures.

D.. The owner shall notify the department immediately of any change in circumstances that would cause the impounding structure to no longer qualify to utilize the provisions of this section.

E. No certificate or permit fee established in this chapter shall be applicable to the impounding structure.

Statutory Authority

§ 10.1-605.3 of the Code of Virginia.

4VAC50-20-502 General permit registration statement requirements.

A. A complete and accurate registration statement shall be filed by the dam owner in accordance with the requirements of this section prior to the issuance of coverage under the general permit.

B. A complete registration statement shall include the following:
1. The name and address of the owner;
2. The location of the impounding structure;
3. The height of the impounding structure;
4. The volume of water impounded;
5. An Emergency Preparedness Plan prepared in accordance with 4VAC50-20-177;
6. The applicable fee for the processing of registration statements as set out in 4VAC50-20-375; and
7. A certification from the owner that the impounding structure (i) is classified as low hazard pursuant to a determination by the department or the owner's professional engineer in accordance with § 10.1-604.1 and this chapter; (ii) is, to the best of his knowledge, properly and safely constructed and currently has no observable deficiencies; and (iii) shall be maintained and operated in accordance with the provisions of the general permit.

Statutory Authority

§ 10.1-605.3 of the Code of Virginia

4VAC50-20-503. General permit requirements for low hazard potential impounding structures.

Any impounding structure owner whose registration statement is approved by the board will receive the following permit and shall comply with the requirements in it.
General Permit No.: Dam Safety 1
Effective Date: (Date of Issuance of Coverage)
Expiration Date: (6 years following Date of Issuance of Coverage)
GENERAL PERMIT FOR OPERATION OF A LOW HAZARD POTENTIAL IMPOUNDING STRUCTURE
In compliance with the provisions of the Dam Safety Act and attendant regulations, owners of an impounding structure covered by this permit are authorized to operate and maintain a low hazard potential impounding structure. The owner shall be subject to the following requirements as set forth herein.

1. The spillway design of the owner's impounding structure shall be able to safely pass a 100-year flood. When appropriate, the spillway design flood requirement may be further reduced to the 50-year flood in accordance with an incremental damage analysis conducted by the owner's engineer.

2. The owner shall develop and maintain an emergency preparedness plan in accordance with 4VAC50-20-177. The owner shall update and resubmit the emergency preparedness plan immediately upon becoming aware of necessary changes to keep the plan workable.

3. The owner shall perform an annual inspection of the impounding structure. The owner shall maintain such records and make them available to the department upon request. The department also shall conduct inspections as necessary in accordance with 4VAC50-20-180.

4. The owner shall ensure that the impounding structure is properly and safely maintained and operated and shall have the following documents available for inspection upon request of the department:

a. An operating plan and schedule including narrative on the operation of control gates and spillways and the impoundment drain;

b. For earthen embankment impounding structures, a maintenance plan and schedule for the embankment, principal spillway, emergency spillway, low-level outlet, impoundment area, downstream channel, and staff gages; and

c. For concrete impounding structures, a maintenance plan and schedule for the upstream face, downstream face, crest of dam, galleries, tunnels, abutments, spillways, gates and outlets, and staff gages.

5. The owner shall not permit growth of trees and other woody vegetation and shall remove any such vegetation from the slopes and crest of embankments and the emergency spillway area, and within a distance of 25 feet from the toe of the embankment and abutments of the dam.

6. The owner shall 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. In the event of a failure or an imminent failure of the impounding structure, the owner shall immediately notify the local emergency management coordinator, the Virginia Department of Emergency Management, and the department. The department shall take actions in accordance with § 10.1-608 or § 10.1-609 of the Code of Virginia, depending on the degree of hazard and the imminence of failure caused by the unsafe condition.

7 . In order to qualify for the protections established in § 10.1-606.3, 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.

Statutory Authority

§ 10.1-605.3 of the Code of Virginia.

4VAC50-20-504 Issuance of general permit for low hazard potential impounding structures

If the general permit registration statement submittal is found to be incomplete, the director shall inform the applicant within 30 days and shall explain what changes are required for an acceptable submission. Within 60 days of receipt of a complete application the board shall act upon the application. Upon finding that the impounding structure as currently operating is in compliance with this chapter, the board shall issue a general permit for low hazard potential impounding structures. Should the board find that the impounding structure as currently operating is not in compliance with this chapter, the board may deny the permit application or issue a conditional permit for low hazard potential impounding structures in accordance with 4VAC50-20-505.

Statutory Authority

§ 10.1-605.3 of the Code of Virginia.

4VAC50-20-505 Conditional permit for low hazard impounding structures

A. During the review of any general permit for low hazard potential impounding structures completed in accordance with 4VAC50-20-502 should the director determine that the impounding structure has nonimminent deficiencies, the director may recommend that the board issue a conditional permit for low hazard potential impounding structures.

B. The conditional permit for low hazard potential impounding structures shall be for a maximum term of two years. This permit will allow the owner to continue normal operation and maintenance of the impounding structure and shall require that the owner correct the deficiencies on a schedule approved by the board.

C. A conditional permit for low hazard potential impounding structures may be extended provided that the owner submits a written request justifying an extension, the amount of time needed to comply with the requirements set out in the current conditional permit for low hazard potential impounding structures and any required fees. The owner must have demonstrated substantial and continual progress towards meeting the requirements of the conditional permit for low hazard potential impounding structures in order to receive an extension.

D. Once the deficiencies are corrected, the board shall issue a general permit for low hazard potential impounding structures upon the impounding structure’s meeting the requirements of 4VAC50-20-502.

4VAC50-20-506 Reapplying for general permit coverage for low hazard potential impounding structures

A. Provided that an impounding structure's hazard potential classification does not change, an owner's coverage under the general permit shall be for a six-year term after which time the owner shall reapply for coverage by filing a new registration statement and paying the necessary fee.

B. No less than 90 days prior to the expiration of the general permit, the owner shall submit a complete registration statement as established in 4VAC50-20-502.

B. No inspection of the impounding structure by a licensed professional engineer shall be required if the owner certifies at the time of general permit coverage renewal that conditions at the impounding structure and downstream are unchanged.

Statutory Authority

§ 10.1-605.3 of the Code of Virginia.

4VAC50-20-507 Enforcement of general permit requirements low hazard potential impounding structures

A. Failure to comply with the provisions of the general permit issued in accordance with 4VAC50-20-503 may result in enforcement actions pursued in accordance with the Dam Safety Act (§ 10.1-604 et seq.), including penalties assessed in accordance with §§ 10.1-613.1 and 10.1-613.2

Statutory Authority

§ 10.1-605.3 of the Code of Virginia.

4VAC50-20-508. Transfer of permits.

A. Prior to the transfer of ownership of a permitted impounding structure the permittee shall notify the director in writing and the new owner shall file a transfer notification with the department. A form for the transfer notification is available from the department (Transfer of Impounding Structure Notification form Past Owner to New Owner). The new owner shall amend the existing permit application as necessary and shall certify to the director that he is aware of and will comply with all of the requirements and conditions of the permit.

B. The transfer notification shall include the following required information:

1. Project information including the name and inventory number of the structure and name of the reservoir;

2. Location of the impounding structure including the city or county and the latitude and longitude;

3. Effective date and expiration date of the permit to be transferred;

4. Past owner's name, mailing address, and residential and business telephone numbers;

5. New owner's name, mailing address, and residential and business telephone numbers;

6. Request to transfer certification statement signed and dated by the past owner;

7. Certification of compliance with the permit terms and conditions signed and dated by the new owner; and

8. Contact information updates for the new owner including name, mailing address, and residential and business telephone numbers.

Statutory Authority

§ 10.1-605 of the Code of Virginia.