

## Changes to the Dam Safety Regulations 2012.

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Goal: Simplify the Regulatory Requirements for  
all vested participants.

### Four Major Changes

1. General Permits for Low Hazard Dams,
2. Roadway Policy for Low Volume Roadways.
3. Simplified Mapping for Low Hazard Dams.
4. ACER 11 Hazard Classification Procedures for all Dams



## General Permits: New Sections

### New sections:

- 4VAC50-20-101. **General permit requirements** for low hazard potential impounding structures.
- 4VAC50-20-102. **Registering for coverage** under the general permit for low hazard potential impounding structures.
- 4VAC50-20-103. **Transitioning** from regular or conditional certificates to general permit coverage for low hazard potential impounding structures.
- 4VAC50-20-104. **Maintaining** general permit coverage for low hazard potential impounding structures.
- 4VAC50-20-375. **Fee** for coverage under the general permit for low hazard impounding structures.



## General Permits: 6 Requirements.

1. The dam has a spillway design able to **safely pass a 100-year flood**.
2. owner shall develop and maintain an **emergency preparedness plan**.
3. The owner shall **perform an annual inspection** and maintain such records and make them available to the Department upon request.
4. The owner shall ensure that the impounding structure is **properly maintained and operated** and shall have operation and maintenance plans and schedules available to the department for inspection upon request.
5. The owner shall **file a dam break inundation zone map** with the Department and the locality(ies)
6. The owner shall **notify the specified authorities** in the event of a failure or imminent failure of the impounding structure.



## The eight components of a General permit submittal

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 is classified as low hazard pursuant to a determination by the department or the owner's professional engineer; (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.



## Maintaining the General Permit

- 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.
- 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**.



## Roadway Policy

- The use of an annual average daily traffic (AADT) volume of 400 vehicles or less as the number where a roadway may be considered “limited use” and processes by which such an impounding structure may qualify for low hazard potential classification.
- Exclude roadways with an annual average daily traffic volume of 400 vehicles or less from consideration as major roadways or secondary roadways that traditionally lead to hazard classifications of High or Significant respectively.



## Simplified Inundation Mapping for Low Hazard Dams

- Changes to the Regulations will primarily allow dam owners the ability to secure specified technical mapping assistance from the Department and to explain what the deliverable and administrative processes related to that assistance included.
- Simplified Mapping will include estimated “Sunny Day Failure” and “PMF Dam Break” inundation maps to be used in Emergency Preparedness Plans.



## Simplified Mapping for Low Hazard Dams

- The Regulations will clarify that the Department may complete for a dam owner a simplified dam break inundation zone map and analysis.
- Like EAPs the Emergency Preparedness Plans (EPP) shall include maps for the sunny day dam failure and a probable maximum flood with a dam failure.
- For a fee of \$2000 a dam owner can request “In house” mapping to be processed and prepared by the Department.
- Should the mapping indicate the dam is either Significant or High Hazard the owner will need to contract with a professional engineer to complete “traditional” inundation mapping.



## Hazard Classification through IDA

- This change specifies that an incremental damage analysis may be utilized as part of hazard potential classification by the owner’s engineer and may result in the lowering of an impounding structure’s proposed potential hazard classification.
- Amends the incremental damage analysis (IDA) section to establish processes by which the potential hazard potential classification of an impounding structure may be lowered based on the results of an incremental damage analysis.
- This is a significant change that could markedly reduce the costs associated with spillway design requirements due to the potential for lowering a hazard potential classification based on an IDA.



## IDA con'd

- ACER TECHNICAL MEMORANDUM NO. 11 ASSISTANT COMMISSIONER - ENGINEERING AND RESEARCH DENVER, COLORADO U.S . DEPARTMENT OF THE INTERIOR Bureau of Reclamation 1988 is the model which the Regulations reference.

Step 1 . Assume a "sunny day" failure and perform a dam-break/inundation study. If a high-hazard classification is valid for this assumption, then this dam failure scenario is sufficient . Increasing the loading conditions (that is, inflow flood) for the dam-break/inundation study would not change the hazard classification .

- Step 2 . If the hazard classification obtained from the first step is less than high , then it is necessary to increase the loading conditions ; that is, determine if a dam-break discharge combined with a large inflow flood would result in an increase in the hazard classification . This is done with the PMF.



## IDA con'd

Step 3 . Route the PMF alone (without considering the dam in place) and determine the "hazard classification" in the same manner as if done for a dam. If a hazard classification less than that obtained from the dam failure discharge plus PMF scenario is obtained, then the hazard classification obtained from the dam break plus PMF scenario is assigned to the dam.

- Step 4. If, when routing the PMF alone, the hazard classification raises above that obtained from a "sunny day" failure, then the incremental effects of a dam-break flood on the hazard classification are evaluated . To make this evaluation, the "incipient danger flood" is sized. For example, the discharge that results in a house having floodwater reaching its foundation ; or the discharge that results in a roadway just getting wet .



## IDA con'd

### Step 4 con'd.

- The incipient danger flood is combined with a dam-break flood, and the downstream hazard classification reevaluated. ACER 11 uses graphs relating both depth and velocity to determine if the combined flood plus dam break flood will cause damage to a house or severely overtop a road.



## Comments or questions?

