

Hazard Reclassification

Background

The Chief Engineer's regulations implementing the Obstructions in Streams Act define "hazard" as property or people possibly endangered by a dam failure and "hazard classification" as the categorization of the level of damage that could occur if a dam failed.

Hazard classification does not indicate the condition of the dam -- only the potential for death, major economic loss, or interruption of public utilities or services should a dam fail.

Kansas uses three hazard classifications to categorize potential loss and rates all dams in these categories:

- **Class A (low hazard):** Failure of a Class A dam may cause damage to uninhabited buildings, agricultural land, undeveloped land such as hiking trails, or traffic on low-volume roads (500 or fewer vehicles traveling by in an average 24-hour period).
- **Class B (significant hazard):** Failure of a Class B dam may endanger a few lives or cause damage to an isolated home, public utility serving a small volume of customers, traffic on a moderate-volume road (501 through 1,500 vehicle use in average 24-hour period), recreation facilities including campgrounds intermittently used for sleeping and serving a relatively small number of persons, or low-volume railroad tracks.
- **Class C (high hazard):** Failure of a Class C dam could potentially cause extensive loss of life or damage to more than one home, industrial or commercial facilities, a public utility serving a large number of customers, traffic on high-volume roads (more than 1,500 vehicle use in average 24-hour period), a frequently-used recreational facility serving a large number of persons, or a high-volume railroad line. Two or more individual Class B hazards below a dam also result in a Class C rating.

Significant and high hazard dams are required to have a safety inspection conducted by a licensed Professional Engineer. Class C dams are to be inspected every three years and Class B dams, every five years. They also are required to have Emergency Action Plans.

Reclassification

Basically, three factors can change a dam's hazard classification. The first and most common is a change in downstream hazards such as additional homes or increasing traffic on roads. Removal of hazards below a dam also can lower a hazard class, for example, from high to significant.

A missed hazard in the original determination also can change a hazard classification. Dams classified in the past may have been reviewed without a breach inundation map and therefore lack sufficient downstream analysis to properly assess the hazard classification.

The third item prompting hazard reclassification is statute or regulation changes. The primary example of this factor relates to traffic counts in areas that might be flooded if a dam fails. Earlier regulations evaluated roadways as simply primary or secondary rather than using traffic counts.

To determine hazard classification, Division of Water Resources staff engineers first conduct an office review of known hazards. This includes examination of current topographic and aerial photographs, data from the original permit process, a breach map (if there is one), traffic counts on roadways that would be inundated or affected by a breach, and other documents. Engineers may develop a simple breach inundation study to aid their evaluation.

In the field, starting at the dam, the engineer physically reviews the area downstream to determine whether any new hazards have been built or changes in known hazards have occurred. Survey information also may be collected to be correlated to breach inundation information in the office.

Upon return, an engineer uses field survey data along with breach inundation area mapping to determine the appropriate classification. If enough information is available to make a clear determination, the owner is notified of any classification change. In some situations, additional information may be needed before a determination is made. A change in hazard classification may require upgrading the dam, additional monitoring, or emergency action plan development.

Assuming the classification change is an upgrade (from a lower hazard rating to a higher one), the owner has several options to consider, including modifying the dam, increasing spillway capacity, increasing dam height, or reducing permanent storage. Dam owners also should consider contacting the owner of the hazards to discuss possible removal or relocation from the breach inundation area, or flood-proofing or breach-proofing.

Another option may be to breach the dam. Before taking any action, DWR staff should be consulted.

If a dam is upgraded because of reclassification, owners may request reconsideration of the hazard class determination under K.A.R. 5-40-26. This request should be accompanied by a proposed hazard classification and an explanation along with support documentation and analysis.

The request must be filed with the Chief Engineer at DWR within 15 days after the owner or applicant is served with written notice of the hazard reclassification or within any time extension authorized. In most cases, additional time will be allowed to complete the information required for the appeal process.

Information for this fact sheet was provided by Leonard Bristow, Division of Water Resources, Kansas Department of Agriculture, Stockton field office.

This map shows development surrounding the dam and reservoir that could be impacted during flooding.

