

Dam Safety in Alaska

Who is ultimately responsible for the safety of dams in Alaska?

Old English common law, on which our legal system is based, holds that the capture of water in itself is a hazardous activity. Therefore, whoever captures the water is generally liable for any damages caused by the capture or release of the water. In almost all cases, the dam owner is ultimately responsible for the safety of the dam. The Dam Safety and Construction Unit (DSCU) of the Department of Natural Resources is responsible for regulating dams that meet certain criteria.

What statutes and regulations cover dam safety in Alaska?

Alaska Statute 46.17 and 11 AAC 93, Article 3, Dam Safety became effective in May 1987.

What dams are regulated under the Dam Safety Program?

Any dam which meets one or more of the following criteria:

- Impounds 50 acre-feet or more and is 10 feet high;
- Is 20 feet high; or
- Would threaten lives and property if it failed.

State statutes do not apply to federally owned or operated dams or hydroelectric dams regulated by the Federal Energy Regulatory Commission.

What dam safety permits are required to construct and operate a dam in Alaska?

A *Certificate of Approval to Construct, Modify, Remove or Abandon A Dam* is required prior to new construction, major modification or repair, removal, or abandonment. A *Certificate of Approval to Operate A Dam* is required before a new or modified dam can be put into operation.

What is required to obtain certificates of approval?

To obtain a *Certificate of Approval to Construct, Modify, Remove or Abandon A Dam*, plans, specifications, engineering reports and other information prepared by a qualified Alaska registered civil engineer must be submitted for review and approval along with the appropriate application fee. Once the application is approved

and the dam is constructed, a *Certificate of Approval to Operate A Dam* is issued after review and approval of a completion report. See 11 AAC 93.171 for details.

How long does it take to obtain certificates of approval?

The department encourages the owner to involve the DSCU during the design process for the dam. When this procedure is followed, review and approval of the design documents can be completed in an expeditious manner and a permit is usually issued in less than 2 weeks after receipt of the complete application.

What determines the major engineering criteria that must be used to design the dam?

Dams are given hazard classifications based on the risk the dam creates to lives, property, and natural resources. The hazard classification is not an indication of the safety of the dam. The hazard classification determines what seismic, hydrologic, and hydraulic criteria must be used in the design. Dams are classified from Class I (highest risk) to Class III (lowest risk) based on the consequences of their failure. The larger the consequences of failure the more stringent the criteria. See 11 AAC 93.157 for details.

What general design procedures are acceptable for design of dams?

Standard design procedures such as Corps of Engineers, Bureau of Reclamation, and Soil Conservation Service are acceptable for use in designing dams. Once selected, the design procedure must be used consistently. Consult a professional civil engineer for more information.

When must a dam be inspected?

During construction, the dam owner must perform regular construction quality control inspections. During operation, the dam owner must perform routine inspections at regular intervals specified in the *Operation and Maintenance Manual* for the dam, submitted by the owner prior to receiving an operation permit. In addition, the dam owner must obtain the services of a qualified professional engineer, pre-approved by the department, to perform *Periodic Safety Inspections* using guidelines provided by the department. The

Periodic Safety Inspections must be performed every three years for Class I and II dams, and every five years for Class III dams. *Periodic Safety Inspection* reports must be submitted to the department for review and approval. Additional inspections, analyses, studies, or other information may be required by the department, based on a review of the report. See 11 AAC 93.159 for details.

Does the DSCU perform inspections?

The DSCU will observe and inspect the dam during construction and operation, at times arranged cooperatively with the owner. The DSCU will also try to coordinate site visits with the *Periodic Safety Inspections* when invited by the owner. If the owner fails to perform any of the inspections required by the certificates of approval, or if an unsafe condition exists, the DSCU will perform inspections at the owner's expense. See 11 AAC 93.161 for details.

What records must the owner of a dam maintain?

The owner of a dam must maintain a file of all records pertaining to the safety of the dam. These records include:

- Construction plans and specifications
- Engineering reports
- As-built drawings
- Completion reports
- Construction inspection reports
- Material test analyses
- Reports of routine and Periodic Safety Inspections

The department may inspect these records during the owner's regular business hours or at any time during an emergency. If denied access, the department may seek an administrative subpoena to require the owner to produce the records.

Does the DSCU offer technical assistance to dam owners?

The DSCU offers some technical assistance and guidance to dam owners, but for construction, repair, or modifications to a dam, a qualified engineer must be employed by the owner.

Is an emergency plan required for dams?

For Class I and Class II Dams, an *Emergency Action Plan* is required. This plan details the actions the owner will take in the event of a dam failure, potential dam failure, or other emergency involving the dam. The plan must have an inundation map and describe warning and

evacuation procedures for affected persons. The plan must also include coordination with the local emergency management agency and the DSCU.

What are some indicators of dam emergencies and what should I do if I see them?

After a storm, if water is flowing over the top of a dam outside of a spillway, the dam may be in danger of failure. At any time, if increased flow or cloudy or muddy water is observed from seeps, or sand boils or sink-holes are noted below the dam, there is a possibility that material is being eroded from the dam or dam foundation. If cracks appear in the dam, there has been movement in the structure, which indicates structural problems, especially after an earthquake. Notify the owner and the local emergency management agency at once and then the DSCU, if any of these conditions are observed.

What happens if there is a dam emergency?

The DSCU would monitor the situation and see that the dam owner is taking steps which insure the safety of the public and which mitigate the emergency. If the owner does not take appropriate steps to protect public safety, the state can seize control of the dam and take all steps necessary to protect the safety of the public and mitigate the emergency, including breaching the dam.

What should I do if I live below a dam?

You should check with your local emergency management agency to get information on the dam. If the dam is a Class I or Class II dam it should have an *Emergency Action Plan*. You should get information on this plan, determine if your home is at risk in the event of a dam failure, and be aware of the notification and evacuation procedures in the plan. Establish the quickest way to reach a safe place on high ground based on the flood maps, and make sure all members of your family know the way. Make sure all members of your family are aware of what to do in the event of a dam failure.

For more information on the Dam Safety Program and to submit applications for construction, modification, removal, or abandonment of dams, contact:

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