

Summary of State Laws and Regulations on Dam Safety

MAY 2020



Association of State
Dam Safety Officials

The information in this publication may not reflect the most current law in your jurisdiction. Nothing in this publication should be construed as legal advice from the Association of State Dam Safety Officials or from any state dam safety program, nor does it serve as a substitute for qualified legal counsel on any subject matter. Any reader of this document seeking such advice should retain the services of appropriate legal or other professional counsel for evaluation of the particular facts and circumstances of their situation.

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Published in Lexington, KY in 2020

By the Association of State Dam Safety Officials

Cover photo:

Mammoth Spring State Park, Arkansas

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FOREWORD

This publication is a summarization of the United States' state laws and regulations pertaining to dam safety. Although laws and regulations vary from state to state, this document categorizes the main functions of each state's policies and thus create a quick reference to specific issues.

This version is an update of the 2000 publication and includes summaries for forty-nine states and Puerto Rico. (Alabama currently has no dam safety laws or regulations, though this may change.) Each state section contains the following categories: Citations, Definitions/Dams Classifications, Jurisdiction/Powers of Department, Permit/Approval Process, Inspection Process, Emergency Action Planning, Liability, Incidents and Response, Owner Non-Compliance/Violations/Penalties, Oversight, and Miscellaneous. The Emergency Action Planning section and the Incidents and Response section were formerly categorized as a single section in prior editions, under the heading "Emergencies." In recent years, legislatures have passed measures mandating and regulating Emergency Action Plans (EAPs), and this report has been adjusted to accommodate that change. Statutes and rules regarding emergency measures outside the scope of EAPs will be detailed under the Incidents and Response section.

The appendix contains URLs for state dam safety program websites, many of which contain links to full-text versions of statutes and rules. The appendix also contains citations for each state's statutes and regulations as cited in the summary chapter.

ACKNOWLEDGEMENTS

ASDSO gratefully acknowledges the cooperation of the state dam safety officials who contributed to this work, as well as the contributions of the involved ASDSO committees and staff members. A special thank you to the ASDSO graduate student intern who did all research and writing for this document.

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INTRODUCTION

The laws and regulations governing dams in most states are extensive and complex. No information in this summary document is intended to be a substitute for specific legal advice from a qualified legal professional and should not be used as such by any entity.

All state summaries, apart from Alabama and Florida, will follow the following layout.

Citation

Each state's dam safety program is established and governed by a set of statutes passed by that state's legislature and a set of regulations promulgated by the department that administers the program. Information regarding which department or agency administers the dam safety program will be found here, as well as a citation for where to find the relevant statutes and regulations.

Definition/Dams Classification

Each state defines dams in their statutes and regulations. Definitions for some of these terms will be found in this subsection. Frequently, statutes and regulations will classify dam according to criteria other than hazard potential, including by size, design, and/or function. Where applicable, these classifications will be detailed in tables.

Hazard Potential Classification Criteria

The criteria for determining how dams are classified into hazard potential categories will be found here, summarized in a table using the language found in the statutes and regulations, if available, in order of lowest hazard potential to highest hazard potential.

Jurisdiction/Powers of Department

The dam safety program is empowered by statute to perform certain regulatory duties. Additionally, each program will have certain rules and limits on what types of dams they are able to regulate. The scope of the program, in terms of its authorities and capabilities, will be specified under "Jurisdiction/Powers of Department" along with citations to relevant sources.

Permit/Approval Process

Rules for dam permitting and approval for new dam construction and dam renovations and removals will be detailed under this subheading. Where possible, detailed design specifications required for permit application will be listed here, or a direct citation to where that information can be found will be listed.

INTRODUCTION

Inspection Process

Inspection requirements and regulations will be covered under this subheading. Inspection frequency schedules will be summarized in a table using the criteria found in the statutes and regulations, if available.

Emergency Action Planning

Requirements for emergency action plans (EAPs) including their design, approval, revision process, testing, and implementation will be detailed here. If the state requires that dam owners coordinate with state and local emergency management officials in creating an EAP, that will be noted.

Liability

Information regarding liability for dam owners or the dam safety program itself in the event of an incident will be found here. The absence of language regarding immunities for the dam safety program within the dam safety laws and regulations specifically does not always indicate the program can be held liable, as the program may be covered under a broader immunity clause for the Department or agency that is located elsewhere within the statutes.

Incidents and Response

In the event of a dam failure or dam safety related incident, or in the event of an impending incident, the emergency measures available to the dam safety program will be described here.

Owner's Non-Compliance/Violations/Penalties

If a dam owner does not comply with the statutes and regulations governing dam safety, actions the program is empowered to take against that dam owner will be detailed here. The absence of specific penalties for violations of the laws or regulations within the text of the dam safety laws and regulations does not necessarily mean an owner cannot be punished, as criminal and civil penalties for violations may be described elsewhere in the Department's or agency's rules.

Oversight

Oversight of the dam safety program or its administering agency or department will be detailed under the Oversight section. When considering what is considered oversight, powers and rights of any of the following entities will be considered:

1. A higher governing agency or department;
2. A state legal authority, such as an Inspector General;
3. An independent authority or review board;
4. Private citizens and dam owners.

Oversight may consist of investigations or reviews of decisions made by the program, rights of citizens or owners to appeal, and/or rights of citizens or owners to sue the program or pursue other such measures against the program.

Miscellaneous

Information contained within the statutes and regulations that is determined to be both relevant and not readily categorized into any other subheading will be found here, within a further subsection appropriately titled for the content of that subsection. This category may be excluded if the statutes and regulations themselves do not contain important miscellaneous content.

Common topics for miscellaneous categories include rules for the demonstration of financial responsibility, state funds for issuing dam-related grants and loans, fees for departmental services, dam signage, special rules for certain dam types such as low-head or weir dams, and cybersecurity and site security issues.

ALABAMA

Alabama has no laws or regulations governing dam safety and does not maintain a state dam safety program.

ALASKA

Citation

Laws pertaining to the Alaska Dam Safety Program are found in Alaska Statutes (AS) Title 46 Chapter 17 effective May 31, 1987 (AS 46.17). Regulations are in the Alaska Administrative Code (AAC) Chapter 93 Article 3 effective October 2, 2004 (11 AAC 93). Alaska's dam safety program is administered by the Dam Safety and Construction Unit in the Alaska Department of Natural Resources' Division of Mining, Land and Water.

Definition/Dams Classification

A *dam* is "an artificial barrier, and its appurtenant works, which may impound or divert water and which has or will have an impounding capacity at maximum water storage elevation of 50 acre-feet and is at least 10 feet in height measured from the lowest point at either the upstream or downstream toe of the dam to the crest of the dam; is at least 20 feet in height; or poses a threat to lives and property as determined by the Department after an inspection" (AS 46.17.900(3)).

Dam height is the maximum vertical distance from the natural bed of the water course at the upstream or downstream toe of the barrier, whichever yields the greater measurement, to the top of the barrier; or if the barrier is not across a watercourse, the maximum vertical distance from the lowest elevation of the outside limit of the barrier to the top of the barrier (11 AAC 93.153).

Hazard Potential Classification Criteria

Dams are classified by hazard potential according to the criteria summarized in Table AK-1 (11 AAC 93.157).

Hazard Potential Classification	Potential Danger to Life	Potential Danger to Property
Class III	Insignificant danger to public health.	Property losses or damage limited to mainly rural, undeveloped land and structures and secondary roads, or to the owner of the barrier.
Class II	Significant health hazard potential, but no loss of human life.	Probable loss of high-value property, probable damage to major highways, railroads, or other public utilities, or probable damage to or loss of important salmon spawning habitat as identified by the commissioner of the Department of Fish and Game.
Class I	Probable loss of human life.	Other losses may or may not occur (not necessary for this classification).

Jurisdiction/Powers of Department

The Department of Natural Resources supervises the safety of all dams and reservoirs (AS 46.17.020) not owned and operated by the federal government or regulated by the Federal Energy Regulatory Commission (AS 46.17.100), including mine tailings dams. The Department has the power to adopt regulations and issue orders necessary to carry out its duties (AS 46.17.030). A person may not construct, enlarge, repair, alter, remove, maintain, operate, or abandon a dam or reservoir without the approval of the Department (AS 46.17.040). The Department has the power to make inspections at least once every five years (AS 46.17.050). The Department may require the owner to pay the cost of inspection (AS 46.17.050). The Department has the authority to issue subpoenas and warrants for records and/or inspections (AS 46.17.060(a)). The Department may enter a dam or reservoir premises without notice if there is reason to believe that a dam or reservoir may be unsafe or presents an imminent threat to life or property (AS 46.17.060(b)). The Department may order the owner to take action to protect life and property if it determines the dam or reservoir is unsafe (AS 46.17.070) and may invoke judicial action to enforce the laws and regulations (AS 46.17.080). The Department may take supervisory control of the dam from the owner in emergency situations (11 AAC 93.163).

Permit/Approval Process

No person may abandon a dam, remove a dam, or begin the construction, modification, or repair (except routine maintenance) of a dam without first applying for the commissioner's permission on a form provided by the commissioner, paying the applicable fees under 11 AAC 05.010, and receiving a certificate of approval from the commissioner for the proposed action. A progressive application process outlined in regulations includes requirements for site investigation, design reports, construction documents including drawings and specifications, and financial assurance (11 AAC 93.171). Design criteria, such as hydrology and seismic parameters, are not specified in the laws and regulations, but are detailed in "Guidelines for Cooperation with the Alaska Dam Safety Program" (2005). Engineering work must be signed and sealed by a qualified engineer as defined by the regulations (11 AAC 93.193).

Inspection Process

The owner of a Class I or Class II dam shall provide for a periodic safety inspection on the dam at least once every three years. The owner of a Class III dam shall provide for a periodic safety inspection on the dam at least once every five years.

Hazard Potential Classification	Inspection Frequency
Class III	At least once every five years.
Class II	At least once every three years.
Class I	At least once every three years.

All inspections required by the regulations must be accomplished at the owner's sole expense (11 AAC 93.159). The safety inspections must be performed by a qualified engineer as defined in regulations 11 AAC 93.193. If

the commissioner determines that a condition may exist that may affect the safety of a dam or determines that the owner inspection required by 11 AAC 93.159 has been inadequate, the commissioner may inspect the dam at the owner's expense (11 AAC 93.161).

Emergency Action Planning

Emergency action plans are required for all Class I and II dams (11 AAC 93.164). The owner of a Class I or Class II dam is required to review their emergency action plan yearly, revise and submit the plan for approval every three years, and exercise the plan at a frequency determined appropriate by the Department (11 AAC 93.164). Emergency action plans for Class I dams must be consistent with Federal Guidelines for Dam Safety (FEMA 64). Emergency action plans for Class II dams may be included in operations and maintenance manuals.

Liability

The laws and regulations do not relieve the owner of a dam or reservoir of the duties or liabilities incident to the ownership or operation of the dam or reservoir (AS 46.17.120). Liability for state actions under the statutes and regulations is restricted apart from negligent orders objected to by the dam owner. A person may bring an action against the state for the recovery of damages caused by an action undertaken by a dam owner that was negligently ordered by the state over the owner's objection (AS 46.17.110).

Incidents and Response

In an emergency the commissioner will, at the commissioner's discretion, take remedial action that the commissioner determines is necessary to protect life and property from the risks posed by the dam's operation or potential failure (11 AAC 93.163). The commissioner may take supervisory control of the dam from the owner, at owner's cost, over the owner's objection if necessary, until the emergency passes (11 AAC 93.163). An incident report is required for certain incidents related to the safety of the dam (11 AAC 93.177).

The owner or operator of a dam shall report to the Department, on a form provided by the Department, each incident involving the dam. These incidents include (11 AAC 93.177):

1. Satisfactory or unsatisfactory performance during extreme loading periods caused by extraordinary seismic or hydrologic events;
2. Uncontrolled release of water due to improper operation, overtopping, seepage, or piping;
3. Indications of stress;
4. Severe deterioration or erosion;
5. Modifications or repairs.

Owner's Non-Compliance/Violations/Penalties

The Department has the authority to issue orders for remedial measures to be performed at the owner's expense (11 AAC 93.163). A person is guilty of a Class A misdemeanor if the person knowingly violates a provision of the laws or regulations (AS 46.17.150).

Oversight

A person may not bring an action against the state, the Department, or agents or employees of the state, for the recovery of damages caused by the partial or total failure of a dam or reservoir, or by the operation of a dam or reservoir, or by the operation of a dam or reservoir, or by an act or omission in connection with approval of construction, issuance of enforcement orders relating to maintenance or operation of the dam or reservoir, or control or regulation of the dam or reservoir (AS 46.17.110).

Miscellaneous

Fees

The department sets a schedule of fees for dam inspections, permit review, certificate transfer, and other administrative duties. The fees may be based upon the size of the dam, as measured by height or impoundment capacity, or by estimated cost of a project (11 AAC 05.260(c)).

Demonstration of Financial Responsibility

Any application for a permit to construct or modify a dam must be accompanied by proof of financial responsibility, including a demonstration of ability to pay costs of operation, maintenance, and breaching of the dam at the end of its service life (11 AAC 93.171(f)(2)(C)).

Any person wishing to remove or abandon a mine tailings dam must submit to the department, among other things, a performance bond or other financial assurance adequate to provide sufficient money to pay for the costs of post-closure monitoring, operation, maintenance, and inspection (11 AAC 93.172(a)(6)).

Recordkeeping

The owner of a dam shall maintain on file all records relating to the safety of the dam, including construction plans and specifications, engineering reports, completion reports and record drawings, inspection reports, material tests, operation and maintenance manuals, and any other documents and information containing data relevant to the safety of the dam. The record must be maintained for as long as the dam is in service (11 AAC 93.175).

ARIZONA

Citation

The Arizona dam safety law is contained in the Arizona Revised Statutes Title 45 – Waters, Chapter 6, Article 1 – Supervision of Dams, Reservoirs, and Projects (A.R.S 45-1201). The rules pertaining to the dam safety program are found in the Arizona Administrative Code Title 12 – Natural Resources, Chapter 15 – Department of Water Resources, Article 12 – Dam Safety Procedures (A.A.C. R12-15-1201), as well as R12-15-105. These rules and regulations were originally adopted on November 2, 1978 and substantially revised in 2000, with further revisions in 2011 and 2017.

Definition/Dams Classification

Arizona Statutes Section 45-1201 defines a *dam* as “any artificial barrier, including appurtenant works for the impounding or diversion of water, twenty-five feet or more in height or the storage capacity of which will be more than fifty acre-feet”. Excluded from this are the following:

1. Barriers less than six feet in height regardless of storage capacity,
2. Barriers with capacity less than or equal to fifteen acre-feet regardless of height,
3. Any barrier for the purpose of controlling liquid-borne material,
4. Release-contained barriers, and
5. Barriers owned, controlled, operated, maintained or managed by the United States government or its agents or instrumentalities if it is a safety program at least as stringent as the state safety program.

A *release-contained barrier* is any artificial barrier that has a storage capacity that in the event of failure would be contained within property owned by the barrier owner, and that property on which the release would be contained is not open to the public.

Dams are classified by size according to the following table (Table AZ-1) (A.A.C. R12-15-1206(A)):

TABLE AZ-1		
Size Classification	Storage Capacity (acre-feet)	Height (feet)
Small	50 to 1,000.	25 to 40.
Intermediate	Greater than 1,000 and not exceeding 50,000.	Higher than 40 and not exceeding 100.
Large	Greater than 50,000.	Higher than 100.

Hazard Potential Classification Criteria

The four hazard potential classifications are Very Low, Low, Significant, and High. The Department considers all of the following factors in classification: probable loss of human life, economic and lifeline losses, and intangible losses identified and evaluated by a public resource management or protection agency (A.A.C. R12-15-1206(B.1)). The Director shall classify intangible losses by considering the common or unique nature of features or habitats and temporary or permanent nature of changes (A.A.C. R12-15-1206(B.2)). The following table (Table AZ-2) describes the classifications.

Hazard Potential Classification	Probable Loss of Human Life	Probable Economic, Lifeline, and Intangible Losses
Very low hazard potential	None expected.	Economic and lifeline losses limited to owner's property or 100-year flood-plain. Very low intangible losses identified.
Low hazard potential	None expected.	Low.
Significant hazard potential	None expected.	Low to high.
High hazard potential	Probable – one or more expected.	Low to high (not necessary for this classification).

Jurisdiction/Powers of Department

All dams of the state, public utilities, or within the state are subject to the jurisdiction of the director of water resources. The director is responsible for the approval process for dam permitting and exemptions. The director is directed by law to supervise the operation and maintenance of all jurisdictional dams to safeguard life and property (A.R.S. 45-1202).

The law gives the director the right and responsibility to conduct investigations and assemble data to make a proper review of the design and construction process and may enter private property for such purposes. The director is authorized to take any legal action necessary to enforce these statutory provisions (A.R.S. 45-1202).

The director may also issue a notice of noncompliance to prescribed provisions of approval to the owner or construction contractor and can order immediate compliance or work stoppage until compliance has been effected and approved by the director (A.A.C. R12-15-1223). The director may enter at reasonable times upon private or public property where a dam is located to enforce the conditions of approval, to inspect a dam, or to investigate or assemble data to aid review and study of a dam (A.A.C. R12-15-1219(F)).

Permit/Approval Process

Construction or enlargement of a dam cannot begin until written approval of plans and specifications has been received from the director. Applications for dam construction or enlargement must be filed using forms provided by the director and must include the following items:

1. Name and address of the owner or agent;
2. Location, type, size, and height of the dam and appurtenant works;
3. Storage capacity of the reservoir, area of the drainage basin, rainfall, stream flow, and flood flow records and estimates;
4. Subsoil and foundation conditions;
5. Time of beginning and completion of construction, cost of construction, other construction details; and
6. Any additional requests by the director.

The director may waive any of the above application requirements. (A.R.S. 45-1203).

Arizona law cites other specific elements of the design, application, and approval process. A.A.C. R12-15-1207 describes this process in detail, including all required elements of an application and the calculation of fees. A.A.C. R12-15-1215 details requirements for the plans and specifications for construction and alteration. A.A.C. R12-15-1216 details design requirements for varying hazard potential classification levels. All plans and specifications accompanying an application for approval must be prepared by or under the direction of a professional engineer registered under Arizona law.

The director must inspect the dam upon completion of construction. Upon passing, approval is made, and license is issued for use (A.A.C. R12-15-1214). The approval plan may be revised if after inspecting the work the director believes amendments, modifications, or changes are necessary.

The application must be approved within 10 days of receipt and cannot be retained for more than 60 days unless more information is needed. Construction must commence within one year of approval and the director must be notified at least 10 days before construction begins. Time frame rules provide limits of 120 days for administrative review and 60 days for substantive review.

Inspection Process

A.A.C. R12-15-1219 requires the director to conduct regular dam safety inspections at a frequency determined by the dam's hazard potential classification level (see Table AZ-3). The director is further required to inspect a dam after construction, repair, remodeling, alteration, during operation and maintenance, and upon filing of a legitimate complaint concerning the safety of the dam. The rules specify the components of a dam safety inspection in A.A.C. R12-15-1219(C).

Hazard Potential Classification	Inspection Frequency
Very low or low hazard potential	At least once every five years.
Significant hazard potential	At least once every three years.
High hazard potential	At least once every year.

The owner is responsible for paying the inspection fee determined by the Department. The owner has the right to conduct an independent inspection at their own expense, providing it complies with all listed requirements in the relevant statutes and regulations, and provide the safety inspection report to the Department. This report must meet the requirements of subsections (B), (C), and (D) of A.A.C. R12-15-1219. The report must detail the qualifications of the inspecting engineer 14 days prior to the scheduled inspection. The director may refuse to accept any inspection that does not conform to the regulations. Inspections by the owner are still subject to the fees required by A.A.C. R12-15-1205(D).

Emergency Action Planning

Each owner of a high or significant hazard potential dam is required to prepare, maintain, and exercise a written emergency action plan for immediate defensive action to prevent the failure of the dam (A.A.C. R12-15-1221). The emergency action plan must include each of the following:

1. Notification chart with priority for notification, including local emergency response agencies, affected downstream populations, county emergency management agencies, and affected flood control districts;
2. Description of the demand reservoir and scope of the EAP;
3. Delineation of criteria under which to implement EAP procedures;
4. Delineation of areas of responsibility for all individuals;
5. Notification procedures for all possible emergency situations;
6. Description of emergency supplies, equipment, and site access;
7. Inundation maps.

The dam owner must submit the draft EAP to the Arizona Division of Emergency Management and local emergency coordinators and include recommendations by those bodies in the revision process before submitting the revised proposal to the Department. The plan must be reviewed and updated at least annually (A.A.C. R12-15-1221(D)).

Liability

Section 45-1215 of the Arizona Revised Statutes states that no action shall be brought or maintained against the state, or any of its departments, agencies, or officials thereof, or any of their employees or agents, for damages sustained through the partial failure of a dam or its maintenance by reason of control and regulation thereof by any of them pursuant to duties imposed upon them under the provisions of that chapter.

Incidents and Response

A dam owner is required to notify the Department and local authorities of any condition that may threaten the dam and to take all necessary actions to protect human life and property. Arizona regulations A.A.C. R12-15-1224(1.a) through A.A.C. R12-15-1224(1.l) detail the emergency conditions that require notification.

ARIZONA

The director is empowered to authorize emergency repairs or removals if the director finds that immediate action is needed to alleviate threat to life or property. The director can authorize the spending of monies from the state's dam repair fund established in A.R.S. 45-1212.1 and levy a lien against the dam owner for the recovery of those funds to the dam repair fund pursuant to A.R.S. 45-1212.

Owner's Non-Compliance/Violations/Penalties

Arizona law defines a violation as failure to follow the law concerning construction, repair, enlargement, alteration, or removal of a dam or failure to carry out an order of the director. The violator is guilty of a class 2 misdemeanor for each day the violation continues (A.R.S. 45-1216).

If the director feels a violation has taken place, the director must give the owner written notice to appear at a hearing before the Department to show cause why the owner should not be penalized or be directed to cease and desist work. The director is then responsible for all decisions based on the hearing. If the violation continues, the director may retain a temporary restraining order or a permanent injunction from the state superior court.

The law states that a person determined to violate the law may be assessed a penalty not to exceed \$1,000 per day of the violation. These monies go to the state general fund. A judge may stay the decision of the director upon appeal on a showing of good cause.

Oversight

A.R.S. 45-1210 and A.R.S. 45-1211 provide the right for a petition for review to be filed by an owner with a board of review for any approval, disapproval, or order by the director concerning a dam. The petition must be filed within 10 days of the contested order's issuance, and upon receipt of the petition the director will prepare a list of 10 qualified experts. The petitioner must select three from this list, who will serve at the expense of the petitioners. No board of review shall be appointed to consider any action taken by the director regarding emergency regulation or control of a dam.

Miscellaneous

Fees

The dam safety rules set a robust schedule of fees in A.A.C. R12-15, Article 1 – Fees. Fees apply to applications and filings, dam safety inspections, reviews of inspection reports, and other administrative activities (A.A.C. R12-15-101 – R12-15-152).

Demonstration of Financial Responsibility

No application for construction, repair, modification, or removal is complete without inclusion of a long-term budget plan and evidence that demonstrates financial responsibility on the part of the applicant to construct,

operate, and maintain the dam in a safe manner (A.A.C. R12-15-1208(A.10)). If the applicant does not have information to that effect that can be independently verified, the director may require a surety company bond as demonstration of financial responsibility, in an amount sufficient to secure the costs in assuring the safety of any dam left partially constructed (A.R.S. 45-1203.F).

Unsafe Dam Repair Fund

The law also establishes funds to help finance the repair of unsafe dams in the form of the dam repair fund, non-emergency dam repair loans, and dam repair grants.

The dam repair fund is made up of monies appropriated by the legislature and monies collected from a lien as described under A.R.S. 45.1212 (see subsection Incidents and Response of this chapter) and is used for emergency remedial work. The dam repair fund also includes appropriate funds, inspection fees, filing fees, and principal and interest collected from dam repair loans. This money can be used for loans and grants as described below. Monies in these funds are exempt from A.R.S. 35-190 (Fiscal Procedures, Controls and Reports of the Public Finances Title) relating to lapsing of appropriations.

Non-emergency dam repair loans let the director grant loans to dam owners to defray the costs of repair which are necessary for safety reasons but not emergencies. Loans are for terms of not more than 2- years. The law goes on to prescribe interest rates, contractual arrangements, fund maintenance procedures, and defaulting procedures (A.R.S. 45-1218).

Dam repair grants may be offered for the same purposes as above and may be in addition to the loans (A.R.S. 45-1219).

ARKANSAS

Citation

The content of this section has not been reviewed by the Arkansas dam safety program and may contain inaccuracies or outdated content. Please contact the Arkansas state dam safety program directly to verify the content of this chapter.

Laws pertaining to the Arkansas dam safety program are found in the Arkansas Code Annotated Section 15-22-201 through 15-22-222 (ACA §§ 15-22-201 – 15-22-222). Regulations are found in Title VII of the Arkansas Natural Resources Commission regulations (Rules Governing Design and Operation of Dams), which was adopted in October of 1993. The Arkansas dam safety program is administered by the Water Management Division of the Arkansas Natural Resources Commission (known prior to 2005 as the Arkansas Soil and Water Conservation Commission).

Definition/Dams Classification

A *dam* is defined as "[any] barrier, including one for flood detention, designed to impound liquid volumes. This shall not include highway, railroad or other roadway embankments, including low water crossings that may temporarily detain floodwater, levees designed to prevent inundation by floodwater, or closed dikes to temporarily impound liquids in the event of emergencies and those barriers not exempt by Sections 701.3 or 701.4 of this title" (Title VII, Subtitle XII.E). Exempt structures include dams with height less than 235 feet, dams with normal storage less than 50 acre-feet, and dams with crest elevations below the ordinary high-water mark of the stream at that location (Title VII § 701.4).

Dams are classified by size according to the following table in Title VII § 705.3 (Table AR-1):

Size Classification	Maximum Storage (acre-feet)	Height (feet)
Small	50 to 1,000.	24 to 40.
Intermediate	Greater than or equal to 1,000 and less than 50,000.	Above or equal to 40 and below 100.
Large	Greater than or equal to 50,000.	Above or equal to 100.

Hazard potential classification criteria

Title VII § 705.4 of the rules give the criteria for hazard potential classifications based on potential loss of human life or economic loss in accordance with Table 2 of the rules (Table AR-2 in this publication). When a dam fits multiple possible classification criteria, the more stringent or hazardous potential category must be

selected. There are three hazard potential classification categories: low (indicating no loss of life and minimal economic loss), significant (indicating loss of life unlikely but notable economic loss), and high (indicating loss of life is expected and/or excessive economic loss).

TABLE AR-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	No.	Minimal. No significant structures; pastures, woodland, or largely undeveloped land. Less than \$100,000 in losses.
Significant hazard potential	No.	Appreciable. Significant structures, industrial, or commercial development, or cropland. \$100,000 to \$500,000 in losses.
High hazard potential	Yes.	Excessive. Extensive public, Industrial, commercial, or agricultural development. Over \$500,000 in losses.
Note: Loss of human life is based upon presence of habitable structures.		

Jurisdiction/Powers of Department

The Arkansas Code affords the Arkansas Natural Resources Commission (ANRC) the authority to enforce its regulations and orders through any of the following means:

1. Revocation of any permit or suspension from any program administered by the Commission;
2. Suit for injunction, damages, or both;
3. Levy civil penalties not to exceed \$10,000. (ACA § 15-22-204).

The ANRC is further empowered to:

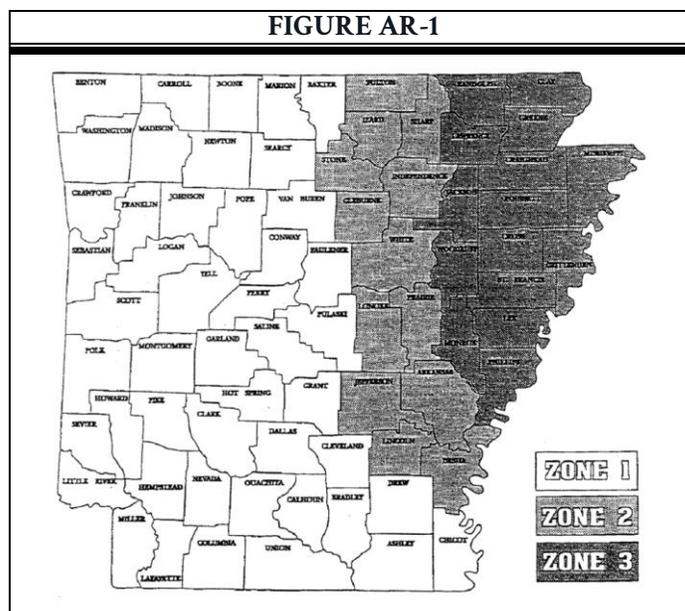
1. Promulgate rules, regulations, and orders as needed to perform its duties (ACA § 15-22-205);
2. Require a permit for construction and operation of all dams which exceed 25 feet in height and impound at least 50 acre-feet of water except those owned by the United States government (Title VII § 701.3);
3. Require, upon appeal by a downstream riparian, a permit for dams of any size whose failure would endanger lives or property (Title VII § 701.5);
4. Enter property at any time to inspect the dam or site before, during, or after construction (ACA § 15-22-210(2)(A));
5. Direct the owner to make repairs, or If the owner fails to in a timely manner, remove the dam or perform necessary repairs to protect safety of dams, with the costs of such work being a lien against the property (ACA § 15-22-210(2));
6. Issue subpoenas for any witness to require their attendance and testimony before the commission, and to require the production of any records determined to be material to the question before the commission (ACA § 15-22-208).

ARKANSAS

Permit/Approval Process

A permit is required to construct or own any dam or impoundment (ACA § 15-22-210). A permit will only be granted to a dam that is constructed and operated in such a way as to prevent any environmental degradation or loss of rights for lower riparian owners and dependents (ACA § 15-22-210(1)).

Preparation of all plans and specifications, and the construction, enlargement, alteration, repair, or removal of any dams subject to commission review shall be under the supervision of an engineer registered in Arkansas (Title VII § 705.2) A permit for construction is required prior to construction of any dam not exempted from commission authority (Title VII § 702.1). For any dam rated as a high or significant hazard potential and located within seismic zones 2 and 3 according to Figure AR-1, the design of the dam must address stability against seismic forces in order to be considered for permitting approval.



An operation permit is required before water is deliberately impounded. Operation permits are issued by the Chief Engineer after completion of final inspection, and receipt of a Certificate of Substantial Compliance by the owner's engineer (Title VII § 702.2). Preliminary plans and hydrologic information must be submitted with the application for permit (see Title VII § 705.5, Table 3 for hydrological criteria for dams). Final plans and specifications must be approved, in writing, by the Chief Engineer prior to the start of construction. (Title VII § 706.1) Before approval or denial of a permit, the commission shall publish a notice describing the proposed dam in local newspapers and shall conduct a public hearing if requested by citizens (Title VII § 702.7 and 702.8, and ACA § 15-22-206).

Inspection Process

At least once per year and after each major storm event, the owner (or owner's agent) of a permitted dam must perform a visual inspection of the dam. The results of the inspection must be summarized on forms supplied by the ANRC and mailed to the Commission office within 10 days of the inspection (Title VII § 709.1).

The Commission will periodically perform maintenance and operation inspections, structural evaluations, and spillway design flood evaluations of permitted dams (Title VII § 709.2). The owner of a dam is required to provide access to Commission personnel and assist Commission personnel when requested (Title VII § 709.3, 709.4).

If an inspection by an owner or by the Commission indicates a dam requires repair or remedial work, such work is the responsibility of the owner. If the Commission determines the owner has failed to appropriately perform required repairs in a timely manner, the Commission will perform the necessary work or remove the dam, and the costs will be a lien against the property (ACA § 15-22-210).

Emergency Action Planning

An emergency action plan (EAP) is required for all permitted high hazard potential dams (Title VII § 710.1). The Commission will provide guidelines for preparation of EAPs, the exact contents of which will vary given site conditions (Title VII § 710.3). All EAPs must receive written approval from the Chief Engineer (Title VII § 710.2). At least once per year, an EAP tabletop exercise must be held, and at least once every three years, a test drill must be held. The Commission's Chief Engineer must be notified at least one week in advance of either procedure (Title VII § 710.4).

Liability

Owners' legal duties, obligations, and liabilities incident to ownership are not reduced by Commission rules. (Title VII § 701.6) No action shall be brought against the states or the Commission or its employees or agents for the recovery of damages caused by the partial or total failure of any dam or reservoir or through the operation of any dam or reservoir upon the grounds that the defendant is liable by virtue of any of the following (Title VII § 701.7 and ACA § 15-22-210[2]):

1. The approval of the dam or reservoir or approval of flood-handling plans during construction;
2. The issuance or enforcement of orders relative to maintenance and operation;
3. Control and regulation of the dam or reservoir;
4. Measures taken to protect against failure during an emergency.

ARKANSAS

Incidents and Response

Upon discovery of any condition which renders a dam subject to rapid failure, the Commission may issue an emergency remedial order describing actions which must be taken to protect life and property. Failure to comply with such orders may result in penalties (Title VII § 704.5).

Owner's Non-Compliance/Violations/Penalties

Any violation of Arkansas law or commission orders regarding dam safety will result in civil penalties of up to \$10,000 per day or per violation, and/or criminal penalties including fines of up to \$10,000 per day or per violation and/or imprisonment for up to six months. Other remedies available to the commission include revocation of any permit or suspension from any program administered by the commission, suit for injunction or damages, or both (ACA § 15-22-204). Financial penalties levied by the Commission will, in general, be set by doubling the costs incurred by the Commission, up to \$10,000 (Title VII § 704.4).

Oversight

Any person affected by a rule, regulation, or order by the commission may obtain review of such actions pursuant to the Arkansas Administrative Procedures Act. (ACA § 15-22-209).

Miscellaneous

Water Rights for Impounded Reservoirs

Any person constructing a dam under permit has the exclusive right to use water from the reservoir created, subject to the obligation to discharge such an amount of water as to preserve downstream environmental Integrity as provided by the permit, and shall have the right to exclude all persons from the water impounded by the dam (ACA § 15-22-218).

Erosion Protection and Overgrowth Restrictions

Growth of woody vegetation is not permitted on the spillway, crest, upstream or downstream embankment, and within 20 feet of the downstream toe or groin of any embankment dam (Title VII § 708.3). Growth of grass, vines, brush, trees or other vegetation is not permitted to grow in cracks or joint of concrete or masonry structures (Title VII § 708.4).

CALIFORNIA

Citation

Laws pertaining to the California dam safety program were originally adopted in 1929 and are amended in the California Water Code Division 3, Section 6000-6612 (Cal. Wat. Code §§ 6000-6612). Laws pertaining to Emergency Action Plans (EAPs) are in the California Government Code Title 2, Division 1, Chapter 7, Section 8589.5 (Cal. Gov. Code § 8589.5). Regulations for dams generally are in California Code of Regulations (CCR) Title 23, Division 2, Chapter 1 (23 CCR § 301). Regulations pertaining to mine tailings dams are found in Article 1, Subchapter 1, Chapter 7 of Title 27, California Code of Regulation (27 CCR § 22470). The California dam safety program is administered by the Division of Safety of Dams, a division of the California Department of Water Resources. Mine tailings dams are regulated by the Division of Mine Reclamation in the California Department of Conservation.

Definition/Dams Classification

A *dam* is defined as any artificial barrier, together with appurtenant works, which does or may impound or divert water, and which either is or will be (a) 25 feet or more in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the Department, or from the lowest elevation of the outside limit of the barrier, as determined by the Department, if it is not across a stream channel or watercourse, to the maximum possible water storage elevation or (b) has or will have an impounding capacity of 50 acre-feet or more (Cal. Wat. Code § 6002).

A *small dam* is defined as any dam less than 25 feet in height with a reservoir storage less than 2,000 acre-feet (23 CCR § 322). Small dams are subject to the jurisdiction of the Small Dam Review Board (23 CCR § 321).

A *critical appurtenant structure* means a water surface barrier or hydraulic control structure that is 25 feet or more in height, that impounds 5,000 acre-feet of water or more, or that the Department determines poses a significant downstream hazard potential (Cal. Wat. Code § 6002.5). The number of critical appurtenant structures a dam has is also used in the determination of a dam's annual fee (23 CCR § 315).

Dams managed or owned by the United States government are excluded from California's regulations.

Hazard Potential Classification Criteria

The Department classifies the downstream hazard potential of all state jurisdictional dams based on a sunny-day loading condition as indicated by the standards in Table CA-1, in accordance with 23 CCR § 335.4(a).

CALIFORNIA

Hazard Potential Classification	Loss of Human Life	Additional Loss
Low hazard potential	No probable loss of human life.	Low economic and environmental losses. Losses are expected to be principally limited to the owner's property.
Significant hazard potential	No probable loss of human life.	Can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts.
High hazard potential	Expected to cause loss of at least one human life.	N/A.
Extremely high hazard potential	Expected to cause loss of at least one human life.	May result in an inundation area with a population of 1,000 persons or more, or in the inundation of facilities or infrastructure, the inundation of which poses a significant threat to public safety as determined by the Department on a case-by-case basis.

A dam owner may request a re-evaluation of hazard potential classification by submitting a written request including a justification letter and supporting documentation explaining why the classification is not applicable and warrants review. The Department will complete the re-evaluation and notify the dam owner within 60 days of receiving a complete request (23 CCR § 335.4(b)).

Jurisdiction/Powers of Department

Any barrier which is below six feet in height or which has a storage capacity of less than 15 acre-feet is not considered a dam (Cal. Wat. Code § 6003).

The Department of Water Resources is provided with authority over all state jurisdictional dams and reservoirs (Cal. Wat. Code § 6076); this authority has been delegated to the Division of Safety of Dams. The Department, under the police power of the state, is authorized to supervise the construction, enlargement, alteration, repair, maintenance, operation, and removal of dams and reservoirs for the protection of life and property (Cal. Wat. Code § 6075). The Department is authorized to enter upon private property as necessary to perform investigations and inspections (Cal. Wat. Code § 6080). The Department may commence an action or proceeding by mandamus or injunction to stop or prevent violations or threatened violations of the dam safety laws or regulations (Cal. Wat. Code § 6150).

Permit/Approval Process

Construction or enlargement of any dam or reservoir cannot begin until the owner has applied for and obtained written approval of plans and specifications from the Department (Cal. Wat. Code § 6200). Among other information detailed in Cal. Wat. Code § 6202-6206, applications for approval must contain the following:

1. Name and address of the owner;
2. Location, type, size, and height of the proposed dam and appurtenant works;
3. Storage capacity of the reservoir;
4. Purpose for which the impounded or diverted water is to be used;
5. Plans and specifications providing pertinent details and dimensions;
6. Any other information deemed by the Department to be necessary.

Repair, alteration, or removal of any dam cannot begin until the owner has applied for and obtained written approval of plans and specifications from the Department, unless excepted by certain criteria (Cal. Wat. Code § 6225). Among other information detailed in Cal. Wat. Code § 6226-6228, the application must contain the following:

1. Name and address of the applicant;
2. Changes/work proposed;
3. Plans and specifications providing pertinent details and dimensions;
4. Proposed timeline of commencement and completion of construction;
5. Any other information deemed by the Department to be necessary.

In case of emergency remedial work necessary to safeguard life and property, repairs may begin immediately but the Department must be notified at once of proposed repairs and work underway (Cal. Wat. Code § 6229).

An owner of a state jurisdictional dam, except an owner of a dam classified as a low hazard dam, is required to submit an inundation map that shows the area that would be subject to flooding under various failure scenarios unique to the dam and the critical appurtenant structures of the dam (Cal. Wat. Code § 6161).

No application may be approved within 10 days of receipt by the Department, but all complete applications shall be approved or disapproved as soon as practicable (Cal. Wat. Code § 6263). Actual construction shall be commenced within one year after date of approval, unless the dam owner receives written approval from the Department to extend the time for commencing construction, otherwise the approval becomes void (Cal. Wat. Code § 6265-6266; 23 CCR § 312(a)(1)). Notice that construction has commenced must be given to the Department at least 10 days prior to the start of construction work (Cal. Wat. Code § 6267).

Immediately upon completion of a new dam or reservoir or enlargement of a dam or reservoir the owner shall give a notice of completion to the Department and as soon thereafter as possible shall file with the Department supplementary drawings or descriptive matter showing or describing the dam or reservoir as actually constructed (Cal. Wat. Code § 6350). A certificate of approval shall be issued upon a finding that the dam or reservoir is safe to impound water within the limitations prescribed in the certificate. Upon written request by an owner for a certificate of approval, the Department shall issue the certificate if it finds that the dam or reservoir is safe to impound water within the limitations prescribed in the certificate. Pending issuance of a certificate of approval by the Department, the owner of the dam or reservoir shall not, through action or inaction, cause the dam or reservoir to impound water (Cal. Wat. Code § 6355).

Inspection Process

All dams in California are subject to inspection by the Department to verify the safety of the structure according to the following schedule (Table CA-2). An inspection is to include, but is not limited to, visual inspection of major features of the dam, including its groins, abutments, and toe areas, the dam’s spillway, and the dam’s outlet works. The inspection shall also evaluate seepage and instrumentation and include a review of available geological data and existing geological conditions.

Hazard Potential Classification	Inspection Frequency
Low hazard potential	Once every two fiscal years.
Significant hazard potential	Once every fiscal year.
High hazard potential	Once every fiscal year.
Extremely high hazard potential	Once every fiscal year.

Dam owners are required to perform, at their own expense, such work as necessary to disclose information sufficient to enable the Department to determine conditions of dams, reservoirs, and critical appurtenant structures regarding their safety and to perform, at the owner’s expense, other work necessary to secure maintenance and operation that will safeguard life and property. Additionally, the dam owner must operate critical outlet and spillway control features on an annual basis and demonstrate operability in the presence of the Department every three years or as directed by the Department (Cal. Wat. Code § 6102 and 6102.5).

Emergency Action Planning

An owner of a dam that is regulated by the state is responsible for emergency preparedness with regard to the potential for loss of life and property resulting from the failure of a dam (Cal. Wat. Code § 6160). An owner of a state jurisdictional dam, except an owner of a dam classified by the Department as a low hazard dam, shall submit electronically to the Department an inundation map that shows the area that would be subject to flooding under various failure scenarios unique to the dam and the critical appurtenant structures of the dam. Upon approval of the inundation map or maps by the Department and the Office of Emergency Services, the owner of the dam shall develop and submit electronically to the Department and the Office of Emergency Services an emergency action plan (EAP) that is based upon the approved inundation map or maps (Cal. Wat. Code § 6161).

A certificate of approval to store water shall not be issued for a new or enlarged dam until the owner has submitted an EAP pursuant to Cal. Gov. Code § 8589.5 (23 CCR § 335.18).

An emergency action plan shall, among other requirements, adhere to the guidelines set in the Federal Emergency Management Agency (FEMA) publication “Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners” (FEMA 64), and include at a minimum (Cal. Gov. Code § 8589.5(b)):

1. Notification flowcharts and contact information;
2. Response process;
3. Roles and responsibilities of the dam owner and impacted jurisdictions following a dam incident;
4. Preparedness activities and exercise schedules;
5. Inundation maps approved by the Department of Water Resources pursuant to Cal. Wat. Code § 6161;
6. Any additional information that may impact life or property.

The owner of a dam shall conduct an emergency action plan notification exercise with local public safety agencies at least once annually (Cal. Gov. Code § 8589.5(c)).

An owner of a dam who fails to comply with a Department order to prepare an acceptable emergency action plan shall pay the cost and expense incurred by the Department to prepare the emergency action plan. The Department's cost and expense shall be recoverable by the state from the owner (Cal. Wat. Code § 6431).

Liability

No action shall be brought against the state or the department or its agents or employees for the recovery of damages caused by the partial or total failure of any dam or reservoir or through the operation of any dam or reservoir upon the ground that such defendant is liable by virtue of any of the following: the approval, issuance of enforcement orders relative to maintenance or operation, control and regulation of the dam or reservoir, or measures taken to protect against failure during an emergency (Cal. Wat. Code § 6028).

The owner or operator of a dam or reservoir is the sole bearer of responsibility for the legal duties, obligations, or liabilities incident to the ownership or operation of the dam or reservoir (Cal. Wat. Code § 6029).

Incidents and Response

The Department is required to immediately employ any remedial means necessary to protect life and property if either: a) the condition of any dam or reservoir is so dangerous to the safety of life or property as not to permit time for the issuance and enforcement of an order relative to maintenance or operation; b) or passing or imminent floods threaten the safety of any dam or reservoir (Cal. Wat. Code § 6110). In applying the remedial means, the Department may in emergency do any of the following (Cal. Wat. Code § 6111-6112):

1. Lower the water level by releasing water from the reservoir;
2. Completely empty the reservoir;
3. Maintain full control of the dam or reservoir or both until rendered safe;
4. Any other steps as necessary to safeguard life and property.

Cost and expenses of the remedial means, including cost of any work done to render a dam or reservoir or its appurtenances safe, are to be recoverable from the owner by action brought by the Department in the superior court of the county wherein the dam or reservoir or any part thereof is situated (Cal. Wat. Code § 6113).

Upon receipt of a written complaint alleging unsafe conditions at a dam due to construction, maintenance, or operation the Department shall inspect the dam, at the expense of the complainant (Cal. Wat. Code § 6390-6393). The California Water Code, Article 5 (Sections 6390 through 6393) details how to file a complaint regarding dam safety conditions with the Department.

Owner's Non-Compliance/Violations/Penalties

Every person who violates any of the provisions of the Department is guilty of a misdemeanor punishable by a fine of not more than \$2,000 or by imprisonment in county jail not exceeding six months, or both. Each day the violation continues constitutes a separate and distinct offense (Cal. Wat. Code § 6425).

Any person who willfully obstructs, hinders, or prevents the Department or its agents or employees from performing the duties imposed by this part or who willfully resists the exercise of the control and supervision conferred by this part upon the Department or its agents or employees is guilty of a misdemeanor and punishable as provided in this article (Cal. Wat. Code § 6426).

Any owner or any person acting as a director, officer, agent, or employee of an owner, or any contractor or agent or employee of a contractor who engages in the construction, enlargement, repair, alteration, maintenance, or removal of any dam or reservoir, who knowingly does work or permits work to be executed on the dam or reservoir without an approval or in violation of or contrary to any approval as provided for in this part, or any inspector, agent, or employee of the Department who has knowledge of such work being done and who fails to immediately notify the Department thereof is guilty of a misdemeanor and punishable as provided in this article (Cal. Wat. Code § 6427).

The Department may impose reservoir restrictions and levy property liens on an owner who fails to comply with any approval, order, rule, regulation, or requirement of the Department (Cal. Wat. Code § 6429).

In addition to any penalties imposed by any other law, the department may impose a civil penalty of up to one thousand dollars (\$1,000) per day upon any owner of a dam who fails to comply with any approval, order, rule, regulation, or requirement of the Department (Cal. Wat. Code § 6432).

Oversight

No part of the code shall be construed to deprive any owner of such recourse to the courts as they may be entitled to under the laws of the State of California (Cal. Wat. Code § 6031).

The California Code of Regulations, Article 5 (Sections 330 through 333) provides for an independent consulting board, which is empowered to conduct independent reviews of dams and reservoirs and conducts a review every five years of the operational performance of department-owned dams.

The California Water Code, Article 5 (Sections 6390 through 6393) details how to file a complaint regarding dam safety conditions with the Department.

Miscellaneous

Fees

The Department may adopt a schedule of fees to cover regulatory costs, which may be adjusted for cost-of-living increases and be based, in part, on the height of the dam on a per foot basis (Cal. Wat. Code § 6307(a)). Fees shall be the responsibility of the dam or reservoir owner (Cal. Wat. Code § 6309). Formulas for determining various administrative fees and annual fees can be found in 23 CCR § 315.

The application for a new dam or reservoir or enlargement shall set for the estimated cost and shall be accompanied by a filing fee based upon that cost according to the schedule set out in Table CA-2 (23 CCR § 314; Cal. Wat. Code § 6300).

TABLE CA-3	
Estimated Cost	Fee (Percent of Estimated Cost)
First \$300,000	3%
Next \$700,000	2%
Next \$1,000,000	1.5%
Next \$1,000,000	1.25%
Next \$2,000,000	1%
Next \$2,000,000	0.75%
Over \$7,000,000	0.50%
Note: The minimum fee is set at \$300.	

In the event that actual costs exceed the estimate by more than 15%, a further fee shall be required by the Department and shall be 115% of the amount of the difference between the fee paid according to the estimated cost and the fee calculated according to the actual cost (Cal. Wat. Code § 6305).

All fees, penalties, interest, fines, or charges collected shall be deposited in the Dam Safety Fund (Cal. Wat. Code § 6308).

Inoperative Dams

A dam will be considered inoperative on other than a temporary basis upon determination by the Department. In order to be considered inoperative, the Department must find that a dam meets both the following criteria (23 CCR § 316):

1. Alteration of the outlet facilities, as approved by the Department, to remove gates, valves controls, or other means to assure maximum possible uncontrolled water release through the outlet works;

2. Absence of water impounding capability of the reservoir under reasonably foreseeable conditions.

An inoperative dam is subject to alternative annual fee calculations (23 CCR § 315).

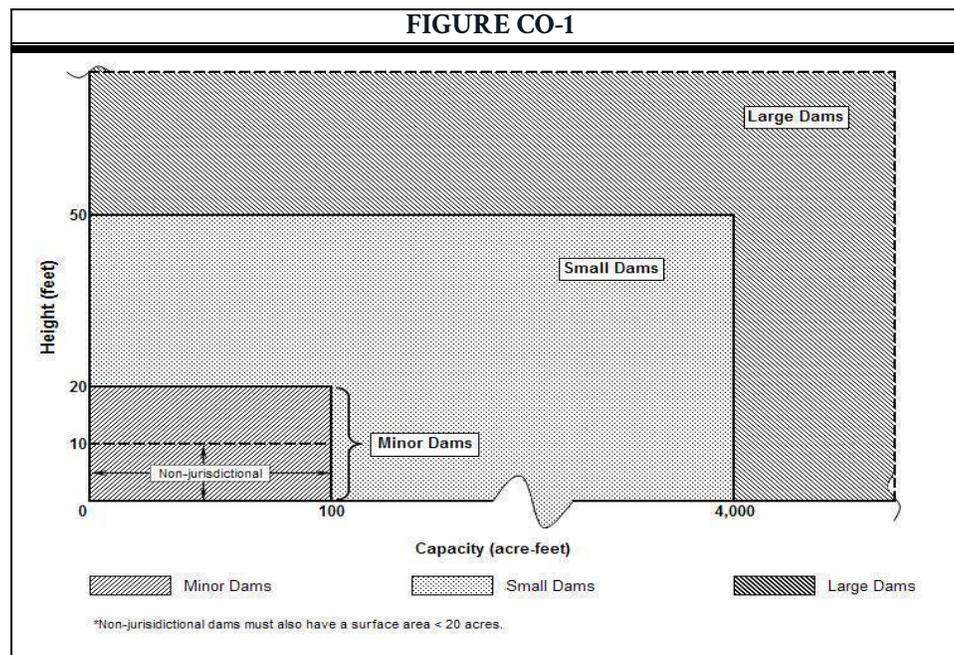
COLORADO

Citation

Colorado's dam safety law is contained in Colorado Revised Statutes Title 37, Article 87, first enacted in 1879 (CRS 37-87-101). Regulations are found in the Colorado Code of Regulations Section 402-1, Rules and Regulations for Dam Safety and Dam Construction (2-CCR 402-1). The Colorado dam safety program is administered by the Division of Water Resources' Dam Safety Branch.

Definition/Dams Classification

A *dam* is defined as a constructed barrier, together with appurtenant structures, constructed above the ground surface for the purpose of impounding water (2-CCR 402-1 R 4.6). Flood control and storm runoff detention dams are included. Dams are divided into jurisdictional size dams and non-jurisdictional size dams. Dams are categorized by size according to their height and capacity following the criteria detailed in Figure CO-1 (2 CCR 402-1 R 6.1, 6.2 and CRS 37-87-105):



Hazard Potential Classification Criteria

Dams are classified into one of four categories defined below as determined by analysis of potential consequences from a sunny day failure of the dam. Conditions for evaluation are absent flooding and the reservoir is assumed to be full to the high-water line at the time of failure. The hazard classification establishes

COLORADO

all the design criteria for a dam except for spillway size, which is controlled by the hydrologic hazard. Table CO-1 summarizes the classification levels (2-CCR 402-1 R.4.13).

TABLE CO-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
No public hazard	No loss of human life expected.	Minimal damage.
Low hazard potential	No loss of human life expected.	Damage to structures and public facilities is expected, but not at a significant level.
Significant hazard potential	No loss of human life expected.	Damage sufficient to render structures or facilities where people generally live, work, or recreate uninhabitable or inoperable is expected.
High hazard potential	Loss of life expected.	Damage may or may not occur (not necessary for this classification).

Every proposed new dam or dam enlargement proposal shall have a hazard classification report identifying the hazard classification for the dam. This may be submitted, reviewed, and approved as a stand-alone report prior to submittal of the application package. A detailed analysis is not required for dams that are declared as High Hazard; however, a dam failure inundation map will be required for the Emergency Action Plan (2-CCR 402-1 R.6.8.4).

Jurisdiction/Powers of Department

The Dam Safety Branch has jurisdiction over all dams defined by the Statutes and the Rules as jurisdictional dams, classified by size and area of impoundment (CRS 37-87-105; 2-CCR 402-1 R 4.6.1 and R 4.6.2). Excluded from the Branch's jurisdiction are any of the following types of impoundment:

1. Livestock water tanks;
2. Erosion control dams;
3. Dams regulated by other agencies
4. Reservoirs storing water below the natural ground (CRS 37-87-114.5).
5. Highways, road-fills, and railroad embankments with undated culverts are exempt.

The State Engineer is empowered with the authority to review and approve plans and specifications for dams to be constructed within the state. The State Engineer is further empowered to establish the rules and regulations governing such plans and specifications and enforce the same during construction and maintenance of dams (CRS 37-87-105).

The State Engineer may determine the frequency and schedule of dam inspections (CRS 37-87-107) and the safe amount of water to impound in the reservoir (CRS 37-87-108). When the State Engineer has reason to believe a reservoir is unsafe, such as when a complaint has been filed by a person or person at risk of danger in

the event of a failure or incident, the State Engineer has the authority to immediately order the reservoir to be drawn down (CRS 37-87-109). In the course of executing these duties, the State Engineer may use such force as is necessary to complete the necessary duties and ensure the safety of the dam and reservoir (CRS 37-87-110). The Engineer may also ask the State Attorney General to commence judicial proceedings against owners or operators who refuse to obey the directions of the Engineer (CRS 37-87-114).

Permit/Approval Process

Section 37-87-105 of the statutes says that no jurisdictional dam shall be constructed, or reservoir created, in Colorado unless plans and specifications have been filed with the state engineer and approved according to regulations.

An Owner proposing to construct a new jurisdictional dam or alter, modify, repair, or enlarge an existing jurisdictional dam and/or appurtenant structures shall submit an application package in a form acceptable to the State Engineer. Construction activities may not commence until the State Engineer has provided written approval of the design (2-CCR 402-1 R 6):

1. Application Form;
2. Engineer's Qualifications Statement and Affidavit
3. Construction Plans;
4. Construction Specifications;
5. Design Report
6. Inundation Map (High and Significant Hazard dams only)
7. Cost Estimate;
8. Filing Fee.

The information required to be included in each of these reports, and detailed instructions regarding their preparation and submittal are contained in Rule 6 of the Rules and Regulations.

An Owner proposing to permanently remove or breach a dam shall submit an application package to be approved by the State Engineer prior to commencing work (2-CCR 402-1 R 9).

Not less than 30 days prior to construction, the Engineer shall submit a construction observation plan to the State Engineer (2-CCR 402-1 R 8.1.2). Within fourteen 14 days of receipt, the State Engineer shall provide written comments and approval, or conditions for approval, of the construction observation plan. Construction shall not commence without approval of the observation plan by the State Engineer (2-CCR 402-1 R 8.1.2.1). Prior to commencement of construction, a meeting shall be held between the Engineer, Owner, State Engineer, and contractor. The State Engineer shall be notified at least 14 days prior to the meeting. The contractor shall present and thoroughly explain its construction work plan along with any anticipated construction difficulties. The name of the subcontractors shall be furnished to the State Engineer at the meeting. Project communication protocol between the Owner, Engineer, and the State Engineer shall be established at the pre-construction meeting (2-CCR 402-1 R 8.1.3). In addition, the state engineer makes

observations of the construction at critical points, must be notified of the completion of the construction, and makes a final inspection (2-CCR 402-1 R 8.2).

Following the receipt of written notification of completion of construction, the state engineer shall furnish acceptance or denial of approval of water storage. Requirements for the completion report are listed in 2-CCR 402-1 R 8.3.

Inspection Process

The State Engineer is required to determine the safe storage level of reservoirs by conducting dam safety inspections using qualified experienced personnel as often as he deems necessary. Inspections are conducted according to the following schedule (Table CO-1).

Hazard potential classification	Inspection Frequency
No Public Hazard	By request or complaint
Low	Once every six years
Significant	Once every two years
High	Once every year

If Division Engineers find that water is being impounded in a greater amount than that allowed by the State Engineer, the Division Engineer has the power and duty to withdraw the excess water, and to use force if owners or others interfere with the process. Costs incurred by the State Engineer in rectifying such a violation may be recovered in civil litigation. These procedures also apply in the case of dams inspected as a result of a complaint made by persons in danger of suffering a loss in the case of flood and/or dam failure. Costs incurred in rectifying such a violation may be recovered by civil litigation (CRS 37-87-107 through 37-87-114).

The State Engineer may utilize an owner's safety inspection report in lieu of a state engineer's report if the following conditions are met (2-CCR 402-1 R 12):

1. An Owner may provide a safety inspection report to the State Engineer recommending the safe storage level of a reservoir. The State Engineer may utilize the Owner's safety inspection report in lieu of a State Engineer safety inspection if the inspection is performed, and the report written, by an Engineer meeting the requirements of Rule 4.10. The Owner's Engineer shall notify the State Engineer at least fourteen (14) days prior to the scheduled safety inspection. Inspections shall be conducted in accordance with current State Engineer policies and these Rules.
2. Dam safety inspections by the Owner's Engineer shall meet the requirements of Rule 4.31. The Engineer shall prepare an inspection report that describes the findings and lists actions the Owner must take to improve the safety of the dam to an acceptable level. The report shall provide the information necessary to allow the State Engineer to make a determination of the safe storage level of the reservoir.

3. The report will be reviewed by the State Engineer prior to acceptance. If the report and findings are accepted, the State Engineer will provide the Owner with a list of required actions and will notify the Owner of the safe storage level.

Emergency Action Planning

Owners of high and significant hazard potential dams are required to prepare and maintain an Emergency Action Plan (EAP). Details for EAP requirements are found in 2-CCR 402-1 R 13.7. An EAP must contain, at a minimum, information and/or procedures for the following:

1. Essential dam information;
2. Event level determination and expected actions;
3. Notifications;
4. Communication;
5. Locally available resources;
6. Evacuation information;
7. Inundation mapping;
8. Critical infrastructure;
9. Spillway and outlet works discharge rating tables/curves;
10. Termination.

Further information, descriptions, and requirements for each of the above components can be found in the rules concerning EAPs.

Liability

Unless determined to be a direct result of negligence, dam and reservoir owners are exempt from liability for personal injury or property damage in the case of overflow or failure. No owner or entity shall be required to pay punitive or exemplary damages for negligence in excess of what is provided by law. No stockholder, officer, or member of a board of directors of an owner of a dam or reservoir can be held liable if the owner has valid and qualified liability insurance, bond, or escrow coverage (CRS 37-87-104).

Incidents and Response

Emergency actions not impairing the safety of the dam may be taken before consultation and guidance can be provided by an Engineer, and do not require prior approval of the State Engineer (2-CCR 401-2 R 11.2). Emergency actions are interim solutions only and may not serve as a permanent solution to the problem(s) being addressed. Additional remedial actions may be required after the emergency passes. Emergency actions may include:

1. Stockpiling materials such as riprap, earthfill, sand, sandbags, and plastic sheeting;

COLORADO

2. Lowering the reservoir level by making controlled releases through the outlet or a gated spillway, by pumping, or by siphoning. Where large releases are to be made, the Division Engineer, Dam Safety Engineer and Local Emergency Manager shall be notified;
3. Armoring eroding areas by placing sandbags, riprap, plastic sheeting, or other available material;
4. Plugging leakage entrances on the upstream slope;
5. Increasing freeboard by placing sandbags or temporary earthfill on the dam;
6. Diverting flood waters around the reservoir or closing inflow diversions;
7. Constructing training berms to control flood waters;
8. Placing sandbag ring dikes around boils at the downstream toe to provide back pressure; and/or
9. Removing obstructions from outlet or spillway flow areas.

Emergency actions not impairing the safety of the dam do not require prior approval of the State Engineer. Emergency actions are interim solutions, not permanent adjustments, and may require remedial actions after the emergency passes. Stockpiling materials, lowering reservoir levels, armoring or reinforcing eroding areas, diverting flood waters, and clearing obstructions are some of the emergency actions listed in the regulations (2-CCR 402-1 R 12.3). The State Engineer must be notified as soon as reasonably possible in the event of any emergency or emergency action (2-CCR 402- R 11.4).

Owner's Non-Compliance/Violations/Penalties

Penalties for noncompliance with the directions of the state engineer are detailed in CRS 37-87-114. An owner determined to be in violation is subject to a fine of no less than \$500 for each offense each day. The fine may be recovered by the state through action in civil courts. The attorney general is authorized to commence proceedings against an owner in violation of the state engineer's orders to compel compliance (CRS 37-87-114(2)).

Oversight

Under Section 37-87-112, owners may initiate complaints regarding actions taken by the state engineer (authorized under Sections 37-87-109 and 110 in response to an unsafe dam situation), in the county district court. The state engineer is required to submit an annual report to the Colorado General Assembly detailing the activities of the state engineer and the Division of Water Resources. Requirements for the content of that report are listed in CRS 37-87-114.4.

Miscellaneous

Recreation

The Colorado Code of Regulations Rule 15.1 places restrictions on the construction of permanent recreational structures below the elevation of the bottom of the spillway unless certain criteria are met.

Fees

The State Engineer assesses fees for the examination of and filing of each set of plans and specifications for a proposed dam project. The fee is set at \$6 per \$1,000 of estimated project cost, with the fee minimum and maximum set at \$100 and \$30,000 respectively (CRS 37-80-110(e)).

CONNECTICUT

Citation

Dam safety laws are found in Connecticut General Statutes, Sections 22a-401 through 411a (Conn. Gen. Stat. §§ 22a-401—22a-411). Dam safety regulations are found in the Regulations of Connecticut State Agencies, Sections 22a-409-1 through 22a-409-2 (R.C.S.A. §§ 22a-409-1—22a-409-2). Regulations on emergency action plans (EAPs) are found in Regulations of Connecticut State Agencies, Sections 22a-411a-1 through 22a-411a-2 (R.C.S.A §§ 22a-411a-1—22a-411a-2). The dam safety program in Connecticut is administered by the Dam Safety Program of the Water Planning & Management Division of the Connecticut Department of Energy and Environmental Protection.

Definition/Dams Classification

Dam refers to any barrier of any kind whatsoever which is capable of impounding or controlling the flow of water, including but not limited to storm water retention or detention dams, flood control structures, dikes and incompletely breached dams (R.C.S.A. § 22a-409-1(a)(10)).

Hazard Potential Classification Criteria

Dams are classified by hazard potential, as seen in Table CT-1 (R.C.S.A. § 22a-409-2(a)).

TABLE CT-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class AA <i>Negligible hazard potential</i>	No loss of life expected.	No measurable damage to roadways, land and structures, and negligible economic loss.
Class A <i>Low hazard potential</i>	No loss of life expected.	Damage to agricultural land, unpaved local roadways, or minimal economic loss.
Class BB <i>Moderate hazard potential</i>	No loss of life expected.	Damage to normally unoccupied storage structures, paved local roadways, or moderate economic loss.
Class B <i>Significant hazard potential</i>	Possible loss of life.	Minor damage to habitable structures and residences, damage to local utility facilities, collector roadways and railroads, or significant economic loss.
Class C <i>High hazard potential</i>	Probable loss of life.	Major damage to habitable structures and residences, damage to major utility facilities, arterial roadways, or great economic loss.

Dams are subject to reclassification at any time the commissioner determines, and the classification of dams shall be reviewed during each regulatory inspection (R.C.S.A. §§ 22a-409-2(a)(2) and 2(a)(3)). A dam owner may request a review to change the hazard potential classification (R.C.S.A. § 22a-409-2(a)(4)). Criteria for determining “minor” damage is detailed in R.C.S.A. § 22a-409-2(a)(6).

Jurisdiction/Powers of Department

Connecticut statutes state that any dam which, by breaking away or otherwise, might endanger life or property is subject to the jurisdiction of the dam safety program (Conn. Gen. Stat. § 22a-401). All Class C, B, BB, and A dams are required to follow the inspection requirements detailed in the statutes and regulations. The commissioner may determine that a Class AA dam that poses a unique hazard may be subject to certain requirements (R.C.S.A. § 22a-409-2(b)(1)).

The program is authorized to enter upon private property to investigate and gather data concerning dams, watersheds, sites, structures and general conditions for inspection, review, and study of the dam.

The commissioner is empowered to issue cease and desist orders if they find that any person is engaged in or about to engage in an action which is likely to result in substantial damage (Conn. Gen. Stat. § 22a-7).

Permit/Approval Process

Any person desiring to construct a dam must apply for a permit from the commissioner (Conn. Gen. Stat. § 22a-403(a)). If the commissioner issues a permit for the dam, they shall publish notice of the permit approval in a newspaper having general circulation in the area where the dam is to be constructed and the impoundment is to be created.

Inspection Process

A dam owner shall ensure a regulatory inspection is conducted in accordance with the schedule detailed in Table CT-2 (R.C.S.A § 22a-409-2(d)).

TABLE CT-2	
Hazard Potential Classification	Regulatory Inspection Frequency
Class A (low)	Once every ten years.
Class BB (moderate)	Once every seven years.
Class B (significant)	Once every five years.
Class C (high)	Once every two years.

The owner must use a professional engineer to conduct the inspection and fill out an inspection report using the standardized form provided by the commissioner (R.C.S.A. § 22a-409-2-(c)(2)). The owner shall furnish a copy of the report to the commissioner within 30 days from the date they receive that report from the professional engineer (R.C.S.A. § 22a-409-2-(c)(3)).

In addition to regulatory inspections, the owner or operator is required to inspect the dam regularly to assure that no unsafe conditions are developing. Non-regulatory inspections must be conducted after every major storm event and at the frequency detailed in Table CT-3 (commissioner (R.C.S.A. § 22a-409-2-(f)(2))).

Hazard Potential Classification	Non-Regulatory Inspection Frequency
Class A (low)	Once every two years.
Class BB (moderate)	Once every year.
Class B (significant)	Four times per year.
Class C (high)	Four times per year.

Emergency Action Planning

Each owner of a Class C or Class B dam shall prepare an emergency action plan (EAP) in coordination with relevant emergency services agencies for each Class C or Class B dam they own. The EAP must be updated at a minimum of every two years.

A complete EAP includes the following components (R.C.S.A. § 22a-411a-2(b)):

1. An inundation map;
2. A dam monitoring procedure for heavy rainfall and runoff;
3. A warning notification procedure, including a warning notification list with addresses for residences, businesses, and highways in the inundation zone;
4. The location of an emergency operation center;
5. A notification flow chart that shows titles and contact names with phone numbers of local, state, federal, or tribal agencies and public service companies;
6. A distribution list of all local, state, federal, and tribal agencies affected that will receive a copy of the EAP;
7. A description of the procedure for determining the termination of the emergency;
8. A description of an EAP exercise or test to be conducted at a minimum of every two years;
9. A title page with the date the EAP is submitted;
10. An executive summary describing the physical components of the dam, pertinent history, the riverine system, and any associated purpose of those waters.

Extensive criteria for each of the required components of an EAP are detailed in the regulations.

Failure to submit an EAP or EAP update shall be cause for the imposition of a civil penalty by the commissioner or commissioner's designee (R.C.S.A. § 22a-411a-(d)).

Liability

The owner of a dam is subject to all legal duties, obligations and liabilities resulting from dam ownership and operation. No action for damages can be brought against the state, the commissioner, or the commissioner's employees or agents (Conn. Gen. Stat. § 22a-406).

Incidents and Response

The commissioner is empowered to issue cease and desist orders if they find that any person is engaged in or about to engage in an action which is likely to result in substantial damage (Conn. Gen. Stat. § 22a-7)

Owner's Non-Compliance/Violations/Penalties

Failure to comply with dam safety statutes, dam safety regulations, and orders of the commissioner will result in the imposition of civil penalties pursuant to Conn. Gen. Stat. § 22a-6b and R.C.S.A. § 22a-6b. The fine imposed cannot exceed the amount set for that particular infraction as detailed in the statute. Fine limits range from \$100 per day to \$25,000 per day depending on the violation.

Oversight

If the commissioner receives a petition of at least 25 signed persons requesting as such, the commissioner shall hold a hearing regarding the decision to issue or deny a permit to a dam application. Notice of the hearing must be posted at least thirty days prior in a newspaper having a general circulation in the area (Conn. Gen. Stat. § 22a-403(b)).

Any owner assessed a civil penalty for a violation is entitled to a hearing on that penalty (Conn. Gen. Stat. 22a-6b(d)).

Miscellaneous

Fees

The commissioner may levy a fee for the registration of any dam according to the schedule detailed in Table CT-4. The commissioner has the power to waive the fee for state-owned dams (Conn. Gen. Stat. § 22a-409(b)).

TABLE CT-4	
Dam Height	Fee
Below 5 feet.	\$0
Between 5 and 15 feet.	\$50
Between 15 and 25 feet.	\$100
Over 25 feet.	\$200

CONNECTICUT

The commissioner may levy a fee of 3,000 for each regulatory inspection made by the state. The commissioner has the power to waive the fee for state-owned dams (R.C.S.A. § .22a-409-2(e)).

DELAWARE

Citation

Delaware's dam safety laws were adopted in 2004 and are found in Delaware Code Title 7, Chapter 42 beginning with section 4201 (Del. Code tit. 7, § 4201). The regulations are found in Title 7 of the Delaware Administrative Code, Section 5103 (7 Del. Admin. C. § 5103). The dam safety program in Delaware is administered by the Delaware Dam Safety Program within the Division of Watershed Stewardship of the Delaware Department of Natural Resources and Environmental Control.

Definition/Dams Classification

Dam refers to any artificial barrier, including appurtenant works, with the ability to impound or divert water, wastewater, or liquid-borne materials (Del. Code tit. 7 § 4202(1)). No obstruction in a canal used to raise or lower water shall be considered a dam. A fill or structure for highway or railroad use, or for any other purpose that may impound water, may be subject to review by the Department and shall be considered a dam if the criteria in the regulations are found applicable and if it is classified as high or significant hazard potential (7 Del. Admin. C. § 5103-2.0).

Hazard Potential Classification Criteria

Dams in the state of Delaware are classified into three categories rated according to potential damage from a dam failure according to the criteria found in Table DE-1 (7 Del. Admin. C. § 5103-5.2).

TABLE DE-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class III <i>Low hazard potential</i>	Unlikely to cause loss of human life.	May cause minor economic and/or environmental losses.
Class II <i>Significant hazard potential</i>	Possible loss of human life.	Will cause economic loss, environmental damage and disruption of lifeline facilities.
Class I <i>High hazard potential</i>	Probable loss of human life.	Not necessary for this classification.

Jurisdiction/Powers of Department

Class III dams are exempted from the requirements of the dam safety regulations (7 Del Admin. C. § 5103-5.2.3).

DELAWARE

Delaware does not regulate privately owned dams. The statutes apply to all dams owned by state or local government agencies and quasi-governmental agencies that are greater than 25 feet in height or impounding a reservoir of greater than 50 acre-feet or deemed to be significant or high hazard potential. Dams less than 6 feet in height or 15 acre-feet in storage, or classified as low hazard potential, are not subject to the statutes (Del. Code tit. 7 § 4203).

The Department has the authority to review and approve the design, construction, reconstruction, enlargement, alteration, repair, maintenance, operation, breach, abandonment, and removal of dams and reservoirs in Delaware (7 Del. Admin. C. § 5103-1.2).

The Department or its representatives may enter upon private property as necessary for the enforcement of its regulations (7 Del. Admin. C. § 5103-1.3). The Department may order an owner to take actions necessary to avert risk of dam failure or incident (7 Del. Admin. C. § 5103-1.4).

Permit/Approval Process

The regulations and process for dam permitting applications are complex and detailed extensively in 7 Del. Admin. C. § 5103-6. A Delaware-licensed professional engineer (Supervising Engineer) is required to prepare the plans and specifications and supervise the inspection of construction of any dam. The Department may require any owner or operator to obtain a permit to construct, alter, repair, or remove a dam. The application for a dam permit requires a pre-application preliminary report detailing the purpose and description of the proposed dam, a geologic report, mapping, and other preliminary design data. Upon the Department's review of the pre-application, the Department will notify the applicant of key issues to address (7 Del. Admin. C. § 5103-6.3).

The final application shall include a Final Design Report detailing various soil analyses, structural studies, hydraulic studies, and hydrologic studies, as well as a number of drawings detailed in the regulations (7 Del. Admin. C. § 5103-6.4).

Upon receipt of an application, the Department will notify the public of the application by advertisement in a local newspaper (7 Del. Admin. C. § 5103-6.5.1). If the Department disapproves an application, a copy of the application detailing the objections will be returned to the applicant. If the Department approves, a copy of the application will be returned along with the relevant permit (7 Del. Admin. C. § 5103-6.5.4).

Inspection Process

The owner is responsible for the safety of the dam and necessary surveillance and inspections. The owner shall conduct informal inspections on at least a quarterly basis and promptly notify the Department of significant changes in condition. The Department is empowered to require more frequent informal inspections if necessary.

Regular inspections are required of all regulated dams according to the schedule outlined in Table DE-2 (7 Del. Admin. C. § 5103-10.3). Inspections may be conducted more frequently than required, and the Department is empowered to require more frequent inspections if necessary.

TABLE DE-2	
Hazard Potential Classification	Regular Inspection Frequency
Class III	Not subject to regulation.
Class II	Once every 2 years.
Class I	Once every year.

All dam inspections must be performed between March and December (7 Del. Admin. C. § 5103-10.3.4).

Emergency Action Planning

All Class I and II dams are required to have an Emergency Action Plan (EAP) that describes the steps to be followed in the event of a potential emergency condition. The plan must be submitted to the Department and to state and local emergency management agencies for review and approval. A complete EAP includes all the following (Del. Admin. C. § 5103-10.4.2):

1. Identification of designated dam inspectors and alternates;
2. Requirements that dam inspectors measure and record pool level during storm events and flood peaks;
3. Requirements for observation of pool level rise, debris accumulation, seepage, and signs of embankment distress;
4. Identification of predetermined elevations or signs of distress to trigger the notification and evacuation phases of the plan;
5. Actions to be taken by the inspector under specific conditions;
6. Description of primary and backup communications capabilities;
7. A notification flow chart;
8. A description of each involved agency;
9. Inundation maps developed from appropriate storms;
10. A list of addresses of structures to be evacuated;
11. Identification of the appropriate local authority to issue evacuation notices and to determine when evacuees may return;
12. Intervention procedures to be taken by the dam owner to alleviate the hazard;
13. List of local contractors and suppliers to be used in the event of an emergency.

The EAP shall be reviewed annually and submitted to the Department with necessary modifications and exercises (Del. Admin. C. § 5103-10.4.4).

DELAWARE

Liability

No action shall be brought against the State of Delaware, any agent of the Department, or any employee of the State of Delaware or the Department for damages sustained from a dam. Nothing in the regulations relieves an owner or operator of a dam from legal duties, obligations, and liabilities arising from ownership and operation (7 Del. Admin. C. § 5103-1.5).

Incidents and Response

Upon receipt of information that any dam may present an imminent and substantial hazard to public health, safety, or welfare, the Department may direct the owner to take such actions as it deems necessary to prevent such an incident. If the owner fails to take such actions, the Department shall have the right to take all appropriate actions itself, including, but not limited to, breaching or draining. The Department may initiate legal proceedings to recover the emergency costs from the dam owner (Del. Code tit. 7 § 4217).

Owner's Non-Compliance/Violations/Penalties

Any person who violates any rule, regulation, order, or condition imposed by the Department shall be fined no less than \$200 and no more than \$2,000 for each offense. Each day the violation continues shall constitute a separate offense. Any person who intentionally, and after written notice to comply, violates any rule, regulation, order or condition imposed shall be fined no less than \$500 and no more than \$10,000 for each offense. Each day the violation continues shall constitute a separate offense (Del. Code tit. § 4216).

Oversight

Any action or determination by the Department shall be subject to appeal to the Environmental Appeals Board, unless otherwise provided (Del. Code tit. 7 § 4213(a)). Any person who desires to make an appeal must do so within 20 days of the decision that person desires to appeal (Del. Code tit. 7 § 6008(a)). Decisions by the Board can be further appealed to the Superior Court in the county in which the activity is wholly or principally located (Del. Code tit. 7 § 6009).

Miscellaneous

Vegetation Control, Operation and Maintenance (O&M)

The regulations require dam owners and operators to create and maintain an O&M plan, updated on a yearly basis. Requirements for an O&M plan are detailed in 7 Del. Admin. C. § 5103-10.2. As a component of O&M regulations, no dam may have trees or other woody vegetation growing upon them, unless waived by the Department (7 Del. Admin. C. § 5103-10.1.2.3).

FLORIDA

Citation

Dam safety in Florida is the shared responsibility of local, regional, state, and federal entities, private dam owners and operators, and consultants. Staff within the Florida Department of Environmental Protection (FDEP or Department) and the five Water Management Districts (WMDs) who perform actions to secure the safety of dams and related structures and promote the health, safety, and general welfare of the public comprise the unofficial Florida Dam Safety Program (FDSP). The State Dam Safety Officer (SDSO), working under the guidance of an Environmental Administrator in the FDEP Engineering, Hydrology, and Geology Program, is a central resource for dam-related activities within the State.

The laws governing dams in Florida are relatively complex and split over various areas of the Florida Statutes (F.S.) The statutes are chiefly contained in F.S. §§ 373.403—373.468, however other areas of the statutes contain clauses relevant to dam safety as well. The state is divided into five water management districts, each empowered to issue permits according to their own area-specific regulations within an overarching statewide rule. Broadly, dam safety is legislated and regulated as a component of surface water management, and the relevant statutes and regulations are chiefly concerned with water quality, wetlands management, and environmental regeneration in addition to dams.

Individuals interested in the statutes and the administrative regulations governing dam safety in Florida should contact the Florida dam safety program or reach out to a specific water management district directly. The following summary was provided by the FDSP, and details some of the administrative structure and regulations for dams in Florida broadly.

Definition/Dams Classification

Dam is defined as any artificial or natural barrier, with appurtenant works, raised to obstruct or impound, or which does obstruct or impound, any of the surface waters of the state (F.S. § 373.403(1)).

The term "dam" is often included in statutory language that addresses surface water management systems in general (F.S. § 373.116; F.S. § 373.423). A few citations speak to abandonment and proprietary interests for dams (F.S. § 373.426); and emergency authority of the Department for remedial measures (F.S. § 373.436 and .439). Section 403.061(22), F.S., states that the Department shall have the power to “adopt, modify, and repeal rules governing the specifications, construction, and maintenance of industrial reservoirs, dams, and containers which store or retain industrial wastes of a deleterious nature”. However, the statutes provide limited guidance or authority specific to dam safety.

Jurisdiction/Powers of Department

Section 373.016(3)(c), F.S. authorizes the Department to develop and regulate dams, impoundments and reservoirs to provide water storage for beneficial purposes. The text that follows this statement is very broad but provides goals for regulating dams. These broad provisions include prohibitions on damage from floods; prohibition of soil erosion; prohibition of excessive drainage; preservation of natural resources, fish, and wildlife; protection of public lands; assistance in maintaining the navigability of rivers; and otherwise promotion of the health, safety, and general welfare of the people of Florida.

Permit/Approval Process

There are only a few references specifically addressing construction and operation of dams. The substantive statutory criteria are found under Part IV of Chapter 373, F.S., commonly referred to as Environmental Resource Permitting (ERP). The primary citation relates to dam construction as described in Section 373.413(1) F.S. The statutory citations "lump" dams within the same regulatory framework as stormwater/flood management systems that are typically associated with construction of new residential, commercial, transportation and public works improvements. Construction and operation of new dams in Florida must be permitted under the ERP program and new dams are subject to the same conditions for issuance that any new development must meet. The conditions for issuance are found in Rules 62-330.301 and .302, Florida Administrative Code (F.A.C.; Appendix A), and require that the project not harm water resources, adjacent properties, and public health, safety, or welfare.

Florida is different than most states in that the ERP program is implemented by both FDEP and the Water Management Districts (WMDs). The agency responsible for processing a permit application is determined by an "activity-based split" of regulatory authority. This split of authority is detailed in an Operating Agreement between FDEP and each WMD that is adopted by rule. Generally, the Department processes ERPs for those projects that would otherwise need a permit under Chapter 403, F.S., such as landfills, wastewater treatment, mining, hazardous waste, and potable water treatment facilities. FDEP also handles those projects proposed by single family entities and projects proposed by Port Authorities, as well as a few other categories. Conversely, the WMDs handle those projects associated with commercial and office development, residential subdivisions and apartments, roadways and highways, and most other largescale development.

The ERP rule includes Chapter 62-330, F.A.C., and Applicant's Handbook Volume I and Applicant's Handbook Volume II. Chapter 62-330, F.A.C., applies statewide as does the accompanying Applicant's Handbook Volume I; each Applicant's Handbook Volume II applies to the WMD in which the activity will occur to permit in accordance with area-specific criteria for stormwater management and flood control.

In Chapter 62-330, F.A.C., and the Applicant's Handbook Volume I, the term "dam" is for exclusionary purposes or for identifying systems that need a permit and they must be designed by a qualified expert. Various dam-specific design and construction criteria are included in each Applicant's Handbook Volume II. The WMD rules related to dams are summarized below.

Water Management District Environmental Resource Permit Rules

Northwest Florida Water Management District

Section 2.11 of Applicant's Handbook Volume II provides a paragraph on Dam Safety and includes a requirement that dams over a certain size be designed consistent with generally accepted engineering practices. Significant criteria include the minimum capacity of dam spillways required for low, moderate, and high hazard ratings; and the probable maximum precipitation (PMP) is provided based on drainage area. There are no criteria related to rating a dam for hazard condition. The *Design of Small Dams* document produced by the Department of the Interior, is mentioned, but is not "adopted by reference" as rule.

Suwannee River Water Management District

Substantial ERP criteria are included in Section 5.8 of Applicant's Handbook Volume II, including definitions for High, Significant, and Low Hazard Potential dams that match the federal guidelines and a recommendation for a "dam breach" analysis and flood inundation map for High Hazard Potential dams. There are requirements related to spillways and design storms; embankment stability including seepage and piping; design and construction standards; and method of construction.

St. Johns River Water Management District

Section 37 of Applicant's Handbook Volume II provides the *Standards for Dams and Impoundments*. The standards include hazard categories Classes A, B, and C, which may be loosely compared to the High, Significant, and Low hazard categories defined by some other WMDs. There is some limited text regarding storage capacity, dam height, and the probable maximum precipitation (PMP). The PMP is defined per size of drainage area and is recommended for design of any "structures". Significantly, this section is not adopted by reference and therefore is not rule.

Southwest Florida Water Management District

Applicant's Handbook Volume II includes a short paragraph addressing dam safety in Section 5.9. This language basically adopts the language from the Northwest Florida Water Management District's Applicant's Handbook Volume II, but without mention of the PMP.

South Florida Water Management District

The most extensive language for any WMD is found in Applicant's Handbook Volume II, Appendix B, *Above Ground Impoundments*. Dams are classified as either Major or Minor, based on the potential for harm due to failure. Other criteria include certification by an engineer and include a requirement for as-built plans; pre-construction submittal requirements; design guidelines including stability, hydraulics and design water depths; operation and maintenance requirements including an extensive section on inspections/ reporting. There is no requirement for an Emergency Action Plan nor any regulation of dams existing prior to adoption of the rule.

GEORGIA

Citation

The content of this section has not been reviewed by the Georgia dam safety program and may contain inaccuracies or outdated content. Please contact the Georgia state dam safety program directly to verify the content of this chapter.

Laws governing the Georgia dam safety program are embodied in the “Georgia Safe Dams Act of 1978”, codified in the Official Code of Georgia Annotated §§ 12-5-370 *et seq.* (OCGA §§ 12-5-370 *et seq.*). Rules are found in the Georgia Comprehensive Rules & Regulations Chapter 391-3-8 (Ga. Comp. R. & Regs. 391-3-8). The dam safety program in Georgia is administered as part of the Environmental Protection Division of the Georgia Department of Natural Resources.

Definition/Dams Classification

Dam is defined as any artificial barrier, including appurtenant works, which impounds or diverts water and which the improper operation or failure of such would result in probable loss of human life and which is 25 feet in height or more or has an impounding capacity of 100 acre-feet or more.

Dams are categorized by size according to the criteria detailed in Table GA-1 (Ga. Comp. R. & Regs. 391-3-8-.02).

TABLE GA-1		
Size Classification	Storage Capacity (acre-feet)	Height (feet)
Small	Less than 500.	Below 25.
Medium	Greater than 500 but less than 1,000.	Above 25 but below 35.
Large	Greater than 1,000 but less than 50,000.	Above 35 but below 100.
Very Large	Greater than 50,000.	Above 100.

Regulatory exemptions are provided for Category II dams, federal dams, and for dams less than 6 feet in height or with an impoundment of less than 15 acre-feet (OCGA § 12-5-372(4)(B)).

Hazard Potential Classification Criteria

Dams are classified into two categories based on their hazard potential (OCGA § 12-5-375). The two categories are determined by potential for loss of life (Table GA-2), determined by the presence of habitable structures in the downstream inundation zone.

TABLE GA-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Category II	Unlikely to cause loss of human life.	Not addressed in statute or regulations.
Category I	Probable loss of human life.	Not addressed in statute or regulations.

The dam safety rules and regulations do not apply to Category II dams (Ga. Comp. R. & Regs. 391-3-8-.04(1)).

Jurisdiction/Powers of Department

The director of the dam safety program is tasked with supervision of jurisdictional dams. To this end, the director may require progress reports from supervising engineers, may require investigations, and may advise, consult, contract, or enter into agreements with other entities in the conduct of those duties.

The director is empowered to approve or disapprove applications for permits (OCGA § 12-5-378), classify and reclassify dams’ hazard potential categories, issue administrative orders requiring remedial construction at owner’s expense (OCGA § 12-5-378), and approve or disapprove applications for dam removal (OCGA § 12-5-377) among other powers. The director, the director’s agents, and authorized agencies are permitted to enter on public and private property without notice for the purposes of completing an inspection (OCGA § 12-5-378).

Permit/Approval Process

Anyone desiring to construct or operate a Category I dam must obtain a permit from the Division (OCGA § 12-5-376). Permit applications require plans and specifications, along with certification of regulatory compliance by a professional engineer. The requirements for a permit application include extensive mapping, design and safety evaluation reports, proposed construction methods and schedules, and any other information deemed pertinent by the director (Ga. Comp. R. & Regs. 391-3-8-.08). The regulations detail extensively each of the sub-requirements for all the above.

If a dam is reclassified from Category II to Category I due to a modification to the dam structure or changing downstream circumstances, the director will serve written notice to the dam owner requiring the owner to apply for a permit to operate that dam (OCGA § 12-5-376(b)).

No permit is required for the construction or operation of a dam in connection with or incidental to surface mining, unless the dam is classified as a Category I dam. In the even that mining operations related to that dam cease, all Category I surface mining dams are subject to immediate remedial actions detailed in OCGA § 12-5-376(c).

Inspection Process

Dam owners and operators are responsible for conducting routine inspections and maintenance of dams in order to:

1. Prevent growth of trees and brush on the embankment and spillway of the dam;
2. Prevent accumulation of debris;
3. Maintain operability of gates, orifices, dissipators, trash racks, and other appurtenances;
4. Maintain vegetation cover to prevent embankment erosion;
5. Identify potential excessive seepage on the downstream slopes of the dam;
6. Identify symptoms of potential failure.

The owner is required to conduct an annual test of the spillway and outlet gates and file an affidavit certifying operability with the director. If the owner or operator sees symptoms of a potential failure, they must immediately notify the Division (Ga. Comp. R. & Regs. 391-3-8-.10(1)).

Dams must be inspected by an engineer every two years between October 1 and March 31. For any dam less than 50 feet in height, the owner may apply for a waiver for one two-year period.

In addition to the inspection by the engineer, the dam owner shall inspect the dam each calendar quarter. The schedule for quarterly inspections is detailed in Table GA-3.

TABLE GA-3			
Hazard Potential Classification	Quarterly Inspection Schedule	Professional Inspection Schedule	
Category II	Not subject to regulation.	Not subject to regulation.	
Category I	Once between January 1 and March 31.	<i>Dams at or over 50 feet in height:</i> Once every two years.	<i>Dams under 50 feet in height:</i> Once every two years, unless waived.
	Once between April 1 and June 30.		
	Once between July 1 and September 30.		
	Once between October 1 and December 31.		

Emergency Action Planning

Dam owners of Category I dams are required to develop, and submit to the Division for approval, Emergency Action Plans (EAPs) using the Division-approved format (Ga. Comp. R. & Regs. 391-3-8-.11). An EAP is required as a component of any permit application. The Department of Environmental Protection’s Safe Dams Program webpage offers the required fillable EAP form and instruction manual for its use. The EAP Template

Instructions document on the DEP webpage requests dam owners submit a copy of the final plan to the local emergency management agency and to the Safe Dams Program.

Liability

Nothing in the laws shall be construed as a waiver of the sovereign immunity of the State, the board, or the Division. No action shall be brought against the State, its agencies, or its agents for damages. The dam owner is subject to all legal duties, obligations, and liabilities incident to the ownership and operation of the dam (OCGA § 12-5-383).

Incidents and Response

If a visual inspection indicates a potential hazard to life, and there is not sufficient time to issue an administrative order, the Director may immediately take such measures as may be necessary to provide emergency protection. Costs incurred from these actions may be recovered by the State from the owners.

Owner's Non-Compliance/Violations/Penalties

If the director determines a dam is not in compliance with any part of the rules or statutes, the director is authorized to commence remedial actions at owner expense. The director is also authorized to revoke or suspend permits if dams are found to be in violation of permit conditions or the dam safety laws or rules (OCGA § 12-5-376).

The director may make application to the superior court for an injunction, restraining order, or other such order against a dam owner or operator if it is believed the owner or operator is engaged in or about to engage in any act considered unlawful by the laws and regulations (OCGA § 12-5-381).

Any person found in violation of the statutes or regulations is guilty of a misdemeanor, with each continued day of violation constituting a separate offense. The director is empowered to levy a civil penalty of up to \$1,000 for each violation with an additional daily penalty of up to \$500 (OCGA § 12-5-385).

Oversight

Any person who is aggrieved or adversely affected by an order or action of the director is entitled to administrative and judicial review of that order or action (OCGA § 12-5-380). Upon petition to the director within 30 days after the issuance of the order or taking of the action, the petitioner has a right to a hearing before an administrative law judge. The decision of the administrative law judge shall constitute the final decision of the board. Persons are "aggrieved or adversely affected" when the challenged action has or will cause injury. The director may present an argument against any claim of injury, which will then be ruled on by the administrative law judge (OCGA § 12-2-2(2)).

HAWAII

Citation

Laws are contained in the Hawaii Revised Statutes § 179D (HRS § 179D). Rules are found in the Hawaii Administrative Rules § 13-190.1 (HAR § 13-190). The Hawaii dam safety program is organized in the Hawaii Department of Land and Natural Resources, Engineering Division, Dam Safety, under the authority of their Board of Land and Natural Resources (Board).

Definition/Dams Classification

Dam is defined as any artificial barrier, including appurtenant works, that impounds or diverts water and is either 25 feet or more in height or has an impounding capacity of fifty acre-feet or more (HRS § 179D-3).

Hazard Potential Classification Criteria

Dams are classified into three categories based on their hazard potential HRS § 179D-3). The three categories are determined by potential for loss of life in the event of a failure (Table HI-1).

Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	No probable loss of human life.	Low economic loss or environmental loss, or both. Economic losses are principally limited to the owner's property.
Significant hazard potential	No probable loss of human life.	Major economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
High hazard potential	Probable loss of human life.	N/A.

Jurisdiction/Powers of Department

The dam safety laws do not apply to any artificial barrier less than six feet in height regardless of storage capacity or any artificial barrier that has a maximum water storage elevation less than 15 acre-feet regardless of height. The Board may exempt dams based on other criteria determined pursuant by the rules (HRS § 179D-3).

All dams or reservoirs in the State shall be under the jurisdiction of the Board until the Board declares which dams or reservoirs are to be removed from its jurisdiction. The Board shall administer the dam and reservoir safety program. In carrying out those duties, the Board shall cooperate, advise, consult, contract, and enter into

cooperative agreements with the United States government or any of its agencies, other state agencies, and the county governments or any of their agencies.

The Department is empowered to conduct investigations, require reports, enter upon private property, make investigations and inspections at owner's expense, require approval for construction and alteration, require approval for removal, require owners to secure written approval to impound water, require fees to cover the board's costs, prepare and publish training materials, appoint agents and employees, catalog an inventory of regulated dams, regulate hazard potential classifications, suspend or revoke approvals, require emergency remedial actions at owner expense, issue injunctions to prevent actions liable to result in damage, recover expenses incurred in taking any action required from dam owners, place liens, assess civil penalties, and prosecute violations (HRS § 179D-6).

Permit/Approval Process

Hawaii requires a permit for new construction, repairs, alterations, and removals. Hawaii also requires certificates of approval to impound water.

No person shall construct, enlarge, repair, alter, or remove any dam or reservoir without approval of the construction plans and specifications. The dam owner must submit three hard copies and an electronic copy of the full application package to the Department. The supplemental materials required for the application are listed in HAR § 13-190.1-20(d). They include, among many other things, design reports, construction plans and specifications, quality assurance plans, cost estimates, and demographic information on the owner or owners. Supplementary material requirements for a dam removal application can be found in HAR § 13-190.1-21.

No owner of a dam or reservoir shall impound water without certificate of approval to impound water. Certificates of approval are valid for five years from the date of issuance, unless otherwise stated by the Department (HAR § 13-190.1-11).

Every owner of a dam or reservoir shall file an application for a certificate of approval to impound. The application requires an application fee and any supplementary documents the Department requests (HAR § 13-190.1-12). The Department shall review the application and inspect the dams and reservoirs. Dams and reservoirs that are found to not have severe deficiencies that affect safety or operational integrity will be issued a certificate of approval (HAR § 13-190.1-14).

Inspection Process

The Department shall make inspections of dams and reservoirs at least once every five years, either with its own engineers or through consulting engineers of its selection (HAR 13-190.1-40(c)).

Emergency Action Planning

Owners of high and significant hazard dams shall prepare, maintain, and implement an emergency action plan for each dam or reservoir. The emergency action plan must be submitted to the Department, emergency response agencies, and the appropriate county for review. The emergency action plan must contain the following, at a minimum (HAR § 13-190.1-42):

1. Guidance for determining emergency event levels;
2. A notification procedure for informing the Department and local emergency response agencies;
3. An anticipated evacuation area;
4. Listing of official emergency action governmental plan holders;
5. Directions to the facility;
6. A location map and site map; and
7. Testing, training, and updated information for the plan.

Liability

Nothing in the laws or regulations shall be construed as a waiver of immunity by the State or its agents. Nothing shall be construed to relieve the owner or operator of the legal duties, obligations, or liabilities incident to the ownership and operation of a dam or reservoir. The owner or operator of a dam or reservoir is not liable for damages as a result of thousand-year earthquakes and 250-year hurricanes or floods (HRS § 179D-4).

Incidents and Response

If the conditions of a dam or reservoir are dangerous enough to immediately threaten life or property, the Department may employ remedial measures to protect the vulnerable areas (HRS § 179D-24).

Owner's Non-Compliance/Violations/Penalties

The administrative penalty for a violation of the regulations shall not exceed \$25,000 per day of the violation, with each day during which the violation continues constituting an additional, separate, and distinct violation. Any person who negligently or knowingly violates the laws or regulations, or obstructs, hinders, or prevents the Department from performing its duties shall be guilty of a class C felony and upon conviction thereof be subject to the following penalties (HRS § 179D-8(b)):

1. For a first conviction, a mandatory fine of not less than \$2,500 but no more than \$25,000 per day of violation, imprisonment, or both;
2. For a second or subsequent conviction, a mandatory fine of not less than \$5,000 but not more than \$50,000 per day of violation, imprisonment, or both.

Oversight

Findings of the board, including approval or disapproval of an application are considered final unless it can be demonstrated to the board that an approval to impound was based on one or more misrepresentations (HRS § 179D-7(a)).

Any person aggrieved or adversely affected by an order or action of the board is entitled to an administrative and judicial review. Until the finding of that review is issued, the board’s decision is to remain in effect (HAR § 13-190.1-6).

Miscellaneous

Fees

The Hawaii dam safety program assesses fees for dam permit applications, certificates of approval to impound water, and an annual fee. The fees are detailed in Table HI-2 (HAR §§ 13-190.1-50 – 13-190.1-52)

TABLE HI-2	
Fee Type	Fee Amount
Dam permit application.	2% of estimated cost.
Certificate of approval to impound water.	\$400
Annual fee.	\$500, plus \$10 per foot of height.

Dam and Reservoir Safety Special Fund

The Department has a special fund administered by the board that contains funds from legislative appropriation, fees, penalties, fines, retail sale of dam safety related items, and public or private sources. The money may be spent on investigations, inspections, public education, training, remedial measures, and other dam and reservoir safety related purposes (HRS § 179D-25).

IDAHO

Citation

The Idaho dam safety statutes are enumerated in the Idaho Code Section 42-1709 through 42-1721 (IC §§ 42-1710 – 42-1720). The regulations are contained in the Idaho Administrative Rules, Rules 37.03.05 37.03.06 (IDAPA r. 37.03.05 and r. 37.03.06). The Idaho dam safety program is administered within the Idaho Department of Water Resources.

Definition/Dams Classification

Dam means any artificial barrier, together with appurtenant works, which is or will be 10 feet or more in height or has or will have an impounding capacity at maximum storage elevation of 50 acre-feet or more (IC 42-1711(b)).

Mine tailings impoundment structure means any artificial embankment which is or will be more than thirty (30) feet in height measured from the lowest elevation of the toe to the maximum crest elevation constructed for the purpose of storing mine tailings slurry (IC 42-1711(l)).

Dams are classified by size according to their height and storage capacity. The criteria for size classification are detailed in Table ID-1 (IDAPA r. 37.03.06.25.01).

Size Classification	Storage Capacity (acre-feet)	Height (feet)
Small	Less than 100	20 or less
Intermediate	Greater than 100 and not exceeding 4,000	Greater than 20 but less than 40
Large	Greater than 4,000	Greater than 40

Hazard Potential Classification Criteria

Dams are classified by hazard potential into three levels, referred to in the rules as “risk categories”, according to the potential damage to dwellings and economic losses. The criteria for risk categories are detailed in Table ID-2 (IDAPA r. 37.03.06.25.02).

TABLE ID-2		
Hazard Potential Classification	Damage to Dwellings	Economic Losses
Low hazard potential	No permanent structures for human habitation.	Minor damage to land, crops, agricultural, commercial or industrial facilities, transportation, utilities or other public facilities or values.
Significant hazard potential	No concentrated urban development, 1 or more permanent structures for human habitation which are potentially inundated with flood water at a depth of 2 ft. or less or at a velocity of 2ft. per second or less.	Significant damage to land, crops, agricultural, commercial or industrial facilities, transportation, utilities or other public facilities or values.
High hazard potential	Urban development, or any permanent structure for human habitation which are potentially inundated with flood water at a depth of more than 2 ft. or at a velocity of more than 2 ft. per second.	Major damage to land, crops, agricultural, commercial or industrial facilities, transportation, utilities or other public facilities or values.

Jurisdiction/Powers of Department

The following are not included as regulated dams or are not considered dams for the purposes of sections 42-1710 through 42-1721:

1. Barriers in a canal used to raise or lower the water;
2. Fills or structures determined by the director to be designed primarily for highway or railroad traffic;
3. Fills, retaining dikes or structures less than twenty (20) feet in height, under the jurisdiction of the department of environmental quality or the department of agriculture, designed primarily for retention or treatment of municipal, livestock, or domestic wastes, or sediment wastes from produce washing or food processing; and
4. Levees that store water regardless of storage capacity.

The program is empowered to regulate the maintenance and operation of all dams, reservoirs, and mine tailings impoundment structures for the protection of public safety. The Department of Water Resources, under the police power the state, oversees the construction, enlargement, alteration, repair, maintenance, operation, and removal of all dams and impounding structures within the state (IC 42-1710), and establishes the design and safety requirements for dams () and mine tailings impoundments (IDAPA 37.03.05.001.02.b; 37.03.05.045).

Permit/Approval Process

Owners who desire to construct, enlarge, alter, or repair a dam may only do so with the permission and approval of the director. The owner shall submit duplicate plans, drawings, and specifications of the proposed work to the director, and construction shall not be commenced until the owner has applied for and obtained written approval. Upon receipt of the plans, drawings, and specifications, the director shall give consideration thereto and approve or disapprove the proposal. The application must include all the following (IC § 42-1712):

1. The name and address of the owner;
2. The location, type, size, and height of the proposed dam or reservoir;
3. The storage capacity of the reservoir;
4. Other information as the director may require.

Upon construction and final inspection of the dam or reservoir, a certificate of approval shall be issued affirming the safety of the structure (IC § 42-1719). Approval may be withdrawn at any point if it is determined the structure or construction process is not in compliance with the approved plans and specifications (IC § 42-1715).

Inspection Process

The director shall inspect all dams at state expense at least once every five years (IC § 42-1717).

Emergency Action Planning

An operation plan for emergency operations and procedures, as well as guidelines for inspection, operation, and maintenance must be filed with the director for all dams that meet the following size and risk categories (IDAPA r. 37.03.06.45.01):

1. Small, high risk;
2. Intermediate; significant risk;
3. Intermediate, high risk;
4. Large, any risk category.

The plan must account for monitoring procedures and criteria during normal operating cycles, critical filling or flood periods, and earthquake effects.

Liability

No action may be brought against the owner by the state for pollution which may occur in the event the director orders emergency dumping or bypassing from a dam, embankment, or mine tailings impoundment (IC § 42-1718). Nothing in the statutes may be construed to relieve the owner or operator of a dam or reservoir from the legal duties and liabilities incident to the ownership of that structure (IC § 42-1717).

No action may be brought against the state, water resources board, director, or department of water resources or their employees for damages caused by the partial or total failure of a dam, or through the operation of the dam, on the grounds that the state (or other aforementioned entity) is liable by virtue of the following:

1. The approval of the structure;
2. The issuance or enforcement of orders relative to the maintenance or operation of the structure;
3. Control and regulation of the structure;
4. Measures taken to protect against failure during an emergency;
5. The use of design and construction criteria prepared by the Department;
6. The failure to issue or enforce orders, to control or regulate dams, or to take measures to protect against dam failure (IC § 42-1717).

Incidents and Response

If, in the opinion of the director, a dam is found to be unsafe, the director shall send a notice to the dam owner to repair the unsafe condition. If the owner does not do so, the director may draw off all or part of the water behind the dam or embankment until the dam is determined to be in a safe condition (IC § 42-1717).

In the event that the condition of any dam or reservoir is so dangerous as to require immediate remedial action, the director may undertake any necessary actions including lowering water levels, emptying the reservoir, and taking full charge and control of the dam or reservoir (IC § 42-1718). The costs and expenses of the remedial actions may be recovered from the order and must be paid within 60 days of invoice.

Owner's Non-Compliance/Violations/Penalties

Every person who violates the provisions of the statutes, or any order of the director, or any rule of the water resource board shall be guilty of a misdemeanor. Any person who willfully obstructs, hinders, or prevents the director from exercising their duties shall be guilty of a misdemeanor. Any individual who does work or permits work to be done on a structure without the approval of the director shall be guilty of a misdemeanor (IC § 42-1720).

Oversight

Any party or party who feels they have been aggrieved by a determination of the director may seek a hearing before the director and may seek judicial review of any final order of the director issued following a hearing (IC § 42-1720).

Miscellaneous

Demonstration of Financial Responsibility

An active surety bond or other means of acceptable surety payable to the Department of Water Resources shall be on file throughout the active life of a mine tailings disposal site. The purpose of the bond is to provide a means by which the tailings impoundment can be placed in a safe maintenance-free condition of abandoned by the owner without conforming to an approved abandonment plan (IDAPA 37.03.053040).

Fees

The fee for construction or enlargement of a dam or mine tailings impoundment structure is set at \$200 plus two amounts determined by the size of the structure according to the following fee schedule (Table ID-3) (IC § 42-1713):

TABLE ID-3		
Reservoir Capacity (acre-feet)	Base Fee	Additional Fee (per 10 acre-feet)
1,000 or less.	None.	\$10.00 for each 10 acre-feet.
Between 1,000 and 10,000.	\$1,000.00	\$1.00 for each 10 acre-feet over 1,000.
Greater than 10,000.	\$1,900.00	\$0.20 for each 10 acre-feet over 10,000.
Note: The maximum fee is set at \$6,000.00.		

ILLINOIS

Citation

The dam safety statutes are contained in the Illinois Compiled Statutes, Chapter 615, Act 5, the Rivers, Lakes, and Streams Act (615 ILCS 5/). Regulations can be found in the Illinois Administrative Code, Title 17, Chapter 1, Subchapter h, Part 3702: Construction and Maintenance of Dams (17 Ill. Admin. Code pt. 3702). Further guideline publications titled *Procedural Guidelines for Preparation of Technical Data to be Included in Applications for Permits for Construction and Maintenance of Dams* and *Guidelines and Forms for Inspection of Illinois Dams* are available on the dam safety section's website. The Illinois dam safety program is administered by the Dam Safety Section of the Office of Water Resources in the Illinois Department of Natural Resources.

Definition/Dams Classification

A *dam* is defined as all obstructions, walls, embankments, or barriers, together with their abutments and appurtenant works, if any, constructed for the purpose of storing or diverting water or creating a pool (17 Ill. Admin. Code pt. 3702.20).

Hazard Potential Classification Criteria

Dams are categorized into three classes according to the degree of threat to life and property in the event of a dam failure. The classes and their criteria are detailed in Table IL-1 (17 Ill. Admin. Code pt. 3702.30).

Hazard Potential Classification	Threat to Life	Threat to Property
Class III	Dam has a low probability for causing loss of life.	Dam may cause minimal economic loss.
Class II	Dam has a moderate probability for causing loss of life.	Dam may cause substantial economic loss.
Class I	Dam has a high probability for causing loss of life.	Dam has a high probability for causing substantial economic loss.

Jurisdiction/Powers of Department

The Department is authorized to carry out inspections of dams within the state, establish standards and issue permits for the safe construction of new dams and the reconstruction, repair, operation, and maintenance of existing dams. Where deemed necessary, the Department may issue orders for repair of an unsafe dam, for changes in water levels, or compel the breaching of the dam (615 ILCS 5/23a).

Permit/Approval Process

All Class I and II dams are required to have a permit for construction and modification. Class III dams who meet certain size criteria are also required to attain a permit. Permits are also required for removing dams or transferring ownership. The Office of Water Resources has available on their website a publication titled *Procedural Guidelines for Preparation of Technical Data to be Included in Applications for Permits for Construction and Maintenance of Dams*, which details all requirements necessary for a dam permit application. The application requires the following materials, at a minimum:

1. A preliminary design report;
2. A final design report;
3. Hydrologic and hydraulic investigations;
4. Structural and geotechnical investigations and design;
5. An operation plan;
6. A maintenance plan;
7. An emergency action plan; and
8. Any other materials requested by the Department.

The guidance publication details extensively the specific requirements for each section of the application, a sample operation and maintenance manual, and includes additional information for permit applications for dam removals and abandonments.

Inspection Process

The Department is authorized to carry out inspections of any dam within the state. If any inspection determines that a dam is in an unsafe condition, the Department will notify the appropriate public officials of the affected city or county, the Attorney of the county, and the Illinois Emergency Management Agency (615 ILCS 5/23a). As a condition of the dam permit, the owner shall retain an engineer or other qualified person to make regular inspection reports according to the schedule in Table IL-2 (17 Ill. Admin. Code pt. 3702.40.b.5).

Hazard Potential Classification	Inspection Frequency
Class III	Once every five years.
Class II	Once every three years.
Class I	Once every year.

Emergency Action Planning

Any applicant for a permit for a Class I or II dam is required to submit, as a part of the operating plan, an emergency warning plan that outlines procedures to be followed during major storm events and other emergency situations. Under this plan, a person designated by the dam owner would monitor dam conditions, and would warn appropriate state and local officials if major problems require immediate repairs and would

indicate how the owner plans to accomplish the needed repairs, and indicate if evacuation of persons in areas downstream of the dam may be necessary (17 Ill. Admin. Code pt. 3702.40.b.4). Specific criteria for emergency action plans (EAPs) are detailed in the *Procedural Guidelines for Preparation of Technical Data* publication, which guides dam owners to use the Federal Emergency Management Agency (FEMA) publication “Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners” (FEMA 64) as a guide for preparing their own EAPs.

Liability

Neither the Department nor its employees or agents may be held liable for damages sustained through the partial or total failure of a dam, or the operation or maintenance of any dam by reason of the Department’s regulations. Nothing in the statutes shall be construed as relieving an owner or operator of a dam from all the legal duties, obligations, and liabilities arising from ownership and operation (615 ILCS 5/23a).

Incidents and Response

In the event a dam constitutes a serious threat to life or damage, the Office of Water Resources will notify the owner and compel the owner to take action to prevent failure. The actions may include lowering the reservoir, draining the reservoir, breaching the dam, or initiating a surveillance program for dam and lake conditions. The Office may hold public meetings in the area and issue press releases informing concerned persons and officials of hazards involved. If the owner fails to take action, or cannot be reached, or is unable to take the actions, the Office may take emergency actions itself (17 Ill. Admin. Code pt. 3702.190).

Owner’s Non-Compliance/Violations/Penalties

Any person who violates the statutes or rules, including violation of the terms of a permit, shall be liable for a civil penalty of up to two times the applicable permit fee, not to exceed \$5,000 per violation (615 ILCS 5/26a). The Department is empowered to conduct investigations and hearings in the performance of its duties, and to issue subpoenas to compel attendance at these hearings. Any person who refuses to comply with a subpoena will be guilty of a Class B misdemeanor (605 ILCS 5/26b).

Oversight

All final administrative decisions of the Department shall be subject to judicial review pursuant to the provisions of the Administrative Review Law (6015 ILCS 5/26c). An individual aggrieved by a decision of the Department is entitled to seek that judicial review.

Miscellaneous

Fees

The Department requires a non-refundable permit application review fee. The base review fee schedule is detailed in Table IL-3, with additional fees listed in detail in the rules (17 Ill. Admin. Code pt. 3702.35.a). Fees are also used in the calculation of civil penalties for violations of the statutes and rules (615 ILCS 5/26a).

Permit Type	Dam Class	Base Fee
Construction of a new dam.	Class I & II	\$5,000
	Class III	\$4,500
Major modification of existing dam.	Class I & II	\$3,500
	Class III	\$2,500
Removal of dam.	All Classes	\$2,500

Demonstration of Financial Responsibility

For Class I and II dams, the owner must document that they have the financial capability to maintain or breach the dam in a safe condition, according to the standards identified in the regulations. If the owner is unable to demonstrate financial capability, the Office of Water Resources may require a performance bond of an amount estimated by the Office (17 Ill. Admin. Code pt. 3702.40.b.6.A).

Dam Signage and Buoys

The Department of Natural Resources specifies requirements for signs and devices that provide warnings of the presence of dams for persons using public waters. The Department will conduct examinations of each non-federal dam to determine which specific hazards exist at the dam, and establish safety devices, exclusion zones, and signage for that dam. The Department may not be held liable for damages, injuries, or deaths occurring at dams, except by reason of willful and wanton misconduct (615 ILCS 5/23b).

INDIANA

Citation

The Indiana dam safety statutes are contained in the Indiana Code, Title 14, Article 27, Chapter 7.5: Regulation of Dams (IC 14-27-7.5). The regulations can be found in the Indiana Administrative Code, Title 312, Article 10.5: Regulation of Dams (312 IAC 10.5). The Indiana dam safety program is administered by the Dams & Levees section of the Division of Water within the Indiana Department of Natural Resources.

Definition/Dams Classification

A *dam* is defined as an artificial manmade barrier, including appurtenant works, that meets the jurisdictional conditions (IC 14-27-2.5-1):

1. Is not built for the sole purpose of erosion control, watering livestock, recreation, or providing a haven or refuge for fish or wildlife;
2. Has a drainage area above the dam of more than one square mile;
3. Exceeds twenty feet in height;
4. Impounds a volume of more than 100 acre-feet of water; and
5. Is not regulated under the federal Mine Safety and Health Act of 1977.

Hazard Potential Classification Criteria

Dams are assigned into three hazard potential classifications according to likeliness to cause loss of human life, damage to property, and interruption of vital services, such as the passage of highways or railroads, or the transmission of utilities, communications, and power. The criteria for determining hazard potential classification are detailed in Table IN-1 (312 IAC 10.5-3-1). A dam owner or an individual who resides downstream of a dam may request the Department reconsider a hazard classification. The dam owner or the affected person may submit any technical information, breach inundation area and damage evaluation assessing the downstream area affected by a dam breach prepared by a professional engineer.

TABLE IN-1			
Hazard Potential Classification	Loss of Human Life	Economic Loss	Interruption of Services
Low hazard potential	Not likely to cause loss of life.	Damage limited to agricultural land.	Not likely to cause interruption of service.
Significant hazard potential	Not likely to cause loss of life.	May cause damage to isolated homes.	May cause brief interruption of service.
High hazard potential	May cause loss of human life.	May cause serious damage to homes, industrial and commercial buildings, or public utilities.	May cause interruption of service for longer than one day.

Jurisdiction/Powers of Department

The Department has jurisdiction and supervision over the maintenance and repair of structures in, on, or along rivers, streams, and lakes in Indiana. The Department, to that end, may issue permits for the construction and operation of dams and set standards for maintenance and operation for those structures (IC 14-27-7.5-8).

Permit/Approval Process

The statutes and rules governing the regulation of dams do not provide the specific guidelines and requirements for permit application and approval, however the Indiana Department of Natural Resources' Division of Water website maintains several online resources for navigating application requirements for all the Department's different permit types.

Inspection Process

The Department or owner shall undertake regular engineering inspections of jurisdictional dams according to the frequency schedule detailed in Table IN-2 (IC 14-27-7.5-10).

TABLE IN-2	
Hazard Potential Classification	Inspection Frequency
Low hazard potential	Once every five years.
Significant hazard potential	Once every three years.
High hazard potential	Once every two years.

Owners of a high hazard potential dam must retain a licensed professional engineer to conduct the inspection and submit an inspection report to the Department using the approved forms. If an inspection uncovers deficiencies in the dam, the owner must immediately conduct repairs, or the Department will find the owner in violation of the statutes (IC 14-27-7.5-9). Significant and low hazard potential dams will be inspected by the

Department, and the Department will assess an inspection fee to the owner for those inspections (IC 14-27-7.5-10).

Emergency Action Planning

While the statutes and rules on dams do not require emergency action plans, the dam safety program provides forms and guidelines for preparing the emergency action plans on the Department's website.

Liability

The owner must maintain the dam through the application of sound and accepted technical principles with due regard to life and property located downstream (IC 14-27-7.5-7). Neither the Department nor the Department's representatives may be held liable for damages arising out of the construction, maintenance, operation or failure of a structure, nor may they be held liable for damages arising from the issuance and enforcement of a notice of violation issued by the Department (IC 14-27-7.5-15).

Incidents and Response

If at any time the condition of the dam becomes dangerous enough to threaten life and property, and there is no time to issue a violation and compel remedial action, the Department may take essential measures to provide emergency protection to life and property. These measures include the lowering of water level and controlled breach of the structure (IC 14-27-7.5-12). The Department and its representatives may enter upon any land or water in the state without liability for trespass, and the owner is required by statute to cooperate with the Department and its agents (IC 14-27-7.5-14). The costs of emergency actions may be recovered by the Department from the owner (IC 14-27-7.5-12).

Owner's Non-Compliance/Violations/Penalties

An owner who knowingly fails to comply with a lawful order of the Department within the time frame required by the Department shall be guilty of a Class B infraction, with each day the failure continues constituting a separate infraction (IC 14-27-7.5-13).

Oversight

The appeals process is governed by the statutes and rules for Department's and the state's general administrative adjudication process.

IOWA

Citation

Dam safety is legislated and regulated as a component of floodplain management in the state of Iowa. The dam safety laws are spread across a large number of chapters within the statutes related to the Department of Natural Resources but are chiefly found in the Iowa Code Chapter 455B – Jurisdiction of Department of Natural Resources, and in Chapter 464B – Dams (Iowa Code §§ 455B and 464B). The rules are likewise spread across chapters and are chiefly located in 567 Iowa Administrative Code, Environmental Protection Commission, Title V, Flood Plain Management (567 IAC 70). Iowa is in the process of updating the rules in late 2020. Please contact the Iowa Dam Safety Program for information regarding the most current rules. The Iowa Dam Safety Program office is administered by the Land Quality section of the Environmental Protection division of the Iowa Department of Natural Resources.

Definition/Dams Classification

Dam is defined as a barrier which impounds or stores water (567 IAC 70.2).

Iowa classes its dams into two categories – major structures and non-major structures – which determine the permitting and inspection rules it is subject to. A dam is determined to be a major structure if it meets at least one of the following measures (567 IAC 70.2):

1. Any high hazard dam;
2. Any moderate hazard dam with a permanent storage exceeding 100 acre-feet or a total of permanent and temporary storage exceeding 250 acre-feet;
3. Any dam, including low hazard dams, where the height of the emergency spillway crest measured above the elevation of the channel bottom at the centerline of the dam (in feet) multiplied by the total storage volume (in acre-feet) to the emergency spillway crest elevation exceeds 30,000. For dams without emergency spillways, these measures shall be taken to the top of dam elevation.

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories according to their likelihood to cause loss of life and property damage in the event of a failure. The criteria for determining hazard potential classification are detailed in Table IA-1 (567 IAC 72.3(2)).

Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Unlikely to cause loss of life.	Damages limited to dam, livestock, outbuildings, agricultural land and rural roads.
Significant hazard potential	Unlikely to cause loss of life.	May cause damage to isolated homes, industrial or commercial structures, and roads, or disrupt public utilities.
High hazard potential	Likely to cause loss of life.	May cause serious damage to residential, industrial, or commercial areas, public utilities, public buildings, or major transport facilities.

If the dam and its impoundment are themselves of public importance, such as dams associated with public water supply systems, industrial water supply, or public recreation, it shall be considered moderate hazard potential unless determined to merit a higher classification (567 IAC 72.3.a(2)). Additionally, if any dam should, upon failure, contribute to failure of a downstream dam or dams, the minimum hazard class of the dam shall not be less than that of the downstream structure (567 IAC 72.3.a(4)).

Jurisdiction/Powers of Department

Any dam which meets any of the following criteria is considered to be under the jurisdiction of the department's rules for permitting (567 IAC 71.3):

1. Any dam designed to provide a sum of permanent and temporary storage exceeding 50 acre-feet at the top of dam elevation, or 25 acre-feet if the dam does not have an emergency spillway, and which has a height of 5 feet or more.
2. Any dam designed to provide permanent storage in excess of 18 acre-feet and which has a height of 5 feet or more.
3. Any dam across a stream draining more than 10 square miles.
4. Any dam located within 1 mile of an incorporated municipality, if the dam has a height of 10 feet or more, stores 10 acre-feet or more at the top of dam elevation, and is situated such that the discharge from the dam will flow through the incorporated area.

The Department may approve and deny permit applications (Iowa Code § 455B.104.1). The Department may also conduct regular inspections (567 IAC 73.21) and order remedial work (567 IAC 73.32).

Permit/Approval Process

The Department is empowered to issue permits for the construction, modification, maintenance, or removal of dams. Upon application by any person for a permit, the Department must investigate the flood impacts of the project (Iowa Code § 455B.264.3). The criteria for determining whether a dam construction project requires a permit vary based on both the type of dam and the location of the dam (567 IAC 71.3).

The Department will approve a permit application only after finding the project is designed in accordance with accepted engineering practice and methods, in a manner consistent with the guidelines in department Bulletin No. 16, *Design Criteria and Guidelines for Iowa Dams*, published in December of 1990 (567 IAC 72.3(1)).

Inspection Process

The Department will conduct inspections periodically according to the schedule detailed in Table IA-2 (567 IAC 73.21(1)).

TABLE IN-2		
Structure Classification	Hazard Potential Classification	Inspection Frequency
Major structures	High hazard potential	Once every two years.
	Significant hazard potential	Once every five years.
	Low hazard potential	Once every five years.
Non-major structures	All hazard potential classes	No mandated schedule, inspected as time allows or issues reported.

The Department may require increased inspection frequency if it finds a dam to be in poor condition. Any problems noted by the Department will be submitted to the dam owner in writing. The owner of a major structure is required to perform annual inspections themselves and submit inspection reports to the Department (567 IAC 73.21.d(2)).

Emergency Action Planning

The statutes and regulations do not contain specific language on emergency action plans.

Liability

No legal or financial responsibility arising from the construction or maintenance of an approved, permitted work shall be held against the state of Iowa or the Department due to the issuance of an order or administrative waiver (567 IAC 72.30(2)).

Incidents and Response

The Department may order remedial work to be undertaken on an unsafe dam, and the Department may request the assistance of the attorney general to compel performance of emergency remedial work (567 IAC 73.32).

Owner's Non-Compliance/Violations/Penalties

A person who violates the statutes, rules, orders, or conditions of a permit is subject to a civil penalty not to exceed \$500, with each day the violation occurs constituting a separate violation (Iowa Code § 455B.279).

Oversight

Any person aggrieved by an initial decision may file a notice of appeal with the director (567 IAC 70.6).

KANSAS

Citation

Kansas' dam safety laws are found in Kansas Statutes Annotated Chapter 82a, Article 3 – Obstructions in Streams (KSA § 82a-301 and onward). Regulations are found in the Kansas Department of Agriculture - Division of Water Resources (Agency 5) Regulations, Article 40 (KAR 5-40-1 through 5-40-106). Kansas' dam safety program is administered by the Division of Water Resources of the Kansas Department of Agriculture.

Definition/Dams Classification

A *dam* is defined as any artificial barrier, including appurtenant works, with the ability to impound water, waste water or other liquids that has a height of 25 feet or more at the emergency spillway; or has a height of six feet or greater and a storage volume of 50 acre-feet or more (KRS § 82a-301(b)(1)).

Kansas dam statutes and regulations have a larger-than-average number of classification types and criteria. Dams are categorized by impact potential, which is determined by size categorization and hazard potential categorization. Hazard potential categorization has subcategorizations based on vehicular traffic volumes for roads at or around certain dams.

Dams are classified by effective storage into four size classes based on size factor, which is calculated by multiplying the storage of the dam (in acre-feet) by the height of the dam (in feet). Class 1 is reserved for small barriers who do not meet the height and storage standards set in the statutory definition of a dam. The criteria for each of the size classes are detailed in Table KS-1 (KAR 5-40-21).

TABLE KS-1	
Size Classification	Size Factor (acre-feet of storage x height of dam)
Size Class 1	Less than 50 acre-feet of storage and below 25 feet in height.
Size Class 2	Less than 3,000.
Size Class 3	3,000 through 30,000.
Size Class 4	More than 30,000.

Dams are classified by size class and hazard potential into two impact categories – high-impact and low-impact. The criteria for each of the categories are detailed in Table KS-2 (KAR 5-40-1(aa); KAR 5-40-1(hh)).

TABLE KS-2		
Impact Classification	Hazard Potential Classification	Size Classification
Low-impact	Class A	Class 1
		Class 2
		Class 3
	Class B	Class 1
		Class 2
High-impact	Class A	Class 4
	Class B	Class 3
		Class 4
	Class C	All size classes

Hazard Potential Classification Criteria

Dams are categorized by hazard potential according to the criteria detailed in Table KS-3 (KAR 5-40-20(a)). The criteria for hazard potential classification in Kansas are more complex than for other states and rely on a further classification of road traffic volumes, noted in Table KS-4 (KAR 5-40-20(b); KAR 5-40-20(c)).

TABLE KS-3		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class A	No probable loss of human life.	Damage only to farms or uninhabited buildings, agricultural or undeveloped land, or traffic on low-volume roads as specified by the traffic volume classification guidelines.
Class B	Failure could endanger a few lives.	Damage to an isolated home, traffic on moderate-volume roads according to the traffic volume classification guidelines, damage low-volume railroad tracks, interrupt a utility serving a small number of customers, or inundate recreation facilities.
Class C	Failure could cause extensive loss of life.	Damage to more than one home, damage to industrial or commercial facilities, interrupt a utility serving a large number of customers, damage traffic on high-volume roads according to the traffic volume classification guidelines, inundate a high-use recreation facility, or cause two or more individual Hazard Class B hazards.

Criteria for determining traffic volume for hazard potential classification purposes are divided into two subcategories. Roads that cross any part of the embankment or a spillway, including auxiliary or service spillways, are subject to more stringent criteria than roads not meeting those criteria. For any dam with potential to cause damage to a road, that dam’s hazard potential class must be at least as high as the associated class for that road’s traffic volume (KAR 5-40-20(b); KAR 5-40-20(c)).

Roads Crossing Dam Structures		Roads Not Crossing Dam Structures	
Hazard Potential Class	Vehicles per Day	Hazard Potential Class	Vehicles per Day
Class A	0 through 100	Class A	0 through 500
Class B	101 through 500	Class B	501 through 1,500
Class C	More than 500	Class C	More than 1,500

Jurisdiction/Powers of Department

The Division of Water Resources is empowered to review applications, approve permits, investigate issues, inspect structures, and perform any other actions necessary to fulfill the duties of the statutes and regulations (KSA §§ 82a-301 – 82a-303b).

Permit/Approval Process

A permit is required for the construction, modification, or addition to any dam or obstruction within a waterway (KSA §§ 82a-301; 82a-302).

An application for a permit requires the owner to submit plans and specifications and design reports to the Division. These plans and specifications include (KAR 5-40-2 – KAR 5-40-3):

1. Plan views of the dam and dam site that include the details listed in KAR 5-40-2(a),
2. A drainage map,
3. A topographic map, and
4. Cross-section views.

The reports, plans, and specifications must be completed by a licensed professional engineer competent in the design and construction of dams (KAR 5-40-4).

Should the chief engineer determine any deficiencies are present in the application, they will notify the applicant who must respond with additional information within 30 days of notification, unless having applied for and received a time extension from the chief engineer (KAR 5-40-8(b); 5-40-8(c)). If the application is dismissed, the applicant may petition to have the application reinstated within 30 days of the dismissal if the applicant can demonstrate good cause for the reinstatement (KAR 5-40-8(f)).

Inspection Process

Each regulated dam is subject to periodic safety inspection. If an inspection by the chief engineer or an authorized representative identifies deficiencies, the Division is empowered to require remedial measures, and the dam will be subject to annual inspection until the dam is determined to be safe. The standard inspection schedule for dams is detailed in Table KS-5 (KSA § 82a-303b).

TABLE KS-5	
Hazard Potential Classification	Regular Inspection Frequency
Class A	No schedule specified.
Class B	Once every 5 years.
Class C	Once every 3 years.

An inspection report must be submitted to the chief engineer documenting the physical condition of the dam, describing deficiencies, and an analysis of the capacity of the dam (KSA § 82a-303b(4)). Detailed requirements for the inspection report can be found in KAR 5-40-90. Should a dam owner fail to comply with the inspection schedule or requirements, the chief engineer may order an inspection be conducted by the Division at the owner's expense, and levy a penalty as determined by KSA § 82a-305a (KSA § 82a-303b(6)).

Emergency Action Planning

The owner of any hazard class C dam will create and maintain an emergency action plan (EAP) that satisfies the recommendations of the Federal Emergency Management Agency (FEMA) publication "Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners" (FEMA 64) (KAR 5-40-73(b)).

The owner of any hazard class B dam will create and maintain an EAP that addresses each of the following criteria (KAR 5-40-73(a)):

1. A description of the dam, including the location of the dam and the access roads;
2. The name, address, and telephone number of the person responsible for notifying local authorities of an emergency;
3. An inundation map;
4. A list of persons to be notified, including contact information;
5. A list of persons involved in the maintenance and operation of the dam, including contact information.

The owner of any dam for which an EAP is required shall annually review the EAP to ensure it is still accurate and applicable to the current condition of the dam (KAR 5-40-73(c)).

Liability

The provisions for enforcement and penalties relating to Division of Water Resources statutes and regulations detailed in KAR 5-14-1 shall not be applied to actions taken by the chief engineer or their authorized representatives in the course of their official duties (KAR 5-14-1(i)).

Incidents and Response

Whenever the chief engineer finds that any condition exists that may present a hazard to public safety, they may issue an order requiring the correction of the violation or condition by the owner or operator. If required, an order may be issued for the removal of the dam or water obstruction.

Whenever the condition in question is severe enough to present an immediate danger to life or property, the chief engineer may employ any remedial means necessary to protect the safety of life or property. The chief engineer shall maintain full charge of the dam or obstruction until the emergency has passed (KSA § 82a-303c).

Owner's Non-Compliance/Violations/Penalties

Any entity determined to be in violation with the provisions of the dam safety statutes or regulations will be deemed guilty of a class C misdemeanor. Each day the violation continues after notice of the original violation is served upon the violator shall constitute a separate offense (KSA § 82a-305a). Penalties assessed for a violation shall be no more than one month in county jail and a fine of no more than \$500 per violation, in accordance with KSA §§ 21-6602, 21-6611.

Oversight

Orders of the chief engineer of the Division of Water Resources may be subject to administrative review upon timely request within 15 days of an action or failure to act (KSA § 82a-1901).

KENTUCKY

Citation

Kentucky's dam safety law is contained in Kentucky Revised Statutes Chapter 151, Geology and Water Resources (KRS § 151). The administrative regulations are contained in Kentucky Administrative Regulations Title 401, Energy and Environment Cabinet – Department for Environmental Protection; Chapter 4, Water Resources (401 KAR 4). Further administrative regulations are contained in the Division of Water's Engineering Memorandum No. 5 (2-1-75). The dam safety program in Kentucky is administered by the Dam Safety Section of the Water Resources Branch of the Kentucky Division of Water within the Department for Environmental Protection, which is itself a part of the Kentucky Energy and Environment Cabinet. Mine tailings dams are regulated by the Division of Mine Reclamation and Enforcement.

Definition/Dams Classification

Dam is defined as any artificial barrier, including appurtenant works, which does or can impound or divert water and which either is 25 feet or more in height or impounds 50 acre-feet or more (KRS § 151.100.12).

Hazard Potential Classification Criteria

Criteria for determining hazard potential classification are contained in Engineering Memorandum No. 5 (2-1-75) Section B-1. The criteria for each classification are detailed in Table KY-1.

TABLE KY-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class A <i>Low hazard potential</i>	No probable loss of human life.	Loss of the dam or structure itself, but little or no additional damage to other property. May cause damage to non-residential farm buildings, agricultural lands, or county roads.
Class B <i>Significant hazard potential</i>	No probable loss of human life.	May cause significant damage to property. Primarily damages isolated homes, main highways or major railroads, or cause interruption of use or service of relatively important public utilities.
Class C <i>High hazard potential</i>	May cause loss of human life.	May cause serious damage to houses, industrial or commercial buildings, important public utilities, main highways, or major railroads.

Jurisdiction/Powers of Department

The Secretary of the Energy and Environment Cabinet is empowered by KRS 151 to exercise the following powers (KRS § 151.125):

1. Administer and enforce the provisions of the law;
2. Conduct investigations, research and training, and disseminate information regarding construction, operation or maintenance of dams and reservoirs; adopt rules and regulations, which have the force and effect of law, for flood control and the protection of water resources as well as regarding the procedural aspects of the dam safety program (i.e. Hearings, reports, issuance of certificates of inspection and permits);
3. Issue orders requiring owners to take remedial actions necessary to protect life and property and to ensure compliance with laws and regulations;
4. Examine and approve or disapprove applications for permits to construct, repair or alter dams;
5. Establish standards for the safe construction, enlargement, repair, alteration, maintenance, or operation of a dam;
6. Make investigations or inspections necessary to determine compliance, including the right to enter upon an area affected and the right of ingress and egress across intervening properties;
7. Order the suspension or revocation of a certificate of inspection or permit for failure to comply with laws or rules;
8. Order the suspension or revocation of a certificate of inspection or permit for failure to comply with laws or rules;
9. Order the cessation of activity undertaken without proper approval or permits;
10. Institute and prosecute court action for the purpose of obtaining enforcement of cabinet orders.

Permit/Approval Process

The construction, reconstruction, relocation or improvement of dams in Kentucky may only take place if the plans and specifications for such work have been submitted to and approved by the Dam Safety section of the Division of Water, and a stream construction permit issued by the same (KRS § 151.250). Federal dams and those permitted by the Division of Mine Reclamation and Enforcement are exempted from these requirements.

All applications for permit shall be in the form and manner prescribed by the Department. Plans and specifications must be drawn by a licensed professional engineer. Upon receipt of a complete application package (including plans and specifications). The Department shall notify the applicant in writing within 20 days either of approval or denial, or that modifications in the plans or specifications are necessary before the permit can be approved (KRS § 151.250-260; 401 KAR 4:030). All plans and specifications must bear the seal and signature of the responsible engineer and must comply with standards as set forth in the Kentucky rules. All structures (other than Class A structures), shall have subsurface investigations and soil analyses. Plans and specifications must include elevation-area-capacity and elevation-discharge data and flood routings, as well as determinations of downstream water requirements and the means to empty the impoundment.

The permit approval process concludes with the issuance of a construction permit, constituting approval of the engineering plans and allowing construction to begin. During construction, monthly progress reports and testing reports must be prepared by the supervising design engineer and submitted to the Cabinet (401 KAR 4:030). After construction is finished and final approval of all as-built plans is given, written approval to impound is issued.

Inspection Process

The secretary is required to conduct a program of regular inspections of all dams and reservoirs within the state, at a frequency determined by the division (KRS § 151.295). Certificates of inspection are valid for a definite period of time set by the cabinet and not to exceed five years (KRS § 151-293). The cabinet shall notify the owner or operator of any noncompliance or deficiencies in the form of a report and require the owner or operator to submit to the cabinet a plan of correction to be implemented according to an approved timeline (401 KAR 4:020 § 3.2).

The statutes and regulations do not establish an inspection frequency schedule for dams according to certain criteria, and the cabinet instead is tasked with conducting inspections throughout the year on all regulatory dams and reservoirs. Currently the Cabinet conducts inspections according to the schedule detailed in Table KY-2.

TABLE KY-2	
Hazard Potential Classification	Inspection Frequency
Low hazard potential	Once every 5 years.
Significant hazard potential	Once every 3 years.
High hazard potential	Once every year.

Emergency Action Planning

The dam safety laws and regulations do not contain specific language on emergency action plans.

Liability

The dam safety laws and regulations as contained in KRS 151, 401 KAR 4, and Engineering Memorandum No. 5 (2-1-75) do not contain specific language regarding liability on the part of the dam safety program.

Incidents and Response

The Energy and Environment Cabinet is empowered to take emergency action if an owner abandons a dam or refuses to take remedial measures as ordered (KRS § 151.297). The owner or owners of a dam at which the Cabinet has taken emergency action are liable for the costs of such action. The Cabinet may apply for foreclosure sale of the property to satisfy any judgment obtained. (KRS § 151.297)

Owner's Non-Compliance/Violations/Penalties

Whenever the cabinet has reason to believe that a violation of any of the provisions of the statutes or regulations has occurred, it may issue a written notice of the provision alleged to have been violated and the facts of the violation to the owner. The owner will be required to answer the charges set out in the notice at a hearing before the cabinet at a time not less than thirty days after the date of notice unless the person complained against waives in writing the thirty day period (KRS § 151.182.1).

If the cabinet determines that a dam is not in compliance with state dam safety requirements, the owner will be ordered to take such action as is needed to render the dam safe. If the Cabinet determines that a dam has been abandoned or if the owner fails to comply with the Cabinet's order to take action, or if danger to life and property is imminent, the Cabinet may declare an emergency and take action itself. Persons to whom an order has been issued must comply immediately but may petition for a hearing in front of the Cabinet. (KRS §§ 151.182 and 151.184 describe this hearing process). The Cabinet may retain control of the dam until the emergency condition has passed.

The dam safety laws and regulations as contained in KRS 151, 401 KAR 4, and Engineering Memorandum No. 5 (2-1-75) do not identify a class of offense (i.e. felony, misdemeanor, or infraction) nor do they specify a penalty for violation of the dam safety laws and regulations specifically. Other portions of the statutes and regulations governing the Energy and Environment Cabinet, specifically KRS §§ 224.10 and 224.99, do have specific criteria for offenses and penalties, which may or may not be applicable to the dam safety statutes.

Oversight

Appeals may be filed by owners regarding any order by the Cabinet. Within 30 days of the order, the appeal must be taken to the circuit court of the county where the structure is located. The Cabinet shall be named respondent and service shall be had on the Secretary. The circuit court shall review and make decisions concerning the appeal. (KRS § 151.186)

Miscellaneous

Atypical Dams

Dam designs not typically seen in the state of Kentucky, including gravity dams, buttress dams, steel dams, and timber dams will be considered on an individual basis according to prevailing engineering practices. The Cabinet will determine design, permitting, maintenance, operation, and inspection criteria for each case individually (KRS § 151.193; 401 KAR 4:030 § 4; Engineering Memorandum No. 5 (2-1-75) Section 4).

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Citation

The dam safety laws are codified in the Louisiana Revised Statutes, Title 38 – Public Contracts, Works and Improvements, Sections 21 through 28 (La. R.S. 38:21). The dam safety regulations are contained in the Louisiana Administrative Code Title 56 – Public Works, Part III – Flood Control and Water Management, Chapter 7 – Dam Safety Program, Subchapter A – Dam Safety (La. Admin. Code tit. 56:III § 701). The Louisiana dam safety program is administered by the Dam Safety Program of the Public Works and Water Resources Division (PW&WR) of the Engineering Division of the Louisiana Department of Transportation and Development (DOTD).

Definition/Dams Classification

A *dam* is defined as any artificial barrier, including appurtenant works, which does or will impound or divert water or any other liquid substance (La. Admin. Code tit. 56, § 705). Dams subject to the jurisdiction of the dam safety program are those that meet the regulatory definition of a dam and are 25 feet or more in height or have an impounding capacity of 50 acre-feet or more (La. RS 38:22). The definition of dams excludes levees, which are subject to separate regulation, and the statute specifically excludes any barrier less than six feet in height or with an impoundment of less than fifteen acre-feet (La. RS 38:22).

Hazard Potential Classification Criteria

The Louisiana dam safety regulations categorize dams by hazard potential into categories referred to in the rules as “impact categories” (La. Admin. Code tit. 56:III § 713-D.2). The impact classification category is determined by the probable maximum impacts of a dam breach, where low impact structures are those which due to small size or remote location are likely to cause little damage, while higher impact levels may cause damage or potential loss of life. The criteria for impact categories are detailed in Table LA-1 (La. Admin. Code tit. 56:III § 713-D.2).

Hazard Potential Classification	Potential Loss of Life	Potential Economic Loss
Low hazard potential	Not likely.	Minimal.
Significant hazard potential	Possible.	Appreciable.
High hazard potential	Likely.	Excessive.

Jurisdiction/Powers of Department

Impoundments subject to regulation by another statutory authority, such as the Department of Natural Resources, shall not be governed by the statutes and regulations of the dam safety program (La. RS 38:25).

The Assistant Secretary, Public Works and Intermodal Transportation is authorized to adopt rules and regulations for the construction, modification, operation and maintenance of dams (La. RS 38:24). The Assistant Secretary is empowered to review and approve plans and specifications for construction, enlargement, removal, alteration, or repair of any dam. They are also authorized to issue permits for these activities (La. RS 38:23), to make inspections during construction and operation (La. RS 38:24). Special inspections due to unusual or alarming circumstances are performed at Departmental discretion. If deficiencies are found in a dam during inspection, the Assistant Secretary may call for remedial work. The right of the State to take over a dam in the event of an emergency is stated in La. R.S. 38:26B. The State does have the authority to invoke judicial action upon violators of provisions (La. R.S. 38:28).

Permit/Approval Process

A permit from the DOTD is required for the construction of new impoundment structures or any structural modifications to existing impoundment structures. All applications for a permit must contain designs for work and all required supporting documentation identified in La. Admin. Code tit. 56:III § 711. The application for a permit to construct or modify a dam should be preceded by a letter of intent notifying the DOTD, although applications for a permit will be accepted without such a letter (La. Admin. Code tit. 56:III § 711-A).

The design plans and specifications must be prepared by a certified professional engineer registered by the Louisiana State Board of Registration for Professional Engineers and Surveyors (La. Admin. Code tit. 56:III § 713-B). Designs must conform to nationally recognized standards and include all the following design steps in sequence (La. Admin. Code tit. 56:III § 713-C). Further criteria for each of the steps can be found in the relevant administrative code section.

1. Hydrology and hydraulics (H&H) design, including
 - a. Impact (hazard potential) classification,
 - b. Determination of controlling design condition and associated storm runoff,
 - c. Setting spillway and stilling basin widths and elevations, top of embankment elevation, and normal pool stage;
2. Structural and geotechnical design of embankment, Spillways, and drawdown structures;
3. Development and documentation of operations and maintenance procedures.

Upon application acceptance, the Director of Public Works and Water Resources Division will prepare a public notice for a public hearing inviting all the affected locale. The applicant is required to publicize the meeting at their own cost and attend the hearing to describe the nature and purpose of the proposed project, and to answer questions regarding the project from the public (La. Admin. Code tit. 56:III § 709-C). Upon completion of all the required steps, the DOTD will issue an “Impoundment Permit/Certification of Completion” (La. Admin. Code tit. 56:III § 709-D).

Inspection Process

The DOTD will periodically conduct limited inspections of jurisdictional dams. These inspections do not relieve the owner of their responsibility to inspect and document conditions at their own dam. The owner is required to inform the DOTD of any issues regarding the safety of their dam. If the DOTD identifies unsafe conditions, or determines the dam is in danger of becoming unsafe, they may direct the owner to take whatever actions necessary to restore the dam to its design conditions (La. Admin. Code tit. 56:III § 719). Neither the statutes nor regulations specify inspection frequency or an inspection schedule.

Emergency Action Planning

The owner of a dam is required to establish and maintain an “Emergency Preparedness Plan” that adheres to Departmental guidance as established in Louisiana’s state guideline publication, *Emergency Action Plan Guidelines*. Submission of the plan is a requirement for the permitting process. It is the owner’s responsibility to ensure the plan is implemented in an emergency situation. As a component of the plan, the owner must conduct a breach analysis according to the criteria established in the regulations governing emergency action planning, which can be found the Louisiana Administrative Code, Title 56, Section 725.

Liability

No action may be brought against the state of Louisiana, its agencies, or its representatives for the recovery of damages caused by the partial or total failure of any dam or through the operation of any dam on the basis of that dam’s approval or the issuance of enforcement orders, control orders, emergency actions, or regulations of that dam (La. RS 38:27).

Incidents and Response

When the chief engineer finds that the terms of the statutes or regulations have not been met, or a dam is in a condition that presents a hazard to public safety or welfare, they may issue an order to require the correction of the violation or condition. If the corrective measures are not accomplished within the established timeline, an order may be issued to require the safe removal of the dam (La. RS 38:26-A). When the condition of the dam is serious enough to require immediate action, the chief engineer may immediately employ any remedial means necessary to ensure the safety of life and property. The costs of that work shall be recovered from the owner (La. RS 38:26-B). The chief engineer may fully drain the impoundment until corrections to the structure have been made (La. Admin. Code tit. 56:III § 721).

Owner’s Non-Compliance/Violations/Penalties

It is unlawful for any person to violate any provision of the statutes, regulations, orders, or requirements of the chief engineer relative to dams. It is also unlawful to obstruct, hinder, or prevent the chief engineer or their authorized representatives from performing their duties (La. RS 38-28-A). It is unlawful for any director, officer, agent, contractor, or employee to construct, modify, maintain, remove, or do work or permit work to

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be done on any dam without the approval of the dam safety program. It is also unlawful for any director, officer, agent, contractor, or employee to fail to notify the chief engineer of improper work of which they have knowledge (La. RS 38:28-A). In the event that a dam is constructed for which the owner has not received proper permitting and approval, the owner will be fined, and the lake or impoundment will be drained until all approvals have been made (La. Admin. Code tit. 56:III § 709-E).

Any individual who violates any of the provisions of the statutes, regulations, orders, or lawful requirements of the chief engineer shall be found guilty of a misdemeanor and fined no more than \$500, or be imprisoned for not more than six months, or both (La. RS 38:28-B).

Oversight

The dam safety statutes and regulations do not provide for a formal process for appealing decisions by the Dam Safety Program, nor is there any other oversight mechanism specified.

MAINE

Citation

The dam safety laws are found in Maine Revised Statutes Title 37-B: Defense, Veterans and Emergency Management, Chapter 24: Dam Safety (37-B MRS § 24). The dam safety regulations are found in the Code of Maine Rules, Agency 15: Department of Defense, Veterans and Emergency Management, Section 214: Maine Emergency Management Agency (MEMA), Chapter 3: Design and Construction Standards for New or Reconstructed Dams (15 214 CMR 3). The Maine Dam Safety Program is administered by the Maine Emergency Management Agency, which is within the Maine Department of Defense, Veterans and Emergency Management.

Definition/Dams Classification

A *dam* is any artificial barrier, including appurtenant works, the site on which it is located, and appurtenant rights of flowage and access that impounds or diverts water. Dams under the jurisdiction of the statutes and regulations are those that are 25 feet or more in height and impounds at least 15 acre-feet of water or is six feet in height or more and impounds at least 50 acre-feet of water (37-B MRS § 24-1111).

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories according to potential loss of human life (as measured by urban development) and potential economic loss. Hazard potential classifications are proposed by the dam owner and approved by the Agency. The criteria for determining hazard potential classification are detailed in Table ME-1 (15 214 CMR 3 § 3(b)).

Hazard Potential Classification	Urban Development	Economic Loss
Low hazard potential	No permanent structure for human habitation	Minimal. Undeveloped to occasional structures or agriculture.
Significant hazard potential	No urban development and no more than a small number of habitable structures	Appreciable. Notable agriculture, industry, or structures.
High hazard potential	Urban development with more than a small number of habitable structures	Excessive. Extensive community, industry, or agriculture.

Jurisdiction/Powers of Department

The Department is empowered to adopt any rules necessary for carrying out the provisions of the statutes. The Department is empowered to undertake remedial actions in an emergency, including taking full control of any dam or reservoir and/or breaching the dam itself. The Department may make necessary investigations and inspections, and in the process of conducting those investigations and inspections may enter upon private property or secure administrative warrants for the purpose of gaining entry on to private property. The Department may initiate proceedings or civil action against any individual or entity who violates the provisions of the statutes (37-B MRS § 24-1114).

Permit/Approval Process

An owner proposing to construct an impoundment must file forms with the Agency detailing the location, purpose, capacity, and height of the structure (15 214 CMR 3 § 41). The owner should then file a preliminary report, including a general description of the structure, description of properties located in the inundation zone, a letter affirming the local governing body in that area is aware of the intent to build an impoundment, preliminary maps and drawings, preliminary design criteria, and all other documentation listed in 15 214 CMR 3 § 42.

The preliminary report shall be followed by a final design report that includes all required technical design criteria detailed in section 43 of the same regulations and shall produce those required reports in accordance with all technical requirements detailed in Chapter 3 Section 5: Design of Structures and Hydrology. The final design report will include a construction schedule that details a time and construction sequence for the impoundment, techniques to be used to divert stream flow during construction to prevent hazard to life and property, and a plan of quality control testing for all materials and construction methods (15 214 CMR 3 § 61). All reports and design specifications must be produced by a qualified professional engineer.

The Agency shall accept, review, and notify the owner within 45 working days whether the preliminary report is acceptable or not, and the same procedure will be followed for the final design report (15 214 CMR 3 § 43(j)). Construction on the impoundment may not commence until approval of the final design report has been given to the owner by the Agency (15 214 CMR 3 § 43).

Inspection Process

All state dam inspectors are licensed professional engineers experienced in the inspection and design of dams (37-B MRS § 24-1117). A state dam inspector shall conduct inspections of all high and significant hazard dams to determine whether the condition or operation of those dams constitutes a threat to public safety. The inspections are to be conducted according to the following schedule (Table ME-2).

TABLE ME-2	
Hazard Potential Classification	Minimum Inspection Frequency
Low hazard potential	N/A.
Significant hazard potential	Once every 6 years.
High hazard potential	Once every 6 years.

Inspections must also be conducted within 60 days of a request from any dam owner or municipality in which the dam is located, and at any time the Agency determines a dam may constitute a potential risk to public safety (37-B MRS § 24-1119.1).

Upon inspection, a state dam inspector shall provide to the Agency a report detailing the operation and material condition of the dam and recommending all necessary remedial measures. The report will be shared to the dam owner, the municipality in which the dam is located, and the emergency management director of the county in which the dam is located (37-B MRS § 24-1119.2). The dam owner must notify the Agency within 20 days of receipt if they wish to contest any finding of the report and must provide support of that contestation within three months. The report will be reviewed by a conference of relevant parties as specified in 37-B MRS § 24-1119.3, at which point the agency will issue any orders for remedial work it deems necessary (37-B MRS § 24-1119.4).

Emergency Action Planning

The owner of a significant or high hazard potential dam is required to prepare an emergency action plan that follows the plan supplied by the Department. The emergency action plan must be updated every two years and will be reviewed by the Department for adequacy (37-B MRS § 24-1127).

Liability

No action may be brought against the State, the Department, or its agents or employees for any action taken or any failure to take action pursuant to the statutes (37-B MRS § 24-1124). Nothing in the statutes should be construed as relieving a person of the duties, responsibilities, or liabilities imposed by any other law, regulation, ordinance or rule of law (37-B MRS § 24-1125).

Incidents and Response

In the event of an emergency, the commissioner is obliged to warn the public of the emergency condition and take immediate actions necessary for the protection of life and property. These actions include, among others, the following (37-B MRS § 24-1114.2):

1. Taking full charge and control of any dam or reservoir;
2. Lowering the water level by releasing water from the reservoir;
3. Completely emptying the reservoir;
4. Breaching or removing the dam itself; and
5. Taking other necessary steps to safeguard life and property.

The owners or persons in control of the dam are liable for the costs incurred by the Department in carrying out emergency remedial actions, or in enforcing any other order. If the owners or persons in control of the dam refuse to comply, or do not fully comply, with any order of the Department, the Department shall initiate civil action against the owners or persons in control of the dam for damages (37-B MRS § 24-1120).

Owner's Non-Compliance/Violations/Penalties

In addition to other any other forfeitures or penalties provided by law, any person violating the statutes or regulations will be subject to a civil penalty assessed by the commissioner of no less than \$100 and no more than \$5,000 for each day the violation continues. The penalty is payable to the State, and will be recovered in a civil action (37-B MRS § 24-1129).

Oversight

Any person aggrieved by an order of the commissioner may appeal to the Superior Court (37-B MRS § 24-1121). No part of the statutes shall be construed to deprive any owner of recourse to the court in which that owner may be entitled to relief under the laws of the State of Maine (37-B MRS § 24-1123).

Miscellaneous

Dam Repair and Reconstruction Fund

The statutes provide for a departmental fund that offers low-interest loans to municipalities and quasi-municipal corporations for engineering, legal, and construction costs from the management of dams under their control (37-B MRS § 24-1130). Loan terms are detailed in the rules (15 214 CMR 4).

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Citation

The Maryland dam safety statutes are contained in Maryland Code, Environment Article, Section 1-404 and Sections 5-503, 5-503.1, and 5-505 through 5-514. The dam safety regulations are found in the Code of Maryland Regulations (COMAR) Sections 26.17.04.01 through 26.17.04.13 (COMAR 26.17.04). The Maryland dam safety program is administered by the Dam Safety Division of the Maryland Department of the Environment, Water and Science Administration.

Definition/Dams Classification

Dam means any obstruction, wall, or embankment, together with its abutments and appurtenant works, in, along, or across any stream, constructed for the purpose of storing or diverting water or for creating a pool upstream of the dam (COMAR 26.17.04.02.B.4).

Hazard Potential Classification Criteria

Dams are classified by size and hazard potential into four categories (Table MD-1).

TABLE MD-1				
Hazard Potential Classification	Storage Volume (acre-feet)	Normal Depth (feet)	Potential for Loss of Life	Potential for Damage
Class I <i>High hazard potential</i>	20,000 or more.	50 or more.	Probable.	Serious damage to: residential, industrial, or commercial buildings; important public utilities, public roads; or railroads.
Class II <i>Significant hazard potential</i>	1,000 or more and less than 20,000.	25 or more and less than 50.	Small possibility.	May cause damage to isolated residences or cause interruption of use or service of public utilities or roads.
Class III <i>Low hazard potential</i>	Less than 1,000.	Less than 25.	Very unlikely.	Damage is of same magnitude as cost of dam and within the financial capability of owner to repair.
Class IV*	Less than 100.	Less than 15.	X	

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Category IV is reserved for those structures which have a contributing drainage area of less than 1 square mile (640 acres), and a normal depth of water less than 15 feet above the original stream bed, and a normal surface area less than 12 acres (COMAR 26.17-04.05.B.1).

Jurisdiction/Powers of Department

The Department of the Environment (MDE; hereafter referred to as the Department) has general supervisory power, regulation, and control over the natural resources of the State of Maryland within the boundaries of the tidal waters (Md. Code, Env. Art. § 5-501). Policies of the Department are carried out through the Water and Science Administration. The law gives power to the Department to issue a permit for construction, reconstruction, or repair of any reservoir, dam, or waterway. Applicants are required to allow representatives of the Department the right of entry to facilities under its jurisdiction (COMAR 26.17.04.05.E.2). An applicant shall agree to allow reasonable inspection of the proposed project site by representatives of the Water and Science Administration (hereafter referred to as the Administration).

If the Department determines that any reservoir, dam, or similar waterway construction is unsafe, needs repair, or should be removed because it is unsafe and not repairable, the Department shall notify the owner in writing to repair or remove the object, as the situation warrants. The repair or removal work shall be completed within a reasonable time. If the work is not completed in the time prescribed in the notice, the Department may have the work completed at the owner's expense. The Department may bring an action in the proper court to recover this expense. In the event of an emergency in which repairs are necessary to safeguard life and property against predicted immediate danger, these repairs must conform to requirements specified by the Administration.

Certain small ponds may be exempt from the permit requirement. Low hazard ponds with dams less than 20 feet high and a drainage area of less than 640 acres may be exempt from the permit requirements if the plans and specifications are approved by the local soil conservation district.

Permit/Approval Process

Every person is required to obtain a permit from the Department to begin to construct any building or structure which may appropriate or use any waters of the state (Md. Code, Env. Art. § 5-502(a)). A person shall obtain a permit to construct, reconstruct, or repair any reservoir, dam, or waterway obstruction; to make, construct, or permit to be made or constructed any change or addition to any reservoir or dam; to make or permit to be made any change, addition to, or repair of any existing waterway obstruction; or change in any manner, in whole or in part, the course of any stream or body of water within the State (Md. Code, Env. Art. § 5-503(a)).

Every application for a permit shall be accompanied by maps, drawings, and specifications of proposed use or waterway obstruction, changes, additions, or repairs to be made, and other data and information as required by the Department (Md. Code, Env. Art. § 5-505). The degree of investigation needed for a specific project will be determined at the discretion of the Administration based upon the magnitude and impact of the project

and the complexity of the site (COMAR 26.17.04.04.A). Applicants must agree to a reasonable inspection of the proposed project site by representatives of the Administration (COMAR 26.17.04.04.N). Detailed requirements for materials to be included in the application can be found in the Code of Maryland Regulations, Section 26.17.04.05, Subsection A(3), entitled “Making Application”. Upon receiving an application, the Department will hold a public informational hearing unless waived under the provisions of the Maryland Code, Environmental Article Sections 5-506(b) through 5-506(e). The application must be overseen and prepared by a registered professional engineer practicing in accordance with the laws of Maryland and qualified in the field of dam design and construction (COMAR 26.17.04.05.A.1). The Department will evaluate the evidence presented in the application and make a determination regarding permit approval based upon the feasibility of the project, the degree to which the project preserves public safety, and the degree to which the project promotes the general public welfare (Md. Code, Env. Art. § 5-507(a)).

Inspection Process

The owner is responsible for the safety of the dam and for providing all necessary surveillance and inspections. The owner shall promptly notify the Administration of any significant changes in the dam’s condition. In addition to owner inspections, the Administration makes inspections of all dams, reservoirs, and waterway obstructions within its jurisdiction to detect early signs of deterioration and to enforce corrective measures. The Administration’s agents must be given free access to every part of the dam or reservoir (COMAR 26.17.04.05.E).

The statutes and regulations do not specify an inspection frequency schedule. In general, the Departments policy is to inspect high hazard potential dams annually, significant hazard potential dams every 3 years, and low hazard potential dams every 5 to 7 years.

Emergency Action Planning

Any dams with the potential to cause the loss of human life or substantial property damage in the event of structural failure, including all high and significant hazard potential dams, are required to develop and maintain an emergency action plan that is subject to the approval of the Department (Md. Code Env. Art. § 5-503.1). Copies of the approved plan must be provided to state and local emergency management agencies and should be updated annually and submitted to the Department for approval. An owner of a dam subject to the requirement for emergency action plans shall conduct a functional exercise or test of the approved plan at least once every five years, and the results of the functional exercise or test shall be reported to the Department in the updated emergency action plan submitted that same year (Md. Code Env. Art. § 5-503.1(f)).

A complete emergency action plan shall contain, at a minimum (Md. Code Env. Art. § 5-503.1(c)):

1. A description of the dam, including its hazard potential classification;
2. Maps or other graphic representations of areas downstream with potential to be affected by a failure or other emergency;

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3. A list of agencies and individuals responsible for monitoring weather and operating conditions at the dam during emergencies;
4. Detailed operating and decision-making procedures to protect life and property downstream;
5. Procedures for notifying jurisdictions, businesses, and persons downstream with potential to be affected by a failure or other emergency;
6. A list of emergency management resources and equipment that could be needed in the event of an emergency; and
7. Any additional information required by the Department.

Liability

The statutes and regulations do not contain specific language regarding the liability of the Department.

Incidents and Response

In the event of an emergency in which repairs are necessary to safeguard life and property, these repairs must be made by the owner immediately, and the owner must notify the Administration within 24 hours of what repairs are needed and the extent of the work underway (COMAR 26.17.04.05.F). Under emergency conditions, such as violation or imminent violation of any of the State's requirements, a permit may be modified or suspended (COMAR 26.17.04.12.C).

Owner's Non-Compliance/Violations/Penalties

A person who violates any provision of the statutes relating to water appropriation and use, or any rule, regulation, order, or permit adopted or issued under any such provision is liable for a civil penalty not exceeding \$5,000 per violation to be collected in a civil action brought by the Department. Each day a violation occurs or continues constitutes a separate violation. Before bringing civil action against a local government, the Department is obliged to meet with that local government to seek an alternative resolution to the contested issue. All funds collected by the Department under this section of the statutes shall be paid into the Maryland Clean Water Fund (Md. Code Env. Art. § 5-514).

If the Administration determines there has been a violation of any provision, regulation, or permit it will issue a written complaint to the alleged violator. The Administration may then impose any of the following options (COMAR 26.17.04.12.A):

1. Issue an administrative order requiring corrective action;
2. Require the alleged violator to file a written report regarding the alleged violation;
3. Require the alleged violator to appear before the Administration to answer the charges;
4. Require the alleged violator to both file a written report and appear before the Administration.

In connection with any hearing authorized by the Department, the Department may subpoena any person or evidence and order a witness to give evidence. Failure to comply with a subpoena may result in a circuit court

compelling obedience to the order, compelling testimony, or compelling production of evidence, and the court may punish as contempt any failure to obey its order (Md. Code, Env. Art. § 5-516(e)).

If the Administration determines a permit has been violated, it is empowered to modify, suspend, or revoke that permit (COMAR 26.17.04.12.B through 26.17.04.12.F).

Oversight

Any action taken by the Administration on an alleged violation may be reviewed upon the request of the person ordered, according to the timeline specified for that particular action under the regulations (COMAR 26.17.04.12).

MASSACHUSETTS

Citation

The content of this section has not been reviewed by the Massachusetts dam safety program and may contain inaccuracies or outdated content. Please contact the Massachusetts state dam safety program directly to verify the content of this chapter.

The Massachusetts dam safety statutes can be found in the Massachusetts General Laws, Part III, Title IV, Chapter 253, Sections 44 through 50A. The regulations are contained in the Code of Massachusetts Regulations, Chapter 302, Section 10. The Massachusetts dam safety program is administered by the Office of Dam Safety within the Massachusetts Department of Conservation and Recreation.

Definition/Dams Classification

Dam is defined as any man-made artificial barrier, including appurtenant works, which impounds or diverts water, and which is 25 feet or more in height or has an impounding capacity of 50 acre-feet or more. Any other artificial barrier which may endanger property or safety in the event of a breach, or cause environmental harm if it were to breach, may be designated by the commissioner as a dam (Mass. Gen. Laws ch. 253 § 44).

Dams are classified according to both size and hazard potential. The size of the dam is determined according to its height, as measured from the dam crest to the lowest point of natural ground along the downstream toe of the dam, and according to its storage capacity, as measured at maximum water storage elevation (302 Mass. Code Regs. 10.06(2)). The specific criteria for each classification can be found in Table MA-1.

TABLE MA-1		
Size Classification	Storage (acre-feet)	Height (feet)
Non-jurisdictional	Less than 15 regardless of height	Less than 6 regardless of storage capacity
Small	15 or more and less than 50	6 or more and less than 15
Intermediate	50 or more and less than 1,000	15 or more and less than 40
Large	Greater than 1,000	Greater than 40

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories according to their likeliness to cause damage to downstream property and their probability to cause loss of life in the event of a dam failure (302 Mass. Code Regs. 10.06(3)). The criteria for hazard potential classifications are detailed in Table MA-2.

TABLE MA-2

Hazard Potential Classification	Loss of Life	Economic Loss
Class III <i>Low hazard potential</i>	Loss of life is not expected.	Dam is located where failure may cause minimal property damage to others.
Class II <i>Significant hazard potential</i>	Dam is located where failure may cause loss of life.	Dam is located where failure may cause damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities.
Class I <i>High hazard potential</i>	Dam is located where failure will likely cause loss of life.	Dam is located where failure will likely cause serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).

Jurisdiction/Powers of Department

The Department is empowered to require persons constructing dams to submit periodic construction reports and as-built drawings, and to order the discontinuance of projects if they are found to be not in conformance with plans and specifications (Mass. Gen. Laws ch. 253 § 45). The Department has the authority to inspect and order the inspection of dams (Mass. Gen. Laws ch. 253 § 46). Powers listed under Section 47 include the power to order owners to take corrective action in the case of an unsafe dam, and the power to act in a dam emergency. The Department may order that costs incurred by the state during the exercise of their enforcement, inspection, and emergency powers be paid by the owner (Mass. Gen. Laws ch. 253 § 48).

Regulations promulgated under the state dam safety program provide further authorizations, including:

1. The Department is authorized to supervise the construction, alteration, repair, removal, enlargement, and emergency action plans of jurisdictional dams in Massachusetts (302 Mass. Code Regs. 10.02);
2. Representatives of the Department are authorized to enter upon private property at any time to investigate or inspect any dam (302 Mass. Code Regs. 10.10);
3. The Department has the power to issue a permit to impound water, adopt rules and regulations, call for remedial work, and cite non-compliance (302 Mass. Code Regs. 10.11).

Permit/Approval Process

No person shall construct or alter a dam without applying for and receiving permit approval from the Department (Mass. Gen. Laws ch. 253 § 45A). The application for a permit must be submitted on departmental forms, and accompanied by plans, specifications, and any related materials required by the Department certified by a registered professional engineer. The Department is required to approve or deny a permit application within 60 days of receipt of the completed application package. A completed application package

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will contain a preliminary report that includes the application form, maps showing the location of the proposed structure and outline of the reservoir, preliminary drawings and cross sections, preliminary design criteria, geology and geotechnical engineering assumptions, spillway design criteria, and materials to be used, among other things (302 Mass. Code Regs. 10.09(1)(a)). The package will further contain the final design report that meets the criteria established in subsection 1-b of Rule 10.09, and two sets of plans and specifications that satisfy the criteria of subsection 2 of the same Rule.

Permits may be revoked, suspended, modified, or denied by the Department for violations of permit conditions, failure to fully disclose facts or obtaining a permit through misrepresentation, violation of any provisions of the statutes and regulations, change of circumstances that would make the dam unsafe, or change of circumstances that are hazardous to life and/or property (302 Mass. Code Regs. 10.10).

Inspection Process

Dam owners shall periodically inspect all dams at a frequency determined by the dam's hazard potential classification. The inspection frequency scheduled is detailed in Table MA-3 (302 Mass. Code Regs. 10.07).

Hazard Potential Classification	Inspection Frequency
Class III <i>Low hazard potential</i>	Once every ten years.
Class II <i>Significant hazard potential</i>	Once every five years.
Class I <i>High hazard potential</i>	Once every two years.

High and significant hazard potential dams whose condition has been determined to be poor or unsafe by an inspection must be inspected and reported at least every three months by a registered professional engineer until the dam is repaired and restored to a suitable condition (302 Mass. Code Regs. 10.07(2)(a)). Should a dam owner fail to meet the dam inspection deadline, the Department will enter upon the property and conduct the inspection. The costs of this inspection will be recovered from the owner, with interest, and a fine will be assessed to penalize the failure to submit an inspection report (302 Mass. Code Regs. 10.07(1)).

Emergency Action Planning

All dams classified as high or significant hazard potential must maintain an emergency action plan (EAP) that is submitted to and reviewed by the Commissioner of the Department and the Massachusetts Emergency Management Agency. All EAPs must be updated annually and follow guidance set by the Office of Dam Safety (ODS) and published on the ODS website. An application to construct a new high or significant hazard potential dam must be accompanied by an EAP in order for the application to be approved. Criteria for the content of EAPs differ based on the hazard potential classification, and can be found in Rule 10.11, subsections 1 and 2 of the Code of Regulations (302 Mass. Code Regs. 10.11).

Liability

The owner shall be responsible and liable for damage to property of others or injury to persons, including but not limited to, loss of life resulting from the operation, failure of or mis-operation of a dam. The Commissioner cannot be held liable for any damages by reason of inspection, technical documents, or permits issued (302 Mass. Code Regs. 10.13).

Incidents and Response

If a dam is determined to be unsafe, and an owner does not take remedial actions or does not file an evaluation report as required by an order to take remedial action, the commissioner may take such emergency actions as necessary to restore the condition of a dam. The commissioner may enter upon private property to undertake any such action, including drawing off water and making temporary repairs (Mass. Gen. Laws ch. 253 § 47(a)).

Owner's Non-Compliance/Violations/Penalties

Any person who fails to comply with the laws or regulations, or any lawful order issued by the commissioner, is subject to a fine not to exceed \$5,000 dollars per offence, with each day a violation continues constituting a distinct offense. The fine will be determined by the courts, and the attorney general will recover the fine upon notice by the commissioner (Mass. Gen. Laws ch. 253 § 47(b)).

Oversight

No specific language in the laws or regulations on dam safety provides for a review or appeal process for decisions made by the Department.

Miscellaneous

Weirs, Low Head Dams, and Roll Dams

The Massachusetts General Laws provide for the appropriation of funds to erect signs near all roll dams (also known as weirs or low-head dams) owned or controlled by the commonwealth or its subdivisions. The signs are intended to warn boaters of the presence of and dangers associated with roll dams. The Department cannot be brought to court over a failure to post a sign (Mass. Gen. Laws ch. 253 § 50A).

MICHIGAN

Citation

The content of this section has not been reviewed by the Michigan dam safety program and may contain inaccuracies or outdated content. Please contact the Michigan state dam safety program directly to verify the content of this chapter.

Laws pertaining to the Michigan dam safety program can be found in the Michigan Compiled Laws, Chapter 324, Part 315 (Mich. Comp. Laws §§ 324.31501 – 324.31529). The state of Michigan separates dam regulations into two categories, with Part 307 regulating lake levels and Part 315 regulating dams over six feet in height. The rules for the Michigan dam safety program are contained in the Michigan Administrative Code, Rules 281.1301 through 281.1313 (Mich. Admin. Code r. 281.1301 and on). The Michigan dam safety program is administered by Dam Safety division of the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

Definition/Dams Classification

A *dam* is "an artificial barrier, including dikes, embankments, and appurtenant works, that impounds, diverts, or is designed to impound or divert water or a combination of water and any other liquid or material in the water; that is or will be when complete 6 feet or more in height; and that has or will have an impounding capacity at design flood elevation of 5 surface acres or more" (Mich. Comp. Laws § 324.31502(6)).

Dams are governed by either Part 307 of the statutes or Part 315 of the statutes, depending on their function. Dams are regulated by Part 315 when they are over 6 feet in height and over 5 acres are impounded during the design flood. Dams are regulated by Part 307 when a circuit court issues an order establishing the level at which the lake is to be maintained.

Hazard Potential Classification Criteria

Dams are classified by hazard potential into three categories – high, significant, and low hazard potential. The categorization shall be determined by the Department; neither the statutes nor the regulations specify the criteria for each hazard potential classification (Mich. Admin. Code r. 281.1305(5)).

Jurisdiction/Powers of Department

The Department of Environment, Great Lakes and Energy is responsible for the safety of dams in Michigan. The Department has the power to regulate the construction, reconstruction, repair, alteration, removal, abandonment, and operation of dams; to provide for the inspection of dams; to provide for the protection of natural resources and the public trust; and to prescribe remedies and penalties (Mich. Comp. Laws §

324.31506). The Department may in an emergency take any necessary actions, including repair, drawdown, breaching or cessation of operation to protect public safety, natural resources and the public trust (Mich. Comp. Laws § 324.31512). Department personnel have conditional right of entry to a dam site (Mich. Comp. Laws § 324.31527). The Department may limit dam operation or order dam removal in order to protect public health, safety, welfare, natural resources and the public trust (Mich. Comp. Laws § 324.31519).

Permit/Approval Process

A permit shall only be issued by the Department after plans and specifications have been approved, and construction on a dam cannot begin before permitting. The Department is required to accept or reject a permit application within 60 days of receipt, and the construction of a newly permitted dam or impoundment must be completed within two years, unless waived by petition to the Department (Mich. Comp. Laws § 324.31515(1)). A permit may be revoked, suspended, annulled, or amended by the Department for due cause at any point (Mich. Comp. Laws § 324.31515(6)).

Application to the Department must be made on departmental forms and will be accompanied by a fee set by the Department. An application for a new dam will require all the following, among other things (Mich. Admin. Code r. 281.1302):

1. A description and evaluation of natural resources that will be lost due to the project;
2. A description and evaluation of natural resources that will be created by the project;
3. An environmental project assessment that will detail impacts on the environment and riparian rights, as well as establish mitigation measures;
4. Assessment of public health impacts;
5. Plans and specifications for the dam or impoundment;
6. All other materials required by the regulations and the Department.

Specific criteria for the environmental project assessment can be found in Rule 281.1304 of the Michigan Administrative Code. Specific criteria for the engineering plans and specifications are detailed in Rule 281.1305 of the Michigan Administrative Code.

When the Department determines the engineering plans and specifications are acceptable, a permit shall be issued, and the recipient notified of the determination. If the Department determines the application to be unacceptable, the Department will advise the applicant of why that determination was made and provide a concise statement of how the application may be corrected (Mich. Admin. Code r. 281.1302(14)).

Inspection Process

Dams are to be inspected regularly, at a frequency determined by the hazard potential classification. The inspection shall be conducted at the expense of the owner, and the inspection report must be prepared and filed by a licensed professional engineer (Mich. Comp. Laws § 324.31518(1)). The inspection frequency order is relatively more complex in Michigan than other states. The Department maintains an alphabetical list of all

dams in each hazard potential classification, and the inspection schedule is established based upon their order in that list, as detailed in Table MI-1 (Mich. Admin. Code r. 281.1309).

TABLE MI-1		
Hazard Potential Classification	Inspection Frequency	Inspection Order, Proceeding Alphabetically
High hazard potential	Once every three years.	Year one: every third dam. <i>First, fourth, seventh, and so on.</i>
		Year two: every third dam. <i>Second, fifth, eighth, and so on.</i>
		Year Three, every third dam: <i>Third, sixth, ninth, and so on.</i>
Significant hazard potential	Once every four years.	Year one: every fourth dam. <i>First, fifth, ninth, and so on.</i>
		Year two: every fourth dam. <i>Second, sixth, tenth, and so on.</i>
		Year three: every fourth dam. <i>Third, seventh, eleventh, and so on.</i>
		Year four: every fourth dam. <i>Fourth, eighth, twelfth, and so on.</i>
Low hazard potential	Once every five years.	Year one: every fifth dam. <i>First, sixth, eleventh, and so on.</i>
		Year two: every fifth dam. <i>Second, seventh, twelfth, and so on.</i>
		Year three: every fifth dam. <i>Third, eighth, thirteenth, and so on.</i>
		Year four: every fifth dam. <i>Fourth, ninth, fourteenth, and so on.</i>
		Year five: every fifth dam. <i>Fifth, tenth, fifteenth, and so on.</i>

When a new dam is constructed, or an existing dam is newly determined to fall under the regulation of the Department, it will be appended to the end of the alphabetical list, and its first inspection will occur according to the same principles regarding its placement on the list (Mich. Admin. Code r. 281.1309(f)).

If the Department determines that a condition may exist that endangers the dam, an inspection shall be required immediately (Mich. Admin. Code r. 281.1309(f)).

Emergency Action Planning

All high and significant hazard potential dams are required to have an emergency action plan prepared and updated. Emergency action plans must be submitted to the Department and local emergency management coordinators for review and approval. At the time the inspection report is due, the owner shall review the emergency action plan to ensure it is up to date. The owner will then inform the Department of the findings of this review and submit necessary revisions to the Department and the local emergency management

coordinators. A completed emergency action plan will include, at a minimum, the following (Mich. Admin. Code r. 281.1311):

1. A description of the conditions under which the plan will be activated, what actions shall be taken, and who shall be responsible to take those actions;
2. The name, address, and telephone number of the individual responsible for operation of the dam, and an alternate for that individual;
3. Contact information for the local emergency management coordinator(s);
4. A listing of occupied facilities, buildings, and residence at risk of flooding due to dam failure or mapping adequate to clearly delineate the potential inundation area.

Liability

No part of the statutes should be read as to relieve the owner of any legal duty, obligation, or liability incident to the ownership or operation of a dam or impoundment (Mich. Comp. Laws § 324.31529).

Incidents and Response

The Department may issue emergency orders, including orders to immediately repair, draw down, breach, or cease operation of a dam where there is an immediate danger of failure or harm to public health, property, or the environment. If the owner fails to comply, cannot comply, or is unavailable or cannot be contacted, the Department may undertake the action immediately and recover the costs of the action from the owner through civil action. Upon issuing an emergency order, the Department shall provide the owner the opportunity for an administrative hearing within 15 days of issuance. The Department may then evaluate whether to continue, modify, or suspend the order (Mich. Comp. Laws § 324.31521).

Owner's Non-Compliance/Violations/Penalties

The Michigan Comprehensive Laws detail extensive penalties for criminal violations of the dam safety statutes, to be assessed by a court. The Michigan Administrative Code details the administrative fines and penalties for specific violations, to be levied by the Department according to an established fee schedule.

If the Department determines that a person is in violation of any part of the statutes or any rule of the regulations, the Department may issue an order requiring compliance or to restore the affected site to its original condition. If a person is in violation of any statute, rule, order, or permit the Department is empowered to bring a civil action against the person in civil court (Mich. Comp. Laws § 324.31524). The civil action will be undertaken by the attorney general on behalf of the Department (Mich. Comp. Laws § 324.31525(1)).

In addition to any other relief granted, the court may impose a civil fine of not more than \$10,000 for each day of violation of the statute, a rule promulgated under the statute, or a permit issued under the statute. A person who willfully or recklessly violates the rules and statutes, or an order issued by the Department, and places or

MICHIGAN

may place a person in imminent danger or cause serious damage to property or the environment is guilty of a misdemeanor punishable by not more than one year in prison or a fine of between \$2,500 and \$25,000 for each day of the violation, or both. A person who has knowledge of any violation is subject to the same punishments. A person who commits a second violation or further violation is guilty of a felony, punishable by not more than two years in prison or a fine of not less than \$10,000 for each day the violation occurred, or both (Mich. Comp. Laws § 324.31525).

A person who does not obtain a permit for regulated activities will be subject to a fine of at least twice the permit application fee (Mich. Comp. Laws § 324.31525(6)).

A person who fails to submit an inspection report on time, fails to comply with an emergency order, violates the permit, fails to maintain an updated emergency action plan, or commits any of the sixteen violations listed in Rule 281.1312 of the Michigan Administrative Code will be subject to an administrative penalty of not more than \$500 per day (Mich. Admin. Code 281.1312). Fines will be levied according to the duration of the violation (Mich. Admin. Code r. 281.1312(2)).

Oversight

A person aggrieved by any action or inaction of the Department may request a hearing on the matter in question. The hearing shall be conducted by the Department in accordance with existing provisions for contested cases. A determination of the Department following a hearing may be subject to judicial review (Mich. Comp. Laws § 324.31526). Nothing in the statutes should be read as to prevent a dam owner from any legal recourse or remedy to which they are entitled under the laws of the state (Mich. Comp. Laws § 324.31529).

Miscellaneous

Minor Projects

The statutes and regulations provide different criteria for minor projects that do not affect the structural integrity of the dam. These projects are issued separate permits and are subject to all regulations excepting the requirement for a final departmental inspection upon completion of the project.

Demonstration of Financial Responsibility

The Department has the authority to require a performance bond to assure completion of a specific project (Mich. Comp. Laws § 324.31515(5)). A performance bond may be required if the Department determines that the total completion of the dam construction, repair, or alteration project is essential for the protection of public health or safety, or to protect natural resources; for temporary dams constructed for a specific time and purpose; for phased construction projects; for projects to be constructed at a future point to mitigate environmental degradation (Mich. Admin. Code r. 281.1307(2)). Any of the following instruments are acceptable forms for a performance bond (Mich. Admin. Code r. 281.1307(1)):

1. A surety bond;
2. A secured trust fund;
3. A letter of credit;
4. Insurance;
5. A financial test;
6. A corporate guarantee;
7. Another suitable instrument or mechanism;
8. A combination of the above.

MINNESOTA

Citation

The Minnesota dam safety statutes are contained in Minnesota Statutes Chapter 103G: Waters of the State, Sections 501 through 561: Dam Construction and Maintenance (Minn. Stat. §§ 103G.501 – 103G.561). The regulations can be found in the Minnesota Rules chapter 6115: Public Water Resources, sections 0300 through 0520 (Minn. R. 6115.0300 – 6115.0520). The Minnesota dam safety program is administered by the Dam Safety unit of the Conservation Assistance and Regulatory Section of the Ecological and Water Resources Division of the Minnesota Department of Natural Resources.

Definition/Dams Classification

Dam means any artificial barrier, together with appurtenant works, which does or may impound water and/or waste materials containing water except (Minn. R. 6115.0320, subp. 5):

1. Any barrier not in excess of six feet in height or impounding no more than 15 acre-feet of water;
2. Underground or elevated tanks to store water, sewage containment barriers, federally owned dams, dikes, and levees.

Hazard Potential Classification Criteria

Dams are classified by the commissioner into three hazard potential classes, according to the criteria detailed in Table MN-1.

TABLE MN-1		
Hazard Potential Classification	Loss of Life	Additional Loss
Class III	N/A.	Property losses restricted mainly to rural buildings and local county and township roads which are an essential part of the rural transportation system serving the area involved.
Class II	Possible health hazard.	Probable loss of high-value property, damage to secondary highways, railroads, or other public utilities, or limited economic loss to the public.
Class I	Any loss of life or serious hazard.	Damage to health, main highways, high-value industrial or commercial properties, major public utilities, or significant economic loss to the public.

Any dam whose failure, mis-operation, or other occurrences would result only in damages to the owner, and would not otherwise affect public health, safety, and welfare as described in Classes I, II, and III is not subject

to the hazard classification. Unclassified dams and structures excluded from the definition of the dam are exempted from certain provisions of the rules (Minn. R. 6115.0340).

Jurisdiction/Powers of Department

The rules do not apply to a barrier six feet or less in height, regardless of storage capacity, or to a barrier creating a storage capacity at maximum water storage elevation of 15 acre-feet or less, regardless of height (Minn. Stat. § 103G.531, subd. 2).

The commissioner may construct, maintain, and operate dikes, dams, and other structures (Minn. Stat. § 103G.505). The Department may review and approve or deny grant applications for repairs to publicly owned dams (Minn. Stat. § 103G.511). The Department may require permits for dam repair (Minn. R. 6115.0350), construction (Minn. R. 6115.0410) and transfer of ownership (Minn. R. 6115.0370).

Permit/Approval Process

The owner of a dam desiring to modify, repair, or remove that dam shall make an application upon forms provided by the commissioner that shall contain:

1. Name and address of owner(s);
2. Proposed changes;
3. Maps, plans, and specifications which set forth pertinent details including location, type, dimensions, storage capacity, and
4. Proposed date of start and completion of construction.

A filing fee shall accompany the application (Minn. R. 6115.0350, subp. 1).

The specific application requirements for a proposed new dam or enlargement, including the preliminary report, final design report, and plans and specifications, are detailed in Minn. R. 6115.0410.

Inspection Process

The commissioner shall conduct an initial detailed inspection of every Class I, II, and III dam to determine safety conditions at that dam (Minn. R. 6115.0360, subp. 2). Thereafter, the commissioner shall make periodic inspections of dams based on the schedule detailed in Table MN-2 (Minn. R. 6115.0360, subp. 3.B).

TABLE MN-2	
Hazard Potential Classification	Inspection Frequency
Class III	Once every eight years.
Class II	Once every four years.
Class I	Once every year.

MINNESOTA

Upon completion of each inspection, the commissioner shall notify the owner of the dam, in writing, of the results of the inspection and if the dam needs corrective action, the commissioner shall order such action (Minn. R. 6115.0360, subp. 4).

Emergency Action Planning

Class I dam owners shall prepare and file for approval a contingency plan for notifying any persons whose lives, property, or health may be endangered by failure, mis-operation, or other circumstances or occurrence affecting the dam, identifying most practical and expeditious means for warning considering the time factor involved based on the proximity of the dam to affected parties. If there is no feasible or practical means to provide for adequate evacuation warning in sufficient time if a catastrophe occurs the owner shall be responsible for notifying affected downstream property owners of that fact (Minn. R. 6115.0490).

Liability

Nothing in the regulations shall be construed as relieving an owner of a dam or permittee of the legal duties, obligations, or liabilities incident to the ownership or operation of the dam (Minn. R. 6115.0430).

Any action or proceeding against the state, the commissioner, a county, or other entity relating to the construction, repair, operation, or control of a dam must be undertaken within one year of the action in question (Minn. Stat. § 103G.555).

Incidents and Response

Where immediate action is necessary for public health, safety, and welfare, repairs may be started by the owner without application for a permit, but the owner shall notify the commissioner at once and shall apply for the permit for the repairs as soon as practicable (Minn. R. 6115.0350, subp. 2.A).

Where necessary to protect public health, safety, and welfare, if the condition of any dam is imminently dangerous to the safety or life or property or imminent floods threaten the safety of a dam or impoundment, the commissioner may require and enforce lowering or emptying of the water level from the impoundment, and take any other steps essential to safeguard life and property (Minn. R. 6115.0350, subp. 2.B).

Owner's Non-Compliance/Violations/Penalties

Any permit shall not be construed as limiting any legal claims of persons against the permitted, or any legal claims of the state against the permittee for violation of any of the terms or conditions of the permit (Minn. R. 6115.0420).

Oversight

Nothing in the regulations shall be construed as to deprive any owner of recourse to the courts (Minn. R. 6115.0440).

Miscellaneous

Demonstration of Financial Responsibility

The owner is responsible for perpetually maintaining the dam and appurtenances to ensure the integrity of the structure. The commissioner may impose such requirements as may be necessary prior to the ultimate termination of the owner's operation to ensure that the owner will be financially responsible for carrying out the activities required for perpetual maintenance, and that adequate funding will exist (Minn. R. 6115.0390).

Fees

Any permit application shall be accompanied by a filing fee (Minn. R. 6115.0350, subp. 1). The initial inspection of a dam shall be accompanied by a fee, charged according to the schedule detailed in Table MN-3, assessed cumulatively (Minn. R. 6115.0520, subp. 2). In addition, a fee will be assessed for each periodic inspection, assessed as a base fee with an additional charge determined by the schedule detailed in Table MN-3, assessed cumulatively (Minn. R. 6115.0520, subp. 3).

TABLE MN-3		
Inspection Type	Fee Criteria	Fee
Initial Inspection	Estimated cost of project: For the first \$100,000	2.5% of cost
	Estimated cost of project: For the next \$400,000	1.5% of cost
	Estimated cost of project: For the next \$500,000	1% of cost
	Estimated cost of project: All costs in excess of \$1,000,000	0.5% of cost
Periodic Inspection	For the first 1,000 square feet of surface	\$0.01 per ft ²
	For each square foot of surface in excess of 1,000	\$0.001 per ft ²

If the actual project cost exceeds the estimate provided in the application, an additional fee is levied.

MISSISSIPPI

Citation

The Mississippi dam safety statutes are contained in the Mississippi Code, Title 51: Waters, Water Resources, Water Districts, Drainage, and Flood Control. Chapter 3: Water Resources; Regulation and Control, Article 1: General Provisions, Section 39: Construction, modification, and inspection of dams and reservoirs (Miss. Code Ann. § 51-3-39). The administrative rules can be found in the Mississippi Administrative Code, Title 11: Mississippi Department of Environmental Quality, Part 7: Surface Water and Groundwater Use and Protection, Chapter 3: Dam Safety Regulations (Miss. Code R. 11-7-3). The Mississippi dam safety program is administered by the Mississippi Department of Environmental Quality.

Definition/Dams Classification

A *dam* is defined as any artificial barrier, including appurtenant works, constructed to impound or divert water, waste water, liquid borne materials, or solids that may flow if saturated. All structures necessary to maintain the water level in an impoundment or to divert a stream from its course will be considered one dam (Miss. Code R. 11-7-3.1).

Hazard Potential Classification Criteria

The Mississippi Dam Safety Program defines three hazard potential classification categories according to the criteria detailed in Table MS-1 (Miss. Code R. 11-7-3.1).

TABLE MS-1		
Hazard Potential Classification	Loss of Life	Economic Loss
Low hazard potential	No threat to human life.	May cause damage to agricultural land, nonresidential farm buildings, or minor roads.
Significant hazard potential	No threat to human life.	May cause significant damage to main roads, minor railroads, or cause interruption of use or service of public utilities.
High hazard potential	May cause loss of life.	Serious damage to residential, industrial, or commercial buildings; or damage to, or disruption of, important public utilities or transportation facilities such as major highways or railroads. Dams which meet the statutory thresholds for regulation that are proposed for construction in established or proposed residential, commercial, or industrial areas will be assigned this classification, unless the applicant provides convincing evidence to the contrary.

Jurisdiction/Powers of Department

Any person proposing to construct, enlarge, repair or alter a dam or reservoir shall submit an application to the Commission on forms prescribed by the Commission at least thirty (30) days prior to commencement of construction. Except as otherwise provided, written authorization must be obtained from the Commission prior to commencement of construction. Detailed drawings showing plan and cross-section views shall be required when necessary to determine if the proposed structure is designed to meet hazard classification regulations set forth herein. Prior written authorization is not required for emergency repairs to a dam that is likely to breach. Any person intending to acquire the right to store or use water from a reservoir formed by a dam on a watercourse regardless of whether written construction authorization therefor was required under these regulations, may do so only by making an application for and obtaining a surface water use permit (Miss. Code Ann. § 51-3-39(1)).

Permit/Approval Process

A person proposing to construct, modify, or alter a dam in any way must first attain a permit from the state permit board (Miss. Code Ann. § 51-3-39(1); Miss. Code Ann. § 49-17-29). The board may require submittal of any information it deems necessary to evaluate the proposal (Miss. Code R. 11-7-3.2-A(1)). The application will follow the following guidelines (Miss. Code R. 11-7-3.3-B):

1. Engineering drawings, specifications, and engineering reports shall be prepared, signed, and sealed by a professional engineer. Engineering reports shall include, but not be limited to, hydrologic calculations, hydraulic calculations, geotechnical investigation, and provisions for internal drainage to address through-seepage and under-seepage. Portions of the investigation at the site of the dam and within the catchment area including, but not limited to, characterization of geologic formations, assessment of groundwater conditions, and/or other geologic conditions, factors, and processes which may impact the design of the dam may be performed by a professional geologist.
2. Drawings shall be prepared to a scale that provides sufficient detail for review of all project components.
3. Specifications shall include detailed descriptions of all work to be performed and materials to be used in the construction, including plans for diversion during construction and quality assurance and quality control.
4. A geotechnical report showing the foundation conditions and material properties at the location of the dam as well as the classification and material properties of all borrow material must be submitted for the construction of all new high and significant hazard dams.
5. For high and significant hazard dams a proposed construction schedule detailing the critical stages including but not limited to construction of the cutoff trench, spillways, and filters must be submitted prior to the commencement of construction.

The permit application will be evaluated in accordance with the rules of the permit board (Miss Code Ann. § 49-17-29).

Inspection Process

The owner and/or operator must conduct a visual inspection of the dam at least every 60 days and after every major rainfall event over the watershed and report observed deficiencies to the Department (Miss. Code R. 11-7-3.6-A). The owner and/or operator will also perform a detailed formal inspection of the dam using the services of a registered professional engineer with experience in dam design and construction, at a frequency to be directed by the Department. In addition, the Department may require annual owner's inspections to be submitted using forms provided by the Department (Miss. Code R. 11-7-3.6-B).

Emergency Action Planning

The owner or operator of a high hazard potential dam shall develop an Emergency Action Plan (EAP) for the dam. The Department may also require owners and operators of certain significant hazard potential dams to do the same. The EAP must be submitted to the Department for approval, and once approved the Department will retain a copy of the plan. The EAP must be reviewed on an annual basis, with revisions being submitted to the Department and all persons involved in the plan's implementation. The owner or operator is also responsible for conducting or coordinating periodic training and exercises to ensure personnel are properly prepared to carry out their emergency responsibilities (Miss. Code R. 11-7-3.6-E).

Liability

Nothing in the statutes shall be construed as creating any liability for damages against the state and/or against its officers, agents and employees (Miss. Code Ann. § 51-3-39(6)). The permit board's decisions or activities regarding a permit do not relieve the dam's owner, consulting engineer, consulting geologist, contractor, equipment supplier, attorney, or any other party of any liabilities or responsibilities. Nothing in the rules shall be construed as conveying any liability or responsibility to the Department or the board (Miss. Code R. 11-7-3.2-C(1)).

Incidents and Response

The Department is empowered to order an owner or operator to take immediate remedial actions if it is determined a dam is in an unsafe condition (Miss. Code R. 11-7-3.6-F). These actions may include the immediate removal of the dam (Miss. Code Ann. § 51-3-39(5)).

Owner's Non-Compliance/Violations/Penalties

If an individual is determined to have violated the statutes, rules, orders, or permit requirements of the Department, or allowed a dam to deteriorate and remain in an unsafe condition despite departmental orders, the Department may cause the dam to be removed or breached, require the owner and/or operator to take remedial action, revoke or modify any authorization pertaining thereto, or take other action the Commission deems appropriate, within its jurisdiction (Miss. Code R. 11-7-3.8).

Oversight

Any person aggrieved by the permit board may request an evidentiary hearing before the board regarding the decision (Miss. Code R. 11-7-3.10).

MISSOURI

Citation

The Missouri dam safety statutes are contained in the Missouri Statutes Chapter 236 – Dams, Mills, and Electric Power (Mo. Rev. Stat. § 236.400 – 236.500). The dam safety regulations are found in the Missouri Code of State Regulations, Title 10 – Department of Natural Resources, Division 22 – Dam and Reservoir Safety and Council (10 CSR 22). The Missouri dam safety program is administered by the Dam and Reservoir Safety Program, a component of the Missouri Geological Survey in the Missouri Department of Natural Resources.

Definition/Dams Classification

Dam is defined as any artificial or manmade barrier which does or may impound water, and which impoundment has or may have a surface area of 15 or more acres of water at the water storage elevation, or which is 35 feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier or dam, if it is not across a streambed or watercourse, together with appurtenant works (Mo. Rev. Stat. § 236.400-5).

An *agricultural dam* is defined as any dam constructed specifically to impound water for use in irrigation, livestock watering, or commercial fish rearing and sale (Mo. Rev. Stat. § 236.400-5).

Dams are categorized by purpose in two categories, conventional and industrial dams. Conventional dams are dams used for purposes other than tailings, slime, settling, or other similar industrial water purposes (10 CSR 22-2.030).

Hazard Potential Classification Criteria

Dams are categorized into three environmental classes based on potential damage due to inundation (water reaching a height of two feet or more) in the event of a failure. The criteria for the classes are detailed in Table MO-1 (10 CSR 22-2.040).

TABLE MO-1	
Environmental Class	Content of the Downstream Environment Zone
Class I	Ten or more permanent dwellings or any public building.
Class II	One to nine permanent dwellings; or one or more campgrounds with permanent water, sewer, and electrical services; or one or more industrial buildings.
Class III	Everything not considered Class I or Class II.

Jurisdiction/Powers of Department

The Dam and Reservoir Safety Council has jurisdiction over all dams as defined in the statutes and regulations. Dams which are not or will not be in excess of thirty-five feet in height, and any dams or reservoirs licensed and operated under the Federal Power Act, are not subject to sections 236.400 through 236.500 of the dam safety laws (Mo. Rev. Stat. § 236.400-5).

The council shall adopt the general technological guidelines and standards, rules, and regulations applicable to permits, design, construction, maintenance, operation, alteration, repair, enlargement, reduction, removal, or other changes to a dam or reservoir. The council may approve or deny permit applications or may delegate that authority to the chief engineer (Mo. Rev. Stat. § 236.415). The council shall undertake a state program of inspection (Mo. Rev. Stat. § 236.420).

The chief engineer may initiate investigations, including hearings, as proper to protect public health and safety from any unsafe dam or reservoir, and is empowered to enter on private or public property as necessary to make investigation or inspection of any dam or reservoir, or records pertaining to the dam or reservoir (Mo. Rev. Stat. § 236.425-3). The chief engineer may, by issue of a judge having jurisdiction, make use of a search warrant in the conduct of investigations and inspections (Mo. Rev. Stat. § 236.425-4). The chief engineer may issue subpoenas for testimony or evidence (Mo. Rev. Stat. § 236.495-1), and both the council and chief engineer may request the attorney general or a prosecuting attorney to begin legal action to enforce a rule or lawful order where necessary (Mo. Rev. Stat. § 236.495-2).

Permit/Approval Process

There are three types of permits – registration permits, construction permits, and safety permits. Each is intended to regulate a separate type of activity. At any given time, a dam will only have one type of permit, although they may have more than one type during their existence (10 CSR 22-2.020(1)). Registration permits are required for dams existing prior to the effective date of the regulations (August 13, 1981) and are issued for a time period of up to five years. Construction permits apply to construction work on new or existing dams and are valid for the period of construction. Safety permits apply to the operation of a dam constructed pursuant to a construction permit and are issued for a period of up to five years (10 CSR 22-2.020).

Any owner of a proposed new dam 35 feet or more in height is required to obtain first a construction permit, and then a safety permit for the new dam and reservoir (10 CSR 22-2.010). Prior to the commencement of the construction, alteration, enlargement, reduction, or removal of a dam or reservoir, the owner shall apply to the council for the permit regarding that work (Mo. Rev. Stat. § 236.435). Construction permit applications must bear the seal and signature of an experienced professional engineer registered in the state of Missouri or employed by a qualified engineering division of a state or federal agency engaged in dam construction (Mo. Rev. Stat. § 236.435-2). The application shall be accompanied by the design report and plans and specifications for the work the applicant is desiring to undertake (Mo. Rev. Stat. § 236.435-2). The specific documentation requirements, including extensive technical details and requirements, are provided in the Code of State Regulations, Division 22, Chapter 3 – Permit Requirements.

The chief engineer and the council shall review the application, and the chief engineer shall deliver a recommendation regarding the application to the council. The council will then approve or reject the application and notify the applicant within 45 days (Mo. Rev. Stat. § 236.435-4, 5).

Upon completion of the construction permitted under the rules above, the dam owner will notify the council and, pending inspection and approval, be issued a safety permit (Mo. Rev. Stat. § 236.440-1). The dam owner must apply for renewal of the safety permit at a regular frequency (Mo. Rev. Stat. § 236.440-8).

Inspection Process

The council, with the advice and assistance of the chief engineer, is responsible for carrying out a regular inspection program that covers all jurisdictional dams and reservoirs in the state (Mo. Rev. Stat. 236.420). The owner is also required, as a condition of the construction permit application, to provide information regarding the plans for regular inspections, including lists of items to be inspected, time schedules, and forms for inspections (10 CSR 22-3.040(2)(C)25).

The statutes and regulations do not contain specific language setting out a specific schedule or frequency for dam inspections, although they are required within the statutes.

Emergency Action Planning

The owner shall develop an emergency action plan as a condition of the construction permit application (10 CSR 22-3.040(2)(C)25). The council or chief engineer may require the owner to submit the downstream environment zone warning procedure to be used when dam failure is a threat. This would consist of the current name of all dam owners' representatives responsible for giving notification of a threat of failure and the current phone numbers of appropriate local police and other persons having emergency assistance authority (10 CSR 22-3.040(2)(D)3).

Liability

In the absence of willful and wanton misconduct, no action shall be brought against the state, its departments, its agents, or its representatives for the recovery of damages caused by the partial or total failure of a dam, or through the use or operation of any dam or reservoir on the grounds of a decision, enforcement order, rule, or measure taken by the council (Mo. Rev. Stat. § 236.475).

Incidents and Response

Enforcement orders shall be prepared by the chief engineer or the council in cases where serious defects pose a threat to public safety. The owner must comply within 30 days of issuance of the order (10 CSR 22-4.020).

If an existing dam is found to be unsafe and an imminent and substantial threat to public safety, so as to not allow time to issue an enforcement order to the dam owner, the chief engineer may take any appropriate action not prohibited by the constitution or laws of the state for protection of public safety. The chief engineer may request the attorney general to take legal steps necessary to accomplish such action and recover costs of such measures from the owner (Mo. Rev. Stat. § 236.455).

If an existing dam is determined to be abandoned and considered a threat to public safety, the dam may be altered, repaired, or removed at the state's expense, and the chief engineer may request the attorney general bring an action in the name of the state to recover expenses from the owner (Mo. Rev. Stat. § 236.450).

Owner's Non-Compliance/Violations/Penalties

Any person who willfully violates the statutes, or obstructs or hinders the council from imposing their duties, or violates the rules or terms of a permit or undertakes work without a permit, is guilty of a misdemeanor and shall be punished by a fine of between \$500 and \$10,000, or by confinement in county jail for a term between 30 days and one year, or both. Each day a violation continues shall constitute a separate and distinct offense (Mo. Rev. Stat. § 236.500).

Oversight

The council shall meet with or hear the appeal of a permit applicant and the applicant's representative if the chief engineer has rejected the application for a construction, safety, or registration permit (Mo. Rev. Stat. § 236.425-5). All decisions of the council are subject to judicial review, however judicial review shall not be available until all administrative remedies are exhausted (Mo. Rev. Stat. § 236.480-1).

Miscellaneous

Earthquake Design Requirements

The regulations categorize each county in Missouri into one of six Zones (A through F) according probable maximum acceleration of bedrock and modified Mercalli intensity (10 CSR 22-3.020, Table 4). Dams in each zone are subject to additional design requirements to ensure safety for slope stability in the event of an earthquake (10 CSR 22-3.020(5) and (6)).

MONTANA

Citation

The Montana dam safety statutes are contained in the Montana Code Annotated Title 85 – Water Use, Chapter 15 – Dam Safety Act (Mont. Code Ann. § 85-15). The dam safety regulations are found in the Montana Administrative Regulations Chapter 36.14 – Natural Resources and Conservation: Dam Safety (Mont. Admin. R. 36.14). The Montana dam safety program is administered by the Dam Safety Program, a component of the Water Operations Bureau within the Water Resources Division of the Montana Department of Natural Resources and Conservation.

Definition/Dams Classification

Dam means any artificial barrier, including appurtenant works, used to impound or divert water (Mont. Code Ann. § 65-15-106(4)).

Hazard Potential Classification Criteria

Any person proposing to construct a dam or reservoir with an impounding capacity of 50 acre-feet or more must submit a hazard determination application to the department (Mont. Code Ann. § 85-15-209). The department will then determine whether the dam or reservoir will be classed as high hazard potential. The criteria for determination are as follows (Mont. Admin. R. 36.14.206):

1. The impoundment capacity is 50 acre-feet or larger, measured at the maximum normal operating pool; and
2. Loss of human life is likely to occur within the breach flooded area as a result of failure of the dam, where loss of life is presumed likely if the following structures are present or planned in the likely flooded area:
 - a. Occupied houses and farm buildings;
 - b. Stores;
 - c. Gas stations;
 - d. Parks;
 - e. Golf courses;
 - f. Stadiums;
 - g. Ball parks; and
 - h. Interstate, principal, and other paved highways, including railroads, highway rest areas, RV areas, and developed campgrounds.

Jurisdiction/Powers of Department

Any employee or agent of the department is authorized to enter upon any land to carry out the purposes of this chapter. The department or its agent shall give reasonable notice to the landowner of the intention to enter upon the land (Mont. Code Ann. § 65-15-108). When requested by the department, the attorney general or county attorneys shall perform legal services and conduct proceedings necessary to carry out the department's duties (Mont. Code Ann. § 85-15-109).

Permit/Approval Process

Any person who wishes to construct a high-hazard potential dam must obtain a permit from the department (Mont. Code Ann. § 85-15-210). The application for the dam construction permit must include the engineering design report, construction plans and specifications, and the application form provided by the department (Mont. Admin. R. 36.14.301). The requirements for the engineering design report for new construction permits are extensively detailed in Mont. Admin. R. 36.14.303. The criteria for plans and specifications for new constructions are detailed in Rules 304 and 305. Requirements for repairs and alterations are detailed in Rule 306, while removal application requirements are detailed in Rule 308.

Upon completion of the construction, the department will conduct a final inspection and, pending approval of the operation permit application that includes operation and maintenance plans by the dam owner, issue a permit for operation (Mont. Admin. R. 36.14.401).

Inspection Process

A high hazard potential dam must be inspected as often as the department considers necessary, at least once every 5 years (Mont. Code Ann. § 85-15-213). The owner is responsible for conducting inspections and submitting inspection reports to the department.

Upon complaint (whereupon the complainant must deposit money sufficient to cover inspection cost) or at departmental discretion, the department may order an inspection of a dam. Should the inspection uncover deficiencies, the department may require the dam owner to pay the costs of the inspection, otherwise, the complainants deposit will be retained (Mont. Code Ann. § 85-15-214).

Emergency Action Planning

Application for an operation permit must be accompanied by emergency procedures and warning plans as a component of the operation plan submitted to the department. The plan must be developed in cooperation with those designated by the owner for carrying out the plan in an emergency, such as county disaster emergency coordinators, county sheriff, city police, engineers, and others. A written statement of agreement to participating in the plan must be signed by those responsible and be attached to the plan (Mont. Admin. R. 36.14.406). The plan must include a list of people to be notified, along with up to date contact information, as well as maps of the downstream evacuation area, a list of individuals and their specific notification

responsibilities, sites and availability of materials for emergency repairs, and a list of contractors and others that could provide assistance before, after, and during an emergency. The plan shall be reviewed and updated annually (Mont. Admin. R. 36.14.406).

Liability

Nothing in the statutes relieves an owner of a dam or reservoir of any duty, obligation, or liability incident to its ownership or operation, including any damages resulting from leakage or overflow of water or floods caused by the failure of the dam or reservoir. The owner of a dam or reservoir that has been permitted by the department in accordance with this chapter or that was designed and constructed under the supervision of an engineer and properly maintained is, in the absence of negligence, not liable for damages to persons or property resulting from flows of water from failure of the dam or reservoir (Mont. Rev. Stat. § 85-15-305).

Incidents and Response

If at any time it is discovered that an emergency or immediate hazard condition exists as defined in Mont. Admin. R. 36.14.701, the owner or the owner's representative must immediately take remedial measures, notify the local sheriff, and notify the department of the emergency actions or repairs being instituted by the owner. For dams permitted under an operation permit (all high hazard potential dams), the owner shall immediately implement the emergency action plan (Mont. Admin. R. 36.14.702)

In the event an inspection uncovers defects in a dam or reservoir that the department judges to be an immediate hazard to public safety, the department may order the draining of the dam or reservoir or the limitation or cessation of use of the dam or reservoir (Mont. Code Ann. § 85-15-214), or any other steps needed to eliminate the hazard at the dam, including investigations and direct actions (Mont. Admin. R. 36.14.703). The department may also undertake emergency repairs or breaching, the costs of which will be recovered from the owner (Mont. Code Ann. § 85-15-215).

Owner's Non-Compliance/Violations/Penalties

An owner of a dam who fails to comply with a provision of the statutes, or a rule or order of the department, is subject to a civil penalty of up to \$1,000. Each day of violation is a separate offense (Mont. Rev. Stat. § 85-15-503). All penalties are deposited in the state general fund (Mont. Rev. Stat. § 85-15-502).

Oversight

The statutes and regulations on dam safety do not provide a specific process by which an individual can appeal or contest a decision of the department.

Anyone may submit an affidavit of complaint against a dam alleging the person or property of the complainant is endangered by a dam or reservoir. The affidavit must follow the submission guidelines detailed in Mont. Admin. R. 36.14.802. If there is no emergency condition at the dam, the affidavit will be referred by the

department to the dam owner for review and response within a pre-established time frame (Mont. Admin. R. 36.14.803(1)). The department may then conduct its own inspection and investigation, and if a defect is found, issue remedial orders as it deems necessary (Mont. Admin. R. 36.14.803(5)).

Miscellaneous

Demonstration of Financial Responsibility

Upon application for a construction permit, the applicant must post a performance bond in the amount of at least 100% of estimated project cost (Mont. Admin. R. 36.14.309(1)(b)) that cannot be released by the owner any sooner than 1 year after completion of the construction, in order to ensure adequate funds to render the dam safe in the event the construction work is abandoned (Mont. Admin. R. 36.14.311).

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Citation

The Nebraska dam safety statutes are contained in the Nebraska Revised Statutes Chapter 46 – Irrigation and Regulation of Water, Sections 1601 through 1670 (Neb. Rev. Stat. § 46-1607 – 1670). The dam safety regulations are found in the Nebraska Administrative Code Title 458, Chapters 1 – 13 (458 Neb. Admin. Code, ch. 1 – ch. 13). The Nebraska Dam Safety Program is administered by the Dam Safety Section of the Nebraska Department of Natural Resources.

Definition/Dams Classification

Dam is defined as any artificial barrier, including appurtenant works, with the ability to impound water, wastewater, or liquid-borne materials and which meets one of the following conditions (Neb. Rev. Stat. § 46-1611):

1. Is twenty-five feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier, or from the lowest elevation of the outside limit of the barrier if it is not across a stream channel or watercourse, to the maximum storage elevation; or
2. Has an impounding capacity at maximum storage elevation of fifty acre-feet or more, except that any barrier described in this subsection which is not in excess of six feet in height or which has an impounding capacity at maximum storage elevation of not greater than fifteen acre-feet shall be exempt, unless such barrier, due to its location or other physical characteristics, is classified as a high hazard potential dam.

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories according to the degree of incremental adverse consequences of a failure or mis-operation. The criteria for each category are detailed in Table NE-1.

Any dam located within three miles of the jurisdictional limits of a city of the metropolitan class or primary class, or any dam within two miles of the jurisdictional limits of a city of the first class, or any dam within one mile of the jurisdictional limits of a city of the second class or a village, shall be classified as high hazard potential unless such dam and hazard classification were previously approved by the Department (458 Neb. Admin. Code, ch. 12, § 002).

TABLE NE-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Minimal hazard potential <i>Neb. Rev. Stat. § 46-1623</i>	Not probable.	No loss beyond owner's property.
Low hazard potential <i>Neb. Rev. Stat. § 46-1621</i>	Not probable.	Low economic loss.
Significant hazard potential <i>Neb. Rev. Stat. § 46-1632</i>	Not probable.	Major loss, environmental damage, or disruption of lifeline facilities.
High hazard potential <i>Neb. Rev. Stat. § 46-1619</i>	Probable.	N/A.

Jurisdiction/Powers of Department

The department is empowered to review and approve the design, construction, reconstruction, enlargement, alteration, breach, removal, or abandonment of all dams in the state for the protection of life and property. No person shall construct, reconstruct, enlarge, alter, breach, remove, or abandon any dam without approval by the department (Neb. Rev. Stat. § 46-1646). The department or its representatives may enter upon private property as is necessary for investigations, inspections, and enforcement (Neb. Rev. Stat. § 46-1648). The department may investigate and gather or cause the owner to gather such data, including advances made in safety practices elsewhere, as may be needed for a proper review and study of the various features of the design, construction, reconstruction, enlargement, alteration, breach, removal, or abandonment of dams (Neb. Rev. Stat. § 46-1649). The department may take any administrative or legal action necessary for the enforcement of the Safety of Dams and Reservoirs Act (Neb. Rev. Stat. § 46-1650).

Permit/Approval Process

Construction of any new dam or the enlargement or modification of any dam shall not commence until the owner has applied for and obtained from the department written application approval of plans and specifications. A separate application for each dam shall be filed with the department upon forms provided by the department. Plans and specifications signed and sealed by the design engineer shall accompany the application (Neb. Rev. Stat. § 46-1652). The application for modification or breach of a dam shall give such pertinent information or data concerning the dam as may be required by the department (Neb. Rev. Stat. § 46-1653).

All plans and specifications for construction, reconstruction, enlargement, alteration, breach, removal, or abandonment of dams and supervision of construction shall be the responsibility of an engineer assisted by qualified engineering geologists and other specialists as necessary (Neb. Rev. Stat. § 46-4638).

Inspection Process

The department shall inspect dams for the purpose of determining their safety. The normal inspection frequency is detailed in Table NE-2 (Neb. Rev. Stat. § 46-1664).

Hazard Potential Class	Inspection Frequency
Minimal hazard potential	Once every five years or more.
Low hazard potential	Once every five years.
Significant hazard potential	Once every two years.
High hazard potential	Once every year.

Emergency Action Planning

The owner of every high hazard potential dam shall develop and periodically test and update an emergency action plan to be implemented in the event of an emergency involving such dam. The department may require the owners of any significant hazard potential dam to develop and periodically test and update an emergency action plan to be implemented in the event of an emergency involving such dams (Neb. Rev. Stat. § 46-1647). The emergency action plan must include the following elements, at a minimum (458 Neb. Admin. Code, ch. 4, § 003.02):

1. Emergency notification plan with flowchart;
2. A statement of purpose;
3. A project description;
4. Emergency detection, evaluation, and classification;
5. General responsibilities;
6. Preparedness;
7. Inundation maps or other acceptable description of the inundated area; and
8. Appendices.

Liability

No action shall be brought against the state, the department, or its agents or employees for the recovery of damages caused by the partial or total failure of any dam by reason of control and regulation thereof pursuant to the Safety of Dams and Reservoirs Act. The Safety of Dams and Reservoirs Act does not relieve an owner or operator of a dam of the legal duties, obligations, or liabilities incident to the ownership or operation of the dam (Neb. Rev. Stat. § 46-1639).

Incidents and Response

The owner of a dam has the primary responsibility for determining when an emergency exists. When the owner of a dam determines that an emergency exists involving a dam, the owner shall immediately implement the emergency action plan. The owner shall immediately notify any persons who may be endangered if the dam should fail, notify emergency management organizations in the area, take necessary remedial action to prevent or mitigate the consequences of failure, and notify the department. The department shall take any remedial action necessary to protect life and property if, in its judgment, either the condition of any dam is so

dangerous to the safety of life or property as not to permit time for the issuance and enforcement of an order relative to maintenance or operation; or passing or imminent floods or any other condition threatens the safety of any dam (Neb. Rev. Stat. § 46-1665).

Owner's Non-Compliance/Violations/Penalties

Upon receipt of a written complaint alleging that the person or property of the complainant is endangered by any dam, the department inspect and investigate the dam unless the data, records, and inspection reports on file are found adequate to make a determination whether the complaint is valid. The complainant shall be provided with a copy of the official report of the inspection and investigation. If it is found an unsafe condition exists, the department will issue the owner an order to take remedial action (Neb. Rev. Stat. § 46-1661).

Violation of the Safety of Dams and Reservoirs Act or of any decision, order, rule, regulation, or requirement of the department under the act is a Class V misdemeanor. Each day that the violation continues constitutes a separate and distinct offense. Any person who willfully obstructs, hinders, or prevents the department from performing the duties imposed by the act commits a Class IV misdemeanor. Any owner or any person who engages in the construction, reconstruction, enlargement, alteration, breach, removal, or abandonment of any dam or who knowingly does work on or permits work to be done on the dam without the approval of the department or in violation of the act and who fails to immediately notify the department thereof commits a Class V misdemeanor (Neb. Rev. Stat. § 46-1666). The person will be subject to a civil penalty in an amount not to exceed \$500 per day of violation (Neb. Rev. Stat. § 46-1668). If the owner or person continues the violation after the department has issued a final notice of violation, the department may seek a temporary restraining order or injunction from a court (Neb. Rev. Stat. § 46-1667).

Oversight

The findings and orders of the department are final, conclusive, and binding upon all owners and state agencies as to the safety of design, construction, reconstruction, enlargement, alteration, breach, removal, or abandonment of any dam (Neb. Rev. Stat. § 46-1640). The Safety of Dams and Reservoirs Act does not deprive the owner of any administrative or judicial recourse to the courts to which such owner is entitled under the laws of the state (Neb. Rev. Stat. § 46-1643).

Any affected person aggrieved by any final order or decision made by the director pursuant to the Safety of Dams and Reservoirs Act may appeal the order (Neb. Rev. Stat. § 46-1669).

Miscellaneous

Fees and Dam Safety Cash Fund

The application for approval of construction, reconstruction, enlargement, alteration, breach, removal, or abandonment of a dam shall be accompanied by a filing fee as established by rule and regulation of the

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department (Neb. Rev. Stat. § 46-1655). The fees are assessed according to the schedule detailed in Table NE-3 (458 Neb. Admin. Code, ch. 3, §§ 001.01 – 001.03).

TABLE NE-3	
Dam Height	Fee
Less than 25 feet.	\$150
25 feet or greater but less than 50 feet.	\$250
Greater than 50 feet.	\$350

The fees will be deposited into the Dam Safety Cash Fund, along with money appropriated by the Legislature, to be used for departmental expenses in executing their duties under the Safety of Dams and Reservoirs Act (Neb. Rev. Stat. § 46-1656).

NEVADA

Citation

The Nevada dam safety statutes are contained in the Nevada Revised Statutes Chapter 535 – Dams and Other Obstructions (NRS Ch. 535). The dam safety regulations are found in the Nevada Administrative Code Chapter 535 – Dams and Other Obstructions (NAC 535). Nevada’s Dam Safety Program is administered by the Nevada Division of Water Resources.

Definition/Dams Classification

Dam means any structure that stores or diverts water for a beneficial purpose (NAC 535.040). Dams are classified by size into three categories according to the criteria established in NAC 535.130 (detailed here in Table NV-1).

TABLE NV-1		
Size Classification	Impoundment (acre-feet)	Height (feet)
Small	Less than 100 acre-feet	Less than 20 feet
Medium	Neither small nor large	Neither small nor large
Large	10,000 acre-feet or more	50 feet or more

Hazard Potential Classification Criteria

Hazard classifications are assigned to each dam based on the immediate consequences to downstream persons and property in the event of a failure (NAC 535.140(1)). The criteria for each classification are set forth in NAC 535.140(2) (Table NV-2).

TABLE NV-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Very low probability of loss of life.	Reasonable probability of little, if any, economic loss or disruption in a lifeline.
Significant hazard potential	Reasonable probability of loss of life.	High probability of extensive economic loss or disruption in a lifeline.
High hazard potential	High probability for loss of life.	N/A.

Jurisdiction/Powers of Department

The Division is empowered to evaluate permit applications for dam construction or removal projects (NRS 535.010(1)). Where a dam is or will be 20 feet or more in height, measured from the downstream toe to the crest of the dam, or is less than 20 feet in height and will impound more than 20 acre-feet, the applicant must submit to the State Engineer for approval before construction begins (NRS 535.010(2)). The State Engineer may make regular inspections of dams and is authorized to enter upon private property in order to do so (NRS 535.030(1); NRS 535.035). The State Engineer has the right, power, and authority to order the removal of any unauthorized dam at the expense of the individual liable for its construction (NRS 535.050). The State Engineer may seek injunctive relief from an appropriate court to prevent violations of the laws or regulations (NRS 535.210(1)).

Permit/Approval Process

Any person who desires to construct, reconstruct, or alter a dam must submit a notice and application for approval of plans for the dam to the State Engineer on forms provided by the State Engineer along with the filing fee (NAC 535.210(2)). The application must include, at a minimum, the following sections (NAC 535.210(1)(c)):

1. A design report;
2. A geotechnical report;
3. The specifications for construction;
4. A potential hazard classification report;
5. A set of plans; and
6. If required or permitted by the State Engineer, one or more addenda.

Requirements for each of the individual components are detailed in NAC 535.210. An application for approval of plans for the decommissioning of a dam requires, at a minimum, a design report and plans and specifications (NAC 535.220). The State Engineer will evaluate applications, rejecting incomplete ones, and approve or disapprove the application, or return the application for corrections. The State Engineer may condition the approval of an application by imposing terms of approval on the work proposed (NAC 535.230(4)). The requirements for an approval are detailed in NAC 535.240. Plans and specifications must demonstrate that a dam is able to accommodate earthquake or other extreme motion events without failure or unintended release of water in order to be approved (NAC 535.250).

No dam will be put into operation without the owner first applying for and receiving approval to impound water. The application for a permit to impound water must include proof of completed work, certification of a professional engineer, documentation of quality assurance and control in the construction of the dam, a set of plans for the dam as-built, and any other documents the State Engineer may require (NAC 535.300).

Inspection Process

The State Engineer will make inspections of dams and require owners to perform necessary maintenance work to safeguard life and property (NRS 535.035). The State Engineer will conduct regular inspections, or require an owner to conduct regular inspections, according to the schedule set forth in NAC 535.560(1) (Table NV-3).

TABLE NV-3	
Hazard Potential Classification	Inspection Frequency
Low hazard potential	Once every five years.
Significant hazard potential	Once every three years.
High hazard potential	Once every year.

The State Engineer may also order inspection for a dam that is the subject of a complaint submitted to the State Engineer, which alleges that the reservoir created by the dam is in an unsafe condition or is being used in an unsafe manner. The State Engineer will require the owner to conduct an inspection no later than the date determined in the owner's notification of the complaint (NAC 535.560(1)).

Emergency Action Planning

To obtain an approval to impound, including a temporary approval, an owner or operator of any high or significant hazard potential dam must submit an emergency action plan (EAP) for the dam to the State Engineer (NAC 535.320(1)). Pursuant to NAC 535.320(3), an EAP must:

1. Follow the format presented by the Federal Emergency Management Agency Publication "Federal Guidelines for Dam Safety: Emergency Action Planning for Dams (FEMA 64) or an equivalent format approved by the State Engineer;
2. Be prepared under the direction of a professional engineer, for those sections requiring numerical analysis, calculations, or mapping;
3. Include a detailed response for each foreseeable emergency; and
4. Include one or more inundation maps.

The owner or operator is required to perform periodic exercises of the plan and update the plan as necessary to keep it current and incorporate lessons learned from the exercises. Any updates to the plan must be submitted to the State Engineer (NAC 535.320(4)).

Liability

The performance by the State Engineer of the duties of the State Engineer do not constitute a warranty in favor of anyone concerning the water to be impounded or diverted (NRS 535.040). The statutes and regulations do not contain specific language on immunity from liability of the dam safety program or owners in the event of an incident.

Incidents and Response

If at any time the condition of any dam becomes so dangerous to the safety of life or property, the State Engineer may, if he or she deems it necessary, immediately employ the following remedial measures to protect life or property: Lower the water level by releasing water from the reservoir, Completely empty the reservoir, or take such other steps as may be essential to safeguard life and property (NRS 535.030(3)).

The State Engineer may seek injunctive relief to prevent the continuance or occurrence of any act or practice which violates any provision of the laws or regulations on dam safety (NRS 535.210(1)).

Owner's Non-Compliance/Violations/Penalties

A person who violates any provision of the statutes, any permit, order, or decision issued by the State Engineer pursuant to the laws and regulations may be required to pay an administrative fine not to exceed \$10,000 per day for each violation (NRS 535.200).

Oversight

Except as otherwise provided, any dam owner or other person feeling aggrieved by any order or decision of the State Engineer affecting the person's interests, when the order or decision relates to the administration of determined rights or levying penalties under NRS 535.200, may have the same reviewed by a proceeding for that purpose, following the procedure detailed in NRS 533.450.

Miscellaneous

Construction of Weirs

Any person owning, leasing, or constructing any dam in any river within two miles of an incorporated city governed by a board of county commissioners is required to construct a weir in the dam of such size as to admit the free passage of water during times of year in which the water is not being used for irrigating purposes (NRS 535.070). This rule does not apply to dams built for the purposes of permanently storing water for beneficial purposes.

Fees

The Nevada statutes detail an extensive fee schedule for permitting, filing, and many other administrative activities in Nev. Rev. Stat. § 533.435. The fee for application review is \$1,200.

NEW HAMPSHIRE

Citation

The New Hampshire dam safety statutes are contained in the New Hampshire Statutes Title L – Water Management and Protection, Chapter 482 – Dams, Mills, and Flowage (N.H. Rev. Stat. Ann. § 482). The dam safety regulations are found in the New Hampshire Administrative Rules, Environment-Water section (N.H. Admin. Rules, Env-Wr). The New Hampshire dam safety program is administered by the Dam Bureau of the Water Division, a division of the New Hampshire Department of Environmental Services.

Definition/Dams Classification

Dam is defined as any artificial barrier, including appurtenant works, which impounds or diverts water, and which has a height of 6 feet or more, or is located at the outlet of a great pond. A roadway culvert shall not be considered a dam if its invert is at the natural bed of the water course, it has adequate discharge capacity, and it does not impound water under normal circumstances. Artificial barriers which create surface impoundments for liquid industrial or liquid commercial wastes, septage, or sewage, regardless of height or storage capacity, shall be considered dams (N.H. Rev. Stat. Ann. § 482:2-II).

Great pond is defined as any body of water 10 acres or more in its natural condition (N.H. Admin. Rules, Env-Wr 101.19).

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories according to the degree of incremental adverse consequences of a failure or mis-operation. The criteria for each category are summarized in Table NH-1 (the rules contain more detailed classification criteria).

NEW HAMPSHIRE

TABLE NH-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential <i>Env-Wr 101.25</i>	Not probable.	Reversible environmental loss to undeveloped land or minor damage to uninhabited structures or to sites listed or tracked by the natural heritage inventory, as maintained by the department (Env-Wr 101.24).
Significant hazard potential <i>Env-Wr 101.39</i>	Not probable.	Major loss to structures or property; damage to a road sufficient to interrupt public safety services; major environmental or public health losses, including damage to a public water system requiring 48+ hours to repair; release of liquid wastes, septage, sewage, or contaminated sediments; or non-reversible damage to an environmentally-sensitive site .
High hazard potential <i>Env-Wr 101.21</i>	Probable.	N/A.

Jurisdiction/Powers of Department

The department shall have the power to issue permits and to make orders, conduct hearings, subpoena and examine under oath owners of dams, their books, records, documents, correspondence, and accounts, and to subpoena any other person it deems necessary to implement the purposes and intent of the statutes. The commissioner shall adopt and enforce such reasonable rules as are deemed necessary (N.H. Rev. Stat. Ann. § 482:87).

Pursuant to its statutory authority under RSA 482, the department performs the following duties regarding dam safety: when duly-authorized by the legislature, accepts, repairs, maintains, and operates certain dams; makes determinations whether it will be in the public interest to grant the right to erect a dam; maintains a current list of existing dams, including their size, location, classification and owner; regulates the construction and reconstruction of dams; makes determinations of whether dams are in disrepair and conducts follow-up proceedings; periodically inspects dams; makes determinations of public use and benefit; makes orders, conducts hearings, subpoenas and examines under oath persons and their books, records, documents, correspondence, and accounts, as necessary to carry out its obligations (N.H. Admin. Rules, Env-Wr 102.01).

Permit/Approval Process

Any owner wishing to construct, reconstruct, or modify a dam must apply for a permit. A completed application to construct or reconstruct a dam will include design specifications, a filing fee, and all other documentation listed in N.H. Admin. Rules, Env-Wr 402.02(b). Specific design requirements for dam construction applications are listed in the Rules Part 403.

Upon review and approval of the application, the department shall issue a permit authorizing the construction or reconstruction. The permit shall include any restrictions, requirements or disclaimers as specified by the

department (N.H. Admin. Rules, Env-Wr 404.02). Upon final inspection after construction of the dam finishes, the department will issue an affidavit of compliance and final approval to begin impounding (N.H. Admin. Rules, Env-Wr 405-09; 405-11).

Inspection Process

The department shall inspect dams in accordance with the frequency detailed in Table NH-2 (N.H. Admin. Rules, Env-Wr 302.02).

TABLE NH-2	
Hazard Potential Classification	Inspection Frequency
Low hazard potential and non-menace structures	Once every six years.
Significant hazard potential	Once every four years.
High hazard potential	Once every two years.

An individual may request the department inspect any dam by putting such request in writing to the department. The written request for inspection shall include: the location of the dam or water body on which the dam is located; the name, mailing address, and daytime telephone number of the owner, if known; and a statement explaining why the requestor believes the dam should be inspected. The department shall review the request and any other available information on the dam. If the department determines that public safety requires the dam to be inspected, the department shall schedule an inspection of the dam (N.H. Admin. Rules, Env-Wr 302.02).

Emergency Action Planning

The owner of any high hazard or non-exempted significant hazard dam is required to prepare and maintain an emergency action plan (EAP) (N.H. Admin. Rules, Env-Wr 501.01). The EAP must be prepared in consultation with local officials and notification of the plan must be given to the general public who would be affected by a sudden release of water caused by an accident or other failure of the dam (N.H. Rev. Stat. Ann. § 482:2-VI; N.H. Admin. Rules, Env-Wr. 504.01). The EAP will include, at a minimum (N.H. Admin. Rules, Env-Wr 505.02):

1. A notification flow chart;
2. Responsibilities under the EAP;
3. Notification checklists;
4. Preventive action;
5. Appendices, including:
 - a. Dam and watershed description;
 - b. Summary of breach analysis;
 - c. Inundation map;
 - d. Monitor training and testing procedures;
 - e. Local evacuation procedure;
 - f. List of EAP holders; and
 - g. Documentation

The administrative rules detail the specific guidelines and requirements for breach analysis, inundation mapping, and all EAP contents in Env-Wr 505.

Liability

The statutes and regulations do not contain specific language on immunity from liability for the dam safety program or owners in the event of an incident.

Incidents and Response

In the event of a deficiency in the condition of a dam, the department may notify the owner of such repairs or reconstruction necessary for restoring the dam to safe condition (N.H. Admin. Rules, Env-Wr 302.03). If the owner does not undertake the needed repairs within the department's established timeframe, the department will order the owner to undertake the repair (N.H. Rev. Stat. Ann. § 482:11). In lieu of repairing or reconstructing a dam as required by the department, the owner may remove or breach the dam, provided the owner follows department rules for the process (N.H. Admin. Rules, Env-Wr 302.04). The owner may purposefully breach a dam without prior department approval only when threat to public safety or health exists, or significant damage to public or private property is imminent (N.H. Admin. Rules, Env-Wr 303.09).

Owner's Non-Compliance/Violations/Penalties

Failure to comply with any law or rule, any permit, any written order or directive, or to answer a subpoena will constitute a violation, with each day of noncompliance constituting a separate violation (N.H. Rev. Stat. Ann. § 482:89-I). Any natural person who knowingly commits a violation shall be guilty of a misdemeanor, and any juridical person who knowingly commits a violation shall be guilty of a felony. Upon petition to the attorney general, the superior court may level a civil penalty in an amount not to exceed \$20,000 for each day of each continuing violation. The commissioner may impose upon any person an administrative fine not to exceed \$2,000 for each violation, in addition to other penalties (including responsibility for remediation and restoration of property affected by a violation) (N.H. Rev. Stat. Ann. § 482:89).

Oversight

The rules provide for a process to appeal final department decisions. Responsibility for the review of appeals is vested in the water council (N.H. Admin. Rules, Env-Wr 204.02).

Miscellaneous

Fees

The dam safety program assesses both filing fees for permit applications (N.H. Rev. Stat. Ann. § 482:9) and an annual dam registration fee (N.H. Rev. Stat. Ann. § 482:8-a). The fee schedules are detailed in Table NH-3. Hydropower developments require a \$100 deposit with the filing fee.

Hazard Potential Classification	Filing Fee	Annual Registration Fee
Non-hazard potential	\$2,000	N/A.
Low hazard potential	\$3,000	\$400
Significant hazard potential	\$4,000	\$750
High hazard potential	\$4,000	\$1,500

Dam Maintenance Fund

For the state of New Hampshire to meet its commitments to maintain its for future generations and promote the safety of the public, there is a dam maintenance fund to cover the cost of performing work on state-owned dams and property associated with state-owned dam sites (N.H. Rev. Stat. Ann. § 482:55).

NEW JERSEY

Citation

The New Jersey dam safety laws are found in New Jersey Statutes Annotated Title 58, Chapter 4 (N.J.S.A. § 58:4). The regulations are found in Title 7 of the New Jersey Administrative Code, Section 20 (N.J.A.C. § 7:20). The dam safety program in New Jersey is administered by the Bureau of Dam Safety within the New Jersey Department of Environmental Protection.

Definition/Dams Classification

Dam means any artificial dike, levee or other barrier, together with appurtenant works, which is constructed for the purpose of impounding water, on a permanent or temporary basis, that raises the water level five feet or more above the usual, mean, low water height when measured from the downstream toe-of-dam to the emergency spillway crest or, in the absence of an emergency spillway, the top-of-dam (N.J.A.C. 7:20-1.2).

Hazard Potential Classification Criteria

The Department classifies dams into four categories based upon potential for loss of life and property damage. Probable future development of the area downstream from the dam is also considered in determining the hazard classification. The criteria for hazard potential classes are detailed in Table NJ-1 (N.J.A.C. 7:20-1.8).

TABLE NJ-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class III <i>Low hazard potential</i>	Not envisioned.	Low. Limited to the dam itself, non-residential farm buildings, agricultural lands, or non-major roads.
Class II <i>Significant hazard potential</i>	Not envisioned.	Significant. Rural, agricultural areas, isolated homes, major highways or railroads, or interruption of relatively important utilities.
Class I <i>High hazard potential</i>	Probable.	Extensive. Industrial or commercial facilities, essential public utilities, main highways, railroads, or bridges, or recreational areas.

A fourth class, Class IV (small dams) is reserved for dams with no expected damage from failure and who meet certain size requirements. A dam qualifies as Class IV if it impounds less than 15 acre-feet of water, is less than 15 feet in height, and has a drainage area above the dam of 150 acres or less, and damage is not expected from failure.

Jurisdiction/Powers of Department

No dam or reservoir shall be constructed, altered, repaired, improved, or removed without the consent of the Department. The Department may investigate and take appropriate action regarding any dam or reservoir which presents a security or safety concern (N.J.S.A. § 58:4-1). The statutes and regulations stipulate restrictions on jurisdiction over dams within the pinelands (N.J.A.C. 7:20-1.1) and further requires coordination and consultation with the Secretary of Agriculture regarding certain actions and decisions for dams in the pinelands (N.J.S.A. § 58:4-1).

Permit/Approval Process

No person may construct or operate a new dam or modify or repair an existing dam without first having obtained a permit from the Department (N.J.A.C. 7:20-1.4(a)). The applicant for a dam permit must use a New Jersey licensed professional engineer to prepare the plans and specifications and to supervise inspection of the construction (N.J.A.C. 7:20-1.5(b)). The application process begins with a submission of a preliminary report, which includes a description of the proposed dam, a map of the surrounding areas, preliminary design data, and reports on surficial conditions and hydrologic design procedure for the dam. The preliminary report must also include all documentation and information related to determining hazard classification and, depending on the circumstance, the Department is entitled to request the applicant submit any other information the Department deems necessary (N.J.A.C. 7:20-1.6(a)).

After the preliminary report, the primary application shall be filed on forms provided by the Department and accompanied by two copies of the final design report, construction specifications, and all plans, drawings, and designs. The regulations provide extensive guidance on what must be included in the final design report and other components of the permit application (N.J.A.C. 7:20-1.7). The regulations further specify distinct requirements for an application for dam breach or removal.

The Department may deny any application for a dam permit, based upon its conclusion that the construction or operation of dam will cause an unacceptable threat to or impact on natural or cultural resources or the environment (N.J.A.C. 7:20-1.4(g)).

Inspection Process

Dam owners are required to have a New Jersey licensed professional engineer conduct periodic dam safety inspections of all dams in the state (N.J.S. A. § 58:4-8.2). The frequency for these inspections is determined by the hazard potential classification and is detailed in Table NJ-2 (N.J.A.C. 7:20-1.11). Dams will undergo regular inspections as well as more rigorous formal inspections.

TABLE NJ-2		
Hazard Potential Classification	Regular Inspection Frequency	Formal Inspection Frequency
Class IV	Once every four years.	At Departmental discretion.
Class III	Once every four years.	At Departmental discretion.
Class II	Once every two years.	Once every ten years.
Class I	Once every two years.	Once every six years.

The owners or operators of all dams which raise the waters of any stream more than 70 feet above its usual mean low-water height or which impounds more than 10,000 acre-feet of water shall have a regular inspection performed annually and formal inspections performed every three years by a New Jersey licensed professional engineer (N.J.A.C. 7:20-1.11(b)).

Emergency Action Planning

All Class I and Class II dam owners must prepare and submit an Emergency Action Plan (EAP) which contains, at a minimum, a dam breach analysis, inundation maps, and emergency notification and evacuation plans (N.J.A.C. 7:20-1.7(f)).

Liability

No action shall be brought against the State or the Department or its agents or employees for the recovery of damages caused by the partial or total failure of any dam or reservoir or through the operation of any dam or reservoir (N.J.A.C. 7:20-1.4(f)).

Incidents and Response

Whenever the Commissioner determines that a dam is in imminent danger of failure and has reasonable cause to believe that danger to life or property may be anticipated from the dam, and the owner of the dam or person having control of the reservoir or dam has failed to comply with an order to repair the dam or to take such interim measures as the Department determines are appropriate, the Department may enter any property, and using resources and personnel available to the Department, remove or cause to be removed the dam and/or appurtenant structures located therein, allowing the water to flow freely, or undertake any other necessary action authorized by the statutes (N.J.A.C. 7:20-2.9(a)). The costs of such an action shall be recovered from the dam owner (N.J.S.A. § 58:4-5(c)).

Owner's Non-Compliance/Violations/Penalties

The Department may assess a civil administrative penalty of up to \$25,000 for each violation of any provision of the Safe Dam Act, or for any failure to comply with any rule or regulation adopted pursuant to the Act, or for any failure to comply with any permit, order or directive issued pursuant to the Act, or for failure to comply with a request for information or request to enter upon the property. Each day during which a violation

continues shall constitute an additional offense (N.J.A.C. 7:20-2.5). The Department has a schedule of penalties for each hazard potential class and each type of violation, which can be found in N.J.A.C. 7:20-2.6.

Oversight

A permit applicant whose application was denied may request an appeal by administrative hearing (N.J.A.C. 7:20-1.5(d)). An individual who has been assessed a civil administrative penalty or administrative order may request an adjudicatory hearing or appeal (N.J.A.C. 7:20-2.1).

Miscellaneous

Environmental Services Fund

All penalties collected pursuant to the dam safety laws and regulations are deposited into the State Environmental Services Fund and kept separate from other deposits in that fund for specific appropriation to the Department for the removal of dams in New Jersey (N.J.A.C. 7:20-2.8).

NEW MEXICO

Citation

Laws pertaining to the New Mexico dam safety program are contained in the New Mexico Statutes Annotated 1978, Chapter 72 – Water Law, Article 5 – Appropriation and Use of Surface Water (NMSA 1978 72-5). Regulations are found in the New Mexico Administrative Code Title 19 – Natural Resources and Wildlife, Chapter 25 – Administration and Use of Water, Part 12 – Dam Design, Construction, and Dam Safety (19.25.12 NMAC), last amended in 2010. The New Mexico dam safety program is administered by the Dam Safety Bureau, a division of the Water Resources Allocation Program (WRAP) within the New Mexico Office of the State Engineer (OSE).

Definition/Dams Classification

Dam is defined as a man-made barrier constructed across a watercourse or off-channel for the purpose of storage, control or diversion of water (19.25.12.7.D(1) NMAC).

Hazard Potential Classification Criteria

The hazard potential classification is a rating for a dam based on the potential consequences of failure, including loss of life, damage to property, and environmental damage. The criteria for each classification level are detailed in Table NM-1 (19.25.12.10 NMAC).

TABLE NM-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Not probable.	Low economic or environmental loss. Losses are principally limited to the dam owner's property.
Significant hazard potential	Not probable.	Can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
High hazard potential	Probable.	N/A.

Jurisdiction/Powers of Department

The dam safety program has authority over all jurisdictional dams, defined as a dam 25 feet or greater in height which impounds more than 15 acre-feet of water, or a dam that is 6 feet or greater in height and that impounds 50 acre-feet or more of water (19.25.12.7.D(1) NMAC).

Permit/Approval Process

Any person, association or corporation, public or private, the state, or the United States that is intending to construct a dam shall submit an application to construct and operate a dam and supporting documentation acceptable to the state engineer (19.25.12.11 NMAC). The state engineer may require additional information not provided for in the general rules and regulations, in any case involving the diversion of five hundred cubic feet of water per second, or more, or in the construction of a dam more than thirty feet high from the foundation (NMSA 1978 72-5-1).

An application form shall be submitted with the original signature of the dam owner, accompanied by all required fees and appropriately crafted design reports, construction drawings and specifications (19.25.12.11.A NMAC), as well as a plat of survey, instrumentation plan, operation and maintenance manual, and emergency action plan. The design report must include, at a minimum, the following information, where each component has been developed in accordance with the regulations as detailed in 19.25.12.11.C NMAC:

1. Hazard potential classification report;
2. Hydrologic analysis;
3. Spillway design flood;
4. Incremental damage assessment;
5. Spillway capacity;
6. Spillway design;
7. Outlet works capacity;
8. Outlet works design;
9. Geological assessment;
10. Geotechnical investigation;
11. Seepage and internal drainage;
12. Stability analysis;
13. Seismic design and analysis;
14. Dam geometry;
15. Freeboard;
16. Erosion protection;
17. Geotextile design;
18. Structural design;
19. Utilities design; and
20. Miscellaneous design (as required by the State Engineer).

Specific requirements for the construction drawings and specifications are detailed in 19.25.12.11.D NMAC and 19.25.12.11.E NMAC, respectively.

After reviewing the required documentation, the state engineer will notify the dam owner/engineer if any deficiencies are found with the submittal to construct and operate a dam. The dam owner will be given an opportunity to correct any deficiencies noted in the review process. Once all deficiencies have been addressed

the state engineer will approve the application for permit to construct and operate a dam with conditions under which construction and operation shall occur. Failure to comply with conditions of the approved permit may result in the state engineer issuing an order to redesign, reconstruct or restrict operation of the dam and reservoir until conditions are met.

Construction must be completed within two years of approving the application unless an extension of time for the construction is requested and approved by the state engineer. Prior to initiation of construction, the dam owner shall designate a professional engineer licensed in the state of New Mexico qualified in the design and construction of dams to supervise construction. If the state engineer finds the engineer acceptable, an order is issued approving the engineer and setting forth conditions under which the engineer will supervise construction (19.25.12.13 NMAC). Upon completion, the supervising engineer will submit a set of plans as-built and other required information, upon which the state engineer will issue a certificate of construction and license to operate a dam.

Inspection Process

Dams classified as high or significant hazard potential shall be inspected on an interval of no greater than 5 years by a professional engineer licensed in the state of New Mexico qualified in the design and construction of dams. The owner is responsible for securing the services of the professional engineer. The professional engineer shall provide a signed and sealed report to the state engineer describing the findings of the inspection and recommendations for corrective action or changes to the operating procedures (19.25.12.21 NMAC).

Emergency Action Planning

Owners of dams classified as high or significant hazard potential shall prepare, maintain and exercise an emergency action plan for immediate action in the event of a potential dam failure (19.25.12.18 NMAC). The plan must be developed in coordination with local emergency management, and will include, at a minimum, the following components, unless exempted by waiver on a case-by-case basis:

1. Notification flowchart;
2. Emergency detection, evaluation and classification;
3. A list designating all responsibilities for emergency action plan related tasks including, but not limited to, developing, maintaining, exercising, implementing, warning, evacuation, and termination of the emergency;
4. Evacuation and inundation maps; and
5. Appendices.

The dam owner should conduct a functional exercise of the emergency action plan every 5 years with a tabletop exercise conducted 2 to 3 years before the functional exercise.

Liability

Neither anything in the statutes, nor any action nor failure to act, shall be construed as to create any liability in the state or its officers or employees for the recovery of damages caused by such action or failure to act; or to relieve the owner or operator of water impoundment works of the legal duties, obligations, or liabilities incident to the ownership or operation of water impoundment works (NMSA 1978 72.5.11).

The annotated statutes further note an instance in which a defendant, who built a dam without obtaining the permit required hereunder, and negligently maintained same, was liable for damage caused by such negligence, despite fact that negligence of one of plaintiffs was also a proximate cause of the damage (NMSA 1978 72.4.1; Little v. Price, 1964-NMSC-178, 74 N.M. 626, 397 P.2d 15).

Incidents and Response

Violation of the accepted operation and maintenance plan, as well as any critical dam safety problem observed by or reported to the state engineer, will result in an order being issued requiring the dam owner to address the problem. The dam owner must report any incident to the state engineer within 72 hours of the incident (19.25.12.21 NMAC). The state engineer may also issue an order restricting storage in order to improve the unsafe condition. Failure to comply with orders issued by the state engineer may result in the license to operate the dam being revoked and the dam being ordered breached (19.25.12.17 NMAC).

Owner's Non-Compliance/Violations/Penalties

Any owner, or owner's agent or employees, who fails to take action specified by the state engineer within the time allowed, shall be guilty of a misdemeanor. Any violation of the dam safety laws or rules shall be punishable by a fine of not more than \$250 for each offense or by imprisonment for a definite term not to exceed six months, or both (NMSA 72-5-12).

Oversight

All persons have the right to appeal actions of the state engineer in approving or rejecting any application (NMSA 1978 72-5-31).

Miscellaneous

Fees

The state engineer assesses fees for filing forms, reviewing plans and specifications for dams and appurtenant structures, and construction inspections. The fee for review of design plans is set at \$2 per \$1,000 of estimated construction cost. The full schedule of fees for various activities is detailed in 19.25.12.8 NMAC.

Dam Site Security

Dams classified as high or significant hazard potential shall address security at dams to prevent unauthorized operation or access. If in the opinion of the state engineer, the failure of the dam will result in catastrophic consequences, a security and risk management program for the dam will be required. Elements of a security and risk management program are threat, vulnerability and risk assessments; physical security plans; and integration of security operational procedures (19.25.12.11.G NMAC).

NEW YORK

Citation

Laws pertaining to the New York dam safety program are found in the New York Environmental Conservation Law Title 5 – Protection of Water (N.Y. ECL §§ 15-0501 – 15-0517). Enforcement provisions are contained in Title 11 (N.Y. ECL § 71-1101). Regulations on dam permitting are found in the New York Codes, Rules, and Regulations, Title 6 – Department of Environmental Conservation, Part 608 – Use and Protection of Waters (6 NYCRR 608.1 – 608.11). Regulations on dam safety and inspection are contained in the New York Codes, Rules, and Regulations, Title 6 – Department of Environmental Conservation, Part 673 – Dam Safety Regulations (6 NYCRR 673.1 – 673.17) and Part 621. The New York dam safety program is administered by the Dam Safety Section in the Division of Water of the New York State Department of Environmental Conservation.

Definition/Dams Classification

Dam means any artificial barrier, including any earthen barrier or other structure, together with its appurtenant works, which impounds or will impound waters (6 NYCRR 673.2).

Hazard Potential Classification Criteria

Dams are categorized into four classifications for hazard potential, based upon the physical characteristics of the dam and the potential consequences relevant to the failure of the dam. The criteria for each category are detailed in Table NY-1 (6 NYCRR 673.5).

TABLE NY-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class A <i>Low hazard potential</i>	Unlikely.	Unlikely to damage more than isolated buildings, undeveloped lands, and/or minor roads.
Class B <i>Intermediate hazard potential</i>	Not expected.	May significantly damage isolated homes, main highways, minor railroads, interrupt utilities, or the environment.
Class C <i>High hazard potential</i>	Likely.	Widespread serious damage to homes, main highways, railroads, utilities, and/or industrial/commercial areas.
Class D <i>Negligible hazard potential</i>	Dam has been breached or removed, or has failed or otherwise no longer impounds waters, or was planned but never constructed. Dam is considered defunct.	

Jurisdiction/Powers of Department

The department has the power to, in the course of exercising its duty to safeguard life or property or to protect the natural resources of the state, issue orders directing any owner to conduct studies, investigations, and analyses of any dam or appurtenant structure; to remove, erect, reconstruct, or repair any dam and to conduct such actions and recover costs of any such actions from the dam owner if the owner fails to follow the order; to enter upon private properties for the purposes of carrying out its duties; and to establish regulations for an owner dam safety program which may include requirements for inspections, monitoring, maintenance and operation, emergency action planning, and prevention of terrorism and cyber terrorism financial security, recordkeeping and reporting (N.Y. ECL § 15-0507).

Permit/Approval Process

No person or local public corporation may construct, reconstruct, repair, breach, or remove a dam without a permit. The permit requirements for dams, as well as design criteria, are dependent upon the dam's hazard classification (6 NYCRR 608.3). The application for a permit must contain all elements required by the department, including hydrological and hydraulic reports, an engineering design report, construction plans and specifications, and any other required information. The application must be prepared, stamped, and sealed by an engineer (6 NYCRR 608.6).

The department will review the application and accompanying materials, and either grant, grant with alterations and conditions, or deny the permit application (6 NYCRR 608.7).

Inspection Process

The owner of any Class B or Class C dam, or any dam meeting the size guidelines in 6 NYCRR 673.6(a), is required to develop and implement an inspection and maintenance plan for the dam. The plan shall include descriptions for all operation, monitoring, and inspection procedures, a schedule for inspections, monitoring, and maintenance, and any other elements required by the department (6 NYCRR 673.6). The department may, at its discretion and without prior notice, enter upon lands and waters to perform a field inspection of a dam when it has been determined the inspection is in the interests of public safety (6 NYCRR 673.14).

The dam owner must retain the services of an engineer for the purposes of conducting regular safety inspections according to the schedule in the inspection and maintenance plan. The owner is responsible for maintaining the inspection reports, and the department may require any owner to furnish any or all reports at the owner's expense, upon reasonable notice (NYCRR 673.12).

The owner of a dam that has been assigned a hazard classification of Class B or Class C shall submit to the dam safety section an annual certification, a component of which includes certification of the full implementation of the inspection and maintenance plan (6 NYCRR 673.8).

Emergency Action Planning

The owner of a Class B or Class C dam shall prepare an emergency action plan (EAP) and annual updates thereof (6 NYCRR 673.7). The EAP must be submitted to the department. The owner of a Class C dam must have the EAP prepared by an engineer, unless waived by the department, and the department may require the owner of any Class B dam to have the EAP prepared by an engineer as well. The EAP shall include, at a minimum, the following components (6 NYCRR 673.7(f)):

1. Procedures for the notification of an emergency;
2. Inundation maps or other acceptable description of the potential inundation area, which may include a dam break analysis;
3. Procedures for implementing all other aspects of the emergency action plan;
4. Procedures for updating the plan; and
5. Other provisions the department deems necessary.

Liability

New York state law provides for defense and indemnification of state employees in a civil proceeding arising from activities within the scope of the employee's public employment (N.Y. POL § 17).

In the event that the department must implement an order to repair a dam, the department may recover the costs from the dam owner and assert any rights of recovery as may exist by law for such costs and expenses. Nothing in the regulations shall affect the right of any party to seek contribution from any other person responsible for such costs (6 NYCRR 673.17).

Incidents and Response

In the event the department determines it necessary to conduct an inspection of a potentially unsafe dam, the department may evaluate the dam's condition and assign a condition rating. The four condition ratings are as follows (6 NYCRR 673.16):

1. *Unsafe* – Dams with deficiencies of such a nature that failure of the dam is imminent and immediate action is required to eliminate or reduce the danger. Among the deficiencies which could result in this rating are seepage which is carrying soil particles, significant erosion problems, and serious structural deficiencies, which may involve movement or cracking of the structure. Severely inadequate spillway capacity may also result in a condition rating of "unsafe."
2. *Unsound* – Dams with deficiencies of such a nature that the safety of the dam cannot be assured. Among the deficiencies which could result in this rating are developing seepage problems, structural stability inadequacies, or seriously inadequate spillway capacity. Hazard class B or C dams for which there is no demonstration that the spillway capacity and stability are adequate may receive a condition rating of "unsound."

3. *Deficiently Maintained* – Dams with physical or operational deficiencies which do not require further significant engineering analysis. Some corrective action is required, often in the form of increased maintenance, to correct the condition of the dam.
4. *No Deficiencies Noted* – A safety inspection or engineering assessment, and/or investigation by the department, did not reveal deficiencies.

Upon determining a dam is unsafe, unsound, or deficiently maintained, the department may order the owner take corrective actions, including to remove, reconstruct, or repair the dam (6 NYCRR 673.17). Should the owner fail to undertake the actions ordered in the time set by the department, the department may take all actions necessary to ensure the safety of the dam, and recover the costs expended from the dam owner.

Owner's Non-Compliance/Violations/Penalties

It is unlawful for any owner to fail, omit, or neglect to comply with an order issued by the department. Each violation of an order is considered a separate offense, with each day of a continuing violation deemed a separate and distinct offense (6 NYCRR 673.17).

Oversight

A dam owner may contest the department's assignment of a dam's hazard classification or the department's change to a hazard classification through the process described in 6 NYCRR 673.5(e). A dam owner may also contest the department's assignment of or change to a dam's condition rating by following the procedure described in 6 NYCRR 673.16(j).

Any applicant for a permit from the Department of Environmental Conservation may request a hearing with the department in the event the permit application is denied (6 NYCRR 621.10(a)(1) and 621.10(a)(2); 621.11(g)) or modified, suspended, or revoked (6 NYCRR 621.13(d)). Procedures for permit hearings can be found in the Department of Environmental Conservation's general regulations, Part 624 – Permit Hearing Procedures (6 NYCRR 624). Any determination, order or issuance, modification or denial of a permit shall be reviewable in a proceeding pursuant to the Civil Practice Law and Rules (N.Y. ECL § 15-0515).

Miscellaneous

Cybersecurity and Terrorism

The statutes explicitly provide authority for the commissioner of the department to promulgate regulations governing the dam safety program, and specifically identifies authority to establish regulations for the response and prevention of terrorism and cyber terrorism (N.Y. ECL § 15-0507). New York is one of the only states to specifically identify terrorism and cybersecurity threats in the dam safety statutes and regulations and provide the dam safety program the authority to regulate dams for that issue and mitigate threats from that issue.

Demonstration of Financial Responsibility

Where a dam has been assessed a deficient condition rating, the department may require the dam owner to implement an enhanced safety program. As a component of this enhanced safety program, the department may require financial assurance associated with the cost of breach or removal of the dam, adequate to fully cover the costs including the costs of labor and materials for design and construction; investigations and surveys' construction plans; environmental mitigation associated with any of the actions taken; and any other appropriate cost as determined by the department. The form of the financial security shall be as a surety bond, one or more irrevocable letters of credit payable to the department, a trust fund for the benefit of the department, a policy of insurance payable to the department, one or more annuities, or one or more certificates of deposit, or any combination of the above (6 NYCRR 673.16(i)).

NORTH CAROLINA

Citation

The content of this section has not been reviewed by the North Carolina dam safety program and may contain inaccuracies or outdated content. Please contact the North Carolina state dam safety program directly to verify the content of this chapter.

The North Carolina dam safety laws are contained in the North Carolina Dam Safety Law of 1967, last revised in 2017, and can be found in the North Carolina General Statutes Sections 143-215.23 through 37 (NCGS §§ 143-215.23 – 37). The regulations are in the North Carolina Administrative Code, Title 15A, Subchapter 2K: Dam Safety (15 NCAC 02K). The North Carolina dam safety program is administered by the Dam Safety Program, a section of the Energy, Mineral and Land Resources Division of the North Carolina Department of Environmental Quality.

Definition/Dams Classification

Dam is defined as a structure and appurtenant works erected to impound or divert water (NCGS § 143-215.25(1)).

Hazard Potential Classification Criteria

Dams are divided into three classes according to the downstream consequences of a failure. The criteria for each hazard potential classification are detailed in Table NC-1 (15A NCAC 02K.0105).

TABLE NC-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Class A	Not probable.	Uninhabited low value non-residential buildings, agricultural land, or low volume roads.
Class B	Not probable.	Minor damage to highways, secondary railroads, public utilities, isolated homes, commercial and industrial buildings.
Class C	Likely.	Serious damage to homes, industrial and commercial buildings, public utilities, primary highways, or major railroads.

Jurisdiction/Powers of Department

Dams less than 25 feet in height or with an impoundment capacity of less than 50 acre-feet are excluded from the jurisdiction of the program (NCGS § 143-215.25A(6)).

The Environmental Management Commission shall have the right to direct such investigations as it deems necessary to carry out its duties, and the Department shall have the right to enter upon private property to conduct such investigations (NCGS § 143-215.37). The Department may issue permits for the construction, repair, modification, or removal of dams. The Department may conduct inspections, issue emergency orders, assess penalties, request the Attorney General institute civil actions, and other such actions in the course of its duty protecting life and property.

Permit/Approval Process

No construction on any dam can begin until at least 10 days after filing a statement concerning the proposed dam's height, impoundment capacity, purpose, location, and other required information is filed with the Department. If the Department then determines the dam is not exempted under the jurisdictional size rules, construction shall not commence until after the receipt and approval of a full permit application (NCGS § 143-215.26). An application must also be made before commencing any repair, alteration, or dam removal project (NCGS § 143-215.27). The application will include a preliminary design report, followed by a final design report and five sets of plans and specifications. The specific components of these reports, as well as the preferred methodologies and requirements for crafting them, are extensively detailed in Section .0200 of the regulations (15A NCAC 02K.0200).

Following receipt of the application, the Commission shall approve, disapprove, or approve with conditions the application. During the period of approved work, the project must be supervised by an engineer legally qualified in the State of North Carolina, and regular reports must be made to the Commission (NCGS § 143-215.29). Upon completion of the project, notice shall be given to the Commission, as well as a set of plans as-built, upon which the Commission will issue its final approval (NCGS § 143-215.30).

Inspection Process

The Department may, at any time, inspect a dam upon receipt of a written request of any affected person or agency, or upon the determination of the Environmental Management Commission. Within the limits of available funds, the Department shall endeavor to inspect all dams once every five years (NCGS § 143-215.32). The inspection schedule established in the regulations is detailed in Table NC-2 (15A NCAC 02K.0301).

Hazard Potential Classification	Inspection Frequency
Class A	Once every five years.
Class B	Once every five years.
Class C	Once every two years.

Emergency Action Planning

The owner of any high or intermediate hazard potential dam is required to develop an emergency action plan (EAP), which will include, at a minimum, the following components (NCGS § 143.215.31):

1. A description of potential emergency conditions that could occur at the dam, including security risks;
2. A description of actions to be taken in response to an emergency condition at the dam;
3. Emergency notification procedures to aid in warning and evacuations during an emergency condition at the dam; and
4. A downstream inundation map depicting areas affected by a dam failure and sudden release of the impoundment.

The dam owner will update the EAP annually and submit it to the Department of Environmental Quality and the Department of Public Safety for their review and approval.

Liability

No action shall be brought against the state of North Carolina, the Department, or the Commission or any agent of the Commission or any employee of the State or the Department for damages sustained through the partial or total failure of any dam or its maintenance by reason of any supervision or other action taken pursuant to or under the statutes. Nothing in the statutes shall relieve an owner or operator of a dam from the legal duties, obligations, and liabilities arising from such ownership or operation (NCGS § 143-215.35).

Incidents and Response

The Director may issue an order directing the owner of a dam to make any maintenance, alteration, repairs, reconstruction, or change in construction necessary to preserve the safe condition of a dam. The owner must comply, at their expense, within 90 days of the order (15A NCAC 02K.0302). In the event the condition of the dam is severe enough, or the owner fails to comply within the 90-day limit, the Department may take such actions as it deems necessary to restore the dam to safe condition and recover the costs of such action through legal proceedings against the dam owner.

Owner's Non-Compliance/Violations/Penalties

Any person who has violated the dam safety statutes shall be guilty of a Class 3 misdemeanor and be assessed a penalty of between \$100 and \$1,000 for each violation. The Department may levy a civil penalty of between \$100 and \$500 for any person who violates any provision of the dam safety statutes, rules, or orders (NCGS § 143-215.26).

Oversight

A person to whom a decision or a dam safety order is issued may contest the decision or order by filing a contested case petition within 30 days of the decision being mailed to that person or 10 days after the order is served (NCGS § 143-215.33).

NORTH DAKOTA

Citation

The North Dakota statutes relating to dam safety are contained in various sections of Title 61 – Waters of the North Dakota Century Code (N.D. Cent. Code §§ 61-03; 61-04; 61-16.1). The dam safety regulations are contained in various articles of Title 89 – Water Commission of the North Dakota Administrative Code (N.D. Admin. Code 89-08-01 – 89-08-04). North Dakota’s dam safety program is administered by the Dam Safety Program, a regulatory program of the North Dakota State Water Commission & Office of the State Engineer.

Definition/Dams Classification

Dam is defined as any barrier, including any appurtenant works, constructed across a watercourse or an area that drains naturally to impound or attenuate the flow of water. All structures necessary to impound a single body of water are considered a single dam (N.D. Admin. Code 89-08-01-01.3).

Hazard Potential Classification Criteria

Dams are classified into three categories based upon the potential for damage in the event of a dam failure. The criteria for each classification are detailed in Table ND-1.

TABLE ND-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential <i>N.D. Admin. Code 89-08-01-01.12</i>	Not expected.	Damage to agricultural land, township and county roads, and farm buildings other than residences.
Medium hazard potential <i>N.D. Admin. Code 89-08-01-01.13</i>	Potential loss of a few lives.	Damage to isolated homes, main highways or railroads, or cause interruption of minor public utilities.
High hazard potential <i>N.D. Admin. Code 89-08-01-01.9</i>	Potential loss of more than a few lives.	Serious damage to homes, industrial and commercial buildings, and major public utilities.

Jurisdiction/Powers of Department

The state engineer may require a plan of operation from any operator of a reservoir greater than 1,000 acre-feet (N.D. Cent. Code § 61-03-21). The state engineer is authorized to inspect or investigate dams and reservoirs and to enter upon land for the purposes of conducting such an inspection or investigation (N.D. Cent. Code § 61-03-21.1). The state engineer may order the removal or modification of unsafe or unauthorized works (N.D. Cent. Code § 61-03-21.2).

Permit/Approval Process

No dams capable of retaining, obstructing, or diverting more than 50 acre-feet of water or, in the case of high or medium hazard dams, 25 acre-feet of water may be constructed without application for and approval for a construction permit (N.D. Cent. Code § 61-16.1-38). A completed construction permit application must include plans and specifications; evidence establishing a property right for the property affected by the construction of the dam; and any additional information required by the state engineer (N.D. Admin. Code 89-08-02-02). As a condition on all construction permits, the owner of the dam will provide the state engineer with “as built” plans within six months of construction being completed (N.D. Admin. Code 89-08-02-07).

Inspection Process

To protect property and assure safety, all dams over ten feet in height must be inspected during construction (N.D. Admin. Code 89-08-03-01). The state engineer may require inspection of a dam as often as necessary after construction to protect property and assure safety (N.D. Admin. Code 89-08-03-05).

Emergency Action Planning

The owner of a high or medium hazard potential dam shall develop, test, and update an emergency action plan (EAP) to be implemented in any emergency involving the dam. The EAP and subsequent updates must be submitted to the state engineer for approval (N.D. Admin. Code 89-08-04-03).

Liability

The receipt of a permit, including a permit for emergency construction, does not relieve an applicant from liability resulting from any activity conducted under the permit (N.D. Cent. Code § 61-03-25).

Incidents and Response

If the state engineer determines that works are unsafe or unauthorized, the state engineer shall notify the landowners. The notice must specify the nature and extent of the noncompliance, the modifications necessary for compliance, and must state that if the works are not modified or removed within the period stated in the notice, but not less than thirty days, the state engineer shall cause the removal or modification of the works and assess the cost thereof, or such portion as the state engineer shall determine, against the property of the landowner responsible (N.D. Cent. Code § 61-03-21.2)

Owner’s Non-Compliance/Violations/Penalties

Any person violating any of the provision of Title 61 of the North Dakota Century Code is guilty of a class B misdemeanor, unless another penalty is specified (N.D. Cent. Code § 61-01-25). Any person who willfully destroys or tampers with any dam is guilty of a class A misdemeanor (N.D. Cent. Code § 61-01-09). The state

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engineer may level a civil penalty not to exceed \$25,000 per violation of the rules or statutes per day the violation continues (N.D. Cent. Code § 61-03-23).

Oversight

Any aggrieved party who has first made a complaint to the water resources board under N.D. Cent. Code 61-16.1-53 may appeal the board's decision to the state engineer. The appeal to the state engineer must be made within thirty days from the date notice of the board's decision has been received and must be made by submitting a written notice to the state engineer specifically setting forth the reason why the board's decision is erroneous. The state engineer shall conduct an independent investigation and make an independent determination of the matter (N.D. Cent. Code § 61-16.1-53.1)

OHIO

Citation

The Ohio dam safety statutes are located in the Ohio Revised Code, Title XV, Chapter 1521 – Division of Water Resources (Ohio Rev. Code § 1521.01 and on). The rules are contained in the Ohio Administrative Code Section 1501:21 – Division of Water Resources – Dam Safety (Ohio Admin. Code 1501:21). The Ohio dam safety program is administered by the Dam Safety Program, a program of the Division of Water Resources of the Ohio Department of Natural Resources.

Definition/Dams Classification

Dam means any artificial barrier together with any appurtenant works, which either does or may impound water or other liquefied material. Upground reservoirs and lagoons are considered to be dams (Ohio Admin. Code 1501:21-3-01).

Hazard Potential Classification Criteria

Dams are categorized into four classes according to potential downstream consequences in the event of a failure and the size of the dam, measured by height and storage volume. The criteria for hazard potential classification are detailed in Table OH-1 (Ohio Admin. Code 1501:21-13-01).

Hazard Potential Classification	Height	Storage Volume	Loss of Human Life	Economic Loss
Class IV	25 ft. or less	50 acre-ft. or less	Not probable.	Restricted to the dam itself and rural lands.
Class III	Greater than 25 ft.	Greater than 50 acre-ft.	Not probable.	Losses of rural buildings or disruption to local roads.
Class II	Greater than 40 ft.	Greater than 500 acre-ft.	Not probable.	Disruption of public water supply or release of hazardous waste; flooding of residential, commercial, industrial, public, or high value property/structures; major roads, railroads, or public utilities.
Class I	Greater than 60 ft.	Greater than 5,000 acre-ft.	Probable.	Structural collapse of at least one residence or one commercial or industrial business.

Jurisdiction/Powers of Department

The chief of the division of water resources may issue rules necessary for preserving public safety, may conduct investigations, and may hold meetings or public hearings, and other such actions (Ohio Rev. Code § 1521.03).

Permit/Approval Process

No dam may be constructed unless the person or governmental agency desiring the construction has a construction permit for the dam issued by the chief of the division of water resources (Ohio Rev. Code § 1521.06(A)). Before a construction permit may be issued, three copies of the plans and specifications, including a detailed cost estimate, prepared by a registered professional engineer shall be filed with the chief. The application must include a preliminary design report, which, upon approval, must be followed by a final design submittal, plans, and specifications that follow the guidelines established in Ohio Admin. Code 1501:21-5. The chief shall, within 30 days of receipt of the application, issue or deny a construction permit for the construction. A registered professional engineer shall inspect the construction during all phases and furnish regular reports to the chief (Ohio Rev. Code § 1521.06). The chief may also make inspections during construction, however inspections by the chief do not relieve the owner or registered professional engineer in charge of the responsibility of providing adequate inspection (Ohio Admin. Code 1501:21-22-01).

Inspection Process

All dams in the state shall be inspected periodically by the chief, unless specifically exempted (Ohio Rev. Code 1521.062). Regulations require the inspection of all Class I, II, and most Class III dams in the state (Ohio Admin. Code 1501:21-21-01), while Class III with no downstream hazards and Class IV are exempted from the periodic inspection requirement. Each inspection will include a review of the design, construction, operation, emergency action plan, and maintenance plans for the structure, as well as visual inspection, among any other procedures the department deems worthy of review (Ohio Admin. Code 1501:21-21-02).

Emergency Action Planning

An emergency action plan shall be required for all class I, II and III dams. The emergency action plan for all class I structures shall include but not be limited to an inundation map of the critical routing reach. An inundation map may also be required for class II and III dams as designated by the chief. The required detail of this map depends upon the complexity of the downstream hazard and shall be acceptable to the chief. Three copies of the emergency action plan shall be submitted to the chief for approval upon the completion of construction or as otherwise directed by the chief. The chief may require additional copies as necessary. The plan shall also be provided in a digital file format acceptable to the chief (Ohio Admin. Code 1501:21-15-07).

Liability

Any dam whose continued operation and potential failure will not constitute a hazard to life, health, or property may be exempted from inspection requirements if the owner requests an exemption and signs a

written certification accepting liability for any injury, death, or loss to persons or property that may occur from the failure of that structure (Ohio Admin. Code 1501:21-19-02).

The dam safety statutes and regulations do not contain specific language on immunity from liability on the part of the dam safety program.

Incidents and Response

In the event a dam is determined to be deficient, the chief shall order the owner to perform such repairs, maintenance, investigations, or other remedial or operational measures as considered necessary to safeguard life, health, or property (Ohio Rev. Code § 1521.062(D)). If the condition of any dam is so dangerous as not to permit time to issue an order, the chief shall employ any necessary means to restore the dam to a safe condition, at the expense of the owner (Ohio Rev. Code § 1521.062(G); (H)).

Owner's Non-Compliance/Violations/Penalties

Any person who violates the permitting or inspection for dam safety statutes shall be fined not less than \$100 nor more than \$1,000 for each offense, with each day the violation continues constituting a separate offense (Ohio Rev. Code § 1521.99).

Oversight

All orders of the chief are subject to appeal. Such an appeal or request for hearing must be filed according to the provisions of the appeal process. The chief shall immediately set a hearing date upon receipt of an appeal request between seven and fifteen days from the date of receipt. Any party adversely affected by an order of the chief issued pursuant to adjudication may appeal to the court of common pleas (Ohio Admin. Code 1501:21-23-01).

Miscellaneous

Demonstration of Financial Responsibility

No construction permit shall be issued unless the person or governmental agency applying for the permit executes and files a surety bond conditioned on completion of the dam, in an amount to 50% of the estimated cost of the project (Ohio Rev. Code § 1521.061).

Fees

The rules set annual fees assessed to dam owners, the amount of which is determined by hazard classification, height of the dam, length of the dam, and total storage volume impounded by the dam. The criteria for determining the annual fee are detailed in Table OH-2 (Ohio Admin. Code 1501:21-24-01).

TABLE OH-2				
Hazard Potential Classification	Base Fee	Fee per Foot of Height	Fee per Foot of Length	Fee per Acre-Foot of Total Storage Volume
Class III	\$90	\$4	\$0.08	\$0.08
Class II	\$90	\$6	\$0.08	\$0.08
Class I	\$90	\$10	\$0.08	\$0.08

OKLAHOMA

Citation

Laws pertaining to the Oklahoma dam safety program are contained in the Oklahoma Statutes Title 82 – Waters and Water Rights, Section 110 – Oklahoma Dam Safety Act (82 OS §§ 110.1 – 110.30). The Oklahoma dam safety rules are contained in the Oklahoma Administrative Code, Title 785 – Water Resources Board, Chapter 25 – Dams and Reservoirs (OAC 785:25). The dam safety program is administered by the Oklahoma Dam Safety Program within the Oklahoma Water Resources Board.

Definition/Dams Classification

Dam is defined as any artificial barrier, together with appurtenant works, which does or may impound or divert water (82 OS § 110.3.2; OAC 785:25-1-2).

Dams are classified by size into three categories. The three size categories for dams are detailed in Table OK-1 (OAC 785:25-3-3(a)(1)).

TABLE OK-1		
Size Classification	Storage (acre-feet)	Height (feet)
Small	Less than 10,000.	Less than 50.
Intermediate	Between 10,000 and 50,000.	Between 50 and 100.
Large	Over 50,000.	Over 100.

Hazard Potential Classification Criteria

Dams are classified by potential downstream consequences in the event of a failure, considering both potential loss of life and potential economic loss. The criteria for hazard potential classifications are detailed in Table OK-2 (OAC 785:25-3-3(a)(2)).

TABLE OK-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Not probable.	Low economic loss.
Significant hazard potential	Not probable.	Can cause economic loss or disruption of lifeline facilities.
High hazard potential	Probable.	N/A.

Jurisdiction/Powers of Department

Dams which are 25 feet or more in height, or impound 50 acre-feet or more, will fall under the jurisdiction of the laws and rules for dam safety (82 OS § 110.4): Any dam less than 6 feet in height is excluded from regulation regardless of impoundment capacity, and dams which impound 15 acre-feet of water or less are excluded regardless of height.

The Board has the power to promulgate rules, review and grant or deny permits, supervise and oversee construction and modification of dams, inspect existing dams and dams under construction, require maintenance and modification of dams as necessary, access private property as needed for the purpose of inspection and investigation, and exercise incidental powers necessary to carry out the Board's duty to protect public safety (82 OS § 110.5).

Permit/Approval Process

Any person who wishes to construct, enlarge, alter, remove, or repair any dam must apply for a permit (OAC 785:25-5-1). The plans and specifications submitted with the application must be prepared by a registered professional engineer with training and/or experience in dam design and construction (OAC 785:25-5-2). The application must include the plans and specifications, as well as an engineer's report that includes hydrologic data, foundation and materials investigations, and any other information required by the Board (OAC 785:25-5-3; 785:25-5-4). After receiving the application, the Board may require applicants for a high or significant hazard potential dam to make public notice of their intent to build a dam by publication in a newspaper (OAC 785:25-5-5). After the Board reviews and approves the application, construction must commence within two years (OAC 785:25-5-8).

During the period of the permitted works, the Board may make periodic inspections to enforce compliance with the rules and terms of the permit (OAC 785:25-7-1). These inspections will be undertaken at owner's expense (OAC 785:25-7-2) and do not absolve the owner of responsibility for monitoring and supervising the construction project themselves (OAC 785:25-7-4). Upon completion of the permitted works project, the owner shall submit a report and plans detailing the dam's status as-built, after which the Board will review the submission and, if appropriate, grant the owner a certificate of completion (OAC 785:25-7-6; 785-7-8).

Inspection Process

Dams are inspected periodically at owner's expense according to a schedule determined by the dam's hazard classification. The inspection schedule for dams in Oklahoma is detailed in Table OK-3 (82 OS § 110.5.4).

TABLE OK-3	
Hazard Potential Classification	Inspection Frequency
Low hazard potential	At least once every five years.
Significant hazard potential	At least once every three years.
High hazard potential	At least once every year.

Significant or high hazard potential dams in an unsatisfactory or poor condition as determined by the Board shall be inspected at the expense of the owner at least every six months until the deficiencies have been corrected (OAC 785:25-9-1(b)(4)).

Emergency Action Planning

Owners of any high hazard potential dam, and any other dam as determined by the Board, must prepare and maintain an emergency action plan (EAP) that follows the guidelines of the Federal Emergency Management Agency publication “Federal Guidelines for Dam Safety, Emergency Action Planning for Dam Owners” (FEMA 64). The owner shall submit a copy of the EAP to the board, and annually review the EAP for accuracy and submit any updates to the Board (OAC 785:25-7-7).

Liability

The dam safety regulations and statutes do not contain specific language on immunity from liability on the part of the state dam safety program.

Incidents and Response

The Board may order a dam owner to take emergency or remedial measures, including lowering the level of or removing all water in the dam reservoir, when it is deemed necessary for public safety or the safety of the dam. If a dam owner fails to comply with the order, and the condition of the dam is such that it presents an immediate danger, the Board may issue an emergency order for remedial work or other actions necessary to put the dam in a safe condition, which must be followed immediately (82 OS § 110.10).

Owner’s Non-Compliance/Violations/Penalties

The Board may impose administrative penalties against owners of dams who fail, refuse, or neglect to comply with the laws, rules, or orders of the Board. The penalty shall not exceed \$500 per day per violation. The Board may seek judicial relief to enforce provisions of the laws, rules, or orders (82 OS § 110.10).

Oversight

Individuals have the right to appeal orders issued by the Board, excepting emergency orders (82 OS § 110.11).

Miscellaneous

Fees

Oklahoma’s dam safety program assesses filing fees for applications to construct, enlarge, alter, or repair a dam based upon the estimated cost of the project. Fees are also assessed for inspections of dams classified as low or significant hazard potential made at request of a person who is not an owner of the dam or other routine or periodic inspections conducted by Board personnel. The fee schedule is detailed in Table OK-4 (36 Ok. Reg. 1286).

TABLE OK-4		
Fee Type	Fee Criteria	Fee Amount
Application to construct, enlarge, alter, or repair.	\$99,999 or less estimated project cost.	\$500
	\$100,000 through \$19,999,999 estimated project cost.	\$5,000
	\$20,000,000 or greater estimated project cost.	\$10,000
Inspection.	Low hazard potential	\$250 per visit
	Significant hazard potential	\$500 per visit

OREGON

Citation

Oregon's dam safety laws that dated to 1929 have been repealed and replaced with a new law that will be fully operative on July 1, 2020. As a new law, it awaits specific Chapter and number references by Legislative Counsel to replace Oregon Revised Statutes (ORS) 540.350 – 540.390, very likely in the same Chapter. This summary will reference citations to the text as it is published in the Oregon Laws, 2019 (Chapter 390, Oregon Laws 2019). The dam safety rules are found in the Oregon Administrative Rules Chapter 690 – Water Resources Department, Division 20 – Dam Safety (OAR 690-020-0000 and onward). Redrafted and some new dam safety rules will be in place to meet the legal requirements and timeframe, and there may be some renumbering of current rules this process. Existing regulations remain in effect until July 1, 2020, and all past dam safety orders are carried forward. Dam safety rules are, and will continue to be in Chapter 690, as Division 20, of Oregon Administrative Rules on file with the Oregon Secretary of State. This summary will reference the rules as they are numbered prior to the new drafting process. Please contact the Oregon Dam Safety Program directly for the most current rules information. The Dam Safety Program is part of the Oregon Water Resources Department, in the Executive branch of Oregon's state government structure.

Definition/Dams Classification

Dam “means a hydraulic structure built above the natural ground grade line that is used to impound water or wastewater and includes all appurtenant structures”. Dams include lagoons (and water borne tailings facilities) (Chapter 390 § 2(2), Oregon Laws 2019; OAR 690-020-0022(8)).

Hazard Potential Classification Criteria

All jurisdictional dams have a hazard potential rating as described in administrative rules. All new dams require the engineer of record to submit a dam breach inundation analysis, also described in the rules. The dam safety program makes the final determination of hazard potential using many parameters and conducts hazard potential rating reviews of existing dams as resources permit. Hazard potential rating is summarized in Table OR-1 (OAR 690-020-0100).

TABLE OR-1	
Hazard Potential Classification	Effects of Dam Failure
Low hazard potential	Any dam not rated high or significant hazard.
Significant hazard potential	Dam failure unlikely to cause fatalities, likely to extensively damage property or infrastructure.
High hazard potential	Dam failure likely to cause fatalities.

Oregon also classifies high hazard potential dams by condition and will be classifying significant hazard potential by condition. Definitions of “unsafe” and “potentially” unsafe are found in the new law, as are “maintenance actions” and “corrective actions” (Chapter 390 § 2, Oregon Laws 2019).

Jurisdiction/Powers of Department

Excluded from the jurisdiction of the dam safety program are dams less than 10 feet in height or impounding less than 3,000,000 gallons of water (ORS 540.400). Dams regulated by the Federal government are excluded, except that the dam safety program may assist in emergency inspections and emergency responses for the federal dams.

The Department or its specific staff are authorized and, as applicable, required to receive, review, and approve or deny necessary plans and reports for construction and modification of dams, and also to review and condition plans for dam removal. The Department is authorized by law to charge an annual dam safety fee, and a fee for review of designs. The Department is required to inspect dams on a hazard-potential-based schedule. The department is authorized to determine if dams are unsafe or potentially unsafe, and if corrective or maintenance actions are needed. The dam safety program is required to work cooperatively with dam owners as long time permits and the cooperative effort is effective in addressing the safety issue(s). If cooperation is not effective, the department will issue orders for maintenance or corrective actions. The Department may also seek a court injunction or court order if necessary actions are not taken, or a dam is unsafe.

Permit/Approval Process

A person or entity may not construct a dam (including modifications that affect safety) unless the department has examined the site plans and specifications, features and other supporting information regarding the construction and operation of the dam and has approved them in writing (Chapter 390 § 4, Oregon Laws 2019). Nor may a person or entity impound water until the Department accepts as built documentation. Depending on the hazard rating of the dam, design reports must include specific elements identified in the rules, including site evaluation, hydrology and inflow design flood, dam structure design, spillway design, design for penetrating conduits, construction specifications and construction administration plans, operations and maintenance plans, and monitoring and instrumentation details. These rules extensively detail the design objectives and standards (not specific design methods) and safety requirements for each of these elements. Work on the dam must be overseen and documented by the Engineer of Record for the dam. Dams storing waters of the state for beneficial uses must also comply with a water rights permit that references the dam safety requirements (OAR 690-020-0035 – 690-020-0080).

Inspection Process

The Dam Safety program conducts its own inspections and oversees inspections of lower hazard rated dams conducted by Department field staff. Formal owner inspections are not required. Inspection frequency is determined by the potential rating as detailed in Table OR-2 (OAR 690-020-0150).

TABLE OR-2	
Hazard Potential Classification	Inspection Frequency
Low hazard potential	Once every six years.
Significant hazard potential	Once every three years.
High hazard potential	Once every year.

Expedited inspections may be conducted if an urgent safety issue is identified or the dam is reclassified to a different hazard potential rating. Following an inspection, the Department provides an inspection summary to the dam owner with recommended or required maintenance actions as appropriate.

Emergency Action Planning

The owner of any high hazard potential dam must prepare and maintain an emergency action plan using a state dam safety EAP template based on the Federal Emergency Management Agency (FEMA) publication “Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners” (FEMA 64). An EAP for construction of a new high hazard potential is required as part of the design submittal process, and that EAP must first address construction safety and then be updated after completion of the dam. Dam owners must exercise and update the EAP as directed by the dam safety program in consultation with the appropriate emergency manager(s). There are also new rule requirements for emergency notifications and actions to prevent failure of significant hazard potential dams. The State dam safety role in emergencies at Federal regulated dams is currently under discussion.

Liability

Compliance with the new law does not relieve the owner or operator of a dam or an individual in immediate charge of a dam from any duty, obligation or liability regarding the ownership, maintenance or operation of the dam. Water Resources Department actions and services under the new law do not relieve the owner or operator of a dam or an individual in immediate charge of a dam from any duty, obligation or liability regarding the ownership, maintenance or operation of the dam (Chapter 390 § 18, Oregon Laws 2019).

Individual employees are protected from personal liability by a Tort Claims Act as long as they are functioning under their authorities and official duties. The State bears financial responsibility for claims against its agencies or employees as is required by the Oregon Constitution.

Incidents and Response

Owners of high hazard dams must follow the actions specified in the Emergency Action Plan under unusual or emergency conditions described in the EAP. Owners of Significant Hazard dams must make emergency notifications, including to the dam safety program, and take all actions to prevent failure. The dam safety program may provide technical assistance and may modify any EAP requirements in an emergency as needed to better prevent failure or protect people. The dam safety program may enter onto any property without

permission in a dam emergency situation and may open valves and siphon water if the dam owner is unable or unwilling to do so (Chapter 390 § 16, Oregon Laws 2019).

Owner's Non-Compliance/Violations/Penalties

The Department will issue formal orders if voluntary compliance is not achieved. The Department may also issue civil penalties for certain violations. Failure to follow certain orders can result in criminal enforcement, and the Department has legal authority to work with a District Attorney or the state Attorney General to have the dam declared a nuisance and removed at the owners expense (Chapter 390 §§ 11 – 13, Oregon Laws 2019; OAR 690-020-0500).

Oversight

The dam owner, upon receipt of an order from the Department, may request a hearing. Hearings are administered by an Administrative Law Judge that does not work for the Department, and will recommend upholding, denying or modifying the order. The Director makes the final order, which can be appealed to the Oregon Court of Appeals.

The State Engineer for Water Resources manages the dam safety program, and reports to the Director of the Water Resources Department on significant dam safety issues. The Director reports to the Governor and implements policy direction from Oregon Water Resources Commission. Rules are developed with review by an independent Rule Advisory Committee. The Water Resources Commission is independent from the Department, must approve all rules, and reviews certain contested cases. All procedures must follow the Oregon Administrative Procedures Act with guidance from the Oregon Department of Justice. This includes all enforcement actions and gives dam owners the right to hearings before an independent administrative law judge. Many general proceedings are public, and other than for critical water or power infrastructure, most dam safety information is public information.

PENNSYLVANIA

Citation

The Pennsylvania dam safety laws are contained in the Dam Safety and Encroachments Act (Act of Nov. 26, 1978, P.L. 1375, No. 325, cited hereafter as DSEA 1978). The regulations are contained in the Pennsylvania Code Title 25 – Environmental Protection, Chapter 105 – Dam Safety and Water Management (25 Pa. Code § 105). Pennsylvania’s dam safety program is administered by the Division of Dam Safety, a division of the Bureau of Waterways Engineering and Wetlands in the Office of Water Programs of the Pennsylvania Department of Environmental Protection.

Definition/Dams Classification

Dam is defined as any artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or any other fluid or semifluid; or any refuse bank fill or structure for highway, railroad or other purposes which does or may impound water or any other fluid or semifluid (DSEA 1978, Section 3).

Dams are classified into three size categories according to impoundment storage and dam height (25 Pa. Code § 105.91). The size category and the hazard potential category are used to determine fees and regulatory standards for dams. The criteria for dam size classification are detailed in Table PA-1.

TABLE PA-1		
Size Classification	Impoundment Storage (Acre Feet)	Dam Height (Feet)
Category A	Equal to or greater than 50,000.	Equal to or greater than 100.
Category B	Less than 50,000 but greater than 1,000.	Less than 100 but greater than 40.
Category C	Equal to or less than 1,000.	Equal to or less than 40.

Hazard Potential Classification Criteria

Dams are classified by hazard potential into four categories, determined by population at risk and potential for economic loss. The criteria for each category are detailed in Table PA-2 (25 Pa. Code § 105.91).

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TABLE PA-2

Hazard Potential Classification	Population at Risk	Economic Loss
Category 4	None expected. No permanent structures for human habitation or employment.	Minimal damage to private or public property and no significant public inconvenience.
Category 3	None expected. No permanent structures for human habitation or employment.	Significant damage to private or public property and short duration public inconvenience such as damage to storage facilities or loss of critical stream crossings.
Category 2	Few. A small number of homes or small businesses.	Appreciable such as limited residential, commercial, or agricultural damage, or moderate public inconvenience.
Category 1	Substantial. Numerous homes or small businesses or a large business or school.	Excessive such as extensive residential, commercial, or agricultural damage, or substantial public inconvenience.

Jurisdiction/Powers of Department

Dams on a watercourse with the greatest depth of water at maximum storage elevation exceeding 15 feet, or maximum storage greater than 50 acre-feet, or with a drainage area exceeding 100 acres; and dams not on a watercourse with the greatest depth of water at maximum storage elevation exceeding 15 feet and with an impounding capacity at maximum storage elevation exceeding 50 acre-feet are governed by the provisions of the dam safety laws and rules (DSEA 1978, Section 4).

Permit/Approval Process

No person shall construct, operate, maintain, modify, enlarge or abandon any dam without the prior written permit of the department (DSEA 1978, Section 6(a)). An application for or a registration of a permit must be accompanied by information, maps, plans, specifications, design analyses, test reports and other data specifically required by the Department. This information includes, but is not limited to, the following (25 Pa. Code § 105.13(e)):

1. A site plan;
2. A location map;
3. A project description;
4. Color photographs;
5. Stormwater management analysis;
6. Floodplain management analysis;
7. Risk assessment;
8. Alternatives analysis;

9. Mitigation plan; and
10. Impacts analysis.

Plans, specifications and reports accompanying applications for dams shall be affixed with the seal of a registered professional engineer and a certification signed by the registered professional engineer (25 Pa. Code § 105.13(j)). An application will be reviewed to determine the proposed project's effect on health, safety and the environment, in accordance with prevailing practices in the engineering profession and in accordance with current environmental principles (25 Pa. Code § 105.14). Towards that aim, any proposed works must be accompanied by an environmental assessment conducted according to the standards detailed in 25 Pa. Code § 105.15.

Where the Department determines the application to be in order, they will issue a permit, with conditions attached at Departmental discretion, for the proposed works (25 Pa. Code § 105.21). The work must be undertaken under supervision and according to the specifications approved in the original application (25 Pa. Code § 105.44). Upon completion, the Department will conduct a final inspection, and the owner shall file with the Department a completion certification and a set of as-built plans for the facility (25 Pa. Code §§ 105.107 – 105.109).

Inspection Process

Dam, reservoirs, and their appurtenant works shall be inspected by the owner at least once every 3 months. For dams classified as hazard potential categories 1 or 2, the owner must submit annual reports, affixed with the seal of a registered professional engineer, regarding the condition of the dam. The Department may require more frequent reports (25 Pa. Code § 105.53).

Emergency Action Planning

The owner of any Category 1, 2, or 3 dam is required to develop and maintain an emergency action plan (EAP), which must be submitted to and acknowledged by the Department and the Pennsylvania Emergency Management Agency (PEMA) (25 Pa. Code § 105.134(a)). The EAP shall be reviewed and updated every 5 years or the frequency interval indicated in the most recent EAP guidelines developed by the Department and PEMA (25 Pa. Code § 105.134(f)).

Liability

In a civil or administrative action taken by the Department alleging violation of the terms of a permit or the provisions of the Dam Safety and Encroachments Act, the person against whom the action has been taken has the burden of proof to demonstrate that the project complies with the act. (25 Pa. Code 105.29a).

The dam safety laws and statutes do not contain specific language on immunity from liability on the part of the state dam safety program.

Incidents and Response

If the Department determines that a dam, water obstruction or encroachment is unsafe or adversely affects property or the environment or has not been properly constructed, operated, monitored or maintained in compliance with legal requirements, it may require the owner of the facility to repair, alter, maintain or remove the facility or take other actions necessary to restore the safe condition of the dam (25 Pa. Code § 105.62). The Department may enter and conduct investigations, tests and analyses, and take corrective actions, when the owner cannot be found or refuses to comply, or when the condition of the facility is so dangerous as to require immediate action. The expenses of such actions will be recovered from the owner.

Owner's Non-Compliance/Violations/Penalties

In addition to pursuing other remedies available by law for any violation of the laws or the rules or the orders of the Department, the Department may assess a civil penalty not to exceed \$10,000 per violation, with an additional penalty of \$500 for each day the violation continues (DSEA 1978, Section 21). Any person who violates the laws or rules may also be assessed a criminal penalty and found guilty of a summary offense, punishable by a fine of between \$100 and \$1,000 for each separate offense, and, in default of the payment of such fine, to imprisonment for a period of up to 60 days. Each day the violation continues shall constitute a separate offense (DSEA 1978, Section 22).

Oversight

Upon denial of any permit application the department will inform the applicant of the procedures for appeal of that decision (25 Pa. Code § 105.21(d)). Any person who shall be aggrieved by any action of the shall have the right within 30 days of receipt of notice of such action to appeal to the Environmental Hearing Board (DSEA 1978, Section 24).

Miscellaneous

Demonstration of Financial Responsibility

For all hazard potential category 1 and 2 dams, the Department requires proof of financial responsibility or security assuring the property construction, repair, operation and maintenance, inspection and monitoring, and removal if necessary, of the facility. The Department may request an increase in the amount of any bond or legal device as necessary to ensure sufficient funds are available (25 Pa. Code § 105.13b).

Fees

The rules set a relatively robust number of fee schedules for permit applications for dam construction, permit applications for modification, permit application for operation and maintenance, and a variety of other departmental review and registration procedures. The fees are set according to the dam's hazard potential category and size category. The fee schedules can be found in 25 Pa. Code § 105.13.

PUERTO RICO

Citation

The Puerto Rico dam safety statutes are found in the Laws of Puerto Rico Title 22 – Public Works, Chapter 18 – Inspection and Regulation of Dams and Reservoirs (Leyes de Puerto Rico Título Veintidós – Obras Públicas, Capítulo 18 – Inspección y Reglamentación de Presas y Embalses) (22 LPRA §§ 401-408). Regulations are contained in Rule 7239 of the Puerto Rico Electric Power Authority entitled Rules of the State Program for the Inspection and Regulation of Dams and Reservoirs (Reglamento para el Programa Estatal de Inspección y Reglamentación de Presas y Embalses, Reglamento Núm. 7239, Autoridad de Energía Eléctrica de Puerto Rico). The Puerto Rico dam safety statutes are published by the Puerto Rico Department of State and are available in both English and Spanish, while the regulations are provided in Spanish. The Puerto Rico Program of Inspection and Regulation of Dams and Reservoirs is administered by the Puerto Rico Electric Power Authority (PREPA) through its Dams and Hydrology Section.

Definition/Dams Classification

Dam is defined as any artificial barrier which, together with its appurtenant works, is constructed for the purpose of retaining, storing or diverting water or any other liquid or semiliquid, and whose elevation exceeds 25 feet from the natural ceiling of the body of water or the ground's natural level (22 LPRA § 401(c)).

Hazard Potential Classification Criteria

The dam safety statutes and regulations do not provide for hazard potential classification criteria.

Jurisdiction/Powers of Department

The Program is empowered to institute regulations for the operation, conservation, maintenance, and inspection of all public and private dams and reservoirs within the Commonwealth governing both normal and emergency situations. The Program carries out regular inspections to determine the condition of dams and evaluate hydraulic and hydrologic capacity. The Program may revise and approve the plans and specifications for the construction, enlargement, modification, or removal of any dam or reservoir, and conduct inspection and oversight during the work period of the same. The Program will also certify and permit a dam after the work period to ensure compliance with approved plans and specifications. The Program may issue notifications whenever necessary for remedial actions to correct defects or hazardous conditions and may carry out the work or take necessary actions when required (22 LPRA § 403). Expenses incurred by the Program may be recovered through annually billing each public agency, person, or private entity that possesses a dam or reservoir participating in the Program for the expenses incurred in the course of official duties regarding that dam or reservoir (22 LPRA § 408).

Permit/Approval Process

No dam or reservoir shall be constructed, enlarged, modified, abandoned, or removed in Puerto Rico without obtaining the permission and approval of the dam safety program first (22 LPRA § 407). Permits may be revoked, suspended, or modified for just cause, which includes but is not limited to:

1. Violations of the permit conditions;
2. Violations of the laws or administrative regulations;
3. Approval of permit under false pretenses or through misrepresentation of application information;
4. Changes in permit conditions that affect the safety standards for permit approval (Reglamento Núm. 7239, Secc. III, Art. D).

Permit applications must be made by an engineer that is experienced in dam construction and design, is licensed to work in the Commonwealth of Puerto Rico, and is up to date on fees for the College of Engineers and Surveyors of Puerto Rico (Reglamento Núm. 7239, Secc. III, Art. H).

Inspection Process

The Puerto Rico dam safety program conducts inspections of dams at least three times a year and maintains an up-to-date inventory of all dams and reservoirs in the Commonwealth (22 LPRA § 403). Upon conducting an inspection, the dam inspector will submit an inspection evaluation form detailing any irregularities, deficiencies, and findings along with recommendations for any necessary remedial work. Specific requirements for the inspection report can be found in the regulations (Reglamento Núm. 7239, Secc. IV, Art. B.6). Identified deficiencies in the dams will be categorized under the classification system described in Table PR-1 (Reglamento Núm. 7239, Secc. IV, Art. B.6.d).

TABLE PR-1	
Deficiency or Finding Classification	Corrective Action Priority Description
Class A	The deficiency or finding is of critical importance and requires immediate corrective action given the potential harm to the safety of the dam. These deficiencies threaten the immediate integrity of the dam and are a danger to public safety.
Class B	The deficiency or finding threatens the safety of the dam in the medium term. It requires corrective action within one to five years or when the dam safety program determines the deficiency has risen to a Class A deficiency.
Class C	The deficiency or finding is discovered during routine inspection and can be amended as part of the dam's standard maintenance schedule.

Owner's Non-Compliance/Violations/Penalties

The Program may issue a notification to a dam owner to perform remedial work, and the owner must then conduct that work in a timely fashion (Reglamento Núm. 7239, Secc. V, Art. B). In the event that the Program must take action directly in emergency situations, the costs incurred by the Program can be recovered from the owner (22 LPRA § 408). The statutes and regulations do not contain language for specific penalties for violations of the dam safety program.

Emergency Action Planning

The statutes and regulations do not contain specific language on the creation and maintenance of Emergency Action Plans. The regulations do provide for the creation of an emergency response plan in the event that a dam is identified as being an imminent risk and requires the Program and associated committees to provide the response plan and a description of the condition to the Governor of Puerto Rico (Reglamento Núm. 7239, Secc. IV, Art. C.8).

Incidents and Response

The Program is empowered to make plans and take necessary actions to secure the safety of dams at risk of failure (Reglamento Núm. 7239, Secc. IV, Art. C.8).

Liability

No language in the statutes or regulations provides specific immunity for the dam safety program in the conduct of its official work.

Oversight

The regulations provide for an administrative review and judicial appeal process for any person aggrieved by the actions of the Program. Requests for a review, and an appeal of that review, must be made according to the timeline provided in the regulations (Reglamento Núm. 7239, Secc. VI).

Miscellaneous

Report to the Governor and Legislative Assembly

The Program's Committee for the Supervision and Evaluation of the Puerto Rico Program of Inspection and Regulation of Dams and Reservoirs must draft and submit to the Governor and Legislative Assembly an annual report of the state of the Commonwealth's dams and reservoirs, drawing on the data from inspections and remedial work conducted by the program that year (Reglamento Núm. 7239, Secc. IV, Art. C.5).

RHODE ISLAND

Citation

Statutes governing dam safety in the state of Rhode Island are chiefly contained in the Rhode Island General Laws Chapter 46-19, “Inspection of Dams and Reservoirs” (R.I. Gen. Laws § 46-19-1). The rules and regulations are found in the Rhode Island Code of Regulations, Title 250 – Department of Environmental Management, Chapter 130 – Compliance and Inspection, Subchapter 05 – Dam Safety, Part 1, titled “Rules and Regulations for Dam Safety” (250-RICR-130-05-1 and on). Rhode Island’s dam safety program is administered by the Dam Safety Program, a program of the Office of Compliance and Inspection in the state’s Department of Environmental Management.

Definition/Dams Classification

Dam is defined in the regulations as any barrier made by humans, including appurtenant works, that impounds or diverts water (250-RICR-130-05-1.5).

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories according to probable consequences of failure or misoperation of the dam. The determination is made by the Director based on an assessment of loss of human life, damages to properties or structures located downstream of the reservoir, or loss of use as a drinking water supply. The criteria for hazard potential categories are detailed in Table RI-1.

Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential 250-RICR-130-05-1.5-A-15	Not probable.	Low losses.
Significant hazard potential 250-RICR-130-05-1.5-A-27	Not probable.	Major loss, disruption of lifeline facilities, or other impacts or concerns detrimental to public health, safety, or welfare.
High hazard potential 250-RICR-130-05-1.5-A-11	Probable loss of human life.	N/A.

Jurisdiction/Powers of Department

No repair work, maintenance work, new construction, substantial alteration, or removal of a dam shall occur without prior approval of the director and, where required, filing of plans and specifications for the work (250-

RICR-130-05-1.7). The department may investigate reports of unsafe dams and issue orders for remedial work or emergency actions for unsafe dams (R.I. Gen. Laws § 46-19-4). The Department may make regular periodical inspections of all dams (R.I. Gen. Laws § 46-19-1). The Department may access private property for the purposes of emergency monitoring, compliance monitoring, and making investigations (R.I. Gen. Laws § 46-19-6; 250-RICR-20-00-3.6).

Permit/Approval Process

No dam or reservoir may be constructed or substantially altered until the plans and specifications of the proposed work are filed with and approved by the Director (R.I. Gen. Laws § 46-19-3). Applications for proposed dams are received and evaluated by Freshwater Wetlands program, which coordinates internally with the Dam Safety Program. The owner of a high or significant hazard potential dam seeking to repair the dam must submit an application to the Department that includes all required maps, written justification for the work, three sets of plans and specifications, supporting computations and field measurements, and all other required materials (250-RICR-130-05-1.10-B). The Director is empowered to review all applications and assess their compliance with accepted dam safety, design, and engineering practices and procedures (250-RICR-130-05-1.10-D). Any approval afforded to the applicant under 250-RICR-130-05-1.10-F may be revoked, suspended, or modified by the Director (250-RICR-130-05-1.10-G).

Inspection Process

Regulated dams are inspected regularly according to the schedule in Table RI-2 (250-RICR-130-05-1.11-A). The inspection must be conducted by a qualified engineer and submit a report to the Department (250-RICR-130-05-1.11-C; D).

TABLE RI-2		
Hazard Potential Classification	Minimum Inspection Frequency	Type of Inspection
Low hazard potential	5 years	Hazard classification assessment
Significant hazard potential	5 years	Visual
High hazard potential	2 years	Visual

The Department may access private property for the purposes of emergency monitoring, compliance monitoring, and making investigations (250-RICR-20-00-3.6).

Emergency Action Planning

An emergency action plan (EAP) must be prepared for each significant or high hazard dam by the city or town wherein the dam lies. (§ 46-19-9). The Department may require the owner of any other dam it deems necessary to develop an EAP. The EAP shall be developed in cooperation with the Rhode Island emergency management agency and the city or town wherein the dam is located. The EAP must also be updated on an annual basis and

RHODE ISLAND

be filed with the Rhode Island emergency management agency, the department of environmental management, the chief of the local police department and the local city or town emergency management official. The city or town wherein the dam lies will provide a written notice to the dam owner for costs of actions taken by the city or town in the development of the EAP which must be paid by the owner within ninety days (R.I. Gen. Laws § 46-19-9).

Liability

All owners are responsible for maintaining the safe condition of the dam and are fully liable for damage to property of others or injury to persons resulting from the operations or misoperations of the dam. The regulations do not create liability on the part of the Department or the Director (250-RICR-130-05-1.6).

Incidents and Response

Whenever the Director determines a dam to be unsafe, the Director may order the water in the reservoir be drawn off in whole or in part and any other actions necessary to make the dam safe (250-RICR-130-05-1.12).

As set forth in R.I. Gen. Laws §§ 42-17.1-1 and 42-17.6-1 et seq., the Director shall have the power to issue enforcement notices, orders, administrative penalties or other requirements to ensure compliance with the rules and regulations. The Director may also provide written or verbal warning of the intent to undertake enforcement action but is not required to do so (250-RICR-130-05-1.14).

Owner's Non-Compliance/Violations/Penalties

If the owner or operator of an unsafe dam fails to comply with an order of the Director, the Director may, by summons and complaint, seek to enforce the order in a court of competent jurisdiction (250-RICR-130-05-1.12).

Assessment of administrative penalties and procedures for pursuing criminal penalties are detailed in a separate section of the Department of Environmental Management rules and are dependent on the type of violation (250-RICR-130-00-1 and onwards).

Oversight

The owner of a dam or proposed dam may appeal an application decision or hazard classification through an adjudicatory hearing by submitting a written request for such a hearing directly with the administrative adjudication division of the Department and the Dam Safety Program. An appeal request immediately stays any contested decision of the Department, and it is the Department's burden to demonstrate by a preponderance of the evidence that the decision or proposed hazard potential classification is consistent with the laws, rules, and regulations. Any person who has received a notice of violation of the rules or regulations may appeal the decision (250-RICR-10-00-1; 250-RICR-130-05-1.15).

Miscellaneous

Environmental Protection

The rules require the dam owner consider the Director's responsibility to minimize negative impacts to freshwater wetlands and water quality during repair and construction and during normal operation of the dam. Towards that goal, specific requirements are placed on the dam owner's activities during repair projects, including requirements on water drawdowns, vegetation, soil stabilization, and project fill that influence the measures and methods the owner may use to ensure safety of the dam during the construction process (250-RICR-130-05-1.18).

SOUTH CAROLINA

Citation

The content of this section has not been reviewed by the South Carolina dam safety program and may contain inaccuracies or outdated content. Please contact the South Carolina state dam safety program directly to verify the content of this chapter.

The South Carolina dam safety statutes are contained in the South Carolina Code of Laws Title 49 – Waters, Water Resources and Drainage, Chapter 11- Dams (S.C. Code §§ 49-11-10 – 49-11-260). The rules can be found in the South Carolina Code of Regulations, Chapter 72 – Department of Health and Environmental Control-Land Resources and Conservation Districts Division, Article 1 – Dams and Reservoirs Safety Act Regulations (S.C. Code Regs. 72-1 – 72-9). The South Carolina dam safety program is administered through the Dams and Reservoirs Safety Program, which falls within the Bureau of Waters in the South Carolina Department of Health and Environmental Control.

Definition/Dams Classification

Dam is defined as any artificial barrier with appurtenant works, including, but not limited to, dams, levees, dikes, or floodwalls for the impoundment or diversion of waters or other fluids where failure may cause danger to life or property (S.C. Code § 49-11-120(4)).

Dams are classified into four size categories, determined by either impoundment storage or height, whichever gives the larger size capacity (S.C. Code Regs. 72-2(B)). The criteria for each size classification are detailed in Table SC-1.

Size Category	Impoundment Storage (Acre Feet)	Dam Height (Feet)
Very Small	Less than 50	Less than 25
Small	50 or greater but less than 1,000	25 or greater but less than 40
Intermediate	1,000 or greater but less than 50,000	40 or greater but less than 100
Large	50,000 or greater	100 or greater

Hazard Potential Classification Criteria

Dams are classified based upon potential loss of human life or property damage in the event of failure or improper operation of the dam or appurtenant works. The classification criteria are detailed in Table SC-2 (S.C. Code Regs. 72-2(C)).

TABLE SC-2		
Hazard Potential Classification	Loss of Life	Economic Loss
Class III <i>Low Hazard Potential</i>	Not expected.	Minimal property damage to others.
Class II <i>Significant Hazard Potential</i>	Not likely.	May damage homes, industrial and commercial facilities, secondary highways or railroads, or interrupt relatively important public utilities.
Class I <i>High Hazard Potential</i>	Likely to cause loss of life.	Serious damage to homes, industrial and commercial facilities, important public utilities, main highways or railroads.

Jurisdiction/Powers of Department

The Department has jurisdiction over all structures in the state that meet the definitional requirements of a dam and meet the following size criteria (S.C. Code § 49-11-120(4)(a)):

1. Is 25 feet or greater in height from top to bottom of the structure;
2. Can impound 50 acre-feet or more of water at maximum storage;
3. Represents a high-hazard potential where improper operation or dam failure may cause loss of human life, regardless of the overall size of the dam.

The authority for the safe maintenance of the dams and reservoirs and the powers of inspection and certification are the responsibility of the department. The department may employ engineers and technicians it considers necessary to implement its duties (S.C. Code § 49-11-140).

Permit/Approval Process

Any individual who proposes to construct a new dam or repair, alter or remove an existing dam shall apply for and obtain a permit from the Department (S.C. Code Regs. 72-3(A); (B)). The requirements for a permit application will vary based on the type of work being done and the unique features of the dam in question but will largely include the following elements: (S.C. Code Regs. 72-3(D)(2) – (D)(4)).

1. A design report that includes maps; descriptions of the structure; calculations regarding site itself, seepage flow, spillway design, and other design elements; a proposed construction schedule; and a maintenance plan.
2. Plans and specifications, which will include all requested maps, drawings, geologic investigations, technical provisions, and special provisions.
3. An emergency action plan (EAP).

Inspection Process

The Department conducts two forms of inspections, preliminary inspections and detailed inspections. The Department schedules preliminary inspections of dams within a priority system based on the condition of the dam and the dam's classification. Where the preliminary inspection uncovers some defect or deficiency in the dam, the Department will then schedule, at its discretion, a detailed inspection of the dam or issue a maintenance order (S.C. Code Regs. 72-4(C)). A detailed inspection shall be performed by a professional engineer licensed in the State and be in sufficient detail so that appropriate plans and specifications correcting all deficiencies of the dam can be prepared by the engineer and submitted by the owner to the Department for approval (S.C. Code Regs. 72-4(D)).

Emergency Action Planning

The owner of each high or significant hazard potential dam is required to develop and provide to the department an emergency action plan (EAP) (S.C. Code § 49-11-150). The EAP must include the following elements, at a minimum (S.C. Code Regs. 72-3(D)(2)(c)):

1. An emergency alert notification plan;
2. Full computer breach analyses; and
3. A written list of specific actions to take if there is reason to conclude the dam is near failure or has failed.

Liability

No liability may be imposed on the state, the department, districts, agencies, officers, or employees for the recovery of damages caused by the action or failure to act, and nothing relieves the owner or operator of a dam of the duties, obligations, responsibilities, or liabilities arising from or incident to the ownership or operation of a dam or reservoir (S.C. Code § 49-11-250).

Incidents and Response

The Department has the authority and responsibility to issue orders to dam owners mandating remedial measures necessary to protect life and property from danger imposed by unsafe dams. The remedial measures ordered by the Department shall be made at the dam owner's expense and shall normally include a detailed inspection followed by appropriate repairs (S.C. Code Regs. 72-5).

When determined necessary, the Department may issue emergency orders to require the dam owner to take necessary measures to protect life or property, including lowering or completely emptying the reservoir, in addition to any other immediate measures necessary to reduce the risk of dam failure. When the owner fails to comply with the emergency order or cannot be found, the Department or its authorized agents may enter and immediately take such actions as may be necessary to provide protection to life or property including

removal of the dam. The Department may recover the expenses incurred in taking such action from the owner (S.C. Code Regs. 72-5(D)).

Owner's Non-Compliance/Violations/Penalties

Any person who violates the dam safety act is guilty of a misdemeanor and will be fined between \$100 and \$500 for each offense, with each day a violation continues constituting a separate offense (S.C. Code § 49-11-260). The Department may assess an administrative fine against any person who violates the Dams and Reservoirs Safety Act, the regulations promulgated pursuant to it, or an order issued under the Act. These fines shall be not less than \$100 nor more than \$1,000. The fines are assessed according to both the type of violation and the hazard potential category of the dam in question, and the schedule of penalties can be found in the regulations (S.C. Code Regs. 72-7).

Oversight

An administrative hearing may be requested by any owner before an administrative law judge to assess the propriety of any hazard classification decision, permit decision, order issued, or fine assessed by the Department (S.C. Code Regs. 72-9).

SOUTH DAKOTA

Citation

Statutes governing dam safety in South Dakota are codified in the South Dakota Codified Laws Chapter 46-7 – Storage, Diversion and Irrigation Works (SDCL 46-7). The rules and regulations are found in the Administrative Rules of South Dakota Chapter 74:02:08 – Safety of Dams (ARSD 74:02:08). Rules for water permits are contained in ARSD 74:02:01. The South Dakota dam safety program is administered by the engineering section of the Water Rights Program, a program of the Division of Environmental Sciences in the South Dakota Department of Environment and Natural Resources.

Definition/Dams Classification

Dam means an artificial barrier, including appurtenant works, which impounds or diverts water, and which is 25 feet or more in height or has an impounding capacity at maximum water storage elevation of 50 acre-feet or more (ARSD 74:02:08:01).

Dams are classified into three size categories as determined by storage capacity or height, whichever gives the larger size category. The criteria for each category are detailed in Table SD-1 (ARSD 74:02:08:06).

TABLE SD-1		
Size Classification	Storage Capacity (acre-feet)	Dam Height (feet)
Small	50 to 1,000.	25 to 40.
Intermediate	1,001 to 50,000.	41 to 100.
Large	Greater than 50,000.	Greater than 100.

Hazard Potential Classification Criteria

Dams are classified into three hazard potential categories based on probable loss of life and downstream losses in the event of a dam failure. The criteria for each hazard potential category are detailed in Table SD-2 (ARSD 74:02:08:01; 74:02:08:05).

TABLE SD-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Category 3 <i>Low hazard potential</i>	Not likely.	Minimal loss, limited damage to agricultural lands or county and township roads.
Category 2 <i>Significant hazard potential</i>	Not likely.	Damage to buildings, highways, railroads, bridges, or public utilities; loss of a (or the sole) water supply reservoir for a water distribution system; other extensive economic loss.
Category 1 <i>High hazard potential</i>	May cause loss of life.	N/A.

Jurisdiction/Powers of Department

Structures with a height not exceeding 6 feet regardless of storage capacity, or with a maximum storage capacity not exceeding 15 acre-feet regardless of height, are not considered dams and are not subject to the dam safety program’s jurisdiction (ARSD 74:02:08:01).

Permit/Approval Process

An application for a Water Right Permit must be filed for a proposed dam meeting any of the following conditions:

1. The proposed dam will impound more than 25 acre-feet of water at the primary spillway elevation;
2. Regardless of the amount of water impounded, diversions will be made from the dam to serve some use other than reasonable domestic use; or
3. The proposed dam is being constructed on a navigable stream.

If a water right permit is needed, state law requires the permit to be approved prior to building the dam. The application must be completed on forms provided by the chief engineer, which includes instructions for the specific supplements to be included (ARSD 74:02:01:06 – 74:02:01:08). Upon completion of the works permitted by a water right permit, an inspection report of construction and application of water to beneficial use shall be filed with the chief engineer (ARSD 74:02:01:16).

Inspection Process

The chief engineer may inspect any works to determine whether the works are safe. All Category 1 dams must be inspected at least once every five years (ARSD 74:02:08:11).

Emergency Action Planning

The owner of each Category 1 dam must have an emergency preparedness plan (EPP) prepared and submitted to the chief engineer (ARSD 74:02:08:10).

Liability

The chief engineer, the state, or its employees do not incur any liability, either sovereign or personal, as a result of the duties imposed by this section or other provisions related to the inspection and repair, maintenance, or alteration of works or the notification to owners of unsafe conditions (SDCL 46-7-5).

Incidents and Response

If works are found to be unsafe, the chief engineer shall notify the owner and shall order the owner to make changes necessary to secure the safety of the works, allowing a reasonable time, not to exceed six months, for putting the works in a safe condition. The order may specify that if the owner fails to make the repairs in the time allowed, the chief engineer may enter the property and put the works in a safe condition. Any costs incurred shall be borne by the owner (SDCL 46-7-5).

Owner's Non-Compliance/Violations/Penalties

Violations of water use laws will result in the violator being found guilty of a Class 2 misdemeanor. In addition, a civil fine of not more than \$500 may be assessed for the violation, with each day of noncompliance with the statutes being considered a separate violation. The chief engineer may pursue administrative actions in addition to the punishments detailed here (SDCL 46-1-11).

Oversight

The owner may contest the order of the chief engineer by filing a protest in writing with the chief engineer within twenty days of the service of the order upon the owner. Upon receiving the protest, the chief engineer shall schedule the matter for hearing with the board. The filing of the written protest suspends the operation of the chief engineer's order until further action by the board (SDCL 46-7-5).

TENNESSEE

Citation

Statutes concerning dam safety in Tennessee are contained in the Tennessee Code Title 69 – Waters, Waterways, Drains and Levees; Chapter 11 – Dams (Tenn. Code Ann. § 69-11-101 *et seq.*). The rules are contained in the Tennessee Comprehensive Rules and Regulations Section 0400-45-07, titled “Rules of Tennessee Department of Environment and Conservation Water Resources Division, Rules and Regulations Applied to the Safe Dams Act of 1973” (Tenn. Comp. R. & Regs. 0400-45-07-.01 *et seq.*). The Tennessee dam safety program is administered by the Safe Dams Program within the Division of Water Resources in the Tennessee Department of Environment and Conservation.

Definition/Dams Classification

Dam is defined as any artificial barrier, together with appurtenant works, that does or may impound water and that either is 20 feet or more in height or has an impoundment capacity of 30 acre-feet or more (Tenn. Code Ann. § 69-11-102(3)).

Dams are classified into three size categories based on impoundment storage and height. The three categories are detailed in Table TN-1 (Tenn. Comp. R. & Regs. 0400-45-07-.05(1)).

TABLE TN-1		
Size Classification	Storage Capacity (acre-feet)	Dam Height (feet)
Small	30 to 999.	20 to 49.
Intermediate	1,000 to 49,999.	50 to 99.
Large	50,000 or greater.	100 or greater.

Hazard Potential Classification Criteria

Every dam is assigned a hazard potential category that reflects the damage which might occur in the event of a failure. The assessment of a dam’s potential consequences factors in downstream development, the presence of industrial and residential areas, geological considerations, and future development, among other factors. The criteria for each hazard potential category are detailed in Table TN-2 (Tenn. Comp. R. & Regs. 0400-45-07-.05(2)).

TABLE TN-2

Hazard Potential Classification	Loss of Human Life	Economic Loss
Category 3	No loss of human life expected.	Any damage probably confined to the dam owner's property.
Category 2	Possible, but remote chance for loss of human life.	May cause relatively minor damage within the general financial capabilities of the owner. Public hazard or inconvenience due to loss of roads or utilities would be minor and of short duration.
Category 1	Probable loss of human life.	Excessive loss of downstream properties, public hazard, public inconvenience due to loss of impoundment, and/or damage to roads or utilities.

Jurisdiction/Powers of Department

Dams less than 6 feet in height, regardless of storage capacity, or with a maximum storage capacity of 15 acre-feet or less, regardless of height, are not considered dams and are outside the jurisdiction of the Safe Dams Program. No impoundments used solely as a farm pond are considered dams, nor are diversion weirs, roadbeds, water tanks, and wastewater impoundment barriers (Tenn. Code Ann. § 69-11-102(3)(B)).

The commissioner has the authority to administer the rules and regulations, conduct investigations, disseminate information, adopt guidance, assess penalties, issue orders for remedial works, examine and approve or disapprove permit applications, establish standards for construction or modification, make inspections, suspend or revoke certificates of approval, order immediate cessation of dangerous behaviors, prosecute court actions, and hear appeals (Tenn. Code Ann. § 69-11-104(a)).

Permit/Approval Process

No person shall construct, enlarge, repair, alter, remove, maintain, or operate a dam in the state of Tennessee without first obtaining from the commissioner a certificate of approval and safety (Tenn. Code Ann. § 69-11-105). Any application for a certificate of any type must include, at a minimum, the following (Tenn. Comp. R. & Regs. 0400-45-07-.04(1)(b)):

1. The name of the dam;
2. The name of the owner;
3. The legal address of the owner and/or lessee;
4. The location of the dam;
5. The type, size and height of the dam;
6. The storage capacity and reservoir surface area for normal and maximum water surface elevation;
7. The purpose or purposes for which the dam or reservoir is to be used;
8. In the case of an application by an owner or lessee of a dam, the names and addresses of all persons having a real property interest in the dam;

9. Such other plans and detailed information as the Commissioner may deem reasonable and necessary.

For any application for an alteration or construction certificate, the applicant must engage the services of a qualified professional engineer experienced in dam design and construction to plan, to prepare designs and specifications, and to supervise construction (Tenn. Comp. R. & Regs. 0400-45-07-.04(1)(c)). The applicant for a construction or alteration certificate must submit plans and specifications that adhere to the design standards in Rules 0400-45-07-.07 and 0400-45-07-.08.

No dam may be operated without first obtaining an operating certificate. Application for an operating certificate must include a history of the construction of the dam, which will include, among other items, a record of geological and foundation data; date, location, and results of material tests; narrative of problems encountered in construction and changes in design; photographs of completed foundations, critical features, and periodic stages of construction; a record of permanent location points, benchmarks, and embedded instruments; and a set of as-built plans (Tenn. Comp. R. & Regs. 0400-45-07-.04(2)(b)).

Inspection Process

The commissioner conducts a program of regular dam inspections, at a frequency determined by the department (Tenn. Code Ann. § 69-11-115) according to the dam’s hazard potential category (Tenn. Comp. R. & Regs. 0400-45-07-.05(2)(b)). Neither the laws nor rules contain specific language on the frequency of dam inspections for each hazard classification, instead delegating the power to establish regular inspection frequencies to the commissioner more broadly. The current program as stated on the Program’s website is to inspect dams according to the schedule in Table TN-3.

TABLE TN-3	
Hazard Potential Classification	Inspection Frequency
Category 3	Once every three years.
Category 2	Once every two years.
Category 1	Once every year.

Emergency Action Planning

All Category 1 dams must submit an Emergency Action Plan (EAP) to the commissioner. This plan shall include, but not be limited to, the following elements (Tenn. Comp. R. & Regs. 0400-45-07-.07(1)(f)):

1. Inundation information and an inundation map based on the breach analysis;
2. Procedures for notification of people downstream and law enforcement and other government agencies; and
3. Resources for emergency actions such as contractor, equipment supplies businesses, etc.

Liability

Nothing laws relieves the owner or owners of a dam or reservoir of the legal duties, obligations, or liabilities incident to the ownership or operation of the dam or reservoir. Nothing in the laws abrogates the right of any person who is materially or personally damaged or injured by the operation of a dam or reservoir to seek remedies against the responsible person in the courts (Tenn. Code Ann. § 69-11-124(a); (b)).

Nothing in the laws imposes any legal duties, obligations or liabilities incident to the ownership or operation of a dam upon the state, a county or city that maintains a roadway upon a dam if the state, such county or city did not construct the dam (Tenn. Code Ann. § 69-11-124(c)).

Incidents and Response

In the event of an emergency where immediate repairs are necessary to safeguard life and property, such repairs shall be made immediately by the owner or his duly authorized agents. In such events, the Commissioner shall be promptly notified of the necessary emergency repairs and of work under way, if any, and such work shall conform to such requirements as specified by the Commissioner (Tenn. Comp. R. & Regs. 0400-45-07-.10).

Where the owner fails to take satisfactory action toward compliance with an order, or to maintain a satisfactory rate of progress toward full compliance with the order, or where the danger to life or property will not permit delay, the commissioner may request that a state of emergency be declared by the governor, and shall take such action as deemed necessary to render the dam or reservoir safe. These actions may include, but are not limited to:

1. Taking full charge and control of the dam or reservoir;
2. Lowering the water level by releasing water from the reservoir;
3. Completely emptying the reservoir;
4. Performing any necessary remedial or protective work at the site; or
5. Taking such other steps as may be necessary to safeguard life and property.

The commissioner is authorized to recover the costs of these actions from the owner (Tenn. Code Ann. § 69-11-117).

Owner's Non-Compliance/Violations/Penalties

Any person who violates the laws, rules, or orders of the commissioner is subject to a civil penalty of not less than \$50 nor more than \$5,000 per day for each day of violation. Each day such violation continues shall constitute a separate violation. The violator is also liable for damages resulting from the violation (Tenn. Code Ann. § 69-11-121). Any person who willfully and knowingly falsifies any records, information, plans, specifications, or other data required by the commissioner or who willfully fails, neglects, or refuses to comply with any of the provisions of the laws commits a Class C misdemeanor (Tenn. Code Ann. § 69-11-123).

Oversight

Any person aggrieved by any order, determination, regulation, or ruling of the commissioner may, within sixty days of the effective date of such order, determination, regulation, or ruling, make application to the commissioner for a hearing on the grievance (Tenn. Code Ann. § 69-11-118). The decision of the commissioner shall become final and binding on all parties subject to judicial review.

Miscellaneous

Fees

The Safe Dams Program assesses fees for reviewing all new dam and reservoir construction projects. The fees for project reviews are detailed in Table TN-4 (Tenn. Comp. R. & Regs. 0400-45-07-.09(1)).

TABLE TN-4	
Height of Dam	Charge for Project Review
6 – 40 feet.	\$1,000
41 – 60 feet.	\$1,500
Greater than 60 feet.	\$2,000

The Program also assesses fees for safety inspections, which are set at \$500 per inspection (Tenn. Comp. R. & Regs. 0400-45-07-.09(2)).

TEXAS

Citation

The Texas dam safety program derives its primary authority from the Texas Water Code Chapter 12, Section 052 titled “Dam Safety” (Tex. Wat. Code § 12.052). The rules governing dam safety are contained in Title 30 of the Texas Administrative Code, Chapter 299 – Dams and Reservoirs (30 Tex. Admin. Code §§ 299.1 – 299.72). The Texas dam safety program is administered by the Dam Safety Program, part of the Critical Infrastructure Division in the Office of Compliance and Enforcement of the Texas Commission on Environmental Quality.

Definition/Dams Classification

Dam means any barrier or barriers, with any appurtenant structures, constructed for the purpose of either permanently or temporarily impounding water (30 Tex. Admin. Code § 299.2(14)).

Dams are classified by both size and hazard (30 Tex. Admin. Code § 299.12). The size and hazard classifications are used to determine hydrologic design criteria for dams (30 Tex. Admin. Code § 299.15(a)(1)(A)) and the frequency of periodic inspection. The size classification is determined by the height of the dam or the maximum storage capacity, whichever is larger according to the standards in Table TX-1 (Tex. Admin. Code § 266.13).

TABLE TX-1		
Size Classification	Storage Capacity (acre-feet)	Dam Height (feet)
Small	15 or more but less than 1,000.	25 or more but less than 40.
	50 or more but less than 1,000.	6 or more but less than 40.
Intermediate	1,000 or more but less than 50,000.	40 or more but less than 100.
Large	50,000 or greater.	100 or greater.

Hazard Potential Classification Criteria

Dams are classified for hazard potential based on either potential loss of human life or property damage in the event of failure or malfunction of the dam. The criteria for the three hazard potential categories are detailed in Table TX-2 (30 Tex. Admin. Code § 299.14).

TABLE TX-2

Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Not expected. No permanent habitable structures in the breach inundation area downstream of the dam.	Minimal. Located primarily in rural areas where failure may damage occasional farm buildings, limited agricultural improvements, and minor highways.
Significant hazard potential	Possible. One to six lives or one or two habitable structures in the breach inundation area downstream of the dam	Appreciable. Located primarily in rural areas where failure may damage isolated homes, secondary highways, minor railroads, or interruption of public utilities.
High hazard potential	Expected. Seven or more lives or three or more habitable structure in the breach inundation area downstream of the dam.	Excessive. Located primarily in or near urban areas where failure is expected to cause extensive damage to public facilities; agricultural, industrial, or commercial facilities; public utilities; main highways; or railroads used as a major transportation system.

Jurisdiction/Powers of Department

The commission shall exempt any owner of a dam located on private property from meeting requirements related to dam safety if the dam satisfies the following conditions (Tex. Wat. Code § 12.052(e-1)):

1. Impounds less than 500 acre-feet at maximum capacity;
2. Has a hazard potential classification of low or significant;
3. Is located within a county with a population of less than 350,000; and
4. Is not located inside the corporate limits of a municipality.

The executive director may enter any person's property at any time for the purpose of inspecting any dam to determine if the dam is being maintained in a safe manner (30 Tex. Admin. Code § 299.42(a)(1)).

Permit/Approval Process

The owner of a proposed dam or existing dam with proposed changes must submit final construction plans and specifications, which are signed, sealed, and dated by a professional engineer for review and approval before commencing construction (30 Tex. Admin. Code § 299.22(a)(1)). The executive director shall not issue approval until a water rights permit, or any required environmental protection plan, is issued (30 Tex. Admin. Code § 299.22(a)(2); (3)). The construction plans, specifications, and engineering reports must include the following components (30 Tex. Admin. Code §§ 299.22(b) – 299.22(d)):

1. A vicinity map that shows the location of the proposed dam and appurtenant structures;
2. A topographic map of the dam site;

3. A profile of the dam site and assorted detailed sections as specified in the rules;
4. Materials requirements;
5. Geotechnical, geological, and structural evaluations;
6. A stability analysis;
7. Hydrologic and hydraulic reports;
8. Instrumentation and measuring reports; and
9. Any other components required in the rules or by the executive director.

If the final construction plans and specifications meet the requirements of this chapter and accepted engineering practices, the executive director shall issue written approval to the owner (30 Tex. Admin. Code § 299.22(e)).

Inspection Process

The executive director shall perform periodic engineering inspections of dams based on hazard classification and size, according to the frequency detailed in Table TX-3 (30 Tex. Admin. Code § 299.42(a)(2)).

Hazard Potential Classification	Size Category	Inspection Frequency
Low hazard potential	Large	Once every five years.
	Intermediate	As needed.
	Small	As needed.
Significant hazard potential	All Sizes	Once every five years.
High hazard potential	All Sizes	Once every five years.

The owner must also conduct regular inspections at the frequency set out in the owner's approved operation and maintenance procedures (30 Tex. Admin. Code §§ 299.42(b)(1); 299.43), as well as after significant rainfall events and during emergency events.

Emergency Action Planning

The owners of all high and significant hazard potential dams are required to prepare and submit to the executive director an emergency action plan (EAP) to be followed in the event or threat of a dam emergency. The executive director shall review the plan and provide any comments in writing to the owner. The owner shall review and update the EAP annually and submit updated portions to the executive director or notify the executive director that no updates were made for that year. The owner must also conduct a table top exercise of the EAP on the frequency provided by the EAP, or at least every five years (30 Tex. Admin. Code § 299.61).

Liability

No part of the rules (30 Tex. Admin. Code § 299.41(d)) or statutes (Tex. Wat. Code § 12.052(f)) relieves the owner of a dam of the legal duties, obligations, or liabilities incident to ownership or operation of that dam,

and it is the full responsibility of the owner to operate and maintain the dam and appurtenant structures in a way that ensures the safety of the structure and the safety of the general public.

Incidents and Response

If the commission determines that a dam presents an immediate or serious threat, the commission may issue an emergency order directing the owner of a dam to perform such actions as the commission determines to make the dam safe (Tex. Wat. Code § 12.052(d); 30 Tex. Admin. Code § 299.72). The owner shall undertake emergency repairs under the supervision of a professional engineer and implement the emergency action plan as soon as possible after the emergency is discovered and evaluated. The owner may start emergency repairs without approval from the executive director. The owner shall have a professional engineer develop plans for permanent repairs as soon as the emergency is over. The owner shall have a professional engineer submit the plans for review and approval (30 Tex. Admin. Code § 299.45).

Owner's Non-Compliance/Violations/Penalties

If the executive director alleges violations of this chapter, enforcement action may be pursued which include seeking an emergency order from the commission to either reconstruct, modify, alter, or repair the deficient dam or remove the dam or referring to the Office of the Attorney General for civil judicial action, including the assessment of civil penalties and injunctive relief. An owner who willfully fails or refuses to take appropriate action within the time frames addressed in the appropriate executive director enforcement letters is liable for a penalty of not more than \$5,000 a day for each day the violation continues (30 Tex. Admin. Code § 299.71).

Oversight

After issuing any emergency order, the commission must fix a time and place for a hearing to affirm, modify, or set aside the emergency order (Tex. Wat. Code § 12.052(e)).

Miscellaneous

Security of Dams

The owners of high hazard potential dams are required to address security to prevent unauthorized operation or access and ensure backup power requirements are met to ensure operation of the dam and appurtenant structures in the event of a power disruption. The owner is required to develop and maintain a security plan for the high hazard potential dam (30 Tex. Admin. Code § 299.62).

UTAH

Citation

The dam safety laws in Utah are contained in the Utah Code Title 73 – Water and Irrigation, Chapter 5a – Dam Safety (Utah Code § 73-5a-101 *et seq.*). Rules for dam safety are provided in the Utah Administrative Code Rules for Natural Resources, Water Rights, Sections 10 – 12 (Utah Admin. Code r. 655-10 – 655-12). The dam safety program in Utah is administered by the Dam Safety Program of the Utah Division of Water Rights.

Definition/Dams Classification

Dam is defined as any artificial barrier or obstruction, together with appurtenant works, if any, which impounds or diverts water (Utah Admin. Code r. 655-10-4).

Dams are classified according to hazard and use (Utah Code § 73-5a-106). The criteria for use classifications are detailed in Table UT-1.

TABLE UT-1	
Use Category	Purpose of Dam
Water Storage	Dams which impound water for prolonged periods, including those built for irrigation, power generation, water supply, aquatic culture, and recreation.
Flood Control	Dams constructed to operate only during significant runoff events, and which impound water for a small percentage of time, including those built for flood control or sediment control and debris basins.
Tailings	Dams in which a large component of the material impounded consists of saturated solids.
Other	Dams which impound a minimal amount of water or where the head behind the dam is minimal, including stock ponds, wash water ponds, recirculated process water ponds, regulating reservoirs, and diversion dams

Hazard Potential Classification Criteria

The criteria for hazard classifications are detailed in Table UT-2 (Utah Code § 73-5a-106(2)).

TABLE UT-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Minimal threat to human life.	Loss is minor or limited to the owner of the structure.
Significant hazard potential	Low probability.	Appreciable property damage, including damage to public utilities.
High hazard potential	High probability.	Extensive damage, including damage to critical public utilities.

Jurisdiction/Powers of Department

The state engineer may by rule exempt from this chapter any dam that impounds less than 20 acre-feet of water and does not constitute a threat to human life if it fails; or does not constitute a threat to human life and would result in only minor damage to property of the owner if it fails (Utah Code § 73-5a-101(3)).

The state engineer has the authority to regulate the safety of dams for the purpose of protecting public safety. To protect life and property, the state engineer may make rules controlling the construction and operation of dams, including rules controlling design, maintenance, repair, removal, and abandonment (Utah Code § 73-5a-101).

Permit/Approval Process

No person may construct, enlarge, repair, alter, remove, or abandon any dam or reservoir without obtaining written approval from the state engineer (Utah Code § 73-5a-201). The owner or proposed owner must submit plans and specifications to the state engineer for approval. The submission must meet all the submission requirements detailed in Utah Admin. Code r. 655-10-6B and must satisfy the extensive design criteria and standards set out in r. 655-11. The design and construction requirements for dams are robust and more comprehensive than most states, and so are too lengthy to be summarized here. Upon reviewing the application, the State Engineer may approve it, reject it, return it for correction, or approve it with conditions (Utah Admin. Code r. 655-10-6A). Before any dam can be placed in operation a final inspection of the project must be undertaken by the State Engineer and his written acceptance of the project received. The Emergency Action Plan, Standard Operating Plan, and Initial Filling Plan, if required, must be completed and approved before final acceptance and authorization for filling can be given (Utah Admin. Code r. 655-11-12E).

Inspection Process

The state engineer shall inspect each dam that in the state engineer’s opinion, in the event of failure, poses a threat to human life or could cause significant property damage. These inspections will occur no less than once every five years at increments commensurate with the relative risk to life and property (Utah Code § 73-5a-501).

Following an inspection, the state engineer shall specify what maintenance is necessary to keep the dam and appurtenant structures in satisfactory condition, and the owner of the dam shall be responsible for that maintenance. Depending upon the severity of the problems, the state engineer may issue orders for engineering studies, repairs, storage limitations, removal of the dam, breaching of the dam, or any other remedy the state engineer determines is appropriate to protect life and property (Utah Code 73-5a-503).

Emergency Action Planning

All owners of high and moderate hazard potential dams are required to prepare, maintain, and exercise an emergency action plan (EAP) (Utah Admin. Code r. 655-12-6). The EAP shall include the following:

1. A notification flowchart for informing emergency support agencies, downstream interests, and the State Engineer;
2. A dam failure inundation map of a suitable scale and with sufficient topographical information which can be easily used by emergency support people, unless waived under r. 655-12-6A(A)(2);
3. Procedures to identify possible emergencies, at what level an emergency action is initiated, and who is responsible for making necessary contacts; and
4. A list of available materials, equipment, and manpower which can be activated on short notice to deal with possible emergencies or to mitigate damage following a dam failure.

All EAPs must be approved by the state engineer and be distributed to all persons included in the notification flowchart (Utah Admin. Code r. 655-12-6A).

Liability

Nothing in the laws shall be construed to relieve an owner or operator of a dam or reservoir of the legal duties, obligations, or liabilities incident to the ownership or operation of the dam or reservoir. The owner or operator of a dam or reservoir may not be held to be strictly liable for any act or omission incident to the construction, ownership, or operation of the dam or reservoir (Utah Code § 73-5a-103).

The laws specify that, due to lack of appropriate finances, certain dam owners are unable to afford the modifications necessary to meet dam safety requirements without state assistance and the state has limited resources to support such efforts. As a result of this, the state and its officers and employees are afforded immunity from suit for any injury or damage resulting from the exercise or performance or the failure to exercise or perform any function pursuant to the laws (Utah Code 73-5a-502).

Incidents and Response

The state engineer may intervene during dam emergencies if the owner of the dam cannot be found or is unwilling to take appropriate action. Intervention may occur only when, in the judgment of the state engineer,

the condition of any dam is so dangerous to the safety of life or property as to not permit time for issuance and enforcement of any order. Emergency actions may include:

1. Alerting appropriate public safety entities of the problem;
2. Draining the reservoir;
3. Hiring personnel or leasing equipment to undertake emergency operations; or
4. Taking other steps considered necessary to safeguard life and property.

Any expenses incurred in undertaking emergency operations may be recovered from the owner (Utah Code § 73-5a-603).

Owner's Non-Compliance/Violations/Penalties

If the state engineer determines that any person is violating any requirement of the laws, rules, or orders of the state engineer, the state engineer will issue a notice of the violation and order corrective action and file an action in the appropriate district court. Any person who is found in violation of the laws, rules, or orders shall be assessed a penalty not to exceed \$5,000 per violation per day of continued violation in a civil proceeding (Utah Code § 73-5a-702).

Oversight

Orders of the department are subject to review by filing either a Request for Reconsideration with the State Engineer or an appeal with the appropriate District Court (Utah Code §§ 63G-4-302 and 73-3-14; Utah Admin. Code R. 655-6-17). A Request for Reconsideration must be filed with the State Engineer within 20 days of the date of the order. However, a Request for Reconsideration is not a prerequisite to filing a court appeal. A court appeal must be filed within 30 days after the date of the order, or if a Request for Reconsideration has been filed, within 30 days after the date the Request for Reconsideration is denied. A Request for Reconsideration is considered denied when no action is taken within 20 days after the Request is filed.

Miscellaneous

Exemption from dam repairs without state assistance

The state engineer may not require any mutual irrigation company or water users association to upgrade a dam to meet the state's minimum safety and design standards, unless a grant to pay for 80% of the costs is made available from the Board of Water Resources (Utah Code § 73-5a-502(5)).

VERMONT

Citation

Following the 2018 passage of Act 161 - An Act Relating to the Regulation of Dams, 10 V.S.A. Chapter 43, Vermont has been engaged in dam safety rule development. The pre-file draft rules are publicly available on the state dam safety program's website. The new administrative rules concerning exemptions from registration and inspections, process for owner registration, hazard classifications, and inspection schedule are set to be adopted by July 1, 2020. The new standards for dam design, operation, inspection, and emergency action plans set to be adopted by July 1, 2022. The amendments to the statute included the addition of a purpose statement, definition of a "dam," requirements for developing inspection schedules, hazard classifications, dam inventorying, and dam recording in the land records.

As the rules are still in development, this summary will not cover the rules. Please contact the Vermont Dam Safety Program directly to determine the status of the new rules.

The Vermont dam safety statutes are contained in the Vermont Statutes Annotated Title 10 – Conservation and Development, Chapter 43 – Dams (10 V.S.A. § 1079 *et seq.*). The state has not promulgated rules on dam safety, although that process is currently ongoing. The Vermont dam safety program is administered by the Dam Safety Program, a program of the Water Investment Division in the Vermont Department of Environmental Conservation, itself a department of the State of Vermont Agency of Natural Resources.

Definition/Dams Classification

Dam means any artificial barrier, including its appurtenant works, that is capable of impounding water, other liquids, or accumulated sediments (10 V.S.A. § 1080(6)(A)). The definition includes an artificial barrier that meets all the following conditions (10 V.S.A. § 1080(6)(B)):

1. Previously was capable of impounding water, other liquids, or accumulated sediments;
2. Was partially breached; and
3. Has not been properly removed or mitigated.

Hazard Potential Classification Criteria

The dam safety statutes specify the Department has the authority to classify dams by hazard potential and decrees the establishment of four categories for hazard potential (10 V.S.A. § 1107). There are currently no rules promulgated to identify the criteria for these categories, although the draft rules currently proposed do. The Dam Safety Program website details criteria for hazard potential classification (using the U.S. Army Corps of Engineers system given in Recommended Guidelines for Safety Inspection of Dams, ER 1110-2-106, 25

Sept. 79, 24 Mar 80 Chg 1), although this standard uses only three categories instead of the four established in the laws.

Dams regulated by the Public Utility Commission are classified into hazard potential categories according to the criteria detailed in Table VT-1 (Vt. Code R. 30 000 4.510).

TABLE VT-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Minimal hazard potential	None expected.	None expected.
Low hazard potential	None expected. No permanent structures for human habitation.	Minimal. Underdeveloped to occasional structures or agriculture.
Significant hazard potential	Few. No urban development and no more than a small number of inhabitable structures.	Appreciable. Notable agriculture, industry, or structures.
High hazard potential	More than a few.	Excessive. Extensive community, industry, or agriculture.

Jurisdiction/Powers of Department

The following structures are not considered dams and are excluded from the dam safety program:

1. Barriers or structures created by beaver or any other wild animal;
2. Transportation infrastructure that has no normal water storage capacity and that impounds water only during storm events;
3. An artificial barrier at a stormwater management structure that is regulated by the Agency of Natural Resources;
4. An underground or elevated tank to store water otherwise regulated by the Agency of Natural Resources;
5. An agricultural waste storage facility regulated by the Agency of Agriculture, Food and Markets; or
6. Any other structure identified by the Department by rule.

The Public Utility Commission (PUC) regulates non-federal, power dams generally constructed before 1935 and are therefore not under FERC jurisdiction. The powers and duties authorized by the laws shall be exercised by the Department of Environmental Conservation, except that the Public Utility Commission shall exercise those powers and duties over nonfederal dams and projects that relate to or are incident to the generation of electric energy for public use or as a part of a public utility system (10 V.S.A. § 1081(a)).

Permit/Approval Process

No person shall construct, enlarge, raise, lower, remodel, reconstruct, or otherwise alter any dam capable of impounding more than 500,000 cubic feet of water or other liquid without receiving authorization from the state to do so (10 V.S.A. § 1082(a)). An application for authorization must include the following (10 V.S.A. § 1083):

1. The location; the height, length, and other dimensions; and any proposed changes to any existing dam;
2. The approximate area to be overflowed and the approximate number of or any change in the number of cubic feet of water to be impounded;
3. The plans and specifications to be followed in the construction, remodeling, reconstruction, altering, lowering, raising, removal, breaching, or adding to;
4. Any change in operation and maintenance procedures; and
5. Other information that the State agency having jurisdiction considers necessary to review the application.

The plans and specifications must be prepared under the supervision of an engineer. the State agency having jurisdiction shall employ an engineer to investigate the property, review the plans and specifications, and make additional investigations as the State agency having jurisdiction considers necessary to ensure that the project adequately provides for the public safety. The engineer shall report the findings to the State agency having jurisdiction (10 V.S.A. § 1087).

Inspection Process

All dams in the state are to be inspected by the State agency having jurisdiction of the dam according to a schedule established by rule. There are currently no rules on dam safety in Vermont, however the proposed rules do include provisions for an inspection schedule. The Dam Safety Program website lists inspection frequencies that are determined by the dam's hazard potential category. The website further notes that the inspection program is voluntary.

Dams regulated by the Public Utility Commission must undertake inspections according to the process detailed in Vt. Code R. 30 000 4.520.

Emergency Action Planning

The laws empower the Commissioner of Environmental Conservation to promulgate rules on the development of emergency action plans (EAPs), although no rules currently exist. The proposed rules will establish guidelines for EAPs and are set to be adopted by July 1, 2022.

For dams regulated by the Public Utility Commission, the owner or operator of any dam which is classified as high or intermediate hazard may be required to maintain an EAP for that dam. Any dam owner required to

maintain an EAP by the Federal Energy Regulatory Commission (FERC) shall file a copy of that EAP with the Commission (Vt. Code R. 30 000 4.543).

Liability

The dam safety statutes do not contain specific language in immunity from liability on the part of the dam safety program, or any other language regarding liability in the case of a dam emergency, failure, or other incident.

Incidents and Response

On receipt of a petition signed by ten or more people or upon the determination of the State, the State will engage in investigations by an engineer regarding the safety of the dam in question. The engineer will present the findings and recommendations at a hearing, after which the agency may decide to issue an order directing reconstruction, repair, removal, or other action necessary to improve the safety of the dam. If the owner fails to comply, the State may petition the court to exercise the right of eminent domain to acquire the rights necessary to effectuate the remedy. The state may take immediate actions if the status of a dam presents an imminent threat to life or property, and hold the hearing previously described after taking such actions as to ensure the safe condition of the dam (10 V.S.A. § 1095).

Owner's Non-Compliance/Violations/Penalties

The statutes, as contained in 10 V.S.A. Chapter 43, do not specify specific punishments for violation of the dam safety statutes. Enforcement of the environmental laws more generally is addressed in 10 V.S.A. § 8001 *et seq.*

Oversight

Orders of the Department may be appealed (10 V.S.A. § 1099).

Miscellaneous

Vermont Unsafe Dam Revolving Loan Fund

The state has established a fund to provide loans and grants to municipalities, nonprofits, and private individuals for the reconstruction, repair, removal, breaching, draining, or other threat-mitigating action necessary for a dam that has been determined to be in an unsafe condition (10 V.S.A. § 1106).

VIRGINIA

Citation

Virginia’s dam safety statutory authority is derived from the Virginia Dam Safety Act, codified in the Code of Virginia Title 10.1 – Conservation, Chapter 6 – Flood Protection and Dam Safety, Article 2 – Dam Safety Act (Va. Code Ann. § 10.1-604 *et seq.*). The dam safety regulations are contained in the Virginia Administrative Code Title 4 – Conservation and Natural Resources, Agency 50 – Virginia Soil and Water Conservation Board, Chapter 20 – Impounding Structure Regulations (4VAC50-20-10). Regulations for mine tailings dams are found in 4VAC25-31-500. The Virginia dam safety program is administered by the Dam Safety Program, a program of the Dam Safety and Floodplains section of the Virginia Department of Conservation and Recreation. Mine tailings dams are regulated by the Department of Mines, Minerals and Energy (DMME), Virginia Division of Mineral Mining.

Definition/Dams Classification

Dam, or as more commonly used in the statutes, *impounding structure*, is defined as 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 (Va. Code Ann. § 10.1-604; 4VAC50-20-30).

For the purposes of categorizing and reporting information to national and other dam safety databases, impounding structures are classified by size according to the criteria noted in Table VA-1 (4VAC50-20-59).

Size Classification	Storage Capacity (acre-feet)	Dam Height (feet)
Small	15 or greater but less than 1,000.	6 or greater but less than 40.
Medium	1,000 or greater but less than 50,000.	40 or greater but less than 100.
Large	50,000 or greater.	100 or greater.

Hazard Potential Classification Criteria

All dams in the state are classified into three hazard potential categories. The criteria for each category are detailed in Table VA-2 (4VAC50-20-40).

TABLE VA-2		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Not expected.	Minimal.
Significant hazard potential	May cause loss of life.	Appreciable. Damage to buildings, industrial or commercial facilities, public utilities, secondary roadways, railroads, personal property, and agricultural areas.
High hazard potential	Probable.	Serious. Damage to buildings, industrial or commercial facilities, public utilities, major roadways, railroads, personal property, and agricultural interests.

Jurisdiction/Powers of Department

The Dam Safety Program has jurisdiction over all dams in the state that are 25 feet or greater in height and that create an impoundment capacity of 15 acre-feet or greater, and all dams that are six feet or greater in height and that create an impoundment capacity of 50 acre-feet or greater (Va. Code Ann. § 10.1-604; 4VAC50-20-30) except as explicitly excluded by law.

Permit/Approval Process

No person or entity shall construct or begin to construct, alter or begin to alter an impounding structure until the board has issued a construction or alteration permit (4VAC50-20-60). The applicant may first submit a preliminary design report to determine if the concept is acceptable to the department that includes proposed design criteria, a description of the structure, ground cover conditions, hydrological and structural features, geotechnical engineering instructions, and preliminary drawings (4VAC50-20-70). The applicant must submit a full design report prepared in accordance with the design standards specified in 4VAC50-20-240, submitted on departmental forms, along with a construction plan and temporary emergency action plan. The application will be reviewed and, if approved, construction must commence within two years of permit issuance. Within 90 days of completion of construction the owner must submit a set of as-built plans signed and sealed by a licensed professional engineer and signed by the owner as well as a complete record report. Permits for alteration follow a similar process (4VAC50-20-80). Low hazard potential impounding structures follow special criteria for attaining a general permit (4VAC50-20-101). All dams must have an active operation and maintenance certificate (4VAC50-20-105).

Inspection Process

The Board shall cause safety inspections to be made of impounding structures in the state (Va. Code Ann. § 10.1-607). Inspections shall be performed on an impounding structure annually. Inspection reports signed and sealed by a licensed professional engineer shall be submitted to the department in accordance with the schedule noted in Table VA-3 (4VAC50-20-105(E)).

Hazard Potential Classification	Inspection Frequency
Low hazard potential	Once every six years.
Significant hazard potential	Once every three years.
High hazard potential	Once every two years.

The director may require owners of certain high hazard potential dams to submit inspections annually (4VAC50-20-53).

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.

Emergency Action Planning

All high and significant hazard potential impounding structures must have an emergency action plan (EAP) coordinated with the Department of Emergency Management. The EAP must be submitted every six years with the owner's operation and maintenance certificate application. The EAP must be drilled annually, and the drill should include a face-to-face meeting with the local emergency management agencies. A table-top exercise shall be conducted once every six years, at a minimum.

The EAP will consist of at minimum the following seven components:

1. Notification chart;
2. Emergency detection, evaluation, and classification procedures;
3. Responsibilities;
4. Preparedness actions;
5. Dam break inundation maps;
6. Appendices;
7. Certification.

The EAP will be developed in coordination with all entities, jurisdictions, and agencies affected by the failure of the impounding structure or with statutory responsibilities for warning, evacuating, or executing post-flood actions. This process includes consultation with state and local emergency management officials (4VAC50-20-175).

Low hazard potential structures must establish an emergency preparedness plan that follows the guidelines established in 4VAC50-20-177.

Liability

No action may be brought against the Commonwealth, the Board, the Department, or agents or employees of the Commonwealth for the recovery of damages caused by the partial or total failure of a dam or reservoir, or

by the operation of a dam or reservoir, or by an act or omission in connection with any of the following (Va. Code Ann. § 10.1-613.3):

1. Approval of the construction, alteration, or maintenance of a dam or reservoir, or approval of flood-operations plans during or after construction;
2. Issuance or enforcement of orders relating to maintenance or operation of the dam or reservoir;
3. Control or regulation of the dam or reservoir;
4. Measures taken to protect against failure of the dam or reservoir during an emergency;
5. Investigations or inspections authorized under this article;
6. Use of design and construction criteria prepared by the Department; or
7. Determination of the hazard classification of the dam.

No part of the laws (Va. Code Ann. § 10.1-613.4) or the rules (4VAC50-20-20) shall be construed or interpreted to relieve the owner or operator of any impoundment or impounding structure of any legal duties, obligations or liabilities incident to ownership, design, construction, operation or maintenance.

Incidents and Response

When the Director identifies an unsafe dam constituting an imminent danger to life or property, the Director shall notify the Department of Emergency management and confer with the owner. The owner is responsible for taking immediate corrective action, and should the owner fail to do so, the Governor has the authority to take immediate action to remove the imminent danger. The costs of such action shall be recovered from the owner (Va. Code Ann. § 10.1-608).

Owner's Non-Compliance/Violations/Penalties

Any person or legal entity failing or refusing to comply with an order may be compelled to comply with the order in a proceeding instituted in any appropriate court by the Board (Va. Code Ann. § 10.1-613)

Any owner who knowingly violates any provision of the laws, rules, or orders is guilty of a Class 3 misdemeanor and may be subject to a criminal penalty, civil penalty, or both of up to \$500 per offense per day of continued offense, not to exceed a total fine of \$25,000 (Va. Code Ann. §§ 10.1-613.1 and 10.1-613.2).

Oversight

A dam owner may petition for a hearing to contest orders or recommendations for the correction of nonemergency deficiencies in their dam (Va. Code Ann. § 10.1-609).

VIRGINIA

Miscellaneous

Fees

The dam safety program assesses fees for construction permit applications (4VAC50-20-370), general permits for low hazard potential structures (4VAC50-20-375), regular operation and maintenance (O&M) certificate applications (4VAC50-20-380), conditional O&M certificate applications (4VAC50-20-390), simplified dam break inundation zone analysis (4VAC-50-20-395), and incremental damage analysis (4VAC50-20-400). The fees are detailed in Table VA-4.

Category	Criteria	Fee Amount
Construction permit application	Low hazard potential	\$1,000
	Significant hazard potential	\$2,500
	High hazard potential	\$2,500
General permit application	Registration statement seeking coverage under the general permit for low hazard impounding structures.	\$300
Regular O&M certificate application*	Low hazard potential	\$300
	Significant hazard potential	\$600
	High hazard potential	\$600
Conditional O&M certificate application*	For a certificate for 1 year or less.	\$150
	For a certificate of more than 1 year but no more than 2 years.	\$300
Analysis	Simplified dam break inundation zone analysis.	\$2,000
	Incremental damage analysis.	Case by case.
*The fee for an extension of a regular or conditional O&M certificate is set at \$250 per year or portion thereof.		

Dam Safety Administrative Fund

The Board is authorized to collect fees and deposit the fee money into a fund to be used for the administration of the dam safety, including for covering costs of emergency actions and orders (Va. Code Ann. § 10.1-613.5).

WASHINGTON

Citation

The dam safety statutes are spread in a number of areas of the Washington Revised Code, with RCW 43.21A.064, 86.16.035, 90.03.350, and 90.03.470 forming the bulk of the pertinent laws. Rules concerning dam safety in the State of Washington are contained in Title 173, Chapter 175 of the Washington Administrative Code (WAC 173-175-010 *et seq.*). The dam safety program in Washington is administered by the Dam Safety Office, located in the Water Resources program in the State of Washington Department of Ecology.

Definition/Dams Classification

Dam means any artificial barrier and/or any controlling works, together with appurtenant works that can or does impound or divert water (WAC 173-175-030).

Dams are classified into three size categories based upon the height of the dam (WAC 173-175-130(4)(d)). The criterion for each size category is detailed in Table WA-1.

TABLE WA-1	
Size Classification	Dam Height
Small	Less than 15 feet.
Intermediate	15 feet or greater but less than 50 feet.
Large	50 feet or greater.

Hazard Potential Classification Criteria

Dams are classified into three hazard potential categories: low, significant, and high. High hazard potential dams are further classified into three downstream hazard potential classification subcategories based upon the size of the at-risk population, giving the dam safety program's hazard potential classification system a total of five classes. The Washington dam safety program can also consider environmental damages as well as economic damages when assessing a dam's hazard potential. The criteria for downstream hazard potential classification are detailed in Table WA-2, which can be found at the end of this chapter (WAC 173-175-130(4)(g)(iv) (Table 3)).

Jurisdiction/Powers of Department

The rules do not apply to dams which impound less than 10 acre-feet, and dams six feet in height may be exempted from the regulations by the department (WAC 173-175-020).

Permit/Approval Process

Any person intending to construct or modify any dam shall, before beginning said construction or modification, submit plans and specifications and a construction inspection plan for review and approval by the department (WAC 173-175-100). The sequence of tasks to be completed by the owner or the project engineer, and the actions taken by the department in permitting dam construction are outlined below (WAC 173-175-110).

1. Submission of application for construction permit, including initial nonrefundable fee payment (WAC 173-175-120).
2. Submission of engineering design report(s) (WAC 173-175-130).
3. Submission of plans and specifications (WAC 173-175-140).
4. Payment of construction permit fee (WAC 173-175-150).
5. Submission of construction inspection plan WAC 173-175-170).
6. Resolution of any outstanding engineering issues (WAC 173-175-160).
7. Department approves plans and specifications and issues construction permit (WAC 173-175-160; 173-175-180).
8. Construction or modification of dam.
9. Submission of operation and maintenance (O&M) plan (WAC 173-175-210).
10. Submission of emergency action plan (EAP) (WAC 173-175-220).
11. Department accepts O&M plan and EAP.
12. Declaration by project engineer that project was constructed or modified in accordance with approved plans and specifications and construction change orders (WAC 173-175-190; WAC 173-175-230).
13. Department concurs with project engineer that project was constructed or modified in accordance with approved plans and specifications and construction change orders (WAC 173-175-200; WAC 173-175-240).
14. Department authorizes filling of reservoir at new dam or resumption of normal operations at existing dam.
15. Submission of a report summarizing the construction records (WAC 173-175-250).

A more complete description of the required tasks, reports, and plans are described in later sections, and additional guidance in meeting department requirements is contained in the department documents titled *Dam Safety Guidelines*.

Inspection Process

The department has the authority to conduct routine periodic inspections of all existing dams with high and significant downstream hazard classifications to reasonably secure safety to life and property. The periodic inspection schedule is detailed in Table WA-3 (WAC 173-175-705).

TABLE WA-3

Hazard Potential Classification	Inspection Frequency
Low hazard potential	Not included in the periodic inspection program.
Significant hazard potential	Once every five years, or ten years if workload or staffing necessitates a longer cycle.
High hazard potential	Once every five years.

Emergency Action Planning

In those cases where a failure of the dam could pose a risk to life based on the current level of development in downstream areas (downstream hazard classes 1A, 1B, 1C, and 2), an emergency action plan (EAP) shall be developed and submitted to the department for review and acceptance (WAC 173-175-220). The EAP shall describe procedures for responding to unusual or emergency situations and procedures for detecting, evaluating, communicating, and initiating notification or warning of individuals who may be at risk in downstream and upstream areas. Information on the development of an EAP is contained within the department's *Dam Safety Guidelines*, which further advise dam owners develop EAPs in consultation with the relevant emergency management agencies (WAC 173-175-520).

Liability

The dam safety statutes do not contain specific language in immunity from liability on the part of the dam safety program, or any other language regarding liability in the case of a dam emergency, failure, or other incident.

Incidents and Response

When, in the opinion of the department, an emergency condition exists which poses an imminent threat to life, the department may take such action as necessary to eliminate or mitigate the hazard and potential consequences. The dam owner or the owner's agent(s) may be directed to take actions, and if that failing, the department may take control of the project and take actions, including, but not limited to:

1. Altering the operation of the project;
2. Lowering the reservoir water level;
3. Draining the reservoir;
4. Making emergency repairs or modifications to the project;
5. Enlisting the services of federal, state, or local authorities to make emergency repairs or modifications to the project; and
6. Breaching the dam.

Costs incurred by the department as a result of taking control of the dam will be charged to the owner (WAC 173-175-610).

Owner's Non-Compliance/Violations/Penalties

The Department may assess civil penalties pursuant to its authority under RCW 86.16.081 and RCW 90.03.600. The Department may also issue regulatory orders to compel compliance with the dam safety rules (WAC 173-175-620).

Oversight

All final written decisions of the department pertaining to permits, regulatory orders, and related decisions made pursuant to this chapter shall be subject to review by the pollution control hearings board (WAC 173-175-630).

TABLE WA-2

Downstream Hazard Potential	Downstream Hazard Potential Classification	Population at Risk	Economic Loss Descriptions	Environmental Damages
Low hazard potential	Class 3	0	<i>Minimal.</i> No inhabited structures. Limited agricultural development.	No deleterious materials in reservoir contents.
Significant hazard potential	Class 2	1 to 6	<i>Appreciable.</i> 1 or 2 inhabited structures. Notable agriculture or work sites. Secondary highway and/or rail lines.	Limited water quality degradation from reservoir contents and only short-term consequences.
High hazard potential	Class 1C	7 to 30	<i>Major.</i> 3 to 10 inhabited structures. Low density suburban area with some industry and work sites. Primary highways and rail lines.	Severe water quality degradation potential from reservoir contents and long-term effects on aquatic and human life.
	Class 1B	31-300	<i>Extreme.</i> 11 to 100 inhabited structures. Medium density suburban or urban area with associated industry, property and transportation features.	
	Class 1A	More than 300	<i>Extreme.</i> More than 100 inhabited structures. Highly developed, densely populated suburban or urban area with associated industry, property, transportation and community life line features.	

WEST VIRGINIA

Citation

The West Virginia dam safety law is contained in the West Virginia Code Chapter 22, Article 14 – Dam Control and Safety Act (W. Va. Code § 22-14-1 *et seq.*). The dam safety rules for West Virginia are found in the West Virginia Code of State Rules Title 47 – Department of Environmental Protection, Series 34 – Dam Safety Rule (W. Va. C.S.R. § 47-34-1 *et seq.*). The dam safety program in West Virginia is administered by the Dam Safety Section within the Environmental Enforcement program of the Division of Water and Waste Management, a division of the West Virginia Department of Environmental Protection. Mining dams are regulated by the West Virginia Department of Environmental Protection’s Division of Mining and Reclamation.

West Virginia maintains two relatively independent dam safety programs within the Department of Environmental Protection – a program for coal related dams and a program for non-coal related dams. Both programs derive authority from the Dam Control and Safety Act (W. Va. Code § 22-14), but the coal related dam safety program rules are contained in a separate set of rules (W. Va. C.S.R. § 38-4) than the non-coal program rules (W. Va. C.S.R. § 47-34).

Definition/Dams Classification

Dam is defined as an artificial barrier or obstruction, including any works appurtenant to it and any reservoir created by it, which is or will be placed, constructed, enlarged, altered or repaired so that it does or will impound or divert water and is 25 feet or more in height and which impounds 15 acre-feet or more of water; or is six feet or more in height and which impounds 50 acre-feet or more of water (W. Va. Code § 22-14-3(f)(1)).

Dams are divided into four general types according to their design or purpose. The four types of dams are detailed in Table WV-1 (W. Va. C.S.R. § 47-34-3.1; W. Va. C.S.R. § 38-4-3.1). The type category will determine much of the specific design criteria and standards that must be met during the permit application, approval, and operation process.

TABLE WV-1		
Dam Regulatory Category	Dam Type Category	Dam Type Criteria
Non-Coal Dam <i>W. Va. C.S.R. § 47-34-3.1</i>	Embankment Dams	Usually constructed of materials which exhibit rock-like or soil-like properties.
	Gravity Dams	Usually constructed of concrete or masonry materials which form a rigid body.
	Waste Disposal Dams	Usually constructed of waste materials such as fly ash or coal refuse. The reservoir is utilized to dispose of waste material, thereby creating a continuously decreasing freeboard condition.
	Dams of Multiple Type	Dam exhibits properties of more than one type, such as gabion structures or roller-compacted concrete.
Coal Dam <i>W. Va. C.S.R. § 38-4-3.1</i>	Embankment Dams	Usually constructed of materials which exhibit rock-like or soil-like properties.
	Coal Waste Disposal Dam	Usually constructed of coal refuse and are utilized for impoundment of coal slurry from coal preparation plants.
	Road Fills	If a road fill has become a hazard to human life or property through frequent or continuous impoundment of water, the Secretary may issue emergency orders regarding it when determined necessary.
	Bridges	If a bridge has become a hazard to human life or property through frequent or continuous impoundment of water, the Secretary may issue emergency orders regarding it when determined necessary.
	Stream Encroachments	If the owner proposes to restrict a natural drain by filling or other means that can or will impound water, and the resulting reservoir will meet the height and storage requirements of a dam, the owner must obtain a certificate of approval.

Hazard Potential Classification Criteria

Dams are classified into hazard potential categories based upon the consequences to life and economic damage in the event of a dam failure. The criteria for hazard potential classification are detailed in Table WV-2 (W. Va. C.S.R. § 47-34-3.5.b; W. Va. C.S.R. § 38-4-3.4.b).

TABLE WV-2

Hazard Potential Classification	Loss of Human Life	Economic Loss
Class 4 <i>Negligible hazard potential</i>	No potential for loss of human life.	No potential for property damage or harm to the environment.
Class 3 <i>Low hazard potential</i>	Unlikely.	Minor damage to nonresidential and unoccupied buildings or land in rural or agricultural areas. Damage is limited to the dam and associated property itself.
Class 2 <i>Significant hazard potential</i>	Unlikely.	Minor damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or cause major damage to unoccupied buildings.
Class 1 <i>High hazard potential</i>	May cause loss of human life.	Major damage to dwellings, commercial or industrial buildings, main railroads, important public utilities, or highways.

Jurisdiction/Powers of Department

The Department is empowered to control and exercise regulatory jurisdiction over all dams in the state as defined in the statutes. The Department will review and grant, modify, revoke, restrict, or refuse applications for dam construction, modification, and removal projects; issue orders for repairs and inspections; establish fees; employ consultants; conduct investigations and inspections; and will establish design standards and criteria for dams (W. Va. Code § 22-14-4).

Permit/Approval Process

It is unlawful to place, construct, enlarge, alter, repair, remove, or abandon a dam without prior approval from the Department (W. Va. Code § 22-14-5). Applications for a certificate of approval must be prepared by or under the supervision of an engineer (W. Va. C.S.R. 47-34-5.1.a). Plans, reports, specifications, and design drawings shall be signed and sealed by an engineer (W. Va. C.S.R. § 47-34-5.1.d). A complete application package will include all of the following elements. Each section has extensive sub-requirements that are specified in the rules (W. Va. C.S.R. § 47-34-6.4.a):

1. Project Narrative – A general narrative discussion of the project which will include, among other things, site conditions, method of construction, a construction plan, and inspection and maintenance procedures and schedules;
2. Construction Sequence and Schedule – A proposed or recommended sequence of construction, with a schedule listing the anticipated number of working dams necessary to accomplish each item in the sequence;
3. Project specifications;
4. Maps and Drawings;
5. Inventory of Protected Sites; and
6. Erosion and Sediment Control.

All dam design submissions must meet the appropriate design criteria for the dam’s purpose, type, and hazard potential classification. Design requirements for dams are detailed extensively in the rules (W. Va. C.S.R. § 47-34-7; W. Va. C.S.R. § 38-4-4 through 38-4-11).

Upon approval from the Department, the applicant must publish a legal advertisement in a qualified newspaper serving the county in which the dam is located. The advertisement shall include the name and address of the applicant, the location of the proposed dam, and any other information required by the Department in their approval notification letter (W. Va. C.S.A. § 47-34-4.2.d). The dam owner is responsible for monitoring the construction project to ensure compliance with the approved plans and specifications (W. Va. C.S.R. § 47-34-8.2.a). Upon completion of the construction work, the dam will undergo a joint inspection conducted by the Department and the owner’s engineer and, upon determining the dam is in safe condition and was constructed according to approved plans and specifications, the Department will issue a letter of acceptance of construction. After acceptance, the dam will be inspected annually for a period of three years by an engineer experienced with such inspections (W. Va. C.S.R. § 47-34-8.3).

Inspection Process

The owner of a dam shall perform safety inspections at least monthly. An engineering inspection shall be conducted by the owner’s engineer at a frequency determined by the dam’s hazard potential rating, unless the Department requires more frequent inspection. The schedule for periodic inspections is detailed in Table WV-3 (W. Va. § 47-34-15-4-c).

TABLE WV-3	
Hazard Potential Classification	Inspection Frequency
Class 4	At least once every seven years.
Class 3	At least once every five years.
Class 2	At least once every three years.
Class 1	At least once every two years.

The Department may conduct its own inspections at any time (W. Va. C.S.R. § 15.4.b), may require more frequent inspection of dams with serious problems, and reserves the right to attend any inspection by the owner of the dam (W. Va. C.S.R. § 15.4.d). The owner must submit a written safety inspection report within 30 days of the inspection. The report shall detail any maintenance work to be performed as a result of the inspection findings (W. Va. C.S.R. § 47-34-15.5).

Coal dams will be inspected annually until removal or abandonment of the structure (W. Va. C.S.R. § 38-4-28).

Emergency Action Planning

The owner of any Class 1 dam is required to prepare an emergency action plan (EAP) and submit that plan to the Department for approval. The Department may require any Class 2 or Class 3 dam to formulate and submit an EAP. The dam owner shall coordinate with county emergency service authorities in developing the plan (W. Va. C.S.R. § 47-34-15.7). Owners of high hazard potential coal dams must formulate and submit an EAP according to W. Va. C.S.R. § 38-4-33.

Liability

Nothing in the laws relieves the owner of a dam of the legal duties, obligations or liabilities incident to the ownership or operation of a dam (W. Va. Code § 22-14-12). The Department's approval of a monitoring or emergency action plan or updates to such a plan does not relieve the dam owner of the legal duties, obligations, or liabilities incident to owning that dam (W. Va. C.S.R. § 47-34-15.9).

Incidents and Response

If the owner of a dam determines that an emergency exists, they must immediately notify any person who may be endangered, appropriate emergency management services authorities, and the Department. After providing notification the owner must undertake any remedial action necessary to protect life and property (W. Va. C.S.R. § 47-34-19.1). Where necessary, the Department may take such steps to protect life and property. These remedial actions may include, but are not limited to (W. Va. Code § 22-14-10):

1. Taking full charge and control of the dam;
2. Lowering the level of water impounded by the dam by releasing such impounded water;
3. Completely releasing all water impounded by the dam;
4. Performing any necessary remedial or protective work at the site of the dam; and
5. Taking any other steps necessary to safeguard life and property.

Owner's Non-Compliance/Violations/Penalties

An authorized representative of the Secretary of the Department may commence an enforcement action for any observed violation. The dam owner must immediately comply with any provisions of the order, including undertaking immediate remedial measures as detailed in the order. The Secretary shall review each enforcement action issued for civil administrative penalty assessment to determine the appropriateness of such a penalty and the amount of the penalty (W. Va. C.S.R. § 47-34-19.2). The Secretary may assess a separate civil penalty against any other violator or person who violates a statute, rule, notice, order, or certificate (W. Va. C.S.R. § 47-34-19.4).

Any person who violates any of the provisions of the laws or any certificate of approval, order, rule or requirement of the secretary or department is guilty of a misdemeanor and, upon conviction thereof, shall be fined not less than \$100 nor more than \$1,000, or incarcerated in a county or regional jail not more than six

months, or both fined and incarcerated. Any person who willfully obstructs, hinders or prevents the secretary or department or its agents or employees from performing their duties or any person who performs or has knowledge of unapproved works on a dam and fails to notify the Department is guilty of a misdemeanor and, upon conviction thereof, shall be fined not less than \$1,000 nor more than \$5,000, or incarcerated in the county jail not more than one year, or both fined and incarcerated (W. Va. Code § 22-14-13).

Oversight

Any person who may be adversely affected by the issuance of a permit or certificate of approval for a dam may request a public hearing before the Department detailing their objections (W. Va. C.S.A. § 47-34-4.3). A person who has been found in violation of the rules may appeal such a decision (W. Va. C.S.R. § 47-34-19.3).

Miscellaneous

Fees

The dam safety program assesses both application fees and an annual registration fee. The fee value is determined by the type of activity requested (for application fees) or the classification of the dam (for annual registration fees). The criteria for the fee types are detailed in Table WV-4 (W. Va. C.S.R. § 47-34-18).

TABLE WV-4		
Category	Criteria	Fee Amount
Application fee	Placement, construction, alteration, enlargement, repair, or approval of a dam.	\$300
	Breaching or abandonment of a dam.	\$200
	Removal of a dam.	\$100
Annual fee.	Class 4 dams.	\$25
	Class 3 dams.	\$50
	Class 2 dams.	\$75
	Class 1 dams.	\$100

State Deficient Dams Rehabilitation Assistance Program

The state has established a fund to make loans to person to finance costs of engineering, design, alteration, improvement, repair, breaching, or removal of a deficient dam. A state list of deficient dams is maintained, and only dams on that list are eligible for loans from the assistance program (W. Va. Code C.S.R. § 47-34-20 *et seq.*). The Department may assume full charge and responsibility over a dam and may expend money from the fund for the purpose of repair or removal of the dam or other remedial action, if:

1. The dam is a deficient dam;
2. The dam is privately owned; and
3. The owner is a noncompliant dam owner.

All costs incurred by the secretary to repair or remove the dam or take other remedial action shall be promptly repaid by the owner upon request or, if not repaid, the secretary may recover costs and damages from the owner by appropriate civil action (W. Va. Code § 22-14-22).

WISCONSIN

Citation

The Wisconsin dam safety law is contained in the Wisconsin Statutes Chapter 31 – Regulation of Dams and Bridges Affecting Navigable Waters, originally enacted in 1917 under the Water Power Law (Wis. Stat. §§ 31.01 – 31.99). Rules for dam safety in Wisconsin are found in the Wisconsin Administrative Code, Department of Natural Resources, Chapters 330, 333, 335, and 336 (Wis. Admin. Code NR §§ 330; 333; 335; 336). Chapter NR 330 provides signing and portage requirements for dams in the state. Chapter NR 333 provides design and construction standards for large dams. Chapters NR 335 and 336 cover the administration of the state’s two funding programs for dam projects. Dam safety in Wisconsin is overseen by the Dam Safety Program, a program of the Wisconsin Department of Natural Resources.

Definition/Dams Classification

Dam is defined at various points in the rules.

As defined in Wis. Admin. Code NR § 330.02(2), *dam* means any artificial barrier, together with appurtenant works, which does or may impound or divert water.

As defined in Wis. Admin. Code NR § 333.03(3) and Wis. Admin. Code NR § 335.03(4), *dam* means any artificial barrier in or across a watercourse which has the primary purpose of impounding or diverting water. A dam includes all appurtenant works, such as a dike, canal or powerhouse.

Dams are classified by size into two categories – large dams, and all other dams. A dam is considered a large dam if it meets either of the following criteria (Wis. Stat. § 31.19(1)(m)):

1. It has a structural height of 25 feet or more and impounds more than 15 acre-feet of water; or
2. It has a structural height of more than 6 feet and impounds 50 acre-feet or more of water.

Hazard Potential Classification Criteria

Dams are classified into three hazard rating (hazard potential) categories based upon potential loss of life, potential property damage and economic loss, potential environmental loss, and whether land use controls are in place downstream of the dam to restrict future development (Wis. Stat. §§ 31.19(1)(g); 31.19(2)(ar)). The criteria for each hazard potential class are detailed in Table WI-1 (Wis. Admin. Code NR § 333.06(1)).

TABLE WI-1		
Hazard Potential Classification	Loss of Human Life	Economic Loss
Low hazard potential	Not probable.	No development unrelated to allowable open space use in the hydraulic shadow. Losses are principally limited to the owner's property. Low economic losses and environmental damage, no significant disruption of lifeline facilities, and land use controls restrict future development in the hydraulic shadow.
Significant hazard potential	Unlikely.	Can cause economic loss, environmental damage, or disruption of lifeline facilities. No existing development in the hydraulic shadow that would be inundated to a depth greater than 2 feet, and land use controls restrict future development.
High hazard potential	Probable.	Inundation to a depth of greater than 2 feet of existing development in the hydraulic shadow, or there are no land use controls restricting future development.

Jurisdiction/Powers of Department

The department may issue orders, conduct investigations, enter upon private property, establish design standards, issue permits, conduct inspections, operate and maintain dams, and take other necessary steps to protect life and property (Wis. Stat. § 31.02).

Permit/Approval Process

Any person, firm, corporation or municipality desiring a permit to construct, operate and maintain a dam must first file a written application with the department (Wis. Stat. § 31.05). The application must include the following components:

1. The name of the navigable waters in or across which a dam is proposed to be constructed and a specific description of the site for the proposed dam;
2. The purpose or purposes for which the proposed dam is to be constructed, operated and maintained;
3. In case the application is for a permit to construct, operate and maintain a dam for a private purpose, proof satisfactory to the department that the applicant owns or has an enforceable option to purchase the described dam site and at least 65 percent of the land to be flowed, or the flowage rights on at least 65 percent of such land;
4. A general description of the proposed dam, of the material to be used in the construction thereof, and a general description of all booms, piers, and other protection works to be constructed in connection therewith;
5. The approximate amount of hydraulic power that the proposed dam is capable of developing;
6. The name of the city, village or town in which the site of the proposed dam will be located and the name of the nearest existing dam above and below the site of the proposed dam;

7. A map on the scale of at least one inch per 1,000 feet showing the lands affected by the construction, operation or maintenance of the proposed dam, or by any flowage that may be caused thereby and approximately the outline of such flowage, which map shall indicate the ownership of each tract of land within the flowage; and
8. Such additional information of any nature that may be required by the department.

All submitted plans and specifications must be prepared by a professional engineer registered in the state of Wisconsin. The plans and specifications, as well as all hydraulic, hydrologic, and stability analyses, must be completed in adherence with the guidelines detailed in Wis. Admin. Code NR § 333.05.

Inspection Process

All large dams in the state are subject to inspection requirements. The department will conduct a detailed inspection of each high and significant hazard potential dam in the state once every 10 years. The dam owner is responsible for engaging the services of a registered professional engineer to inspect the dam at a regular frequency between each inspection conducted by the department. The frequency for owner inspections is determined by the dam’s hazard rating (hazard potential) category, and the owner inspection schedule is detailed in Table WI-2 (Wis. Stat. § 31.19(2)).

TABLE WI-2	
Hazard Potential Classification	Inspection Frequency
Low hazard potential	At least one time every 10 years.
Significant hazard potential	At least two times between each department inspection (2 times every 10 years).
High hazard potential	At least four times between each department inspection (4 times every 10 years).

Emergency Action Planning

Owners of any dam shall prepare an emergency action plan (EAP) in consultation with the local unit of government and concurred in by the division of emergency government. An adequate EAP shall include, among other things, the following (Wis. Admin. Code NR § 333.07(3)(c)):

1. A notification flow chart identifying involved agencies, other dam owners both upstream and downstream and their phone numbers;
2. Emergency operation procedures;
3. An inundation map of the hydraulic shadow on a scale of 1" = 2000' or less that extends downstream to an elevation within one foot of the dam nonexistent profile; and
4. Procedures for notification of all property owners affected by a dam failure and a list of their names, addresses and phone numbers.

The EAP must be submitted to the department for approval (Wis. Admin. Code NR § 333.07(3)(d)).

Liability

Owners are fully liable for damage or death caused through the failure by neglect or mis-operation of their dam (Wis. Stat. § 31.26). No common law liability and no statutory liability for damage resulting from or growing out of the construction, maintenance or operation of any dam is released and the law creates no liability on the part of the state for any such damages (Wis. Stat. § 31.26(4)).

Incidents and Response

In the event of an emergency the department has the power to order the repair of any dam without notice or hearing (Wis. Stat. § 31.18). If the Department finds pursuant to an investigation that a dam or reservoir is not sufficiently strong or is unsafe and that the dam or reservoir is dangerous to life or property, it may cause to be drawn off, in whole or in part, the water in the reservoir or impounded by the dam if it determines that this action is necessary to prevent impending danger to persons or property (Wis. Stat. § 31.19(5)).

Owner's Non-Compliance/Violations/Penalties

Any person who constructs a dam without authorization from the Department could be assessed a fine of not more than \$50 per violation per day of continued violation. Any person who violates any other provisions of the laws, rules, or orders shall be fined not more than \$,1000 per violation (Wis. Stat. § 31.23). Any person who has knowledge of or is a party to a violation may be charged and convicted of the violation, even if they did not directly commit that violation (Wis. Stat. § 31.99).

Oversight

The Department may convene a hearing to evaluate permit applications, at which persons opposed to a proposed dam project may present their case to the Department (Wis. Stat. § 31.06). The statutes and rules as contained here do not specify a process for appealing decisions of the department.

Miscellaneous

Demonstration of Financial Responsibility

The department may require a dam owner or the owner of a proposed dam to prove their ability to maintain the dam. This may take the form of requiring the dam owner to create a fund or reserve to be used for major repairs, reconstruction, or removal of the dam (Wis. Stat. § 31.14(5)). During construction, the owner of a dam shall file a bond, escrow account, lien or other financial assurance satisfactory to the department prior to the commencement of construction or reconstruction of the dam (Wis. Admin. Code NR § 333.09(1)(a)).

State Grants for Dam Projects

The state maintains two grant programs, the Municipal Dam Grant Program and the Dam Removal Grant Program, to provide funding for eligible owners and operators to ensure the safety of dam projects within the state (Wis. Stat. § 31.385; Wis. Admin. Code NR §§ 335.01 – 336.10).

Warning Signs and Portages for Dams

The dam safety rules contain extensive requirements and specifications for posting warning signs at and around certain dams, as well as providing portages and portage signs (Wis. Admin. Code NR § 330). The department may inspect dams and evaluate the nature and extent of navigational hazards at that dam. The department may then issue orders with a completion deadline for the installation of warning signs and devices required at the dam and/or portage and signs at the dam. The department will then inspect the dam after the completion deadline to ensure compliance with the order. The rules provide guidelines for the placement of portages and signs described in Wis. Admin. Code NR § 5.09 (colors) and Wis. Admin. Code NR § 330.05 (size)..

WYOMING

Citation

Dam safety laws for Wyoming are contained in the Wyoming Statutes Title 41 – Water, Chapter 3 – Water Rights; Administration and Control, Article 3 – Reservoirs (W.S. 41-3-307 – 41-3-318). The Wyoming dam safety rules are located in the Wyoming Administrative Rules., Agency 037 – State Engineer’s Office, Program 0006 – Surface Water, Chapter 5: Reservoirs, promulgated May 28, 1980 (037.0006.5.05281980 Wyo. Admin. R. § 1 *et seq.*). Wyoming’s dam safety program is administered by the Safety of Dams Program, a program of the Wyoming State Engineer’s Office.

Definition/Dams Classification

Dam is defined as any artificial barrier, including appurtenant works, used to impound or divert water and which is or will be greater than 20 feet in height or with an impounding capacity of 50 acre-feet or greater (W.S. 41-3-307(a)(iii)).

Hazard Potential Classification Criteria

The dam safety laws and rules as contained in W.S. 41-3-307 – 41-3-318 and 037.0006.5.05281980 Wyo. Admin. R. § 1 *et seq.* do not contain specific language on categorizing dams by hazard potential.

Jurisdiction/Powers of Department

The state engineer is empowered to review applications for dam construction, enlargement, repair, alteration, and removal. The state engineer may conduct inspections and investigations and may enter upon private property for that purpose. Where an emergency exists, the state engineer may order remedial action or, when necessary, take such action without delivering prior notification to the dam owner. The state engineer may assess penalties for non-compliance with the provisions of the dam safety statutes, rules, and orders of the state engineer.

Permit/Approval Process

Plans and specifications of any proposed construction, enlargement, major repair, alteration or removal of a dam or diversion system shall be prepared by or under the direction of a registered professional engineer licensed to practice in the state of Wyoming and experienced in dam design and construction and shall be submitted to the state engineer for approval (W.S. 41-3-308(a)). A permit from the State Engineer is required before commencing construction of any dam or reservoir involving the impoundment of water in Wyoming (037.0006.5.05281980 Wyo. Admin. R. § 1.a). A complete application requires the submission of plans for the dam, which must include the following (037.0006.5.05281980 Wyo. Admin. R. § 1.b):

1. A profile drawing of the dam along the center line, and a maximum cross-section of the proposed dam;
2. The outlet works and spillway in detail, including a computation of capacity and all necessary data;
3. Maps and drawings of sufficiently large scale;
4. For earth dams, plans that meet the design specifications of 037.0006.5.05281980 Wyo. Admin. R. § 1.b.4;
5. For reservoirs with a dam height greater than 20 feet, or with storage capacity greater than 50 acre-feet, or which are located in an area where extensive property damage or loss of life may result from overtopping, plans that demonstrate spillway capacity to pass the flood flow of a projected 100-year storm;
6. Detailed construction plans and specifications, including underlying computations, as required by the State Engineer; and
7. A capacity table showing the capacity of the proposed reservoir shown on the reservoir filling map.

The application must follow the format and use the language specified in the rules (037.0006.5.05281980 Wyo. Admin. R. §§ 4 – 5).

The engineer in charge will conduct regular inspections to insure project work conforms with the plans and specifications approved by the State Engineer's Office (W.S. 41-3-309). The state engineer is authorized to inspect personally any dam project to insure conformity to approved plans and specifications as well (W.S. 41-3-310). Inspections conducted by the state engineer under W.S. 41-3-310 will be performed at state expense unless specifically exempted, in which case the costs of such inspection shall be recovered from the owner (W.S. 41-3-310(b); (c)).

Inspection Process

All dams subject to the jurisdiction of the Safety of Dams Program will be inspected at least once every ten years, or as often as deemed necessary based on the hazards of the dam to insure the continued protection of public safety and property (W.S. 41-3-311). The state engineer or their authorized representatives may enter upon private property to conduct inspections.

Emergency Action Planning

The dam safety laws and rules as contained in W.S. 41-3-307 – 41-3-318 and 037.0006.5.05281980 Wyo. Admin. R. § 1 *et seq.* do not contain specific language on requirements for emergency action plans for dams.

Liability

No action shall be brought against the state or its employees for the recovery of damages caused by the partial or total failure of any dam upon the ground that such defendants are liable by virtue of any of the following (W.S. 41-3-316):

1. The approval of the dam, reservoir or diversion system or approval of flood handling plans during construction;
2. The issuance or enforcement of orders relative to maintenance or operation of any dam or reservoir;
3. Control and regulation of any dam, reservoir or diversion system;
4. Measures taken to protect against failure during an emergency; or
5. Failure to take an action required by the provisions of this act.

Nothing in the laws or rules relieves the dam owner of any legal duties, obligations, or liabilities incident to their ownership or operation of the dam (W.S. 41-3-317).

Incidents and Response

If an inspection discloses defects in the works which in the judgment of the state engineer or an authorized agent constitute a threat to life or property, the state engineer may, without incurring any liability, order the draining of any reservoir involved, or the limitation or cessation of its use or the use of any defective works until such time as the owner of the reservoir or other works returns the works to a safe condition as approved by the state engineer (W.S. 41-3-312).

In case of an emergency where the state engineer or an authorized representative declares that repairs or breaching of a dam or diversion system are immediately necessary to safeguard life and property, the necessary repairs or breaching shall be started immediately by the owner or by the state engineer or a state engineer's representative at the owner's expense, if the owner fails to do so. All costs incurred by the state engineer during an emergency shall be recovered from the owner (W.S. 41-3-314).

Owner's Non-Compliance/Violations/Penalties

Failure to comply with any of the dam safety laws regarding dam design, construction, permitting, and operation shall subject the dam owner's permit to cancellation (W.S. 41-3-318; 41-3-616(c)). Failure to comply with any valid order issued by the state engineer shall subject the permit holder to penalty. This penalty will include being found guilty of a misdemeanor and assessed a fine not to exceed \$1,250 per violation per day of continued violation (W.S. 41-3-616).

Oversight

The dam safety statutes and rules do not contain specific language on appeal or review of decisions of the state engineer.

Miscellaneous

Fees

The state engineer assesses fees for review of plans (037.0003.1.10182017 Wyo. Admin. R. § 3.b.vii) based upon the height or the impoundment capacity of the proposed dam, whichever is greater. The criteria for assessing dam review fees are detailed in Table WY-1.

TABLE WY-1		
Dam Height	Dam Capacity	Fee Amount
More than 20 feet but less than 40 feet.	50 acre-feet or more but less than 100 acre-feet.	\$100
40 feet or more.	100 acre-feet or more.	\$150

STATE PROGRAM WEBSITES

State websites are current as of the time of publication. Further information on dam safety regulations can be found by contacting the state dam safety program directly. Visit ASDSO at damsafety.org/states for up-to-date information on state programs and representatives.

TABLE APPX-1

State	Website
Alabama	N/A.
Alaska	http://dnr.alaska.gov/mlw/water/dams/index.cfm
Arizona	http://www.azwater.gov/AzDWR/SurfaceWater/DamSafety/default.htm
Arkansas	http://anrc.ark.org/divisions/water-resources-management/dam-safety
California	http://www.water.ca.gov/damsafety/
Colorado	http://water.state.co.us/damsafety/dams.asp
Connecticut	http://www.ct.gov/deep/cwp/view.asp?a=2720&q=325634&deepNav_GID=1654
Delaware	http://www.dnrec.delaware.gov/swc/Drainage/Pages/DamSafety.aspx
Florida	https://floridadep.gov/water/engineering-hydrology-geology/content/florida-dam-safety-program
Georgia	https://epd.georgia.gov/watershed-protection-branch/safe-dams-program
Hawaii	http://dlnreng.hawaii.gov/dam/
Idaho	http://www.idwr.idaho.gov/dams/
Illinois	https://www.dnr.illinois.gov/WaterResources/Pages/DamSafetyProgram.aspx
Indiana	http://www.in.gov/dnr/water/2458.htm
Iowa	http://www.iowadnr.gov/Environmental-Protection/Land-Quality/Dam-Safety
Kansas	http://agriculture.ks.gov/divisions-programs/dwr/dam-safety
Kentucky	http://water.ky.gov/damsafety/Pages/default.aspx
Louisiana	http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Public_Works/Dam_Safety/Pages/default.aspx
Maine	https://www.maine.gov/mema/hazards/dam-safety
Maryland	http://mde.maryland.gov/programs/water/DamSafety/Pages/index.aspx
Massachusetts	http://www.mass.gov/eea/agencies/dcr/conservation/dam-safety/
Michigan	www.mi.gov/damsafety
Minnesota	http://www.dnr.state.mn.us/waters/surfacewater_section/damsafety
Mississippi	http://www.mdeq.ms.gov/water/dam-safety/
Missouri	http://dnr.mo.gov/geology/wrc/dam-safety/index.html?env/wrc/dam-safety/index.html
Montana	http://dnrc.mt.gov/divisions/water/operations/dam-safety
Nebraska	https://dnr.nebraska.gov/dam-safety
Nevada	http://water.nv.gov/programshomes.aspx?program=Dams and Dam Safety
New Hampshire	http://www.des.nh.gov/organization/divisions/water/dam/index.htm
New Jersey	http://www.state.nj.us/dep/damsafety/
New Mexico	http://www.ose.state.nm.us/dams/index.php

APPENDIX: STATE WEBSITES

<i>New York</i>	http://www.dec.ny.gov/lands/4991.html#
<i>North Carolina</i>	http://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permits/dam-safety
<i>North Dakota</i>	http://www.swc.state.nd.us/reg_approp/damsafety/
<i>Ohio</i>	http://water.ohiodnr.gov/safety/dam-safety
<i>Oklahoma</i>	http://www.owrb.ok.gov/hazard/dam/dams.php
<i>Oregon</i>	https://www.oregon.gov/OWRD/programs/streamslakessanddams/dams/DSPProgram/Pages/default.aspx
<i>Pennsylvania</i>	http://www.dep.pa.gov/Business/Water/Waterways/DamSafety
<i>Puerto Rico</i>	<i>Español:</i> http://www.aeepr.com/es-pr/ <i>English:</i> http://www.aeepr.com/en-us/
<i>Rhode Island</i>	http://www.dem.ri.gov/programs/complianceandinspection/dam-safety.php
<i>South Carolina</i>	https://www.scdhec.gov/environment/water-quality/dams-and-reservoirs
<i>South Dakota</i>	http://denr.sd.gov/des/wr/sod.aspx
<i>Tennessee</i>	https://www.tn.gov/environment/program-areas/wr-water-resources/water-quality/safe-dams-program.html
<i>Texas</i>	https://www.tceq.texas.gov/compliance/investigation/damsafetyprog.html
<i>Utah</i>	http://www.waterrights.utah.gov/daminfo/default.asp
<i>Vermont</i>	http://dec.vermont.gov/facilities-engineering/dam-safety
<i>Virginia</i>	http://www.dcr.virginia.gov/dam-safety-and-floodplains/
<i>Washington</i>	https://ecology.wa.gov/Water-Shorelines/Water-supply/Dams
<i>West Virginia</i>	http://www.dep.wv.gov/damsafety/Pages/default.aspx
<i>Wisconsin</i>	http://dnr.wi.gov/topic/dams/
<i>Wyoming</i>	http://seo.wyo.gov/surface-water/safety-of-dams

STATUTORY AND REGULATORY CITATIONS

Citations refer to either the full chapter or section, or to the opening subsection of the relevant statute or regulation.

TABLE APPX-2

State	Statutes	Regulations
<i>Alabama</i>	N/A.	N/A.
<i>Alaska</i>	AS 46.17	11 AAC 93
<i>Arizona</i>	A.R.S. 45-1201	A.A.C. R12-15-1201
<i>Arkansas</i>	ACA § 15-22-201	ANRC Regs., Title VII
<i>California</i>	Cal. Wat. Code § 6000 Cal. Gov. Code § 8589.5	23 CCR § 301
<i>Colorado</i>	CRS 37-87-101	2-CCR 402-1
<i>Connecticut</i>	Conn. Gen. Stat. § 22a-401	R.C.S.A. §§ 22a-409; 22a-411a
<i>Delaware</i>	Del. Code tit. 7, § 4201	7 Del. Admin. C. § 5103
<i>Florida</i>	F.S. § 373.403	Chapter 62-330, F.A.C.
<i>Georgia</i>	OCGA 12-5-370	Ga. Comp. R. & Regs. 391-3-8
<i>Hawaii</i>	HRS § 179D	HAR § 13-190
<i>Idaho</i>	IC § 42-1710	IDAPA r. 37.03.06
<i>Illinois</i>	615 ILCS 5/ IC 14-27-7.5	17 Ill. Admin. Code pt. 3702 312 IAC 10.5
<i>Iowa</i>	Iowa Code § 455B Iowa Code § 464B	567 IAC 70
<i>Kansas</i>	KSA § 82a-301	KAR 5-40-1
<i>Kentucky</i>	KRS 151	401 KAR 4 Engineering Memorandum No. 5 (2-1-75)
<i>Louisiana</i>	La. RS 38:21	La. Admin. Code tit. 56:III § 701
<i>Maine</i>	37-B MRS § 24	15 214 CMR 3
<i>Maryland</i>	Md. Code, Env. Art. § 1-404 Md. Code, Env. Art. § 5-510	COMAR 26.17.04.00
<i>Massachusetts</i>	Mass. Gen. Laws ch. 253 § 44	302 Mass. Code Regs. 10
<i>Michigan</i>	Mich. Comp. Laws § 324.31501	Mich. Admin. Code r. 281.1301
<i>Minnesota</i>	Minn. Stat. § 103G.501	Minn. R. 6115.0300
<i>Mississippi</i>	Miss. Code Ann. § 51-3-39	Miss. Code R. 11-7-3
<i>Missouri</i>	Mo. Rev. Stat § 236.400	10 CSR 22
<i>Montana</i>	Mont. Code Ann. § 85-15	Mont. Admin. R. 36.14
<i>Nebraska</i>	Neb. Rev. Stat. § 46-1607	458 Neb. Admin. Code, ch. 1
<i>Nevada</i>	Nev. Rev. Stat. § 535	NAC 535
<i>New Hampshire</i>	N.H. Rev. Stat. Ann. § 482	N.H. Admin. Rules, Env-Wr.
<i>New Jersey</i>	N.J.S.A. § 58:4	N.J.A.C. § 7:20
<i>New Mexico</i>	NMSA 1978 72-5	19.25.12 NMAC

APPENDIX: CITATIONS

<i>New York</i>	N.Y. ECL § 15-0501	6 NYCRR 608 6 NYCRR 673
<i>North Carolina</i>	NCGS § 143-215.23	15 NCAC 02K
<i>North Dakota</i>	N.D. Cent. Code § 61-03 N.D. Cent. Code § 61-16.1	N.D. Admin. Code 89-08-01
<i>Ohio</i>	Ohio Rev. Code § 1521	Ohio Admin. Code 1501:21
<i>Oklahoma</i>	82 OS § 110	OAC 785:25
<i>Oregon</i>	ORS 540.350	OAR 690-020-0000
<i>Pennsylvania</i>	Dam Safety and Encroachments Act, 1978	25 Pa. Code § 105
<i>Puerto Rico</i>	22 LPRA § 401	Reglamento Núm. 7239
<i>Rhode Island</i>	R.I. Gen. Laws § 46-19	250-RICR-130-05
<i>South Carolina</i>	S.C. Code § 49-11-10	S.C. Code Regs. 72-1
<i>South Dakota</i>	SDCL 46-7	ARSD 74:02:08 ARSD 74:02:01
<i>Tennessee</i>	Tenn. Code Ann. § 69-11-101	Tenn. Comp. R. & Regs. 0400-45-07
<i>Texas</i>	Tex. Wat. Code § 12.052	30 Tex. Admin. Code § 299
<i>Utah</i>	Utah Code § 73-5a	Utah Admin. Code r. 655-10 – 655-12
<i>Vermont</i>	10 V.S.A. § 1079	Rules pending.
<i>Virginia</i>	Va. Code Ann. § 10.1-604	4VAC50-20-10
<i>Washington</i>	RCW 43.21A.064 RCW 86.16.035 RCW 90.03.350 RCW 90.03.470	WAC 173.175.010
<i>West Virginia</i>	W. Va. Code § 22-14-1	W. Va. C.S.R. § 47-34-1
<i>Wisconsin</i>	Wis. Stat. § 31.01	Wis. Admin. Code NR § 330 Wis. Admin. Code NR § 333 Wis. Admin. Code NR § 335 Wis. Admin. Code NR § 336
<i>Wyoming</i>	W.S. 41-3-307	037.0006.5.05281980 Wyo. Admin. R. § 1 et seq.