



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

## **Dam Safety Guidelines**

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### ***Part I*** ***General Information and*** ***Owner Responsibilities***

July 1992 (Revised April 2021)

Publication 92-55a

## Publication and Contact Information

This document is available on the Department of Ecology's website at:  
<https://apps.ecology.wa.gov/publications/summarypages/9255a.html>

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# **Dam Safety Guidelines**

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## ***Part I***

### ***General Information and Owner Responsibilities***

Water Resources Program  
Dam Safety Office  
Washington State Department of Ecology  
Olympia, Washington

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# 1. Introduction

The **Dam Safety Guidelines** provide information on the planning, design, construction, operation, and maintenance of dams in the State of Washington. In particular, they provide guidance in meeting the **Dam Safety Regulations** ([Chapter 173-175 WAC](#)). For convenience of the various expected users, the guidelines have been organized into four basic units entitled:

**Part I - General Information and Owner Responsibilities**

**Part II - Project Planning & Approval of Dam Construction or Modification**

**Part III - An Owner's Guidance Manual**

**Part IV - Dam Design and Construction**

Three Technical Notes are also available with more detailed information on engineering design and analysis of various project elements.

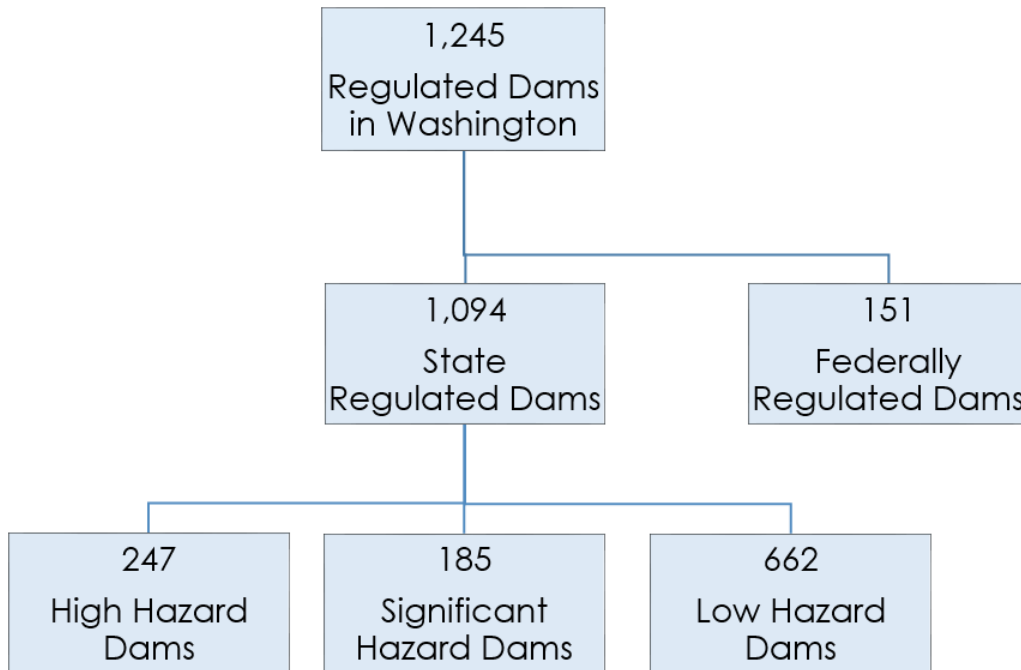
**Part I** of the guidelines contains general information about statutory authority, dam safety activities, and dam owner responsibilities for completed projects. Appendix A of Part I provides important definitions and terms related to State of Washington dam safety activities.

## 2. Dam Safety in Washington

### 2.1 Dams in Washington

As of February 2021, there are 1,245 regulated dams in the State of Washington. Washington State’s Dam Safety Office (DSO) regulates 1,094 of those dams. Those not regulated by DSO are regulated by a federal agency with their own dam safety office. The number of dams in Washington changes as new dams are built each year and other dams are taken out of service. The most recent information about Washington’s dams can be found in the online [Inventory of Dams Report](#)<sup>1</sup>.

DSO classifies all state-regulated dams as either low, significant, or high downstream hazard, depending on their potential impact on people, property, and the environment should a dam failure occur. Of these, DSO has classified 432 as high or significant hazard dams, which means their failure would threaten human lives and/or cause substantial economic or environmental damage (Figure 1). The classification is not a reflection of the structural condition of a dam, only the potential impact from dam failure. The hazard classification for a dam may change over time as property development occurs downstream.



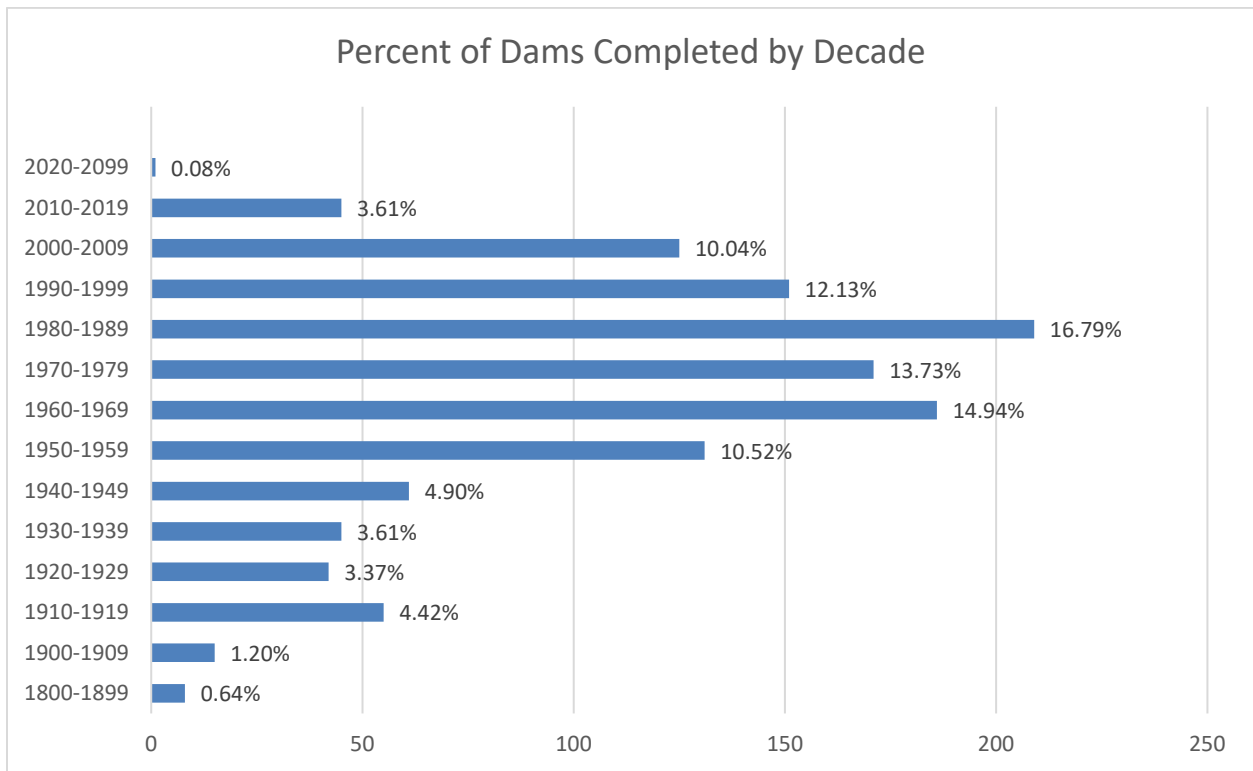
**Figure 1 - Dams by Hazard Class (2021 data)**

<sup>1</sup> <https://apps.ecology.wa.gov/publications/publications/94016.pdf>



There are a variety of reasons why dams are built. In Washington, the majority of dams are used for irrigation, recreation, or water quality. About 58 percent of these dams are owned by a private entity, 21 percent by local government, 8 percent by public utility, 8 percent by the federal government, and 5 percent by state government.

The average life expectancy of a dam is about 50 years and half of Washington’s dams are at or beyond that age (see Figure 2 below.) For some dams, their age may be a factor in their structural integrity because materials deteriorate under continued load and environmental conditions. Unless retrofitted, older dams also don’t benefit from advancements in dam materials, design, and construction techniques. In particular, seismic design for the earthquake potential in the Pacific Northwest has advanced greatly and older dams may not have been designed for the loading conditions generated by a Cascadia Subduction Zone interface earthquake.



**Figure 2 - Percent of Dams Built by Decade (2021 data)**

## 2.2 Regulated Dams

The DSO regulates any dam that could impound 10 or more acre-feet of water, or other substance combined with sufficient water to exist in a liquid or slurry state at the time of initial containment. This volume is equal to about 3.25 million gallons. This jurisdictional threshold only applies to storage above natural ground level. Therefore, impoundments built entirely below natural ground level, regardless of volume, would not trigger regulation by the DSO. If part of an impoundment is below natural ground level and part above it, only that part above natural ground level is considered in the volume calculation.

The jurisdictional volume considers the maximum volume that could be stored in the impoundment (above natural ground level) which means the volume must be calculated to the dam crest and not to an operational level and/or discharge elevation (e.g., spillway invert).

The DSO does not dually regulate dams that are overseen by a federal agency with their own dam safety organization. Of the 151 federally regulated dams shown in Figure 1 above, most are overseen by the Federal Energy Regulatory Commission (FERC). This includes Washington’s hydropower dams. Other federal dam regulators include the Army Corps of Engineers and the Bureau of Reclamation.

**Table 1 – Washington Dams Overseen by Federal Dam Safety Offices**

Number of Dams	Federal Agency
56	Federal Energy Regulatory Commission (FERC)
32	Bureau of Reclamation (BOR)
22	United States Fish and Wildlife Services (USFWS)
16	United States Army Corps of Engineers (USACE)
13	United States Forest Service (USFS)
5	Bureau of Land Management (BLM)
4	Bureau of Indian Affairs (BIA)
2	United States Department of Energy (USDOE)
1	National Park Service (NPS)

In accordance with February 9, 2021, monthly DSO report

There are other reasons why some dams are not regulated by the DSO as identified in Washington Administrative Code (WAC) 173-175-020.

## 2.3 Dam Ownership

In general, the DSO considers the landowner to be the dam owner for purposes of dam safety responsibility. However, the DSO will honor written agreements between landowners and other entities which allow the non-landowner to use the property for constructing and/or operating a dam. A copy of such written agreement should be provided to the DSO for our files. After receiving a copy of this agreement, the DSO will shift dam responsibility to the non-land owner.

Changes in land ownership or dam responsible parties must be reported to the DSO within 90 days and identify the personnel responsible for operation and maintenance.

## 2.4 Dam Safety Authority and Purpose

The authority and responsibility to regulate dams and provide for public safety in Washington are contained in the following laws:

- State Water Code (1917) - [Chapter 90.03 RCW](#)
- Flood Control Act (1935) - [Chapter 86.16 RCW](#)
- Department of Ecology (1970) - [Chapter 43.21A RCW](#)

For dams and reservoirs with a storage volume of 10 acre-feet or more, the laws have provisions for the engineering review of the construction plans and specifications, dam inspections, and remedial actions, as necessary, to reasonably secure proper operation, maintenance, and continued safe performance. Ecology is the agency of state government vested with the authority and responsibility to perform these functions.

A list of these statutes in the Revised Code of Washington (RCW) and pertinent sections of the Washington Administrative Code (WAC) are provided in Appendix A and are summarized below.

### 2.4.1 RCW 43.21A.064(2) - Powers and Duties

The Department of Ecology has powers and duties to inspect the construction of all dams, and to require necessary changes in construction or maintenance, as may be necessary to assure safety to life or property.

### 2.4.2 RCW 86.16.035 - Control of Dams and Obstructions

The Department of Ecology shall have supervision and control over all dams and obstructions in streams and may adopt administrative rules concerning the flow of water, as necessary, for the protection of life and property below these works from flood waters.

### **2.4.3 RCW 90.03.350 - Plans and Specifications**

Anyone intending to construct or modify any dam or controlling works for the storage of 10 acre-feet or more of water shall submit plans and specifications thereof to the Department of Ecology for approval as to safety. Any dam not constructed according to approved plans and specifications or not maintained as ordered, shall be presumed to be a public nuisance, and may be abated.

### **2.4.4 RCW 90.03.470(7),(8) - Fees for Inspection, Plan Review**

Fees are required for the review of construction plans and specifications and for safety inspections. Fees for review of construction plans and specifications are based on actual costs or a minimum of ten dollars for dam removal. Fees for safety inspection are to be based on actual costs.

### **2.4.5 Chapter 173-175 WAC - Dam Safety Regulations**

The Dam Safety Regulations provide for the design, construction, operation, maintenance, inspection, and supervision of dams in a manner consistent with accepted engineering practice. These regulations:

- Designate the types of dams to which the rule applies.
- Establish and administer a permitting program for constructing new dams and for modifying existing dams.
- Establish a fee schedule based on dam size that reflects the actual cost to the department of engineering review of plans and specifications and for construction inspections.
- Establish the requirements and owner responsibilities for developing and executing plans for Operation and Maintenance, and Emergency Actions.
- Establish a program for the periodic inspection by the department of existing dams, and a fee schedule for these inspections based on the downstream hazard classification and frequency of inspections. This fee schedule reflects the actual cost to the department.
- Require Ecology to develop and maintain engineering guidelines to aid dam owners and project engineers to develop design reports, construction plans, operation and emergency plans, and to conduct dam inspections.

## **2.5 The Dam Safety Office**

In order to carry out our statutory responsibilities and associated activities, the DSO was established within the Water Resources Program of Ecology. The DSO acts in the interest of general public safety, by providing reasonable assurance that impoundment facilities will function adequately and not pose a threat to lives, property, and the environment. It is

emphasized, however, that dam owners or responsible parties are primarily responsible for the safety of their structures, and this is achieved through proper design, construction, operation, and maintenance of their facilities.

The DSO neither advocates nor opposes the construction and operation of dams. The DSO regulates dams with the sole purpose of reasonably securing public safety. Environmental and natural resource issues are addressed by other governmental units through separate regulations and permits.

The following sections provide a brief description of the basic functions performed by the DSO.

### **2.5.1 Plan Review and Approval**

The DSO reviews engineering design reports, and construction plans and specifications for dams and appurtenant works to ensure they meet statutory requirements and accepted engineering practices. Plan review is required for all projects with an impounding capability of 10 acre-feet or more at the dam crest level. The DSO issues a construction permit when the construction plans and specifications, and Construction Inspection Plan have been found to be acceptable and upon payment of applicable plan review fees. Copies of all approved plans are retained on file in the DSO.

The DSO also reviews a dam's Operation and Maintenance (O&M) Plan and Emergency Action Plan (EAP). An O&M Plan is required for all projects and is used to develop an O&M Manual following completion of the project. An EAP is required for those projects where a dam failure could pose a threat to life. Both plans must be submitted for review prior to startup or resumption of project operations following construction (see Section 3 for more details on O&M and Emergency Action Plans).

### **2.5.2 Construction Inspection**

Construction inspections are performed to verify that the actual field conditions are compatible with the conditions assumed in design and that the construction is consistent with the approved plans, specifications, and Construction Inspection Plan. Particular emphasis is placed on elements which are critical to the safe performance of the facility. The frequency of DSO site inspections is proportionate with the size and complexity of the project.

In addition to DSO's inspections of the construction work, the owner's engineering consultants or their representatives must also oversee construction.

### **2.5.3 Periodic Inspection**

Periodic inspections are conducted every five years on existing dams that are located in areas where dam failure and release of the reservoir contents could pose the potential for loss of life or significant environmental damage. The inspections are intended to identify deficiencies, reasonably assure safe operation, and to confirm that maintenance is being adequately

performed. Periodic inspections also help identify dams where significant new development has occurred downstream. The inspections are performed by professional engineers from the DSO and involve:

- Review and analysis of available information on the design, construction, operation, and maintenance of the dam and its appurtenances.
- Visual inspection of the dam and its appurtenances.
- Engineering analyses of critical project elements under extreme flood and static and seismic loadings.
- Evaluation of the downstream hazard classification.
- Evaluation of the operation, maintenance, and inspection procedures employed by the owner and/or operator; and, review of the EAP for the dam including review and possible update of dam breach inundation maps.

The DSO will prepare a comprehensive report of the inspection which includes a description of analyses, findings from the inspection, and any remedial work required.

#### **2.5.4 Emergency Response Services**

The dam owner or the agreed-upon responsible party has primary responsibility for managing a dam during an emergency. The primary responsibility for public alerts and evacuations lies with local emergency responders. The DSO offers technical assistance and direction to the owner; and helps coordinate between various parties.

Owners of dams classified as high or significant hazard are legally required to have EAPs in place, but Ecology encourages all dam owners to have plans for emergency situations. An EAP identifies signs of dam problems, people and property at risk, and communication protocols for unusual or emergency events. The DSO is available to help owners prepare their plans.

In the event of an emergency, dam owners/responsible parties are instructed to call 911 to reach local authorities, and to contact county/city emergency management agencies and/or the Washington State Emergency Management Division (EMD). EMD can reach DSO staff 24 hours a day, 7 days a week.

#### **2.5.5 Compliance and Enforcement**

The DSO takes enforcement actions as necessary to secure compliance with safety requirements and to correct identified deficiencies. The compliance and enforcement activity involves a variety of possible actions including restrictions on reservoir operation, draining of the reservoir, assessment of fines, and court actions. When a dam owner is not responsive in correcting deficiencies, the dam may be declared a public nuisance and removed through an abatement proceeding in Superior Court.

## 2.5.6 Records and Inventory

Records of all activities associated with a project, including design reports, plans and specifications, inspection reports, and correspondence, are retained on file with the DSO. The DSO maintains an online inventory for all [dams in the state](#)<sup>2</sup> containing basic information on physical characteristics.

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<sup>2</sup> <https://apps.ecology.wa.gov/publications/publications/94016.pdf>

### 3. Dam Owner Responsibilities

Dam owners are responsible to operate and maintain their dam(s) in a safe manner and condition, and to notify the DSO when changes to the dam are proposed or unusual or unsafe circumstances occur. The following sections list dam owner responsibilities and identify activities that require review, approval, or acceptance by the DSO.

For further information on dams, owners can look to the [Pocket Safety Guide for Dams and Impoundments](#)<sup>3</sup> by the Federal Emergency Management Agency (FEMA).

#### 3.1 Project Operation and Maintenance

Proper attention to project operation and maintenance is critical for ensuring the continued safe operation of the dam. Owners of new dams are required to submit an O&M Plan to the DSO for review and acceptance prior to placing the reservoir into service. Owners of existing dams must also have, and routinely update, an O&M Plan. The O&M Plan provides an overview of the key components of the dam, and a brief description of how the dam is operated and what is needed to maintain the dam in good operating condition. DSO has created an [O&M Plan template](#)<sup>4</sup> for dam owners to use.

In addition to an O&M Plan, dams are also required to have an O&M Manual (WAC 173-175-500.) For some simple earthen dams, having an O&M Plan will satisfy the O&M Manual requirements. For other dams, a more comprehensive, detailed manual may be required by DSO. DSO makes this determination on a case-by-case basis after reviewing the O&M Plan.

If required, an O&M Manual provides more detailed descriptions and procedures for the operation of the dam under both normal and extreme reservoir inflow conditions, as well as technical guidance and procedures for monitoring, inspection, and long-term maintenance.

The sophistication of the O&M Manual should reflect the complexity of dam operations. At minimum, an O&M Manual should contain the following information:

- General information and important features about the project.
- Details of how the reservoir and equipment at the dam are to be operated.
- Detailed information and instructions on performing periodic maintenance and upkeep at the dam.
- Information on performing regular surficial inspection of the dam by the owner or the dam operator.

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<sup>3</sup> [https://www.fema.gov/sites/default/files/2020-08/fema\\_911\\_pocket\\_safety\\_guide\\_dams\\_impoundments\\_2016.pdf](https://www.fema.gov/sites/default/files/2020-08/fema_911_pocket_safety_guide_dams_impoundments_2016.pdf)

<sup>4</sup> <https://apps.ecology.wa.gov/publications/documents/ecy07039.pdf>



- Information about instrumentation and monitoring, and instructions for monitoring and recording of data.
- Information on procedures for the continued updating of the manual.

Detailed discussions of the above items and a description of the contents of an O&M Manual are contained in Ecology Publication 92-21, [Guidelines for Developing Dam Operation and Maintenance Manuals](#)<sup>5</sup>.

Owners must submit the proposed changes for review and approval prior to implementing any changes to an O&M Manual which could affect public safety (such as significant changes to project operation).

DSO staff will review O&M Plans/Manuals as part of the 5-year periodic inspections (see section 2.3.3 for details of periodic inspections performed by the DSO). The dam owner must update the O&M Plan/Manual to ensure that personnel, contact information, and the procedures for routine maintenance, inspection, and monitoring are current; and send a copy of the updated version to the DSO.

## 3.2 Inspection

Owners are required to evaluate the safety of their dams and all appurtenant works, and to make modifications, as needed, to reasonably secure safety to life and property.

### 3.2.1 Owner Conducted Annual Inspections

Owners are required to conduct annual surficial inspections and submit a copy of the inspection form/report to the DSO within 30 days following the inspection, including photographs of the dam crest, embankments, spillways, and other important components of the dam at the time of the inspection. Owners are not required to retain the services of a Professional Engineer to conduct these inspections. Information to assist owners in performing these inspections can be found in Chapter 5 of [Part III, Dam Safety Guidelines](#)<sup>6</sup>.

DSO engineers will review the inspection records to assess the need for a follow up site visit to better evaluate a situation. Typical inspection items would include:

- Condition of the dam crest and the upstream and downstream dam faces, with particular attention to settlement, cracking, slumps, or other distress.
- Condition of the outlet works and spillways, noting any erosional damage.
- Testing of infrequently used valves, control works, and other hydraulic mechanisms.

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<sup>5</sup> <https://apps.ecology.wa.gov/publications/documents/92021.pdf>

<sup>6</sup> <https://apps.ecology.wa.gov/publications/documents/9255c.pdf>

- Observation and measurement of seepage, noting the location and concurrent reservoir water level.
- Observation and recording of any conditions which have changed from previous inspections.

DSO has created Annual Inspection Form templates that can be used for either an [earthen dam](#)<sup>7</sup> or a [concrete dam](#)<sup>8</sup>, although it is not required to use a DSO form.

### **3.2.2 Periodic Inspections Conducted by Ecology**

The DSO conducts periodic inspections to reasonably secure safety to life and property. These inspections are performed on a 5-year cycle on dams where there is the potential for loss of life and/or significant property or environmental damage in the event of a dam failure (i.e., dams that have been classified as having a Significant or High downstream hazard).

Dams classified as low hazard are not included in the periodic inspection program. Inspections of low hazard dams are performed based on owner requests, citizen complaints, or DSO concerns about a particular dam.

Fees are charged for periodic inspections of high and significant hazard dams conducted by DSO. Fee amounts and payment requirements are described in WAC 173-175-755 through 173-175-795.

The DSO will give at least 30 days advance notice of the periodic inspection and advise the owner of any special requirements, such as gates or valves that are to be operated during the inspection. Vegetation must be removed from the dam to facilitate inspection.

Owners are encouraged to accompany DSO personnel during these inspections to provide background information on the project and discuss any deficiencies found during the inspection.

Following the inspection, the DSO will issue a report describing the analyses performed, findings from the inspection, and any remedial work needed. Owners must correct safety deficiencies, as instructed by the DSO. The owner is responsible for paying for any needed remedial work.

## **3.3 Emergency Action**

An Emergency Action Plan (EAP) describes procedures for responding to unusual or emergency situations and for warning individuals who may be at risk in downstream areas. In those cases where a failure of the dam could pose a threat to life (dams with a downstream hazard class of

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<sup>7</sup> <https://fortress.wa.gov/ecy/publications/SummaryPages/ECY070572.html>

<sup>8</sup> <https://fortress.wa.gov/ecy/publications/SummaryPages/ECY070613.html>

1A, 1B, 1C or 2D), the owner is required to develop an Emergency Action Plan (EAP). In addition, the DSO and FEMA highly recommend that an EAP be prepared for dams that do not have downstream lives at risk but could have significant environmental or economic consequences if they failed (hazard class 2E). This would establish important communication lines and help reduce the risks in the event of a pending or actual failure.

Owners of new dams are required to submit an EAP to the DSO for review and acceptance during the Construction Permit process (for information on the Construction Permit process, see section 2.3.1 and [Part II, Dam Safety Guidelines](#)<sup>9</sup>). For existing dams without a required EAP, the owner must submit the EAP as directed by the DSO.

Typically, the EAP should include the following information:

- Responsibilities and procedures (preferably in the form of a flow chart) for notifying downstream residents in the event of an impending dam failure.
- A notification list that includes the names and telephone numbers of all affected downstream residents, dam owner, dam operator, local and state emergency officials, the DSO, and other appropriate government agencies.
- Specific instructions to be followed by responsible parties at the dam site in response to emergencies such as floods, equipment failures, or other unusual events where the situation might lead to dam failure. In particular, include any immediate remedial action that can be effective to prevent failure or reduce hazards to downstream residents.
- A map showing residences and infrastructure that could be impacted by a complete dam failure

Detailed information on the development of EAPs is contained in Ecology Publication 92-22, [Guidelines for Developing Dam Emergency Action Plans](#).<sup>10</sup>

The DSO has two templates that can assist dam owners with creating an EAP:

- [Simplified Emergency Action Plan Form](#)<sup>11</sup> – can be used by most dam owners in planning a response to a dam-related emergency.
- [Emergency Action Plan Form](#)<sup>12</sup> – should be used if the simplified version is inadequate to detail the response to a dam-related emergency.

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<sup>9</sup> <https://apps.ecology.wa.gov/publications/documents/9255b.pdf>

<sup>10</sup> <https://apps.ecology.wa.gov/publications/documents/9222.pdf>

<sup>11</sup> <https://fortress.wa.gov/ecy/publications/summarypages/ecy07037.html>

<sup>12</sup> <https://fortress.wa.gov/ecy/publications/summarypages/ecy070383.html>

To develop the EAP, owners must coordinate with local Emergency Services staff, the State Department of Commerce (previously the Department of Community Development), the State Emergency Management Division, and other appropriate local authorities.

Copies of the completed EAP must be provided to the State Emergency Management Division, local Emergency Services, and to the DSO.

Any proposed changes to existing EAPs which could have an effect on public safety, must be coordinated with the local Emergency Services staff and be reviewed and accepted by the DSO.

### **3.4 Reporting of Incidents**

Owners are required to notify the DSO when problems or conditions arise which may pose a threat to life or property, or threaten the integrity of the dam. The owner is required to telephone the DSO to report on any condition affecting the safety of the project or when an incident has occurred. This initial oral report must be made as soon as practicable after the condition is discovered or following any incident. In addition, dam owners are required to notify the DSO prior to resuming normal reservoir operation following any emergency actions.

The DSO may require that the owner submit a written report within 30 days following the discovery of the condition or after the incident. The report shall describe the incident or condition affecting the safety of the project, and preliminary plans for correcting the condition and for preventing the recurrence of similar incidents.

Examples of incidents that would require notifying the DSO include:

- Failure or partial failure of gates and valves associated with spillways and outlet works.
- Significant damage associated with an extreme event such as an earthquake or flood.
- Unforeseen facility operations that result in a condition that threatens the structure, dam operators, or the lives or property in downstream areas.
- Any significant change in the physical characteristics of the dam, foundation, or outlet works, such as significant changes in seepage through the embankment or foundation, or the occurrence of slumps or slides on earthen embankments.

### **3.5 Modifications to Existing Dams**

Dam owners are required to submit construction plans and specifications to the DSO for review and approval prior to beginning construction on any structural modification to a dam. A modification is defined as any structural alteration of a dam, its reservoir, spillway(s), outlet(s), or other appurtenant works that could significantly influence or affect the project safety. Modifications do not include activities related to routine maintenance and repair. DSO review and approval is also required for removal or abandonment of a dam.

The Construction Permit process for modification or removal of a dam is similar to the process associated for the construction of new dams (see [Part II, Dam Safety Guidelines<sup>13</sup>](#)).

The DSO should be contacted as early in the project development phase as possible, preferably when conceptual plans are developed, to expedite the Dam Safety construction permitting process.

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<sup>13</sup> <https://apps.ecology.wa.gov/publications/documents/9255b.pdf>

## References

1. State of Washington, Department of Ecology, Various Statutes and rules related to Water Resources: State Water Code (1917), [Chapter RCW 90.03 RCW](#); Powers and Duties, Department of Ecology, (1970), [Chapter 43.21A RCW](#); Floodplain Management (1935), [Chapter 86.16 RCW](#); Dam Safety Regulations, (1992), [Chapter 173-175 WAC](#); Olympia, WA.
2. State of Washington, Department of Ecology Publication Number 92-21, [Guidelines for Developing Dam Operation and Maintenance Manuals](#), February 1995, Olympia, WA.
3. State of Washington, Department of Ecology Publication Number 92-22, [Guidelines for Developing Dam Emergency Action Plans](#), December 2013, Olympia, WA.

# Appendix A

## State Statutes and Administrative Rules Pertaining to Dam Safety

### **RCW 43.21A.064 Powers and duties - Water resources.**

Subject to RCW 43.21A.068, the director of the department of ecology shall have the following powers and duties:

- (2) Insofar as may be necessary to assure safety to life or property, the director shall inspect the construction of all dams, canals, ditches, irrigation systems, hydraulic power plants, and all other works, systems, and plants pertaining to the use of water, and may require such necessary changes in the construction or maintenance of said works, to be made from time to time, as will reasonably secure safety to life and property.

### **RCW 43.21A.068 Federal power act licensees - Exemption from state regulations.**

- (1) With respect to the safety of any dam, canal, ditch, hydraulic power plant, reservoir, project, or other work, system or plant that requires a license under the federal power act, no licensee shall be required to:
  - (a) submit proposals, plans, specifications or other documents for approval by the department;
  - (b) seek a permit, license or other form, permission, or authorization from the department;
  - (c) submit to inspection by the department; or
  - (d) change a design, construction, modification, maintenance, or operation of such facilities at the demand of the department.
- (2) For the purposes of this section, "licensee" means an owner or operator, or any employee thereof, of a dam, canal, ditch, hydraulic power plant, reservoir, project, or other work, system, or plant that requires a license under the federal power act.

### **RCW 86.16.035 Department of Ecology - Control of dams and obstructions.**

Subject to RCW 43.21A.068, the department of ecology shall have supervision and control over all dams and obstructions in streams, and may make reasonable regulations with respect thereto concerning the flow of water which he or she deems necessary for the protection to life and property below such works from flood waters.

### **RCW 90.03.350 Construction or modification of storage dam—Plans and specifications—Additional dam safety inspection requirements for metals mining and milling operations.**

Except as provided in RCW 43.21A.068, any person, corporation or association intending to construct or modify any dam or controlling works for the storage of ten acre feet or more of water, shall before beginning said construction or modification, submit plans and specifications

of the same to the department for examination and approval as to its safety. Such plans and specifications shall be submitted in duplicate, one copy of which shall be retained as a public record, by the department, and the other returned with its approval or rejection endorsed thereon. No such dam or controlling works shall be constructed or modified until the same or any modification thereof shall have been approved as to its safety by the department. Any such dam or controlling works constructed or modified in any manner other than in accordance with plans and specifications approved by the department or which shall not be maintained in accordance with the order of the department shall be presumed to be a public nuisance and may be abated in the manner provided by law, and it shall be the duty of the attorney general or prosecuting attorney of the county wherein such dam or controlling works, or the major portion thereof, is situated to institute abatement proceedings against the owner or owners of such dam or controlling works, whenever he or she is requested to do so by the department.

A metals mining and milling operation regulated under chapter 232, Laws of 1994 is subject to additional dam safety inspection requirements due to the special hazards associated with failure of a tailings pond impoundment. The department shall inspect these impoundments at least quarterly during the project's operation and at least annually thereafter for the postclosure monitoring period in order to ensure the safety of the dam or controlling works. The department shall conduct additional inspections as needed during the construction phase of the mining operation in order to ensure the safe construction of the tailings impoundment.

#### **RCW 90.03.470 Schedule of fees.**

The following fees shall be collected by the department in advance:

- (7) For the inspection of any hydraulic works to insure safety to life and property, a fee based on the actual cost of the inspection, including the expense incident thereto, is required except as follows: (a) For any hydraulic works less than ten years old, that the department examined and approved the construction plans and specifications as to its safety when required under RCW 90.03.350, there shall be no fee charged; or (b) for any hydraulic works more than ten years old, but less than twenty years old, that the department examined and approved the construction plans and specifications as to its safety when required under RCW 90.03.350, the fee charged shall not exceed the fee for a significant hazard dam.
- (8) For the examination of plans and specifications as to safety of controlling works for storage of ten acre feet or more of water, a minimum fee of ten dollars, or a fee equal to the actual cost, is required.

#### **RCW 90.54.160 Department to report on dam safety.**

The department of ecology shall report to the legislature on the last working day of December of 1984, 1985, and 1986, and thereafter as deemed appropriate by the department, on dam facilities that exhibit safety deficiencies sufficient to pose a significant threat to the safety of life and property. The report shall identify the owner or owners of such facilities, detail the owner's



ability and attitude towards correcting such deficiencies, and provide an estimate of the cost of correcting the deficiencies if a study has been completed.

## Chapter 173-175 WAC – Dam Safety

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Last Update: 2/27/12

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#### DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS TITLE

Effective date. [Statutory Authority: 1995 c 8. WSR 95-22-030 (Order 94-15), § 173-175-070, filed 10/24/95, effective 11/24/95. Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-070, filed 12/16/92, effective 1/16/93; WSR 92-12-055 (Order 91-17), § 173-175-070, filed 6/1/92, effective 7/2/92.] Repealed by WSR 04-16-122 (Order 03-08), filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064 , 43.21A.080 , 86.16.061 , 90.03.350 and [90.03].470.

173-175-700 Applicability to projects licensed or exempted by the Federal Energy Regulatory Commission (FERC). [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-700, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-710 Coordination between the department and the Federal Energy Regulatory Commission (FERC). [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 .

WSR 93-01-090 (Order 92-35), § 173-175-710, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-720 Construction or modification of FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-720, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-730 Construction permit fee for FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-730, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-740 Construction inspection of FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-740, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-750 Construction records reporting for FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-750, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-760 Exceptions to construction permit for FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-760, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-770 Operation of FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-770, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-780 Periodic inspection of FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-780, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-790 Emergency action plans for FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-790, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-800 Right of entry at FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090

(Order 92-35), § 173-175-800, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-810 Enforcement at FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-810, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

173-175-820 Appeals for FERC licensed projects and FERC exempted projects. [Statutory Authority: RCW 43.21A.064 , [43.21A].080 and 86.16.061 . WSR 93-01-090 (Order 92-35), § 173-175-820, filed 12/16/92, effective 1/16/93.] Repealed by WSR 95-22-030, filed 10/24/95, effective 11/24/95. Statutory Authority: 1995 c 8.

### **WAC 173-175-010 - Purpose and authority.**

These regulations provide for the comprehensive regulation and supervision of dams in order to reasonably secure safety to life and property pursuant to chapters 43.21A, 43.27A, 86.16, 90.03, 90.28, 90.54 and RCW. The purposes of these regulations are to:

- (1) Designate the types of dams to which these regulations are applicable;
- (2) Provide for the design, construction, operation, maintenance, and supervision of dams in a manner consistent with accepted engineering practice;
- (3) Establish and administer a program for permitting of construction work for new dams and for modifications of existing dams;
- (4) Establish a fee schedule based on dam size that will reflect the actual cost to the department of engineering review of plans and specifications and for construction inspections;
- (5) Establish the requirements and owner responsibilities for developing and executing plans for operation and maintenance, owner inspection and emergency actions; and
- (6) Establish a program for the periodic inspection by the department of existing dams, and a fee schedule for these inspections based on downstream hazard classification and frequency of inspections. This fee schedule will reflect the actual cost to the department.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-010, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-010, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-020 - Applicability.**

- (1) These regulations are applicable to dams which can impound a volume of ten acre-feet or more of water as measured at the dam crest elevation. The ten acre-foot threshold applies to dams which can impound water on either an intermittent or permanent basis. Only water that can be stored above natural ground level or which could be released by a failure of the dam is considered in assessing the storage volume.

The ten acre-foot threshold applies to any dam which can impound water of any quality, or which contains any substance in combination with sufficient water to exist in a liquid or slurry state at the time of initial containment.

- (2) For a dam whose dam height is six feet or less and which meets the conditions of subsection (1) of this section, the department may elect to exempt the dam from these regulations.

The decision by the department to exempt a dam will be made on a case-by-case basis for those dams whose failure is not judged to pose a risk to life and minimal property damage would be expected (downstream hazard class 3).

(3) These regulations do not apply to dams that are, or will be, owned, by an agency of the federal government which has oversight on operation and maintenance and has its own dam safety program for periodic inspection and repair of safety deficiencies of completed projects. The department will continue to be the state repository for pertinent plans, reports, and other documents related to the safety of federally owned dams.

(4) These regulations do not apply to transportation facilities such as roads, highways, or rail lines which cross watercourses and exist solely for transportation purposes and which are regulated by other governmental agencies.

Those transportation facilities which cross watercourses and which have been, or will be, modified with the intention of impounding water on an intermittent or permanent basis and which meet the conditions of subsection (1) of this section shall be subject to these regulations.

(5) These regulations do not apply to dikes or levees constructed adjacent to or along a watercourse for protection from natural flooding or for purposes of flood plain management.

(6) These regulations do not apply to concrete or steel water storage tanks.

(7) These regulations do not apply to FERC licensed projects and to FERC exempted projects. The department will continue to maintain a repository for pertinent plans, reports, and other documents related to the safety of FERC licensed and FERC exempted projects.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-020, filed 8/4/04, effective 9/4/04. Statutory Authority: 1995 c 8. WSR 95-22-030 (Order 94-15), § 173-175-020, filed 10/24/95, effective 11/24/95. Statutory Authority: RCW 43.21A.064, [43.21A].080 and 86.16.061. WSR 93-01-090 (Order 92-35), § 173-175-020, filed 12/16/92, effective 1/16/93; WSR 92-12-055 (Order 91-17), § 173-175-020, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-030 - Definitions.**

As used in this chapter:

#### **Acceptance**

means acceptance by the department that the proposed plan(s) will satisfactorily address issues associated with proper operation, maintenance, inspection, or emergency action.

#### **Annual exceedance probability**

means the chance that a specified magnitude of some phenomenon of interest, such as a flood or earthquake, is equaled or exceeded during a given year.

**Approval**

means approval by the department that the proposed design, and plans and specifications conform to accepted engineering practice and department guidelines.

**Appurtenant works**

means such structures as outlet works and associated gates and valves; water conveyance structures such as spillways, channels, fish ladders, tunnels, pipelines, or penstocks; powerhouse sections; and navigation locks, either in the dam or adjacent thereto.

**Authorization**

means written acknowledgement from the department to proceed with proposed actions. "Construction change order" means a revision to the department approved plans and specifications that is initiated during construction.

**Construction permit**

means the permit which authorizes construction and that the project's plans and specifications and construction inspection plan have been reviewed and approved by the department.

**Construction permit process**

means the sequence of activities specified in WAC 173-175-110 inclusive, beginning with the application for construction permit and ending with the submission of a report summarizing construction records.

**Crest length**

means the total horizontal distance measured along the axis of the dam, at the elevation of the top of the dam, between abutments or ends of the dam. Where applicable, this includes the spillway, powerhouse sections, and navigation locks, where they form a continuous part of the impounding structure.

**Critical project element**

means an element of a project whose failure could result in the uncontrolled release of the reservoir.

**Dam**

means any artificial barrier and/or any controlling works, together with appurtenant works that can or does impound or divert water.

**Dam abutment**

means that contact location at either end and beneath the flanks of a dam where the artificial barrier joins or faces against the natural earth or rock foundation material upon which the dam is constructed.

**Dam height**

means the vertical distance from the natural bed of the stream or watercourse at the downstream toe of the impounding barrier to the maximum storage elevation. If the dam is



not across a stream or watercourse, the height is measured from the lowest elevation of the outside limit of the impounding barrier to the maximum storage elevation.

**Department**

means the Department of Ecology.

**Design step level**

means an integer value between one and eight used to designate increasingly stringent design loadings and conditions for design of critical project elements. Design steps have a range in annual exceedance probability from one in five hundred at Step 1 to one in one million at Step 8.

**Downstream hazard classification**

means a rating to describe the potential for loss of human life and/or property damage if the dam were to fail and release the reservoir onto downstream areas. Downstream hazard classifications of 3, 2 and 1C, 1B, 1A correspond to low, significant, and high downstream hazard classes respectively.

**Emergency condition**

means a situation where life and property are at imminent risk and actions are needed within minutes or hours to initiate corrective actions and/or warn the public.

**Enlargement**

means any modification of a project that will result in an increase in normal pool height and/or dam height.

**Exigency condition**

means a situation where the dam is significantly underdesigned according to generally accepted engineering standards or is in a deteriorated condition and life and property are clearly at risk. Although present conditions do not pose an imminent threat, if adverse conditions were to occur, the situation could quickly become an emergency.

**FERC exempted project**

means a project that is classified as exempt by the Federal Energy Regulatory Commission (FERC) under provisions of the Federal Power Act.

**FERC licensed project**

means a project whose operation is licensed by the Federal Energy Regulatory Commission (FERC) under provisions of the Federal Power Act.

**Freeboard**

means the vertical distance between the dam crest elevation and some reservoir level of interest.

**Hydrograph**

means a graphical representation of discharge, stage, or other hydraulic property with respect to time for a particular location on a watercourse.

**Impounding barrier**

means the structural element of the dam that has the primary purpose of impounding or diverting water. It may be constructed of natural and/or man-made materials.

**Incident**

means the occurrence of any dam-related event where problems or conditions arise which may have posed a threat to the safety or integrity of the project or which may have posed a threat of loss of life or which resulted in loss of life.

**Inflow design flood (IDF)**

means the reservoir inflow flood hydrograph used for sizing the spillways and for determining freeboard. It represents the largest flood that a given project is designed to safely accommodate.

**Maintenance**

means those tasks generally accepted as routine in keeping the project and appurtenant works in a serviceable condition.

**Maximum storage elevation**

means the maximum attainable water surface elevation of the reservoir pool that could occur during extreme operating conditions. This elevation normally corresponds to the crest elevation of the dam.

**Miscellaneous construction elements**

means a variety of construction elements or activities such as, but not limited to: Reservoir linings; parapet walls or low berms for wave containment; minor reconstruction of isolated portions of the impounding barrier; internal drainage improvements; and erosion protection.

**Modification**

means any structural alteration of a dam, its reservoir, spillway(s), outlet(s), or other appurtenant works that could significantly influence or affect the project safety.

**Normal pool height**

means the vertical distance between the lowest point of the upstream toe of the impounding barrier and the normal storage elevation.

**Normal storage elevation**

means the maximum elevation to which the reservoir may rise under normal operating conditions. Where the principal spillway is ungated, the normal storage elevation is usually established by the elevation of the spillway crest.

**100-year flood plain**

means the area inundated during the passage of a flood with a peak discharge having a one percent chance of being equaled or exceeded in any given year at a specified location on a watercourse.

**Outlet**

means a conduit and/or channel structure for the controlled release of the contents normally impounded by a dam and reservoir.

**Owner**

means the person holding lawful title to the dam or any person who owns or proposes to construct a dam.

**Periodic inspection**

means a detailed inspection of the dam and appurtenant works conducted on regular intervals and includes, as necessary, associated engineering analyses to confirm the continued safe operation of the project.

**Person**

means any individual, firm, association, county, public or municipal or private corporation, agency, or other entity whatsoever.

**Plans and specifications**

means the detailed engineering drawings and specifications used to describe the layout, materials, construction methods, etc., for assembling a project or project element. These do not include shop drawings or other drawings prepared by the construction contractor for temporary construction support systems.

**Population at risk**

means the number of people who may be present in areas downstream of a dam and could be in danger in the event of a dam failure.

**Project**

means a dam and its reservoir either proposed or existing.

**Project engineer**

means a professional engineer licensed in Washington, having direct supervision, as defined in WAC 196-25-070 (previously WAC 196-24-095), in managing the engineering aspects of the project as representative of the owner.

**Reservoir**

means any basin that contains or will contain the water impounded by a dam.

**Reservoir routing**

means the procedures used to determine the attenuating effect of reservoir storage on a flood as it passes through a reservoir.

**Rule curve**

means the rules and procedures used to regulate reservoir levels and project operation for various reservoir inflows and for both normal and unusual seasonal conditions.

**Significant enlargement**

means any modification of an existing dam that results in the dam height or normal pool height being increased by an amount greater than 5.0 feet, and which also represents a ten percent or greater increase in dam height or normal pool height over that which existed prior to the modification.

**Spillway**

means a channel structure and/or conduit for the safe release of water or floodwater. "Stop work order" means an administrative order issued to temporarily halt construction work until a problem can be resolved.

**Substantially complete**

means that a plan, action, or project element requires only minor additions to be complete, and in its present state will perform the necessary functions for its intended use.

**Surficial inspection**

means a visual inspection conducted to identify obvious defects or changed conditions.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-030, filed 8/4/04, effective 9/4/04. Statutory Authority: 1995 c 8. WSR 95-22-030 (Order 94-15), § 173-175-030, filed 10/24/95, effective 11/24/95. Statutory Authority: RCW 43.21A.064, [43.21A].080 and 86.16.061. WSR 93-01-090 (Order 92-35), § 173-175-030, filed 12/16/92, effective 1/16/93; WSR 92-12-055 (Order 91-17), § 173-175-030, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-040 - Activities that require department review, approval, acceptance, authorization, or notification.**

- (1) Activities related to the safety of dams that require review and approval by the department as detailed in this chapter include:
  - (a) Construction of a new dam;
  - (b) Modification of an existing dam;
  - (c) Removal or abandonment of an existing dam;
  - (d) Construction change orders for project elements that could have an effect on public safety.
- (2) Activities related to the safety of dams that require review and acceptance by the department as detailed in this chapter include:
  - (a) Adoption of an operation and maintenance (O&M) plan;
  - (b) Adoption of an emergency action plan (EAP);
  - (c) Changes to existing operation and maintenance procedures or to an emergency action plan that could have an effect on public safety.
- (3) Activities related to the safety of dams that require authorization from the department before proposed actions can proceed include:

- (a) Startup of construction: For a new dam; modifications to an existing dam; or removal or abandonment of an existing dam.
  - (b) Initial controlled filling of a reservoir following new dam construction and implementation of procedures for normal reservoir operation.
  - (c) Resumption of normal reservoir operation following dam modifications or emergency action.
- (4) Activities related to the safety of dams that require a notification to the department as detailed in this chapter include:
- (a) Change of dam ownership;
  - (b) Advance notice of the startup of dam construction;
  - (c) Declaration by the project engineer of project completion in accordance with the department approved plans and specifications and construction change orders;
  - (d) Advance notice of periodic inspection; and
  - (e) The occurrence of an incident at the dam.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-040, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-050 - Provision of guidelines.**

The department will develop and maintain *Dam Safety Guidelines* to aid dam owners and project engineers in complying with the department requirements in developing, producing, or conducting:

- (1) Engineering design reports;
- (2) Plans and specifications;
- (3) Construction inspection plans;
- (4) Operation and maintenance plans;
- (5) Periodic inspections; and
- (6) Emergency action plans.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-050, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-060 - Change of ownership.**

When a change of ownership of a dam occurs, the new owner shall notify the department within ninety days following the transaction and provide:

- (1) The mailing address and telephone number where the owner can be contacted.
- (2) The name(s) and telephone number(s) of the individual(s) who will be responsible for operation and maintenance of the dam.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-060, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-100 - Construction permit.**

- (1) 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.
- (2) The approval of these documents will be indicated by the department's plan approval stamp on the cover sheet of the plans signed by the department's professional engineer who had primary responsibility for the engineering review.
- (3) The return of the construction plans to the owner will be accompanied by a construction permit which authorizes construction and which must be prominently displayed at the construction site.
- (4) A copy of the department approved plans and specifications shall be maintained at the construction site.
- (5) Construction work shall not proceed until the plans, specifications, and construction inspection plan have been approved by the department.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-100, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-110 - Sequence of permitting actions.**

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. 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*. The following outline is listed to give an overview of the normal sequence of actions for construction of a new dam. Subsections (9), (10), and (11) of this section will not be required for modification of an existing dam where the department has previously accepted the project's operation and maintenance plan and emergency action plan.

- (1) Submission of application for construction permit, including initial nonrefundable fee payment.
- (2) Submission of engineering design report(s).
- (3) Submission of plans and specifications.
- (4) Payment of construction permit fee.
- (5) Submission of construction inspection plan.
- (6) Resolution of any outstanding engineering issues.
- (7) Department approves plans and specifications and issues construction permit.

- (8) Construction or modification of dam.
- (9) Submission of operation and maintenance (O&M) plan.
- (10) Submission of emergency action plan (EAP).
- (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.
- (13) Department concurs with project engineer that project was constructed or modified in accordance with approved plans and specifications and construction change orders.
- (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.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-110, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-120 - Application for construction permit.**

- (1) The department shall supply an application form to be used to initiate the process for obtaining the construction permit.
- (2) The application form shall be submitted to the department at the time that the first substantive engineering information becomes available about the proposed project.
- (3) An initial, nonrefundable payment which may represent all or a portion of the construction permit fee, shall be included along with the application form. The amount of the initial construction permit fee payment is defined in WAC 173-175-390.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-120, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-130 - Engineering design reports.**

- (1) Engineering design reports summarizing the various engineering investigations and pertinent project information are an important element of the project design documents. All pertinent engineering design reports that have been prepared during project formulation shall be submitted for review. The engineering design report(s) must bear the seal and signature of the project engineer.
- (2) The engineering design reports shall be sufficiently complete so as to support the development of plans and specifications without substantial change or additional information.
- (3) The engineering design report(s) shall be comprehensive in description of the various engineering investigations.

- (a) For new project construction, the engineering design report(s) shall include, as a minimum, the items listed in subsection (4) of this section:
  - (b) For modifications of existing dams, the engineering design report(s) shall include, as a minimum, those items listed in subsection (4) of this section which represent changed conditions from original construction or which address items that have not been previously addressed in prior reports that were submitted to the department.
- (4) Contents of engineering design report(s):
- (a) A description of the basic purposes of the project, normal operational characteristics and any unique or important design considerations associated with the site or project configuration.
  - (b) A description of the site geology, seismicity and geotechnical considerations including: A presentation of the findings from subsurface explorations based on test pits and/or boring logs; field tests; laboratory testing and classification of samples; and an identification of the seismotectonic provinces that could generate earthquakes large enough to significantly affect the project site.
  - (c) A description of the climatic and hydrologic characteristics of the site and tributary watershed including the computation of the inflow design flood and, where applicable, a listing of the input and output data for the computer model used to determine the inflow design flood.
  - (d) A listing of all sources of inflow to the reservoir.
  - (e) The size classification of the proposed project as defined by Table 1.

**Table 1. Dam Size Classification**

Size Classification	Dam Height
Small Dam	Less than 15 feet
Intermediate Dam	15 feet or greater but less than 50 feet
Large Dam	50 feet or greater



- (f) The reservoir operation classification of the proposed project as defined by Table 2.

**Table 2. Reservoir Operation Classification**

Reservoir Operation Classification	Determining Factor
Permanent Pool or Seasonal Pool Operation	Steady state seepage or saturated flow conditions occur in impounding barrier and foundation at or near normal pool conditions.
Intermittent Operation	Duration of normal high pool condition is insufficient for steady state seepage or saturated flow conditions to develop in impounding barrier and foundation.

- (g) An assessment of the consequences of dam failure on downstream areas, including:
- (i) An estimation of the magnitude of the dam break flood hydrographs resulting from hypothetical dam failures occurring with the reservoir at normal storage elevation and maximum storage elevation;
  - (ii) A general description of the areas downstream of the dam that could be affected by floodwater from a dam failure;
  - (iii) If there is the potential for loss of life, an inundation map delineating the maximum areal extent of flooding that could be produced by a dam failure. Inundation mapping should extend to a point downstream where the inundation from the dam failure is within the 100-year flood plain for the affected watercourse;
  - (iv) The downstream hazard classification as defined by Table 3, which reflects the current conditions of development in downstream areas. The most serious potential consequences of failure of those listed in columns 3A, 3B, and 3C shall be used to establish the appropriate downstream hazard classification.

**Table 3. Downstream Hazard Classification**

Downstream Hazard Potential	Downstream Hazard Classification	Column 3A Population at Risk	Column 3B Economic Loss Generic Descriptions	Column 3C Environmental Damages
Low	3	0	Minimal. No inhabited structures. Limited agricultural development.	No deleterious materials in reservoir contents
Significant	2*	1 to 6	Appreciable. 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	1C	7 to 30	Major. 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.
High	1B	31-300	Extreme. 11 to 100 inhabited structures. Medium density suburban or urban area with associated industry, property and transportation features.	
High	1A	More than 300	Extreme. More than 100 inhabited structures. Highly developed, densely populated suburban or urban area with associated industry, property, transportation and community life line features.	

\* Although not reflected in the current regulations, the DSO subdivides Significant Hazard dams into either 2D or 2E. 2D indicates there are people at risk, while 2E indicates that impacts are limited to economic or environmental risks.

- (h) Engineering calculations and data supporting the detailed design of project elements. This would include, as a minimum:
  - (i) The design step levels used in design of the various critical project elements, based on guidance contained in the department's *Dam Safety Guidelines*;
  - (ii) Stability analyses corroborating the design of the proposed embankment/barrier section under static and seismic loadings and rapid drawdown conditions;
  - (iii) Calculations for the design of any hydraulic structures, which are subject to high lateral earth pressures, relatively large seismic loads and/or uplift pressures;

- (iv) Computations for sizing the principal and emergency spillway, including, where applicable, reservoir routing computations defining the reservoir inflow and outflow design flood hydrographs.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-130, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-140 - Plans and specifications.**

- (1) Two copies of the plans and specifications, bearing the seal and signature of the project engineer, shall be submitted to the department for engineering review. Upon approval, one copy will be retained by the department and the other copy will be returned to the owner or the project engineer.
- (2) For large or complex projects, one copy of the preliminary or intermediate level plans, in addition to the final plans, shall be submitted to the department for review.
- (3) To be approved, the plans and specifications must contain sufficient detail to describe the proposed construction work.
  - (a) The following items, as a minimum, shall be included as part of the construction plans:
    - (i) Project location and vicinity maps;
    - (ii) Site map of dam, reservoir area, and appurtenances;
    - (iii) Sectional view along longitudinal axis of dam and foundation;
    - (iv) Cross-sectional view of dam at location of maximum height;
    - (v) Cross-sectional views and profiles of spillway(s), outlet facilities, and other appurtenances;
    - (vi) Steel reinforcement placement and bar sizing for concrete construction must be shown in at least one section or profile; and
    - (vii) The plan for diversion and control of water during construction.
  - (b) The following items, as a minimum, shall be included as part of the construction specifications:
    - (i) Type, class, or description of all materials to be used;
    - (ii) The requirements for fill placement, moisture conditioning, and minimum level of compaction of all earthen zones;
    - (iii) The requirements, procedures, and minimum standards for concrete construction and/or structural details.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-140, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-150 - Construction permit fee.**

There is a fee for the review of plans and specifications and for construction inspections conducted by the department. The amount of the fee and owner requirements for fee payment are contained in WAC 173-175-350 through 173-175-400.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-150, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-160 - Review standards.**

The department will review engineering design reports, plans, and specifications and the construction inspection plan to ascertain that the proposed project will be designed and constructed in a manner which will reasonably secure safety to life and property.

- (1) The department's review is intended to address issues of safety directly related to the structural stability and integrity of the completed project. The review is not intended to extend to more general issues of safety not directly related to the structural stability and integrity of the project which are the purview of other governmental agencies such as the Washington department of labor and industries (L&I), which administers the Washington Industrial Safety and Health Act (WISHA).
- (2) In addition to the above, the department will review documents submitted pursuant to this chapter to ascertain that they conform to accepted engineering and construction practice and are in conformance with guidance contained in the department's Dam Safety Guidelines.
- (3) Those elements of a document(s) which are found not to be in conformance with the above will be identified to the owner or the project engineer and changes may be required as appropriate to conform to accepted engineering practice.
- (4) Where differences of opinion arise on the suitability of certain engineering or construction practices and cannot be readily resolved, the burden of proof will rest on the owner and the project engineer to demonstrate the suitability of the proposed plan or action.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-160, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-170 - Construction inspection plan.**

- (1) A detailed plan shall be submitted to the department describing how adequate and competent construction inspection will be provided.
- (2) The construction inspection plan shall be prepared by a professional engineer and shall bear his/her seal and signature.
- (3) The construction inspection plan shall include, as a minimum:

- (a) A listing of construction activities related to critical project elements and planned inspection effort including staffing levels, responsibilities, frequency, and duration of site visits;
- (b) A description of the quality assurance testing program which describes the type of test, general frequency, acceptable results, handling of deficient materials, and the individual(s) responsible for overseeing the testing;
- (c) Description of construction management organization, lines of communication, and responsibilities;
- (d) Description of the change order process including who is responsible for coordinating the change order review process with the department;
- (e) Description of the technical records handling and the content and frequency of construction progress reports.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-170, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-180 - Issuance of construction permit.**

- (1) After the department has determined that the plans and specifications and construction inspection plan conform to accepted engineering practice, these documents will be approved and a construction permit will be issued which authorizes construction to commence.

Construction shall not commence until the construction permit has been issued by the department.

Preliminary work such as mobilization of equipment, stripping and grubbing and other site access and preparation work is allowed prior to receipt of the construction permit, provided no permanent features of the dam are initiated.

- (2) Receipt of the construction permit does not relieve the owner of the responsibility to secure all other applicable permits and approvals before proceeding with construction work.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-180, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-190 - Construction change orders.**

- (1) All dam projects subject to the provisions of this regulation shall be constructed in accordance with the plans and specifications approved by the department. Any proposed changes to the department-approved plans which could have an effect on structural integrity or safe operations of the project must first be presented to the department for a determination if an approval is required.
- (2) If the department determines that the proposed construction change order represents a significant modification of the approved plans or specifications that

could have an effect on structural integrity or safe operations of the project, then approval of the change order will be required.

The department will review the construction change order and provide a response to the project engineer in a timely manner consistent with the complexity and safety concerns of the situation.

- (3) If department approval of the proposed construction change order is required, no action can be taken by the owner to make the construction change until approval is given by the department.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-190, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-200 - Department role in construction inspection.**

- (1) It will be the department's role during construction to confirm that the project engineer, as representative for the owner, is properly implementing the department approved construction inspection plan.
- (2) The department will periodically observe the construction work to independently confirm that conditions assumed in the design stage are valid for field conditions and that construction is proceeding in accordance with the approved plans and specifications.
- (3) Changes may be required by the department to be made to the approved plans and specifications to reasonably secure safety to life and property. Reasons for changes may include, but are not limited to the following:
  - (a) To address unanticipated field conditions;
  - (b) To correct omissions or errors in the approved plans and specifications;
  - (c) To correct situations where the construction work clearly is not being performed in a workmanlike manner and does not, in the opinion of the department, meet the performance intent of the specifications.
- (4) Where deemed necessary by the department, a stop work order may be issued to temporarily halt construction until a problem can be resolved.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-200, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-210 - Operation and maintenance plan.**

- (1) An operation and maintenance (O&M) plan shall be developed and submitted to the department for review and acceptance. The O&M plan shall outline and summarize how the project is to be operated and how the basic elements of monitoring, inspection and maintenance, as listed in WAC 173-175-500(1), are to be accomplished.

The department may issue an acceptance after determining the O&M plan is substantially complete.

- (2) Owners are responsible for incorporating the details of the O&M plan into an O&M manual suitable for use by dam operators. Requirements associated with O&M manuals are listed in WAC 173-175-500.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-210, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-220 - Emergency action plan.**

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, WAC 173-175-130), an emergency action plan (EAP) shall be developed and submitted to the department for review and acceptance. The purpose of the plan is to establish procedures for responding to unusual or emergency situations and procedures for detecting, evaluating, communicating and initiating notification or warning to individuals who may be at risk in downstream/upstream areas. Requirements associated with EAP's are listed in WAC 173- 175-520.

The department may issue an acceptance after determining the EAP is substantially complete.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-220, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-230 - Declaration of construction completion.**

Within sixty days following substantial completion of construction or modification of a dam, the project engineer shall submit to the department:

A declaration stating the project was constructed in accordance with the department approved plans and specifications and construction change orders.

The department will provide a declaration form which may be used or altered, as appropriate, by the project engineer.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-230, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-230, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-240 - Authorization to commence or resume project operation.**

- (1) Upon receipt of the project engineer's declaration of construction completion, the department will authorize the owner or the project engineer, as appropriate, to commence or resume normal project operation, provided that:

- (a) The department concurs with the project engineer that the project was constructed in accordance with the approved plans and specifications and construction change orders;
  - (b) The proposed O&M plan is acceptable to the department;
  - (c) The proposed emergency action plan, if required (see WAC 173-175-220), is acceptable to the department.
- (2) If the above conditions are not met, the owner shall not commence or resume normal operation of the project until all outstanding issues or problems are resolved. When outstanding issues or problems are not resolved in a timely manner, the department may:
- (a) Order the outlet works to remain fully open and not allow filling of the reservoir;
  - (b) Restrict reservoir water levels or reservoir operation;
  - (c) Order the breaching of the impounding barrier;
  - (d) Take other measures as appropriate to reasonably secure safety to life and property.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-240, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-250 - Construction records summary.**

Within one hundred twenty days following completion of construction or modification of a dam, the project engineer, as representative of the owner, shall submit a report to the department on construction activities which includes:

- (1) A summary of results from field testing of materials used in construction. The summary shall identify both representative values and the range of test values;
- (2) A discussion of any notable items encountered during construction;
- (3) One complete set of drawings describing the as-built condition of the dam. These drawings shall be submitted in both paper and electronic format.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-250, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-250, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-260 - Exceptions to construction permit process.**

If the department determines that emergency or exigency conditions exist at a dam and that it is in the best interests of public safety to expedite the construction or modification of a dam, the department may elect to temporarily suspend the normal construction permit process. To allow this exception, the department will issue a written conditional construction permit, which:



- (1) May initially be oral;
- (2) Will specify the construction activities to be allowed;
- (3) May be terminated at a time deemed appropriate by the department;
- (4) Shall incorporate, to the extent possible, and not inconsistent with the situation, all applicable requirements of this chapter.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-260, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-270 - Department review response time.**

In reviewing the various documents required in the construction permit process, the department shall respond in a timely manner to the owner or project engineer with written review comments, approval, or acceptance as appropriate.

If the department response is anticipated to occur sixty days or more beyond the date of receipt of the document(s), the department shall notify the owner and/or project engineer in writing and advise them of the expected response date.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-270, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-350 - Authority for construction permit fees.**

It is required by RCW 90.03.470(9) that fees be collected by the department for the examination of plans and specifications. The fee shall be a minimum of ten dollars or the actual cost. In addition, the department is required by RCW 43.21A.064(2) to inspect the construction of all dams. It is required by RCW 90.03.470(8) that fees be collected for the actual cost to the department for inspection including the expense incident thereto.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-350, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-360 - Construction permit fees for new project construction.**

- (1) Fees for the review of plans and specifications and for construction inspection for new project construction shall be the amounts shown in Table 4A through June 30, 2012, and as shown in Table 4B thereafter, as determined by the nearest values of dam height and crest length, in feet, which correspond to the project's planned dam height and crest length.
- (2) Fees for the review of plans and specifications and for construction inspection for new dairy waste impoundments, and conservation dams, shall be one thousand eight hundred ninety dollars through June 30, 2012, and one thousand nine hundred seventy-seven dollars thereafter, provided the project meets the following requirements:

- (a) The facility has a low downstream hazard classification;
- (b) The maximum embankment height is less than fifteen feet;
- (c) The facility conforms with a set of standard plans and specifications prepared by the Natural Resource Conservation Service (NRCS) and approved by the department; and
- (d) The NRCS or its designee provides periodic oversight of construction to ensure that the facility conforms to the standard plans.

If the project fails to meet any of the above requirements, the standard fees as described under subsection (1) of this section shall apply.

**Table 4A. Construction Permit Fees  
For use through June 30, 2012**

Dam Height (ft)	Crest Length (ft)															
	50	100	150	200	250	300	350	400	500	600	700	800	1000	1500	2000	4000
400	74451	83068	86270	88200	89756	90979	92016	92911	94181	94181	94181	94181	94181	94181	94181	94181
300	64420	76381	81561	84245	85893	87118	88155	89095	90602	91827	92863	93804	94181	94181	94181	94181
250	57215	71107	77087	80950	82975	84669	85753	86647	88155	89425	90462	91357	92863	94181	94181	94181
200	47561	62442	70636	74827	78217	80666	82032	83304	85187	86412	87447	88389	89896	92627	94181	94181
180	42052	58251	66351	71813	75062	77841	80195	81373	83444	85045	86082	86976	88484	91262	93193	94181
160	36401	53636	61877	67528	71720	74356	76663	78736	81326	82975	84434	85422	86930	89708	91639	94181
150	33670	51046	59287	64984	69553	72520	74780	76805	80195	81843	83257	84528	86082	88861	90791	94181
140	30939	47467	56509	62395	66775	70588	72802	74780	78171	80619	82032	83257	85187	87918	89896	94181
130	28301	43606	53684	59428	63902	67528	70730	72661	75957	78736	80713	81938	83963	86930	88908	93617
120	25664	39556	50245	56273	60889	64420	67528	70306	73603	76334	78736	80478	82551	85893	87824	92534
110	23074	35600	45866	52978	57357	61171	64138	66775	71201	73838	76146	78171	80995	84763	86694	91403
100	20579	31739	40875	48504	53684	57310	60512	63148	67575	71154	73368	75346	78783	83020	85422	90132
95	19354	29808	38426	45960	51846	55285	58440	61265	65550	69318	71955	73885	77229	82080	84763	89472
90	18130	27924	35977	43040	49021	53307	56273	59004	63525	67151	70353	72331	75628	81137	83775	86270
85	16906	26041	33575	40169	46149	50953	54108	56744	61406	64891	68046	70777	73980	80149	81561	81561
80	15728	24204	31221	37343	42947	47844	51894	54437	58911	62630	65645	68376	72284	76852	76852	76852
75	14551	22415	28867	34565	39745	44548	48597	52083	56367	60183	63196	65832	70448	72144	72144	72144
70	13374	20625	26559	31787	36590	40969	45112	48597	53778	57403	60605	63243	67433	67433	67433	67433
65	12243	18883	24298	29101	33434	37484	41299	44878	50764	54531	57639	60417	62725	62725	62725	62725
60	11113	17140	22086	26418	30373	34047	37531	40780	46761	51564	54579	57215	58016	58016	58016	58016
55	10030	15445	19919	23827	27406	30703	33810	36730	42240	47137	51235	53307	53307	53307	53307	53307
50	8947	13797	17753	21285	24440	27406	30186	32775	37720	42240	46431	48597	48597	48597	48597	48597
46	8100	12479	16105	19260	22133	24817	27313	29714	34141	38237	42147	44830	44830	44830	44830	44830
42	7252	11207	14457	17282	19872	22273	24534	26653	30655	34329	37813	41062	41062	41062	41062	41062
38	6451	9936	12808	15352	17659	19778	21802	23687	27218	30515	33575	36543	37296	37296	37296	37296
34	5651	8758	11254	13467	15492	17377	19118	20767	23874	26747	29478	32022	33528	33528	33528	33528
30	4897	7534	9701	11631	13374	14975	16482	17941	20625	23121	25428	27642	29762	29762	29762	29762
28	4521	6970	8947	10736	12337	13844	15210	16529	19024	21332	23450	25523	27877	27877	27877	27877
26	4144	6404	8240	9841	11302	12667	13938	15163	17423	19542	21520	23403	25994	25994	25994	25994
24	3861	5792	7487	8947	10312	11537	12714	13844	15916	17799	19637	21332	24111	24111	24111	24111
22	3626	5274	6781	8100	9324	10454	11489	12526	14362	16105	17753	19260	22180	22226	22226	22226
20	3343	4708	6075	7252	8334	9371	10312	11207	12856	14457	15869	17282	19872	20343	20343	20343
18	3107	4191	5368	6451	7393	8287	9135	9936	11396	12808	14080	15304	17612	18459	18459	18459
16	2872	3767	4708	5651	6451	7252	8005	8664	9983	11160	12337	13374	15398	16576	16576	16576
15	2778	3626	4379	5227	6027	6733	7439	8052	9277	10407	11442	12432	14315	15634	15634	15634
14	2683	3437	4050	4850	5556	6215	6875	7439	8571	9606	10596	11489	13232	14692	14692	14692
13	2590	3249	3813	4473	5132	5745	6309	6875	7911	8853	9748	10596	12150	13751	13751	13751
12	2543	3060	3626	4097	4708	5227	5792	6262	7204	8100	8900	9701	11113	12808	12808	12808
11	2496	2920	3391	3813	4284	4756	5227	5698	6546	7346	8100	8806	10125	11866	11866	11866
10	2448	2778	3154	3578	3908	4284	4708	5132	5886	6593	7299	7911	9088	10925	10925	10925
9	2401	2636	2967	3296	3626	3908	4237	4568	5274	5886	6498	7063	8100	9983	9983	9983
8	2354	2543	2778	3013	3343	3578	3813	4050	4614	5179	5698	6215	7110	9040	9040	9040
7	2354	2448	2590	2825	3013	3249	3484	3673	4002	4473	4945	5368	6169	7958	8100	8100
6	2354	2401	2496	2636	2778	2967	3107	3296	3626	3861	4191	4568	5227	6733	7157	7157
5	2354	2354	2401	2496	2590	2683	2825	2920	3202	3437	3673	3861	4332	5556	6215	6215

**Table 4B. Construction Permit Fees**  
**For use beginning July 1, 2012**

Dam Height (ft)	Crest Length (ft)															
	50	100	150	200	250	300	350	400	500	600	700	800	1000	1500	2000	4000
400	77890	86905	90255	92274	93902	95182	96267	97203	98532	98532	98532	98532	98532	98532	98532	98532
300	67396	79909	85329	88137	89861	91142	92227	93211	94787	96069	97153	98137	98532	98532	98532	98532
250	59858	74392	80648	84689	86808	88580	89714	90650	92227	93556	94641	95577	97153	98532	98532	98532
200	49758	65326	73899	78284	81830	84392	85821	87152	89122	90404	91487	92472	94049	96906	98532	98532
180	43994	60942	69416	75130	78529	81437	83900	85132	87299	88974	90058	90994	92571	95478	97498	98532
160	38082	56113	64735	70647	75033	77791	80204	82373	85083	86808	88334	89368	90946	93852	95872	98532
150	35225	53404	62026	67986	72766	75870	78234	80353	83900	85624	87103	88433	90058	92966	94985	98532
140	32368	49659	59119	65277	69860	73849	76165	78234	81782	84343	85821	87103	89122	91979	94049	98532
130	29608	45620	56164	62173	66854	70647	73997	76017	79466	82373	84441	85723	87842	90946	93015	97942
120	26849	41383	52566	58872	63702	67396	70647	73554	77003	79860	82373	84196	86364	89861	91881	96809
110	24140	37244	47985	55425	60006	63997	67101	69860	74490	77249	79663	81782	84736	88679	90699	95625
100	21529	33205	42763	50744	56164	59957	63307	66065	70696	74441	76757	78826	82422	86855	89368	94296
95	20248	31185	40201	48083	54241	57839	61139	64095	68578	72520	75279	77298	80796	85872	88679	93605
90	18967	29214	37639	45028	51285	55769	58872	61729	66459	70253	73603	75672	79122	84885	87645	90255
85	17687	27244	35126	42024	48281	53307	56607	59365	64242	67888	71189	74046	77397	83851	85329	85329
80	16454	25322	32663	40454	44931	50054	54291	56951	61632	65523	68677	71534	75623	80402	80402	80402
75	15223	23450	30200	36161	41581	46606	50842	54489	58971	62963	66115	68873	73702	75477	75477	75477
70	13991	21577	27786	33255	38280	42861	47196	50842	56262	60055	63404	66164	70548	70548	70548	70548
65	12808	19755	25420	30445	34978	39215	43207	46951	53109	57050	60301	63208	65622	65622	65622	65622
60	11626	17931	23106	27638	31776	35619	39264	42664	48921	53946	57100	59858	60696	60696	60696	60696
55	10493	16158	20839	24927	28672	32121	35372	38426	44191	49314	53602	55769	55769	55769	55769	55769
50	9360	14434	18573	22268	25569	28672	31580	34289	39462	44191	48576	50842	50842	50842	50842	50842
46	8474	13055	16849	20149	23155	25963	28574	31086	35718	40003	44094	46901	46901	46901	46901	46901
42	7587	11724	15124	18080	20790	23302	25667	27884	32071	35915	39559	42959	42959	42959	42959	42959
38	6749	10395	13399	16061	18474	20691	22809	24781	28475	31924	35126	38231	39019	39019	39019	39019
34	5912	9162	11773	14089	16207	18179	20001	21726	24976	27982	30839	33501	35076	35076	35076	35076
30	5123	7882	10149	12168	13991	15666	17243	18769	21577	24189	26602	28919	31137	31137	31137	31137
28	4729	7292	9360	11232	12906	14483	15912	17292	19902	22317	24533	26702	29164	29164	29164	29164
26	4335	6699	8620	10295	11824	13252	14581	15863	18227	20444	22514	24484	27194	27194	27194	27194
24	4039	6059	7832	9360	10788	12070	13301	14483	16651	18621	20544	22317	25224	25224	25224	25224
22	3793	5517	7094	8474	9754	10936	12019	13104	15025	16849	18573	20149	23204	23252	23252	23252
20	3497	4925	6355	7587	8719	9803	10788	11724	13449	15124	16602	18080	20790	21282	21282	21282
18	3250	4384	5616	6749	7734	8669	9557	10395	11922	13399	14730	16011	18425	19311	19311	19311
16	3004	3941	4925	5912	6749	7587	8374	9064	10444	11675	12906	13991	16109	17341	17341	17341
15	2906	3793	4581	5468	6305	7044	7782	8424	9705	10887	11970	13006	14976	16356	16356	16356
14	2806	3595	4237	5074	5812	6502	7192	7782	8966	10049	11085	12019	13843	15370	15370	15370
13	2709	3399	3989	4679	5369	6010	6600	7192	8276	9262	10198	11085	12711	14386	14386	14386
12	2660	3201	3793	4286	4925	5468	6059	6551	7536	8474	9311	10149	11626	13399	13399	13399
11	2611	3054	3547	3989	4481	4975	5468	5961	6848	7685	8474	9212	10592	12414	12414	12414
10	2561	2906	3299	3743	4088	4481	4925	5369	6157	6897	7636	8276	9507	11429	11429	11429
9	2511	2757	3104	3448	3793	4088	4432	4779	5517	6157	6798	7389	8474	10444	10444	10444
8	2462	2660	2906	3152	3497	3743	3989	4237	4827	5418	5961	6502	7438	9457	9457	9457
7	2462	2561	2709	2955	3152	3399	3644	3842	4186	4679	5173	5616	6454	8325	8474	8474
6	2462	2511	2611	2757	2906	3104	3250	3448	3793	4039	4384	4779	5468	7044	7487	7487
5	2462	2462	2511	2611	2709	2806	2955	3054	3349	3595	3842	4039	4532	5812	6502	6502

[Statutory Authority: Chapters 43.21A, 43.27A, 86.16, 90.03, 90.28, 90.54 RCW, RCW 43.135.055 and 2011 1st sp.s. c 50 § 302(2). WSR 12-06-013 (Order 10-09), § 173-175-360, filed 2/27/12, effective 3/29/12. Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-360, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-360, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-370 - Construction permit fees for modifications of existing dams.**

- (1) Fees for the review of plans and specifications and for construction inspections for project modifications involving significant enlargements shall be the amount determined by those applicable percentages shown in Table 5A of the fees in Table 4A through June 30, 2012, or Table 4B thereafter, but no less than one thousand eight hundred ninety dollars through June 30, 2012, or one thousand nine hundred seventy-seven dollars thereafter. The appropriate Table 4A or B fee amount is to be determined using the nearest values of dam height and crest length, in feet, which correspond to the overall dimensions of the modified dam.
- (2) Fees for the review of plans and specifications and for construction inspection for project modifications not involving significant enlargements shall be the amount determined by those applicable percentages shown in Table 5B of the fees in Table 4A through June 30, 2012, or Table 4B thereafter, but no less than one thousand eight hundred ninety dollars through June 30, 2012, or one thousand nine hundred seventy-seven dollars thereafter. The appropriate Table 4A or B fee amount is to be determined using the nearest values of dam height and crest length, in feet, which correspond to the overall dimensions of the modified dam.
- (3) Fees for the review of plans and specifications and for construction inspection for repair of a dam with safety deficiencies as required by the department shall be one thousand eight hundred ninety dollars through June 30, 2012, or one thousand nine hundred seventy-seven dollars thereafter.
- (4) Fees for the review of plans and specifications and for construction inspection for the removal or partial removal of a dam with safety deficiencies for the purpose of eliminating a public safety hazard shall be the minimum fee of ten dollars.
- (5) Fees for the review of plans and specifications and for construction inspection for the planned abandonment and reclamation of dams and reservoir areas used in mining operations shall be one thousand eight hundred ninety dollars through June 30, 2012, or one thousand nine hundred seventy-seven dollars thereafter.

**Table 5. Fees for Modifications of Dams**  
**Modification Fee as Percentage of Fee for New Dam Construction**

Features Modified	Table 5A Modification Involving Significant Enlargements	Table 5B Modification Not Involving Significant Enlargements
Spillway(s)	35%	25%
Impounding Barrier	35%	25%
Appurtenant Works and Miscellaneous Construction Elements	10%	10%

[Statutory Authority: Chapters 43.21A, 43.27A, 86.16, 90.03, 90.28, and 90.54 RCW, RCW 43.135.055 and 2011 1st sp.s. c 50 § 302(2). WSR 12-06-013 (Order 10-09), § 173-175-370, filed 2/27/12, effective 3/29/12. Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-370, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-370, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-380 - Maintenance.**

It will not be necessary to submit plans and specifications for review for routine maintenance, normal replacement, or repair of items to keep them in a serviceable condition, seasonal removal, or replacement of stoplogs, or other similar minor operational activities.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-380, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-390 - Payment of construction permit fees.**

- (1) The amount of the construction permit fee will be determined by the department based upon procedures contained in WAC 173-175-360 and 173-175-370 and information contained in the construction plans.
  - (a) An initial payment, which may represent all or a portion of the construction permit fee shall be paid in conjunction with the submittal of the construction permit application described in WAC 173-175-120. The amount of the initial payment shall be:
    - (i) Ten dollars for the removal of a dam with safety deficiencies as described in WAC 173-175-370(3); or
    - (ii) One thousand eight hundred ninety dollars for construction of a new dam or modification of an existing dam or project through June 30, 2012, and one thousand nine hundred seventy-seven dollars thereafter.

- (b) The balance of the fee amount (less the initial payment above) is to be paid following notification by the department of the balance due.
- (c) All fees collected are nonrefundable.
- (2) No fee shall be required for the review of conceptual plans which describe proposed repairs or improvements to existing dams to correct safety deficiencies. The normal construction permit process will apply at the time plans and specifications are submitted to the department.
- (3) No additional fees shall be required for plan and specification changes and resubmittals required by the department as part of the review process.
- (4) No additional fees shall be required for review of construction change orders.

[Statutory Authority: Chapters 43.21A, 43.27A, 86.16, 90.03, 90.28, and 90.54 RCW, RCW 43.135.055 and 2011 1st sp.s. c 50 § 302(2). WSR 12-06-013 (Order 10-09), § 173-175-390, filed 2/27/12, effective 3/29/12. Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-390, filed 8/4/04, effective 9/4/04. Statutory Authority: 1995 c 8. WSR 95-22-030 (Order 94-15), § 173-175-390, filed 10/24/95, effective 11/24/95. Statutory Authority: RCW 43.21A.064, [43.21A].080 and 86.16.061. WSR 93-01-090 (Order 92-35), § 173-175-390, filed 12/16/92, effective 1/16/93; WSR 92-12-055 (Order 91-17), § 173-175-390, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-400 - Cost of expert opinion.**

In resolving differences of opinion on engineering issues between the department and project engineer or owner, it may be necessary for the department to employ an expert in dam design, analysis or construction.

- (1) The expert who is chosen, the assigned tasks, and the estimated cost for the expert's services shall be determined by negotiation between the owner and the department.
- (2) The cost associated with employing the expert shall be paid by the owner of the proposed or existing project.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-400, filed 6/1/92, effective 7/2/92.]

#### **WAC 173-175-500 - Operation and maintenance.**

- (1) The owner shall develop and maintain a current operation and maintenance (O&M) manual. The manual shall describe procedures for operation of the project under normal and extreme reservoir inflow conditions and provide technical guidance and procedures for monitoring, inspection, and long-term maintenance. Information on the development of the O&M manual is contained in the department's *Dam Safety Guidelines*. The O&M manual shall include, as a minimum, the following items:
  - (a) Identification of the individual(s) responsible for implementing the plan;

- (b) A project data sheet describing the pertinent features of the dam and reservoir, including the spillway(s), outlet works, and appurtenant structures and their locations at the dam site;
  - (c) The rules and procedures (rule curve) used to regulate reservoir levels and project operation for various reservoir inflows and for both normal and unusual seasonal conditions;
  - (d) A description of each hydraulic element used to regulate or release water, including information on proper operation and scheduled maintenance;
  - (e) A listing of the items requiring periodic monitoring, the frequency of monitoring and procedures for monitoring, measurement, and recordkeeping;
  - (f) A listing of the items requiring periodic maintenance and procedures for conducting and documenting maintenance and recording of problems;
  - (g) A listing of items to be inspected or test operated, the frequency and procedures for conducting the same and for documenting the findings.
- (2) It shall be the duty and responsibility of the owner to, at all times, operate and maintain the dam and all appurtenant works in a safe manner and condition and follow the method and schedule of operation of the dam as outlined in the O&M manual.
  - (3) Any proposed changes to the O&M manual which could have an effect on public or project safety must be submitted to the department for review and acceptance before implementation.
  - (4) The O&M manual must be updated within one hundred eighty days after a periodic inspection has been completed by the department.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-500, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-500, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-510 - Inspection by owner.**

Owners are required to evaluate the safety of their dam(s) and all appurtenant works and to make modifications, as become necessary, to reasonably secure safety to life and property. To accomplish this, owners are:

- (1) Required to conduct annual surficial inspections and to maintain records of their findings, including records of actions taken to correct problem conditions.  
The annual surficial inspections may be conducted by the owner or by agent(s) designated by the owner, or by a professional engineer.
- (2) Owners are required to submit a copy of the annual inspection checklist and other documents which contain the findings resulting from the annual inspection within thirty days following the completion.



[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-510, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-510, filed 6/1/92, effective 7/2/92.]

**WAC 173-175-520 - Emergency action plans.**

- (1) In those cases where a failure of the dam could pose a threat to life (downstream hazard classes 1A, 1B, 1C, and 2), the owner shall develop and maintain an emergency action plan (EAP) acceptable to the department.
  - (a) 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.
  - (b) It shall be the duty and responsibility of the owner to implement the EAP when conditions warrant and to follow the method and schedule contained within the EAP.
  - (c) Owners are required to coordinate the development of the EAP with representatives from the local emergency services staff, state department of community development (now referred to as the Department of Commerce), emergency management division, and appropriate local authorities.
  - (d) Copies of the completed EAP must be provided to the state emergency management division, local emergency services office, and to the department.
- (2) Any proposed changes to the EAP which could have an affect on public or project safety must be submitted to the department for review and acceptance before implementation.
- (3) Owners are required to exercise components of the EAP as needed to confirm the viability of the plan.
- (4) The department will coordinate and solicit review comments from the local emergency services office and the state emergency management division on the acceptability of proposed EAPs. Those comments will constitute the primary basis for accepting or requesting modifications to a proposed EAP.
- (5) The EAP must be updated within one hundred eighty days after a periodic inspection has been completed by the department.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-520, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-520, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-530 - Reporting of incidents.**

Owners are required to notify the department when incidents occur or when problems or conditions arise which may pose a threat to life or property or a threat to the integrity of the dam.

- (1) The owner shall report by telephone to the department on any condition affecting the safety of the project or when an incident has occurred. The initial oral report must be made as soon as practicable after the condition is discovered or following any incident.
- (2) A written report may be required by the department within thirty days following the discovery of the condition or after the incident. The report shall describe the condition affecting the safety of the project or the incident which has occurred and shall describe the preliminary plans for correcting the condition and for preventing the recurrence of a similar incident.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-530, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-600 - Right of entry.**

The department or its duly appointed agent(s) shall have the right to enter at all reasonable times in or upon property, public or private, for the purpose of inspecting and investigating conditions relating to the construction, operation, maintenance or performance of dams. The department shall comply with the owner's reasonable rules for access to the project.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-600, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-610 - Emergencies.**

- (1) 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:
  - (a) Altering the operation of the project;
  - (b) Lowering the reservoir water level;
  - (c) Draining the reservoir;
  - (d) Making emergency repairs or modifications to the project;
  - (e) Enlisting the services of federal, state, or local authorities to make emergency repairs or modifications to the project;
  - (f) Breaching the dam.

- (2) All costs incurred by the department as a result of taking control of the project will be charged to the owner.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-610, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-620 - Enforcement.**

- (1) In enforcement of this chapter, the department may impose such sanctions as appropriate under authorities vested in it, including but not limited to, the issuance of regulatory orders under RCW 86.16.081 and 43.27A.190 and civil penalties under RCW 86.16.081 and 90.03.600.
- (2) Any dam which is found to be under construction or recently constructed without prior approval of the plans and specifications is in violation of RCW 90.03.350 and will be presumed to be a public nuisance. The owner will not be allowed to fill the reservoir or continue to operate the reservoir until the structural integrity and safety of the facility can be demonstrated to the satisfaction of the department. In addition:
  - (a) Regulatory orders may be issued to enforce the restriction of reservoir filling and fines may be levied at one hundred to five thousand dollars per day;
  - (b) Owners are required to submit as-built drawings and all available documentation describing the manner in which the dam or portion thereof was constructed;
  - (c) If the structural integrity and safety of a dam project cannot be demonstrated or confirmed to the satisfaction of the department, the owner shall not commence or resume normal operation of the project until all outstanding issues or problems are resolved to the satisfaction of the department. To accomplish the above, the department may:
    - (i) Order the outlet works to remain fully open and not allow filling of the reservoir;
    - (ii) Restrict reservoir water levels or reservoir operation;
    - (iii) Order the breaching of the impounding barrier;
    - (iv) Take other measures as appropriate to reasonably assure safety to life and property.
  - (d) If, in the opinion of the department, the owner is unwilling or incapable of resolving the outstanding safety issues in a timely manner, the department may take action to have the dam abated as prescribed by law under RCW 90.03.350.
- (3)
  - (a) In order to correct safety deficiencies and exigency conditions as identified by the department on existing dams, owners are required to take actions as prescribed by the department to preserve the structural stability and integrity of

the project and attain levels of safety in accordance with accepted engineering practice.

- (b) If the owner does not take action to correct safety issues in a timely manner, regulatory orders may be issued to require modifications, and to restrict the filling of the reservoir until all outstanding issues or problems are resolved to the satisfaction of the department.
- (c) If the owner continues to be unwilling or incapable of resolving the outstanding safety issues, the department may take action to have the dam abated as prescribed by law under RCW 90.03.350.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-620, filed 8/4/04, effective 9/4/04. Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175-620, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-630 - Appeals.**

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 in accordance with chapter 43.21B RCW.

[Statutory Authority: RCW 43.21A.064, [43.21A.]080 and 86.16.061. WSR 92-12-055 (Order 91-17), § 173-175- 630, filed 6/1/92, effective 7/2/92.]

### **WAC 173-175-705 - Periodic inspection by the department.**

- (1) As authorized by RCW 43.21A.064, 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.
  - Dams with high downstream hazard classifications will be inspected every five years.
  - Dams with significant downstream hazard classifications will be inspected every five years, or ten years if workload or staffing necessitates a longer cycle between inspections.
  - Dams classified as low hazard are not included in the periodic inspection program.
- (a) The department will give at least thirty days notice of the date of the periodic inspection and advise the owner of any requirements such as gates or valves that are to be operated during the inspection.
- (b) Fees shall be charged for periodic inspections conducted by the department. The amount of the fee and owner requirements for the fee payment are described in WAC 173-175-755 through 173-175-775.

### **Dam classification**

- (2) The downstream hazard classification of existing dams shall be determined by the department in accordance with WAC 173-175-130, Table 3.
- (3) The classification of each dam shall be reviewed during each periodic or other inspection and may be changed as the result of such inspection.

### **Components of a periodic inspection**

- (4) Each periodic inspection shall consist of, but not be limited to, the following:
  - (a) Review and analysis of available data on the design, construction, operation, and maintenance of the dam and its appurtenances;
  - (b) Visual inspection of the dam and its appurtenances, the downstream area, and all other areas affected by the structure;
  - (c) Evaluation of the safety of the dam and its appurtenances, which may include assessment of the hydrologic and hydraulic capabilities, structural stabilities, seismic stabilities, and any other condition which could constitute a hazard to the integrity of the structure;
  - (d) Evaluation of the downstream hazard classification;
  - (e) Evaluation of the operation, maintenance, and inspection procedures employed by the owner and/or operator; and
  - (f) Review of the emergency action plan for the dam including review and/or update of dam breach inundation maps.
- (5) The department shall prepare a written safety inspection report that describes the findings from the inspection and lists remedial actions that must be taken to ensure the continued safety of the dam.
- (6) The department shall provide the dam owner with a copy of the written report of the periodic inspection. The dam owner must correct any identified safety deficiencies in a timely manner.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-705, filed 8/4/04, effective 9/4/04.]

### **WAC 173-175-725 - Nonroutine inspections by department.**

- (1) The department may perform nonroutine inspections of dams with any downstream hazard classification, separate from the periodic inspection program. The purposes for these inspections include, but are not limited to, the following:
  - (a) Determining downstream hazard classification;
  - (b) Condition inspections during or immediately after emergencies such as floods or earthquakes;
  - (c) When problems or conditions arise that may pose a threat to the integrity of the dam;

- (d) Obtaining routine monitoring data and information;
  - (e) Surficial inspections of low hazard dams.
- (2) No fees shall be charged to the dam owner for nonroutine inspections.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-725, filed 8/4/04, effective 9/4/04.]

#### **WAC 173-175-735 - Inspection at public request.**

- (1) The department may inspect a dam if a complaint from the public is received that states that a dam:
- (a) Impounds ten or more acre-feet of water at the dam crest level; and
  - (b) Is endangering public safety or property, or has been constructed without prior department approval.
- (2) The department shall provide a copy of the written report of findings to the complainant and dam owner.
- (3) The dam owner shall be required to correct any identified safety deficiencies or exigency conditions in a timely manner.
- (4) Dams found to be under construction or recently built without prior approval of the plans and specifications will be subject to enforcement actions as described under WAC 173-175-620(2).
- (5) No fees shall be charged to the dam owner for inspections at public request.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-735, filed 8/4/04, effective 9/4/04.]

#### **WAC 173-175-755 - Periodic inspection fees.**

The department is required by RCW 90.03.470(7) (this citation was previously RCW 90.03.470(8)) to collect in advance a fee based on the actual cost, including the expense incident thereto, of the inspection of any dam to insure safety to life and property. Fee amounts contained in this section represent the department's true estimate of the cost of performing periodic dam safety inspections as described in WAC 173-175-705, and reflect the department's commitment to fully recover all eligible expenses.

[Statutory Authority: Chapters 43.21A and 90.03 RCW. WSR 05-18-039 (Order 05-11), § 173-175-755, filed 8/31/05, effective 10/1/05. Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-755, filed 8/4/04, effective 9/4/04.]

#### **WAC 173-175-765 - Periodic inspection fee schedule.**

- (1) The inspection fee amounts are based on the downstream hazard classification of the dam, as determined by the department. The inspection fees for each five-year

inspection are prorated on an annual basis. The cost for a periodic inspection by the department starting July 1, 2012, will be as follows:

- (a) For dams with high downstream hazard classifications the fee is six thousand forty dollars, with a prorated annual fee of one thousand two hundred eight dollars for a five-year inspection cycle.
  - (b) For dams with significant downstream hazard classifications the fee is four thousand four hundred five dollars, with a prorated annual fee of eight hundred eighty-one dollars if a five-year inspection cycle is implemented, or four hundred forty dollars and fifty cents if a ten-year inspection cycle is implemented.
- (2) Exceptions to periodic inspection fee schedule.
- (a) For any hydraulic works less than ten years old, that the department examined and approved the construction plans and specifications as to its safety when required under RCW 90.03.350, there shall be no fee charged; or
  - (b) For any hydraulic works more than ten years old, but less than twenty years old, that the department examined and approved the construction plans and specifications as to its safety when required under RCW 90.03.350, the fee charged shall equal the fee for a significant hazard dam.
- (3) Inspection fee for impoundments with multiple dams. For reservoirs or impoundments with a main dam and one or more saddle dams, a single annual inspection fee will be charged for the facility. The dam with the highest downstream hazard rating will be used for fee computation.
- (4) Inspection fee for multicell impoundments. For multicell impoundments, such as wastewater lagoons, where two or more cells are located side-by-side or share a common embankment, a single annual inspection fee will be charged for the facility. The cell with the highest downstream hazard classification will be used for fee computation.
- (5) Inspection fee for nonroutine inspections. For nonroutine inspections as described in WAC 173-175-725, no fees will be charged to the dam owner.
- (6) Inspection fee for inspections at public request. For inspections done at public request, as described in WAC 173-175-735, no fees will be charged to the dam owner.

[Statutory Authority: Chapters 43.21A, 43.27A, 86.16, 90.03, 90.28, and 90.54 RCW, RCW 43.135.055 and 2011 1st sp.s. c 50 § 302(2). WSR 12-06-013 (Order 10-09), § 173-175-765, filed 2/27/12, effective 3/29/12. Statutory Authority: Chapters 43.21A and 90.03 RCW. WSR 05-18-039 (Order 05-11), § 173-175-765, filed 8/31/05, effective 10/1/05. Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-765, filed 8/4/04, effective 9/4/04.]

### **WAC 173-175-775 - Periodic inspection fee computation.**

- (1) The department shall charge inspection fees based on the fee schedule contained in WAC 173-175- 765. After July 1st of each year, the department shall publish the adjusted fees by providing notice on its internet site, and by providing written notification by mail or electronic mail to owners of high and significant hazard dams. The inspection fees must be received by the department within forty-five days after the department mails a billing statement.
- (2) Inspection fee computation. Computation of fees shall begin on the first day of each fiscal year. In the case of new dams not previously covered by the inspection program, fee computation begins on the first day of each fiscal year following completion of construction.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-775, filed 8/4/04, effective 9/4/04.]

### **WAC 173-175-785 - Periodic inspection fee payments.**

- (1) The applicable inspection fee shall be paid by check or money order payable to the department of ecology and mailed to the following address:  
Department of Ecology Cashiering Unit  
P.O. Box 47611  
Olympia, Washington 98504-7611.
- (2) In the event a check is returned due to insufficient funds, the department shall consider the inspection fee to be unpaid.
- (3) Delinquent accounts. Dam owners are considered delinquent in the payment of fees if the fees are not received by the first invoice billing due date. Delinquent accounts will be processed in the following manner:
  - (a) Municipal and government entities shall be notified by certified mail that they have one hundred eighty days to bring the delinquent account up-to-date. Regulatory orders may be issued to enforce a restriction of reservoir filling until all delinquent fees are paid on accounts that remain delinquent after ninety days.
  - (b) Nonmunicipal or nongovernment dam owners shall be notified by the department by certified mail that they have one hundred eighty days to bring the delinquent account up-to-date. Accounts that remain delinquent after one hundred eighty days may be turned over for collection. In addition, a surcharge totaling twenty percent of the delinquent amount owed will also be added. The surcharge is to recover the costs for collection. If the collection agency fails to recover the delinquent fees after twelve months, the department may issue regulatory orders to enforce restriction of reservoir filling until all delinquent fees are paid.



[Statutory Authority: Chapters 43.21A, 43.27A, 86.16, 90.03, 90.28, and 90.54 RCW, RCW 43.135.055 and 2011 1st sp.s. c 50 § 302(2). WSR 12-06-013 (Order 10-09), § 173-175-785, filed 2/27/12, effective 3/29/12. Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-785, filed 8/4/04, effective 9/4/04.]

**WAC 173-175-795 - Periodic inspection fees for transfer of ownership or control.**

The department shall charge inspection fees from the dam owner on record with the department. In the event that ownership or control of a dam is transferred, it shall not be the responsibility of the department to transfer funds between a new and previous dam owner, and the department shall not refund fee charges prospectively in the event of a transfer. Fees paid by a previous dam owner shall be deemed to satisfy the corresponding fee payment requirements of a new dam owner. Agreements between a new and previous dam owner are not binding on the department.

[Statutory Authority: RCW 43.21A.064, 43.21A.080, 86.16.061, 90.03.350 and [90.03].470. WSR 04-16-122 (Order 03-08), § 173-175-795, filed 8/4/04, effective 9/4/04.]