Ministry of Agriculture and Forestry, Finland
NB: Unofficial translation; legally binding texts are those in Finnish and Swedish.

Government Decree on Dam Safety
319/2010

Section 1 – *Competence requirements*

(1) A person who designs a dam must have appropriate education and possess sufficient expertise and experience in the design of similar structures.

(2) The staff responsible for the operation of the dam must possess sufficient knowledge and expertise on the circumstances which impact on dam safety, operation of the dam and related safety systems.

Section 2 – *Hydrological dimensioning of a watercourse dam*

(1) A watercourse dam is designed for a water flow which causes the maximum need for discharge. The dimensioning is presented as the annual probability or frequency of flooding which corresponds to such a water flow (*design flood*).

(2) The design flood of a watercourse dam is based on a flood which occurs:
1) in case of class 1 dam, with a probability of 0.02 – 0.01 per cent, that is, once in 5 000 – 10 000 years on average;
2) in case of class 2 dam, with a probability of 0.2 – 0.1 per cent, that is, once in 500 – 1000 years on average;
3) in case of class 3 dam with a probability of 1 – 0.2 per cent, that is, once in 100 – 500 years on average.

(3) A watercourse dam is designed so that during a design flood the water level in the dam basin does not rise above the safe water level when the discharge capacity of the dam excluding the flow through the turbines of the hydropower plant is in operation.

Section 3 – *Hydrological dimensioning of other dams*

(1) The hydrological dimensioning for watercourse dams is used, as applicable, for the hydrological dimensioning of other dams.

(2) The hydrological dimensioning of a flood embankment is specified according to the need for flood protection.

Section 4 – *General technical safety requirements of a dam*

(1) The stability of the structure of a dam and the functioning and dimensions of the structural components must be sufficient to ensure the safety of the dam in all situations of operation.

(2) The discharge gates and other operating equipment of a dam must be functionally reliable. An emergency hoisting system or plan must be in place for the operation of the discharge gates of a dam.

(3) There must be effective transport connections to the dam. The possibility for dam maintenance also in case of flood and dam accidents must be planned and ensured, where necessary. There may be no vegetation or other substances or objects which do not belong to the dam and which may cause damage to the structure of the dam or harm to the maintenance or monitoring of the dam.

(4) The owner of the dam must provide the dam safety authority with the plans of the dam which show how the technical safety requirements of the dam are implemented and how

the raising of the water or other impounded substance takes place when the dam is brought into operation. The owner of the dam must organise the opportunity for the dam safety authority to verify the fulfilment of the technical safety requirements in different stages of the dam construction work.

Section 5 – *Specific technical safety requirements for class 1 and 2 dams*

(1) In addition to the provisions in section 4, the height of a class 1 and 2 dam must be sufficient to ensure the safety of the dam in all situations of operation.

(2) The crest of an embankment dam of class 1 and 2 must be passable to traffic throughout its length.

(3) The provisions of this section do not apply to flood embankments.

Section 6 – *Dam break hazard analysis*

(1) A dam break hazard analysis:

1) describes the spread of water or other impounded substance in case the dam collapses in places where the collapse causes the greatest hazard;
2) determines the maximum coverage of a flood caused by the dam failure (*flood hazard in case of dam failure*);
3) specifies the objects of damage in the flood hazard area;
4) gives an estimate of the damage to the objects of damage caused due to the flow, depth or type of the water or other impounded substance.

(2) Where necessary to establish the class of the dam or prepare the emergency action plan and rescue service plan, the progress of the flood wave must be established by means of relevant calculations using, for example, a terrain model.

Section 7 – *Emergency action plan of a dam*

(1) An emergency action plan of a dam presents the measures to be taken by the owner of the dam:

1) to prevent accidents in case of disturbances as well as to prevent and limit damages at the dam;
2) to protect humans, property and the environment against damage;
3) to report an accident.

(2) The plan also presents the materials and equipment to be kept ready for preventing an accident and the available staff.

(3) In addition, an emergency action plan for a waste dam presents the type of the impounded substance, properties causing hazard, volume, contents, movement and conversion and other special characteristics of the dam.

Section 8 – *Monitoring programme*

(1) A monitoring programme presents the dam monitoring frequency, objects to be monitored and measures relating to monitoring separately for the time when the dam is brought into operation and when it is being operated.

(2) A monitoring programme also presents how the monitoring of a dam is intensified during floods, heavy rainfall, strong winds and other similar specific strains.

Section 9 – *Dam safety arrangements*

(1) The safety of a class 1 and 2 dam shall be ensured by means of:

1) arrangements to ensure the operation of the dam in case of disturbances;
2) warning and other arrangements concerning the discharge of a watercourse dam to prevent danger to those above or below the dam;

3) where necessary, arrangements to prevent damage caused by sabotage or vandalism.

(2) The owner of a dam must prepare and keep up to date a description of safety arrangements and provide this to the dam safety authority if this is not shown in the other documents provided to the dam safety authority.

Section 10 – *Information to be provided to the information system*

(1) The owner of a dam must provide to the information system:

1) permit decisions and other official decisions concerning the dam;
2) information on the hydrological dimensioning of the dam;
3) planning documents concerning the plan which show the realisation of the technical safety requirements when the dam was being constructed and in the alteration and repair works on the dam;
4) dam monitoring programme;
5) dam break hazard analysis, if such an analysis must be prepared for the dam;
6) emergency action plan, if such a plan must be prepared for the dam;
7) description of the safety arrangements, if such a description must be prepared for the dam;
8) periodic inspection data;
9) condition studies prepared on the dam.