

Draft Regulations

Draft Regulation

Dam Safety Act
(chapter S-3.1.01)

Dam safety — Amendment

Notice is hereby given, in accordance with sections 10 and 11 of the Regulations Act (chapter R-18.1), that the Regulation to amend the Dam Safety Regulation, appearing below, may be made by the Government on the expiry of 45 days following this publication.

The main purpose of the draft Regulation is to adjust some requirements applicable to high-capacity dams based on the risk they represent for the safety of persons and property. It also makes a few technical amendments and harmonization amendments.

Study of the matter has shown no negative impact on the public and on enterprises, including small and medium-sized businesses.

Further information may be obtained by contacting Sylvain Paquet, Direction de la sécurité des barrages, Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs, 675, boul. René-Lévesque Est, 5^e étage, Québec (Québec) G1R 5V7; telephone: 418 521-3945, extension 7533; fax: 418 643-4609; email: sylvain.paquet@mddefp.gouv.qc.ca

Any person wishing to comment on the draft Regulation is requested to submit written comments within the 45-day period to Michel Rhéaume, Director, Direction de la sécurité des barrages, Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs, 675, boul. René-Lévesque Est, 5^e étage, Québec (Québec) G1R 5V7.

YVES-FRANÇOIS BLANCHET,
*Minister of Sustainable Development, Environment,
Wildlife and Parks*

Regulation to amend the Dam Safety Regulation

Dam Safety Act
(chapter S-3.1.01, ss. 6, 14, 15, 16, 17, 19, 20, 21, 24, 29,
31, 36 and 37)

1. The Dam Safety Regulation (chapter S-3.1.01, r. 1) is amended by replacing section 21 by the following:

“**21.** Subject to the provisions of sections 21.1, 22 and 24, every dam must be able to withstand any of the following safety check floods, according to its dam failure consequence category:

Dam failure consequence category	Safety Check Flood
Very low or low	Centennial (1 : 100 years)
Moderate or high	Millennial (1 : 1,000 years)
Very high	Decamillennial (1 : 10,000 years)
Severe	Probable maximum flood

21.1. A dam's safety check flood may be less than that established under section 21, without being less than the centennial flood, if an engineer certifies that a dam failure during such a flood would cause a consequence category lower than the dam failure consequence category.

The engineer's certificate must be sent to the Minister, together with the study on which the engineer's conclusions are based.”.

2. Section 22 is amended

(1) by replacing “subject to sections 23 and 24” in the part preceding subparagraph 1 of the first paragraph by “subject to section 24”;

(2) by replacing “under section 21” in subparagraph 1 of the first paragraph by “under section 21 or 21.1”;

(3) by replacing the third paragraph by the following:

“This section does not apply to a dam whose failure consequence category is “very low” or “low”.”.

3. Section 23 is revoked.

4. Section 24 is amended by replacing “under section 21, 22 or 23” by “under section 21, 21.1 or 22”.

5. Section 28 is amended by adding the following paragraph at the end:

“This section does not apply to a dam whose failure consequence category is “very low” or “low”.”.

6. Section 29 is replaced by the following:

“**29.** Calculations regarding the structural and foundation seismic stability of a dam must be done on the basis of a return period of 2,500 years and by using either of the following peak ground acceleration values:

(1) the value which, under Schedule I, corresponds to the seismic zone in which the dam is located;

(2) the value which, with regard to the location of the dam, may be determined from the seismic data established by the Geological Survey of Canada.”.

7. Section 34 is replaced by the following:

“**34.** The provisions of this subdivision do not apply to Class E dams.

They do not apply either to dams in other classes in the following cases:

- (1) the only discharge facility of the dam is a free weir;
- (2) an engineer certifies that it is not necessary to manoeuvre the dam discharge facilities during floods.

The engineer’s certificate referred to in subparagraph 2 of the first paragraph must be sent to the Minister, together with the study on which the engineer’s conclusions are based.”.

8. Section 42 is replaced by the following:

“**42.** Every dam must, according to its class, be the subject of the minimum number of inspections indicated in the table below in accordance with the frequency mentioned therein:

Type of inspection	Number and frequency of inspections according to the dam’s class				
	A	B	C	D	E
Site	12/year	6/year	3/year	2/year	1/year
Regular	4/year	3/year	2/year	-----	-----
Formal	1/year	1/2 years	1/5 years	1/8 years	1/10 years

For the purposes of the table in the first paragraph, a formal inspection counts as a regular inspection and as a site inspection for the year in which the formal inspection is carried out. Likewise, a regular inspection counts as a site inspection.

Inspections that must be carried out yearly must be spread as evenly as possible over the 12 months of the year.”.

9. The first 3 paragraphs of section 45 are replaced by the following:

“**45.** The site inspections and regular inspections of a dam may be carried out by an engineer, a civil-engineering technician or one of the following persons:

(1) in the case of a Class A or Class B dam, by the owner of the dam or by any person designated by the owner, provided that the inspection is carried out under the supervision of an engineer or civil-engineering technician;

(2) in the case of a Class C, Class D or Class E dam, by the owner of the dam or by any person designated by the owner.”.

10. Section 48 is amended

(1) by replacing “The purpose of a dam safety review is to evaluate the safety, stability and functionality of a dam” in the part preceding paragraph 1 by “In the case of a dam whose failure consequence category is equal to or greater than “moderate”, the purpose of a dam safety review is to evaluate the condition, stability and functionality of the dam”;

(2) by inserting the following after paragraph 3:

“(3.1) analyzing the topography of the reservoir rim with respect to the dam’s safety check flood and, if applicable, determining the low points on that rim;”;

(3) by replacing subparagraph *b* of paragraph 4 by the following:

“(b) validation of the dam failure consequence category;”;

(4) by replacing “Subdivision 1 of Division III” in paragraph 5 by “Subdivision 1 of Division III of Chapter III”.

11. Section 49 is amended

(1) by inserting “referred to in section 48” in the part preceding subparagraph 1 of the first paragraph after “review”;

(2) by inserting the following after subparagraph 5 of the first paragraph:

“(5.1) the opinion of the engineer in charge on the liquefaction potential of the dam and its foundation and the data on which that opinion is based;”;

(3) by replacing subparagraphs 7 to 9 of the first paragraph by the following:

“(7) if applicable, the recommendations of the engineer in charge on the erosion potential of the low points on the reservoir rim;

(8) if applicable, the recommendations of the engineer in charge in respect of the remedial measures that, considering in particular the elements listed in section 48, must be implemented to ensure that the dam is safe and complies with good practice and with the minimum safety standards and the engineer’s opinion on the time required to implement those measures;

(9) if applicable, the opinion of the engineer in charge on the temporary measures and work required to ensure the dam’s safety until the remedial work is carried out;

(10) the recommendations of the engineer in charge in respect of the class and dam failure consequence category that should apply to the dam, together with, as the case may be, the dam failure analysis, rough inundation maps or characterization of the area referred to in section 18.”.

12. The following is inserted after section 49:

“**49.0.1.** The safety review of a dam whose failure consequence category is “very low” or “low” must include

(1) checking the dam’s condition by means of a visual inspection of its structure;

(2) checking the functionality and reliability of the discharge facilities;

(3) checking the dam’s discharge capacity, including a review of the hydrologic and hydraulic data and assumptions with respect to the dam’s safety check flood;

(4) if, on the reservoir rim, there are other dams whose failure consequence category is equal to or greater than “moderate”, checking the dam’s stability with regard to the its safety check flood;

(5) a topographic analysis of the reservoir rim with respect to the safety check flood and, if applicable, the determination of the low points on that rim;

(6) reviewing the dam’s classification, including

(a) validation of the parameters used to determine the vulnerability of the dam, in particular, the dam age, condition and reliability of discharge facilities; and

(b) validation of the dam failure consequence category; and

(7) reviewing the impounded water management plan if, under Subdivision 1 of Division III of Chapter III, such a plan is required for the dam to be constructed.

The report documenting the dam safety review must include

(1) the opinion of the engineer in charge on the dam’s condition;

(2) the opinion of the engineer in charge on the functionality and reliability of discharge facilities;

(3) the opinion of the engineer in charge on the discharge capacity of the dam with respect to its safety check flood;

(4) if, on the reservoir rim, there are other dams whose failure consequence category is equal to or greater than “moderate”, the opinion of the engineer in charge on the dam’s stability with regard to its safety check flood;

(5) if applicable, the recommendations of the engineer in charge with respect to the erosion potential of the low points on the reservoir rim;

(6) if applicable, the recommendations of the engineer in charge in respect of the remedial measures that, considering in particular the elements listed in the first paragraph, must be implemented to ensure that the dam is safe and complies with good practice and with the minimum safety standards and the engineer’s opinion on the time required to implement those measures;

(7) if applicable, the opinion of the engineer in charge on the temporary measures and work required to ensure the dam's safety until the work to implement the remedial measures is carried out;

(8) the recommendations of the engineer in charge in respect of the class and dam failure consequence category that should apply to the dam, together with, as the case may be, the dam failure analysis, rough inundation maps or characterization of the area referred to in section 18.

The report must also include the information referred to in subparagraphs 1 to 4 and 6 of the second paragraph of section 49.”

13. Section 54 is amended by inserting “of Chapter III” in subparagraph 2 of the first paragraph after “Division III”.

14. Section 57 is amended

(1) by replacing “Division III” in subparagraph 3 of the first paragraph by “Division III of Chapter III”;

(2) by inserting “of Chapter III” in subparagraph 4 of the first paragraph after “Division III”;

(3) by replacing subparagraphs 6 and 7 of the first paragraph by the following :

“(6) seismic stability calculations for the dam to be constructed, unless the dam failure consequence category is “very low” or “low”;

(6.1) the opinion of the engineer in charge on the liquefaction potential of the dam and its foundation and the data on which that opinion is based, unless the dam failure consequence category is “very low” or “low”;

(7) a topographic analysis of the reservoir rim with respect to the safety check flood of the dam and, if applicable, the determination of the low points on that rim;”.

15. Section 58 is amended

(1) by replacing subparagraphs 2 and 3 of the first paragraph by the following :

“(2) seismic stability calculations for the proposed dam, unless the dam failure consequence category is “very low” or “low”;

(2.1) the opinion of the engineer in charge on the liquefaction potential of the dam and its foundation and the data on which that opinion is based, unless the dam failure consequence category is “very low” or “low”;

(3) a topographic analysis of the reservoir rim with respect to the safety check flood of the dam and, if applicable, the determination of the low points on that rim;”;

(2) by inserting “of Chapter III” in subparagraph 4 of the first paragraph after “Division III”;

(3) by inserting “of Chapter III” in subparagraph 2 of the second paragraph after “Division III”.

16. Section 60 is amended by inserting “of Chapter III” in paragraph 4 after “Division III”.

17. Section 78 is amended

(1) by replacing “10 years” in subparagraph 1 of the fourth paragraph by “13 years”;

(2) by replacing “12 years” in subparagraph 2 of the fourth paragraph by “15 years”;

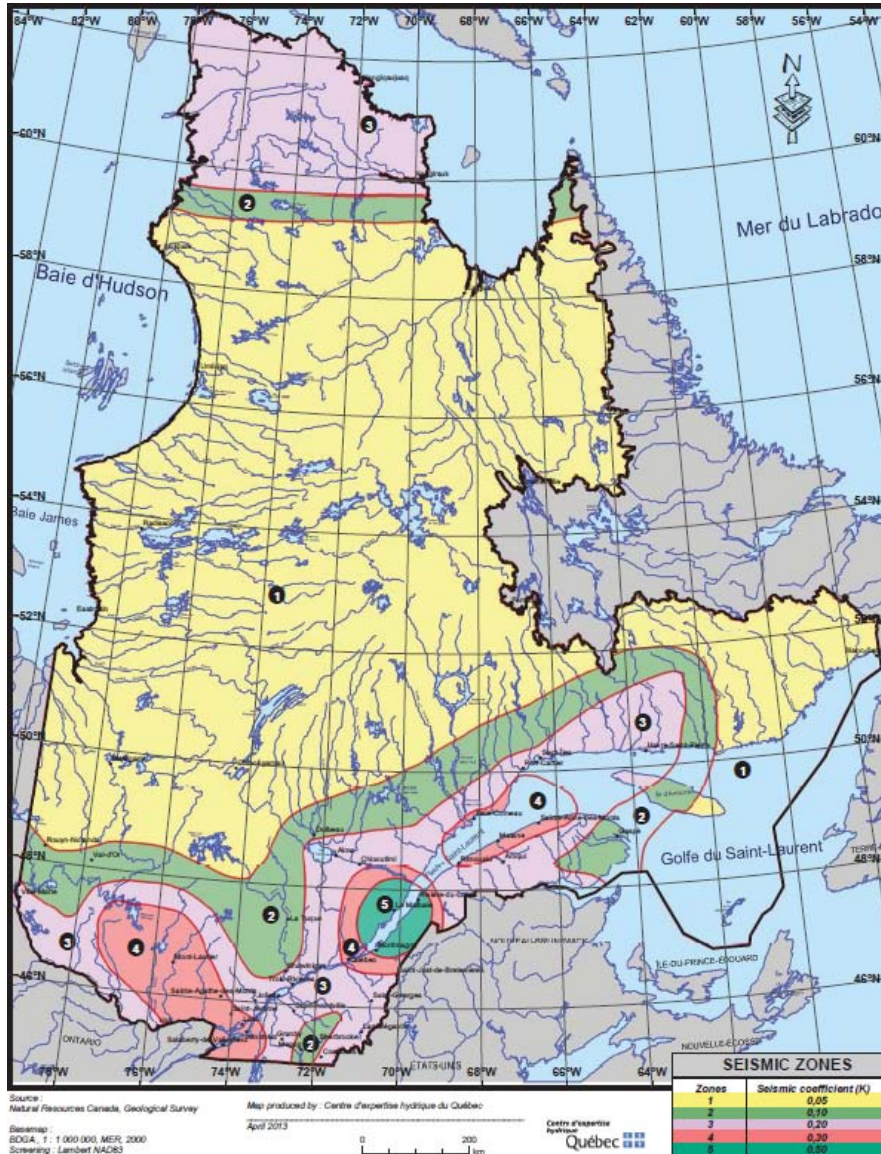
(3) by replacing “16 years” in subparagraph 1 of the fifth paragraph by “18 years”;

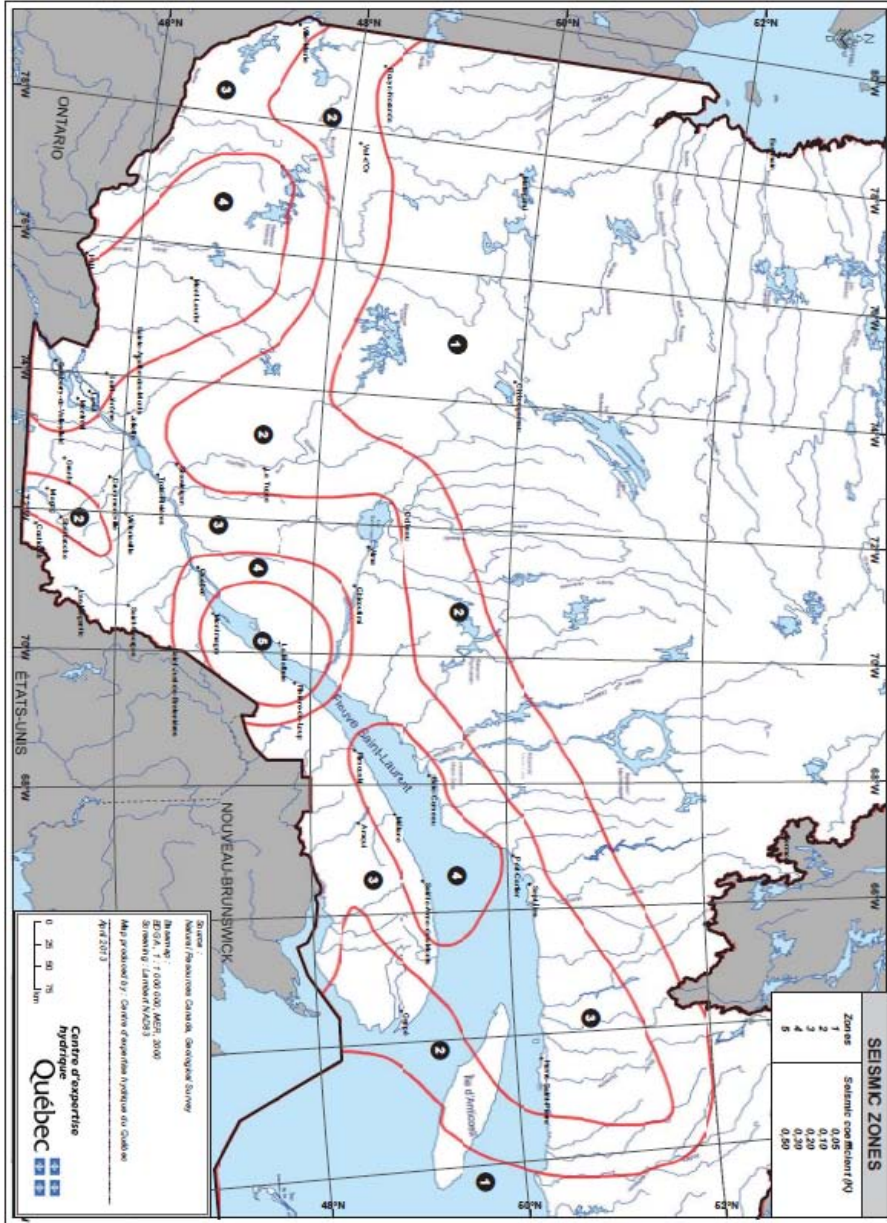
(4) by replacing “18 years” in subparagraph 2 of the fifth paragraph by “20 years”;

18. Schedule I to the Regulation is replaced by the following :

“**SCHEDULE I**
(ss. 5, 14 and 29)

SEISMIC ZONES





19. This Regulation comes into force on the fifteenth day following the date of its publication in the *Gazette officielle du Québec*.