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**State of Vermont
Public Utility Commission**

MEMORANDUM

To: #22-4420-RULE - Proposed Revisions to Vermont Public Utility Commission Rule 4.500 (Dam Safety)

From: Holly R. Anderson, Clerk of the Commission ^{HRA}

Re: Filing with Vermont Secretary of State

Date: December 30, 2022

On December 7, 2022, the Vermont Public Utility Commission (“Commission”), pursuant to 3 V.S.A. § 838, filed the attached proposed rule revision and filing documents with the Vermont Secretary of State.

The Secretary of State’s proposed rule posting can be reviewed at the following link: <https://secure.vermont.gov/SOS/rules/index.php>.

The proposed rule and filing documents are also available in the Commission’s electronic case management system (“ePUC”) at the following link <https://epuc.vermont.gov/> in case number #22-4420-RULE. You may access documents in ePUC without creating an ePUC user account. If you would like to create an account, more information about how to create an ePUC user account and how to use ePUC, including short instructional videos and recordings of online training sessions, is available on the Commission’s website at <https://puc.vermont.gov/>.

The Commission will convene a public hearing as part of the rulemaking process. The public hearing will take place on Tuesday, January 17, 2023, via Go To Meeting videoconference, commencing at 2:30 P.M. The purpose of this hearing is to provide a forum for members of the public to provide input to the Commission regarding the proposed rule revisions.

Participants and members of the public may access the public hearing and information session online at <https://meet.goto.com/408610061> or call in by telephone using the following information: phone number: + 1 (571) 317-3116; access code: 408-610-061. Participants may wish to download the GoToMeeting software application in advance of the hearing at <https://meet.goto.com/install>. Guidance on how to join the meeting and system requirements may be found at <https://www.gotomeeting.com/meeting/online-meeting-support>.

The deadline for filing written comments on the proposed rule is January 25, 2023. Comments may be filed into the rulemaking case, #22-4420-RULE, in ePUC, emailed to the Clerk of the Commission (puc.clerk@vermont.gov), or mailed to the following address:

Holly R. Anderson
Clerk of the Commission
112 State Street
Montpelier, Vermont 05620-2701

Proposed Filing - Coversheet

Instructions:

In accordance with Title 3 Chapter 25 of the Vermont Statutes Annotated and the “Rule on Rulemaking” ([CVR 04-000-001](#)) adopted by the Office of the Secretary of State, this filing will be considered complete upon filing and acceptance of these forms and enclosures with the Office of the Secretary of State, and the Legislative Committee on Administrative Rules.

All forms shall be submitted to the Office of the Secretary of State, no later than 3:30 pm on the last scheduled day of the work week.

The data provided in text areas of Proposed Filing Coversheet will be used to generate a notice of rulemaking in the portal of “Proposed Rule Postings” online, and the newspapers of record. Publication of notices will be charged back to the promulgating agency.

**PLEASE REMOVE ANY COVERSHEET OR FORM NOT
REQUIRED WITH THE CURRENT FILING BEFORE DELIVERY!**

Certification Statement: As the adopting Authority of this rule (see 3 V.S.A. § 801 (b) (11) for a definition), I approve the contents of this filing entitled:

Rule 4.500 Safety of Hydroelectric Dams

/s/ Anthony Z. Roisman
(signature)

_____, on 12-6-2022
(date)

Printed Name and Title:

Anthony Z. Roisman, Chair
Vermont Public Utility Commission

RECEIVED BY: _____

- Coversheet
- Adopting Page
- Economic Impact Analysis
- Environmental Impact Analysis
- Strategy for Maximizing Public Input
- Scientific Information Statement (if applicable)
- Incorporated by Reference Statement (if applicable)
- Clean text of the rule (Amended text without annotation)
- Annotated text (Clearly marking changes from previous rule)
- ICAR Filing Confirmed

1. TITLE OF RULE FILING:

Rule 4.500 Safety of Hydroelectric Dams

2. ADOPTING AGENCY:

Vermont Public Utility Commission

3. PRIMARY CONTACT PERSON:

(A PERSON WHO IS ABLE TO ANSWER QUESTIONS ABOUT THE CONTENT OF THE RULE).

Name: Micah Howe

Agency: Vermont Public Utility Commission

Mailing Address: 112 State Street, Montpelier, VT 05620

Telephone: (802) 238-2358 Fax:

E-Mail: micah.howe@vermont.gov

Web URL *(WHERE THE RULE WILL BE POSTED)*:

<https://puc.vermont.gov/about-us/statutes-and-rules>

4. SECONDARY CONTACT PERSON:

(A SPECIFIC PERSON FROM WHOM COPIES OF FILINGS MAY BE REQUESTED OR WHO MAY ANSWER QUESTIONS ABOUT FORMS SUBMITTED FOR FILING IF DIFFERENT FROM THE PRIMARY CONTACT PERSON).

Name: Elizabeth Schilling

Agency: Vermont Public Utility Commission

Mailing Address: 112 State Street, Montpelier, VT 05620

Telephone: (802) 828-2358 Fax:

E-Mail: elizabeth.schilling@vermont.gov

5. RECORDS EXEMPTION INCLUDED WITHIN RULE:

(DOES THE RULE CONTAIN ANY PROVISION DESIGNATING INFORMATION AS CONFIDENTIAL; LIMITING ITS PUBLIC RELEASE; OR OTHERWISE, EXEMPTING IT FROM INSPECTION AND COPYING?) No

IF YES, CITE THE STATUTORY AUTHORITY FOR THE EXEMPTION:

PLEASE SUMMARIZE THE REASON FOR THE EXEMPTION:

6. LEGAL AUTHORITY / ENABLING LEGISLATION:

(THE SPECIFIC STATUTORY OR LEGAL CITATION FROM SESSION LAW INDICATING WHO THE ADOPTING ENTITY IS AND THUS WHO THE SIGNATORY SHOULD BE. THIS SHOULD BE A SPECIFIC CITATION NOT A CHAPTER CITATION).

30 V.S.A. § 2(c); 10 V.S.A. § 1081

7. EXPLANATION OF HOW THE RULE IS WITHIN THE AUTHORITY OF THE AGENCY:

Section 2(c) of Title 30 of the Vermont Statutes Annotated allows the Vermont Public Utility Commission ("Commission") to initiate rulemaking proceedings on issues within its jurisdiction. Section 1081 of Title 10 of the Vermont Statutes Annotated gives the Commission jurisdiction over nonfederal dams and projects that relate to or are incident to the generation of electric energy for public use or as a part of a public utility system.

8. CONCISE SUMMARY (150 WORDS OR LESS):

The proposed revisions to Commission Rule 4.500 (Safety of Hydroelectric Dams) update the hazard classification definitions and assessment guidance for dams within the Commission's jurisdiction to coordinate with the definitions and assessment guidance in the Agency of Natural Resources' ("ANR") Dam Safety Rule (20P006), adopted August 1, 2020.

9. EXPLANATION OF WHY THE RULE IS NECESSARY:

The Commission and ANR have split jurisdiction over dams in the State. The Commission has jurisdiction over non-federal power producing dams, while ANR has jurisdiction over non-power producing and state-owned dams. On August 1, 2020, ANR adopted its Dam Safety Rule as required by Act 161 of 2018. Like Commission Rule 4.500, ANR's rule categorizes dams under its jurisdictions using hazard classifications that, among other things, dictate the safety inspection frequencies required for the dams. On February 11, 2022, the State Auditor released a report on ANR's dam safety program, noting a discrepancy between the hazard classification definitions applied by ANR and the Commission. The Auditor recommended that the Commission update the hazard classification definitions in its dam safety rule to match the classifications in ANR's rule, which are more protective of public safety.

10. EXPLANATION OF HOW THE RULE IS NOT ARBITRARY AS DEFINED IN 3 V.S.A. § 801(b)(13)(A):

The proposed revisions to Commission Rule 4.500 change the hazard classification definitions to match ANR's Dam Safety Rule, resulting in consistent application of hazard classifications to Vermont dams by ANR and the Commission.

**11. LIST OF PEOPLE, ENTERPRISES AND GOVERNMENT ENTITIES
AFFECTED BY THIS RULE:**

Owners of Vermont dams that are subject to Commission jurisdiction.

Members of the public in areas surrounding Commission-regulated dams.

12. BRIEF SUMMARY OF ECONOMIC IMPACT (150 WORDS OR LESS):

Although all owners of the 22 Vermont dams under the Commission's jurisdiction will be subject to the revised rule, most will not see any economic impact due to the revised hazard classifications. The proposed revisions could result in four dams under Commission jurisdiction currently classified as "significant" hazards being reclassified as "high" hazard dams. A dam classified as "high" hazard is subject to a safety inspection interval of five years, rather than the 10-year safety inspection interval for "significant" hazard dams. If a dam is reclassified from significant to high hazard, the dam owners will incur inspections costs every five years rather than every 10 years (Green Mountain Power Corporation, Coaticook River Water Power Company, and the Carthusian Foundation).

13. A HEARING IS SCHEDULED .

IF A HEARING WILL NOT BE SCHEDULED, PLEASE EXPLAIN WHY.

14. HEARING INFORMATION

(THE FIRST HEARING SHALL BE NO SOONER THAN 30 DAYS FOLLOWING THE POSTING OF NOTICES ONLINE).

IF THIS FORM IS INSUFFICIENT TO LIST THE INFORMATION FOR EACH HEARING, PLEASE ATTACH A SEPARATE SHEET TO COMPLETE THE HEARING INFORMATION NEEDED FOR THE NOTICE OF RULEMAKING.

Date: 1/17/2023

Time: 02:30 PM

Street Address: <https://meet.goto.com/408610061> OR call
1 (571) 317-3116 and enter Pin # 408-610-061

Zip Code:

Date:

Time: AM

Street Address:

Zip Code:

Date:

Time: AM

Street Address:

Zip Code:

Date:

Time: AM

Street Address:

Zip Code:

15. DEADLINE FOR COMMENT (NO EARLIER THAN 7 DAYS FOLLOWING LAST HEARING): 01/25/2023

16. KEYWORDS (PLEASE PROVIDE AT LEAST 3 KEYWORDS OR PHRASES TO AID IN THE SEARCHABILITY OF THE RULE NOTICE ONLINE).

Vermont Public Utility Commission

Dam

Hazard Classification

Adopting Page

Instructions:

This form must accompany each filing made during the rulemaking process:

Note: To satisfy the requirement for an annotated text, an agency must submit the entire rule in annotated form with proposed and final proposed filings. Filing an annotated paragraph or page of a larger rule is not sufficient. Annotation must clearly show the changes to the rule.

When possible, the agency shall file the annotated text, using the appropriate page or pages from the Code of Vermont Rules as a basis for the annotated version. New rules need not be accompanied by an annotated text.

1. TITLE OF RULE FILING:

Rule 4.500 Safety of Hydroelectric Dams

2. ADOPTING AGENCY:

Vermont Public Utility Commission

3. TYPE OF FILING (*PLEASE CHOOSE THE TYPE OF FILING FROM THE DROPDOWN MENU BASED ON THE DEFINITIONS PROVIDED BELOW*):

- **AMENDMENT** - Any change to an already existing rule, even if it is a complete rewrite of the rule, it is considered an amendment if the rule is replaced with other text.
- **NEW RULE** - A rule that did not previously exist even under a different name.
- **REPEAL** - The removal of a rule in its entirety, without replacing it with other text.

This filing is **AN AMENDMENT OF AN EXISTING RULE** .

4. LAST ADOPTED (*PLEASE PROVIDE THE SOS LOG#, TITLE AND EFFECTIVE DATE OF THE LAST ADOPTION FOR THE EXISTING RULE*):

SOS Log#86-73; 4.500 Safety of Hydroelectric Dams;
January 8, 1990, (December 2017, agency name change
from Public Service Board).

Economic Impact Analysis

Instructions:

In completing the economic impact analysis, an agency analyzes and evaluates the anticipated costs and benefits to be expected from adoption of the rule; estimates the costs and benefits for each category of people enterprises and government entities affected by the rule; compares alternatives to adopting the rule; and explains their analysis concluding that rulemaking is the most appropriate method of achieving the regulatory purpose. If no impacts are anticipated, please specify “No impact anticipated” in the field.

Rules affecting or regulating schools or school districts must include cost implications to local school districts and taxpayers in the impact statement, a clear statement of associated costs, and consideration of alternatives to the rule to reduce or ameliorate costs to local school districts while still achieving the objectives of the rule (see 3 V.S.A. § 832b for details).

Rules affecting small businesses (excluding impacts incidental to the purchase and payment of goods and services by the State or an agency thereof), must include ways that a business can reduce the cost or burden of compliance or an explanation of why the agency determines that such evaluation isn’t appropriate, and an evaluation of creative, innovative or flexible methods of compliance that would not significantly impair the effectiveness of the rule or increase the risk to the health, safety, or welfare of the public or those affected by the rule.

1. TITLE OF RULE FILING:

Rule 4.500 Safety of Hydroelectric Dams

2. ADOPTING AGENCY:

Vermont Public Utility Commission

3. CATEGORY OF AFFECTED PARTIES:

LIST CATEGORIES OF PEOPLE, ENTERPRISES, AND GOVERNMENTAL ENTITIES POTENTIALLY AFFECTED BY THE ADOPTION OF THIS RULE AND THE ESTIMATED COSTS AND BENEFITS ANTICIPATED:

Owners of Vermont dams that are subject to Commission jurisdiction.

4. IMPACT ON SCHOOLS:

INDICATE ANY IMPACT THAT THE RULE WILL HAVE ON PUBLIC EDUCATION, PUBLIC SCHOOLS, LOCAL SCHOOL DISTRICTS AND/OR TAXPAYERS CLEARLY STATING ANY ASSOCIATED COSTS:

The amended rule will not have any impact on public education, public schools, local school districts, or taxpayers.

5. **ALTERNATIVES:** *CONSIDERATION OF ALTERNATIVES TO THE RULE TO REDUCE OR AMELIORATE COSTS TO LOCAL SCHOOL DISTRICTS WHILE STILL ACHIEVING THE OBJECTIVE OF THE RULE.*

None. The amended rule will not impose costs on schools.

6. **IMPACT ON SMALL BUSINESSES:**

INDICATE ANY IMPACT THAT THE RULE WILL HAVE ON SMALL BUSINESSES (EXCLUDING IMPACTS INCIDENTAL TO THE PURCHASE AND PAYMENT OF GOODS AND SERVICES BY THE STATE OR AN AGENCY THEREOF):

The proposed amended rule includes new hazard classification definitions, which could result in the reclassification of some dams and, as a result, increase safety inspection costs for small businesses that own Vermont dams under the Commission's jurisdiction. Regular safety inspections are an essential component of dam safety program and costs vary widely depending on the complexity of the dam facility. Any costs resulting from increased inspection frequencies will be minor and spread over time, with inspection frequencies increasing from once every 10 years to once every five years for dams reclassified from significant to high hazard. The Commission estimates that less than five dams could potentially be reclassified, only two of which may be owned by small businesses. Any effect on utility rates will be negligible due to the limited scope of the rule change.

7. **SMALL BUSINESS COMPLIANCE:** *EXPLAIN WAYS A BUSINESS CAN REDUCE THE COST/BURDEN OF COMPLIANCE OR AN EXPLANATION OF WHY THE AGENCY DETERMINES THAT SUCH EVALUATION ISN'T APPROPRIATE.*

If a dam is reclassified into a higher hazard class due to the new definitions, the dam owner must abide by the dam safety inspection requirements. The proposed amended hazard classification definitions will align the Commission's definitions with ANR's recently adopted definitions and modern dam safety practices, resulting in consistent classification of dams in

Vermont and increased public safety as recommended by the State Auditor and a report from the American Society of Civil Engineers.

8. COMPARISON:

COMPARE THE IMPACT OF THE RULE WITH THE ECONOMIC IMPACT OF OTHER ALTERNATIVES TO THE RULE, INCLUDING NO RULE ON THE SUBJECT OR A RULE HAVING SEPARATE REQUIREMENTS FOR SMALL BUSINESS:

Updating the hazard classifications in Commission Rule 4.500 will remove an inconsistency between the hazard classification definitions applied by the Commission and ANR to dams within their respective jurisdictions, but could potentially result in increased dam safety inspection costs for a small number of dam owners. The additional costs associated with those inspections will provide a public safety benefit and increase the safety of the affected dams. Not updating the hazard classifications would avoid any additional inspection costs, but would maintain the inconsistency in the State's regulation of dams and the public safety risks that could result from the Commission's less stringent hazard classification definitions.

9. SUFFICIENCY: *DESCRIBE HOW THE ANALYSIS WAS CONDUCTED, IDENTIFYING RELEVANT INTERNAL AND/OR EXTERNAL SOURCES OF INFORMATION USED.*

The Commission reviewed the Auditor's report, ANR's hazard classification definition, and the Commission's database of Commission-regulated dams and their hazard classifications. The database shows that four dams regulated by the Commission are classified as "significant" hazards. The proposed revisions to the hazard classification definitions result in a more stringent "significant" hazard classification definition. The Commission's current definition allows dams with risks from failure that include "few" losses of life to qualify as "significant" hazard dams. Under the proposed revised definition, only dams that have no probable loss of life will qualify as "significant" hazards. If a dam "will probably cause loss of human life," it will be classified as a "high" hazard dam and will be subject to more frequent safety inspection requirements.

Environmental Impact Analysis

Instructions:

In completing the environmental impact analysis, an agency analyzes and evaluates the anticipated environmental impacts (positive or negative) to be expected from adoption of the rule; compares alternatives to adopting the rule; explains the sufficiency of the environmental impact analysis. If no impacts are anticipated, please specify “No impact anticipated” in the field.

Examples of Environmental Impacts include but are not limited to:

- Impacts on the emission of greenhouse gases
- Impacts on the discharge of pollutants to water
- Impacts on the arability of land
- Impacts on the climate
- Impacts on the flow of water
- Impacts on recreation
- Or other environmental impacts

1. TITLE OF RULE FILING:

Rule 4.500 Safety of Hydroelectric Dams

2. ADOPTING AGENCY:

Vermont Public Utility Commission

3. GREENHOUSE GAS: *EXPLAIN HOW THE RULE IMPACTS THE EMISSION OF GREENHOUSE GASES (E.G. TRANSPORTATION OF PEOPLE OR GOODS; BUILDING INFRASTRUCTURE; LAND USE AND DEVELOPMENT, WASTE GENERATION, ETC.):*

None.

4. WATER: *EXPLAIN HOW THE RULE IMPACTS WATER (E.G. DISCHARGE / ELIMINATION OF POLLUTION INTO VERMONT WATERS, THE FLOW OF WATER IN THE STATE, WATER QUALITY ETC.):*

None. This rule is about dam safety, not water quality. Dam-related water quality issues are regulated under 10 V.S.A. 1082 and 1086. Section 1086 requires that the Commission include all conditions that the Vermont Agency of Natural Resources determines are necessary for the attainment of water quality

standards in any orders the Commission issues under section 1082.

5. **LAND:** *EXPLAIN HOW THE RULE IMPACTS LAND (E.G. IMPACTS ON FORESTRY, AGRICULTURE ETC.):*

None.

6. **RECREATION:** *EXPLAIN HOW THE RULE IMPACT RECREATION IN THE STATE:*

None.

7. **CLIMATE:** *EXPLAIN HOW THE RULE IMPACTS THE CLIMATE IN THE STATE:*

None.

8. **OTHER:** *EXPLAIN HOW THE RULE IMPACT OTHER ASPECTS OF VERMONT'S ENVIRONMENT:*

None.

9. **SUFFICIENCY:** *DESCRIBE HOW THE ANALYSIS WAS CONDUCTED, IDENTIFYING RELEVANT INTERNAL AND/OR EXTERNAL SOURCES OF INFORMATION USED.*

The Commission reviewed the Auditor's report, ANR's hazard classification definition, and the Commission's database of Commission-regulated dams and their hazard classifications. The proposed amended rule will only affect the safety classification of existing dams in Vermont that are regulated by the Commission; it will not affect the environmental regulations applicable to that dam. If the amended rule results in the reclassification of a dam, it will increase the frequency of safety inspections but will not otherwise change the operation of the dam or hydroelectric facilities.

Public Input Maximization Plan

Instructions:

Agencies are encouraged to hold hearings as part of their strategy to maximize the involvement of the public in the development of rules. Please complete the form below by describing the agency's strategy for maximizing public input (what it did do, or will do to maximize the involvement of the public).

This form must accompany each filing made during the rulemaking process:

1. TITLE OF RULE FILING:

Rule 4.500 Safety of Hydroelectric Dams

2. ADOPTING AGENCY:

Vermont Public Utility Commission

3. PLEASE DESCRIBE THE AGENCY'S STRATEGY TO MAXIMIZE PUBLIC INVOLVEMENT IN THE DEVELOPMENT OF THE PROPOSED RULE, LISTING THE STEPS THAT HAVE BEEN OR WILL BE TAKEN TO COMPLY WITH THAT STRATEGY:

The Commission will hold a public hearing on the proposed rule. Since individuals across the State may have an interest in this rule, the public hearing will be held virtually to maximize public participation.

4. BEYOND GENERAL ADVERTISEMENTS, PLEASE LIST THE PEOPLE AND ORGANIZATIONS THAT HAVE BEEN OR WILL BE INVOLVED IN THE DEVELOPMENT OF THE PROPOSED RULE:

The Commission has provided notice of the proposed rule changes to the owners of dams subject to Commission regulation and other parties that have participated in the Commission's dam-related proceedings. The proposed rule adopts the hazard classifications contained in ANR's Dam Safety Rule and ANR is aware that the Commission is working on adopting its hazard classification definitions.

4.500 SAFETY OF HYDROELECTRIC DAMS

4.510 Size and Hazard Classifications

(A) Dams shall be categorized by size. The size category shall be determined by height or storage, whichever gives the larger size category. The height of a dam and its storage shall both be established with respect to its maximum storage potential, measured from the natural bed of the water course to the maximum water storage elevation. For the purpose of determining size category, the maximum water storage elevation shall be considered to be the height above streambed as defined in section 4.521(B).

Category	Storage (ac-ft)	Height (ft)
SMALL	<1,000	<40
MEDIUM	≥1,000 and <50,000	≥40 and <100
LARGE	≥50,000	≥100

(B) Dams shall also be classified by hazard potential. The hazard potential classification of a dam pertains to potential loss of human life or property damage in the area downstream of the dam in the event of failure of the dam.

<u>Classification</u>	<u>General Definition</u>
<u>HIGH</u>	<u>Dams where failure or mis-operation will probably cause loss of human life.</u>
<u>SIGNIFICANT</u>	<u>Dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environment damage, disruption of lifeline facilities, or other impacts. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.</u>
<u>LOW</u>	<u>Dams where failure or mis-operation results in no probable loss of human life and low economic and environmental losses.</u>
<u>MINIMAL</u>	<u>A dam that meets the “low” hazard definition, above, but is only capable of impounding less than 500,000 cubic feet.</u>

The following additional guidance is provided and shall apply to dams subject to this rule:

<u>Classification</u>	<u>Loss Categories</u>	<u>Criteria</u>
<u>HIGH</u>	<u>Direct Loss of Life</u>	<u>Probable or Certain (one or more) (extensive downstream residential, commercial, or industrial development)</u>
	<u>Property Losses</u>	<u>Not considered for this classification</u>
	<u>Lifeline Losses</u>	<u>Not considered for this classification</u>
	<u>Environmental Losses</u>	<u>Not considered for this classification</u>
<u>SIGNIFICANT</u>	<u>Direct Loss of Life</u>	<u>None expected</u>
	<u>Property Losses</u>	<u>Major or extensive public and private facilities</u>
	<u>Lifeline Losses</u>	<u>Disruption of essential or critical facilities and access</u>
	<u>Environmental Losses</u>	<u>Major or extensive mitigation required or impossible to mitigate</u>
<u>LOW</u>	<u>Direct Loss of Life</u>	<u>None expected</u>
	<u>Property Losses</u>	<u>Private agricultural lands, equipment and isolated non-occupied buildings, non-major roads.</u>
	<u>Lifeline Losses</u>	<u>No disruption of services – repairs are -cosmetic or rapidly repairable damage</u>
	<u>Environmental Losses</u>	<u>Minimal incremental damage</u>
<u>MINIMAL</u>		<u>Same as LOW hazard, above</u>

<u>Hazard</u>	<u>Potential</u>	<u>Potential</u>
<u>Class</u>	<u>Loss of Life</u>	<u>Economic Loss</u>
<u>Minimal</u>	<u>None expected</u>	<u>None expected</u>
<u>Low</u>	<u>None expected (no permanent structures for human habitation)</u>	<u>Minimal (undeveloped to occasional structures or agriculture)</u>
<u>Significant</u>	<u>Few (no urban development and no more than a small number of inhabitable structures)</u>	<u>Appreciable (notable agriculture, industry, or structures)</u>
<u>High</u>	<u>More than a few</u>	<u>Excessive (extensive</u>

~~community, industry, or
agriculture)~~

~~(C) At the request of its owner or operator, a dam which both impounds less than fifty acre feet and is less than twenty five feet tall may be placed in the 'Minimal' hazard class for purposes of this rule. A dam which is less than six feet tall or which has a maximum storage potential of less than fifteen acre feet shall be classified in the 'Minimal' hazard class, unless reclassified pursuant to paragraph (D).~~

(CD) Any dam may be reclassified to another hazard class by means of a petition brought by the owner or operator of the dam, the Department of Public Service, on the Commission's own motion, or by a petition brought pursuant to section 1095 of Title 10 of the Vermont Statutes Annotated. A proceeding based upon such a petition shall be a contested case for purposes of Chapter 25 of Title 3 of the Vermont Statutes Annotated. When determining whether to reclassify a dam's hazard classification, the Commission shall systematically assess the four loss types in the following order: life, property, lifeline, and environmental losses.

(1) Direct Loss of Life. Loss of life potential is to be established based on available mapping, engineering judgement, and inundation mapping of the area downstream of the dam. Analyses of loss of life potential shall consider the extent of development and associated population at risk, time of flood wave travel, flow depth and velocities, and warning time.

(2) Property Losses. Property losses are evaluated by assessing both direct economic loss to downstream properties due to dam failure, and indirect economic impact due to loss of dam services (i.e., impact on a community due to loss of water supply or flood control protection). Public, commercial, and private property losses shall be considered, including damage to bridges, roads, utilities, downstream dams, buildings, and homes.

(3) Lifeline Losses. Indirect threats to life caused by the interruption of lifeline services due to dam failure shall be considered. This includes loss of access to medical and emergency facilities, loss of access to utilities such as drinking water, wastewater and power supply, or loss of communication infrastructure. The importance of the lifeline and anticipated outage shall be considered.

(4) Environmental Losses. Environmental impact downstream caused by the incremental flood wave produced by dam failure shall be considered. The assessment of environmental loss shall consider the damage that would normally be expected as a result of the magnitude flood event under which the dam failure occurred. If environmental losses are reversible or expected to mitigate or self-

remediate within five years, they shall be considered Low or Minimal. If major or extensive mitigation is required or losses are severe or permanent, they shall be considered Significant. Examples of Significant environmental losses include release of hazardous or toxic material in sediment accumulated behind a dam, release of hazardous or toxic material from landfills or storage facilities caused by a dam failure, release of wastewater, release of high levels of accumulated sediment, mine tailings, loss or long term impact to threatened or endangered species habitat, or other natural resource concerns determined by the Commission with consultation from the Vermont Agency of Natural Resources.

(4)(5) Dam in Series. If an upstream dam failure has the capability to create failure of a downstream dam because of its incremental flood wave, it shall have the same or higher hazard potential classification as the downstream dam.

(DE) Unless reclassified pursuant to the foregoing procedure, a dam's hazard class shall be that identified in the Vermont Dam Inventory maintained by the Vermont Department of Environmental Conservation, pursuant to 10 V.S.A. § 1108. Unless classified or reclassified pursuant to paragraphs (C) or (D), a dam shall be classed in the same hazard class to which it is assigned by the U.S. Army Corps of Engineers on its inventory made pursuant to the National Dam Inspection Act, Public Law 92-367. If a dam is not included in the inventory, it shall be placed in the Low hazard class if it is of Small size, in the Significant hazard class if it is of Medium size, and in the High hazard class if it is of Large size. Classifications of such non-inventoried dams shall be reviewed by the Commission as soon as practicable.

4.515 Inventory

The Commission shall maintain at its offices an inventory of all dams in the state which are subject to the Commission's regulatory jurisdiction under 10 V.S.A. § 1105. It shall be the duty of each owner or operator, upon request, to inspect such inventory and inform the Commission of any inaccuracies or omissions. In addition, it shall be a continuing duty of each owner or operator to inform the Commission of any change made to the height, storage, installed capacity, or ownership of a dam.

4.520 Safety Inspection

4.521 Definitions

For purposes of this Rule:

(A) "Independent consultant" means any person who:

- (1) Is approved by the Federal Energy Regulatory Commission to do inspections pursuant to 18 C.F.R. Chapter I Part 12 Subpart D; and

- (2) Is not, and has not been within two years before being retained to perform an inspection under this subpart, an employee of the owner or operator or its affiliates or an agent acting on behalf of the owner or operator or its affiliates. Having been retained to perform an inspection shall not constitute having been an employee or agent.

(B) “Height above streambed” means:

- (1) For a dam with a spillway, the vertical distance from the lowest elevation of the natural streambed at the downstream toe of the dam to the maximum water storage elevation possible without any discharge from the spillway. The maximum water storage elevation is the elevation of the spillway crest or the top of any gates or flashboards, whichever is higher. If the spillway is determined to be inadequate, under standards of or accepted by the U. S. Army Corps of Engineers, the maximum water storage elevation will be the elevation of the non-overflow section of the top of the dam;
- (2) For a dam without a spillway, the vertical distance from the lowest elevation of the natural streambed at the downstream toe of the dam to the lowest point on the crest of the dam.

- (C) “Dam” means any barrier (including its appurtenant structures and adjacent supporting natural features) constructed across a waterway to control the flow or raise the level of water, or behind which water is impounded or pumped for later release, over which the Commission has jurisdiction pursuant to Chapter 43 of Title 10 of Vermont Statutes Annotated.

(D) “Lifeline” means a structure or service indispensable for maintaining or protecting life, including but not limited to key transportation links such as bridges or highways; power supply lines; potable water connection or supply; or sanitary sewer connection.

4.522 Applicability

(A) Safety Inspection shall be required of any dam:

- (1) That is more than twenty-five feet in height above streambed or that has a gross storage capacity of more than 750 acre-feet; or
- (2) That has a significant or high hazard potential or is determined by the Commission to require inspection under this Rule.

- (B) The owner of any dam which must be inspected by an independent consultant pursuant to regulation by the Federal Energy Regulatory Commission, or which is inspected for safety by employees or agents of the Federal Energy Regulatory Commission, may file with the Commission a copy of the report of such inspection. Unless otherwise determined by the Commission, such filing shall satisfy the inspection requirement of this Rule.
- (C) The owner of any dam included in the description set forth in subsection (A), but which is not inspected pursuant to Federal Energy Regulatory Commission regulations as defined in subsection (B), must file a report of an independent consultant as defined in the ensuing sections of this Rule.

4.523 Exemption

- (A) Upon written request from the owner or operator, the Commission may grant an exemption from the requirement for inspection (or any part of that requirement) in extraordinary circumstances that clearly establish good cause for exemption.
- (B) Good cause for exemption may include the finding that the dam in question meets the criteria for low hazard potential as defined by section 4.510(B).

4.524 Initial Reports

The initial inspection and report under this rule shall be completed not later than:

- (A) For dams which are inspected pursuant to Federal Energy Regulatory Commission rule, a copy of the most recent inspection report shall be filed within ninety days of the effective date of this Rule.
- (B) For dams not subject to federal inspection requirements:
 - (1) For dams in the large size category or the high hazard class, two years from the effective date of this rule.
 - (2) For all other dams to which the inspection requirement applies, three years from the effective date of this rule.

4.525 Time of Subsequent Inspections and Reports

- (A) General rule. After the initial inspection and report under this subpart, subsequent inspections under this subpart must be completed and the reports on them filed at the following intervals:

- (1) For dams which are inspected pursuant to Federal Energy Regulatory Commission rule, within thirty days of the availability of each scheduled inspection report.
- (2) For dams not subject to federal inspection requirements:
 - (a) Five years for dams classed as large or high hazard under section 4.510;
 - (b) Ten years for dams classed as medium or of significant hazard.
- (B) Extension of time. For good cause shown, the Commission may extend the time for filing an independent consultant's report under this subpart.

4.526 Specific Inspection Requirements

Scope of inspection. The inspection by the independent consultant shall include:

- (A) Due consideration of all relevant reports on the safety of the dam made by, or written under the direction of, federal or state agencies or made by other consultants;
- (B) Physical field inspection of the project works and review and assessment of all relevant data concerning:
 - (1) Settlement;
 - (2) Movement;
 - (3) Erosion;
 - (4) Seepage;
 - (5) Leakage;
 - (6) Cracking;
 - (7) Deterioration;
 - (8) Seismicity;
 - (9) Internal stress and hydrostatic pressures;
 - (10) The functioning of foundation drains and relief wells;
 - (11) The stability of critical slopes;
 - (12) Regional and site geological conditions.
- (C) Specific evaluation of:
 - (1) The effects of overtopping of non-overflow structures;
 - (2) The structural adequacy and stability of structures under all credible loading conditions;
 - (3) The relevant hydrological data accumulated since the dam was constructed or last inspected under this subpart;

- (4) The history of the performance of the dam through analysis of data from monitoring instruments; and
 - (5) The quality and adequacy of maintenance, surveillance, and methods of operations for the protection of public safety.
- (D) Evaluation of spillway adequacy. The adequacy of any spillway must be evaluated by considering hazard potential which would result from failure of the project works during flood flows.
- (1) If structural failure would present a hazard to human life or cause significant property damage, the independent consultant must evaluate the ability of project works to withstand the loading or overtopping which may occur from a flood up to the probable maximum flood or the capacity of spillways to prevent the reservoir from rising to an elevation that would endanger the project works.
 - (2) If structural failure would not present a hazard to human life or cause significant property damage, spillway adequacy may be evaluated by means of a design flood of lesser magnitude than the probable maximum flood, if the report of the independent consultant pursuant to subsection 4.527 provides a detailed explanation of the basis for the finding that structural failure would not present a hazard to human life or cause significant property damage.

4.527 Report of the Independent Consultant

General requirement. Following inspection of a project development as required under this subpart, the independent consultant shall prepare a report, and the owner or operator shall file two copies of that report with the Commission. The report shall conform to the provisions of this section.

- (A) General information in the initial report. The first report filed under this subpart for any dam shall contain:
 - (1) A map of the region indicating the location of the dam;
 - (2) Plans, elevations, and sections of the dam;
 - (3) A summary of the design assumptions, design analyses, spillway design flood, and the factors of safety used to evaluate the structural adequacy and stability of the dam; and
 - (4) A summary of the geological conditions that may affect the safety of the project works.
- (B) Information required for all reports. Any report of an independent consultant filed under this subpart shall contain the information specified in this paragraph:

- (1) Analyses. The report shall:
 - (a) Analyze fully the safety of the dam and the maintenance and methods of operation of the development in light of the independent consultant's reviews, field inspections, assessments, and evaluations described in subsection 4.526;
 - (b) Identify any changes in the information and analyses required by paragraph (a) of this subsection that have occurred since the last report by an independent consultant and analyze the implications of those changes; and
 - (c) Analyze the adequacy of existing monitoring instruments, periodic observation programs, and other methods of monitoring project works and conditions affecting the safety of the project or project works with respect to the dam.
- (2) Recommendations. Based on the independent consultant's field observations and evaluations of the project works and the maintenance, surveillance, and methods of operations of the dam, the report shall contain the independent consultant's recommendations regarding:
 - (a) Any corrective measures necessary for maintaining the integrity of the structures, for improving methods of operation of the dam, or for improving maintenance or surveillance procedures; and
 - (b) A reasonable time to carry out each corrective measure.
- (3) Dissenting views. If the inspection and report were conducted and prepared by more than one independent consultant, the report shall clearly indicate the substance of any dissenting views concerning the analyses or recommendations of the report that may be held by any individual consultant.
- (4) List of participants. The report shall identify all professional personnel who have participated in the inspection of the project or in preparation of the report and shall identify the independent consultant who directed those activities.
- (5) Statement of independence. The independent consultant shall declare that all conclusions and recommendations in the report are made independently of the owner or operator and its employees and representatives.
- (6) Signature. The report shall be signed by each independent consultant responsible for the report.

4.528 Review

Every five years the Commission shall conduct a review of the exemptions of dams which have been exempted from periodic inspection pursuant to 4.522(A) or 4.523. Such review shall focus on changed conditions concerning each dam which may indicate that inspection ought to be required.

4.530 Corrective Measures

4.531 Emergency Corrective Measures

If, in the course of an inspection, an independent consultant discovers any condition for which emergency corrective measures are advisable, the independent consultant shall immediately notify the owner or operator, and the owner or operator shall report that condition to the Commission and take corrective action as required under subsection 4.532.

4.532 Taking Corrective Measures After the Report

(A) Corrective plan and schedule.

(1) Not later than sixty days after the report of the independent consultant is filed with the Commission, or fifteen days in the case of emergency corrective measures reported pursuant to 4.531, the owner or operator shall submit to the Commission two copies of a plan and schedule for designing and carrying out any corrective measures that the owner or operator proposes.

(2) The plan and schedule may include any proposal, including taking no action, that the owner or operator considers a preferable alternative to any corrective measure recommended in the report of the independent consultant. Any proposed alternative must be accompanied by the owner or operator's complete detailed analysis and evaluation in support of that alternative.

(B) Carrying out the plan. The owner or operator shall complete all corrective measures in accordance with the plan and schedule submitted to the Commission, as approved or modified by the Commission.

(C) Notwithstanding the above, if corrective action is required by any federal agency, including the Federal Energy Regulatory Commission, and the owner or operator complies with the instructions provided by such federal agency, such compliance shall constitute sufficient action under this section.

(D) Extension of time. For good cause shown, the Commission may extend the time for filing the plan and schedule required by this section.

4.540 On-going Care

4.541 Reporting of Safety-related Conditions

- (A) Oral report. An owner or operator shall report to the Commission by telephone any condition affecting the safety of a dam, as defined in subsection (C) of this section. The oral report shall be made as soon as practicable after that condition is discovered, without interfering with any necessary or appropriate emergency repair, alarm, or other emergency action.
- (B) Written report. Following the initial oral report required in subsection (A), the owner or operator shall submit to the Commission a written report on the condition affecting the safety of the dam. The written report shall be submitted within thirty days and shall contain such information as the Commission directs including:
- (1) The causes of the condition;
 - (2) A description of any unusual occurrences or operating circumstances preceding the condition;
 - (3) An account of any measure taken to prevent worsening of the condition;
 - (4) A detailed description of any damage to the dam and the status of any repair;
 - (5) A detailed description of any personal injuries;
 - (6) A detailed description of the nature and extent of any property damages; and
 - (7) Any other relevant information requested by the Commission.
- (C) “Condition affecting the safety of a dam” means any condition, event, or action which might compromise the safety, stability, or integrity of the dam or its ability to function safely for its intended purpose, or which might otherwise adversely affect life, health, or property. Conditions affecting the safety of a dam include, but are not limited to:
- (1) Unscheduled rapid draw-down of impounded water;
 - (2) Failure of any facility that controls the release or storage of impounded water, such as a gate or a valve;
 - (3) Failure or unusual movement, subsidence, or settlement of any part of a dam;
 - (4) Unusual concrete deterioration or cracking, including development of new cracks or the lengthening or widening of existing cracks;
 - (5) Piping, slides, or settlements of materials in any dam, abutment, dike, or embankment;
 - (6) Significant slides or settlements of materials in areas adjacent to reservoirs;
 - (7) Significant damage to slope protection;
 - (8) Unusual instrumentation readings;
 - (9) New seepage or leakage or significant gradual increase in pre-existing seepage or leakage;
 - (10) Sinkholes;
 - (11) Significant instances of vandalism or sabotage;

- (12) Natural disasters, such as floods or earthquakes;
- (13) Any other signs of instability.

4.542 Commission Action

On the basis of any oral or written report made under this section, the Commission may order the owner or operator to take any action reasonably required to correct the condition or conditions reported. The Commission may retain a consultant to inspect any dam and, if the inspection reveals any unsafe condition which the owner or operator should have discovered and reported, may require the owner or operator to pay the cost of the inspection.

4.543 Emergency Plans

- (A) The owner or operator of any dam which is required to maintain an emergency action plan by the Federal Energy Regulatory Commission shall file a copy of the Commission's approval letter for its most recent plan.
- (B) The copy of the emergency action plan approval letter shall be filed within sixty days of the adoption of this rule, or within thirty days of an owner's receipt of such letter, whichever is later.
- (C) The owner of a dam which is classified as high or intermediate hazard, but which is not required by the Federal Energy Regulatory Commission to maintain an emergency action plan, may be required by the Commission to develop a plan to protect lives and property downstream. Any plan so developed shall be filed with the Vermont Emergency Management Division.

4.500 SAFETY OF HYDROELECTRIC DAMS

4.510 Size and Hazard Classifications

(A) Dams shall be categorized by size. The size category shall be determined by height or storage, whichever gives the larger size category. The height of a dam and its storage shall both be established with respect to its maximum storage potential, measured from the natural bed of the water course to the maximum water storage elevation. For the purpose of determining size category, the maximum water storage elevation shall be considered to be the height above streambed as defined in section 4.521(B).

Category	Storage (ac-ft)	Height (ft)
SMALL	<1,000	<40
MEDIUM	≥1,000 and <50,000	≥40 and <100
LARGE	≥50,000	≥100

(B) Dams shall also be classified by hazard potential. The hazard potential classification of a dam pertains to potential loss of human life or property damage in the area downstream of the dam in the event of failure of the dam.

Classification	General Definition
HIGH	Dams where failure or mis-operation will probably cause loss of human life.
SIGNIFICANT	Dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environment damage, disruption of lifeline facilities, or other impacts. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
LOW	Dams where failure or mis-operation results in no probable loss of human life and low economic and environmental losses.
MINIMAL	A dam that meets the “low” hazard definition, above, but is only capable of impounding less than 500,000 cubic feet.

The following additional guidance is provided and shall apply to dams subject to this rule:

Classification	Loss Categories	Criteria
HIGH	Direct Loss of Life	Probable or Certain (one or more) (extensive downstream residential, commercial, or industrial development)
	Property Losses	Not considered for this classification
	Lifeline Losses	Not considered for this classification
	Environmental Losses	Not considered for this classification
SIGNIFICANT	Direct Loss of Life	None expected
	Property Losses	Major or extensive public and private facilities
	Lifeline Losses	Disruption of essential or critical facilities and access
	Environmental Losses	Major or extensive mitigation required or impossible to mitigate
LOW	Direct Loss of Life	None expected
	Property Losses	Private agricultural lands, equipment and isolated non-occupied buildings, non-major roads.
	Lifeline Losses	No disruption of services – repairs are cosmetic or rapidly repairable damage
	Environmental Losses	Minimal incremental damage
MINIMAL		Same as LOW hazard, above

(C) Any dam may be reclassified to another hazard class by means of a petition brought by the owner or operator of the dam, the Department of Public Service, on the Commission’s own motion, or by a petition brought pursuant to section 1095 of Title 10 of the Vermont Statutes Annotated. A proceeding based upon such a petition shall be a contested case for purposes of Chapter 25 of Title 3 of the Vermont Statutes Annotated. When determining whether to reclassify a dam’s hazard classification, the Commission shall systematically assess the four loss types in the following order: life, property, lifeline, and environmental losses.

(1) Direct Loss of Life. Loss of life potential is to be established based on available mapping, engineering judgement, and inundation mapping of the area downstream of the dam. Analyses of loss of life potential shall consider the extent of development and associated population at risk, time of flood wave travel, flow depth and velocities, and warning time.

(2) Property Losses. Property losses are evaluated by assessing both direct economic loss to downstream properties due to dam failure, and indirect economic impact due to loss of dam services (i.e., impact on a community due to loss of water supply or flood control protection). Public, commercial, and private property losses shall be considered, including damage to bridges, roads, utilities, downstream dams, buildings, and homes.

(3) Lifeline Losses. Indirect threats to life caused by the interruption of lifeline services due to dam failure shall be considered. This includes loss of access to medical and emergency facilities, loss of access to utilities such as drinking water, wastewater and power supply, or loss of communication infrastructure. The importance of the lifeline and anticipated outage shall be considered.

(4) Environmental Losses. Environmental impact downstream caused by the incremental flood wave produced by dam failure shall be considered. The assessment of environmental loss shall consider the damage that would normally be expected as a result of the magnitude flood event under which the dam failure occurred. If environmental losses are reversible or expected to mitigate or self-remediate within five years, they shall be considered Low or Minimal. If major or extensive mitigation is required or losses are severe or permanent, they shall be considered Significant. Examples of Significant environmental losses include release of hazardous or toxic material in sediment accumulated behind a dam, release of hazardous or toxic material from landfills or storage facilities caused by a dam failure, release of wastewater, release of high levels of accumulated sediment, mine tailings, loss or long term impact to threatened or endangered species habitat, or other natural resource concerns determined by the Commission with consultation from the Vermont Agency of Natural Resources.

(5) Dam in Series. If an upstream dam failure has the capability to create failure of a downstream dam because of its incremental flood wave, it shall have the same or higher hazard potential classification as the downstream dam.

- (D) Unless reclassified pursuant to the foregoing procedure, a dam's hazard class shall be that identified in the Vermont Dam Inventory maintained by the Vermont Department of Environmental Conservation, pursuant to 10 V.S.A. § 1108.

4.515 Inventory

The Commission shall maintain at its offices an inventory of all dams in the state which are subject to the Commission's regulatory jurisdiction under 10 V.S.A. § 1105. It shall be the duty of each owner or operator, upon request, to inspect such inventory and inform the Commission of any inaccuracies or omissions. In addition, it shall be a continuing duty of each

owner or operator to inform the Commission of any change made to the height, storage, installed capacity, or ownership of a dam.

4.520 Safety Inspection

4.521 Definitions

For purposes of this Rule:

(A) “Independent consultant” means any person who:

- (1) Is approved by the Federal Energy Regulatory Commission to do inspections pursuant to 18 C.F.R. Chapter I Part 12 Subpart D; and
- (2) Is not, and has not been within two years before being retained to perform an inspection under this subpart, an employee of the owner or operator or its affiliates or an agent acting on behalf of the owner or operator or its affiliates. Having been retained to perform an inspection shall not constitute having been an employee or agent.

(B) “Height above streambed” means:

- (1) For a dam with a spillway, the vertical distance from the lowest elevation of the natural streambed at the downstream toe of the dam to the maximum water storage elevation possible without any discharge from the spillway. The maximum water storage elevation is the elevation of the spillway crest or the top of any gates or flashboards, whichever is higher. If the spillway is determined to be inadequate, under standards of or accepted by the U. S. Army Corps of Engineers, the maximum water storage elevation will be the elevation of the non-overflow section of the top of the dam;
- (2) For a dam without a spillway, the vertical distance from the lowest elevation of the natural streambed at the downstream toe of the dam to the lowest point on the crest of the dam.

(C) “Dam” means any barrier (including its appurtenant structures and adjacent supporting natural features) constructed across a waterway to control the flow or raise the level of water, or behind which water is impounded or pumped for later release, over which the Commission has jurisdiction pursuant to Chapter 43 of Title 10 of Vermont Statutes Annotated.

(D) “Lifeline” means a structure or service indispensable for maintaining or protecting life, including but not limited to key transportation links such as bridges or

highways; power supply lines; potable water connection or supply; or sanitary sewer connection.

4.522 Applicability

(A) Safety Inspection shall be required of any dam:

- (1) That is more than twenty-five feet in height above streambed or that has a gross storage capacity of more than 750 acre-feet; or
- (2) That has a significant or high hazard potential or is determined by the Commission to require inspection under this Rule.

(B) The owner of any dam which must be inspected by an independent consultant pursuant to regulation by the Federal Energy Regulatory Commission, or which is inspected for safety by employees or agents of the Federal Energy Regulatory Commission, may file with the Commission a copy of the report of such inspection. Unless otherwise determined by the Commission, such filing shall satisfy the inspection requirement of this Rule.

(C) The owner of any dam included in the description set forth in subsection (A), but which is not inspected pursuant to Federal Energy Regulatory Commission regulations as defined in subsection (B), must file a report of an independent consultant as defined in the ensuing sections of this Rule.

4.523 Exemption

(A) Upon written request from the owner or operator, the Commission may grant an exemption from the requirement for inspection (or any part of that requirement) in extraordinary circumstances that clearly establish good cause for exemption.

(B) Good cause for exemption may include the finding that the dam in question meets the criteria for low hazard potential as defined by section 4.510(B).

4.524 Initial Reports

The initial inspection and report under this rule shall be completed not later than:

(A) For dams which are inspected pursuant to Federal Energy Regulatory Commission rule, a copy of the most recent inspection report shall be filed within ninety days of the effective date of this Rule.

(B) For dams not subject to federal inspection requirements:

- (1) For dams in the large size category or the high hazard class, two years from the effective date of this rule.

- (2) For all other dams to which the inspection requirement applies, three years from the effective date of this rule.

4.525 Time of Subsequent Inspections and Reports

- (A) General rule. After the initial inspection and report under this subpart, subsequent inspections under this subpart must be completed and the reports on them filed at the following intervals:
 - (1) For dams which are inspected pursuant to Federal Energy Regulatory Commission rule, within thirty days of the availability of each scheduled inspection report.
 - (2) For dams not subject to federal inspection requirements:
 - (a) Five years for dams classed as large or high hazard under section 4.510;
 - (b) Ten years for dams classed as medium or of significant hazard.
- (B) Extension of time. For good cause shown, the Commission may extend the time for filing an independent consultant's report under this subpart.

4.526 Specific Inspection Requirements

Scope of inspection. The inspection by the independent consultant shall include:

- (A) Due consideration of all relevant reports on the safety of the dam made by, or written under the direction of, federal or state agencies or made by other consultants;
- (B) Physical field inspection of the project works and review and assessment of all relevant data concerning:
 - (1) Settlement;
 - (2) Movement;
 - (3) Erosion;
 - (4) Seepage;
 - (5) Leakage;
 - (6) Cracking;
 - (7) Deterioration;
 - (8) Seismicity;
 - (9) Internal stress and hydrostatic pressures;
 - (10) The functioning of foundation drains and relief wells;
 - (11) The stability of critical slopes;

(12) Regional and site geological conditions.

(C) Specific evaluation of:

- (1) The effects of overtopping of non-overflow structures;
- (2) The structural adequacy and stability of structures under all credible loading conditions;
- (3) The relevant hydrological data accumulated since the dam was constructed or last inspected under this subpart;
- (4) The history of the performance of the dam through analysis of data from monitoring instruments; and
- (5) The quality and adequacy of maintenance, surveillance, and methods of operations for the protection of public safety.

(D) Evaluation of spillway adequacy. The adequacy of any spillway must be evaluated by considering hazard potential which would result from failure of the project works during flood flows.

- (1) If structural failure would present a hazard to human life or cause significant property damage, the independent consultant must evaluate the ability of project works to withstand the loading or overtopping which may occur from a flood up to the probable maximum flood or the capacity of spillways to prevent the reservoir from rising to an elevation that would endanger the project works.
- (2) If structural failure would not present a hazard to human life or cause significant property damage, spillway adequacy may be evaluated by means of a design flood of lesser magnitude than the probable maximum flood, if the report of the independent consultant pursuant to subsection 4.527 provides a detailed explanation of the basis for the finding that structural failure would not present a hazard to human life or cause significant property damage.

4.527 Report of the Independent Consultant

General requirement. Following inspection of a project development as required under this subpart, the independent consultant shall prepare a report, and the owner or operator shall file two copies of that report with the Commission. The report shall conform to the provisions of this section.

(A) General information in the initial report. The first report filed under this subpart for any dam shall contain:

- (1) A map of the region indicating the location of the dam;
- (2) Plans, elevations, and sections of the dam;

- (3) A summary of the design assumptions, design analyses, spillway design flood, and the factors of safety used to evaluate the structural adequacy and stability of the dam; and
 - (4) A summary of the geological conditions that may affect the safety of the project works.
- (B) Information required for all reports. Any report of an independent consultant filed under this subpart shall contain the information specified in this paragraph:
- (1) Analyses. The report shall:
 - (a) Analyze fully the safety of the dam and the maintenance and methods of operation of the development in light of the independent consultant's reviews, field inspections, assessments, and evaluations described in subsection 4.526;
 - (b) Identify any changes in the information and analyses required by paragraph (a) of this subsection that have occurred since the last report by an independent consultant and analyze the implications of those changes; and
 - (c) Analyze the adequacy of existing monitoring instruments, periodic observation programs, and other methods of monitoring project works and conditions affecting the safety of the project or project works with respect to the dam.
 - (2) Recommendations. Based on the independent consultant's field observations and evaluations of the project works and the maintenance, surveillance, and methods of operations of the dam, the report shall contain the independent consultant's recommendations regarding:
 - (a) Any corrective measures necessary for maintaining the integrity of the structures, for improving methods of operation of the dam, or for improving maintenance or surveillance procedures; and
 - (b) A reasonable time to carry out each corrective measure.
 - (3) Dissenting views. If the inspection and report were conducted and prepared by more than one independent consultant, the report shall clearly indicate the substance of any dissenting views concerning the analyses or recommendations of the report that may be held by any individual consultant.
 - (4) List of participants. The report shall identify all professional personnel who have participated in the inspection of the project or in preparation of the report and shall identify the independent consultant who directed those activities.

- (5) Statement of independence. The independent consultant shall declare that all conclusions and recommendations in the report are made independently of the owner or operator and its employees and representatives.
- (6) Signature. The report shall be signed by each independent consultant responsible for the report.

4.528 Review

Every five years the Commission shall conduct a review of the exemptions of dams which have been exempted from periodic inspection pursuant to 4.522(A) or 4.523. Such review shall focus on changed conditions concerning each dam which may indicate that inspection ought to be required.

4.530 Corrective Measures

4.531 Emergency Corrective Measures

If, in the course of an inspection, an independent consultant discovers any condition for which emergency corrective measures are advisable, the independent consultant shall immediately notify the owner or operator, and the owner or operator shall report that condition to the Commission and take corrective action as required under subsection 4.532.

4.532 Taking Corrective Measures After the Report

(A) Corrective plan and schedule.

- (1) Not later than sixty days after the report of the independent consultant is filed with the Commission, or fifteen days in the case of emergency corrective measures reported pursuant to 4.531, the owner or operator shall submit to the Commission two copies of a plan and schedule for designing and carrying out any corrective measures that the owner or operator proposes.
- (2) The plan and schedule may include any proposal, including taking no action, that the owner or operator considers a preferable alternative to any corrective measure recommended in the report of the independent consultant. Any proposed alternative must be accompanied by the owner or operator's complete detailed analysis and evaluation in support of that alternative.

(B) Carrying out the plan. The owner or operator shall complete all corrective measures in accordance with the plan and schedule submitted to the Commission, as approved or modified by the Commission.

(C) Notwithstanding the above, if corrective action is required by any federal agency, including the Federal Energy Regulatory Commission, and the owner or operator

complies with the instructions provided by such federal agency, such compliance shall constitute sufficient action under this section.

- (D) Extension of time. For good cause shown, the Commission may extend the time for filing the plan and schedule required by this section.

4.540 On-going Care

4.541 Reporting of Safety-related Conditions

- (A) Oral report. An owner or operator shall report to the Commission by telephone any condition affecting the safety of a dam, as defined in subsection (C) of this section. The oral report shall be made as soon as practicable after that condition is discovered, without interfering with any necessary or appropriate emergency repair, alarm, or other emergency action.
- (B) Written report. Following the initial oral report required in subsection (A), the owner or operator shall submit to the Commission a written report on the condition affecting the safety of the dam. The written report shall be submitted within thirty days and shall contain such information as the Commission directs including:
- (1) The causes of the condition;
 - (2) A description of any unusual occurrences or operating circumstances preceding the condition;
 - (3) An account of any measure taken to prevent worsening of the condition;
 - (4) A detailed description of any damage to the dam and the status of any repair;
 - (5) A detailed description of any personal injuries;
 - (6) A detailed description of the nature and extent of any property damages; and
 - (7) Any other relevant information requested by the Commission.
- (C) “Condition affecting the safety of a dam” means any condition, event, or action which might compromise the safety, stability, or integrity of the dam or its ability to function safely for its intended purpose, or which might otherwise adversely affect life, health, or property. Conditions affecting the safety of a dam include, but are not limited to:
- (1) Unscheduled rapid draw-down of impounded water;
 - (2) Failure of any facility that controls the release or storage of impounded water, such as a gate or a valve;
 - (3) Failure or unusual movement, subsidence, or settlement of any part of a dam;
 - (4) Unusual concrete deterioration or cracking, including development of new cracks or the lengthening or widening of existing cracks;

- (5) Piping, slides, or settlements of materials in any dam, abutment, dike, or embankment;
- (6) Significant slides or settlements of materials in areas adjacent to reservoirs;
- (7) Significant damage to slope protection;
- (8) Unusual instrumentation readings;
- (9) New seepage or leakage or significant gradual increase in pre-existing seepage or leakage;
- (10) Sinkholes;
- (11) Significant instances of vandalism or sabotage;
- (12) Natural disasters, such as floods or earthquakes;
- (13) Any other signs of instability.

4.542 Commission Action

On the basis of any oral or written report made under this section, the Commission may order the owner or operator to take any action reasonably required to correct the condition or conditions reported. The Commission may retain a consultant to inspect any dam and, if the inspection reveals any unsafe condition which the owner or operator should have discovered and reported, may require the owner or operator to pay the cost of the inspection.

4.543 Emergency Plans

- (A) The owner or operator of any dam which is required to maintain an emergency action plan by the Federal Energy Regulatory Commission shall file a copy of the Commission's approval letter for its most recent plan.
- (B) The copy of the emergency action plan approval letter shall be filed within sixty days of the adoption of this rule, or within thirty days of an owner's receipt of such letter, whichever is later.
- (C) The owner of a dam which is classified as high or intermediate hazard, but which is not required by the Federal Energy Regulatory Commission to maintain an emergency action plan, may be required by the Commission to develop a plan to protect lives and property downstream. Any plan so developed shall be filed with the Vermont Emergency Management Division.

PUC Case No. 22-4420-RULE - SERVICE LIST

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