

Regulation of the
**Department of Energy and Environmental
Protection**
Concerning
Dams and Similar Structures

Regulations adopted after July 1, 2013, become effective upon posting to the website of the Secretary of the State, or at a later date specified within the regulation.

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Electronic Copy Certification Statement

I, **Robert J. Klee, Commisisoner** of the **Department of Energy and Environmental Protection**, in accordance with the provisions of Section 4-172 of the *General Statutes of the State of Connecticut*, **do hereby certify:**

That the electronic copy of a regulation concerning **Dams and Similar Structures**, which was approved by the Legislative Regulation Review Committee on **January 26, 2016**, and which shall be submitted electronically for filing to the Secretary of the State by **Kenneth M. Collette** of this agency on or before **February 9, 2016**, is a true and accurate copy of the original regulation approved in accordance with Sections 4-169 and 4-170 of the *General Statutes of the State of Connecticut*.

In testimony whereof, I have hereunto set
my hand on February 1, 2016

A handwritten signature in blue ink, appearing to read "Robert J. Klee", written over a horizontal line.

Robert J. Klee, Commissioner

REGS-1 Rev. 09/2013
(Title page)

For permanent regulations
First NOTICED ON AND AFTER JULY 1, 2013

IMPORTANT: Use this form (**REGS-1**) to submit permanent regulations to the Legislative Regulation Review Committee.
For emergency regulations, use form REGS-1-E instead.
For *non-substantive technical amendments and repeals* proposed without prior notice or hearing as permitted by subsection (g) of CGS 4-168, as amended by PA 13-247 and PA 13-274, use form REGS-1-T instead.

Please read the additional instructions on the back of the last page (Certification Page) before completing this form. Failure to comply with the instructions may cause disapproval of proposed regulations.

State of Connecticut
REGULATION
of the

NAME OF AGENCY:

Connecticut Department of Energy and Environmental Protection

Concerning

SUBJECT MATTER OF REGULATION:

Dams and Similar Structures

Section 1. Section 22a-409-1 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 22a-409-1. Definitions. Registration of dams and similar structures.

- (a) **Definitions.** As used in Sections 22a-409-1 and 22a-409-2 of the Regulations of Connecticut State Agencies:
- (1) "Abutment" means natural ground that borders on either end of the dam structure.
- (2) "Acre-foot" means a unit of volume of water equal to 43,560 cubic feet or 325,853 gallons (one foot depth over one acre).
- [(3) "Average daily traffic" (ADT) means a measure of the number of vehicles using a specific road in an average twenty-four hour period.]
- [(4)] (3) "Appurtenance" means any structure or mechanism other than the dam itself which is associated with its operation.
- (4) "Arterial roadway" means a roadway that provides a high level of mobility and that is frequently the route of choice for buses and trucks, as provided in the U.S. Department of

Transportation document entitled “Highway Functional Classification Concepts, Criteria and Procedures, 2013 edition”.

- (5) "Breach" means an alteration of a dam either deliberately or accidentally in such a way as to release its impounded waters resulting in partial or total failure of the dam.
- (6) “Collector roadway” means a roadway that collects traffic from local roadways and connects traffic to arterial roadways, as provided in the U.S. Department of Transportation document entitled “Highway Functional Classification Concepts, Criteria and Procedures, 2013 edition”.
- [(6)] (7) "Commissioner" means the [commissioner of environmental protection] Commissioner of Energy and Environmental Protection, or such commissioner’s designated representative.
- (8) “Certificate of Dam Registration” or “(CDR)” means a form issued by the commissioner to the owner that acknowledges receipt of all required information regarding a dam registration and a one-time payment of the registration fee.
- (9) “CT Dam ID Number” means a unique identifying number assigned to a dam registered and regulated by the State of Connecticut.
- [(7)](10) "Dam" means any barrier of any kind whatsoever which is capable of impounding or controlling the flow of water, including but not limited to storm water retention or detention dams, flood control structures, dikes, and incompletely breached dams.
- (11) “Dam failure” has the same meaning as provided in section 22a-411a-1 of the Regulations of Connecticut State Agencies (RCSA).
- [(8)](12) "Dam [Height] height" means the vertical distance from the crest of the dam or similar structure to the downstream toe of such dam or similar structure.
- [(9)](13) "Embankment" means the fill material, usually earth or rock, placed with sloping sides providing a barrier which impounds water.
- [(10)] (14) "Flood" means [a general and temporary condition of partial or complete inundation of normally dry land areas] any high flow, overflow, or inundation by water which causes or threatens damage to persons or property.
- [(11)] (15) "Hazard [Potential] potential" means the probable damage that would occur if the structure failed, in terms of loss of human life and economic loss or environmental damage.
- (16) “Local roadway” means a roadway that provides a high level of accessibility used to provide direct access to multiple properties, as provided in the U.S. Department of

Transportation document entitled “Highway Functional Classification Concepts, Criteria and Procedures, 2013 edition”.

- (17) “Operator” means the person(s) in control of, or having responsibility for, the daily operation of the dam as designated by the owner on the dam registration form required by subsection (b) of this section.
- [(12)] (18) “Owner” means [any individual, firm, partnership, association, syndicate, company, trust, corporation, municipality, agency, or political or administrative subdivision of the state, or any other legal entity of any kind holding legal title to the dam] the person(s) having legal ownership of the dam.
- (19) “Person” has the same meaning as provided in section 22a-2(b) of the Connecticut General Statutes.
- (20) “Professional engineer” means an individual who is currently licensed and registered under section 20-302 of the Connecticut General Statutes.
- (21) “Regulated dam” means a dam subject to the jurisdiction of the Department of Energy and Environmental Protection pursuant to section 22a-401 of the Connecticut General Statutes.
- (22) “Regulatory inspection” means an inspection required in accordance with section 22a-409(c) of the Connecticut General Statutes and section 22a-409-2(c) of the Regulations of Connecticut State Agencies.
- (23) “Spillway design flood” or “SDF” means the largest flood that a given structure is designed to pass safely.
- [(13)](24) “Structure” means the dam, its appurtenances, abutments and foundation.
- [(14)](25) “Toe” means the base portion of the impounding structure which intersects with natural ground at the upstream and downstream sides.
- (26) “100-year flood” means a statistical designation that there is a 1 in 100 chance that a flood of this intensity will occur at a particular geographical location during any year.
- (b) **Registration.** The owner of any dam or similar structure required to be registered by section 22a-409(b) of the Connecticut General Statutes and that is not already registered shall register any such dam or similar structure with the commissioner on or before [July 1, 1984,] October 1, 2015. [on] All registrations shall be submitted on a form prescribed by [him] the commissioner [the location and dimensions of such dam or structure. In addition the registration shall include] and shall provide the following:
- (1) [the] The name, address, [and] telephone number, and email address of the dam owner and operator;
 - (2) [the] The name of the dam and impoundment and the CT Dam ID Number, if known;

- (3) The street address of the dam location or the street address nearest to the dam location;
- (4) The parcel ID number of the property where the dam is located, i.e. map, block, and lot number, or as otherwise designated by the town;
- [(3)] (5) [the] The present condition of the dam;
- [(4)](6) Whether there is a low-level outlet, and whether the low-level outlet is operable;
- [(5)](7) [a] A map showing the location of the dam in context to surrounding streets;
- [(6)](8) [a] A description of the materials used in constructing the dam;
- [(7)](9) [the] The dimensions of the impoundment;
- [(8)](10) [the] The dimensions of the spillway;
- [(9) [a] A general description of the level of development in the floodplain below the dam:]
- [(10)] (11) [a] A statement of the use(s) of the impounded water;
- [(11) whether the dam is regulated under the Connecticut Water Diversion Policy Act;]
- (12) [a] A check or money order payable to the [DEP, Water Resources Unit] DEEP Dam Safety Program for the amount of the registration fee required [by Section] in accordance with section 22a-409(b) of the General Statutes; [, as amended;] and
- (13) Any other relevant information which the commissioner deems necessary.
- (c) **Changes in registration information.** The owner shall report any change in the following information provided in the registration to the commissioner [within] not later than ten (10) days from the date of such change:
- (1) The name, address, [and] telephone number, and email address of the dam owner or operator; and
- (2) The name of the dam or its impoundment [;].
- [(3) The present condition of the dam; or]
- [(4) The condition of the low level outlet.]
- (d) **Certificate of Dam Registration (CDR).** [A registration form shall not be deemed received by the commissioner until all information specifically required by statute or regulation is submitted with the appropriate fee.] Upon review of a complete registration, the commissioner shall issue a [certificate of registration] Certificate of Dam Registration (CDR) to the owner of the dam. A registration form shall not be deemed complete by the commissioner until all information specifically required by statute or regulation is submitted with the appropriate fee.
- (e) **Fees.** (1) The commissioner shall waive the registration fee for any dam which is owned by the State of Connecticut [or the federal government].
- (2) Wherever [a single] an impoundment is formed by two or more dams, there shall be a single registration fee based on the highest dam forming the impoundment.
- (3) Wherever a dam is owned by two or more owners there shall be a single registration fee.

- (f) **Forfeiture and Injunction.** Failure to register a dam not previously registered, by [July 1, 1984] October 1, 2015 shall subject the owner of the dam to the forfeiture and injunction provisions of [Section] section 22a-407 of the Connecticut General Statutes, as amended.
- (g) **Violations.** Any violation of these regulations shall subject the owner of the dam to the injunction provisions of [Section] section 22a-6(3) of the Connecticut General Statutes, as amended, or an administrative civil penalty pursuant to sections 22a-6b-1 to 22a-6b-15 of the Regulations of Connecticut State Agencies or both.

Section 2. Section 22a-409-2 of the Regulations of Connecticut State Agencies is amended to read as follows:

Sec. 22a-409-2. Dam safety inspection [regulations] and classification

- (a) **Jurisdiction.** All dams which must be registered pursuant to Section 22a-409 of the General Statutes shall be under the jurisdiction of the Commissioner. Dams of the State, or any political subdivision thereof, and all dams within the State except those of the United States or its instrumentalities are included within the jurisdiction conferred by this section.]

Classification of Dams.

- (1) The commissioner shall assign each dam to one of five classes according to the potential impacts of a dam failure. The factors used to evaluate and assign a hazard potential are the physical characteristics of the dam, such as the dam height and capacity of the impoundment, the location of the dam, the areas impacted by a failure of the dam, and potential damage to property, infrastructure, or threat to human life as described below:

(A) A Class AA dam is a negligible hazard potential dam which, if it were to fail, would result in the following:

- (i) no measurable damage to roadways;
- (ii) no measurable damage to land and structures; and
- (iii) negligible economic loss.

(B) A Class A dam is a low hazard potential dam which, if it were to fail, would result in any of the following:

- (i) damage to agricultural land;
- (ii) damage to unpaved local roadways; or
- (iii) minimal economic loss.

(C) A Class BB dam is a moderate hazard potential dam which, if it were to fail, would result in any of the following:

- (i) damage to normally unoccupied storage structures;
- (ii) damage to paved local roadways; or
- (iii) moderate economic loss.

(D) A Class B dam is a significant hazard potential dam which, if it were to fail, would result in any of the following:

- (i) possible loss of life;
- (ii) minor damage to habitable structures, residences, including, but not limited to, industrial or commercial buildings, hospitals, convalescent homes, or schools;
- (iii) damage to local utility facilities including water supply, sewage treatment plants, fuel storage facilities, power plants, cable or telephone infrastructure, causing localized interruption of these services;
- (iv) damage to collector roadways and railroads; or
- (v) significant economic loss.

(E) A Class C dam is a high hazard potential dam which, if it were to fail, would result in any of the following:

- (i) probable loss of life;
- (ii) major damage to habitable structures, residences, including, but not limited to, industrial or commercial buildings, hospitals, convalescent homes, or schools;
- (iii) damage to major utility facilities, including public water supply, sewage treatment plants, fuel storage facilities, power plants, or electrical substations causing widespread interruption of these services;
- (iv) damage to arterial roadways; or
- (v) great economic loss.

(2) The classification of a Class A, BB, B, and C dam shall be reviewed during each

regulatory inspection.

- (3) Dams shall be subject to reclassification at any time the commissioner determines that the hazard potential of the dam has changed.
- (4) The dam owner may submit a request to change the hazard classification assigned to the owner's dam based on an analysis submitted to the commissioner that supports the reclassification. Recommendations made by the owner to reclassify the owner's dam shall be subject to review and approval by the commissioner.
- (5) Where a dam is so located that its failure would likely cause a downstream dam to fail, the hazard classification of such dam shall be at least as great as that of the downstream dam.
- (6) Potential damage to habitable structures shall be considered minor when habitable structures are not within the direct path of the probable flood wave produced upon failure of a dam and when such structures will experience the lower of the following elevations:
 - (A) No more than 1.5 feet of rise of flood water above the lowest ground elevation adjacent to the outside foundation walls; or
 - (B) No more than 1.5 feet of rise of flood water above the lowest habitable floor elevation of the structure.

(b) [Periodic] **Regulatory Inspections - Applicability.** [The following dams shall be regularly inspected by the Department of Environmental Protection at a frequency as described in Section 22a-409-2(e)(2) of these regulations] The owner of a dam classified by the commissioner as Class C, B, BB, or A in accordance with subsection (a) of this section shall ensure a regulatory inspection is conducted for such dam in accordance with the requirements of this section except dams owned or regulated by the United States or its instrumentalities that are visually inspected on a regular basis in accordance with applicable federal requirements to the satisfaction of the commissioner:

- (1) If the commissioner determines that a dam classified as AA poses a unique hazard, the commissioner may require its owner to conduct a regulatory inspection in accordance with this section except dams owned or regulated by the United States or its instrumentalities that are visually inspected on a regular basis in accordance with applicable federal requirements to the satisfaction of the commissioner.
- (2) The state and each political subdivision of the state shall conduct a regulatory inspection of each dam owned by the state or such political subdivision, respectively.

[(1) Dams which pose a significant (B) or high (C) hazard to life or property as defined in Section 22a-409-2(d);

(2) Dams which are:

(A) Greater than twenty-five (25) feet in height with an impoundment capacity greater than fifteen (15) acre-feet; or

(B) Greater than six (6) feet in height but less than or equal to twenty-five (25) feet in height with an impoundment capacity greater than fifty (50) acre-feet; or

(3) All other dams with an impoundment capacity of three (3) acre-feet or more.]

(c) **[Periodic] Regulatory Inspection Procedures.** All regulatory inspections shall be conducted by a professional engineer and use a standard dam inspection form and instructions that direct the proper use of the form. Both the inspection form and the instructions shall be developed by the commissioner and based upon accepted standards of visual dam inspection.

(1) Each [periodic] regulatory inspection shall consist of, but not be limited to, the following:

(A) Visual inspection of the dam, its appurtenances, abutments, downstream toe and all other areas which could affect the safety of the dam. In addition, inspection and operation of mechanical systems, and inspection of the abutments downstream, the components of the dam which are under water during normal operation, or the interior of outlet conduits shall be made [by the owner, if required by the Commissioner] if deemed necessary by a professional engineer to more completely assess the condition of the dam;

(B) Review [and analysis] of all available file data [on] related to the design, construction, post construction investigations, operation, maintenance and performance of the structure. This review shall supplement the visual inspection and aid in determining if additional analysis is required;

(C) Observation of the nature and extent of downstream development which would be subject to inundation in the event of a dam breach for purposes of assessing the potential hazard which the dam poses;

[(D) Evaluation of the general condition of the structure, including when possible, assessment of its hydrologic and its hydraulic capabilities and structural stability.]

[(E)] (D) Evaluation of the operation, maintenance and inspection procedures employed by the owner [.] and

[(F)] (E) Evaluation of any other conditions which constitute or could constitute a hazard to the integrity of the structure.

- [(2) The inspection shall be performed by qualified personnel of the D.E.P. Dam Safety Program with technical training in the inspection of dams and under the supervision of a civil engineer.]
- [(3)](2) [A standard dam inspection checklist based upon accepted standards of visual dam inspection and inspection guidelines which direct the proper use of the checklist shall be prepared by the Commissioner and will be utilized by the inspection team.] The [Commissioner will issue] professional engineer shall prepare a written report [based on] using a form prescribed by the commissioner detailing the findings of the [periodic] regulatory inspection which shall include, but not be limited to, the following:
- (A) An assessment of the condition of the structure based on the visual observations, available file data [on] related to the design, construction, post construction investigations, operation, maintenance and performance of the [structure, the hydrologic and hydraulic capacities and the structural stability of the dam;] dam, and
- (B) Recommendations [for any emergency measures or actions, if required to assure the immediate safety of the structure;], if any are required as a result of the inspection and assessment, for:
- (i) emergency measures or actions, if required to assure the immediate safety of the structure;
- [(C)](ii) [Recommendations for] remedial measures and actions related to design, construction, operation, maintenance and inspection of the structure [, if required];
- [D] (iii) [Recommendations for] additional detailed studies, investigations and analyses [, if required; and];
- [E] (iv) [Recommendations for] time periods appropriate for implementing [any necessary emergency, remedial measures and] the actions [and any necessary additional investigations and analyses, as required by] recommended in accordance with [subparagraph (B), (C) and (D)] clauses (i), (ii), and (iii) of this [subdivision] subparagraph; [and]
- [F] (v) [Recommendations for] routine maintenance and inspection by the owner, [if required.];
- (vi) a hydrologic and hydraulic analysis based on file data, visual observations, or information provided by the owner that indicates the capacity of the spillway is insufficient to safely pass the spillway design flood, or, at a minimum, the 100-year flood, if required; and

(vii) a stability analysis based on file data, visual observations, or information provided by the owner that indicates the stability of the dam may be structurally unsound under normal or extreme loading conditions.

[(4)] (3) The [Commissioner] owner shall furnish a copy of the written report to the [owner] commissioner not later than 30 days from the date he or she receives the report, but no later than March 15th of the year following the year the owner received the notification letter sent by the commissioner in accordance with section 22a-409(c) of the Connecticut General Statutes.

(A) [The owner shall within] Not later than thirty (30) days of receipt of [the written report] a written request from the commissioner to perform recommended maintenance or repairs on the dam, the owner shall inform the [Commissioner] commissioner in writing of [his or her] the owner's schedule of implementation of any required recommendations. The commissioner's recommendations shall be based on the commissioner's review of the submitted inspection report and recommendations made by the owner's professional engineer contained in the report; and

(B) A copy of the report [will] shall be kept on file with the records of the [Commissioner] commissioner pertaining to dam safety.

[(d) Classification of Dams.

(1) The Commissioner shall assign each dam to one of five classes according to its hazard potential. Such classification shall be determined by the Commissioner during the initial periodic inspection.

(A) A Class AA dam is a negligible hazard potential dam which, if it were to fail, would result in any of the following:

- (i) no measurable damage to roadways;
- (ii) no measurable damage to land and structures;
- (iii) negligible economic loss.

(B) A Class A dam is a low hazard potential dam which, if it were to fail, would result in any of the following:

- (i) damage to agricultural land;
- (ii) damage to unimproved roadways (less than 100 ADT);
- (iii) minimal economic loss.

- (C) A Class BB dam is a moderate hazard potential dam which, if it were to fail, would result in any of the following:
- (i) damage to normally unoccupied storage structures;
 - (ii) damage to low volume roadways (less than 500 ADT);
 - (iii) moderate economic loss.
- (D) A Class B dam is a significant hazard potential dam which, if it were to fail, would result in any of the following:
- (i) possible loss of life;
 - (ii) minor damage to habitable structures, residences hospitals, convalescent homes, schools , etc;
 - (iii) damage to or interruption of the use or service of utilities;
 - (iv) damage to primary (less than 1500 ADT) and railroads;
 - (v) significant economic loss.
- (E) A Class C dam is a high hazard potential dam which, if it were to fail, would result in any of the following:
- (i) probable loss of life;
 - (ii) major damage to habitable structures, residences, , hospitals, convalescent homes, schools, etc.;
 - (iii) damage to main highways (greater than 1500 ADT);
 - (iv) great economic loss.
- (2) The classification of a Class A, BB, B, and C dam shall be reviewed during each subsequent periodic inspection.
- (3) All dams will be subject to reclassification at any time the Commissioner determines that the hazard potential has changed.
- (4) Potential future development of the area downstream from the dam that would be affected by its failure shall be considered in determining the classification.
- (5) Where a dam is so located that its failure would likely cause a downstream dam to

fail, the hazard classification of this dam shall be at least as great as that of the downstream dam.

- (6) Potential damage to habitable structures will be considered minor when habitable structures are not within the direct path of the probable flood wave produced upon failure of a dam and when such structures will experience:
- (A) No more than 1.5 feet of rise of flood water above the lowest ground elevation adjacent to the outside foundation walls; or
 - (B) No more than 1.5 feet of rise of flood water above the lowest habitable floor elevation of the structure; the lower of the elevations governing.
- (7) The extent of potential damage resulting from a dam breach may notwithstanding the above, justify designating damage as either major or minor. Such a designation may be made after a detailed analysis has established the relative impact of the probable dam breach and has considered the following factors:
- (A) The conditions prior to and after a dam breach;
 - (B) The extent to which, access has been affected, both before and after a dam breach;
 - (B) The extent of damage.]

[(e) Inspection Schedule.

- (1) The Commissioner or his representative may enter upon private property at any time to investigate or inspect any dam.
- (2) The Commissioner shall periodically inspect all dams in accordance with the following schedule. These time periods are the maximum time between inspections, more frequent inspections may be performed at the discretion of the Commissioner.
- | <i>Hazard Class</i> | <i>Inspection Frequency</i> |
|-----------------------|-----------------------------|
| Class A (low) | 10 years |
| Class BB (moderate) | 7 years |
| Class B (significant) | 5 years |
| Class C (high) | 2 years |
- (3) Inspections scheduled according to the time period set forth above, may be modified, at the discretion of the Commissioner, in special cases where it is desirable to observe a dam under particular conditions (i.e. wet season, dry season, foliage. . .).
- (4) The Commissioner may require scheduled inspections on a more frequent basis if particular conditions exist which require more frequent monitoring.
- (5) The Commissioner may require Class B and C dams to be inspected after the occurrence of a major flood event. The date of these post-flood inspections will be the starting date from which the date of the next regularly scheduled periodic

inspection will be computed.

(6) The Commissioner shall exempt from periodic inspections, any dam which, after an initial inspection, impounds less than three (3) acre-feet of water or any Class AA dam, unless the Commissioner determines that such dam poses a unique hazard.]

[(f)] (d) **Inspection [by the Owner] Schedule.**

- [(1)] A dam owner [may elect to employ the services of a professional engineer registered in the State of Connecticut, experienced in the design, construction and inspection of dams to inspect the owner's dam] shall ensure a regulatory inspection is conducted as required by subsection (b) of this section according to the following inspection schedule:

<i>Hazard Class</i>	<i>Inspection Schedule</i>
Class A (low)	<u>every 10 years</u>
Class BB (moderate)	<u>every 7 years</u>
Class B (significant)	<u>every 5 years</u>
Class C (high)	<u>every 2 years</u>

- [(2)] The owner shall furnish a copy of each completed inspection report in a format determined by the Commissioner within thirty (30) days of the date of the inspection to the DEP Dam Safety Program.
- [(3)] The inspection report shall be sealed by a professional engineer registered in the State of Connecticut and shall include:
- (A) Those items listed in Section 22a-409-2(c), and
 - (B) Correspondence from the owner stating his or her intent to implement such recommendations, if required.
- [(4)] If the dam owner elects to comply with subdivisions (1) through (3), inclusive, the Commissioner shall periodically inspect the dam according to the following schedule:

<i>Hazard Class</i>	<i>Inspection Frequency</i>
Class A (low)	20 years
Class BB (moderate)	14 years
Class B (significant)	10 years

Class C (high)

6 years

The year the Commissioner inspects the dam, the owner shall be exempt from conducting his or her own inspection.]

[(g) New Dam Construction.

- (1) All new dams, and dams which have a high or significant hazard classification undergoing substantial repairs according to the permit authorization of the Commissioner, must be inspected by the professional engineer employed by the dam owner for construction services according to the following schedule:
 - (A) Upon first filling of the impoundment, after completion of new construction or substantial repairs, inspection should be performed to assure proper functioning of dam components.
 - (B) Upon attainment of full impoundment, inspections of the dam should be performed frequently for the first two (2) months.
 - (C) These dams shall be inspected at least annually for the first three (3) years of operation.
 - (D) After the third year of operation, these dams will be inspected according to the inspection schedule set forth in Section 22a-409-2-(e).
 - (E) The Commissioner may exempt from the requirements of this subsection repairs to high and significant hazard dams which he determines do not affect the immediate safety of the dam.
- (2) An inspection report must be submitted by the owner's engineer to the Commissioner on a form prescribed by him, within thirty (30) days after:
 - (A) The last inspection performed during the first two (2) months after full impoundment was attained; and
 - (B) Each annual inspection as set forth in Section 22a-409-2(g)1(C).]

[(h)] (e) Fees for Inspection by the State.

- (1) [Each owner shall pay an inspection fee to cover the cost to the State of making both scheduled inspections and post-flood inspections. Such fee bill shall accompany the written report and shall be paid within thirty (30) days after receipt by the owner.] In the event the commissioner conducts a regulatory inspection of an owner's dam because such owner failed to do so, as required by subsection (b) of this section, such owner shall pay an inspection fee to cover the

cost to the state for conducting the regulatory inspection. Any invoice for such fee shall be paid in accordance with the instructions on the invoice.

[(2)] The owner shall submit the inspection fee by check, or money order payable to DEP Dam Safety Program.]

[(3)] (2) The fee for each regulatory inspection made by the State of an owner's dam shall be [according to the following:] \$3000.00.

[Hazard Class	Fee
Class A (low)	\$150.00
Class BB (moderate)	\$150.00
Class B (significant)	\$250.00
Class C (high)	\$350.00]

[(4)] (3) The [Commissioner] commissioner shall waive the regulatory inspection fee for any dam which is owned by the State of Connecticut.

[(i) Notification.

- (1) The Commissioner shall notify a dam owner, of the upcoming date for a regularly scheduled inspection at least ninety (90) days before the inspection.
- (2) If, the Commissioner does not receive notification of the owner's intent to perform the inspection with his or her own engineer thirty (30) days prior to the date of the scheduled inspection, the Commissioner shall inspect the dam and charge the owner the appropriate fee.
- (3) If after notification by the owner of his or her intent to perform the inspection, the Commissioner does not receive a copy of the inspection report within thirty (30) days of the scheduled inspection date, the Commissioner shall inspect the dam and charge the owner the appropriate fee.]

[(j)] (f) Responsibility of the Owner.

- (1) [Inspections by the State do not relieve] The requirement to ensure a regulatory inspection is conducted by a professional engineer does not relieve an owner of [the] a dam of [the] other legal duties, obligations or liabilities incidental to the ownership or operation of [the] a dam.
- (2) [The] In addition to the regulatory inspections required by this section, the owner or [his or her representative] operator shall inspect the dam on a [frequent] regular basis to assure that no unsafe conditions are developing including, but not limited to, weather related damage, animal activity or vandalism. Class B and Class C dams shall be inspected by the owner or [his or her representative] operator at least quarterly. Class BB dams shall be inspected by the owner or operator at least

annually. Class A dams shall be inspected by the owner or operator at least every two years. [and a] A written record of said inspections shall be maintained by the owner or operator and be made available to the [Commissioner] commissioner upon request.

- (3) The owner or [his or her representative] operator shall inspect the dam during and after the occurrence of major flood events to assure that the structure is withstanding the flood waters safely.
- (4) The owner or operator shall fully and promptly advise the [Commissioner] commissioner of any sudden or unpredicted floods, unusual circumstances or major changes in the condition of the dam.
- (5) The owner or operator shall report to the [Commissioner] commissioner any major damage which the dam has suffered, such as, overtopping by flood waters, erosion of the spillway discharge channel and any major problems which are observed to have developed, such as, new seepage or a significant increase in seepage quantities, settling, cracking or movement of the embankment or any component of the dam.
- (6) To facilitate visual inspection during the intervals between [regularly scheduled] regulatory inspections, the dam owner shall be required to maintain the structure and adjacent area free of brush and tree growth.
 - (A) Brush and tree growth shall be cleared from embankments and within twenty-five (25) feet of the upstream and downstream toe and the abutment embankment contact; and
 - (B) Grass [or other suitable vegetative cover] on earthen embankment dams [must] shall be established and maintained [on abutments and embankments].
- (7) The owner shall maintain a written record of all inspections and maintenance work performed. This record shall include observations made regarding areas of concern on the structure and descriptions of the major and minor repairs performed and materials utilized.

(g) Inspection by the Commissioner.

- (1) The commissioner may enter upon private property at any time to investigate or inspect any dam for any reason, including, but not limited to, the following: the auditing of regulatory inspection reports, failure of the owner to conduct a regulatory inspection, to investigate a complaint, or as determined necessary after a flood event.
- (2) Any inspection conducted by the commissioner in accordance with this subsection, including a regulatory inspection, shall be performed by a professional

engineer or personnel of the DEEP Dam Safety Program with technical training in the inspection of dams and under the supervision of a professional engineer.

Section 3. The Regulations of Connecticut State Agencies are amended by adding section 22a-411a-1 as follows:

(NEW) Sec. 22a-411a-1. Definitions.

As used in this section and section 22a-411a-2 of the Regulations of Connecticut State Agencies:

- (1) "Abutment" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (2) "Appurtenance" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (3) "Breach" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (4) "Commissioner" means the Commissioner of Energy and Environmental Protection, or such commissioner's designated representative.
- (5) "Class B Dam" means a significant hazard potential dam, as provided for in section 22a-409-2(a) of the Regulations of Connecticut State Agencies.
- (6) "Class C Dam" means a high hazard potential dam, as provided for in section 22a-409-2(a) of the Regulations of Connecticut State Agencies.
- (7) "CT Dam ID Number" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (8) "Dam" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (9) "Dam failure" means a catastrophic breach characterized by the sudden, rapid, and uncontrolled release of impounded water, or a lesser breach that adversely affects the dam's primary function of impounding water.
- (10) "Embankment" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (11) "Early warning notification" means an alert stage in which the local authorities are informed by the dam owner that a situation exists at a dam that could develop into a serious hazard to downstream inhabitants, making evacuation necessary.

- (12) “Emergency” means a condition of a serious nature which develops unexpectedly, endangers the structural integrity of a Class C or Class B dam, and requires immediate action.
- (13) “Emergency action plan” or “EAP” means a formal document required to be submitted to the commissioner in accordance with section 22a-411a-2 of the Regulations of Connecticut State Agencies.
- (14) “Emergency management authority” means any local, state, federal, or tribal agency responsible for emergency operations, planning, mitigation, preparedness, response, and recovery for all hazards.
- (15) “Emergency operation center” means the location or facility where responsible officials gather during an emergency to direct and coordinate emergency operations, to communicate with other jurisdictions and with field emergency forces, and to formulate protective action decisions and recommendations during an emergency.
- (16) “Final warning notification” means a warning in which the local authorities are informed by the dam owner that a failure of the dam is a likely possibility and residents downstream should be evacuated immediately.
- (17) "Flood" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (18) "Hazard potential" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (19) “Inundation map” means a map sufficient in graphic detail and of a scale that clearly shows the downstream inhabited areas and the inundation zones with features and other related information required in section 22a-411a-2(b) of the Regulations of Connecticut State Agencies.
- (20) “Inundation zone” means the area downstream of a dam that could be temporarily inundated with water released by a dam failure.
- (21) “Operator” has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (22) “Owner” has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.
- (23) “Person” has the same meaning as provided in section 22a-2(b) of the Connecticut General Statutes.
- (24) “Piping” means the progressive development of internal erosion through a dam by water, appearing downstream as a hole or seam discharging water that contains soil particles.
- (25) “Public service company” has the same meaning as provided in section 16-1 of the Connecticut General Statutes.

(26) "Professional engineer" means an individual who is currently licensed and registered under section 20-302 of the Connecticut General Statutes.

(27) "Structure" has the same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.

(28) "Toe" same meaning as provided in section 22a-409-1(a) of the Regulations of Connecticut State Agencies.

Section 4. The Regulations of Connecticut State Agencies are amended by adding section 22a-411a-2 as follows:

(NEW) Sec. 22a-411a-2. Requirements for Emergency Action Plans (EAPs).

(a) **Emergency Action Plans.** Each owner of a Class C or Class B dam shall prepare an emergency action plan (EAP) for each Class C or Class B dam that he or she owns. The owner shall coordinate with the agencies responsible for providing emergency services when developing the plan. The owner shall update the EAP a minimum of every two years, or more frequently as necessary to reflect significant changes. Copies shall be filed with the commissioner and the chief executive officer and the emergency management officer of any municipality that would potentially be affected in the event of an emergency involving the dam for which the EAP has been prepared.

(b) **Emergency Action Plan Components.** A complete EAP shall include the following components:

(1) An inundation map prepared by a professional engineer who uses all elevations based on a reference to Geodetic North American Vertical Datum (NAVD88).

(A) The map shall show, at a minimum, the following features:

- (i) The name and address or location of the dam,
- (ii) Pertinent downstream features such as buildings, homes, railroads, bridges, schools, hospitals, camp grounds, other dams, and any other significant facilities, etc.,
- (iii) The inundation zone for wet weather with arrows indicating the direction of the flood wave,
- (iv) A north arrow and bar scale, and
- (v) Pertinent downstream cross sections, such as roads (identify the road names).

- (B) The following information related to the inundation map shall also be included with the map:
- (i) An estimated timeline that shows arrival times of peak floodwaters expressed in hours and minutes and incremental increase in water depth above the baseline elevation at critical intersection(s), structure(s), or inhabited structure(s).
 - (ii) A list of all streets, roads, and highways, including the address of the residences and businesses subject to flooding.
 - (iii) A location map sufficient in scale to clearly show the exact location of the impoundment in relation to the surrounding area, other dams in the area, and the delineation of the drainage area. Said map shall include a north arrow, a bar scale, and the size of the drainage area noted in square miles.
 - (iv) A description of the method or computer model used to prepare the inundation map.
 - (v) Identification of any road closures.
 - (vi) Identification of any evacuation routes.
 - (vii) Identification of any emergency shelters.
- (2) A dam monitoring procedure that shall outline procedures for monitoring the dam during periods of heavy rainfall and runoff, or when the dam owner observes any of the conditions noted in subdivision (3)(A)(i), (3)(A)(ii) or (3)(C)(i) to (3)(C)(v), inclusive, of this subsection. At a minimum, the dam monitoring procedure shall provide for the following:
- (A) The identification of the personnel and their alternate(s) responsible for conducting monitoring of the dam and features of the dam to be inspected at given intervals.
 - (B) The initiation of monitoring of the dam when the National Weather Service announces a Flood Warning for the area where the dam is located or when the dam owner observes any of the conditions noted in subdivision (3)(A)(i), (3)(A)(ii) or (3)(C)(i) to (3)(C)(v), inclusive, of this subsection. Said monitoring shall be conducted at an interval that has been calculated by a professional engineer retained by the owner, to correspond with the particular hydrologic, hydraulic and structural components of the dam. Such monitoring shall include viewing the dam and, if it is safe to do so, walking the dam crest at regular intervals to determine if any sloughing of the embankment, cracking, settlement, or movement of the dam has occurred. This shall also include the inspection of the toe of the dam and the abutment contacts to detect any signs of deterioration of the dam or its components, and inspection of the spillway(s) and outlet structure(s) for accumulations of debris.

- (C) A notification to the local authority that monitoring under the procedure has been initiated in accordance with the EAP on file with the municipality.
 - (D) The maintenance of a written record of all monitoring activity which shall include at a minimum, date and time of each inspection interval, rainfall data, reservoir level, observation of any changes in the dam including sloughing of the embankments, cracking, settlement, movement, erosion, seepage, deterioration of abutment contacts, debris obstructing the spillway(s) or outlet structure(s), or any other sign the dam is deteriorating. When observing seepage, the written record shall comment on location, amount of flow and whether it is clear, cloudy or muddy. When observing movement, sloughing or erosion of the dam the written record shall comment on the depth and location of said conditions.
 - (E) If applicable, a description of all automated monitoring equipment the owner or operator will utilize to conduct monitoring, and a description of a testing procedure for such equipment that occurs at a minimum semi-annually, to ensure proper operation and maintenance.
 - (F) The steps to be taken to provide adequate lighting to view the dam at night.
 - (G) An inventory of emergency equipment and supplies and their location, and personnel which could be utilized by the dam owner or operator to respond to emergencies at the dam, including, but not limited to, clearing debris blocking the spillway, repairing surface erosion of an embankment, or placing sandbags.
 - (H) A list identifying personnel and their alternate(s) that would be utilized by the dam owner or operator(s) responsible for decision making and for implementing emergency repairs, when the owner is absent.
- (3) A warning notification procedure that shall provide a formal warning notification process in accordance with this subdivision to alert the local authority who is responsible for acting on the warning or determining whether to evacuate residents or others within the inundation zone in the event of an emergency, including a warning notification list with addresses for residences, businesses, and highways located in the inundation zone, to be used to warn inhabitants downstream that the dam may fail, or is in imminent danger of failing.
- (A) The dam owner or operator shall provide an early warning notification to the local authority responsible for providing emergency services when any of the following conditions have been observed:
 - (i) A marked increase in seepage through an embankment, particularly if evidence of a boil (release of seepage under pressure which tends to “float” away the material through which it flows) is observed.
 - (ii) An increase in the rate of rise of the impoundment such that the non-overflow section(s) of the dam may be overtopped.

(iii) Conditions are developing at the dam that could lead to a potential failure.

(B) The early warning notification shall state:

- (i) The name of the dam owner and operator,
- (ii) The name and location of the dam,
- (iii) Conditions that indicate the dam may be compromised, and
- (iv) A notice to the emergency management authority to warn residents in those areas within the limits of potential flooding as described in the emergency action plan for such dam that an evacuation of this area may be necessary.

(C) The dam owner or operator shall provide a final warning notification to alert the local authority who is responsible for acting on the final warning or evacuating residents in the inundation zone in the event of an emergency when any of the following conditions have been observed:

- (i) A dramatic increase in seepage flow (or a pre-existing boil), particularly if piping is occurring.
- (ii) Cracking, settlement, or movement of masonry or concrete spillways, training walls or other structures.
- (iii) The rise of the impoundment is such that the non-overflow section(s) of the dam will overtop or is overtopping and the dam is failing or is in imminent danger of failing.
- (iv) Substantial erosion or sloughing of dam embankments.
- (v) An increase in the rate of rise of the impoundment such that the non-overflow section(s) of the dam will be overtopped.
- (vi) Any other condition resulting in a probable failure of the dam.

(D) The final warning notification shall state:

- (i) The name of the dam owner or operator,
- (ii) The name and location of the dam,
- (iii) Conditions at the dam indicate that the dam is in imminent danger of failing,
- (iv) That this is a final warning, and

- (v) That this is a notice to the emergency management authority to warn residents in those areas within the limits of potential flooding as described in the emergency action plan for such dam that an evacuation of this area is necessary.
- (4) The location of an emergency operation center where responsible officials will gather during an emergency to direct and coordinate emergency operations.
 - (5) A notification flow chart that shows titles or associated contact names with phone numbers of local, state, federal, or tribal agencies, and any public service company that are responsible for providing emergency services. The contacts on the flow chart shall be called when dam monitoring is initiated in response to a National Weather Service Flood Warning, when an early warning notification is recommended by the owner or operator and when a final warning notification (evacuation) is recommended to the appropriate local authority. The flow chart shall clearly depict the order and circumstance under which named contacts will be notified.
 - (6) A distribution list of all local, state, federal, and federal tribal agencies affected that will receive a copy of the EAP.
 - (7) A description of the procedure for determining when the emergency can be terminated.
 - (8) A description of an exercise, or test to be conducted at a minimum of every two years of the EAP that includes participation of all appropriate personnel identified in the EAP that are responsible for providing emergency services in the event the EAP is initiated.
 - (9) A title page with the date the EAP is submitted. The title page shall identify the document as an emergency action plan and specify the dam for which it was developed. The dam, reservoir names, hazard class, and town(s) in which the dam is located shall be included on the title page along with the CT Dam ID number.
 - (10) An executive summary that describes the physical components of the dam, pertinent history, the riverine system on both the upstream and downstream area of the dam and any associated purpose of those waters.
- (c) **Submission of Emergency Action Plans.** New and updated EAPs for Class C Dams shall be submitted to the commissioner not later than twelve (12) months from the effective date of this section. New and updated EAPs for Class B Dams shall be submitted to the commissioner not later than eighteen (18) months from the effective date of this section.
 - (d) **Failure to submit EAPs or EAP updates.** Failure to submit an EAP by the deadline imposed by subsection (c) of this section or to submit an EAP update every two (2) years, as required by subsection (a) of this section, shall be cause for the imposition of a civil penalty by the commissioner or the commissioner's designee on the dam owner in accordance with section 22a-6b of the Connecticut General Statutes and section 22a-6b-1 of the Regulations of Connecticut State Agencies.

- (e) **Incomplete submission.** The submission of an EAP lacking information required by this section shall be cause for the commissioner to issue an order to the dam owner requiring the submission of a complete EAP within sixty (60) days of the order. If a submitted EAP is incomplete, the order shall identify the information needed to complete the EAP. The commissioner may impose a civil administrative penalty in accordance with section 22a-6b of the Connecticut General Statutes and section 22a-6b-1 of the Regulations of Connecticut State Agencies for failure to submit a complete EAP in compliance with any order issued by the commissioner or the commissioner's designee pursuant to this subsection.

REGS-1 Rev. 09/2013
(Statement of Purpose page)

Statement of Purpose

Public Act 13-197 mandates certain changes to the Department's dam safety program and specifically requires the commissioner to update and add to the existing dam safety regulations to incorporate these changes and new requirements.

Sections 1 and 2 - Amendments to RCSA §§ 22a-409-1 and 22a-409-2

These amendments are required to implement recent statutory changes regarding the registration and inspection of dams on private property. The changes to the regulations establish procedures and requirements for dam owners to complete registration of a dam, comply with a schedule for the inspection of their dams by retaining the services of a professional engineer licensed in the State of Connecticut, and to establish fees for inspections undertaken by the department to recover the reasonable cost of inspections that may be conducted by the state under certain circumstances.

Section 3 and 4 Adoption of RCSA § 22a-411a-1 and 22a-411a-2

This new section establishes requirements for emergency action plans for owners of high and significant hazard dams. These Emergency Action Plans require dam owners to create and implement procedures for observing the dams during periods of heavy rainfall and runoff, or when other conditions develop that warrant close monitoring of the dam and communicating with the appropriate emergency management authorities regarding the status of the dam and to provide warning about potential or imminent dam failure, including recommendations to implement evacuation plans for residents or businesses in downstream areas potentially affected by a dam failure.

REGS-1 Rev. 09/2013

(Certification page—see Instructions on back)

CERTIFICATION

This certification statement must be completed in full.

I hereby certify that the above Regulation(s)

- 1) is/are (check all that apply) adopted amended repealed by this agency pursuant to the following authority(ies): (complete all that apply)
- a. **Connecticut General Statutes section(s) 22a-409 and 22a-411a.**
- b. **Public Act Number(s) PA 13-197.**
 (Provide public act number(s) if the authorizing act has not yet been codified in the Connecticut General Statutes.)

And I further certify

- 2) that **Notice of Intent** to adopt, amend or repeal said regulation(s) was electronically submitted to the Secretary of the State on 2/24/2015, and posted to the Secretary's regulations website on 2/24/2015; (Insert dates notice was (a) emailed to the Secretary of the State and (b) posted on the Secretary's website, if notice and posting were required by CGS 4-168, as amended by PA 13-247 and PA 13-274.)
- 3) and that a public hearing regarding the proposed regulation(s) was held on 4/7/2015 or that no public hearing was held; (Insert date(s) of mandatory public hearing(s) held pursuant to CGS 4-168(a), as amended, or other applicable statute, and/or voluntary hearing, or if no hearing was held, check the box for that statement.)
- 4) and that notice of **Decision to Take Action** on said regulations was electronically submitted to the Secretary of the State on 9/25/2015, and posted to the Secretary's regulations website on 10/1/2015; (Insert dates notice was (a) emailed to the Secretary of the State and (b) posted on the Secretary's website, if notice and posting were required by CGS 4-168, as amended by PA 13-247 and PA 13-274.)
- 5) and that said regulation(s) is/are **EFFECTIVE** (check one, and complete as applicable)
- When posted online by the Secretary of the State.
- OR on (insert date) _____.

6) SIGNED (Head of Board, Agency or Commission) <i>Michael Sullivan</i>	OFFICIAL TITLE, DULY AUTHORIZED Deputy Commissioner	DATE 12/22/15
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APPROVED by the Attorney General as to legal sufficiency in accordance with CGS Section 4-169, as amended.

DATE 12/31/15	SIGNED (Attorney General or AG's designated representative) <i>Robert Wickert</i>	OFFICIAL TITLE, DULY AUTHORIZED Special Counsel to Attorney General
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Proposed regulations are DEEMED APPROVED by the Attorney General in accordance with CGS Section 4-169, as amended, if the Attorney General fails to give notice to the agency of any legal insufficiency within thirty (30) days of the receipt of the proposed regulation.

(For Regulation Review Committee Use ONLY)

- APPROVED in WHOLE or WITH technical corrections deletions substitute pages
- DEEMED APPROVED, pursuant CGS 4-170(c), as amended.
- Rejected without Prejudice Disapproved, pursuant to CGS 4-170(c), as amended.

By the Legislative Regulation Review Committee in accordance with CGS Section 4-170, as amended	DATE 1/26/16	SIGNED (Administrator, Legislative Regulation Review Committee) <i>[Signature]</i>
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In accordance with CGS Section 4-172, as amended by PA 13-247 and PA 13-274, one certified paper copy and one electronic copy with agency head certification statement received on the date(s) specified below.

DATE	SIGNED (Secretary of the State)	BY

(For Secretary of the State Use ONLY)

Date Posted to SOTS Regulations Website:

Date Electronic Copy Forwarded to the Commission on Official Legal Publications:

SOTS file stamp: