



Budgeting and Funding Your Dam Removal Project

From the Agenda

- How do we fund these complicated projects?
- How does EEA judge proposals and what are eligible costs?
- How do you break out the components of your project and budget/fundraise accordingly?



We think of dam removal projects in three major categories:

Safety – Dams that do not comply with safety regulations. Dam owners are required to be in compliance. This may include repair or removal of the structure.

Resiliency – May increase flooding not related to overtopping and failure. May involve a culvert. May exacerbate low-flow conditions in drought.

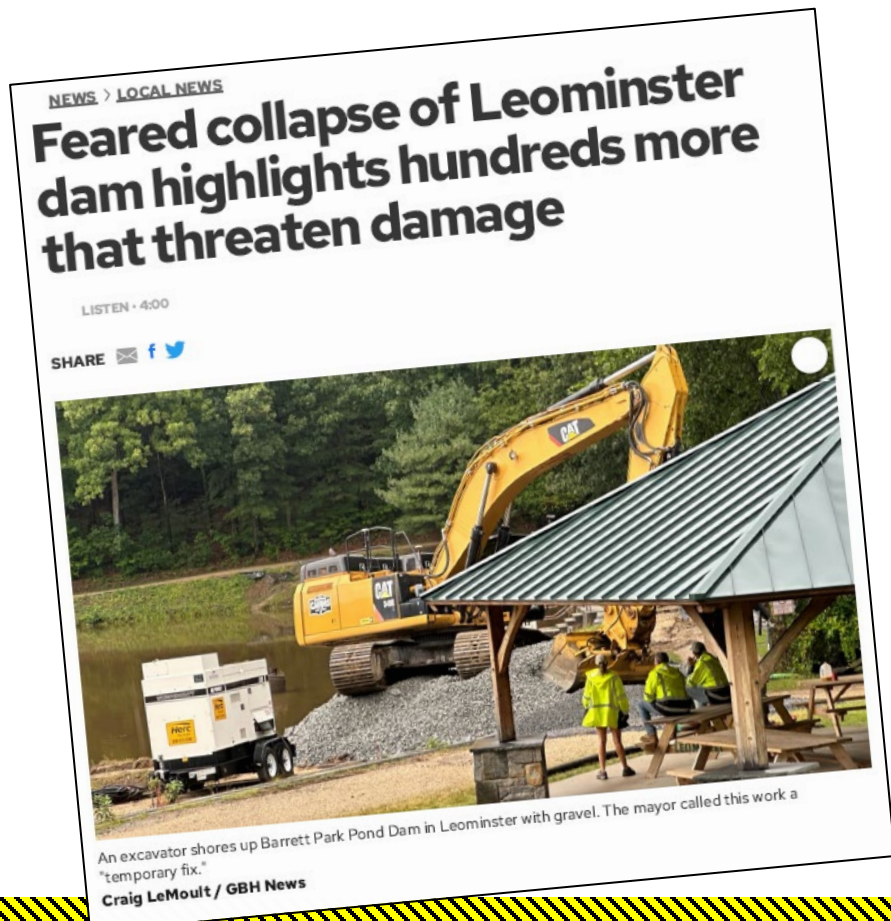
Ecology – Regardless of size or hazard. A dam in top condition disrupts river functions as much as a failing one. Some riverine habitats and species are more threatened than others.





Think Safety!

- To maximize your chances, understand ALL of the benefits of removal
- Understand [302 CMR 10 DAM SAFETY](#) Regulations



HAZARD POTENTIAL CLASSIFICATION TABLE

High Hazard Potential (Class I)	Dams located where failure will likely cause loss of life and serious damage to home(s), industrial or commercial facilities, important public utilities, main highway(s) or railroad(s).
Significant Hazard Potential (Class II)	Dams located where failure may cause loss of life and damage to home(s), industrial or commercial facilities, secondary highway(s) or railroad(s) or cause interruption of use or service of relatively important facilities.
Low Hazard Potential (Class III)	Dams located where failure may cause minimal property damage to others. Loss of life is not expected.



Poor Condition Dam. A dam whose condition, as determined by the Commissioner, presents a significant risk to public safety located downstream from the dam. Among the deficiencies that may result in this determination are: significant seepage or piping, significant woody vegetation and tree growth on embankments and areas immediately adjacent to the dam and appurtenances, significant erosion or subsidence conditions, significant sink holes, significant sloughing of embankment, significant deficient flood routing spillway capacity and/or condition of outlet(s), significant movement or cracking of structural elements and other significant structural deficiencies.

Unsafe Condition Dam. A dam whose condition, as determined by the Commissioner, is such that a high risk of failure exists and the dam condition presents a high risk to public safety located downstream from the dam. Among the deficiencies that may result in this determination are: severe seepage or piping, severe woody vegetation and tree growth on embankments and areas immediately adjacent to the dam and appurtenances, severe erosion or subsidence conditions, severe sink holes, severe sloughing of embankment, severely deficient flood routing spillway capacity and/or condition of outlet(s), severe movement and/or severe cracking of structural elements and other severe structural deficiencies.



What is the threat to people and infrastructure?

Interest is keeping people safe

Homes

Businesses

Hospitals and Schools

[National Inventory of Dams \(army.mil\)](http://www.army.mil)

and

Ensuring continuity of infrastructure

Roads

Rails

Power/Telecom/Gas

Water/Sewer

Physical Condition	Hazard Classification				
		Non-Jurisdictional	Low	Significant	High
Good					
Satisfactory					
Fair					
Poor					
Unsafe					

Answers sought after the weekend failure of an earthen dam on private land in Hinsdale

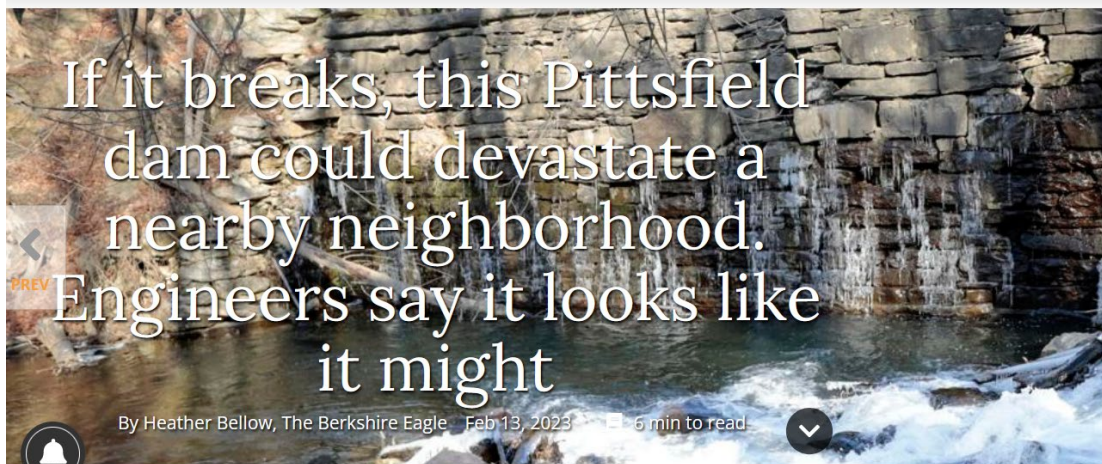
By Matt Martinez, The Berkshire Eagle
Oct 17, 2022



☰ The Berkshire Eagle

If it breaks, this Pittsfield dam could devastate a nearby neighborhood.

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LOCAL NEWS >

East Bridgewater yards flooded after dam breaks in Halifax



BY CBSBOSTON.COM STAFF

UPDATED ON: JANUARY 27, 2023 / 5:17 PM / CBS BOSTON



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Feared collapse of Leominster dam highlights hundreds more that threaten damage

Cost Savings From Removing Dams – Moving towards a decision

- Required inspections
 - High Hazard – every 2 years
 - Significant Hazard – every 5 years
 - Low Hazard – every 10 years
 - Follow-Up Inspections as needed
- Emergency Action Plan and Update
- Insurance?
- Maintenance and Repair
- Inadequate Spillway Capacity, future conditions and future retrofit



Cost Drivers for Dam Removal Projects

Expensive Things We Know About

Bridges

Culverts

Utilities

HazMat/Contaminated Sediment

Poor Site Access

Railroads

Dams in Series

Fish Ladders

Additional Factors That May Be Expensive

Ownership

Abutters and Abutting Structures

Roads Over Dams

MEPA and Permit Timeline

Mitigation

Active vs. Passive Sediment Management

Construction Market Cost

Surprises in the impoundment

Common Design and Permitting Costs

- Feasibility Study
- Resource Delineation
- Survey
- Sediment Characterization and Quantification
- Hydrologic and Hydraulic Analysis (H&H)
- Design Plans

- Regulatory Coordination Meeting
- Massachusetts Environmental Policy Act ENF/SIR
- Wetlands Protection Act NOI
- U.S. Army Corps of Engineers Section 404
- Department of Environmental Protection Section 401 Water Quality Certificate and Chapter 91
- Office Dam Safety Chapter 253 Permit

- Final Plans and Specifications
- Bid Document



Potential Funding Sources

Safety

- EEA Dam and Seawall Program
- FEMA High Hazard Potential Dam Program

Resiliency

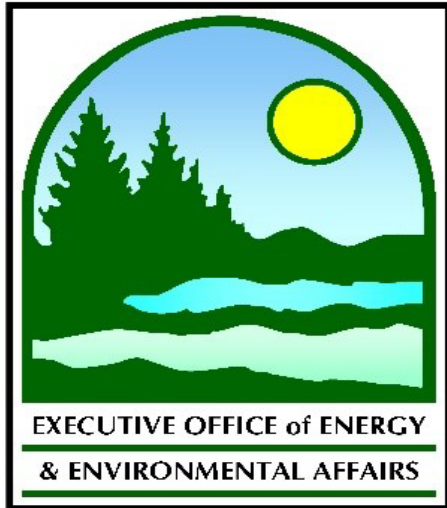
- EEA Municipal Vulnerability Preparedness
- FEMA BRIC

Ecological Benefit

- DER Priority Projects
- EEA Massachusetts Environmental Trust
- NOAA Restoration Center
- U.S. Fish and Wildlife Service
- National Fish and Wildlife Foundation
- Private Foundations
- DFG Fee-in-lieu program
- U.S. Army Corps of Engineers Section 206 - Aquatic Ecosystem Restoration
- Natural Resources Conservation Service

Infrastructure

- RPO/MassDOT TIP Listing
- MassDOT Small Bridge Program
- Exec. Office of Economic Development One Stop
- Federal Highway Administration National Culvert Removal, Replacement, and Restoration Grants



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