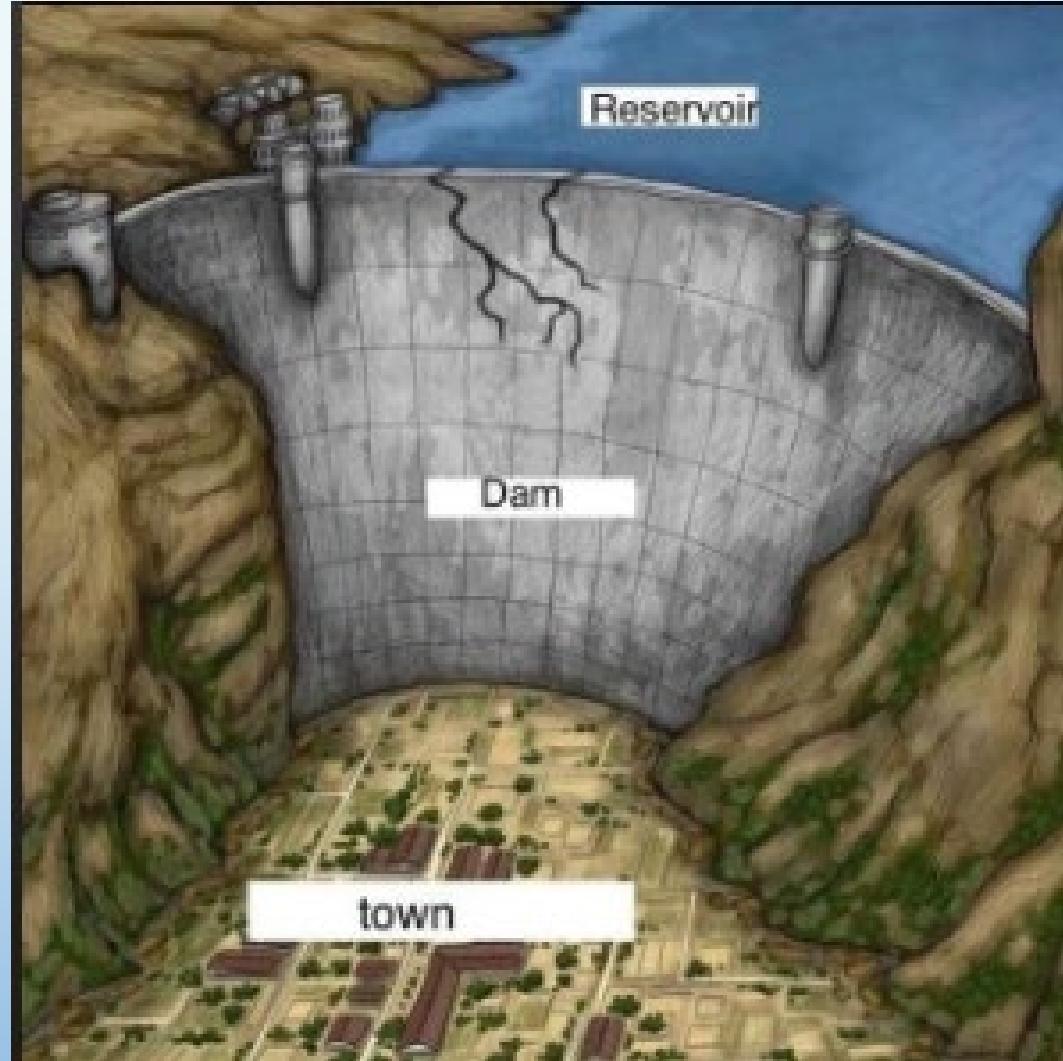


# DAM REMOVAL AND DAM SAFETY



Reddit.com

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# THE PROBLEM: OLD DAMS

- HUNDREDS OF AGEING, DAMS OBSTRUCTING OUR WATERWAYS
- INCREASED RISK OF DAM INCIDENT OR FAILURE
- PUBLIC SAFETY RISK AS WELL AS ECOLOGICAL IMPACT
- CHANGING CLIMATE



Wainwright Dam, Salisbury

# THE GOAL: MAKE US SAFER AND MANAGE RIVERS TOWARD EQUILIBRIUM CONDITION

- REDUCE RISK TO PEOPLE AND PROPERTY
  - DAM REMOVAL TODAY CAN PREVENT MULTIPLE FUTURE PROPERTY BUYOUTS
- RECONNECT RIVERS FOR FLOOD AND DROUGHT RESILIENCE, WATER QUALITY DEGRADATION, AND BIODIVERSITY DECLINE
- SAVE TAXPAYER DOLLARS ON DISASTER RECOVERY (VT SPENDS TENS MILLIONS ANNUALLY)



# HOW SAFE ARE OUR DAMS?

- “HIGH HAZARD—POTENTIAL DAMS NATIONWIDE HAVE INCREASED BY 20% SINCE 2012, DRIVEN MOSTLY BY INCREASED DEVELOPMENT IN DOWNSTREAM AREAS” – 2025 NATL INFRASTRUCTURE REPORT CARD
- ANR’S VT DAM SAFETY HAS JURISDICTION OF OVER 900 DAMS (NON- POWER, NON-FEDERAL)
- 44 ARE HIGH HAZARD, 133 ARE SIGNIFICANT, 252 ARE LOW HAZARD, OVER 500 ARE EITHER NOT RATED OR MINIMAL HAZARD
- ANR OWNS 100 DAMS – 80% ARE MORE THAN 50 YEARS OLD AND 40% ARE IN POOR OR UNSATISFACTORY CONDITION

additional strain to the nation’s dams. For example, in Vermont, the average age of the state’s dams is 89 years. Because of this, many of Vermont’s dams were not built using modern codes and standards; thus, they are not designed to withstand increasingly heavy and frequent rain events. Unfortunately, in July 2023, prolonged heavy rainfall over 48 hours produced between three and nine inches of rain in some parts of the state, which resulted in historic flooding and placed significant strain on Vermont’s aging dams. Following the flooding, state dam inspectors assessed 400 dams across the state and found that 57 dams were overtopped by flooding, 50 dams sustained “notable damage,” and five dams failed.<sup>6</sup>

# FLOODS OF 2023 & 2024

- JULY 2023 FLOOD -DAM SAFETY COMPLETED RAPID INSPECTIONS AT 400 DAMS.
- 5 DAMS FAILED, 53 WITH MAJOR DAMAGE, AND 57 WERE OVERTOPPED FROM FLOODING WITH OVER 7INCHES OF RAIN
- TIMING IS CRITICAL, URGENCY IS REAL (INCREASED INTEREST IN DAM REMOVAL, AND RECOGNIZED BENEFIT OF NATURE – BASED SOLUTIONS)
- DAMS COST \$ TO MAINTAIN/REPAIR
- LOTS OF DAMS EITHER NEEDING TO BE REPAIRED OR CONSIDERING REMOVAL



“Dam Scary: Intense Storms Push Vermont’s Aging Structures to the Brink”  
Seven Days, July 26, 2023

# WHAT HAVE WE DONE ABOUT IT? - ACT 161

## **ACT 161 (REGULATION OF DAMS) PHASE 1 – ADMINISTRATIVE IS COMPLETE:**

- REFINED DEFINITION OF A “DAM”
- DAM OWNER OBLIGATION AND RESPONSIBILITY
- PUBLIC INVENTORY, RECORDING DAMS IN LAND RECORDS
- HAZARD POTENTIAL DEFINITIONS UPDATED TO MATCH NATIONAL INVENTORY
- PERIODIC INSPECTION SCHEDULE
- COMPLIANCE WITH INSPECTION RESULTS

## **PHASE 2 – TECHNICAL STANDARDS RULEMAKING PROCESS IS NEXT:**

- DAM ORDER APPLICATION REQUIREMENTS
- DESIGN, PLANNING, AND CONSTRUCTION REQUIREMENTS
- OPERATION & MAINTENANCE REQUIREMENTS
- INSPECTION, MONITORING, RECORD KEEPING, AND REPORTING
- CRITERIA FOR HAZARD POTENTIAL CLASSIFICATION
- EMERGENCY ACTION PLANS (EAPS) UPDATES
- DETAILED TECHNICAL STANDARDS



# ACT 121 FLOOD SAFETY ACT- THE TIME WAS YESTERDAY

“AN ACT RELATING TO THE REGULATION OF WETLANDS, RIVER CORRIDOR DEVELOPMENT, AND DAM SAFETY”

WATERSHED SCALE APPROACH TO PUBLIC SAFETY & RESILIENCE

- LIMIT DEVELOPMENT IN MOST DANGEROUS AND FLOOD-VULNERABLE AREAS
- **STRENGTHEN OVERSIGHT AND MAINTENANCE REQUIREMENTS FOR DAM OWNERS AND INVEST IN THE REMOVAL OF DAMS THAT EXACERBATE FLOODING, TOGETHER ENHANCING PUBLIC SAFETY.**
- IMPROVE WETLAND MAPPING AND REPORTING OF WETLANDS- GUIDED BY SCIENCE.

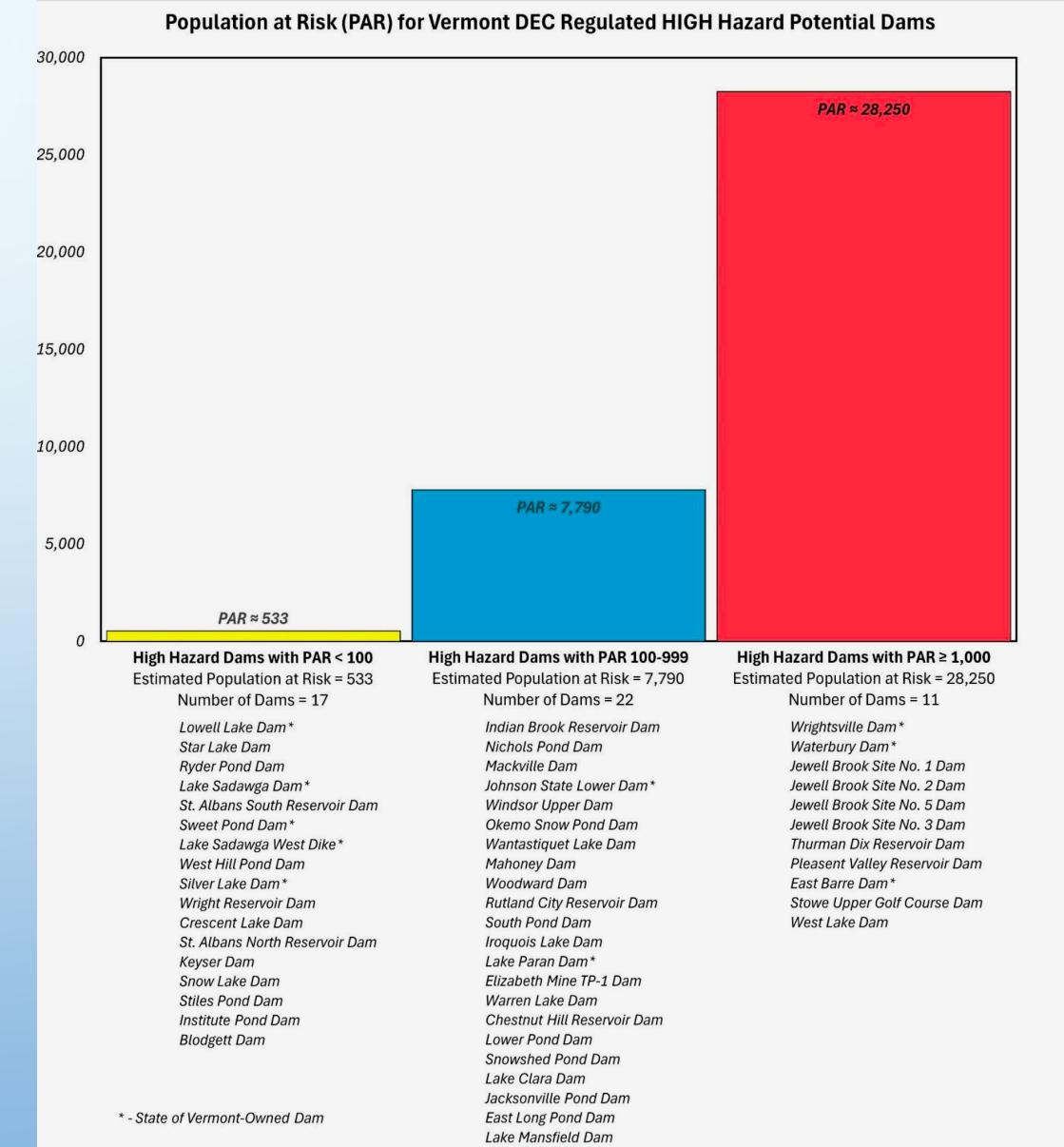
9 NEW VT DEC POSITIONS (DAM SAFETY PROGRAM, RIVERS AND WETLANDS PROGRAMS).

PROVIDES DEC WITH MORE ENFORCEMENT AUTHORITY AND CREATES A DAM SAFETY REVOLVING LOAN FUND (\$ AVAILABLE FOR BOTH EMERGENCY AND NON-EMERGENCY PROJECTS, BUT NON-EMERGENCY CRITERIA IS MORE RESTRICTIVE (INCLUDES ALTERNATIVE ANALYSIS WITH REMOVAL OPTIONS).

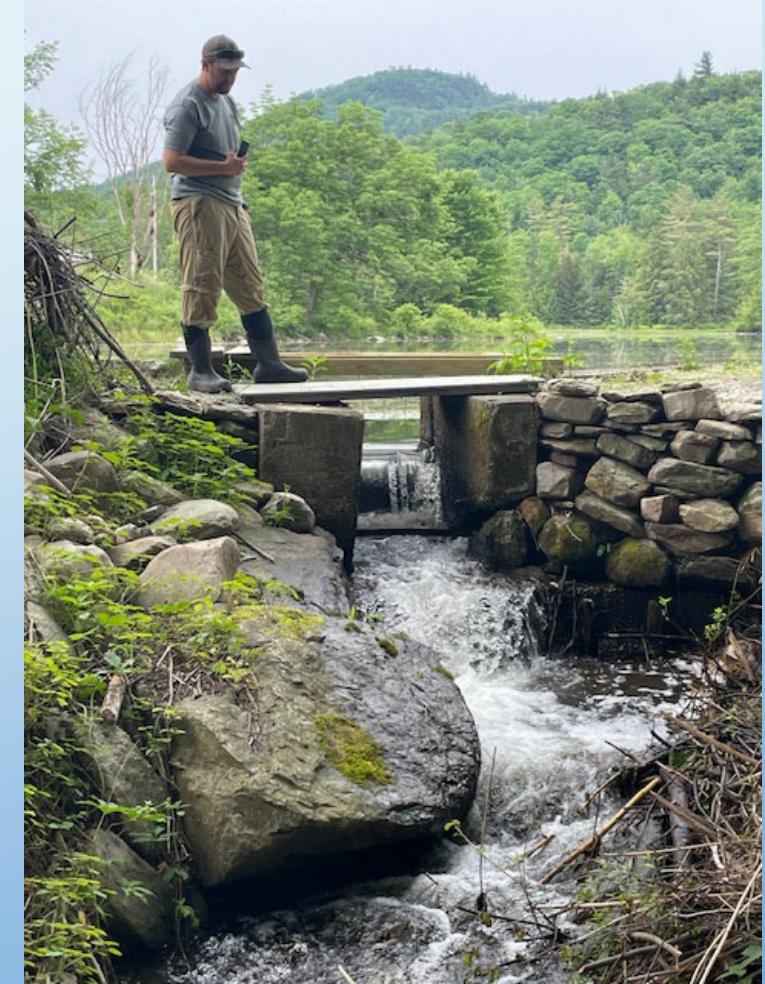


# H. 778 DAM SAFETY; EMERGENCY OPERATIONS PLANNING

- DEVELOP AN **EMERGENCY OPERATIONS PLANS (EOPS)** FOR EACH DAM WITH A POPULATION AT RISK OF >100 PERSONS (JANUARY 15, 2030 FOR >1000; AND JANUARY 15, 2031 FOR >100 BUT <1000 PERSONS)
- GOVERNOR OR DIRECTOR OF VT EMERGENCY MANAGEMENT (VEM) MAY REQUIRE THE EVACUATION FOR AN AREA AT RISK OF DAM FAILURE OR SUBJECT TO DAM FAILURE
- PILOT PROJECT BY VEM TO DEVELOP EOP'S FOR 2 STATE-OWNED HIGH-HAZARD DAMS WITH POPULATIONS AT RISK OF >1000 PERSONS (JULY 1, 2028 – SUBMITTAL RESULTS TO LEGISLATURE)



# BALDWIN POND DAM, STARKSBORO – SIGNIFICANT HAZARD



# ROULEAU POND, WILLIAMSTOWN - SIGNIFICANT

- EMERGENCY BREACH POST 2023 STORM DAMAGE TO LOWER WATER LEVEL BY 4 FT TO REDUCE LOADING ON THE DAM UNTIL PERMANENT REMOVAL
- HOPING TO REMOVE IN 2026 CONTINGENT UPON FUNDING
- DOWNSTREAM DAMAGE IN WILLIAMSTOWN

“Unstable dam has town on edge”

[Times Argus, July 18, 2023](#) – Rouleau Pond Dam



# EAST CALAIS MILL DAM – SIGNIFICANT HAZARD

- CONSTRUCTED IN 1900, REBUILT IN 1975, REPAIRED IN 2004, AND THEN AGAIN IN JULY 2023.
- JULY 2023 FLOOD THE DAM OVERTOPPED AND ERODED THE EARTHEN EMBANKMENT ON RIVER LEFT.
- DAM FAILURE WOULD LIKELY RESULT IN PROPERTY LOSS OF 3 BUILDINGS.
- CONDITION OF DAM RATING FROM FAIR IN 2017, TO UNSATISFACTORY IN 2023 AND RECLASSIFIED FROM LOW HAZARD TO SIGNIFICANT.
- PLANS FOR REMOVAL ARE UNDERWAY



# HANDS MILL, WASHINGTON- SIGNIFICANT HAZARD



# CLARKS SAWMILL, CABOT- 2023 DAM FAILURE



*Figure 2: Clark Saw Mill Dam (Looking Upstream on the Winooski River)*

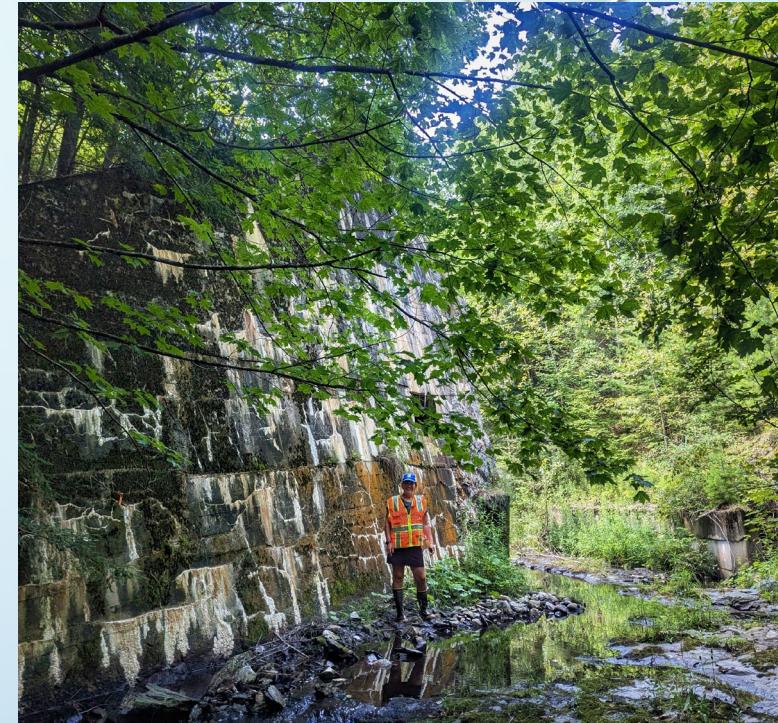
# YOUNGS BROOK DAM REMOVAL, WEST RUTLAND

## Overview:

- Earth and concrete Dam 250 ft long 50 ft high
- Significant hazard
- Blocking 4 miles upstream
- Water supply reservoir for the town in the 1920s
- The reservoir and dam were abandoned in 1985 and suffered a major breach during a storm event ten years later
- The breach caused infrastructure damage downstream and the dam continued to pose a major safety risk during storm events up until its removal

## Restoration:

- 560-foot-long pilot channel
- $\frac{1}{2}$  an acre of Floodplain restored
- Future tree plantings planned at restoration site and at fill site
- The channel is finding its equilibrium



# CROSS BROTHERS DAM, NORTHFIELD – COMING SOON



Before



After

# 2025 DAM REMOVAL HIGHLIGHTS:

- 9 DAMS REMOVED IN 2025 (RIPTON, BARRE TOWN, TUNBRIDGE, NEWPORT TOWN, BERKSHIRE, WEST DOVER, SPRINGFIELD, BARRE AND WEST RUTLAND) – MOST EVER IN ONE YEAR
- OVER 125 MILES OF RIVER WAS RECONNECTED.
- 6100 LINEAR FT OF STREAM CHANNEL WAS RESTORED TO FIND ITS OWN MEANDER PATH
- 10 ACRES OF FLOODPLAIN WAS RESTORED
- ONE SIGNIFICANT HAZARD DAM WAS REMOVED AND 9 DAMS IN POOR CONDITION
- OVER \$4 MILLION SPENT WITHIN THE LOCAL ECONOMY ON EXCAVATION CONTRACTORS AND ENGINEERS
- IMPROVED ACCESS AND RECREATIONAL OPPORTUNITIES ON RIVERS
- IMPROVED HEALTH OF THE RIVERS, INCLUDING WATER QUALITY AND WILDLIFE HABITAT
- IMPROVED FLOOD RESILIENCE AND PUBLIC SAFETY
- BRINGS COMMUNITIES TOGETHER – ORGANIZATIONS THAT REMOVED DAMS IN 2025: FRANKLIN COUNTY CONSERVATION DISTRICT, MISSISQUOI BASIN ASSOCIATION, CONNECTICUT RIVER CONSERVANCY, WHITE RIVER PARTNERSHIP, MOUNT ASCUTNEY REGIONAL PLANNING, THE TOWN OF WEST RUTLAND, FRIENDS OF THE WINOOSKI RIVER AND VERMONT NATURAL RESOURCES COUNCIL