

# The Need for a National Dam Rehabilitation Program



We cannot afford to wait for additional dam failures.

## The Issue

Dam failures are man-made disasters. Neglect and inadequate design combined with downstream development have created some of the worst tragedies in our nation's history.

While federally owned dams are in good condition, and there have been modest gains in the number of dams being repaired, the number of state-regulated dams identified as unsafe is increasing at a faster rate than those being repaired. The number of unsafe dams has risen by 33% since 1998, ASCE's 2005 Report Card for America's Infrastructure gave Dams in the United States a grade of "D".

Additionally, the number of high-hazard potential dams (dams whose failure would cause loss of human life) is increasing dramatically. Since 1998, the number of high-hazard-potential dams has increased from 9,281 to 10,094, with 1,006 in North Carolina alone. The combined effect of rapid downstream development, aging/non-compliant structures and inadequate past design practices, coupled with a predicted increase in extreme events, demands fully funded and staffed state dam safety programs, as well as substantial and proactive funding for dam repairs.

The March 2006 failure of Ka Loko Dam in Hawaii killed seven people and caused millions of dollars in damage.

Even more alarming, states presently report more than 3,300 "unsafe" dams, which have deficiencies that leave them more susceptible to failure. Several states have large numbers of deficient dams, including Ohio (825), Pennsylvania (325), New Jersey (193), and Indiana (445). Many state agencies do not report statistics on unsafe dams; therefore the actual number is potentially much higher.

Without proper maintenance, repair and rehabilitation, a dam may become unable to serve its intended purpose and could be at great risk for failure. Effective dam inspection programs routinely identify deficiencies at dams, but inspections alone are not a remedy for these deficiencies. Responsibility for maintaining dams lies with dam owners, most of whom simply cannot afford to finance needed repairs. Consequently, delays in repairing unsafe dams increase the probability of tragic yet preventable disasters.

No price can be put on the lives lost due to dam failures.

## The Cost

The Association of State Dam Safety Officials estimates that \$36.2 billion is needed to rehabilitate dams across the nation, based on the current national inventory of non-federally owned dams. The estimate does not include costs for administration of a funding program, nor does it take into account the fact that the number of high hazard potential dams is increasing.

It is estimated that \$10.1 billion is needed to address the most critical\* dams that pose a direct risk to human life should they fail. Needed repairs to publicly owned dams are estimated at \$5.9 billion.

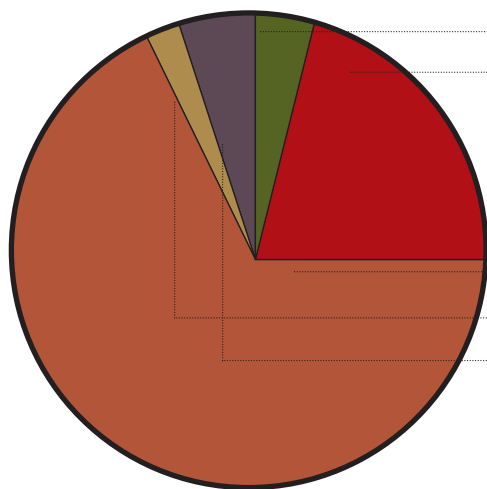
- Deterioration of our nation's dams is a public safety issue that demands a national solution.
- Lack of public policy addressing dam rehabilitation has led to the neglect of a hazardous element of the national infrastructure.
- Lives and local economies are at risk.
- Dam owners need a reliable source of funding for dam rehabilitation that will address safety and security issues.

# The Solution

To address the estimated \$36.2 billion cost, particularly the most critical\*, high hazard dams, the dam safety community advocates a federally backed funding source for dam repair, rehabilitation and, where appropriate, removal.

Prevention of dam failures is a more cost-effective use of public funds than is disaster clean up.

The federal government takes a proactive interest in funding rehabilitation of critical infrastructure, especially when the inadequacies of the structures threaten public health and safety such as highways, bridges, airports, water supply systems and wastewater treatment facilities, but not dams.



## Ownership of Dams

Federal	4%
Local Government	21%
Private	68%
Public Utility	2%
State	5%

Source: National Inventory of Dams, U.S. Army Corps Engineers, January 2005.

- There are approximately 79,000 dams in the U.S. National Inventory of Dams, of which states regulate 95%.
- Dams are a critical piece of the nation's infrastructure.
- Benefits of Dams: Water Supply; Flood Control; Navigation; Recreation; Irrigation; Power Supply; Waste Impoundment
- There are currently over 3,300 unsafe dams across the U.S. Since 1999, there have been 129 dam failures.

# Background



Dams provide tremendous benefits, including water supply for drinking, irrigation and industrial uses; flood control; hydroelectric power; recreation; and navigation. However, dams also represent one of the greatest risks to public safety. Historically, some of the largest disasters in the United States have resulted from dam failures. In 1889, 2,209 lives were lost when the South Fork Dam failed above Johnstown, Pennsylvania. The 1928 St. Francis Dam failure killed 450. During the 1970s, the failures of the Buffalo Creek Dam in West Virginia, Teton Dam in Idaho and the Toccoa Falls Dam in Georgia collectively cost 175 lives and more than \$1 billion in losses.

While the recent passage of the National Dam Safety Act of 2006 (Public Law No: 109-460), which provides funding through grants, has improved state dam safety programs, it does not provide funding for needed repairs.

There is still an alarming lack of public support and education about the need for proper maintenance and repair of dams. Unless a dam fails, dam safety is not usually in the public view, although it is an issue that affects the safety of millions of people who could be living and working in the path of a sudden, deadly dam failure.

\* Critical dams are those determined to be high-hazard, meaning failure will most likely cause loss of life or severe property damage.

Note: This flyer summarizes findings in the ASDSO report entitled, "The Cost of Rehabilitating Our Nation's Dams: A Methodology, Estimate and Proposed Funding Mechanisms," December 2002 [Revised October 2003]. This report is available from ASDSO at 859-257-5140 or [www.damsafetycoalition.org](http://www.damsafetycoalition.org).

# Purpose

The Dam Safety Coalition supports the creation of a federal funding program to repair the nation's unsafe dams and to address the critical issue of deteriorating dam structures that pose a severe threat to many communities throughout the country.

## Members

- American Society of Civil Engineers
- Associated General Contractors
- Association of State Dam Safety Officials
- National Stone Sand and Gravel Association
- National Society of Professional Engineers
- National Watershed Coalition
- Portland Cement Association
- U.S. Society on Dams

# Case Studies

In the past four years, 23 dam failures were reported to the National Performance of Dams program, which collects and archives information on dam performance as reported by state and federal regulatory agencies and dam owners.

## March 14, 2006 failure of Ka Loko Dam, Kauai, Hawaii

Heavy rainfall over a two-month period caused the failure of the Ka Loko Dam, killing seven people in the resulting flood.

- A privately owned dam, Hawaii State records show that the owner had repeatedly refused to allow safety inspections.
- An examination of the dam after the failure noted the presence of erodable material in the failure area, and reports suggest that the spillway was inaccessible, buried under several feet of dirt.
- Damage estimates are in excess of \$50 million.

## April 15, 2007 failure of Rainbow Lake Dam, New Jersey

Severe storms with rainfall in excess of 10 inches flooded Rainbow Lake and caused the dam to fail.

- Rainbow Lake Dam, classified as a high hazard dam constitutes part of State Route 56 in Pittsgrove Township, Salem County.
- The failure resulted in the further failure of two smaller dams nearby.

## March 12, 2004 failure of Big Bay Lake Dam, Mississippi

- Nearly 100 homes damaged or destroyed
- 2 churches damaged
- 1 fire station damaged
- 1 bridge washed out
- Numerous vehicles destroyed
- Agriculture losses, including outbuildings and livestock

[www.damsafetycoalition.org](http://www.damsafetycoalition.org)



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