



US Army Corps  
of Engineers  
Kansas City District

## TUTTLE CREEK DAM

# FACT SHEET

October 2001

## DAM SAFETY ASSURANCE PROGRAM

### Earthquake Performance of Dams

The performance of earthen dams during earthquakes came to the attention of the international engineering community in 1971 with the near failure of the Lower San Fernando Dam in California during a major earthquake. Before then, it was believed that well built earthen dams would survive all but the most massive earthquakes. The lessons learned after the Lower San Fernando Dam near failure resulted in the creation of earthquake dam safety programs in several Federal agencies.

### Program Background

Since 1979 when formal Federal Guidelines for Dam Safety were published, the Corps of Engineers has been re-evaluating dams across the country under several different programs to ensure that all dams comply with these standards. The Dam Safety Assurance Program is the national U.S. Army Corps of Engineers program under which the safety of existing dams is compared against new data or state-of-the-art design and construction methods for severe earthquake and extreme flood design. This program is very specialized and is only applicable to the investigation of major earthquake and flood issues and is not used to evaluate normal operations or maintenance issues.

### Program Requirements

The Corps of Engineers' regulations state that all dams "are required to survive and remain safe during and following the maximum credible earthquake (MCE) event" (6.6 magnitude for Tuttle Creek) and "...must also be capable of remaining operational with only minor repair during and after an operating basis earthquake (OBE)" (4.9 magnitude for Tuttle Creek). This regulation also states "It is U.S. Army Corps of Engineers (USACE) policy that seismic safety of USACE embankment dams, where failure would result in loss of life, must be assured". The Dam Safety Assurance Program also requires that a wide range of alternatives be considered when addressing dam safety concerns. These alternatives include doing nothing, partial correction of the condition, complete correction of the condition, removing the dam, and replacing the dam with a new dam.





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### Dam Safety Assurance Program National Evaluations

Three Corps of Engineers dams in the country have been or are being modified to improve their performance during earthquakes. Those dams are Mud Mountain Dam in Washington, Sardis Dam in Mississippi, and Success Dam in California. Four dams in addition to Tuttle Creek Dam are currently undergoing detailed analyses for performance during an earthquake. Tuttle Creek is currently farther into the evaluation process than any other Corps of Engineers project in the country. Nationally, dozens of other dams are planned to be studied.

### Tuttle Creek Dam Analyses

The evaluation of Tuttle Creek dam is being performed using the best world wide engineering practices known to exist. These criteria were developed by experts within the Corps of Engineers and other Government agencies as well as by independent international experts from universities and private engineering firms. The Tuttle Creek evaluation and design process has been and will be reviewed by national and international experts from within the Corps of Engineers and by independent experts outside of the Federal Government. Tuttle Creek Dam is the second dam in the Kansas City District to be evaluated under the Dam Safety Assurance Program for performance during an earthquake. Milford Dam was evaluated in the 1980s and was found to meet the current earthquake safety criteria at the time.

This fact sheet is published by the U.S. Army Corps of Engineers, the lead agency for the Tuttle Creek Dam Safety Assurance Program. Comments or questions about this fact sheet or the Dam Safety Assurance Program should be directed to Bill Empson of the Kansas City District, Corps of Engineers at (816) 983-3556 or by E-mail at [tcdam.nwk@usace.army.mil](mailto:tcdam.nwk@usace.army.mil).

Questions or comments about lake operations or Tuttle Creek project office activities should be directed to the on-site Operations Manager, Brian McNulty at 785-539-8511.

For additional information, visit our web site: <http://www.nwk.usace.army.mil/tcdam>

