



US Army Corps
of Engineers®

USACE Dam Safety Facts for Smithville Dam

Project location and description: Smithville Dam was designed and built by the U.S. Army Corps of Engineers, Kansas City District and completed in 1977. USACE operates Smithville Dam for flood control, water supply, recreation, and fish and wildlife enhancement.



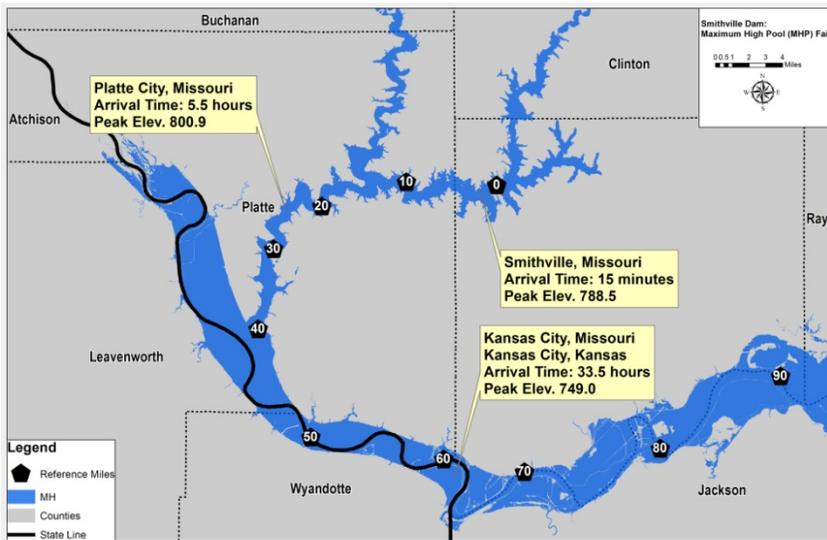
The main components of the project are an earthen embankment, a gated outlet works, and a limited service, fixed crest-type spillway section for releases during major flood events. The spillway is located on the right abutment (looking downstream) and is 50 feet wide with a crest elevation of 880.2 feet NGVD. The spillway can release up to 41,900 gallons per second or approximately six hundredths the volume of an Olympic-sized swimming pool each second. The earthen dam is 4,000 feet long and 100 feet high, and the top of the dam is 30 feet wide. The elevation of the top of the earthen embankment is 895.0 feet NGVD. The foundation consists of alluvium, sandy clay, clayey sand, and basal gravel.

During normal operations, the lake is kept at a relatively consistent level (referred to as conservation pool). Should heavy rains occur in the spring or at any other time, surface water runoff is stored in the lake until the swollen streams and rivers below the dam recede and can handle the release of stored water without damage to lives, property or the environment. Sometimes water must be released to protect the dam's integrity even though streams and rivers may have already reached or exceeded their capacity.

Benefits associated with Smithville Dam: This dam has provided \$970.5 million in flood damage reduction since placed into service. During 2013, the dam prevented \$303,500 in flood damages. The dam provides 19,650 acre-feet of water and the annual water supply benefit is about \$4.7 million. Annual recreational benefits to the area are about \$9.7 million.

Risks associated with dams in general: Dams reduce the risk of damages and loss of life from inundation due to floods but do not eliminate this risk. Large amounts of water that could cause flooding downstream may have to be released when a flood exceeds the reservoir's storage capacity (such as during a large flood or storm event). This release could be damaging. A fully functioning dam could be overtopped when a very rare or infrequent, large flood occurs, or a dam could breach because of a deficiency, which raises the risk of property damage and life loss even further. This means there will always be inundation risk that has to be managed. To manage these risks, USACE has a routine program that inspects and monitors its dams regularly. USACE implements short- and long-term actions on a prioritized basis when unacceptable risks are found at any of its dams.

Risk associated with Smithville Dam: Based upon the most recent risk assessment in 2014, USACE considers this dam to be a moderate to high risk dam among its more than 700 dams primarily due to the potential for failure due to instability during an extreme flood. USACE has implemented interim risk-reduction measures and/or long-term measures to reduce this risk.



What residents should know: Dams do not eliminate all inundation risk, so it is important that residents downstream from the dam are aware of the potential consequences should the dam breach, not perform as intended, or experience major spillway or outlet works flows. The moderate to high risk in Smithville and the related consequences further downstream warrant increased efforts on the part of USACE, local emergency management officials, and residents to heighten awareness of the potential inundation risk associated with the dam.

The primary areas impacted should the dam breach with a full reservoir during a rare flood event, not perform as intended, or experience major spillway or outlet works flows are shown on the map. The potential for loss of life is highest within a few miles of the dam and decreases substantially beyond 40 miles downstream of the dam. Advanced warning of problems and events plays a major role in protecting life and property. See the map for a general indication of breach with a full reservoir during a rare flood event.

Public awareness: Dams are designed to pass large amounts of water on a regular basis and this means there will always be inundation risk that has to be managed (see the table below).

Recommendations for Residents	Smithville Dam Facts
<ul style="list-style-type: none"> • Living with flood risk-reduction infrastructure comes with risk – know your risk. • Living with flood risk-reduction infrastructure is a shared responsibility – know your role. • Know your risk, know your role, and take action to reduce your risk. • Listen to and follow instructions from local emergency management officials. • Strongly consider purchasing flood insurance. • Contact your elected local, county, and state officials to make sound flood risk management decisions in your area. 	<p>Estimated property and population affected for dam breach with reservoir at top of active storage / maximum high pool:</p> <ul style="list-style-type: none"> • Population at risk: 21,700 / 35,300 • Property at risk: \$459.8 million / \$1.2 billion <p>Estimated non-breach property and population affected for maximum spillway release:</p> <ul style="list-style-type: none"> • Population at risk: 1,670 • Structures at risk: 1,100 • Property at risk: \$200 to \$226 million <p>Flood damages prevented: \$970.5 million (1976-2013) National Inventory of Dams (NID) No.: MO12084</p>

Residents should listen to and follow instructions from local authorities. For more information, please contact the USACE Kansas City District office at (816) 426-6320.

For additional information about dam safety and living with dams, please visit:
www.usace.army.mil/Missions/Civil-Works/Dam-SafetyProgram/
www.damsafety.org/