



Marseilles Dam Emergency Response Fact Sheet

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

Location

This project is located along the Illinois River Waterway in Marseilles, Ill. at the Marseilles Lock and Dam complex between river miles (RM) 247.5 and 246.9.

States IL

Congressional District(s) IL-16



Overview

The Marseilles Lock and Dam complex located on the Illinois Waterway Project at Marseilles, Ill., was completed by the federal government in 1933. The dam spans from the right descending bank to Bells Island. The lock is located further downstream and is accessed by a canal situated between Bells Island and the left descending bank.

The gated dam control structure (dam) and earthen dike structure (earth dike) were damaged during an April 2013 flood event. Five of eight 60-foot wide tainter gates were impacted by seven barges that had broken loose during high flows. Two Tainter gates (2 and 3) on the dam were rendered inoperable, as their common trunnion anchorage on Pier 2 was broken free from the dam. Gates 4, 5 and 6 were also impacted but did not lose their trunnion anchorage and are currently being used to regulate flow. The barges were removed during the period of April 25 to June 17.

The earth dike contains the pool created by the Marseilles Dam and extends approximately one-half mile upstream of the dam along the right descending bank. The City of Marseilles is located behind the earth dike. The land along the earth dike is mostly privately owned but there is a federal easement to maintain it. During the April flood event overtopping of the earth dike caused extensive flooding and significant scour to the dike.

The work needed to repair both the dam and the earth dike was divided into two phases. Phase I includes temporary repairs to the dam and earth dike and Phase II includes permanent repairs to both.

Status

Phase I Temporary Dam and Earth Dike Repairs include the following components:

- Rock Dike Construction – The barge impacts left the dam in a condition unable to maintain the navigation pool at low flows. In order to restore control of the pool and allow placement of bulkheads, in-house labor was utilized to construct a rock dike downstream of the dam from Bells Island to Pier 3. This 24-hour per day operation occurred between April 27 and May 15, 2013, and placed over 40,000 tons of rock material. Since the installation of the bulkheads at Gates 2 and 3, the rock dike is being removed to restore operation of Gates 1 and 4. Rock will be recovered and repurposed to various uses in the local area.

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- Bulkhead Fabrication and Installation – There was one maintenance bulkhead available to block flow through the tainter gate bay prior to the event. A combination of in-house capability and contract action fabricated two additional bulkheads to execute repairs. This allows two bulkheads to remain installed at Gates 2 and 3, and leaves one to move between the other damaged gates to perform the detailed assessment. Bulkheads were installed at Gates 2 and 3 by June 27, 2013.
- Gate Damage and Trunnion Anchorage Assessments – Assessment of the damaged gates 2 thru 6 and the existing anchorage tendons was completed in October 2013.
- Risk Assessment (RA) - The RA will consider all potential failure modes for the Marseilles Dam, Earth Dike, and the damming surfaces between for the current condition (post-incident). The failure modes that are the highest contributors to overall risk will be developed with likelihood of failure and associated consequences calculated. Based on these results interim risk reduction measures will be recommended. Some of the items the team will consider are the operation of the dam with damaged gates and trunnion anchors, performance of the dam and dike through the permanent construction period (five years), probability of overtopping the earth dike, and the removal of in-place bulkheads. The RA is scheduled to be complete in Dec 2013.
- Earth Dike - Overtopping of the earth dike caused scour to several areas and a contract was executed to repair scour and to remove large trees that existed in the crown section of the dike. Between May 30 and June 1, 2013, the earth dike was temporarily raised by four feet to mitigate for potential pool increases due to loss of dam capacity. The earth dike raise included 3500 feet of Hesco Baskets and 1000 feet of rock dike. The increase in earth dike height will be maintained until the dam is repaired.
- Boiler House Erosion Repairs – When the overtopping of the earth dike occurred, the area around the right abutment of the dam was also overtopped. Significant erosion occurred around a building that houses some dam controls, and around the emergency generator. This area could only be accessed by two narrow bridges across the adjacent headrace channels before the event. This event further damaged these bridges and has rendered them unusable and inaccessible. Repairs to the area are scheduled to be completed in December 2013.
- Illini State Park (Parking Lot) – The parking lot was used for emergency operations in accessing and repairing the damage at the dam. The parking lot was damaged during these operations and is scheduled to be repaired by December 2013.

Phase II Permanent Dam and Earth Dike Repairs include the following components:

- Dam Repairs – The initial plans indicate that dam repairs are expected to start with stability measures of Pier 2 and then reconstruction of the Pier 2 tainter gate anchorage. Once this work is completed, work will begin on the complete replacement of the damaged Tainter Gates 2, 3 and 5 with new gates. With restored operation of those gates, work will start to repair damages to Gates 4 and 6. Along with this work, concrete repairs will be necessary on the upstream side of Piers 2 thru 6.
- Earth Dike Repairs – The rehabilitation is required for long-term sustainability of the project and shall include removal of all woody vegetation within the easement, impacting the design template for the earth dike. Structures and utilities within the easement impacting the operation, maintenance, or stability of the dike shall be removed. Finally, the dike will be restored to the original design cross-section.

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- The City has requested assistance under Section 205 to evaluate measures to reduce flood risk to the community.

Summarized Project Costs The Phase I costs are \$10 million. The current cost estimate to complete Phase II repairs is in the range of \$30 to \$50 million (not including already expended Phase I costs of \$10 million).

Financial Status

FY13 Funding	\$10,200,000
FY14 Appropriation (Work Plan)	\$TBD
FY15 President's Budget	\$TBD