



US Army Corps of
Engineers
St. Paul District

Mississippi River Locks and Dams Nos. 2-10 Embankment Rehabilitation

Location/Description

An earthfill embankment dam is included in each of the Mississippi River Locks and Dams 2 through 10 sites. The purpose of the project is to extend the useful life of the embankments considering the potential for high floods, degradation of the riprap, and presence of seepage and tree growth at the downstream toe of some of the embankments.

Because the embankments are a sandfill type, the potential exists for damage from erosion, especially during high water. The existing rock erosion protection is past its intended design life and does not perform satisfactorily. The primary result of an embankment failure could be adverse effects on the river environment and navigation.



Typical dam embankment erosion

Evaluation of the existing conditions will include restoring embankments to meet design standards where needed, collecting geotechnical data for use in analysis and presenting it in a usable form for future reference, performing embankment stability analysis, determining upstream riprap deterioration, determining erosion protection for wave action, determining embankment-structure junction protection, and developing a comprehensive plan to improve conditions that will achieve environmental sustainability. No increase in the height of the embankments is planned.

Status

Construction started in fiscal year 2007 on a demonstration project at Lock and Dam 4 which mainly consists of a vegetated sand berm rather than riprap for erosion protection for the embankment. Construction is planned to take 1 to 2 years and estimated to cost \$1.2 million. The plan is to create more beneficial habitat than currently exists. Construction is planned to start in fiscal year 2008 and take 1 to 2 years for Locks and Dams 6 and 7 Erosion Protection at Structures, which is estimated to cost \$1.2 million.

Wave action from high water in spring 2001 caused widespread erosion. Construction completion of Lock and Dam 5A repairs is the end of the \$4.3 million of repairs from the 2001 damages. Any remaining maintenance work on the embankments will be part of a comprehensive plan developed by an interagency team. The interagency team will also interact with the Upper Mississippi River System Navigation and Environmental Sustainability Program (NESP). The entire work effort is being coordinated with the Upper Mississippi River Resources Forum.

Overtopping protection adjacent to concrete structures is the first priority. Design for riprap overtopping erosion protection on the embankment at structures started in fiscal year 2006. Construction is to be completed in 2010 at an estimated cost of \$5 million. Design for remaining erosion protection on the embankments will start in fiscal year 2009, and construction is to be completed by fiscal year 2021 at an estimated cost of \$22.5 million.

Authority

The Upper Mississippi River Nine-Foot Channel Navigation Project was authorized as part of the River and Harbor Act approved July 3, 1930.

Fiscal

Lock and Dam 4 \$1,200,000
Lock and Dam 6 and 7 \$1,200,000
Remaining embankment rehab work \$25,100,000
Total \$27,500,000

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