



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. At lock and dam 3, only embankments on the Minnesota side are included in this project. 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 would be the loss of the 9-foot navigation channel, with adverse effects on the river environment and navigation.



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

Wave action from high water in spring 2001 caused widespread erosion. In fiscal year 2001, \$2.3 million of emergency repair work was completed. It consisted of rock placement on the upstream slope of selected reaches of embankments at locks and dams 2, 5, and 8. Corps of Engineers and other agency personnel visually inspected the existing embankments for each site. An evaluation of the rock erosion protection on the Mississippi River embankments identified three sites that need repair within the next 5 years as a result of the 2001 event. The repair work consists of rock placement on the upstream and downstream slopes of selected reaches of embankments at locks and dams 5A, 6, and 8. Construction work for lock and dam 6 is complete. Construction for lock and dam 8 is underway and should be completed by August 2006. Construction work for lock and dam 5A is scheduled to start in 2006 and should be completed by September 2006. 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. The entire work effort is being coordinated with the Upper Mississippi River Resources Forum.

A demonstration project at lock and dam 4 is scheduled to be started in fiscal year 2006 at an estimated project cost of \$1.2 million. Construction is planned to be with hired labor. A sand berm will be constructed to act as erosion protection for the embankment rather than placing riprap. The purpose of the plan is to create more beneficial habitat than currently exists. Riprap overtopping erosion protection on the embankment at structures is to be completed by the end of 2010 at an estimated cost of \$5 million. Remaining erosion protection on the embankments is to be completed between fiscal years 2010 and 2021 at an estimated cost of \$20 million. The timeline depends on the condition of the existing riprap.

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 5A work is estimated to cost about \$250,000 to \$500,000 for fiscal year 2006. Lock and dam 4 work is estimated to cost about \$1 million in fiscal year 2006 and \$200,000 in 2007. Costs for the remaining embankment rehabilitation work are estimated to be \$25 million.

