



US Army Corps  
of Engineers®  
Engineer Research and  
Development Center

# Data Management System for Structural Monitoring

## Description

This work unit will develop a Data Management System (DMS) as a demonstration project using data from existing instruments at Greenup Lock and Dam, Greenup, Kentucky. These instruments were mounted on the downstream miter gate (landside leaf) of the 1,200-ft chamber in November 2003. The Greenup data set includes a total of 20 strain gages in six sets that allow analysis of both horizontal and vertical girders as well as the strut arms at the top of the gate.



## Issue

Long-term monitoring instrumentation has been used to measure structural response under various load and vibration conditions at project sites around the Corps of Engineers for many years. This monitoring involves the installation of diagnostic instrumentation to gain understanding of failure or damage often believed to be caused by either an anomalous load or excessive vibration conditions. The massive amounts of data collected during the life cycle of such monitoring projects can overwhelm project engineers.

## Users

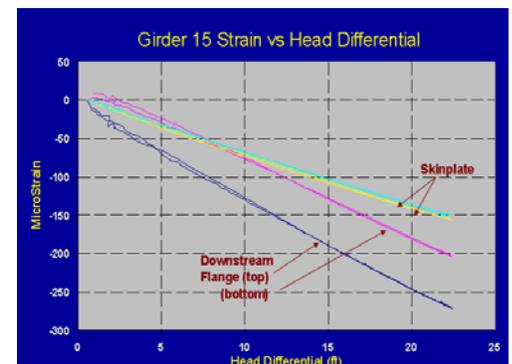
Specific users will be structural engineers in Huntington District, but this project has potential for application across USACE.

## Products

The products will be the DMS; (i) a stable data repository in a RDBMS database; and (ii) web-based access to the Greenup miter gate strain data in a structured way, allowing downloads and reports.

## Benefits

This demonstration project will provide the structural engineer with a much needed automated system for data storage and access, real-time trend analysis, and condition alerts. This project will focus mainly on the specific requirements for Greenup users, but the structure of the DMS provides a framework applicable to a wide range of similar projects.



## Corps Program

Navigation Systems Research Program, Mr. Charles E. "Eddie" Wiggins, Program Manager

## Point of Contact

Mr. Bruce Barker, US Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180; (601) 634-3458, [Bruce.C.Barker@usace.army.mil](mailto:Bruce.C.Barker@usace.army.mil); or Mr. Charles E. "Eddie" Wiggins, (601) 634-2471, [Charles.E.Wiggins@usace.army.mil](mailto:Charles.E.Wiggins@usace.army.mil).

## Partners

U.S. Army Engineer District, Huntington, and U.S. Army Engineer Research and Development Center Information Technology Laboratory