



University of Mississippi

Mississippi Groundwater, Surface Water, and Dam Inventory and Vulnerability Assessment – Dam Vulnerability Assessment Tools



Dr. Joel Kuszmaul, kuszmaul@olemiss.edu, 662-915-7499; Dr. Robert M. Holt, rmholt@olemiss.edu, 662-915-6687

Prevent, Protect, Respond, Recover

Homeland Security Challenge:

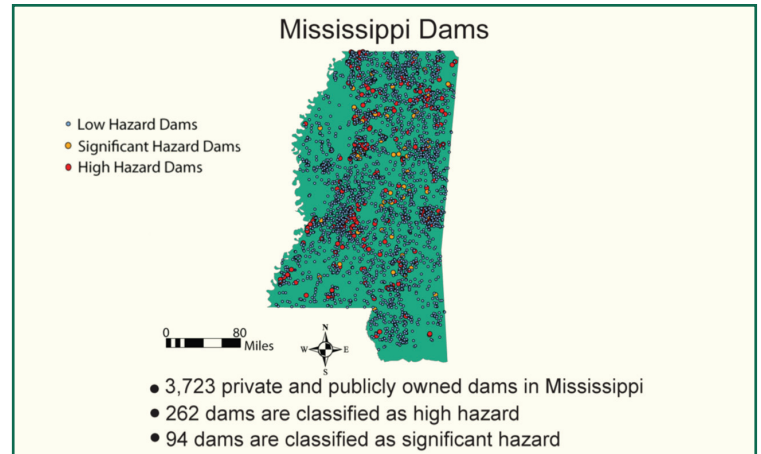
There are more than 78,000 dams in the United States. About 11,000 dams are classified as high-risk dams and must have emergency action plans prepared according to regulations and standard engineering practices. Careful emergency planning operations require risk-based vulnerability assessments to determine the mitigation and response actions required to protect communities and minimize the impacts of disasters related to dam failures.

Research Project Solution:

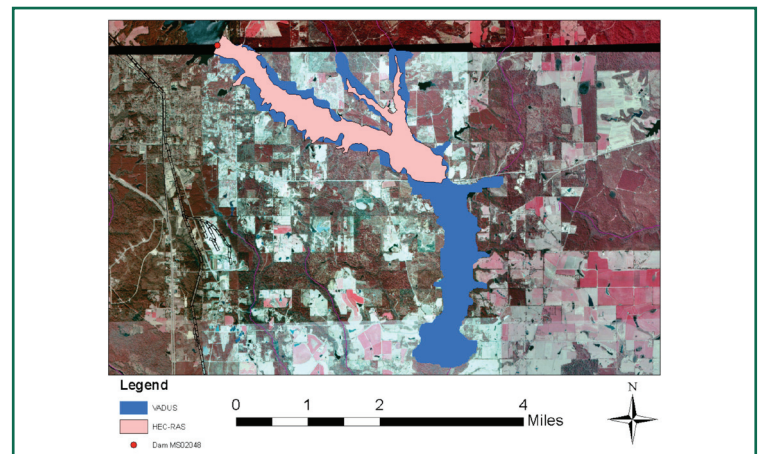
The objective of this research project is to develop GIS-based vulnerability assessment tools that can be used to assess risk for dams and for groundwater and surface water resources in the State of Mississippi. Mississippi has the sixth largest inventory of dams in the United States. Of the 3,723 dams in Mississippi, there are 277 considered as high hazards dams. There are no emergency actions plans or inadequate plans for a significant number of these high hazards dams. Dam vulnerability assessment tools developed in this project have the capability to assess intrinsic vulnerabilities (internal characteristics such as dam construction, topography, age, etc.), extrinsic vulnerabilities (external risks related to assess, etc), and consequences (human and economic). The project includes collaboration and training with the Mississippi Department of Environmental Quality.

National Implications:

GIS based, rapid, risk-based vulnerability assessments of dams are now possible for federal agencies, states, and communities. The GIS-based vulnerability assessment tools developed by this project for the State of Mississippi can be customized to other states. The tools are highly flexible and scalable and can be used to support a variety of applications such as prioritizing limited dam maintenance and upgrade resources, emergency action plan assessment and development, scheduling dam inspections following natural disasters, and directing emergency response efforts.



Mississippi contains the 6th largest inventory of dams in the United States. Over 3700 dams in the state fall under the regulatory responsibilities of the Mississippi Department of Environmental Quality's Office of Dam Safety.



Dam vulnerability assessment tools contain a simple, easy to use, flood inundation package for mapping areas affected by a dam breach. Here the tool (in blue) is compared with a more sophisticated, and complicated, flood model (in pink). The simplified model is conservative.

www.serri.org

For More Information on SERRI, contact;

Warren Edwards, Director, SERRI
865-574-8277, edwardswc@ornl.gov

Ben Thomas, Operations Manager
865-574-5438, thomasbjr@ornl.gov

SERRI is managed by the Department of Energy's Oak Ridge National Laboratory for the U.S. Department of Homeland Security