



Nashville Flood: Lessons Learned

“Although a tragic event for Nashville, USACE project personnel acted in a heroic manner and risked their lives to save the Old Hickory Dam and to reduce flooding downstream in Nashville.”

– LTC Anthony Mitchell, Commander, Nashville District

From May 1-3, 2010, portions of the Cumberland and Tennessee River Basins experienced an unprecedented 36-hour rainfall. The [Nashville area received between 13 and 17+ inches of rain](#), more than doubling a two-day record set in 1979. The U.S. Army Corps of Engineers’ Cordell Hull, Old Hickory, and Cheatham projects set pools and maximum water-flow release records. Barkley Dam set a maximum water flow release record and Old Hickory came within 6.6 inches of overtopping the upstream lock wall. District staff performed heroically and project operations reduced flood stage in Nashville by an estimated 5 feet. The magnitude and rapid nature of the event stressed the Corps’ flood response, exposing the need to prepare for extreme events, especially in the area of communication. The Corps, working closely with other Federal agencies, is taking action to improve response to extreme events.

Lessons Learned from the [After Action Review \(AAR\)](#)

- The AAR, an objective assessment of the facts of the event, identifies key areas for improvement including internal and external communication and internal Water Management operating procedures. The complete After Action Report is available at www.lrn.usace.army.mil.
- One major lesson learned is the need to provide more effective flood risk communication to the public. As a result, the Corps and the [National Weather Service](#) are developing an interagency process to relay river crest stage forecasts via flood inundation maps in a manner that gives members of the public a better understanding of the consequences of flood forecasts.

Moving Forward

- The Corps is actively working with the National Weather Service and other agencies to improve communication and institute new procedures during flood events. A Post Flood Report is underway that will document technical meteorological, hydrologic, and hydraulic data from the flood to improve understanding of flood risks, preparedness and response. Funding has been received and the report should be complete by December 2011.
- Several updated procedures have been implemented since the flood, including improved interagency communication among the Corps, NWS, and [U.S. Geological Survey](#); providing real-time project release information directly from Corps navigation project operators to NWS staff; the 24/7 operations plan for Water Management; and increased flow of information to the public through the media.

Key Messages

- Public safety is the Corps of Engineers’ first priority.
- The Corps of Engineers is actively working with the NWS and other agencies. The NWS recognizes its responsibilities to forecast and communicate to the public and the Corps is working with the NWS to improve communication by instituting new procedures during flood events.
- A Post Flood Report is underway that will detail technical meteorological, hydrologic, and hydraulic data from the flood. Funding has been received and the report is scheduled for completion in Dec. 2011.
- For more information about USACE’s efforts, visit www.lrn.usace.army.mil

Facts & Figures

- Flooding resulted in 26 deaths and over \$2.0B in damages. These deaths occurred due to flash flooding in uncontrolled watersheds prior to Nashville reaching flood stage.
- The two-day rainfall of 13.57 inches in Nashville shattered the monthly rainfall record for May, which was 11.04 inches. Other areas received over 17 inches of rainfall.
- The Cumberland River crested at 51.86 feet in Nashville, the highest recorded level since construction of Corps’ flood control projects.
- Over 50 spillway gate changes at Old Hickory Dam were required during May 1-6.