



Highlights of [GAO-05-894T](#), a report to Subcommittee on Housing and Community Opportunity, Committee on Financial Services, House of Representatives

## Why GAO Did This Study

Floods inflict more damage and economic losses upon the United States than any other natural disaster. During the 10 years from fiscal year 1992 through fiscal year 2001, flooding resulted in approximately \$55 billion in damages. The Federal Emergency Management Agency (FEMA) is responsible for managing the National Flood Insurance Program (NFIP). The program uses flood maps to identify the areas at greatest risk of flooding and make insurance available to property owners to protect themselves from flood losses. According to FEMA, many of the nation's flood maps are more than 10 years old and no longer reflect current flood hazard risks because of erosion and changes in drainage patterns. Moreover, because many flood maps were created or last updated, there have been improvements in the techniques for assessing and displaying flood risks.

This testimony is based on GAO's findings and recommendations in its March 2004 report related to (1) how map modernization intended to improve the accuracy and accessibility of the nation's flood maps, (2) what the expected benefits of more accurate and accessible flood maps are, and (3) to what extent FEMA's strategy for managing the map modernization program support the achievement of these benefits.

[www.gao.gov/cgi-bin/getrpt?GAO-05-894T](http://www.gao.gov/cgi-bin/getrpt?GAO-05-894T).

To view the full product, including the scope and methodology, click on the link above. For more information, contact William O. Jenkins, Jr. at (202) 512-8757 or [jenkinswo@gao.gov](mailto:jenkinswo@gao.gov).

# FLOOD MAP MODERNIZATION

## Federal Emergency Management Agency's Implementation of a National Strategy

### What GAO Found

Through map modernization, FEMA intends to produce more accurate and accessible flood maps by using advanced technology to gather accurate data and make the flood maps available on the Internet. For example, displaying map data in digital Geographic Information Systems format permits consistent, accurate display, and ready electronic retrieval of a variety of map features, including elevation data and the location of key infrastructure, such as utilities.

FEMA expects that by producing more accurate and accessible digital flood maps through map modernization, the nation will benefit in three ways. First, communities can use more accurate digital maps to reduce flood risk within floodplains by more effectively regulating development through zoning and building standards. Second, accurate digital maps available on the Internet will facilitate the identification of property owners who are statutorily required to obtain or who would be best served by obtaining flood insurance. Third, accurate and precise data will help national, state, and local officials to accurately locate infrastructure and transportation systems (e.g., power plants, sewage treatment plants, railroads, bridges, and ports) to help mitigate and manage risk for multiple hazards, both natural and man-made.

At the time of GAO's review, FEMA had not yet established clear standards for the types, quantity, and specificity of data collection and analysis associated with different levels of flood risk. We recommended that FEMA develop standards to better ensure that data collection and analysis is consistent for all communities with similar risk and that it is using its resources efficiently while producing maps that are accurate and useful for communities at different levels of flood risk. In November 2004, FEMA issued its Multi-Year Flood Hazard Identification Plan. The plan describes FEMA's strategy for addressing GAO's recommendation by using varying types of data collection and analysis techniques to develop flood hazard data in order to relate the level of study and level of risk for each county.

GAO concluded that FEMA's performance measures would not effectively measure the extent to which the agency's map modernization program would result in its primary intended benefits. As a result, GAO recommended that FEMA develop and implement useful performance measures. In response to GAO's recommendation, FEMA has set target percentages in its Multi-Year Flood Hazard Identification Plan for four key performance indicators in fiscal years 2006 through 2009. FEMA's four indicators are (1) Population with Digital GIS Flood Data Available Online, (2) Population with Adopted Maps that Meet Quality Standards, (3) Percent of Effort Leveraged; that is, state and local resources provided for map modernization as a percentage of FEMA resources provided, and (4) Appropriated Funds Sent to Coordinating Technical Partners.