



**Case Concentration:** Harris County Texas and FEMA partner to assist residents in recovery from Tropical Storm Allison and minimize future flood loss by developing accurate flood hazard information.

### Scope of Project:



In early June 2001, Tropical Storm Allison ravaged 28 counties in Texas, including many areas of densely populated Harris County, which includes the City of Houston. Widespread flooding caused approximately \$5 billion in damage in the Houston area. In the aftermath, local and regional officials recognized the need for accurate and timely flood hazard information. Subsequently, the Federal Emergency Management Agency (FEMA) and Harris County Flood Control District (HCFCD/the District) working under a Cooperative Technical Partner (CTP) agreement engaged in a rapid restudy of approximately 1,200 stream miles in 22 impacted watersheds. Neither historical data nor weather forecasts could adequately predict this extraordinary storm that would dump as much as 80 percent of the area's average

annual rainfall over some Houston and Harris County neighborhoods, affecting more than 2 million people. When the rain finally ended, Allison had left Harris County with 22 fatalities, 95,000 damaged automobiles and trucks, 73,000 damaged residences, 30,000 residents in shelters, and over \$5 billion in property damage in its wake. Simply put, everything about Allison was "off the charts."

The Tropical Storm Allison Recovery Project (TSARP), a partnership between the Harris County Flood Control District (HCFCD) and FEMA Region VI, included an Outreach plan for the flood study rollout process. The TSARP developed technical products to assist the community in recovery from the devastating flooding and provide a greater understanding of flooding and flood risks. The study created new Digital Flood Insurance Rate Maps (DFIRMs), delineating Special Flood Hazard Areas.

### Mapping Activity:



Local emergency preparations prior to the arrival of Tropical Storm Allison were hindered by floodplain maps that had not been updated in more than 20 years. These maps lacked the benefit of more accurate information and recent technology. New hydrological and hydraulic analysis was conducted on the County's watersheds. Approximately 1,100 stream miles in 22 watersheds were restudied and an additional 100 miles of stream were newly studied. Some watersheds were remapped based on the new topographic data. The study and

preliminary recovery DFIRMs were completed by March 2003. Affected communities received two sets of the new maps.

## Outreach Activities:

The HCFCD engages in continual outreach efforts and has implemented a two-way communication strategy. At least four of the County's 100 Flood Control District staff work full-time on communication efforts. A number of others staff members work on communication and outreach activities part-time, particularly planning office staff.

Community outreach and input were particularly important to the project. All impacted communities in Harris County were notified and invited to participate in the mapping project. An introductory briefing was held for Flood Plain Administrators. Communities also participated through frequent meetings with FEMA, HCFCD, and the TSARP team. Several advisory committees further encouraged continual public involvement.

**The Executive Committee** included the Mayor's office, political liaisons, and executive level staff. This committee was the first to receive new information to avoid surprises in the media, and TSARP solicited input from this committee on suggested objectives. Just as important, TSARP staff reviewed political pitfalls that might have arisen within other committee meetings, outside discussions or from the media, and became politically savvy of possible obstacles to the flood study.

**The Technical Committee** included engineers, surveyors, technical personnel and societies, and individuals from a local university. The goal was to share, assess and analyze technical information. This two-way discussion ensures visibility and accuracy of technical findings.

**The Users Group** included stakeholders directly affected by products, such as floodplain administrators. The goal was to seek advice to ensure end products were user-friendly. This committee was established during the summer of 2001 at the Disaster Field Office (DFO).

**The Stakeholders Committee** included vocal members of general public. TSARP encouraged supporters and dissenters to attend. Invitations were sent to the League of United Latin American Citizens (LULAC), homeowners associations, environmental groups, property development groups, insurance agent associations, mortgage brokers & bankers, and the local universities and ethnically diverse societies.

The Stakeholder and User groups committees met quarterly, and the other two committees met semi-monthly. By January, TSARP merged the Users Group and Stakeholders committees into one large committee.

The HCFCD staff worked to create an open, interactive exchange for committee members. Rather than taking a confrontational stance when heated questions were directed to HCFCD staff, often the staff would open the question up to a member of the audience to generate discussions.

Post-Preliminary Phase: TSARP tapped into resources outside of the flood mapping community to discover outreach opportunities. For example, TSARP participated in a May 2003 Rice University conference to release documents to a technical audience. Engineers working on the project submitted technical documents to Rice for discussion.

The TSARP worked to ensure that the general public, technical users, and all other stakeholder groups were made aware of flood hazard maps and were included in the review process of the preliminary maps. They used local venues such as universities, libraries, and convention centers to hold forums and open meetings. The efforts to inform and engage the public, technical experts and local officials was designed to gather accurate, relevant information and present in a manner that would ensure acceptance of the maps.

Paper copies of the DFIRM were delivered to impacted communities. In addition, each community received a CD containing: Flood Insurance Study Text, Flood Profiles, ESRI Export, ESRI Shape Files, DFIRM Panel TIF, DFIRM Panel PDF, and Project Metadata.

## Outreach Tools:

- Website development: The TSARP web page ([www.tsarp.org](http://www.tsarp.org)) promotes products, such as a TSARP presentation and a report – educational resources available to the general public. The TSARP web pages are regularly referenced during stakeholder meetings and presentations. The hurricane tracking chart distributed in 2002 prominently promoted the website.



- Publications: A hard copy of the Tropical Storm Allison Public Report, "Off The Charts" is available to the public. The TSARP promoted the web address in the publication to encourage property owners and other stakeholders to visit the site regularly. This easy to read publication, oriented to the general public's interest and comprehension level of multiple components of flood hazard mapping, floodplain management, flooding, and flood insurance, was published one year after the flood. Significantly, the local newspaper, "The Houston Chronicle", agreed to distribute 380,000 copies of the report as in insert in the newspaper's plastic sleeve to home subscribers. To reach those segments of the public who do not subscribe to the local paper, the TSARP worked with a large local grocery store chain, the HEB, to distribute a Hurricane Guide. The TSARP also distributed guides in Spanish using a mailing list of Spanish-speaking households provided by the newspaper partner.

**Lessons Learned:** The HCFCD learned that printing the "Off the Charts" document in Spanish was costly, and its distribution may not have reached their targeted audience. Several obstacles became apparent: many of the Spanish speakers did not read Spanish. The HCFCD received about 200 calls from English speakers complaining they received a Spanish version of the document. Although it was a lesson learned for the HCFCD, the HCFCD still aimed to provide everyone in the community a printed, readable version of the guide.

- The HCFCD Communications Department visited every community within Harris County, including city council meetings or to the city or local government. This fostered support for communities signing FEMA's Cooperating Technical Partner (CTP) agreement.
- A Public Outreach Consultant, who has a great relationship with the media, was hired from a public relations firm. Houstonians understand flooding but didn't have an understanding of flood maps, so this was an important, but contentious issue.

**Polling:** The public relations consultant encouraged staff to poll citizens about mapping and re-mapping. The poll was unique in that it sought to educate respondents while gathering feedback. The PR firm hired a pollster to develop a survey with the TSARP and to call about 500 homeowners. Interviews were extensive - about 20 minutes; however, they received incredible feedback. Eighty-two percent of the people supported the effort at the end of the interview after they were educated through the phone, while 4% opposed it for one reason or another. The feedback from the interviews guided the public relations consultant in developing the messages. The poll found that people in Harris County know that it floods and were interested in having accurate information about flood hazards. The poll showed the public thought that "risk assessment" information is important. At first, citizens questioned the use of resources for the massive mapping endeavor, then the pollster educated them about the value of today's technology in contrast to the extremely outdated technology used 20 years ago. People soon understood and supported the idea that new, more accurate maps would help HCFCD reduce flooding in the future.

- Messages: The TSARP designs present clear and concise messages, and are customized for specific audiences.

- Training: The TSARP works with local NFIP staff to develop training courses for insurance agents. Many residents incorrectly believe insurance agents determine flood insurance rates and do not associate flood insurance with FEMA or HCFCD. Insurance agents sometimes do not know about flood insurance or the FIRMs. The TSARP assembled broad coalitions to sponsor training courses. For instance, the TSARP contacted with an insurance representative who worked with the governor to ensure top-down support. TSARP concurrently conducted outreach and grass roots initiatives to gain support from the bottom up.
- Upcoming Community Meetings: In 2003, the TSARP created a comprehensive strategy for community meetings.
- Press Releases: The ultimate goal was to distribute and gain acceptance of the maps. The communication staff provided the basis for numerous news stories to the "The Houston Chronicle" during the rollout.
- Presentations: The HCFCD actively pursued and responded to requests to present information on the TSARP. The TSARP presented to the students of Sam Houston State University and community organizations. The staff at HCFCD and TSARP made presentations a priority to build support.

## Best Practices Followed and Developed:

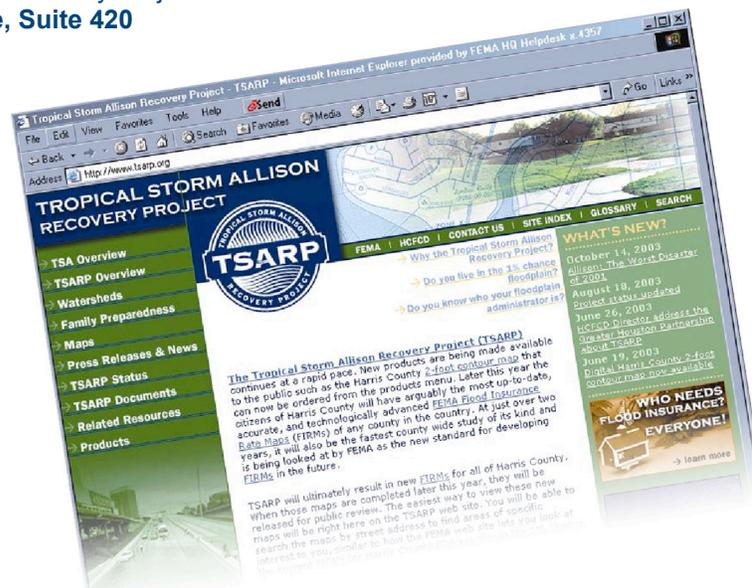


TSARP staff sought assistance from other communities that have undergone the flood mapping roll-out and discussed best practices to: effectively rollout the maps and reach and assist low-income communities.

Harris County Flood Control District  
**9900 Northwest Freeway**  
**Houston, TX 77092**  
**Phone: 713.684.4000**

Federal Emergency Management Agency  
**REGION VI FEDERAL CENTER**  
**Federal Regional Center**  
**800 N. Loop 288**  
**Denton, TX 76209-3698**  
<http://www.fema.gov/regions/vi/index.shtm>

Tropical Storm Allison Recovery Project  
**16225 Park Ten Place, Suite 420**  
**Houston, TX 770084**  
**Phone: 281.579.4656**  
[www.tsarp.org](http://www.tsarp.org)



"A Nation Prepared" is FEMA's vision, and all at FEMA are dedicated in its mission to lead America in preparing for, preventing, responding to and recovering from disasters. If you would like more information on FEMA's Multi-Hazard Flood Map Modernization Initiative and how we may provide expert resources for you and your community, please visit our website at <http://www.fema.gov/fhm> or call 1-877-FEMA-MAP. You may view flood hazard maps at the FEMA Map store - <http://www.msc.fema.gov/>.