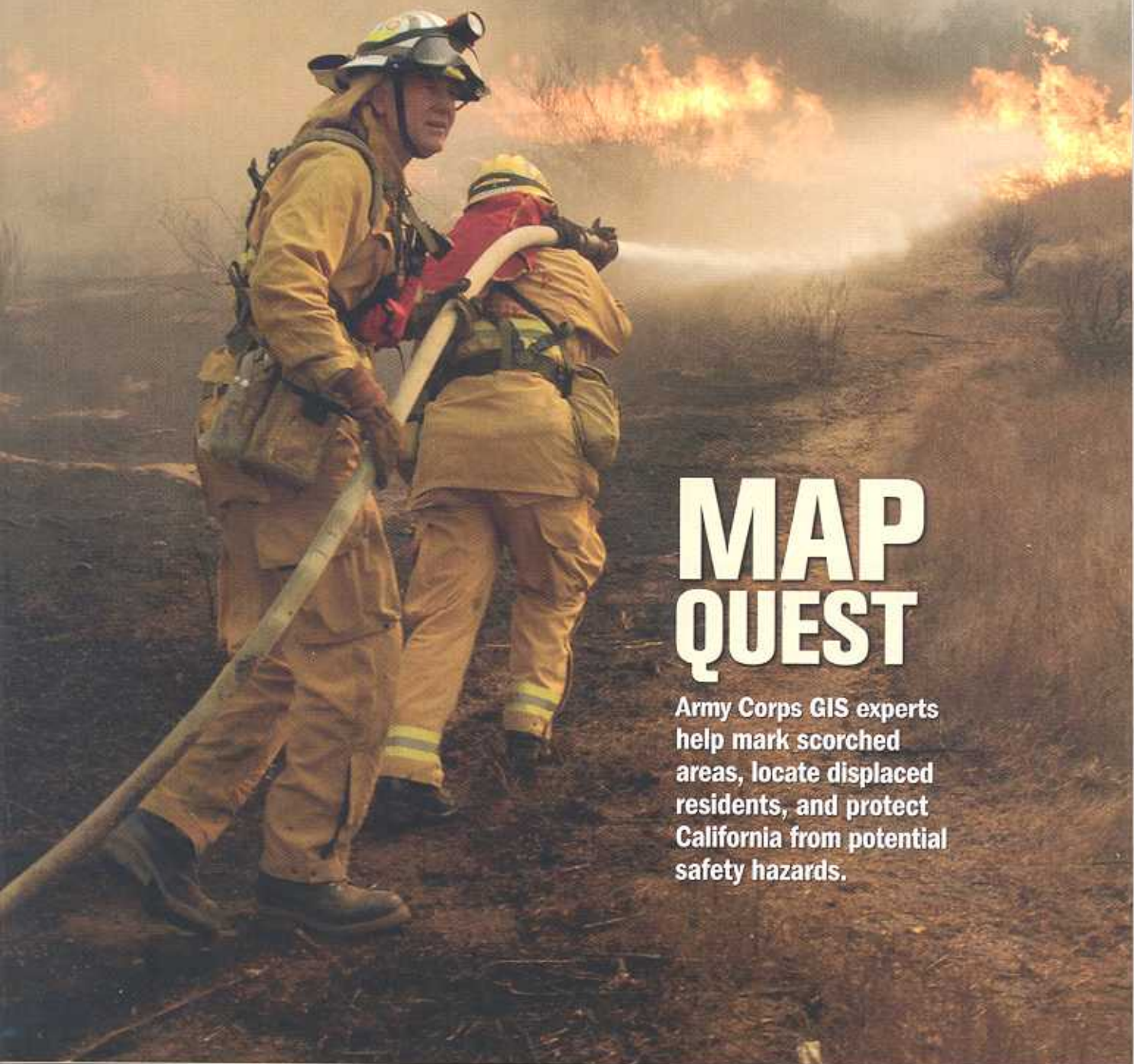


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# WILDFIRE<sup>®</sup>



## MAP QUEST

Army Corps GIS experts help mark scorched areas, locate displaced residents, and protect California from potential safety hazards.

**W**ildfires swept across Southern California this fall, blazing out of control and leaving in their path death and destruction.

Twenty raging brush fires were fanned by strong winds that quickly spread to seven counties. Homes were burned to the ground, and 500,000 of forest were destroyed, and thousands were left homeless including pets and hundreds of wild animals that called the forest their home.

Responders needed a precise method to help locate and assist displaced people.

In response, the Federal Emergency Management Agency sought the U.S. Army Corps of Engineers' Geographic Information System expertise and capability.

The Corps has used its GIS expertise on several past missions including Hurricane Katrina and in the aftermath of the Sept. 11, 2001, attacks at the World Trade Center.

In California, the maps helped FEMA to identify territories in scorched counties affected, and to help locate displaced people requiring assistance, such as temporary trailers, and to protect the state from potential safety hazards that can result from these fires in the future.

Stephen McDevitt, GIS expert with the Corps' New York District is one of the national action officers responsible for deploying and managing GIS teams throughout southern California to assist FEMA and other federal, state and volunteer organizations.

# BATTLE PLANS

The Army Corps of Engineers sent its GIS experts to aid wildfire recovery efforts in Southern California.

By JoAnne Castagna



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## BATTLE PLANS

"GIS is a computer-based information system and tool for analysis of spatial data," says McDevitt. "The GIS takes data from various sources, such as aerial photographs, drawings, and electronic geographic data and combines these layers of information in various ways as overlays to perform spatial analysis and produce an electronic map, which depicts the results of that analysis."

Chad Markin, geographer/GIS coordinator with the Corps' Rock Island District deployed to California in support of the mission.

"We used a lot of different data from a lot of different sources to perform analyses and create GIS mapping products," says Markin. "This included aerial photography pre and post event; satellite imagery; commercial data sources; and vector data from varying sources in the field that includes things like fire perimeters, ignition points, and burn-intensity data."

The corps uses five main types of maps.

**County and damaged structure maps.** These maps identified counties that were adversely affected and were used to identify damaged homes and businesses.

The information shows FEMA officials where they should set up disaster recovery centers to enable residents to obtain FEMA assistance applications. Maps of the DRC locations also were created to direct the public to the nearest DRC.

When FEMA receives assistance applications from residents, it contacts them to ascertain where their damaged home is located. FEMA then looks up the location on the Corps' GIS maps to verify that the county they live in was badly burned and that structures were damaged. This way FEMA knows it is providing assistance to someone who truly needs it.

**FEMA individual assistance application maps.** These maps are being used to locate where residents are submitting applications for FEMA assistance.

"FEMA plots these maps with dots to show where clusters of residents are filling in applications," says John D. Ennis, geographer/GIS with the Corps' Chicago District, who also was deployed to California to create maps.

These dots also show FEMA where damage may have occurred and where a DRC may need to be set up.

**Demographic maps.** These maps are being used by FEMA to locate where impoverished individuals may live that do not have transportation to get to the nearest DRC. Once identified, FEMA sends a mobile DRC to the area.

**Flood plain maps.** For FEMA to set up temporary trailer parks for residents, it needs to know where flood plains are located. Flood plains are areas of land that border rivers that are prone to flooding.

**Soil burn severity maps.** Even after Southern California gets back to normal, there are safety hazards that can result from these fires.

Soil burn severity maps show where the fires burned the valley the most and where there is the most soil erosion.




Major contributing factors to the extreme fire conditions in Southern California were drought, hot weather, and unusually strong Santa Ana winds with gusts reaching 85 mph.

This is important for FEMA to know because when fire "cooks" the soil it eventually breaks it up leaving chunks of soil, "like pottery." When the rainy season comes, this stuff washes down — like "chunks of tire." These large pieces of hard earth can cause mud slides that injure people and damaged property.

"In the 2003 fires in California, many people actually got killed due to this. They had a big rain and they had mud slides that buried and killed people," says Ennis.

"Besides FEMA, the Corps maps are being used by different groups for different reasons," says Ennis. "For example, the Environmental Protection Agency wants to see the burned areas to see what environmental impacts have occurred. And emergency responders want to see them so they know where they need to evacuate people."

"Our geospatial information and data products provide disaster emergency managers and responders at all levels of government with the information that allows them to make more-informed decisions, ultimately reducing the risk to life, property, and the environment," Markin said.

"I want to extend my thanks and appreciation for the U.S. Army Corps of Engineers' GIS assistance during this disaster," says Jonathon Bartlett, GIS Lead, Multi-Agency Support Group, FEMA. "We look forward to continuing to work with the Corps' GIS team because their ability to provide GIS support is vital to our success and education in the field." 

*JoAnne Castagna is a technical writer-editor for the U.S. Army Corps of Engineers, New York District. She can be reached at joanne.castagna@usace.army.mil.*

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