

Field GIS Provides Timely and Accurate Structural Damage Assessment During Wildfire

The human-caused Williams Fire started at approximately 5:00 p.m. on September 22nd. For over a week it consumed nearly 39,000 acres of the Angeles National Forest, which consisted of highly volatile, drought-stricken chaparral, mixed oak and mixed conifer fuel types that had not burned in 30-100 years. Fire behavior was often extreme and forced the closure of the entire National Forest and evacuation of thousands of residents. Numerous homes, seasonal cabins, vehicles and valuable natural resources were destroyed within the first couple of days.

The Williams Fire was identified as the number one priority in the nation to receive fire suppression resources. A team of technical specialists from Los Angeles County Fire Department, CA Department of Forestry and Fire Protection and the National Park Service responded. This group was supported by GIS Specialists from the CA Governors Office of Emergency Services, Bureau of Land Management, LA County Fire and U.S. Forest Service.

In order to collect essential information needed to provide fire managers, agency administrators and evacuated homeowners with an overall status of the extent of the damage, the "Digital Field Observers" went into the fiery chaos armed with the latest mobile GIS mapping software, handheld PDA computers, lightweight GPS receivers, digital video and still cameras as well as the standard fire handtools and personal protective equipment.

ArcPad was used extensively throughout the assignment, not only for navigation but to collect and display the location of every damaged structure. A TeleType pcmcia card GPS receiver was connected wirelessly to a Compaq iPAQ and served as an effective inexpensive means to georeference the video scenes used for documentation. Another Garmin III plus GPS collected geographic coordinates that georeferenced jpeg images recorded by a Kodak digital camera. The GPS receiver and camera were conveniently mounted on a small aluminum bracket with a short 6" data cable between the two devices. This made for ease of handling and enabled the technician to get in, take the shot, and back out to a safe distance often while the structure was still burning. The GPStag script by GeoSpatial Experts would do all the work of imbedding the lat/long coordinates and time and date stamp into each picture. The final phase was to simply remove the compact flash card from the camera and insert it into a notebook computer. An ArcView extension would recognize the imbedded information; create a point shapefile and hotlink the image to that point.

It should be noted that this entire procedure was performed directly on the fire. There was no wasted time traveling all the way back to the Incident Command Post for post-processing. By the time we returned to fire camp, we could whip out the trusty iPAQ, start ArcPad and give a thorough briefing to fire officials. The iPAQ even has an expansion sleeve that allows direct connectivity to an LCD projector or TV monitor for group presentations. Just for the fun of it and "because we can", we included a short

video clip that shows how we do it. I enjoy watching people's reaction when you play a movie file on the iPAQ that depicts how the iPAQ was used on the fire. Does this qualify as a certified Type I fire geek (FGT1)?

In San Dimas Canyon alone we recorded 62 residences, 8 outbuildings and 27 vehicles destroyed or damaged. Each image-hotlinked location was easily displayed on an ArcPad map or ArcView project in just a couple of minutes. In 1999 I completed a similar assignment on the Willow Fire, which destroyed over 60 structures in the San Bernardino National Forest. It took almost three days to collect the data and manually edit the database table to link the individual image of the damaged property with its GPS coordinates. Three years later on the Williams Fire, the Incident Commander and Forest Supervisor were provided with a polished product within the 24 hour deadline given to us to complete our report. This would not have been possible without field GIS technology.

For additional information about the methods used to map the Williams Fire, check out:

www.esri.com/arcpad

www.geospatialexperts.com

www.3dllc.com

www.teletype.com

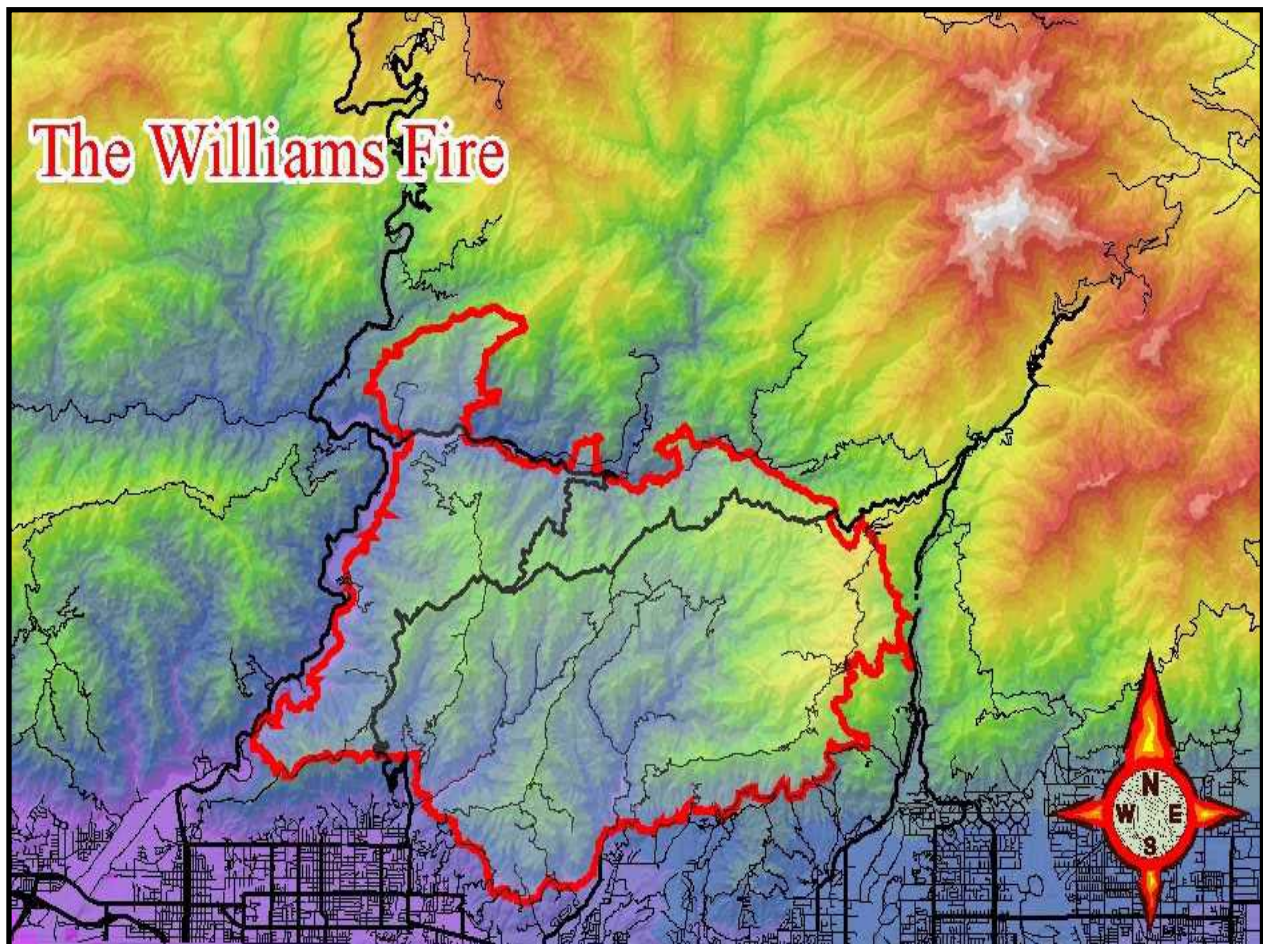
www.datanywhere.net

<http://spatialnews.geocomm.com/newsletter/issue12/demofis265.html>

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