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[What's Happening](#)
[Events & Entertainment](#)
[Food & Wine](#)
[Columnist & Blogs](#)
[Opinion](#)
[Contact Us](#)
[Videos](#)
[e-blast](#)
[f](#)
[t](#)

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Next Story >

How technology mapped a massive fire cleanup

Posted on July 19, 2018 by Sonoma Valley Sun



The Nuns Wildfire not only destroyed the house but also the bridge that served as the only means of access. This is just one of the challenging properties that remains to be cleared of debris. The Corps, under the direction of the Federal Emergency Management Agency and in partnership with the California Governor's Office of Emergency Services, is removing ash and fire-related debris in Northern California following the October 2017 wildfires. (Photo by Mike DeRusha).

By JoAnne Castagna, Ed.D.

Last fall in northern California, blazing wildfires turned wine vineyards and home developments into debris and ash. Soon after, make-shift tents started rising on the charred landscape.

“Residents didn’t want to leave their property,” said Marzena Ellis, an engineer with the U.S. Army Corps of Engineers. The residents were holding onto the lives they had before the wildfires, and Ellis was there to help them rebuild.

Ellis, from New York, is one of almost 900 Army Corps volunteers that deployed to California from various Army Corps Districts and Divisions to help with the recovery efforts. Her role was to create maps using Geographic Information System to help with the massive debris removal process.

GIS inputs data from various sources, such as aerial photography, and combines these layers of information in various ways to perform analysis and create maps.

October’s fast-moving wildfires burned over 245,000 acres in Sonoma, Napa, Lake, Mendocino, Solano, Yuba and Butte counties, killing 43. Over 10,000 structures were destroyed or damaged.

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The aftermath? The largest debris cleanup in California's history since the 1906 San Francisco earthquake.

It was the job of the Army Corps to execute the massive debris removal mission. The Army Corps worked under the direction of FEMA and in partnership with California's Governor's Office of Emergency Services, as well as other federal, state and local agencies.

As of June, 2.2 million tons of debris has been removed from more than 4,500 properties. This is equal to the weight of more than two Golden Gate Bridges, which combined equals 1,774,000 tons.



Sonoma Valley. A stark reminder of the impact of the Nuns Fire on the Kenwood community.

To assist with the debris removal process, Ellis created maps for debris hauling routes, safety awareness and project updates. The maps were constantly updated based on data from the field: counting the number of buildings on the site, noting any hazardous materials and situations on the site, taking air monitoring measurements and determining the best routes to transport debris.

“In a disaster of this size – over three counties – it was critical to have the most current Intel on where the impacted structures were located,” said Todd Thalhamer, CalRecycle operations chief.

Miller added that because of the large number of entities working on this mission, sharing information and having the latest data was important. “It was a common sight throughout the weeks to see supervisors from CalRecycle, FEMA, Arcadis, and private debris hauling contractors all reviewing the maps we created during their discussions of planning and decision making.”

The coordinated effort, Miller said, “allowed a rapid response timeline, so that the residents and communities affected by the wildfire, could begin rebuilding.”

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