

CSAC Challenge Award
Contra Costa County Public Works Flood Control District Executive Summary

Overview. The Rain Map web application is an initiative allowing the community to monitor rainfall and potential flooding of creeks and channels within Contra Costa County.

Challenge. Disastrous flooding became an issue in Contra Costa County as well as the rest of California due to the heavy storm season in 2016-2017. The Flood Control District (the District) and the public historically lacked the accessibility to real-time rain and stream level data, which is useful information during heavy storm such as this past season. There was no way for the public or staff to easily determine if the conditions were met for potential flooding other than viewing data from a rain gauge table.

Innovative Solution. The District sought to make the rain data more appealing and accessible for Contra Costa County Residents. The Rain Map App uses Doppler radar data so that the community member user can view the rain coverage and intensity in real time in their specified “pin-drop” location.

We have also developed a “protocol” we call “7-5-3-2 Flood!”. This protocol or motto stands for 7 inches (of rainfall) so far for the season, 5 inches in the last 30 days, 3 inches in the 7 days, and 2 inches forecasted in the next 24 hours. If the critical 7-5-3 rainfall conditions are met or nearly met, and the National Weather Service forecast is for two (2) inches of rainfall in the next 24 hours, flooding of the local streams is possible. The Rain Map provides data needed for the public to access the information themselves. We have added a thumbnail map of the current 24-hour forecast so that, at a glance, the public can see if there will be rain in the next 24-hours.

Originality and Resourcefulness. The Rain Map is unique in that we have not seen another jurisdiction provide this type of rain map that also works well on a mobile device. Several other flood agencies have contacted us to learn how we developed our Rain Map and we have heard that they are working on similar apps. The code is open source, meaning anyone may copy the code. The Rain Map features allow staff to easily monitor the system in graphic format from anywhere. The data includes rain, stream and basin water levels, and battery levels to alert us when maintenance is required. The Rain Map data is

updated automatically every 20 minutes through our hydrologic data collection system. The information reaches the public quickly: edits to the map can be made on a local copy and then, once the changes are reviewed, can be pushed out to the public facing server in minutes.

Cost effectiveness. The Rain Map App is practical and more importantly low-maintenance. Typically around three Public Works employees are utilized to keep the system current. The website development was funded through a DWR Flood Emergency Response grant. The original cost of having the Rain Map developed was only \$5,000. We continuously modify the map to improve mobile device accessibility, utilizing our public service employees.

Results. The Rain Map has become a favorite among our elected officials and the public. It has been instrumental in raising community awareness of potential flooding, but also their awareness of our District and the services we provide. We often hear residents mention our map, how cool it is, and how often they go to it for information. Since the flood control districts around the country are often not well known, and since we will someday need to be known to have our community support additional funding, we see it as an invaluable tool for public outreach and not just for disseminating information.

Overall, our vision is to have a way for our community to obtain valuable data with the use of their personal device. This may reduce their risk of personal and property damage when a storm comes. The District believes that we've provided Contra Costa County residents a valuable way to protect property and life with flood forecasting information that is simple, accessible, and transparent.

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