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Not My Fault: ShakeOut promotes tsunami safety

Lori Dengler/For the Times-Standard
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Thursday (10/21/2021) was the Great ShakeOut and more than 7.6 million Californians were registered participants. Our North Coast tally was just under 53,000 – kudos to all of you who practiced Drop, Cover, and Hold On drills whether at home, at work, at school or in another location.

Getting under that table or desk is only one part of ShakeOut. It was also an opportunity to test emergency notification systems. I received three alerts. The first was from the Humboldt County Everbridge notification system, followed a few seconds later by a MyShake alert, and then a notice from HSU's campus system.

All of these systems have one thing in common – you need to opt into them to get notified. If you did not receive any alerts last Thursday, there are two reasons. First, you aren't currently in the system. Every county in California has a notification system, but they aren't automatic. You need to enroll in order to get text, email, or phone alerts. You can sign up for Humboldt's system at https://humboldtgov.org/2014/Emergency-Notifications or phone the County OES (707) 268-2500.

The Humboldt alert was sent to over 67,000 contacts. 22% confirmed that the message was received. In a real emergency, it is important to verify receipt as the system will continue to contact you until it knows it got to you. The ShakeOut test showed a new problem. Many phones have spam filters on them and blocked the calls or labeled them "Potential Spam" and people ignored them. The County is working with Everbridge to code the messages in a way that people will recognize.

ShakeOut originally focused on earthquakes and shaking hazards. We began including tsunami awareness several years ago because feeling an earthquake is the natural warning that a tsunami may soon follow. This year, the community of Fairhaven on the Samoa Peninsula went a step further and held a tsunami evacuation drill.

Fairhaven is the southernmost community on the Peninsula and is home to about 200 people. It's been a community of concern since we first became aware of the Cascadia tsunami threat. Unlike Samoa and Manila, there are no high dunes near Fairhaven and the first State tsunami maps identified the nearest safe high ground a 45-minute walk away. Fairhaven is exploring a vertical evacuation structure, but the costs have so far put that project out of site.

Last year, new tsunami maps were issued for Humboldt County (https://rctwg.humboldt.edu/tsunami-hazard-maps). The new maps used far more precise land elevation data. The more detailed topography was able to incorporate the dune topography and revealed that several dunes near Fairhaven exceed 40 feet in elevation and one reaches 46 feet.

If you've seen tsunami movies or read some media accounts, this might not sound very high. Recent tsunamis have exceeded 100 feet in some areas. But tsunamis are not like bathtubs and can't be described as a single elevation line. The height of a tsunami on land is a function of many things including the character of the source, the shape and depth of the sea floor, and coastal topography. Shallower water in the source area can mean a much smaller tsunami even when earthquake slip is large.

The California Geological Survey put all of these factors together in determining how large a tsunami would be produced by a magnitude 9 earthquake on the Cascadia subduction zone. In most of Humboldt County, the new tsunami maps were very similar to the previous ones but there were a few areas of more flooding and some, where more safe areas have emerged.

Yesterday morning, we put the new maps to good use. The Redwood Coast Tsunami Work Group coordinated an evacuation drill to the newly identified high dune, and even in the pouring rain, about ten percent of the community walked from their homes to the evacuation site. The primary purpose of this drill was to familiarize residents with the location of the site and how to get there. But it also served to time how long it takes to walk the route and where evacuation route signs need to be placed.

Why walk? A natural inclination is to jump in the car and drive to Eureka or Arcata. That works fine for tsunamis coming from far away when several hours elapse between notification and the first surges. But this drill focused on the big earthquake beneath our feet, the earthquake that damages roads, drops powerlines and produces a tsunami that arrives very quickly. The highway goes through many low areas before reaching high ground and, even if the

road is still passable, is much more vulnerable to a tsunami strike than the high dunes.

Ten minutes is our target time to get people to safety after a Cascadia earthquake. People in most parts of the community were able to reach the high dune in that time at a comfortable walking pace. But the drill did identify several issues. It took one family 15 minutes just to coordinate their young children and leave the house. We call this milling – the time it takes to prepare before action occurs.

I fully understand the issues of getting kids dressed and out the door, especially on a rainy day. There are ways to address this. First, hold frequent drills so that everyone in the family knows exactly what to do. Storing coats, shoes, snacks, and other necessary supplies in go kits by the door can also help. And third, community help - identifying people with young children or the elderly who need assistance ahead of time. Nearby neighbors can give them a hand when an emergency occurs.

Yesterday's drill was just a first step. The evacuation route needs to be improved so that wheelchairs and strollers can navigate it. My aging knees found the last hill a bit of a challenge. The signs aren't permanently installed yet. It's also not a final solution – I'm still hoping a permanent evacuation structure can be built. But this was a big first step and my applause to everyone who participated.

Lori Dengler is an emeritus professor of geology at Humboldt State University, an expert in tsunami and earthquake hazards. The opinions expressed are hers and not the Times-Standard's. All Not My Fault columns are archived online at https://kamome.humboldt.edu/resources and may be reused for educational purposes. Leave a message at (707) 826-6019 or email rctwg@humboldt.edu for questions and comments about this column, or to request a free copy of the North Coast preparedness magazine "Living on Shaky Ground."