

## **Not My Fault: Kudos to Manila, our newest TsunamiReady Community**

Lori Dengler/For the Times-Standard  
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It's been more than five years in the works, but all the boxes are finally checked and this week, the Eureka National Weather Service Office announced that Manila has earned TsunamiReady recognition. TsunamiReady, a program developed by the NWS, establishes criteria for towns, tribes, cities and counties to respond to a tsunami threat coming from either far away or nearby.

This is not just an academic issue to me. I spend a lot of time in Manila. My favorite dog walking trail is Ma-le'l Dunes and I visit it and other Manila coastal spots three or four times a week. I am a big fan of the Lighthouse Plaza Mini-golf course, although my husband and son usually beat me. Tsunami safety in Manila is of personal interest to me.

Manila, like the rest of Humboldt and Del Norte counties, needs to prepare for tsunamis that may come from distant parts of the Pacific like Alaska, Japan or Chile and from the Cascadia subduction zone along our own coast. The first step is to define the hazard. For California, the agency tasked with this responsibility is the California Geological Survey (CGS). The process requires examination of historic tsunami events, prehistoric or paleotsunami events, and numerical modeling of the tsunami produced by sources both close to us and far away.

The result is maps that show the worst likely hazard all along the coast. This becomes the basis for the next step, working with counties to make tsunami zone maps, develop evacuation routes and post hazard signs. Humboldt County worked closely with CGS geologists, the County Office of Emergency Services and the Redwood Coast Tsunami Work Group to develop maps to help communities and individuals with evacuation planning.

The tsunami zone maps are more conservative than the state hazard maps, and include an additional factor of safety to account for high tides and large waves. They don't show water heights or penetration for a specific event, but delineate safe areas (white) and yellow zones where all bets are off for our greatest threat. The boundaries are usually easily recognizable geographic landmarks like streets or rivers. You can find them online

at

[http://www2.humboldt.edu/rctwg/site/download\\_tsunami\\_maps/](http://www2.humboldt.edu/rctwg/site/download_tsunami_maps/) Google 'humboldt tsunami app' or request copies by leaving a message at the number at the bottom of this column.

For Manila and other communities on the Samoa Peninsula, the biggest concern is the local tsunami, generated by a very large earthquake on the Cascadia subduction zone. Not only will Cascadia produce our largest tsunami, but the first surges could arrive at nearby coastlines in as little as ten minutes, giving no time for official announcements and a coordinated evacuation. The earthquake will also cause shaking damage meaning that the Internet, telephones, radios, and sirens won't work.

This is where the TsunamiReady process becomes important. TsunamiReady communities must not only have hazard maps and the ability to receive tsunami alert messages when a tsunami comes from far away. They must also support "ongoing, sustained tsunami public education and outreach, including to schools in tsunami hazard zones." Regional NWS forecast offices are responsible for defining what satisfies public education and outreach for their area. On the North Coast it means establishing evacuation routes, holding evacuation drills and putting in place a sustained outreach program.

There were a number of hurdles to leap before Manila could satisfy these conditions. First and most important was defining safe areas. We knew that driving off the Peninsula on 255 was not a good option. Even in the best of conditions, such a drive takes more than 10 minutes to get to higher ground, and traffic and earthquake shaking could make it impassable. You are likely to be stuck in a far more hazardous spot than where you started. The good news is the higher sand dunes should provide safety. There is no geologic evidence that these dunes have been overtopped in at least 3000 years. Numerical modeling confirms these dunes will stay dry and there are numerous dunes within a ten minute walk of almost every residence.

The next barrier was figuring out safe ways to get to the dunes. There were fences along Hwy 255 that restricted access in some areas. Other routes to high ground required passing under high tension power lines. We worked with Caltrans and PG&E on access and to assess the seismic stability of the utility poles. The agencies sent teams of engineers to help resolve the problems. Access was made and PG&E signed off on the seismic stability of the support structures.

For the dunes to provide safe refuge, residents and visitors need to know how to get to them. In April of 2013, Manila held a community evacuation drill and designated five locations as the best areas to aim for. Copies of these evacuation sites are available at the Manila Community Services District, from County OES and from the NWS Office in Eureka.

The TsunamiReady program singles out schools for targeted tsunami outreach. Redwood Coast Montessori in Manila takes tsunami safety seriously. Once a month the school practices evacuation drills and every student knows exactly what to do once the ground stops shaking so that you can safely move. If you happen to be near the school when an earthquake strikes, follow the kids and you will be safe.

Outreach is an ongoing process. Just this last weekend, Manila held community preparedness fair, with a presentation on tsunami hazards and participation from a number of safety organizations. I was impressed that on a beautiful Saturday morning, about 50 Peninsula residents chose to listen and learn. One couple said to me as they were leaving, "This made us feel so much better. Knowing that there is something we can do to stay safe."

Preparedness tip of the week: Contact a local or state elected official and tell them that preparedness matters to you – check out the contact information in this paper.

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Lori Dengler is an emeritus professor of geology at Humboldt State University, an expert in tsunami and earthquake hazards. Questions or comments about this column, or want a free copy of the preparedness magazine "Living on Shaky Ground"? Leave a message at (707) 826-6019 or email [Kamome@humboldt.edu](mailto:Kamome@humboldt.edu) <https://www.times-standard.com/2018/09/26/lori-dengler-kudos-to-manila-our-newest-tsunamiready-community/>