West Tahoe fault overdue for major temblor



Gordon Seitz in the trench brushing dirt from the walls. The dark diagonal line or crack in the wall of the trench is the fault line. Photos/Provided

By Jessie Marchesseau

Anyone who has lived in Lake Tahoe for a while has heard stories of the impending tsunami if an earthquake occurs. In reality, those stories may not be too far off. And the earthquake may not be either.

The California Geological Survey has been taking a closer look at the West Tahoe fault, the most active and most hazardous of the three faults in the Lake Tahoe Basin. Last October, the agency dug a trench approximately 15 feet deep and 15 feet wide across part of the fault near Meyers.

The project was years in the making, with the CGS working closely with the TRPA, USFS and Lahontan making sure the project was a low-impact as possible. The trench has already been filled in again and the land restored.

Gordon Seitz, engineering geologist with the CGS and lead on this project, said trenches are a relatively common way to study fault lines. By examining and sampling layers of sediment below the surface, geologists can determine frequency and magnitude of past earthquakes.

Seitz and his crew were able to learn quite a bit about what has happened at the fault since the last Ice Age (about 12,000 years ago). They found two earthquakes, each one shifting the earth on the west side of the fault higher than the east side resulting in a full 12-foot difference between the two sides.

“If we had an earthquake tomorrow, there would be a step, a vertical step on the fault,” Seitz told *Lake Tahoe News*. “It would be about 6-feet high.”



The trench before it was filled back in.

An earthquake tomorrow is not exactly out of the question, either. It will be a few more months before exact results are

back from the lab, but so far it looks as if earthquakes happen on the West Tahoe fault about every 4,000 years. And how long has it been since the last one? About 4,000 years.

“If it happened tomorrow in Tahoe, I wouldn’t be surprised. But I’m not expecting it to either,” Seitz said.

The West Tahoe fault travels from just west of Meyers through Fallen Leaf Lake, down into the bottom of Lake Tahoe and back out again near Dollar Point. What Seitz said makes the Tahoe area so interesting is that in most places the biggest hazard during an earthquake is the shaking, but when the west side of the fault, 1,200 feet below the surface of Lake Tahoe, rises up 6, maybe even as much as 18-feet higher than the east side, a giant wave will ensue.

“If we have a shift like we see in the trench at the bottom of the lake, we will have a large wave, that’s a given,” Seitz said. “What we don’t know is how big the wave is or the impact.”

This is something else he is working on. Last July, Seitz was part of a team that took a remotely operated submarine-like vehicle 1,100 feet down into Lake Tahoe. What they saw was not a 12-foot step from the west to the east side of the fault like in Meyers, but a 36-foot step. This means there are either more earthquakes down there, or they are just bigger.

The team hopes to take the remote operated vehicle down again this summer for further investigation, and to hopefully determine which of those scenarios it really is.

Seitz expects to have solid data on the earthquakes of the West Tahoe fault within the next five years. However, he said the more difficult part of all of this is what to do with that data. The hope is to have reports, maps and computer models to explain where the fault is and how it and the waters of Lake Tahoe will behave in different scenarios. All this could be used for future planning in our communities, especially in the

realm of emergency response plans.

“Overall, even though it sounds scary,” Seitz said, “it should make people feel better that we’re working on it.”