

17,500 earthquakes in Nevada in 2015



Cracks developed from the magnitude 7.3 Pleasant Valley earthquake in 1915. It was Nevada's largest earthquake; located south of Winnemucca. Photo/Carl Stoddard/courtesy of UNR

By Mike Wolterbeek

More than 17,500 earthquakes were recorded in 2015 by the

UNR's Nevada Seismological Laboratory. That includes the 231 recent quakes in south Reno and the magnitude 4.8 in Caliente that shook Las Vegas in January.

"While the Reno shaking is fresh in our minds, what's really bumping the number up from the background rates is the energetic sequence in far northwestern Nevada, the Sheldon sequence," Graham Kent, director of the Nevada Seismological Lab said.

Through 2015 there have been 4,511 earthquakes recorded in the remote Sheldon Wildlife Refuge near Vya, east of Cedarville, Calif. The earthquake activity that began there in July 2014 has produced 234 earthquakes greater than magnitude 3.0, and 24 earthquakes of magnitude 4.0 or larger, including the largest, a magnitude 4.8 on Sept. 14 and a magnitude 4.6 just before Christmas.

That leaves more than 13,000 other Nevada and eastern California earthquakes, including swarms as well as less prolonged mainshock-aftershock sequences in Caliente, Carson City and Virginia City. Outside of the persistent Sheldon sequence, Nevada was hit with 54 magnitude 3 or greater earthquakes or about one per week.

Overall, there have been 19 earthquakes of magnitude 4.0 and larger and the university's seismological lab has reported 160 earthquakes between magnitude 3.0 and 3.9.

"The south Reno swarm that just happened produced about 30 earthquakes in two days and about 200 more in the days that followed," Kent said. "For our entire network, we are averaging about 50 located earthquakes a day."

They aren't all part of identifiable swarms like Sheldon, South Reno or Virginia City.

"Many of the earthquake clusters in the Walker Lake area in 2015 were more typical sequences and not like Sheldon that has

now continued for more than a year,” Ken Smith, associate director of the Nevada Seismological Lab said. “Just as the Caliente 4.8 that startled Las Vegas in May or the 4.8 at Scotty’s Castle at Death Valley in February with their fairly extensive aftershocks, in Nevada we wouldn’t be surprised to see a significant event anywhere.”

The Nevada Seismological Lab is a public service and research department in the university’s College of Science tasked by the state to operate a monitoring network and report earthquake information for activity throughout the state. The Seismology Lab’s data are provided to the USGS, other national data centers and shared with adjacent network operators in California, Utah, Washington and Oregon.

“All of our earthquake data are fed to the USGS,” Smith said. “We work with the Nevada Department of Emergency Management, county emergency managers, FEMA and even the California Office of Emergency Services. We have special reporting requirements for magnitude 3 and higher quakes. We had 179 earthquakes of magnitude 3.0 and larger in 2015, the most of any seismic network operation in the lower 48.”

The lab operates, maintains and monitors 185 real-time seismograph stations across Nevada and along the Sierra Nevada mountain range of eastern California. The seismological lab crew has been upgrading and expanding the network, including adding 15 broadband stations in southern Nevada this year and are looking for funding to match or exceed that expansion rate in 2016.

“We’re looking to the USGS, state of Nevada and others for support to bring seismograph coverage to more of the state,” Kent said. “What we’ve done for the Vegas area already has been critical for our response capabilities in southern Nevada. Despite the number of earthquakes we track – compared to other western states – support for statewide earthquake monitoring in Nevada is far below that of similar western U.S. seismic

networks. That said, we've added new analysts and reorganized our 24/7 monitoring team to keep up with the volume. But maintaining this level of effort isn't really sustainable without additional funding."

Though the third most seismically active state behind California and Alaska, Nevada has not had a magnitude 7.0 earthquake in 60 years.

Mike Wolterbeek works for UNR.

Pioneering boat inspections benefit Tahoe

By Christopher Kilian

After nine years and 51,000 inspections, Lake Tahoe's boat inspection program has become a national model for preventing aquatic invasive species (AIS) from sneaking into the lake and wreaking environmental havoc.

The program by the Tahoe Resource Conservation District (Tahoe RCD) and the Tahoe Regional Planning Agency (TRPA) has used research to pioneer innovative ways to decontaminate boats quickly and thoroughly. Program officials have consulted with boat mechanics to develop the best procedures and resources, and they are working with one manufacturer on engine designs that will facilitate decontamination in the future.

Stopping invaders

TRPA and Tahoe RCD launched the Watercraft Inspection Program

in 2008 to minimize the risk of aquatic invasive species becoming established at Lake Tahoe. Understanding that watercraft play a significant role in spreading AIS, and notably the quagga and zebra mussel, the purpose of the program was to intercept these risks before they entered Lake Tahoe.

The 100th Meridian Initiative and Pacific States Marine Fisheries Commission provided the official training for Tahoe's original inspection team leaders. Inspections were introduced to the boating public at launch ramps around Lake Tahoe. Any vessel found to be harboring AIS had few options at the time. Other lakes might turn away potential risks, but the goal of the Tahoe program was to grant access to all watercraft.

From bleach to heat

The solution was decontaminations, a process that would allow access to all vessels that failed the inspection and were at high risk of infesting Lake Tahoe. At the time, science showed that adult mussels could be eradicated by exposure to high concentrations of bleach. And so the advent of Tahoe's decontamination program was born.

Spray bottles of bleach were used on areas of a watercraft deemed by the inspection process to be at high risk of transporting or harboring mussel larvae, called veligers, that are invisible to the naked eye. This process, although proven, had its drawbacks. Bleach could not be used everywhere, and in this concentration is harmful to carpeting, upholstery, and aluminum.



An inspector uses a pressure washer to decontaminate a boat before it is launched in Tahoe. Photo/Corey Rich

New techniques discovered

Other drawbacks were difficulties in achieving exposure times, removing bleach after application so it would not enter the lake, and an inability to be used in raw-water siphoning systems.

In 2009, scientists discovered that hot water was a suitable method for exterminating mussel veligers and other species. With an exposure time of just 10 seconds, adult quagga mussels will die when exposed to 140-degree water.

The Tahoe program purchased portable pressure washer units to improve the effectiveness of high-risk decontaminations and eliminate chemicals from the process. A small crew of Tahoe RCD and TRPA staff were responsible for performing every decontamination. Machines, equipment, and containment mats were transported to Tahoe marinas to perform these decontaminations, and took anywhere from one to four hours to

complete. It was at this point that our knowledge of the complexity of watercraft began to blossom.

The Watercraft Inspection Program harnessed the knowledge of local boat mechanics, industry professionals, and marina operators and wrote what became known as "The Boat Book."

This was a resource meant to expound upon the limited information previously understood about watercraft. Manufacturers of pumps, impellers, engines, and other marine parts were contacted to ensure that the process of flushing these components with hot water would be safe for vessels.

During the research and consulting process, it became obvious that the risks posed by watercraft lay much deeper than the outer hull and engine compartment. Watercraft have an intricate network of areas for discretely transporting potentially threatening AIS, explaining why they are one of the top carriers of AIS.

Process continually improved

Over the years, continuous research led to many more decontaminations. The program looked to science, statistics, and data analysis, as well as an ever-growing knowledge of the mechanics of watercraft, to eliminate some risk factors and absorb others. Decontamination procedures were vetted through local boat mechanics, including those that specialize in pleasure boats, race boats, and wooden boats.

Rigorous protocols were designed to effectively inspect and decontaminate, preventing the spread of AIS without having to decontaminate every vessel entering Lake Tahoe.

Through an outreach campaign, boaters were encouraged to arrive "Clean, Drain, and Dry" in order to pass the inspection.

Inspection sites were moved to improve boater convenience as

they entered the basin and alleviate congestion at the launch ramps.

The decontamination equipment was heavily modified and evolved from a simple pressure washer to a unique and purpose-built machine that was quicker, safer, more effective, and capable of accommodating even the most obscure vessel. Through these processes, decontaminations became much quicker and less frequent. And Tahoe's inspection program is now one of the nation's most protective.

*Chris Kilian is the operations coordinator for the watercraft inspection program for the Tahoe Resource Conservation District. This article first appeared in **Tahoe In Depth**.*

USFS buries plan on transfer of ski area water rights

By Jason Blevins, Denver Post

The U.S. Forest Service will not require ski resorts to transfer water rights to the federal government as a condition of operating on public land. Instead, the agency will require ski areas to prove there is enough water to sustain skiing for the future.

In 2011, the Forest Service, which oversees 122 ski areas that count 23 million visits a year, proposed a clause in its permitting process that would require ski resorts to transfer water rights to the federal government.

The Forest Service had argued that the clause would assure the water would never be separated from the land. The agency

feared that as the value of water rights climbs in the arid West, ski areas might see more economic benefit in selling water rights than in using the water for snowmaking and ski operations. The National Ski Areas Association sued the Forest Service in January 2012 over what it called an illegal taking of private property.

Read the whole story

Vonn talks about her need for speed

By Brigid Mander, Wall Street Journal

When she hits the slopes, Olympic gold-medalist Lindsey Vonn will be predictably focused on one thing: winning. For this habitué of terrifying downhill inclines (and red carpets), that's merely maintaining the status quo. Vonn, 31, is the most decorated female ski racer in history, with two Olympic medals, 67 World Cup wins, 19 World Cup season championship titles and five World Championship medals.

Her wholesome Minnesota demeanor and disarming smile belie her ruthlessly competitive side—a combination that has consistently fascinated the public. Vonn has been featured in publications ranging from Sports Illustrated and ESPN to Vogue and Elle.

At 5-foot-10 and 160 pounds, she has a physique that's sparked debate in the media about what it means to be healthy and strong—not simply skinny—something she'll explore further in her forthcoming book, "Strong Is the New Beautiful," to be released next year. According to Vonn, it will be a guide to

staying healthy and feeling beautiful, with wisdom on nutrition and working out that she's gleaned over the years.

Although Vonn maintains that her days primarily consist, rather mundanely, of eating, sleeping, training and skiing, she's found time to oversee her recently launched Lindsey Vonn Foundation, a nonprofit that helps girls empower themselves and begin to realize their dreams, whether in sports or other arenas.

Read the whole story

K's Kitchen: Starting the year with a healthy dish

By Kathryn Reed

It's rare in winter when I want salad to be my main meal. I'm usually craving something warm.

On this particular day I needed healthy more than anything else because s'mores and wine were what I had consumed most of the previous day. With this particular salad, it is warm because of the tofu.

And with the holidays behind us, eating healthfully may return to normal for many of us.

However, just say tofu and so many people turn up their noses. I understand. If it's not cooked correctly, it really is a turn off because of the texture, taste and appearance. This recipe, though, might make you a convert.

I cooked the tofu in the oven, but it could easily be grilled.

I used spinach for the greens because I had some in the fridge. I just added a carrot and mushrooms. You are going to want to make a regular salad, then you'll add the tofu and special dressing. Pay attention to which vegetables you think will go well with the dressing.

I also used vegannaise, but real mayonnaise will do the same thing.

With tofu being a great source of protein, no need to add more. Think of this like a vegetarian chef's salad, but without the nasty processed meat and questionable dressing.

The amount of dressing is enough for a salad for four. Just don't dress the salad – any salad – until you are ready to serve it and only dress the amount you believe will be consumed because it's seldom good the next day.

I had lots of extra dressing. Some I used in a stir fry – excellent. The rest I used as a spread on a heated tortilla with the leftover tofu – which I also heated. This, too, was great.



Greens with Tofu

For Tofu

1 package extra firm tofu

2 T sesame oil

2 T soy sauce

1 tsp brown sugar

$\frac{1}{4}$ tsp cayenne

$\frac{1}{4}$ tsp garlic powder

Dressing

$\frac{1}{3}$ C tahini

2 T vegannaise or mayonnaise

$1\frac{1}{2}$ T rice vinegar

1 T sesame oil

3 cloves garlic, minced

$\frac{1}{8}$ tsp pepper

Heat oven to 400 degrees.

Press tofu between paper towels to remove excess water. Cut tofu in half and then in thirds. Place the six slices on a rimmed baking sheet.

Whisk the six tofu ingredients together and then pour over tofu, coating both sides.

Cook for about 15 minutes, until there is firmness to the tofu and it turns golden or dark brown. For extra crispiness, cook under broiler at the end. Cut tofu into cubes.

Prepare salad.

Combine dressing ingredients in small bowl.

Add tofu to salad, then add dressing.

Opinion: LTN making changes in 2016

By Kathryn Reed

Looking back on some of the headlines from 2015 I'm extremely proud and grateful to live here: Amgen women cyclists and other sporting events, local athletes excelling, businesses reinvesting in the area, environmental improvements, the artists and authors who share their world with us.

Looking back on others I'm embarrassed, saddened and just shake my head: the ones about political recalls, censure of an elected official, crime, deaths, lawsuits, companies treating employees shabbily.

Together, though, they represent our life in the Lake Tahoe Basin and beyond. The frivolity and the complexity of topics will never change; which is probably good, otherwise life might be boring.

People often ask why *Lake Tahoe News* doesn't write more positive stories, why it's always negative. My reply – there is no good or bad news, there is just news. We merely seek the truth of whatever the topic.

There are times as a publication we have plotted out special series like we did in 2015 with stories about the city of South Lake Tahoe turning 50. In 2016 we have a couple other special topics in the works. The first will commence at the end of the month. While it is not Tahoe-centric, it is a topic that is bound to resonate with many *Lake Tahoe News* readers.

Not all stories on *LTN* generate comments, but most do. We

welcome the dialogue. For the most part we like the conversation. We understand there are plenty of reasons to remain anonymous while commenting.

However, starting today we are going to be more rigid with what is allowed to be posted. One of my favorite phrases is: "You can disagree without being disagreeable." It's time for the commenters to embrace that sentiment as well. Attack the idea, not the person. Then try to come up with a solution. Elevate the discussion; don't let it devolve into childish rhetoric. If you can't play nice, you will be banned from commenting. It's that simple. If you aren't using a valid email address, your comments won't get posted. For all the people who claim we will be limiting your rights in regards to the First Amendment, you're wrong – study the Constitution a bit more.

The goal is to make *Lake Tahoe News* more inviting, a place that welcomes diverse points of view without the threat of being demeaned and ridiculed. Disagree all you want among yourselves, just do it without the name calling. Be constructive, be passionate, pick apart flaws in reasoning, express why you agree or disagree – just don't make it personal.

The biggest change is it is now going to cost people to comment. For \$100 a year people may make as many comments as they like. Or you may choose to pay \$10 for unlimited comments for that one month. A number of people already subscribe to *Lake Tahoe News*. Whatever the amount you've paid will continue to get you unlimited comments on an annual basis as long as you renew your subscription each year.

The pay-for-comment policy will take effect Feb. 1. This gives you time to subscribe. You may do so **online**. If cash or check is more to your liking, send them to: Lake Tahoe News, PO Box 13406, South Lake Tahoe, CA 96151. Please make checks payable to Lake Tahoe News. This **paid subscriber form** must also be

filled out.

Becoming a paid subscriber, though, will not give you license to be abusive with your comments. Bullies will be banned – no matter the amount you've paid.

And with that, I wish you all a wonderful 2016.

Kathryn Reed is publisher of Lake Tahoe News.

Hotel reservations becoming more complicated

By Amy Zepkin, New York Times

The deal on the website of Hilton Hotels & Resorts seemed like a good one to Jeffrey Buszkiewicz: A 72-hour online sale after Thanksgiving showed a \$129 room at a Hilton Garden Inn in Manhattan for Christmas night. Two subsequent nights cost more.

But there was a hitch. After he talked about it with his wife and was ready to book, the rate had increased by \$40 a night when he logged on again the next day.

"I assumed if the sale was on for 72 hours, the rate would be good for 72 hours," said Mr. Buszkiewicz, fiscal officer for the Indiana University School of Education.

Making hotel reservations used to be straightforward. Guests booked a room and could generally cancel without penalty until the day of arrival.

Now, as hotel chains consolidate, last-minute booking apps

proliferate, and short-term rental sites like Airbnb and HomeAway grow, experts say the reservations landscape is undergoing an upheaval with new and higher fees and new restrictions on reservations that are driving new sources of revenue.

Read the whole story

IGT remains part of Nev. after \$6.4 bil. merger

By Howard Stutz, Las Vegas Review-Journal

Slot machine giant International Game Technology is as much a part of Nevada as the Battle Born motto, bristlecone pine trees, sagebrush and Lake Tahoe.

The folks at the former GTECH Holdings understand this.

That's one reason why the Italian-based lottery company didn't abandon the Silver State after spending \$6.4 billion to acquire one of the casino industry's largest gambling equipment providers. GTECH even took on the IGT name when the merger was finalized in April.

Meanwhile, IGT is using its 1.2 million-square-foot Reno manufacturing facility as the central hub for its slot machine business.

Together, the executives are putting a Nevada face to the new

IGT. Another tie to Nevada is the company's chairman, Phil Satre, a Reno resident who chaired the former IGT board and spent more than 20 years as CEO and chairman of Harrah's Entertainment.

Read the whole story

Close call with avalanche a scary lesson

By Benjamin Spillman, Reno Gazette-Journal

There are a lot of reasons Jason Layh shouldn't have been caught in a Sierra Nevada avalanche late last year.

For starters the range is known for its heavy, stable snowpack even in big years, let alone during the fourth consecutive year of drought and meager snow.

And Layh is an experienced, knowledgeable skier who understands the danger of avalanche terrain and skis accordingly.

But none of that mattered in December 2014 when he and three friends headed to Castle Peak north of Truckee to make turns following a few days of fresh snowfall.

But the rewards of backcountry skiing come with risk, as Layh and his group were about to be reminded.

Read the whole story

Opinion: Reviewing South Tahoe's accomplishments

By Nancy Kerry

As we welcome in 2016, the city of South Lake Tahoe would like to reflect on the accomplishments of 2015.

The following is a summary of accomplishments during 2015.

Strategic Priority: Fiscal Sustainability



Nancy Kerry

The most important issue facing cities and local agencies is continued steadfast attention to the budget, both short term and long term fiscal impacts.

- Fiscal year 15-16 budget adopted on time and without use of alternative revenues – third consecutive year.
- Adopted five-year financial forecast and five-year capital investment plan.

Strategic Priority: Improve the Built Environment

- Implemented Single Room Occupancy (SRO) Ordinance to ensure common sense regulations for the use of hotel/motel rooms as quality transitional housing.

- Implemented plastic bag ban for all grocery stores.
- Implemented comprehensive Vacation Home Rental (VHR) Ordinance to ensure safety compliance.
- Adopted the Tahoe Valley Area Plan which focuses on creating a commercial, mixed-use, and multi-family development that are pedestrian friendly and transit oriented while harmonizing with the overall natural environment of the Lake Tahoe Basin.
- Completed phase 4 of \$4.5 million Sierra Tract erosion control project.
- Airport Master Plan completed.

Strategic Priority: Economic Development

Growing the economy is important to the entire South Shore. Economic development is necessary as a strategy of the City Council and survivability of the South Shore.

- Construction began at Zalanta Resort at the Village consisting of high-end luxury condominiums and 19,477 square feet of retail space.
- Renovation of the shops at the Y to begin in 2016.
- Construction began for the new 27-acre Lake Tahoe Wildlife Care Center on Al Tahoe Boulevard.
- \$2.145 million in grant funding awarded for Al Tahoe Boulevard Safety and Mobility Enhancement Project.

50th Anniversary Events

- Held open houses at police, fire, development services, recreation and administrative service departments.
- Hosted a parade with 100 vehicles, 450 walkers and 200 cyclists.
- Hosted a gala dinner event at Lake Tahoe Resort Hotel.
- Created a 123-page commemorative book of the city's first 50 years.
- Created a 45-minute video with interviews chronicling the formation of the city of South Lake Tahoe.

Community Engagement Initiative

- 23,000 average monthly website visitors
- 20,572 Facebook likes
- 2,314 Twitter followers
- 2,180 Instagram followers
- Launched SpeakupSLT.com website
- Launched eComment feature for public to comment on agenda items before City Council meetings
- Launched OpenGov to view city's budget in real time
- Hosted Coffee with a Cop during summer months.

Strategic Priority: Partnership Development

- Through partnership with Tahoe Area Mountain Bike Association (TAMBA) and South Lake Tahoe BMX Association, built the Bijou Bike Park.
- Partnership with El Dorado County on implementation of Parks, Trails & Recreation Master Plan.
- Participated in emergency evacuation and preparation with multiple agencies including; EDSO, CHP, American Red Cross, Barton Hospital, LTUSD and USFS.
- Established Legacy Principles for the South Shore with group of 40 community leaders.

Strategic Priority: Quality Core Services

Delivering quality core services is a key function of city government and the main reason the city was formed 50 years ago to deliver police, fire and snow removal operations. The following actions and activities supported the strategic priority to deliver quality core services.

- Implemented the South Tahoe Action Team (STAT) program and trained citizens to be first responders in large scale emergencies.
- Acquired 1740 D St. to create an office and industrial facility for the city's Public Works Department staff and equipment currently located at the Rufus Allen

Corporation Yard and the Tata Lane Offices.

- Purchased new sander/plow truck fleet.
- Purchase new street sweeper fleet.
- Installed asset management system.

Long Term Planning Initiatives

- Recreation complex renovations.
- Regan Beach upgrades and remodel.
- Expansion of community playfields.
- Implementing El Dorado Beach to Ski Run Bike Trail.