

LIVING IN A FAULT ZONE

Extensive preparation paid off when a small earthquake shook Salt Lake Valley, Utah.

By Holly Downs



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Utah is known for world-class skiing, rock climbing and hiking, along with a multitude of other outdoor adventures for clean living. In Utah, one of our state’s mottos is “Life Elevated” — a nod in part to the spectacular Wasatch Mountains located on the western edge of the greater Rocky Mountain range. Utah gets its name from the Ute Native American tribe, which means “people of the mountain.”

We are a mountain-centric people, with 85% of the Beehive State’s population — more than 2.5 million people — living within 15 miles of the 160-mile-long Wasatch Range. At its heart is the metro urban area of Salt Lake County, home to the professional basketball team the Utah Jazz, the state capital and an estimated 1 million-plus residents.

While the state’s 11 world-class ski resorts dominate headlines in the northern part of the state, what is less known is that this area of the Wasatch Front is built on an active segment of the Wasatch Fault — one of the most potentially seismic areas in the United States.

The Wasatch Fault is also known as the Wasatch Fault Zone, a series of five primary active fault segments. This area parallels the Wasatch Mountains, which were created over several million years by many earthquakes along the fault zone. According to the Federal Emergency Management Association (FEMA) as recently as 2020, “the Wasatch Fault poses one of the most catastrophic natural threat scenarios in the United States, meaning residents living along the Wasatch Front have a 43% chance of experiencing a magnitude 6.75 or greater earthquake in the next 50 years.”

Earthquake plans are rehearsed and discussed each year as part of Emergency Planning and Operations in our area. Utah’s “Be Ready Utah” program is focused on preparing citizens for the inevitable “big event.” Every April, public and private groups partner for statewide earthquake drills to ensure we are ready. We are warned and re-warned: “Utah has experienced damaging earthquakes in the past, and geologic evidence indicates that earthquakes larger than any experienced locally in historical time are likely in the future.”

Local media have shared doomsday messages in the past, such as one report from KSL News in 2006 saying scientists predicted that Utah would experience a 7.0 magnitude earthquake within the decade. This event would kill 6,200 people, injure 90,000 more,

cause moderate damage to 42% of all local buildings and cause \$40 billion in economic losses. Those are indeed devastating figures. As the predicted decade passed and no seismic events occurred, the media moved on to the next big story, no longer reporting the danger beneath us.

The world of public safety has a longer memory. We have in place operational plans and processes to handle natural disasters of every variety from the common microbursts, high winds, fires, floods, winter storms, avalanches and mudslides to the eventual earthquake and one-time tornado.

Fast forward to March 2020 as the world held its breath at the beginning of the COVID-19 pandemic. On March 11, Utah Jazz all-star center Rudy Gobert tested positive for COVID-19, causing the NBA to immediately suspend its season. Less than two days later, on March 13, President Donald Trump declared coronavirus a national health emergency. Like most 9-1-1 centers around the nation, Salt Lake Valley Emergency Communications Center (SLVECC) was already in pandemic planning mode, pulling out H1N1 protocols of the past and making relevant changes to 9-1-1 interrogation based on CDC recommendations and local health care/medical authority.

Natural disasters are not polite. They do not wait until it is a convenient time when staffing levels are at their best or when a pandemic is not knocking at the door, or even when there is a lull in normal activity. On March 18, at 7:09 a.m., commuter traffic was well on its way and the world was waking up to its business. Our 9-1-1 center at SLVECC was already fully engaged in the day-to-day responsibility of serving our large metro community. People had medical issues and crimes were still being reported. The routine of a large multi-jurisdictional 9-1-1 center was overwhelmed when a 5.7 magnitude earthquake shook our community, with the epicenter less than 15 miles from downtown Salt Lake City in the city of Magna.

To complicate matters, within the hour, social media was rampant with fear-based rumors that another, much larger earthquake would soon occur. This increased the panic and calls to 9-1-1 from concerned citizens. For a time, these rumors hung over us like a cloud of impending danger as we worked to ensure citizen safety, looking for reliable information. We breathed a sigh of relief as we were able to advise callers that the University of Utah Seismograph Stations (UUSS) determined it was the mainshock and not a foreshock as feared.

This moderate seismic event, lasting a mere 20 seconds, resulted in thousands of emergency calls. Unreinforced masonry in several old buildings crumbled and damaged buildings in Magna, Kearns, West Valley City and downtown Salt Lake City. Power was lost in most areas of the county, shutting down semaphores and the light rail system. Salt Lake International airport stopped operations for a time. Of greatest concern was an unprecedented chemical leak at Rio Tinto's massive Kennecott Copper Mine, as 8,200 gallons of hydrochloric acid leaked from a 12,000-gallon container causing the evacuation of workers and shutting down mine operations. Chief Dan Peterson of the Unified Fire Authority later reported that the multi-agency response contained the leak quickly, eliminating risk to residents.

Magna city was declared a state of emergency as the National Guard, Red Cross and other organizations were called upon to assist in various capacities during the aftermath. Magna citizens who lived along Main Street, the area hardest hit, were displaced for days.

West Valley City next to Magna was significantly impacted with many buildings damaged. Most critical were 48 mobile homes that were destroyed or severely damaged. Dozens of homes were knocked off their foundations, fracturing gas lines, which created a further hazard. Natural gas leaks can be flammable; citizens are advised to immediately evacuate the building and area, leaving the door open behind them to keep natural gas from filling the building. They are also told not to use light switches, telephones or other electrical devices that may spark and ignite the gas and not to start a motor or vehicle.

Natural gas leaks from the main gas line are not the only consideration. Natural water heaters that are not secured properly can be dangerous. A full water heater is heavy and

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will move during an earthquake. If it moves too far or falls over, it is likely to break the water and gas lines.

Pipes breaking were not limited to natural gas, and we responded to flooding calls as there were water main breaks as well as smaller pipes damage throughout homes and structures.

The final tallies for the day were unprecedented for our area. In addition to the massive chemical leak at Kennecott Copper, we managed communications for 172 other quake-related fire emergencies. There were 52 natural gas leaks, which ranged from mobile homes to large industrial or commercial buildings. There also were 48 incidents of damage to buildings and property that were not natural gas, fire or flood related. Above ground electrical lines were down across the valley. Fire alarms were reported, but luckily, actual fires were limited to a couple of outside fires, one commercial structure fire and one residential fire. Medical emergencies and law enforcement calls were also part of the equation. We managed in total 3,076 calls during that operational period (12 hours). Almost half were handled during the first one to two hours after the initial quake.

Fortunately, no citizens were seriously injured, no lives were lost and most people experienced little or no damage to their homes. Yet the 9-1-1 system was overtaxed by anxious callers. Supervisors enacted our emergency rule to manage the call load and focus on calls from people who required a response. Many of the panicked and curious citizens were assured that yes, we had indeed experienced an earthquake. Some citizens who called and did not get an immediate answer disconnected the line. We have a policy of calling back on all 9-1-1 hang-up calls, which added to the workload. No roads were immediately damaged, but

emergency vehicles were delayed in heavy traffic. Without power, semaphores were not functioning, impacting additional staff responding to SLVECC's 9-1-1 center.

While some employees were traumatized and in need of support and reassurance, all telecommunicators stayed on duty as additional staff arrived to man the needed extra radio and fire positions. They all had family, pets, friends and homes they were worried about as they continued working through the events of the crisis and aftermath. Some were gripped with fear as the world rolled beneath us. Our emergency communications center is positioned on earthquake shocks — large coils that absorb the earth's movements by essentially floating the building. This prevents severe structural damage and personnel injury as we sway and roll with the shifting tectonic plates. For some telecommunicators, the sense of panic was increased as they were unable to take cover under desks; they had to keep answering calls and dispatching units. We simply had to ride out the main event and over 2,500 aftershocks.

The largest aftershocks were two 4.6 magnitude events on April 14 and April 17. These aftershocks were felt throughout Salt Lake County and other counties along the Wasatch Front area. The earth moved, and once again, 9-1-1 lines were inundated with calls. A few less this time but still significant.

All the "Be Ready Utah" drills and media warnings did not prepare people for this event. When the ground shifted and their world rocked and rolled, they called 9-1-1, as often happens when people get scared about a potentially life-altering event.

2020 was a year that brought many lessons. Our world has gone through political and social upheaval, and our landscape is changing at local, national and international levels. Pandemics have happened in the past and will happen again in the future. Many communities throughout the U.S. have had to deal with the ramifications of social outrage and unrest, highlighting a need for various changes. But we are progressing and trying to build and even rebuild as we soldier forward. There are challenges ahead, and they will not always be easy to overcome. In Utah, we are preparing for the eventual 7.0 magnitude or greater earthquake, which is predicted to have 90 times the force of our relatively benign 5.7 event.

We learned that many of the processes we have in place were effective. Basic ICS principles and mutual aid agreements used in day-to-day operational procedures met most needs. Partnerships and emergency plans with Rio Tinto/Kennecott Copper were effective in addressing the unprecedented leak. Applying the “emergency rule” to processing 9-1-1 calls for service was imperative.

Most of all, we learned that our employees worked diligently and professionally, despite the uncertainty of tremors and aftershocks, helping the community. They were able to mitigate fear and panic and are better prepared for the future.

While no one wants a natural disaster, just maybe the upside is that this 5.7 quake will prepare us and our citizens for bigger

upheavals. While we were not able to test all emergency plans, we are in a better position to respond to the “big one” whenever it may strike. ●

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CDE EXAM #58177

QUIZ

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| <ol style="list-style-type: none"> 1) According to FEMA, the Wasatch Fault poses one of the most catastrophic natural threat scenarios in the United States with a 25% chance of having a 6.75 magnitude or greater earthquake in the next 30 years. <ol style="list-style-type: none"> a. True b. False 2) SLVECC plans and prepares for earthquakes along with other natural disasters such as high winds, fires, floods, winter storms, avalanches, and mudslides to the eventual earthquake and one-time tornado. <ol style="list-style-type: none"> a. True b. False 3) This occurred at least 52 times in mobile homes, large industrial buildings and commercial buildings. <ol style="list-style-type: none"> a. Chemical spill b. Structure fire c. Natural gas leak d. Fire alarms | <ol style="list-style-type: none"> 4) Gas leaks often occur when lines to businesses and residents are damaged with foundational shift. What else can happen during an earthquake to cause a natural gas leak? <ol style="list-style-type: none"> a. When construction crews dig up lines to the house b. When roofs collapse c. When down electrical lines cause a fire d. When unsecured water heaters fall over 5) Natural gas leaks are dangerous because natural gas is flammable. <ol style="list-style-type: none"> a. True b. False 6) When there is a natural gas leak citizens should be told: (Mark all that apply) <ol style="list-style-type: none"> a. Move their vehicle from the garage b. Evacuate the area c. Leave door open d. Avoid using electrical devices e. Do not leave the area 7) How many aftershocks were recorded by UUSS after the 5.7 mainshock? <ol style="list-style-type: none"> a. approximately 650 b. more than 8,200 c. more than 2,500 d. less than 1,600 | <ol style="list-style-type: none"> 8) SLVECC learned that mutual aid agreements used in day-to-day large operations were ineffective in meeting the demands of the 5.7 magnitude earthquake. <ol style="list-style-type: none"> a. True b. False 9) What is the benefit of having a 5.7 magnitude event? (Mark all that apply) <ol style="list-style-type: none"> a. To determine which employees' homes are damaged b. To prepare for potentially larger disasters c. To test agency emergency operational plans d. There are no benefits 10) What was the impact of social media in this situation? <ol style="list-style-type: none"> a. It was a platform to get relevant good information to the public b. Social media rumors that there was going to be a greater magnitude earthquake caused fear c. It did not have any impact d. It only impacted Facebook |
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