Living on SHAKY GROUND
HOW TO SURVIVE EARTHQUAKES AND TSUNAMIS IN NORTHERN CALIFORNIA

Part of the Putting Down Roots in Earthquake Country Series

Includes updated Seven Steps
INTRODUCTION

You Can Prepare for the Next Quake or Tsunami

SOME PEOPLE THINK it is not worth preparing for an earthquake or a tsunami because whether you survive or not is up to chance. NOT SO! Most Northern California buildings will survive even a large earthquake, and so will you, especially if you follow the simple guidelines in this handbook and start preparing today. If you know how to recognize the warning signs of an earthquake and understand what to do, you will survive that— but you need to know what to do ahead of time!

This handbook will help you prepare for earthquakes and tsunamis in Northern California. It explains how you can prepare for, survive, and recover from them. It also describes what you can do today to save lives, reduce injuries, and minimize damage.

Government agencies and other emergency organizations cannot protect you from the next earthquake or tsunami. Even under the best of circumstances, medical aid or fire and law enforcement officials may not be able to reach you for many hours, or even days. It is our responsibility as individuals, neighborhoods and communities to reduce risks, to prepare for the critical period immediately after the earthquake, and to make sure that planning for earthquakes and tsunamis has the high priority it deserves. By becoming informed, we can take actions to protect ourselves, reduce losses, and recover quickly.

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Disclaimer: This document is intended to promote earthquake and tsunami readiness. It is based on the best currently available scientific, engineering, and sociological research. Following its suggestions, however, does not guarantee the safety of an individual or of a structure. The writers, contributors, and sponsors of this handbook assume no liability for death, injuries, property damage, or other effect of an earthquake or tsunami.

Prepared by the Humboldt Earthquake Education Center and the Redwood Coast Tsunami Work Group (RCTWG), in cooperation with the California Emergency Management Agency (CEMAG), California Office of Emergency Services (Cal OES), Federal Emergency Management Agency (FEMA), California Geological Survey (CGS), Department of Interior United States Geological Survey (USGS), National Oceanographic and Atmospheric Administration (NOAA) National Weather Service, with contributions from many members of the Redwood Coast Tsunami Work Group. The Redwood Coast Tsunami Work Group is a member of the Earthquake Country Alliance, a statewide “alliance of alliances” linking the public information efforts of organizations and individuals that provide earthquake information and services in California.

Dedication

To the memory of Kathleen Sullivan Fairchild

2 Evacuation map based on relative hazard maps by Jay Patton

Earthquakes of magnitude (M) 6 and larger since 1900 located in California north of Santa Rosa and in the adjacent offshore area.

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LIVING ON SHAKY GROUND
Answer These Questions Before a Disaster

During an emergency, you’ll need immediate answers to many questions. Here are some questions you should answer long before a disaster strikes.

Where will my family be and how will I reach them?
- Make sure your family disaster plan includes:
  - Children who may be away at school, day care, or at other activities.
  - Planning for pets or livestock if you are away from home.
  - An out-of-the-area contact to convey information to other friends and family members.
- Discuss your safety and emergency plans with everyone in your family.
Remember—Phone systems, such as land-based and cell phones, and Internet communications may be disrupted, or overwhelmed almost immediately. The road system may also be damaged making it difficult or impossible to travel.

Where will I get medical help?
- Take first aid and CPR classes to help you respond to medical emergencies.
- Plan for back-up power if members of your family require electricity for life-saving medical equipment.
Remember—the 9-1-1 system will likely be overloaded or completely down, ambulances and emergency vehicles will be overwhelmed or have limited access and some medical facilities may not be operational.

Am I prepared to live without the essentials?
- Store water at home, work and in your car because drinking water will be in short supply.
- Keep at least one week’s worth of food and medicine on hand for everyone in your family.
- Fill up your gas tank frequently and keep it at least half full because gasoline will be scarce.
Remember—Utilities and water supplies may be disrupted for weeks.

How will I pay for things?
- Keep cash on hand because banks may be closed and credit cards unusable.
Remember—ATMs are likely to be out of order.

How will I repair the damage to my home?
- Examine what your insurance covers and consider earthquake and/or flood insurance.
- Minimize losses by taking action to reduce your hazards.
Remember—Construction materials and labor for repairs will be limited and costs may increase.

Who’s Going to Save You?

Who can you rely on to help you after a disaster? Who will provide you with food, water, shelter, and medical care? You might be surprised by the answer: you and your neighbors!

A major earthquake or tsunami will likely overwhelm local law enforcement, fire, and emergency medical personnel and resources. In fact, it may take local, state and federal agencies a week or more to provide the most basic relief. This is particularly true in the many remote locations on the North Coast and in the mountains of Northern California.

Start getting prepared today by identifying and mitigating hazards, readying supplies, and developing an emergency plan may make all the difference during a disaster.
NORTHERN CALIFORNIA IS one of the most beautiful places in the United States to live with its high mountains, rugged coast and dramatic vistas. The geologic forces that have made it a spectacular place to live also make it one of the most earthquake-prone spots in the continental United States. Forces deep within the earth have folded and broken great slabs of the earth’s outer surface to create the Coast Ranges, the Trinity Alps, the Modoc Plateau and the High Cascade volcanoes.

California’s most damaging earthquakes of the past 150 years, such as the 1906 “San Francisco” earthquake, have occurred on faults in the San Andreas fault system. While we are at risk of future San Andreas tremors, there are many other seismic zones, some capable of producing earthquakes as large or larger as the one in 1906. North of the Mendocino triple junction lies the 700 mile long Cascadia subduction zone, believed capable of producing magnitude (M) 9 earthquakes. Faults in Northeastern California show evidence of past earthquakes in the M 7 range.

ALL AREAS OF NORTHERN CALIFORNIA HAVE EXPERIENCED EARTHQUAKES IN THE PAST AND WILL DO SO AGAIN IN THE FUTURE

You Live in Earthquake Country

PLATE MOTIONS LOAD THE FAULTS
Three plates meet on California’s North Coast at the Mendocino triple junction. To the north of the triple junction, the Gorda plate is pulled to the northeast beneath the North American plate at a few inches per year. To the south of the triple junction, the Pacific plate grinds to the northwest past the North American plate at a similar speed.

Our Faults
Faults are weak zones in the earth’s crust where the rock on one side has moved relative to the other side. Some faults, like the San Andreas, are vertical and the two sides move horizontally like cars on a freeway. Thrust faults slope like a ramp and the rock above the fault is pushed up and over the rock below. The largest faults on earth are thrust faults in subduction zones. An earthquake is caused when the rock miles below the earth’s surface breaks along the fault and the two sides suddenly slip in a process called fault rupture. The larger the rupture area, the larger the earthquake. The rupture begins many miles beneath the earth’s surface. The epicenter is the location on the ground surface directly above the point where the rupture starts.

Our Faults
Invest in beachfront property in Nevada and Arizona
Despite Hollywood special effects, California will not fall into the ocean. Earthquakes actually help keep the land above sea level. If it weren’t for the uplift associated with them, all of the continental land masses would have been leveled to sea level long ago. The 1992 Cape Mendocino earthquake uplifted a 15-mile stretch of coast about four feet.

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PLATE TECTONICS
If our planet were the size of an egg, the earth’s outermost layer would be about as thick as the eggshell. This shell is broken into several pieces called plates, which move about as fast as your fingernails grow. A plate boundary is where one plate meets another. A triple junction is an area where three plates or plate boundaries meet.

The vast majority of the world’s earthquakes occur at or near the boundaries between plates. The most seismically active plate boundaries are convergent zones where one plate dives beneath an adjacent plate in a process known as subduction. Northwestern California is located on top of one of these zones known as the Cascadia subduction zone.
Notable earthquakes

January 26, 1700 Cascadia subduction zone – M 9 earthquake ruptured from Cape Mendocino to Vancouver Island—based on North American geology and Native American oral history. Japanese documents describe some of the ensuing tsunami’s effects on the far side of the Pacific.

April 18, 1906 San Andreas fault – M 7.8 earthquake ruptured from Santa Cruz to Shelter Cove, the largest Northern California earthquake in the past 200 years. Often called the San Francisco earthquake, it caused major damage in the coastal counties as far north as Humboldt and was felt throughout the state.

June 6, 1933 Gorda plate fault – M 6.4 earthquake centered near Arcata caused severe damage in the Humboldt Bay region and killed a woman in Eureka when a chimney from a neighboring building collapsed on her home.

December 21, 1954 Coastal onshore fault – M 6.5 earthquake located between Blue Lake and Willow Creek caused damage in the Humboldt Bay region and killed a man in Korbel.

November 8, 1960 Gorda plate fault – M 7.2 earthquake located offshore of Trinidad caused a highway overpass to collapse, and seriously injured six people driving on the bridge. $2 million in property damage. Felt from Eugene, Oregon to San Francisco and Western Nevada.

Not all earthquakes that affect Northern California are centered here. Great earthquakes like the 1964 M 9.2 Alaska earthquake may generate tsunamis that can hit our coast.

Bricks from the same building fell during the April 1992 earthquake. The building has now been replaced by a wooden structure.

Types of Earthquakes

Offshore earthquakes

MORE THAN TWO-THIRDS of our large historic earthquakes have been located offshore on faults within the Gorda plate or along the Mendocino fault. Fortunately many of these earthquakes have been too far offshore to cause damage. However, more than 20 were close enough to the coast to knock down chimneys and damage buildings. For offshore earthquakes of M 7 or larger, tsunami warnings may be issued.

Onshore earthquakes

The most damaging Northern California earthquakes in the past century were caused by faults onshore. Earthquakes as small as M 5 can cause damage if they are close to populated areas. There are many faults throughout the region that are capable of producing earthquakes in the M 7 range.

The Big One – the Cascadia subduction zone

The world’s largest faults are associated with subduction zones and have produced earthquakes in the M 9 range! The last great earthquake on the Cascadia subduction zone occurred in 1700, a little over 300 years ago. Geologists have found evidence for at least 13 great Cascadia earthquakes during the past 7,000 years—and estimate they occur irregularly at intervals anywhere between 200 and 800 years. The next Cascadia earthquake may be similar to the M9 2011 Japan earthquake. It could cause strong ground shaking from Northern California to Southern Canada lasting for five minutes or longer. It will also produce a tsunami that could affect not only our coast, but other countries throughout the Pacific basin.

THE SIZE, LOCATION and how often earthquakes occur give an indication of what to expect in the future. Since the mid-1800s, more than 40 earthquakes of M 6 or larger have occurred in California north of Santa Rosa and in adjacent offshore areas.
Most Earthquake Damage is Caused by Shaking...

Earthquakes also cause damage in other ways...

Damaged infrastructure
Earthquakes often damage roads, which can hinder rescue and recovery efforts and may cause accidents. Ruptured pipelines result in water loss and can cause "sinkholes" that undermine roads and buildings. Damage to gas and electrical systems can cause fires, as well as major service outages. This Highway 101 overpass south of Eureka collapsed in the November 1980 M 7.2 earthquake.

Dam failures
Earthquake shaking and fault rupture can cause dams to fail, potentially causing catastrophic downstream flooding, reduced water supply and contamination. This photo shows the failure of the Shihkang Dam, the largest concrete gravity dam in Taiwan, caused by the 1999 M 7.6 Chi Chi, Taiwan earthquake.

Liquefaction
Strong ground shaking can cause loose soil and fill to behave like a liquid. Liquefied ground loses its strength causing slumps and fractures that can disrupt roads and cause buried gas and water lines to break. This hazard is greatest in saturated low-lying areas of loose, sandy soils or poorly compacted fill. The photo was taken shortly after the 1996 earthquake and shows liquefaction caused slope failures on the banks of the Eel River.

Surface rupture
Fault movements can break the ground surface, damaging buildings and other structures and breaking pipe lines. This track at a high school in Taiwan was deformed when a thrust fault ruptured the ground in 1999.

Myth #3
The Ground Will Crack Open and Swallow You Up
The opening of great, yawning chasms that may swallow houses and people only occurs in fiction. Though some fissures may be produced on earthquake-triggered landslides, the earth’s pressure is too great to allow ground cracks associated with faulting to open up.

Hazardous material releases
Chemicals, pesticides and other hazardous materials can be released when industrial plants, laboratories and other facilities are damaged in an earthquake. Oil was released when these tanks failed during the 1983 M 6.5 Coalinga earthquake.

Landslides
Earthquakes can trigger landslides that damage roads, buildings, pipelines and other infrastructure. Northern California has steep slopes underlain by loose rock that is highly susceptible to landslides. Landslides may temporarily dam rivers and cause a destructive flood hazard when the rivers break through. The Navarro River in this photo was temporarily dammed by a landslide in 1995.

Destructive Fires
Earthquakes and tsunamis are often followed by fires because gas lines may break, electrical shorts cause sparks, damaged water tanks and broken pipes limit water for fire fighting, and damaged roads prevent fire fighter access. The 1964 tsunami caused this fire in Crescent City that burned for three days.

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What is a TSUNAMI?

A tsunami (soo-nah-me) is a series of waves or surges that is most often caused by earthquake fault movement beneath the sea floor.

TSUNAMIS CAN CAUSE great loss of life and property damage in coastal areas. Very large tsunamis can cause damage to coastal regions thousands of miles away from the earthquake that caused them.

Thirty-eight tsunamis have been recorded on the Northern California coast since 1933. Most were very small, but five caused damage. The most damage was caused by a tsunami generated by the M 9.2 1964 Alaska earthquake. It flooded 29 blocks of Crescent City’s waterfront, damaged harbors and port facilities far south as Santa Cruz, and caused 12 deaths in California.

1946 – HAWAII The tsunami surge approaching Coconut Island in Hilo, Hawaii looked like a sloping mountain of water.

2004 – THAILAND When the water rushed in, it looked like a river in flood.

2004 – THAILAND In Phuket, the tsunami began as a withdrawal of the ocean water that exposed hundreds of feet of the sea floor.

2001 – JAPAN In Kesennuma, cars and other debris were swept away by tsunami waves.

Tsunami Facts

- Tsunamis most commonly are caused by earthquakes, but also may be triggered by landslides, submarine volcanic eruptions and, very rarely, meteor impacts.
- No two tsunamis are alike. Sometimes they look like sloping mountains of water and other times they rush ashore like a river in a flood, and are usually choked with debris.
- Large tsunamis may reach heights of 20 to 50 feet along the coast and, in isolated areas, even higher. The first tsunami surge is not the highest. In Northern California, the largest surge may occur hours after the initial wave.
- It is not unusual for tsunami surges to last 12 hours, and in some cases much longer. It is not safe to approach the coast until officials permit you to return.
- The time between wave surges may range from minutes to over an hour. It is not possible to predict how many surges or how much time will elapse between waves.
- The areas at greatest risk are on the beach and low-lying coastal areas. Only in large coastal rivers is a tsunami likely to penetrate farther than two miles inland.
- Sometimes the first sign of a tsunami is an unusual lowering of ocean water, exposing the sea floor. This “drawdown” always means that the water will surge back strongly. Not all tsunamis are preceded by water lowering—so if you feel ground shaking or hear that a tsunami warning has been issued, evacuate the coast immediately and do not wait to see the water pull back.

HOW TSUNAMIS ARE FORMED

1. Gravity pulls the offshore Gorda and Juan de Fuca plates beneath the North American Plate. Most of the time the two plates are firmly stuck together along the boundary (red zone).

2. Over time, the North American plate is squeezed and bulges up as the Gorda plate slowly moves beneath it.

3. Eventually the stuck area can no longer resist the squeezing and breaks along the boundary, causing a large earthquake. Like a spring, the overriding North American Plate jumps upward and seaward, lifting the water above it. A tsunami is born.

4. The water bulge divides and sends waves both east towards the coast and west into the Pacific. The first waves reach nearby shores only minutes after the earthquake. The other set of waves may still be large enough to damage distant coastal areas many hours later.
How Will I Know if a Tsunami is Coming?
You may find out that a tsunami is coming in two ways:

Natural Warnings
GROUND SHAKING, a loud ocean roar, or the water receding unusually far exposing the sea floor are all nature’s warnings that a tsunami may be coming. If you observe any of these warning signs, immediately walk to higher ground or inland. A tsunami may arrive within minutes and damaging surges are likely to occur for at least 12 hours and possibly longer. Stay away from coastal areas until officials permit you to return.

How Do I Know if an Earthquake is Big Enough to Cause a Tsunami?
• If you are on the beach and feel an earthquake, no matter how small, move inland or to high ground immediately.
• In other low-lying areas, COUNT how long the earthquake lasts. If you count 20 seconds or more of ground shaking and are located in a tsunami hazard zone, evacuate as soon as it is safe to do so.

Official Warnings
You may be notified that a Tsunami Warning has been issued via TV, radio stations, door-to-door contact by emergency responders, NOAA weather radios, or in some cases, by outdoor sirens and announcements from airplanes. Move away from the beach and seek more information without using a phone. Tune into local radio or television stations for more information. Follow the directions of emergency personnel who may ask you to evacuate low-lying coastal areas.

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The 2004 Indian Ocean Tsunami

THE GREAT INDONESIA earthquake of December 26, 2004 made the world aware of the destructive power of tsunamis. The M 9.2 earthquake that caused the tsunami ruptured more than 900 miles of the Sumatra-Andaman subduction zone. People in Indonesia felt at least five minutes of strong shaking. The first tsunami surges arrived at the closest land only eight minutes after the earthquake. It took 15 minutes for the first waves to hit Northern Sumatra, and about two hours to reach Sri Lanka and Thailand. The waves were still large enough to cause damage in Africa about seven hours after the earthquake. The tsunami ravaged the coastlines of 14 countries and killed at least 227,000 people. Few people in Indian Ocean countries were aware of tsunamis and their natural warning signs, and there was no tsunami warning system to warn populations far from the source region of the impending waves.

Lessons from the Simeulue Islanders

Langi is a small village on Simeulue Island off the coast of Sumatra. The earthquake damaged many buildings in the town and the first tsunami surge arrived only eight minutes after the earthquake shaking began. The surges were over 30 feet high and destroyed every building in the town.

Not a single man, woman or child in Langi was killed.

Why were there no casualties? Langi has no electricity, no Internet and no technological warning system. But the people on Simeulue have an oral history and have passed stories about the dangers of tsunamis from one generation to the next. If the ground shakes for a minute or more, everyone knows exactly what to do. Adults grab the children, and use carts to wheel the elderly and the sick up to their evacuation area about 90 feet above the village, where they have stashed supplies and temporary building materials. Great tsunamis are rare in Simeulue—the last deadly tsunami occurred in 1907. Large earthquakes are common in Indonesia and most don’t produce tsunamis. Simeulue Islanders consider every earthquake an opportunity to practice their evacuation skills whether it produces a tsunami or not.

Why Northern Californians should be interested in the Indian Ocean tsunami:

- Northern California is located along a subduction zone—the same type of geologic setting as the Eastern Indian Ocean.
- The last great earthquake on the Cascadia subduction zone occurred on January 26, 1700, and was nearly the same size as the 2004 Indonesia earthquake. It produced a tsunami that affected native peoples from Northern California to Vancouver Island, Canada and caused damage in Japan more than 4,800 miles away.

On March 11, 2011, an M 9.0 earthquake occurred off the Northeast Coast of Japan’s main island of Honshu. The earthquake generated a great tsunami in Japan that also traveled outward from the source region and across the Pacific basin. More than eight hours after the earthquake, the first surge reached the West Coast of the United States. In California, this tsunami produced very little flooding on land but the extremely strong currents tore up docks and harbor structures and smashed boats. The cost to repair the damage exceeded $80 million.

- The 2011 tsunami on the West Coast didn’t look like a “wave.” It looked like a turbulent rising and lowering of the tide with strong currents like a river in flood rushing through the harbor.
- All of the damage was caused by strong currents. The tsunami water height only barely exceeded the high tide level.
- The surges continued for five days in Crescent City’s harbor! The largest surges occurred more than two hours after the first.

Above: Modeled peak water heights from the 2011 Japan tsunami. The shape of the sea floor focuses some of the energy at California’s North Coast.

Below: All the damage to Crescent City Harbor’s small boat basin was caused by strong currents and occurred more than two hours after the first tsunami wave arrived.
Seven Steps That May Save Your Life

EARTHQUAKES AND TSUNAMIS are inevitable but the damage is not—even in a great earthquake on the Cascadia subduction zone. Most damage and loss can be reduced by steps you take before, during, and after. The seven steps that follow include actions to keep you and your loved ones safe, reduce potential damage and recover quickly. These steps should also be followed in schools, workplaces, and other facilities. By following them, countless casualties can be avoided and millions of dollars saved.

Preparation is the key to surviving a disaster—that much is clear—but where should you start? Start by talking—talk to your family, friends, neighbors and co-workers about what you’ve learned in this handbook about earthquakes and tsunamis in Northern California. Then discuss what you have done to prepare and together plan your next steps.

Many people are overwhelmed by the mere prospect of a natural disaster and, as a result, don’t prepare at all. Do not fall into that trap. You can start today by following these seven steps.

Visit earthquakecountry.org for instructions and resources.

Start Here!

PREPARE
1. Secure Your Space (see illustration below and page 20)
2. Plan to be Safe (page 22)
3. Organize Disaster Supplies (page 23)
4. Minimize Financial Hardships (page 24)

SURVIVE
5. Drop, Cover and Hold On (page 26)
6. Improve Safety (page 27)

RECOVER
7. Reconnect and Restore (page 28)

THE SEVEN STEPS

STEP 1—SECURE YOUR SPACE
1. Know whether you live, work or play in a tsunami hazard zone.
2. Hang plants in lightweight pots with closed hooks, well secured to a joist or stud and far away from windows.
3. Store fire extinguisher (type ABC) in easily accessible location.
4. Install strong latches on kitchen cabinets.
5. Use flexible connections where gas lines meet appliances.
6. Remove or lock refrigerator wheels, secure to studs.
7. Keep several flashlights in easily accessible places around the house.
8. Secure valuable electronics items such as computers and televisions.
9. Keep breakables in low or secure cabinets with latches.
10. Move heavy plants and other large items to floor or low shelves.

STEP 2—PLAN TO BE SAFE
1. Have your emergency plan accessible and discuss with all family members.

STEP 3—ORGANIZE DISASTER SUPPLIES
1. Obtain a NOAA Weather Radio with the Public Alert feature to notify you of tsunamis and other hazards.
2. Keep an emergency backpack with copies of important documents near the door to grab and go.
3. Keep flashlight, slippers and gloves next to beds.
4. Keep gas tank at least half full.
5. Store emergency food and water supplies in a dry accessible area. Include first aid kit, extra cash, portable radio, extra batteries, medications and other necessary supplies.

STEP 4—MINIMIZE FINANCIAL HARDSHIP
1. Use anchor bolts every 4 to 6 feet to secure home to foundation.
2. Reinforce brick chimneys.
SECURE YOUR SPACE AND KNOW YOUR ZONE

THE FIRST STEP to earthquake and tsunami safety is to recognize your hazards. Look around your home and workplace and identify objects that might fall or shift during shaking. Additional information, including how-to instructions, is available at earthquakecountry.org and from your local American Red Cross office.

START NOW by identifying items that may fall, topple, or slide. Secure potentially hazardous and valuable items.

KITCHENS
• Install strong latches on cabinet doors.
• Secure refrigerators and major appliances.

HANGING OBJECTS
• Place only soft art above beds and sofas.
• Hang mirrors and pictures on closed hooks.
• Brace overhead light fixtures.

OBJECTS ON OPEN SHELVES AND TABLETOPS
• Hold small valuables in place with removable putty, museum wax, or quake gel.
• Add lips to shelves to prevent costly items from sliding.
• Move heavy objects and breakables to lower shelves.

WOOD STOVES
• Anchor stove feet by bolting to floor or creating brick and mortar bracing to keep stove from sliding. Note: anchors must not conduct heat.
• Brace stove pipes.

WATER HEATERS
• Anchor to wall studs or masonry with metal straps and lag screws.
• Install flexible (corrugated) copper water connectors.

FURNITURE
• Store heavy and breakable items on lower shelves.
• Secure tall furniture to wall studs with lag bolts.

GARAGES AND UTILITY ROOMS
• Move flammable or hazardous material to low cabinets that are securely latched.
• Ensure that items stored above or beside vehicle cannot fall.

WATER AND GAS PIPES
• Evaluate, replace and properly secure rusted or worn pipes.
• Replace rigid gas connections with flexible stainless steel gas connections.

ABOVE GROUND PROPANE TANKS
• Propane tanks can be anchored by mounting the tank on a continuous concrete pad and bolting the four legs to the pad.

HOME AND OFFICE ELECTRONICS
• Secure televisions, computers, sound systems and other electronics with flexible nylon straps and buckles.

START NOW by determining if you live, work or play in a tsunami hazard zone

Know your risk. Use signs and maps to find out which areas are hazardous. No signs or maps for your area? On the open coast areas 100 feet or more in elevation and low areas more than two miles inland are safe.
WILL EVERYONE IN your household know what to do during the violent shaking of a strong earthquake or when a tsunami warning has been issued? Do you know how to get in touch with each other afterwards? Before the next earthquake or tsunami, talk to your family, housemates or co-workers and plan what each person will do before, during and after.

Plan Now to Be Safe During an Earthquake
- Practice DROP, COVER, and HOLD ON (see step 5, page 26).
- Identify safe spots in every room, such as under sturdy desks and tables.
- Learn how to protect yourself no matter where you are when an earthquake strikes.
- Be sure to include hazards unique to where you live or work in your planning. Are you in a tsunami zone? Could your home be isolated if a bridge failed or a landslide occurred?

Plan Now to Respond After an Earthquake or Tsunami
- Get a fire extinguisher for your home and learn how to use it properly.
- Teach everyone in your household to use emergency whistles and to knock three times repeatedly if trapped.
- Identify family members or neighbors with special needs such as medications, special diets and wheelchairs.
- Take a Red Cross First Aid and Cardiopulmonary Resuscitation (CPR) class or refresher course.
- Know the location of utility shut-offs and key needed tools nearby. Only turn off the gas if you smell or hear leaking gas. Only the gas company should turn the gas back on.
- Install smoke alarms and check them monthly. Change batteries once a year or whenever you hear a ‘chirping’ sound.
- Work with your neighbors to identify people who have skills and resources useful in an emergency.
- Know the tsunami hazard zones in your community and how to get to safe areas.
- Recognize the natural warning signs of a tsunami—ground shaking, water receding unusually fast, and/or a loud roar from the ocean—and make sure everyone in your family knows to immediately evacuate if they are in a hazard zone.
- Know how you may be notified if a tsunami warning is issued. Consider a NOAA Weather Radio with the Public Alert feature if you live or work in a tsunami hazard zone.
- If a tsunami warning is issued, get off the beach and tune in to your radio or television for further instructions on what to do.
- Consider becoming a part of Community Emergency Response Team (CERT) in your area. Contact the Regional Training Institute for more information at fema.gov/community-emergency-response-teams.

Plan Now to Communicate and Recover After an Earthquake or Tsunami
- Select a safe place outside of your home to meet your family or housemates after the shaking stops.
- Identify an out-of-the-area contact person to call who can relay information to other friends and family.
- Provide all family members with a current list of important contact telephone numbers.
- Determine where you might stay if your home cannot be occupied after an earthquake or tsunami.
- Ask about your children’s school or day care emergency response plans. Keep emergency release information current.
- Talk to your insurance agent about your coverage for earthquake and tsunami losses.
- Make copies of important documents such as identification, deeds, insurance policies and financial records in a secure, waterproof container. Include a household inventory of your belongings.

After the shaking stops or the waves recede, power, utilities, communication systems and roads may be out, fires and chemical spills may occur, or you may be separated from children, pets and other family members. By planning now, you will be ready. Planning for earthquakes and tsunamis will also prepare you for other more frequent emergencies such as storms, fires, and flooding.

EARTHQUAKE OR TSUNAMI
- Provide important documents such as identification, deeds, insurance policies and financial records in a secure, waterproof container. Include a household inventory of your belongings.
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TIP
A space blanket not only keeps you warm and dry, its reflective surface can be used to signal for help.

Every person in your household should have personal disaster supply kits. Keep them where you spend most of your time, so they can be reached even if your building is damaged or if you need to evacuate. Store them in grab-and-go backpacks or small duffel bags so you can take them with you if you need to evacuate. You could be stranded at work or in your office; keep a change of clothes and extra medicines there as well.

Everyone should have personal disaster supply kits.
- Medications, prescription list, copies of medical cards, doctors’ names and contact information
- Medical consent forms for dependents and copies of personal identification
- First aid kit and handbook
- Non-latex gloves, dust masks
- Spare eyeglasses or contact lenses and cleaning solution
- Whistle (to alert rescuers to your location)
- Sturdy shoes, change of clothes, blanket
- Emergency cash (ATMs require power and might not work)
- Local road maps
- List of emergency out-of-area contact phone numbers
- Bottled water, snack foods high in protein and calories
- Flashlight with extra batteries and light bulbs
- Comfort items such as games, crayons, writing materials, stuffed animals
- Toiletries and personal care supplies
- Extra keys for car, home, office, safe deposit box etc.

Organize Disaster Supplies
- Keep a flashlight and a pair of sturdy shoes secured to each person’s bed.

Household Disaster Supply Kit—Supplies for at least seven days
Store in an easily-accessible location, preferably outdoors, in a large water-tight, easily-moved container. Replace perishable items like water, food, medications and batteries on a yearly basis.
- Water (minimum one gallon a day for each person and pet)
- Wrenches or other special tools to turn off gas and water supplies
- Work gloves and protective goggles
- Heavy duty plastic bags for waste, and to serve as tarps, rain ponchos, etc. Include duct tape.
- Portable or hand-cranked radio with extra batteries
- Additional flashlights or light sticks
- Canned and packaged food
- Charcoal or propane for outdoor cooking and matches if needed
- Cooking utensils and a manual can opener
- Pet food, pet carrier and restraints
- Comfortable, warm clothing including extra socks
- Blankets and/or for sleeping bags, and perhaps a tent
- Copies of vital documents (deeds, insurance, bank accounts etc.)

Car Disaster Supply Kit
- Decide what items in your personal kit are absolute necessities and add:
- An additional e-pack of water
- Tire repair kit, booster/jumper cables, pump and flares, white distress flag or silver space blanket
- Seasonal supplies: winter (blanket, hat, mittens, shovel, sand, chains, windshield scraper); summer (sunscreen and hat)
EARTHQUAKES MAY LAST only seconds but they can cause financial hardships that last for weeks, months or years. You can minimize losses by strengthening your home, organizing important documents, and considering insurance.

Common building problems
Buildings are designed to withstand the downward pull of gravity, yet earthquakes shake a building in all directions—up and down, but most of all, from side to side. The following presents some common structural problems and how to recognize them.

UNREINFORCED MASONRY
The most typical type of unreinforced masonry in Northern California is brick. While there are few brick homes in our area, many older buildings have unreinforced brick chimneys. If your house has brick or blocks as a structural element, consult a professional to find out if your building is adequately braced.

If you live in a mobile home...
Mobile homes can easily slide off their foundations if not properly secured to resist side-to-side motion. Look under your home—if you only see a metal or wood “skirt” on the outside with concrete blocks or steel tripods/jacks support your home, you need to have an “earthquake-resistant bracing system” (ERBS) installed. For those who rent
As a renter, you have less control over the structural integrity of your building, but you do control which apartment or house you rent. When looking for housing, remember:
- Apartment buildings have to meet the same codes and structural requirements as houses.
- Avoid rental units made of unreinforced masonry or those with “tuck-under” parking spaces on the ground floor.
- Consider the safety of attached structures such as stairways and balconies, which can break during an earthquake.

Ask your landlord these questions:
- What retrofitting has been done on this building?
- Has the water heater been strapped to the wall studs?
- May I secure furniture to the walls?

More Ways to Protect Yourself Financially
Identify your important documents and place them in a safe space. These include property deeds, insurance policies, vehicle titles, wills, bank accounts and stocks and bonds, credit cards and personal information such as passports, driver’s licenses and marriage/birth certificates. Consider scanning these documents and keeping them electronically and/or making paper copies. Take photos or a video of the interior and exterior of your home and your personal belongings to make an inventory for insurance purposes. You can further protect your home with earthquake and flood insurance. Without insurance, you will be responsible for all costs to repair or rebuild your home and replace your personal property. Residential policies do not cover earthquake or flood damage. For more information, see page 30.

STRENGTHENING YOUR “PIER AND POST” FOUNDATION
“Pier and post” or “post and beam” foundations consist of wooden posts on isolated concrete footings, which support the entire structure. Many homes in rural Northern California have this foundation system. This type is particularly vulnerable to the strong side-to-side shaking from earthquakes. There is no question that the best foundation to resist earthquake shaking is a continuous perimeter foundation, but for many Northern California residents, the cost of installing such a foundation is prohibitive.

It is possible, however, to strengthen your pier and post foundation at relatively low cost. The bracing system pictured here increases resistance to lateral forces for your home. The bracing should be installed around the perimeter of the structure and, at a minimum, every second line of interior posts. This type of strengthening should be considered adequate for short term stabilization until you are able to install a permanent, concrete, perimeter system.

Find out more at earthquakecountry.org.

SPECIAL CONSIDERATIONS
Children
Earthquakes and tsunamis may be traumatic events for all of us. They are especially frightening for children who may not understand such events and feel anxious and confused. After an earthquake, a child fears recurrence and injuries, and being separated from other family members. Seeing a parent or other adult become frightened adds to a child’s anxiety. Repeated aftershocks can increase these fears. You can help to alleviate your child’s fears before the next earthquake.
- Talk with children about what might happen during an earthquake or tsunami. Let them ask questions.
- Involve children in reducing hazards, putting together an earthquake kit and in developing an earthquake plan. Include emergency information in your child’s back pack. Practice family earthquake drills.

AFTER THE EARTHQUAKE
- Keep the family together.
- Limit media coverage of the disaster. Repeated exposure to disturbing images and sounds will increase children’s fears.
- Encourage children to talk or draw pictures about their experience.
- Include children in earthquake cleanup and safety activities whenever possible and age appropriate.
- Take particular care at bedtime. Children may have difficulty sleeping, may wake up frequently and/or have nightmares for weeks or months afterwards. Allowing a child to share a room with another child or parents may alleviate these fears.

Fragile, Elderly and Disabled
Persons with any special considerations need to take extra precautions.
- Realistically assess your own special needs and those of family members and write them down. Include medications and special equipment such as ventilators and oxygen tanks.
- Keep medications, duplicate prescriptions, glasses and any special equipment in a safe place where they can be easily reached.
- Keep a notebook, pencils, a whistle and flashlight in several locations if you have difficulty in communicating.
- Include supplies for seeing eye, hearing, or companion dogs.

DURING AND AFTER AN EARTHQUAKE
- If you are in a wheelchair, lock the wheels of the chair once you are in a safe and protected position.
- If unable to move safely and quickly, stay where you are, even in bed, and cover your head and body with your arms, pillows and blankets.
- Use your whistle to call for help and signal others if you need it.

To find out more about how children and adults react to emergencies and how you can help, contact your local mental health department.

PETS AND LIVESTOCK
Don’t forget your pets in your earthquake and tsunami plan.
- Include extra pet food and medications in your disaster kits.
- Consider implanting your pet with an identification microchip so that if you and your pet are separated, you can be easily reunited.
- Many emergency shelters don’t allow pets. Prepare a list of friends and other locations that could shelter your pets in an emergency. Emergency preparedness is particularly important for livestock owners because of their food and shelter needs and difficulties in transporting large or numerous animals.
- Make sure every animal has durable and visible identification.
- Identify alternate water and power sources. A generator with a safety-stored supply of fuel may be essential if you have electrical equipment necessary to the well being of your animals.
- If you use heat lamps or other electrical machinery, make sure the wiring is safe and that any heat source is clear of flammable debris.

More tips for livestock owners at: humanesociety.org/issues/animal_rescue/tips/disaster_preparedness_for_livestock.html.

REINFORCED MASONRY
Many homes in rural Northern California are reinforced masonry, with steel reinforcing rods in the concrete. While there are few brick homes in our area, many older buildings have unreinforced brick chimneys. If your house has brick or blocks as a structural element, consult a professional to find what can be done and to determine if it is safe.

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INDOORS
Drop, cover, and hold on
• Drop down to the floor and take cover under a sturdy desk, table or other furniture.
• Hold on to the table or desk and be prepared to move with it—hold the position until the ground stops shaking and it is safe to move.
If there is no nearby table or desk:
• Sit on the floor against an inside wall, away from windows, tall furniture or bookcases.
• Protect your head and neck with your arms.
• If you are elderly or have mobility impairment, remain where you are, bracing yourself in place.
• Avoid exterior walls, windows, hanging objects, mirrors, tall furniture, large appliances, and cabinets with heavy objects or glass.
DO NOT GO OUTSIDE WHILE THE GROUND IS SHAKING!

DO NOT GO OUTSIDE WHILE THE GROUND IS SHAKING!

DRIVING
Pull over to the side of the road, stop and set the parking brake. Avoid overpasses, bridges, powerlines, signs and other hazards. Stay inside the vehicle until the shaking is over. If power lines fall on your vehicle, stay inside until a trained person removes them.

IF YOU ARE IN A THEATER OR STADIUM
Stay at your seat. Duck down and protect your head and neck with your arms. If you can’t duck under the seat, at least put your head and upper body under the seat. Don’t try to leave until the shaking stops. Then exit slowly, watching for fallen debris or for anything that could fall on you in the aftershocks. Stay calm and encourage others to do likewise.

IF YOU ARE IN THE MOUNTAINS
Avoid unstable slopes or cliffs and watch for falling rock and debris.

IN BED
If you are in bed, stay there, hold on and protect your head with a pillow.

IN A MULTISTORY BUILDING
Drop, cover, and hold on. Do not use elevators. Do not be surprised if sprinkler systems or fire alarms activate.

IF YOU ARE OUTSIDE
Move to a clear area if you can safely do so; avoid power lines, trees, signs, buildings, vehicles and other hazards.

EVACUATE if you are in a TSUNAMI HAZARD ZONE
For a large local earthquake, feeling ground shaking may be the only warning you will get that a tsunami is on its way. Use tsunami hazard maps and posted hazard zone signs to identify safe evacuation areas. Refer to page 15 for more information about tsunami.

IF YOU ARE AT THE BEACH:
Move to higher ground immediately—no matter how small the earthquake.

IF YOU ARE IN A TSUNAMI HAZARD ZONE AND THE EARTHQUAKE LASTS A LONG TIME
Immediately gather your family members, grab your tsunami disaster kit, and WALK to a safe area.

IF EVACUATION IS IMPOSSIBLE:
Go to the upper floor of a sturdy building or climb a tree. This should only be a last resort.

DO NOT WAIT FOR AN OFFICIAL WARNING

IF YOU ARE NOT IN A TSUNAMI HAZARD ZONE, STAY WHERE YOU ARE. YOU ARE NOT AT RISK OF A TSUNAMI. Unnecessary evacuation will put you at risk and hamper the evacuation of people who really need to get away from danger.

Once you are in a safe area, CHECK FOR INJURIES AND DAMAGE
First take care of your own situation—check yourself for injuries so you can help others. Remember your emergency plans. Aftershocks may cause additional damage, so get to a safe location and take your disaster supply kit with you. Once you are safe, help others and check for damage. Protect yourself by wearing sturdy shoes and work gloves, to avoid injury from broken glass and debris. Wear a dust mask and eye protection if you have them.

If you are trapped under debris, protect your mouth, nose and eyes from dust. If you are bleeding, put pressure on the wound and elevate the injured part. Signal for help with your emergency whistle, a cell phone, or tap on pipe or wall, three times every few minutes, so rescuers can locate you. Don’t shout—shouting will wear you out and can cause you to inhale dangerous amounts of dust.

Check for injuries
• Use your first aid kit or the front pages of your telephone book for detailed instructions on first aid measures such as stopping bleeding, rescue breathing and CPR (cardiopulmonary resuscitation).
• Do not move seriously-injured persons unless they are in immediate danger of further injuries.
• Cover injured persons with blankets or additional clothing to keep them warm.

Check for damage
FIRE
If possible, put out small fires in your home or neighborhood immediately. Call for help, but don’t wait for the fire department.

GAS LEAKS
Shut off the main gas valve only if a leak is suspected or identified by the odor of natural gas. Wait for the utility company to turn it back on once the damage is repaired.

DAMAGED ELECTRICAL WIRING
Shut off power at the breaker box. Leave the power off until damage is repaired.

UNPLUG BROKEN LIGHTS AND APPLIANCES
They could cause fires when power is restored.

DOWNED POWER LINES
Consider all downed lines as potentially hazardous and stay well away from them. Never touch downed lines or any objects in contact with them even if you think they may be dead.

FALLEN ITEMS
Beware of items tumbling off shelves when you open closet and cupboard doors. Wear gloves before handling broken items. Replace your telephone on its receiver. Telephones off the hook tie up the telephone network.

SPILLS
Clean up any spilled medicines, drugs or other non-toxic substances. Potentially harmful materials such as bleach, lye, paint, garden chemicals, and gasoline should be isolated or covered with an absorbent such as dirt or cat litter. When in doubt, leave your home.

DOWNED OR DAMAGED CHIMNEYS
Stay away from chimneys and walls made of brick. They may be weakened and could topple during an aftershock. Don’t use a fireplace until it is inspected by an expert—it could start a fire or let poisonous gasses into your home.

Myth #5
The “Triangle of Life” is the Best Way to Protect Yourself Inside a Building
NOT TRUE. The best survival method inside a building is to drop, cover, and hold on. The triangle of life advocates that you get next to a large object rather than crouch beneath a desk or table. This will expose you to lacerations and crushing injuries from falling objects and debris. Many reputable scientific, government and relief organizations have examined the triangle of life and are unanimous in recommending that you drop, cover, and hold on. Find out more at earthquakecountry.org/dropcoverholdon.
Step 7
RECONNECT AND RESTORE

Once you have met your and your family’s immediate needs, continue to follow the plan you prepared in advance (see Step 2, page 22).

Tsunamis
Stay away from the coast until officials reopen the area for you to return.
• The first surge is almost never the largest. The largest waves may arrive hours after the first.
• Successive surges will arrive at irregular intervals spaced minutes to tens of minutes apart. The danger period may last 10 hours or longer.
• Never go to the coast to watch a tsunami. Tsunamis move faster than a person can run. Incoming traffic hampers safe and timely evacuation of coastal areas.

BE IN COMMUNICATION
Listen to your NOAA Weather Radio for updates on the hazard and for instructions on what to do.

Earthquakes
You may be safest staying in your home even if the power is off and some items have been damaged. Shelters may be overcrowded and initially lack many services. Use the information you put together in your disaster plan and the supplies you organized in your disaster kits.
• Do not use open flames (candles, matches, lighters or grills) or operate any device that could generate a spark such as light switches, generators, motor vehicles until you are sure there are no gas leaks.
• Never use a camp stove, gas lantern or heater, gas or charcoal grill, or gas generator indoors.

BE IN COMMUNICATION
• Use your portable, car, or NOAA Weather Radio for updates and safety advisories. Scan channels to find one that is on air and broadcasting safety information.
• Call your out-of-area contact and tell them your status, then stay off the phone. Emergency responders need the phone lines for life-saving communications.
• Check on the condition of your neighbors.

FOOD AND WATER
• If the power is off, plan meals to use up refrigerated and frozen foods first. With the door closed, food in the freezer may last several days.
• If your water is off or unsafe, you can drink from water heaters, melted ice cubes, or canned vegetables. Avoid drinking water from swimming pools or spas.
• Do not eat or drink anything from open containers that are near shattered glass.

The first weeks after the earthquake...
This is a time of transition. Aftershocks may continue for many months, but it is time to work toward getting your life, your home and family, and your routines back in order. Emotional care and recovery are just as important as healing physical injuries and rebuilding a home.
• Make sure your home is safe to occupy and not in danger of collapse in an aftershock.
• If your gas was turned off, you will need to arrange for the gas company to turn it back on.
• If the electricity went off and came back on, check your appliances and electronic equipment for damage.
• If water lines broke, look for water damage.
• Have a professional inspect your fireplace or wood burning stove before you use them after an earthquake. The damage may not be easy to see and could cause a chimney fire or poisonous gas release.
• Locate and/or replace critical documents that may have been misplaced, damaged or destroyed.
• Contact your insurance agent right away to begin your claims process. Take pictures of the damage both of your building and contents.

If you cannot stay in your home...
If your home is in a tsunami hazard zone, is structurally unsafe, or threatened by a fire or other hazard, you need to evacuate.
If you evacuate, tell a neighbor and your out-of-area contact where you are going. Set up an alternative mailing address with the post office as soon as possible. Take the following, if possible, when you evacuate:
• Personal disaster supply kits
• Supply of food, water and snacks
• Blanket/pillow/air mattress or sleeping pad
• Towel and washcloth
• Change of clothing and a jacket
• Comfort items such as family pictures, games, books
• Valuables that might be lost, stolen, or take up needed space

Do not take to a shelter:
• Pets—have a plan for your pets in advance (service animals for people with disabilities are allowed but you must bring food for them)
• Large quantities of unnecessary clothing or other personal items—space is very limited
• Valuables that might be lost, stolen, or take up needed space

If a major disaster has been declared by the President, the Federal Emergency Management Agency (FEMA) may activate the Individuals and Households Program. This program may include home-repair cash grants, rental assistance and/or temporary housing.

Find out more by visiting fema.gov/disaster-process-disaster-aid-programs.
Insuring Against Earthquake and Tsunami Damage in California

Earthquake Insurance

If YOU OWN your home, it is probably your biggest single asset. In seconds, an earthquake can cause major damage to both the structure and its contents. Following the steps in this handbook will help to protect your family from injuries and reduce your losses, but you may still have some level of damage and will need to repair or replace belongings. One option for managing these potential costs is to buy earthquake insurance.

Most standard homeowners’, mobile homeowners’, condominium, and renters’ insurance policies do not cover earthquake damage; it is generally a separate policy you can purchase when buying homeowners insurance. All insurance companies that sell residential property insurance in California are required by law to offer earthquake insurance to homeowners when the policy is first sold and every two years thereafter.

Most of the companies that sell residential property insurance in California participate in the California Earthquake Authority (CEA) and offer CEA’s residential earthquake policies. The cost of the earthquake policy is based on a number of factors including location, age, construction type and home value.

CEA policies cover a policyholder’s dwelling, while excluding coverage for nonessential items such as swimming pools, patios, and detached structures. The insured value of your home is the same as the amount of coverage specified in your homeowners insurance policy. CEA policies provide:

- Optional coverage is available to lower the deductible, increase personal property coverage, increase additional living expenses, and increase building code and land upgrades. You may purchase a CEA policy only through the CEA’s participating insurers. A complete list is on the CEA web site at earthquakeauthority.com which has an online premium calculator.

Tsunami Flood Insurance

Tsunami Flood Insurance

Flood insurance is not included on homeowner’s policies and cannot be purchased through residential earthquake companies. A separate flood insurance policy issued through the National Flood Insurance Program (NFIP) covers damages due to tsunamis as well as other flooding events and includes:

- Losses that result from flood-related erosion
- Damage due to mudflows if caused by flooding
- Flood damage to the building itself—foundation elements, posts, pilings, piers or other support systems in elevated buildings

Flood insurance does not cover buildings that are entirely over water (like a boat house), and structures other than buildings (like fences, retaining walls, swimming pools, walkways, decks, driveways, etc.)

You can find out about your flood risk by entering your property address information at floodsmap.gov.

Recovering From a Big One

Resilient infrastructure

TO BOUNCE BACK quickly from a disaster, communities need to become resilient. Community resilience depends on how many individuals, businesses, schools, agencies and organizations are prepared. While taking the actions suggested in this handbook will help protect your family and reduce your personal losses, your actions alone can’t protect your community and restore the regional economy. Studies of past disasters show that the key to economic recovery is infrastructure—the essential facilities like roads, bridges, hospitals and dams and the lifelines that supply water, power, gas, and communications. The more damage there is to infrastructure, the slower the recovery. Building resilient infrastructure requires public-private partnerships and a long-term perspective on the health and viability of the region. You can help by letting public officials know that seismic safety is a high priority and must be included in long-term planning for all California communities. The process is similar to voting, where personal decisions and actions can affect everyone.

- Learn about the issues—earthquake impacts and risk reduction strategies.
- Decide which efforts will best protect your loved ones and your financial security.
- Take action—talk to friends and neighbors and let candidates and public officials know which efforts are important to you.

If enough people “vote” the same way, they will have a winning platform and be on the path to a resilient community.

Small business recovery

Small businesses are particularly vulnerable to the economic disruption caused by major disasters. Many small businesses have very narrow profit margins and even a small disruption can make a big difference in the bottom line. There are steps you can take, similar to the steps in this handbook, to protect your business and employees.

Find out more information—download or request free copies of “Seven Steps to an Earthquake Resilient Business” at earthquakecountry.org/roots.
THE SEVEN STEPS
FOR EARTHQUAKE & TSUNAMI SAFETY

Tear off this page and put it on your refrigerator, bulletin board or other prominent place. Make copies for other family members.

PREPARE

1 Secure Your Space (pg 20)
   • Identify items that may fall, topple or slide
   • Secure potentially hazardous and valuable items
   • Determine if you live, work or play in a tsunami hazard zone

2 Plan to be Safe (pg 22)
   • Practice “Drop, Cover, and Hold On” drills
   • Collect critical supplies
   • Choose a meeting place and an out-of-area contact
   • Recognize the natural and official warnings of a tsunami and know how to respond

3 Organize Disaster Supplies (pg 23)
   • Create kits for home, work and car
   • Be prepared to be isolated for at least a week

4 Minimize Financial Hardships (pg 24)
   • Identify weaknesses in your building and fix them
   • Consider earthquake and/or flood insurance

SURVIVE

5 Drop, Cover, and Hold On (pg 26)
   • DROP to the floor
   • TAKE COVER under a sturdy table or desk
   • HOLD ON until the shaking stops

6 Improve Safety (pg 27)
   • If you are in a tsunami hazard zone, immediately WALK to higher ground or inland away from coast
   • Check for injuries and damage

RECOVER

7 Reconnect and Restore (pg 28)
   • If you evacuated coastal areas—stay away until officials permit you to return
   • Be in communication—use your radio for info
   • Expect aftershocks—some may be large enough to do additional damage

IMPORTANT INFORMATION

Out-of-Area Contact Name ________________________________ Phone __________________

Email ________________________________ Phone __________________

Neighborhood Meeting Place ________________________________ Phone __________________

Regional Meeting Place ________________________________ Phone __________________

Doctor/Office ________________________________ Account No. __________________ Phone __________________

Medical Insurance ________________________________ Policy No. __________________ Phone __________________

Pharmacist ________________________________ Account No. __________________ Phone __________________

Rx No. ________________________________ Rx No. ________________________________ Rx No. __________________

Home/Rental Insurance ________________________________ Policy No. __________________ Phone __________________

Veterinarian/Kennel ________________________________ Account No. __________________ Phone __________________

Call the HEEC Earthquake Hotline for a daily recording of earthquake activity locally and around the globe: (707) 826-6020

Shake Out shakeout.org

Geologic Hazards myhazards.caloes.ca.gov

Living on Shaky Ground humboldt.edu/shakyground

Earthquake Country Alliance earthquakecountry.org


NOAA Tsunami Preparedness tsunami.noaa.gov/prepare.html

CEA CALIFORNIA EARTHQUAKE AUTHORITY
Cal OES GOVERNOR’S OFFICE OF EMERGENCY SERVICES
HUMBOLDT STATE UNIVERSITY
Earthquake Country Alliance We’re all in this together