NATURAL HAZARD MITIGATION

'Living with Fire; A Guide for the Homeowner' by the University of Nevada Cooperative Extension with Illustration by Kirah Van Sickle and Animania, LLC

New Mexico State University

Dave DuBois

Source: All About Watersheds, www.allaboutwatersheds.org

GOVERNOR'S LETTER

My fellow New Mexicans,

One of the most important challenges I face as your governor is trying to keep you safe. Safe from gun violence and other crimes. Safe on our roads and highways. And safe from a whole array of natural disasters: flash floods, drought, high winds, landslides, winter storms, wildfire -- and whatever else nature (aided by man-made climate change) has to throw at us. Our New Mexico Departments of Agriculture, Homeland Security and Emergency Management, and Energy, Minerals, and Natural Resources share responsibility for preparing, preventing and responding to natural and man-made disasters, and they take that responsibility very seriously. Together, these agencies work to provide you with the information you need and the resources our state needs to protect lives and property in times of calamity. Please help us help you. Read and heed the information in this publication so you can help keep your loved ones prepared for any emergency.

Sincerely,

Michelle Lujan Grisham

New Mexico Governor

UNDERSTANDING NATURAL HAZARDS IN NEW MEXICO

You may think of New Mexico as a peaceful place of sunshine, low humidity and mild winters. The reality is that natural disasters pose a serious threat, even in the Land of Enchantment. Natural disasters may lead to serious consequences, including property damage, disruption of government services, disruption of everyday business services, and even the loss of life.

The New Mexico Department of Agriculture (NMDA) and the New Mexico Department of Homeland Security and Emergency Management (DHSEM) are committed to providing continued education, awareness and training on topics critical to the safety and security of New Mexico's citizens.

Kelly Hamilton, Acting Secretary of New Mexico Department of Homeland Security and Emergency Management

Jeff M. Witte, New Mexico Secretary of Agriculture

The two agencies have worked together to achieve safety for New Mexicans during several disasters in recent years, including the Goliath storm in 2016, Little Bear wildfire in 2012, Las Conchas fire in 2011 and several fires in Ruidoso. The agencies work closely on a continual basis during training exercises. Most recently, NMDA and NMDHSEM joined numerous agencies for the 2018 New Mexico Agriculture Livestock Incident Response Team large-scale training exercise.

Training exercises prepare responders for real-life disaster situations.

High profile natural resource hazards such as wildfire, floods or severe winter storms often gain the most attention from the public due to the potential for occurrence and media coverage. However, other hazards, such as dam failure, expansive soils or drought, can be similarly destructive. No matter the type of hazard, it is important to educate the public on steps that may be taken to prevent, prepare for and mitigate these events.

Chances are that, at some point, you will encounter a situation that will threaten your family's well-being. You can help protect yourself, your family and your property from these events by becoming familiar with the threats and taking the proper response actions against future disasters. These actions include:

- **Prepare:** Make sure you have thought about your basic needs for survival. You should have enough supplies to last 72 hours, including food, water and medical supplies.
- **Plan:** Create an emergency response plan for your household that identifies a location that your family will go in the event of an emergency. Recognize that each situation may alter your plan differently, and some flexibility may be needed. Identify a family contact person outside the area impacted by the emergency to streamline communication and minimize misinformation.
- **Practice:** Practice your emergency response plan to reduce uncertainty when an emergency does happen. Elements in a plan may change, and it is through practice that you learn what does and does not work.
- **Stay informed:** Circumstances may evolve rapidly during a disaster. Make sure you know where to go for information, including sources such as the internet and radio. Visit www.ready.gov for more information.

Both private and public sectors have important roles to play when it comes to preparedness, response and recovery measures in their own communities. Emergency planning is a community effort, so contact your local emergency manager to find more ways to become involved.

NM STATE

NMDA
New Mexico Department of Agriculture

THUNDERSTORMS

By Kerry Jones, National Weather Service
National Oceanic and Atmospheric Administration

Thunderstorms may be beautiful, but they can also be deadly. All thunderstorms produce lightning, and some may produce damaging wind, hail, tornadoes and flooding. All of these can result in injury, death and/or property damage. Severe thunderstorms are defined by the National Weather Service as downdraft winds in excess of 58 miles an hour and/or hail 1 inch in diameter or greater. Severe thunderstorms are reported each year in all New Mexico counties, but they typically peak in the east during April through June and statewide July through August. Knowing when thunderstorms are likely to impact your area is key to staying safe. When Thunder Roars, Go Indoors! Check www.weather.gov daily or tune into your local news. Identify safe places to shelter from a storm throughout your day. If you are at home, work or school, identify locations away from windows and electrical appliances. If you're going to be outside, know where the nearest enclosed building is located, and go there at the first sign of a storm. If no building is available, the next best option is to get inside a car with the windows rolled up. If you are driving and encounter water covering the roadway, turn around and find another route to your destination. Turn Around Don't Drown®! By understanding the risks posed to you by thunderstorms, you can take steps to keep yourself and loved ones safe.

What you can do *before* a thunderstorm strikes...

- Know the county you are located in and the names of the major nearby cities or towns, as watches and warnings will reference counties and inclusive communities.
- Check the latest weather forecast and hazardous weather outlook.
- Watch for signs of an approaching thunderstorm.
- If a storm is approaching, tune to National Oceanic and Atmospheric Administration (NOAA) Weather Radio and/or your favorite media outlet.
- Postpone outdoor activities if thunderstorms are imminent. This is your best way to avoid being caught in a dangerous situation.

When thunderstorms approach...

Outdoors:

- REMEMBER: If you can hear thunder, you are close enough to a storm to be struck by lightning.
- If possible, move to a sturdy building or hard top automobile.
- If safe shelter is not available, find a low spot away from trees, fences and poles.
- Make yourself the smallest target possible and minimize your contact with the ground.
- Do not take shelter in small sheds, rock outcroppings, under isolated trees or in convertible automobiles.
- If boating or swimming, get out of boats and away from the water, get to land and find shelter immediately.
- When boating, always stay tuned to the latest weather reports, and return to safe harbor before the strong winds arrive.

Indoors:

- Stay away from windows, and go to the safest location on the lowest level of your home.
- Unplug unnecessary appliances and do not use a corded phone, but rather a cordless or wireless phone.
- Mobile homes are especially vulnerable to the high winds of a thunderstorm and are subject to overturning and rolling if not properly anchored to the ground. At a minimum, the frame should be secured with heavy steel straps. Heavy straps should also go over the top of the home with both frame and over-the-top ties secured in concrete footings.


Jay Hill

For safety information, visit www.weather.gov/safety/thunderstorm.

This publication was prepared under a sub-grant from the Federal Emergency Management Agency, and the New Mexico Department of Homeland Security and Emergency Management. Points of view or opinions expressed in this publication are those of the authors and do not necessarily represent the official position or policies of the Federal Emergency Management Agency, and the New Mexico Department of Homeland Security and Emergency Management.

FLASH FLOODS

By Kerry Jones, National Weather Service
National Oceanic and Atmospheric Administration

Summer thunderstorms are often associated with intense rainfall over a brief time period, producing more water than the ground can absorb. The varied terrain of New Mexico can channel water to locations that have not received rain. In either situation, the result may be fast-moving, rapidly-rising water, often in areas that are normally dry. These events are referred to as flash floods. Flash floods also result from slow-moving thunderstorms or recurring thunderstorms that move over the same area for an extended period. Flash floods usually occur within 6 hours of heavy rainfall and are normally the most dangerous of floods.


Kyle Harwood

Flash floods can occur with little or no advance warning, move at very fast speeds and can reach a peak in a matter of a few minutes. They can roll rocks, tear out trees, sweep away cars and trucks and destroy buildings and bridges. Rapidly rising water can reach heights of 30 feet or more. Flash flood-producing rains can also trigger catastrophic mudslides. You will not always have a warning that these deadly, sudden floods are coming. Most flood deaths are due to flash floods, and most fatalities occur in vehicles.

Flash floods in New Mexico can occur in any month, but the threat increases in May and June or during the severe weather season. A more dramatic increase occurs during monsoon season, especially in the months of July and August.

Since 1959, 65 New Mexicans have lost their lives in flash floods. Nearly two-thirds of these fatalities occurred in a car.

For more information, visit www.weather.gov/safety/flood.

EXTREME HEAT

By Kerry Jones, National Weather Service
National Oceanic and Atmospheric Administration

"But it's a dry heat..."

Many residents and visitors to the desert Southwest think that when the humidity is low, they do not need to worry about heat stress. While high humidity can certainly increase the adverse effects of heat on the human body, the hottest of days in New Mexico can result in numerous health issues.

Heat stress is particularly dangerous for the elderly, the very young and anyone with a compromised pulmonary condition. However, many people are not aware of the extreme heat stress environment that can be created by the combination of an unventilated parked car and direct sunlight. The interior of a car will heat rapidly when in direct sun due to the "greenhouse effect." Solar radiation is not blocked by the glass windows and readily heats the car interior, but radiation generated by the warming car is not able to pass through the windows. It is possible for the temperature within a car in direct sunlight to increase 22 degrees Fahrenheit in just 10 minutes! Recent research studies, which focused on vehicle-related hyperthermia deaths, have produced information to help public officials and child safety advocates.

HEAT EXHAUSTION: Heavy sweating, weakness, skin cold, pale and clammy. Pulse is scarcely detectable. Normal temperature possible. Fainting and vomiting. First Aid: Get victim out of sun. Lay down and loosen clothing. Apply cool, wet cloths. Fan or move victim to air-conditioned room. Sips of water. If nausea occurs, discontinue sips of water. If vomiting occurs, seek immediate medical attention.

HEAT STROKE: High body temperature (106° F. or higher). Hot dry skin. Rapid and strong pulse. Possible unconsciousness. First Aid: HEAT STROKE IS A SEVERE MEDICAL EMERGENCY. SUMMON EMERGENCY MEDICAL ASSISTANCE OR GET THE VICTIM TO A HOSPITAL IMMEDIATELY. DELAYING CAN BE FATAL. Move the victim to a cooler environment. Reduce body temperature with cold bath or sponging. Use extreme caution. Remove clothing, use fans and air conditioners. If temperature rises again, repeat process. Do not give fluids. Persons on salt restrictive diets should consult a physician before increasing their salt intake.

For more information, visit https://www.weather.gov/safety/heat.

BE PREPARED FOR WILDFIRE

Don't wait until you can see smoke…that will be too late!

By Doug Cram,
New Mexico State University Extension Forest and Fire Specialist

When the smoke alarm sounds in the middle of the night, everybody knows how to respond, right? After years of elementary school training, we all know the routine. First, we call our insurance agent to see if we have adequate coverage. Next, we sift through paperwork to decide which documents are important. Then, we take pictures off the wall. And finally, we track down the cats and dogs hiding under the bed and head out. Oh, don't forget to evacuate family members too.

Hopefully that was good for a laugh. Of course, this is NOT the appropriate response to a smoke alarm in the middle of the night. The appropriate response would be immediate and orderly, if possible, evacuation of the house by all occupants. Wildfire evacuations should be the same. However, all too often, we see and hear stories of individuals staying at home until the last minute, scrambling to pack up the car with anything they think is valuable, and then trying to evacuate in the face of wind-whipping flames, smoke and embers…on the same evacuation route as 10,000 of their neighbors.

What is a better solution? Simply stated: Be prepared ahead of time by following these basic steps:

1. **Discuss adequate coverage** with your insurance agent regarding fire loss. In addition to the primary dwelling, consider outbuildings, fences, livestock, forage, vehicles and other outside equipment. This can be as simple as a phone call.
2. **Medication grab-bag.** Consider what medications you need on a daily basis so that in the event of an emergency evacuation (like the smoke alarm going off in the middle of the night), you can quickly grab what you need. In the event of a mandatory evacuation, it could be days before you will be allowed to return; and even then, there may not be anything standing upon your return.
3. **Prepare a pet evacuation plan.** This may be as trivial as grabbing your pet and heading out, but as the size and number of pets increase, so too does the complexity – which then requires proactive arrangements, such as multiple pet carriers and a pickup truck for example. Lost pets and pictures are the top two items cited by fire victims as things they wish they could get back.
4. **Back up your photos.** As noted above, lost photos are greatly missed. It is relatively easy to solve this problem. Digital photos can be stored in the cloud as well as on social media servers. We can also use our digital cameras to take pictures of our wall photos – the quality won't match the original, but it will be better than nothing. Focus first on irreplaceable photos and prints.
5. **Back up important documents.** Most documents can actually be replaced if necessary (e.g., birth certificates, social security cards, real estate deeds). However, living and last wills may be the most important documents you want safely stored. There are multiple options for storage (e.g., fire resistant safe, county clerk, attorney, on-line companies), all of which have pros and cons. The best option may be two or more locations known by two or more trusted parties.

If you follow these simple proactive steps, and you are faced with an approaching wildfire, you will have confidence that your home is insured, your photos and documents are backed up, and all you have to do is grab your medication and pets and evacuate. Speaking of evacuation, one of the best ways to receive emergency notifications – such as approaching wildfire – is to sign up for your county's free reverse 9-1-1 service.

P.S. There are steps you can take to harden your house and yard/property to wildfire, but they do not guarantee success. Search "FireWise USA" on the internet for more information.

P.S.S. Do NOT plan to slow down a wildfire or save your house with a garden hose! Intense heat, growing flame lengths and smoke are wildfire's great trump cards.

Jami Gonzales

TROUBLESOME SHRINK-AND-SWELL SOILS OF NEW MEXICO

By Robert Flynn, Interim Superintendent/Extension Agronomist
NMSU Extension Plant Sciences
NMSU Agricultural Science Center at Artesia

There is a wide variety of environmental hazards that affect communities, including both farms and cities. We are accustomed to brief hazards that have a significant impact. Unfortunately, the most dramatic environmental hazards are not the costliest in terms of annual damage incurred. We do not have to turn our heads too far to find environmental hazards under our feet that can cause damage gradually.

Swelling soils may cause as much dollar-related damage annually in the U.S. as earthquakes, floods and landslides. According to the Olshan Foundation, in a typical year, expansive soils cause damage to more homes than earthquakes, floods, hurricanes and tornadoes combined. The United States Department of Agriculture estimated that half of the homes in the U.S. are built on expansive soils. This is due to a soil clay known as montmorillonite.

Weathered soils in arid regions like New Mexico are the best environments for the formation of this type of clay. The ability for montmorillonite to shrink and swell is a result of the structure of the clay itself. Clay is small – measuring only 0.002 mm in size. Not all clays, however, expand when they get wet. The specific clays that swell and shrink are called smectites, whose mineralogical structure is able to absorb water. While all clays have some expansiveness, illite has tremendous ability to swell. Montmorillonite could swell up to 2000% of its original dry volume in the presence of sodium (Tourtelot, 1974).

New Mexico does have shrink-and-swell clays. They are found to one degree or another throughout most of the state. Buildings are built when soils are dry. If expansive clays stay dry, they do not cause problems … until they get wet. Water will inevitably get under the foundations of our homes and businesses. This comes from rainwater runoff from the roof, which might pond around the foundation. Once exposed to water, the clays will expand. If exposed to water for a number of years, then damage will occur when the clay is dry. Vegetation near a foundation can influence shrink-swell activity. If yards are over-watered, soils may expand. Large trees can also cause a problem by absorbing all the available soil moisture, causing soils to shrink. Studies have shown that trees should be planted a distance of 0.5-to-1.5 times their height from a foundation to avoid problems (Bozozuk and Burns, 1960).

There are soil series in New Mexico that are troublesome due to the nature of their clays. These include the Armijo and Belen soil series. To learn about what soil you may live on, visit the USDA National Resources Conservation Services Web Soil Survey at websoilsurvey.sc.egov.usda.gov.

References
Bozozuk, M. and Burns, K. N. 1960. Ground movements near elm trees. Geotechnique 10: 19-32
Tourtelot, H.A. 1974. Geologic origin and distribution of swelling clays. Bulletin of the Association of Engineering Geologists. 11:259-275
Websoilsurvey (websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx)

DROUGHT – BE A CITIZEN SCIENTIST

By Dave DuBois, New Mexico State Climatologist

Drought affects us all. Whether you live in a city, the suburbs or the country surrounded by many acres of a rangeland, drought takes a toll on our livelihood, impacting both the environment and humans. We usually think of drought as just the lack of rainfall, but it's much more than that. Did you know that there are several types of drought, each defined by how they impact our environment and society? One type is meteorological drought, which is defined by the lack of precipitation compared to the long-term average. In New Mexico, annual precipitation varies from 7 inches in the Central Valleys and in San Juan County to more than 40 inches in the high elevations of the Sangre de Cristo Mountains. The monsoon season, which lasts from mid-June to the end of September, provides 40 to 50% of the precipitation that falls over the course of just one year.

Another type of drought is hydrologic drought, which refers to the amount of water available in our reservoirs, lakes and groundwater. The most noticeable example of hydrologic drought is the gradually declining amount of water in Elephant Butte Reservoir over the last 20 years. In 1996, the reservoir was at its capacity, but storage began its decline beginning around 1999.

Agricultural drought has occurred when we see crop damage. This type of drought is most pronounced in rangelands and dryland agricultural areas; however, irrigated agriculture can also suffer. The onset of agricultural drought is caused not only by the lack of precipitation, but by high temperatures, high winds and cloudless days, which cause any water left in the soil to evaporate.

Ecological drought is when we see damage to plant and animal life in our forests, grasslands, shrublands and along rivers, such as our cottonwood bosques. Wildfires are another indicator for ecological drought but can be exasperated by other factors, such as insect infestations.

Finally, socioeconomic drought impacts our economic base of supply and demand. Prolonged drought, which occurred from 2011 to 2013, affected cattle production, which had impacts that we are still feeling in 2020.

We gauge drought through networks of weather stations, radar, satellite and models that map out drought. So how can you help? You can be a citizen scientist by helping us measure the amount of precipitation falling in your backyard and reporting the current condition of the landscape where you live. The Community Collaborative Rain Hail and Snow Network, or CoCoRaHS, is a non-profit, community-based network of volunteers of all ages and backgrounds, working together to measure and map precipitation. CoCoRaHS started in Colorado in 1998, and New Mexico joined in 2005. Our observers measure daily amounts of precipitation in the form of rain, hail or snow. CoCoRaHS also participates in a condition reporting program that allows its members to submit drought impacts. As of early 2020, more than 400 observers take data daily as part of the network. You can participate by purchasing a CoCoRaHS-type rain gauge, receiving proper training and installing the gauge at your location. It's free to join CoCoRaHS, and doing so allows you to see how your observation compares with others in your area. The New Mexico Climate Center, the National Weather Service and the United States Department of Agriculture Southwest Climate Hub provide training on how to take proper measurements.

For more information, visit the following websites:

CoCoRaHS: www.cocorahs.org

The New Mexico Climate Center: weather.nmsu.edu/cocorahs

The National Weather Service Albuquerque Office: www.weather.gov/abq/cocorahs

The National Weather Service Santa Teresa Office: www.weather.gov/epz/volunteer

Staying Safe in the Heat

- Limit Outdoor Activities
- Drink Plenty of Water
- Avoid Alcohol
- Wear Light Clothing
- Wear Sunscreen
- Work Outdoors Early or Very Late in the Day

weather.gov/heat

SEVERE WINTER STORMS

By Kerry Jones, National Weather Service
National Oceanic and Atmospheric Administration

Changes in elevation can be subtle or dramatic across New Mexico, but often a slight increase in elevation can mean big changes in travel and trail conditions during a winter storm. The weather may be tranquil in the valley areas, while motorists are being stranded in areas like Clines Corners, Tijeras Canyon, the Continental Divide, Raton Pass or near Ruidoso. On the less-traveled highways, there are numerous and often remote spots where motorists may become stranded. Everyone is potentially at-risk during winter storms, but statistics show that males and the elderly suffer death and injury most frequently, whether it is an accident related to ice and snow or exposure to the cold. Sudden weather changes also threaten the unprepared hiker, hunter or cross-country skier. You might find yourself in mild and sunny weather at the start of your outdoor adventure, then face falling temperatures, wind chill and cold rain or snow as a storm front moves in quickly. Tragically, alcohol is related to many winter weather deaths and injuries each year in New Mexico due to prolonged exposure to the cold. Prolonged outbreaks of cold weather, especially following heavy snows and ice storms, can create risks at home if utility service is lost or conditions prevent travel for medical care and food. Alternative heat sources may become deadly without fire safeguards or proper ventilation.

Be prepared! Act before the first winter storm to winterize automobiles and prepare emergency survival kits. At home, stock up on food, fuels, first-aid and medical items and other supplies, such as batteries for flashlights and radios. Don't forget to check fire extinguishers, smoke detectors and carbon monoxide detectors. Always keep up with the latest forecasts and statements from the National Weather Service. Your automobile can be your best friend or worst enemy during winter storms. Get your car winterized before winter arrives. The following items should be checked: ignition system, cooling system, fuel system, battery, lights, tires, heater, brakes, wipers, defroster, oil and exhaust. Keep water out of your fuel tank by keeping it full.

Winter travel by automobile is serious business. If the storm exceeds or tests your driving ability, seek available shelter immediately. If unable to find shelter, and you become stranded, stay with your vehicle. Run the motor 10 minutes each hour to maintain warmth, but keep your windows slightly open to prevent buildup of carbon monoxide. Make sure your exhaust pipe is not blocked by snow. Keep the car visible with a brightly colored cloth tied to the antenna. Exercise periodically in your car by vigorously moving your arms, legs, toes and fingers.

For more information, visit www.weather.gov/safety/winter.

EARTHQUAKE HAZARD, PREPAREDNESS AND MITIGATION

By Chelsea Morganti, State Hazard Mitigation Officer and Earthquake Program Manager, New Mexico Department of Homeland Security and Emergency Management

Do we have earthquakes in New Mexico? You bet!

Not nearly as many or as big as some other parts of the world, but New Mexicans have felt their share of earthquakes over the years. Thousands of earthquakes have been recorded in New Mexico in recent decades by the New Mexico Institute of Mining and Technology and the U.S. Geological Survey. While most are too small to feel, there is always the potential for a larger event that can cause noticeable shaking and damage.

The earth's surface has raised approximately 2 millimeters per year near Socorro due to a broad, thin body of molten rock that is roughly 1,300 square miles and sits approximately 12 miles beneath the surface. In 1971, an earthquake caused damage to several schools and shops in the Albuquerque area. In 1935, an earthquake caused temporary closure of several schools in Belen. In 1906, an earthquake with an estimated magnitude of 6.2, the largest in New Mexico recorded history, caused a significant amount of damage in Socorro.

Much of the state's previous earthquake occurrences have been felt along the Rio Grande Valley, the most populated corridor of the state. The potential is low-to-moderate for a damaging earthquake to occur in New Mexico in the near future. But because the potential exists and impacts could be significant, we encourage New Mexicans to take steps to be prepared and to reduce the impact of earthquakes.

How to prepare for earthquakes
Create a personal disaster plan and decide how you will communicate in an emergency. Get together with your family, housemates and co-workers to plan what each person will do before, during and after an earthquake. **Organize disaster supplies** in convenient locations. Everyone should have disaster supply kits stored in accessible locations like at home, at work and/or in your vehicle. **Practice 'Drop, Cover and Hold On'** to save lives and reduce injury. Practicing helps you be ready to react whether at home, work, school or traveling. In 2019, more than 67 million people participated in ShakeOut drills worldwide. Register for the New Mexico ShakeOut at www.shakeout.org/newmexico.

How to reduce the impact of earthquakes ('mitigate')
Secure your household, school and work place by identifying hazards and securing moveable items. Earthquake shaking can move almost anything, even large or heavy items. Move furniture such as bookcases away from beds, sofas or other places where people sit, sleep or spend a lot of time. Move heavy objects to lower shelves. Examples of other items to secure include televisions, computers and water heaters. **Do a "hazard hunt"** for items that might fall during earthquakes and secure them.

For more information, visit:
New Mexico Bureau of Geology and Mineral Resources: geoinfo.nmt.edu
New Mexico Shake Out: www.shakeout.org/newmexico
New Mexico Natural Hazard Mitigation Plan: www.nmdhsem.org/mitigation
Earthquake Country Alliance: www.earthquakecountry.org

If you have questions, contact the New Mexico Hazard Mitigation Program at dhsem.mitigation@state.nm.us.

WATCH VS. WARNING

By Kerry Jones, National Weather Service
National Oceanic and Atmospheric Administration

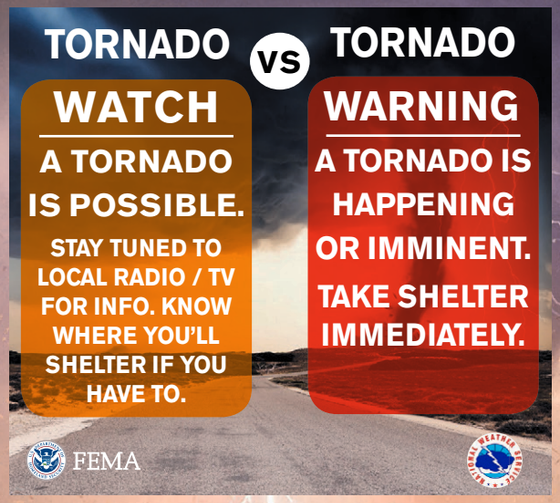
Know the Difference Between a Watch and a Warning

It's vital to your safety to know the difference between a watch and a warning. During severe weather season, watches and warnings may be issued for severe storms, tornadoes and flash floods.

Watch = Get Ready! A "watch" is issued when a specific weather hazard is possible. For example, if the weather conditions are such that tornadoes might form, a watch will be issued. Tornadoes are not yet occurring when a watch is issued. This gives you time to get prepared. If you know what time of day storms are forecast to occur, you can plan where you will need to shelter should a tornado occur. You can also make plans for how to get yourself and your family, including pets, to that shelter if necessary. The watch also gives you a chance to test your communications plan and alert family and friends to the threat of dangerous weather.

Warning = Take Action! A "warning" is issued when a specific weather hazard is currently occurring or will be occurring very soon. If a severe thunderstorm warning is issued, you should get inside a building immediately and stay away from windows and electrical appliances with cords. If a tornado warning is issued, you should go to the lowest level of a sturdy building to an interior room with no windows.

What is the Heat Index? It's an index that combines air temperature and relative humidity in an attempt to determine the human-perceived equivalent temperature – how hot it feels, termed the "felt" or "apparent" air temperature. The human body normally cools itself by perspiration, or sweating, which evaporates and carries heat away from the body. However, when the relative humidity is high, the evaporation rate is reduced, so heat is removed from the body at a lower rate, causing it to retain more heat than it would in dry air.



DAM SAFETY THREATS

By Charles Thompson, Bureau Chief
New Mexico Office of the State Engineer Dam Safety Bureau

New Mexico has over 400 dams that can be found in nearly every county within the state. These dams were constructed to meet community needs for water storage for drinking, irrigation, recreation and more. Many dams also serve to catch and control water in the event of large rainstorms to prevent flooding. The storage of water behind a dam, although useful and beneficial, does, by necessity, create the potential for a flooding hazard should a) the dam fail or b) should excessive water collect behind the dam and water spills through the spillway. That is, in the rare event of extreme rainfall, water may be diverted out of the reservoir via the dam's spillway and, in that case, the water may flood a location that has never flooded in the life of most residents. Dam failure is not a foregone conclusion–dams that have the potential to cause loss of life due to failure are regulated by state, local, tribal and federal entities to ensure that the owners operate their dams as safely as possible. However, the potential for dam failure or the need for a large release of water via the dam's spillway (often to prevent dam failure) can't be completely ruled out in many cases.

Although dams provide great benefit, it is important that members of the community be aware of potential hazards associated with their local dams. This knowledge is used to take steps to reduce negative impact in the unlikely event of flooding either related to dam failure, in which the entire reservoir is lost, or during spillway use in cases when too much water collects behind the dam during a rainstorm.

Communities with dams that have the potential to cause loss of life or interruption of lifeline infrastructure are required to have an Emergency Action Plan (EAP). The EAP gives pre-planned actions for the dam owner and community officials to follow. These actions include steps to intervene if possible and to take action to warn and evacuate downstream parties. New Mexico residents are encouraged to learn about the dams that may be in their community so that they can understand both the benefits and any potential hazards. For more information and contacts on dam safety, please visit the following websites:

New Mexico Office of the State Engineer–Dam Safety Bureau
www.ose.state.nm.us/dams, Association of State Dam Safety Officials
www.damsafety.org

HIGH WINDS

By Kerry Jones, National Weather Service
National Oceanic and Atmospheric Administration

Downburst winds are a common byproduct of thunderstorms that affect New Mexico, especially during the spring and summer, and are extremely hazardous. They, along with flash floods, are the two thunderstorm-related weather hazards most likely to produce property damage in the state.

A downburst is a non-rotating wind that is created by a column of sinking air in a thunderstorm that, after hitting ground level, spreads out in all directions and is capable of producing damaging straight-line winds of over 100 mph. These winds can often produce damage similar to, but distinguishable from, damage caused by tornadoes. The physical properties of a downburst are completely different from those of a tornado. Often the damage is very localized or, in some cases, can be widespread. When rain descends from a thunderstorm, the effects of evaporative cooling and drag act to strengthen the downward velocity of the downdraft. At times, the precipitation will evaporate (i.e. virga) prior to reaching the ground. Once the accelerating air reaches the ground, it will spread laterally, often with a vortex or "curl" on the lead edge. Downburst damage will radiate from a central point as the descending column spreads out when impacting the surface, whereas tornado damage tends toward convergent damage consistent with rotating winds.

While downburst winds often do produce local, short-lived areas of blowing dust, larger convective clusters can result in wind spread areas of blowing dust, at times persisting for 30 to 60 minutes. The most extreme cases of dust storms in New Mexico occur in the extreme southern portions of the state, and are referred to as "haboobs." A haboob is an extreme dust storm that can persist for 1 to 3 hours. The onset of the dust is extreme – it is virtually a wall of dust! If you encounter a dust storm, pull off the road immediately. Turn off your headlights and taillights, put your vehicle in "park," and take your foot off the brake. Other motorists may tend to follow taillights in an attempt to get through the dust storm, and may strike your vehicle from behind.

COMMUNITY EMERGENCY RESPONSE TEAM

By Jeremy Cuddeback,
New Mexico Citizen Corps Coordinator
New Mexico Department of Homeland Security and
Emergency Management

Every community across New Mexico has the potential to be affected by some form of hazard or disaster. It could be a local home that catches on fire, a neighborhood covered in mud and debris from heavy rainfall, a sudden and devastating tornado that shreds through town, or any other number of potential natural or human caused disasters. Within every community in New Mexico, it is not a matter of *if,* but *when* something devastating happens. The big question is, "Will you be ready?" Community Emergency Response Team (CERT) training is a great way to help you prepare for disaster.

CERT offers education and training that enables and encourages volunteer assistance before, during and after a disaster. CERT is a grassroots movement that has tremendous benefits. Not only will CERT training help you prepare for any type of disaster, but it will also teach you how to safely help your families, neighbors or coworkers following a disaster. Some of the skills that CERT members learn include fire safety, team organization, basic first aid and disaster medical operations, and search and rescue.

As well as learning individual skills and preparedness tips, CERT teams help to create more resilient communities. Along with preparing to take care of yourself and others immediately following a disaster, CERT teams across New Mexico attend various preparedness trainings, participate in preparedness exercises, occasionally assist emergency responders through firefighter rehab or traffic control, and may provide community event support, such as staffing first aid or information booths. As proud examples of resilience, CERT members often help others to be better prepared for disasters and recognize potential threats in their community.

Several communities across New Mexico regularly offer CERT training and volunteer opportunities. To learn more about how CERT training could help you prepare for disaster, contact the Local Preparedness Program at the New Mexico Department of Homeland Security and Emergency Management, at dhsem.localprepared@state.nm.us.

KIDS CORNER

WORD SEARCH

A	I	M	D	R	O	U	G	H	T	H
D	I	S	A	S	T	E	R	B	F	U
O	K	L	G	S	A	F	E	T	Y	R
T	W	N	P	T	J	H	D	C	R	R
Q	I	U	I	O	E	U	N	Y	C	I
P	L	A	N	R	S	E	Z	A	K	C
F	D	N	W	M	G	I	S	C	V	A
L	F	H	L	R	E	R	D	P	G	N
O	I	B	E	P	R	E	P	A	R	E
O	R	M	Y	T	O	R	N	A	D	O
D	E	V	A	C	U	A	T	E	X	R

Flood	Prepare	Drought	Plan
Wildfire	Evacuate	Emergency	Safety
Storm	Tornado	Hurricane	Disaster

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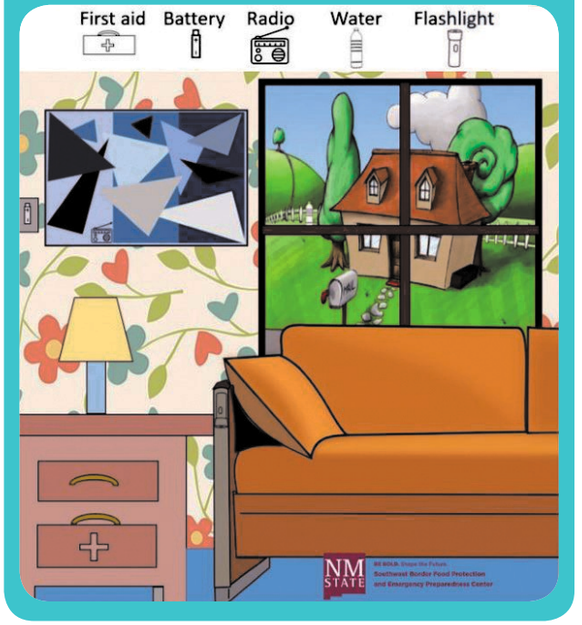
HIDDEN PICTURE FIND



VOLCANOES IN NEW MEXICO

Did you know?
Although there are currently no active volcanoes in New Mexico, many extinct volcanoes are preserved in the state. Well known extinct volcanoes in New Mexico include Mount Taylor, the Jemez Mountains, the Albuquerque volcanoes and Capulin volcano. Lava flows near Grants and Carrizozo are the youngest volcanic flows in the state (about 3,000 years old and 5,000 years old, respectively).
www.nmnaturalhistory.org/online-exhibits-geoscience/volcanoes-new-mexico

Try this at home! (Adult supervision must be provided at all times.) Make a lava lamp: Place a few teaspoons of baking powder (bicarbonate of soda) into the bottom of a plastic container. Half fill the container with cooking oil, covering the baking powder. Fill a cup full of water, and add a tablespoon of vinegar and some food dye. Pour the vinegar mixture into the container. The water/vinegar will sink to the bottom and react with the baking powder. Blobs of the water/vinegar mixture will rise and fall like lava!
smallscience.club/experiments/lava-lamp/