

A photograph showing a flooded area with a brick wall on the left. Several sandbags are piled up against the wall, partially submerged in the water. The water is a murky yellowish-brown color. In the foreground, more sandbags are visible, some with ropes tied around them. The overall scene depicts a flood preparedness or damage control situation.

HOW TO PREPARE FOR A FLOOD

AMERICA'S
PrepareAthon!SM
BE SMART. TAKE PART. PREPARE.

FLOOD BASICS

Flooding is the most common natural disaster in the United States and can happen anywhere. *How to Prepare for a Flood* explains how to protect yourself and your property, and details the steps to take now so that you can act quickly when you, your home, or your business is in danger.

WHAT

Flooding is an overflowing of water onto land that is normally dry. Flooding may happen with only a few inches of water, or it may cover a house to the rooftop.

WHEN

Flooding can occur during any season, but some areas of the country are at greater risk at certain times of the year. Coastal areas are at greater risk for flooding during hurricane season (i.e., June to November), while the Midwest is more at risk in the spring and during heavy summer rains. Ice jams occur in the spring in the Northeast and Northwest. Even the deserts of the Southwest are at risk during the late summer monsoon season.

WHERE

Flooding can happen in any U.S. state or territory. It is particularly important to be prepared for flooding if you live in a low-lying area near a body of water, such as a river, stream, or culvert; along a coast; or downstream from a dam or levee.

HOW

Flooding can occur in several ways, including the following.

- Rivers and lakes cannot contain excessive rain or snowmelt.
- Excessive rain or snowmelt cannot be fully absorbed into the ground.
- Waterways are blocked with debris or ice and overflow.
- Water containment systems break, such as levees, dams, or water or sewer systems.
- Strong winds from tropical storms or hurricanes cause a storm surge by pushing seawater onto land.

The speed and duration of flooding can vary significantly.

- Flooding can occur slowly as rain continues to fall for many days. This type of flooding, sometimes called a slow-onset flood, can take a week to develop and can last for months before floodwaters recede.
- Rapid-onset floods occur more quickly, typically developing within hours or days. These types of floods usually occur in smaller watersheds experiencing heavy rainfall, particularly in mountainous and urban areas, and the water usually recedes within a few days.
- Some rapid-onset floods known as flash floods occur very quickly with little or no warning, such as during periods of extremely heavy rain or when levees, dams, ice jams, or water systems break. Densely populated areas are at a high risk for flash floods. In urban areas, flash floods can fill underpasses, viaducts, parking structures, low roads, and basements.
- The strong winds of a tropical cyclone or hurricane can push large amounts of seawater up onto the land, causing a storm surge. A storm surge combines with the ocean's tide to produce a storm-tide surge. Storm-tide surges have been registered as high as almost 35 feet above normal sea level and can cause significant flooding across a large area. This generally occurs over a short period, typically 4 to 8 hours, but in some areas, it can take much longer for the water to recede to its pre-storm level.

IMPACT

The physical destruction caused by flooding depends on the speed and level of the water, the duration of the flood, terrain and soil conditions, and the built environment (e.g., buildings, roads, and bridges).

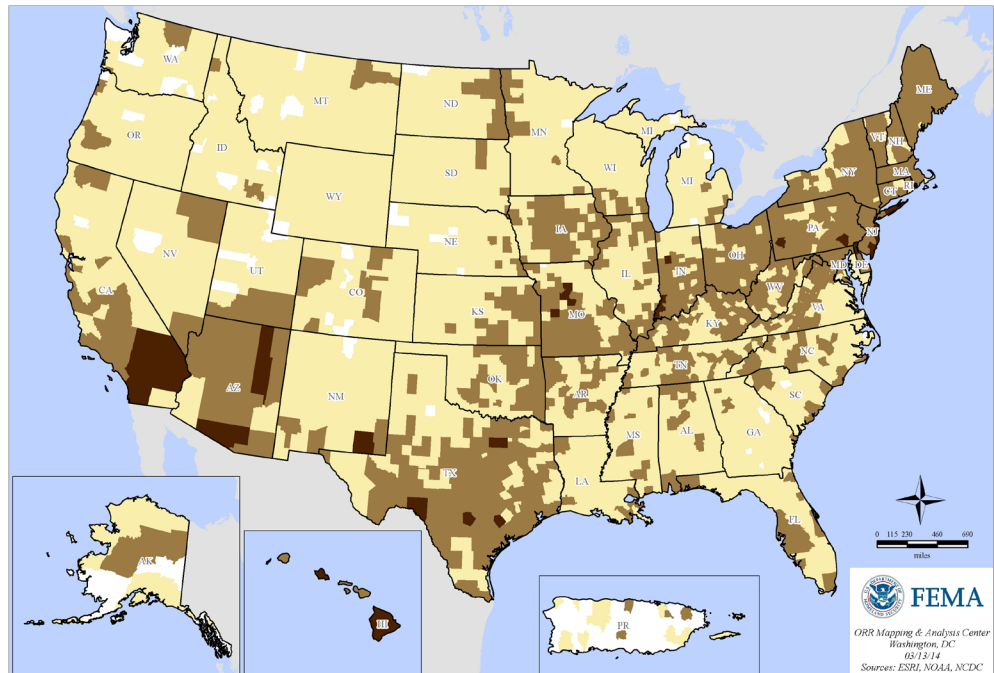
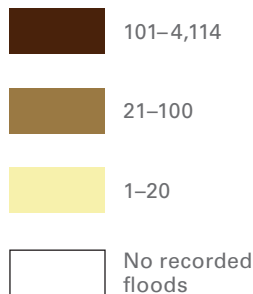
- Flooding can cause fatalities and serious injuries for people who are trapped or swept away by wading in, driving through, or boating across floodwaters.
- Transportation routes, power, water, gas, and other services may be disrupted.
- Commercial supplies and government support systems may be temporarily unavailable.
- Drinking water supplies and wells may become polluted.
- Floodwaters can cause erosion, which can damage roads, bridge structures, levees, and buildings with weak foundations, causing their collapse without warning. The floodwaters may carry the worn-away mud, rocks, and other sediment.
- Landslides and mudslides can occur.
- Even a few inches of floodwater in a home can cause tens of thousands of dollars in damage.

KNOW THE RISK

FREQUENCY OF FLOOD EVENTS BY COUNTY: 1996–2013

This map depicts all coastal, flash, lakeshore, storm surge, or other flooding identified by the National Oceanic and Atmospheric Administration (NOAA).

Flood Frequency
By County



YOUR GOAL FOR PROTECTION

Flood-related injuries and deaths are often the result of individuals trapped in floodwaters. The best way to stay safe is to leave areas that flood and avoid floodwaters.

PERSONAL PROTECTION

EVACUATE

To avoid being trapped when floodwaters threaten your area, the best action to protect yourself and your family is to evacuate before flooding starts. Know and follow the directions from local officials for community evacuation or seek high ground for localized flooding. If you do not evacuate before the flooding occurs or you are trapped by flash flooding, do not enter flooded areas or moving water either on foot or in a vehicle, including areas that appear to have only inches of water.

PROPERTY PROTECTION

ELEVATE, WATERPROOF, AND CLEAR DEBRIS

Your goal now, before a flood occurs, is to reduce the risk of damage to structures from flooding. This means elevating critical utilities, such as electrical panels, switches, sockets, wiring, appliances, and heating systems, and waterproofing basements. In areas with repetitive flooding, consider elevating the entire structure. Make sure that basements are waterproofed and that your sump pump is working and then install a battery-operated backup in case of a power failure. Installing a water alarm will also let you know if water is accumulating in your basement. Clear debris from gutters and downspouts. Anchor any fuel tanks. Move furniture, valuables, and important documents to a safe place.

RISK MANAGEMENT

FLOOD INSURANCE

Purchasing flood insurance provides financial protection for the cost of repairs due to flood damage. Standard insurance policies do not cover flooding, but flood insurance is available for homeowners, renters, and business owners through the National Flood Insurance Program.

EMERGENCY NOTIFICATIONS

The National Weather Service (NWS), part of the National Oceanic and Atmospheric Administration (NOAA), issues flood alerts when weather conditions make flooding more likely.

Watches, warnings, and evacuation notices are science-based predictions that are intended to provide adequate time for evacuation. Those who wait for actual confirmation of catastrophic levels may be trapped by flooding or traffic. Download the *Be Smart. Know Your Alerts and Warnings* document at www.ready.gov/prepare for a summary of available notifications.

FLOOD WATCH

Flooding in your area is possible. You should leave or be prepared to move to higher ground immediately upon short notice. Tune in to NOAA Weather Radio All Hazards, local radio, and/or television stations for information and monitor alert notifications.

FLOOD WARNING

Flooding is occurring or is about to occur soon. If advised to evacuate, do so immediately.

FLASH FLOOD WATCH

Flash flooding is possible. You should leave or be prepared to move to higher ground upon short notice. Listen to a NOAA Weather Radio All Hazards, local radio, and/or television stations for information and monitor alert notifications.

FLASH FLOOD WARNING

A flash flood is occurring or about to occur. Seek higher ground immediately.

OTHER ALERTS

Flood watches and warnings may also be issued for specific types of flooding (e.g., coastal or river flooding).

NWS River Forecast Centers issue river-flood forecasts to the public. During periods of flooding, these forecasts inform the public about the height of the flood crest, the date and time the river is expected to overflow its banks, and the date and time the flow in the river is expected to recede back within its banks. The U.S. Geological Survey (USGS) and NWS work together during a flood to collect and use the most up-to-date data and to update forecasts as new information is acquired. For more information on the River Forecast Centers and current observed river conditions, go to www.water.weather.gov/ahps/rfc/rfc.php.

EVACUATION NOTICE

If the danger is significant, local authorities may issue an evacuation notice to alert residents that flooding will be or is occurring and it is important to leave the area. Evacuation orders vary by state and community, and may range from voluntary to mandatory. When authorities issue a mandatory evacuation notice, leave the area immediately.

**PROTECT
YOURSELF
BEFORE
A FLOOD**

TAKE ACTION NOW!

Protecting yourself today means having sources for information, preparing your home or workplace, developing an emergency communications plan, and knowing what to do when a flood is approaching your home or business. Taking action today can save lives and property.

KNOW

Know your flood risk. Learn whether you live, work, or travel through areas that are prone to flooding. To help communities understand their risk of flooding, the Federal Emergency Management Agency (FEMA) creates flood maps (Flood Insurance Rate Maps, or FIRMs) to show the locations of high-risk, moderate-to-low risk, and undetermined risk areas. To check your flood risk, enter your address at www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/defining_flood_risks.jsp. According to the National Flood Insurance Program (NFIP), more than 25 percent of all flood claims each year come from homes outside areas at high risk for flooding. To participate in the NFIP, local communities must adopt floodplain management regulations that meet or exceed its minimum requirements.

Know how to stay informed. Receiving timely information about weather conditions or other emergency events can make all the difference in knowing when to take action to be safe.

- Monitor the weather reports provided by your local news media.
- Many communities have text or email alerting systems for emergency notifications. To find out what alerts are available in your area, do an Internet search with your town, city, or county name and the word "alerts."
- Consider buying a NOAA Weather Radio (NWR) All Hazards receiver, which receives broadcast alerts directly from NWS. You can purchase these at many retail

outlets, such as electronics and big box stores, or online. Some NWR receivers are designed to work with external notification devices with visual and vibrating alerts for people who are deaf or hard of hearing. For more information on NWR receivers, visit www.nws.noaa.gov/nwr/nwrrcvr.htm#programming.

- Think about how you will stay informed if there is a power outage. Have extra batteries for a battery-operated radio and your cell phone. Consider having a hand crank radio or cell phone charger.
- You can use USGS's WaterAlert system (<http://maps.waterdata.usgs.gov/mapper/wateralert>) to receive texts or email messages when a stream in your area is rising to flood level.

Know your evacuation routes; plan your transportation and a place to stay.

The safest way to survive a flood is to evacuate the area if advised to leave. To ensure that you will be able to act quickly should the need arise, you need to plan ahead.

- Know your community's local flood evacuation plan and identify several escape routes for your location if roads are blocked; include plans to evacuate people with disabilities and others with access and functional needs, pets, service animals, and livestock.
- If you will evacuate by car, keep your car fueled and in good condition. Keep emergency supplies and a change of clothes in your car.
- If you will need to share transportation, make arrangements now. If you will need to use public transportation, including paratransit, contact your local government emergency management agency to ask how an evacuation will work, how you will get current information during an evacuation, the location of staging areas, and other information.
- If you need to relocate for an extended period of time, identify a place away from home now where you could go if you had to leave. Consider family or friends who live outside of the local area.
- If you expect to go to a shelter after evacuating, download the American Red Cross Shelter Finder app. This app displays open American Red Cross shelters and provides the capacity and current population of each shelter. Visit www.redcross.org/mobile-apps/shelter-finder-app. You can also text SHELTER + your ZIP code to 43362 (4FEMA) to find the nearest shelter in your area.
- If you have pets and plan to go to a shelter, call to inquire whether the shelter can accommodate your pets. Shelters will accept service animals.

PRACTICE

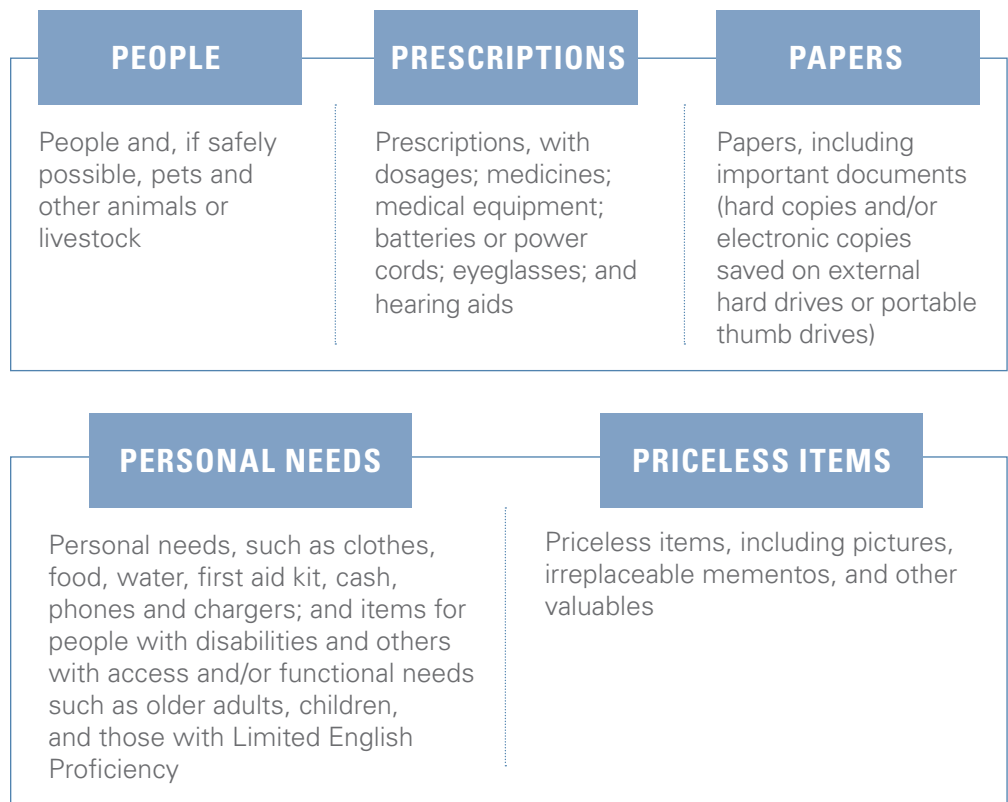
Practice how you will communicate with family members. In a dangerous situation, your first thoughts will be the safety of your family and friends. In case you are not together when authorities issue a flood watch or flood warning, practice how you will communicate with each other. Remember that sending texts is often faster than making a phone call. Keep important numbers written down in your wallet not just in your phone. It is sometimes easier to reach people outside of your local area during an emergency, so choose an out-of-town contact for all family members to call or use social media. Decide where the members of your household will meet after the flood. Visit www.ready.gov/make-a-plan for instructions on developing a Household Communication Plan.

Practice first aid skills and emergency response actions through training classes.

In most circumstances, when someone is hurt, a person on the scene provides the first assistance, before professional help arrives. Learn and practice response skills now so you will know what to do.

- Each year, more than 3 million people gain the skills they need to prepare for and respond to emergencies through American Red Cross training classes, including first aid, automated external defibrillator (AED), and cardio-pulmonary resuscitation (CPR) training. Visit www.redcross.org/take-a-class to find out about classes in your area. Download the American Red Cross First Aid App at www.redcross.org/mobile-apps/first-aid-app.
- The Community Emergency Response Team (CERT) Program expands the emergency response network by providing training in basic response skills to community members. CERT Basic Training educates individuals about disaster preparedness for hazards that may affect their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Visit www.fema.gov/community-emergency-response-teams to find your local program.

STORE **Store supplies so you can grab them quickly if you need to evacuate; know in advance what else you will need to take.** Take time now to make a list of the things you would need or want to take with you if you had to leave your home quickly. Store the basic emergency supplies in a “Go Bag” or other container. Be ready to grab other essential items quickly before leaving. Remember to include specialized items for people with disabilities and others with access and functional needs such as older adults, children, and those with Limited English Proficiency. For a full list of supplies for your emergency supply kit, visit www.ready.gov/build-a-kit. When making your list, consider the **Five Ps of Evacuation**.



Store the important documents you will need to start your recovery.

Review your homeowners or renters insurance policy and also prepare or update a list of your home's contents by taking pictures or videotaping each room in the house. If your home or business sustains significant damage, you will need access to insurance and rental or mortgage agreements to file a claim or request assistance from the government. During recovery, you may also need access to personal information such as medical insurance, prescriptions, or warranties for durable medical equipment. The Emergency Financial First Aid Kit (EFFAK) can help you identify the records you will want to keep safe. This document is available at www.fema.gov/media-library/assets/documents/29791. Store your records safely. Keep papers in a fireproof, waterproof box. If records are stored electronically, keep a backup drive in your fireproof, waterproof box or store files using a secure cloud-based service.

PROTECT

Protect your property and manage your risk. Take steps to protect your property from flood damage.

- Talk to your insurance agent about buying flood insurance. Flood insurance is available for homeowners, renters, and business owners. Because homeowners insurance policies do not typically cover flood losses, you will need to purchase separate flood insurance if your property is at risk for flooding. Visit www.floodsmart.gov/floodsmart/pages/flooding_flood_risks/defining_flood_risks.jsp for an estimate of what flood insurance may cost for your property address. A policy purchased today will take effect in 30 days, so act now.
- Elevate the heating system (furnace), water heater, and electric panel if the location is susceptible to flooding.
- Install "check valves" in sewer lines to prevent floodwater from backing up into the drains of your home.
- Waterproof the basement.
- Install sump pumps with battery backup.
- If you live in a flood-prone area, stockpile emergency building materials (e.g., plywood, plastic sheeting, lumber nails, a hammer and saw, a pry bar, shovels, and sandbags).
- In areas with repetitive flooding, consider elevating the building.
- Keep gutters and drains free of debris.

DISCUSS

Discuss what you have done to prepare with your family, friends, neighbors, and colleagues. Talking about preparedness with others will help you think through your plans, share information about alerts and warnings, and share tips for protecting property. Talking about disasters and helping others prepare makes everyone safer.

Discuss how your community can reduce risk. Work with others in your community to improve community resilience planning. Work with others to support your community's participation in the Community Rating System of the National Flood Insurance Program and to examine what building codes or land use will improve your community's resilience. For more information on mitigation options for reducing your community's risk, see *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards* at www.fema.gov/media-library/assets/documents/30627?id=6938.

PROTECT YOURSELF DURING A FLOOD

Flood-related injuries and deaths are often the result of individuals being trapped in floodwaters. Authorities may direct you to evacuate a low-lying area, or the likely path of the rising waters, to avoid being trapped by rapid changes in water levels.

EVACUATE

- If authorities advise or order you to evacuate, do so immediately. Be sure to remember the **Five Ps of Evacuation**: People, Prescriptions, Paper, Personal Needs, and Priceless Items.
- If you are in the path of a slow-onset flood and there is time before you need to evacuate, consider the following strategies.
 - ✓ Move items you want to protect to a higher floor.
 - ✓ Turn off gas, water, and electricity if you know how and can do it safely. Do not touch electrical equipment if it is wet or you are standing in water.
 - ✓ Put sandbags around your property.

IF FLOODWATER IS PRESENT

If you see floodwater on roads, walkways, bridges, and on the ground, do not attempt to cross. The depth of the water is not always obvious and the roadbed may be washed out under the water. Moving water has tremendous power. Six inches of moving water has the potential to knock you off your feet, and a foot of water can sweep a vehicle—even a large SUV—off of the road. Floodwaters can contain rocks, mud, other debris, oil, gasoline, and even sewage. Be especially cautious at night when it is harder to recognize flood dangers. For more information on floodwater hazards, visit the NWS Turn Around Don't Drown® program at <http://tadd.weather.gov>.

IF TRAPPED

If you do not leave before the flooding reaches your immediate area and you are trapped, call 911 if possible. Give your location and explain your situation.

IN A BUILDING

- Go to the highest level of the building. Avoid basements and lower floors, but do not climb into a closed attic as you may become trapped by rising floodwater.
- Go onto your roof only if necessary. Signal for help.

IN A VEHICLE

- If floodwater is blocking your evacuation route but you can turn around safely, turn around and go to a building on high ground.
- If your vehicle is trapped in rapidly moving water, stay in the vehicle. If water is rising inside the vehicle, seek refuge on the roof.

OUTDOORS

- Move to higher ground and, if necessary, climb as high as possible on a sturdy object.

PROTECT YOURSELF AFTER A FLOOD

IF YOU EVACUATED

- Return home only when authorities say it is safe.
- Be aware of areas where floodwaters have receded, and watch out for debris.
- Do not attempt to drive through areas that are still flooded.

IF YOU STAYED IN THE AREA OR AS YOU RETURN

Listen to official public information to get expert, informed advice as soon as it becomes available. After the rising water has stopped, use the following considerations and precautions:

INSIDE SAFETY

- If your home was severely flooded, you may only be able to enter when officials say it is safe to do so. Stay out of any building surrounded by floodwaters.
- Use extreme caution when entering flooded buildings. There may be hidden damage, particularly in foundations. Personal safety considerations include protecting yourself from electric shock, mold contamination, asbestos, and lead paint. Turn off electricity at main breaker or fuse box. Homeowners who are unfamiliar with electricity or their home's electrical systems should contact their local power company or a qualified electrician to assist them in making their property safe from electrical hazards after a flood. Check for loose boards and slippery floors.
- Do not touch electrical equipment if it is wet or you are standing in water.
- Shut off utilities to a flooded home or building.
- Use flashlights, not lanterns, torches, or matches, to examine buildings. Flammable gases may be inside the structure and open flames may cause a fire or explosion.
- If you turned off your gas, a licensed professional is required to turn it back on.
- Carbon monoxide exhaust kills. Use a generator or other gasoline-powered machine ONLY outdoors and away from windows so the fumes do not get inside. The same goes for camping stoves. Fumes from charcoal are also deadly—cook with charcoal ONLY outdoors. For more information, visit the U.S. Centers for Disease Control and Prevention's website on preventing carbon monoxide poisoning after an emergency at <http://emergency.cdc.gov/disasters/cofacts.asp>.

OUTSIDE SAFETY

- Stay away from moving water, especially near rivers, streams, drainage systems, and coastal areas.
- Avoid wading in floodwater, which may be contaminated by oil, gasoline, or raw sewage.
- Watch for dangerous debris (e.g., broken glass, metal fragments), dead animals, or venomous snakes that may be in floodwaters. Before walking through debris, use a stick to check for hidden dangers. Underground or downed power lines may electrically charge the water.
- Do not drive in areas where floodwater covers the road.
- Stay away from downed power lines and report them to 911 or the power company's emergency number.
- Stay away from damaged areas unless police, fire, or relief organizations have requested your assistance.

COMMUNICATIONS

- Use local alerts, radio stations, and other local information sources, such as American Red Cross apps, to get information and advice as soon as available.
- Use text messaging or social media to communicate with family and friends. Telephones and cellular phone systems are often overwhelmed following a disaster, so use phones only for emergency calls.

HEALTH AND SANITATION

- Listen for news reports to learn whether the community's water supply is safe to drink.
- Service damaged septic tanks and leaching systems as soon as possible. A damaged sewage system is a serious health hazard.
- Have wells checked for contamination from bacteria and chemicals.
- Clean and disinfect everything that got wet. Mud left from floodwater can contain sewage, bacteria, and chemicals. Take precautions and wear appropriate protective equipment such as gloves, safety glasses, and face masks. Follow five basic steps for post-flood building restoration, including (1) air out, (2) move out, (3) tear out, (4) clean out, and (5) dry out. Seek out professional services and/or guidance before attempting to repair flood-damaged property.
- Throw out any food, including canned items, that was not maintained at a proper temperature or has been exposed to floodwaters. Do not eat food from a flooded garden. When in doubt, throw it out.
- Remove and replace any drywall or other paneling that has been underwater. Use a moisture meter to make sure that wooden studs and framing are dry before replacing the drywall. Mold growth in hidden places is a significant health hazard.

CARE FOR LOVED ONES

- Look for signs of depression or anxiety related to this experience, such as feeling physically and mentally drained; having difficulty making decisions or staying focused; becoming easily frustrated on a more frequent basis; feeling tired, sad, numb, lonely, or worried; or experiencing changes in appetite or sleep patterns. Seek help from local mental health providers if you detect these signs in yourself or others.

INSURANCE

- Photograph damage to your property and contact your insurance agent. Do what you can to prevent further damage that insurance may not cover (e.g., putting a tarp on a damaged roof).

RESOURCES

If you would like more information, the following resources may be helpful.

- American Red Cross, *Repairing Your Flooded Home*:
www.redcross.org/images/MEDIA_CustomProductCatalog/m4340135_file_cont333_lang0_150.pdf
- FEMA *Above the Flood: Elevating Your Floodprone House*:
www.fema.gov/media-library/assets/documents/725
- FEMA *After a Flood: The First Steps*:
www.fema.gov/media-library/assets/documents/3396
- FEMA *Homeowner's Guide to Retrofitting: Six Ways to Protect Your House From Flooding*: www.fema.gov/media-library/assets/documents/480
- FEMA *Hurricane Sandy Issue Paper: Guidance for Turning the Power Back On*:
www.fema.gov/media-library/assets/documents/29788
- FEMA *Hurricane Sandy Recovery Fact Sheet #1: Cleaning Flooded Buildings*:
www.fema.gov/media-library/assets/documents/31368?id=7128
- FEMA *Protecting Building Utilities From Flood Damage*:
www.fema.gov/media-library/assets/documents/3729
- FloodSmart: www.floodsmart.gov/floodsmart
- NWS Flood Safety Awareness: www.floodsafety.noaa.gov
- NWS *Hurricane Flooding: A Deadly Inland Danger*:
www.nws.noaa.gov/om/brochures/InlandFlooding.pdf
- NWS NOAA River Forecast:
www.water.weather.gov/ahps2/index.php?wfo=bmx
- NWS *The Hidden Danger: Low Water Crossing*:
www.nws.noaa.gov/om/brochures/TheHiddenDangerEnglish.pdf
- NWS *Tropical Cyclone Inland Flooding*:
www.nws.noaa.gov/om/brochures/TropicalCycloneInlandFlooding.pdf
- NWS Turn Around Don't Drown®:
www.nws.noaa.gov/os/water/tadd/tadd-resources.shtml#brochures
- Ready: www.Ready.gov/floods
- Substance Abuse and Mental Health Services Administration (SAMHSA), *Disaster-Specific Resources: Annotated Bibliography*:
www.samhsa.gov/dtac/dbhis/dbhis_specific_bib.asp#disaster
- USGS WaterAlert: <http://maps.waterdata.usgs.gov/mapper/wateralert>