Protect Your Home from Flooding

LOW-COST PROJECTS YOU CAN DO YOURSELF

FEMA

RiskMAP
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FLOODING IS THE MOST COMMON AND COSTLY DISASTER IN THE UNITED STATES AND CAN HAPPEN ANYWHERE.

However, there are many ways to reduce your home's risk of flooding, and not all of them are difficult or expensive. This guide briefly describes some of the smaller, lower cost actions you can take yourself or with minor assistance from others. It also suggests places you can go to find more information about flood mitigation techniques, including some of these.

You have many flood mitigation options as a homeowner. As you begin to think about which might be the best for you and your home, consider following these **three key steps**:

1. **Know Your Risk.** Anywhere it can rain, it can flood–so we all live in a flood zone, and we all live with the risk of flood damage to our property. Learn more details about your home's level of flood risk, including the type of flood zone it is in and, if available, the potential flood elevation (referred to as the "base flood elevation" on a flood map). A good place to start is FEMA's online Flood Map Service Center at www.msc.fema.gov/portal/. You can also visit the officials in your community who maintain the FEMA flood maps and elevation certificates; they may work in the local planning and zoning office or in the building department. Talk to them, your neighbors, and others about any past flood events and how high the water has risen in the past at or near your home.

2. **Insure Your Property.** As a homeowner, it's important to insure your home and personal belongings. Even if your home is in a low- or moderate-risk flood zone, purchasing a flood insurance policy is highly recommended. It provides you with financial protection from a flood event. Flood damage isn't covered by standard homeowners insurance policies, and just a few inches of floodwater can end up costing thousands of dollars in repairs. More than 25 percent of flood insurance claims come from properties that are not in an identified high-risk zone, but most homeowners in these areas are eligible for coverage at a preferred rate. Preferred Risk Policy premiums are the lowestpremiums available, offering building and contents coverage for one low price.

3. **Reduce Your Risk.** Decide how to prepare your family and protect your home from flooding. Consider which of the methods included in this guide are most appropriate and practical, based on your home's flood risk, and create a plan to mitigate the risk to your property. Even after a mitigation project, some risk will remain, so learn about more actions to prepare and protect your family, home, and belongings at www.ready.gov/make-a-plan.

OUTSIDE THE HOME

For the exterior areas of your property, consider taking the following actions:

- **Maintain proper water runoff and drainage.** Routinely clean and maintain gutters, downspouts, and splashpads so that rainwater from your roof flows easily away from your home. Also, make sure that any nearby drainage ditches or storm drains are clear of debris and functioning properly.

- **Improve lot grading.** Determine how water flows or accumulates around your home to identify potential trouble spots (often easy to see during an average rainstorm). Stormwater should always drain away from the building; if necessary, change your landscaping to improve runoff. This may include building up any sunken areas around the foundation, digging small depressions to properly channel water, and otherwise improving the yard so that it slopes away from your home.

- **Reduce impervious surfaces around your home.** Water runs off concrete and asphalt almost immediately and can exceed the capacity of storm sewers quickly during heavy rains. Retaining and creating natural green space around your home can help reduce sewer overflows by reducing stormwater runoff. Consider options such as rain gardens, vegetated swales, or pervious pavements, which allow more water to be absorbed by the ground.

Please be aware that flood mitigation measures need to be tailored to the property in question. Depending on the project, you may need to consult local architects, engineers, contractors, landscapers, or other experts in design and construction. Also, changes to properties and buildings often require permits or other regulatory approvals. Your local planning and zoning office or building department is a good place to start for advice on how to best proceed. Lastly, please remember to be kind to your neighbors! Consulting adjacent property owners is very important when any actions on your property, such as extending downspouts or regrading areas between homes, could affect their property.

- **Install a rain barrel.** A rain barrel is an alternative method for dealing with rainwater. Rain barrels are typically connected to gutter downspouts and collect the runoff from roofs. You can use this stored water for non-potable uses such as watering the lawn and gardens or washing your car.

- **Elevate utilities and service equipment.** Raise and anchor air conditioning condensers, heat pumps, water meters and other service equipment onto pedestals or platforms that are at least 1 foot above the potential flood elevation. For identified high-risk zones this means going to or above the regulatory flood elevation for the property as adopted by the local community. This inexpensive action can help prevent significant damage and disruption following a flood event.

- **Anchor outdoor fuel tanks.** Attach outdoor fuel tanks to a large concrete slab that weighs enough to resist the force of floodwaters, or install inexpensive ground anchors that are connected across the top of the tank with metal straps. Unanchored fuel tanks can be easily moved and ruptured by floodwaters and pose serious threats to people, property, and the environment. If located in an identified high-risk zone, fuel tanks should also be elevated to or above the regulatory flood elevation as adopted by the local community. If not feasible then all filling and ventilation tubes should be elevated so that floodwaters cannot enter the tank.

INSIDE THE HOME

For interior areas below the potential flood elevation, consider making the following alterations:

- **Protect your valuable possessions.** Move important documents and other valuable or sentimental items to a safer location, well above the potential flood elevation and/or inside watertight containers.

- **Seal your foundation and basement walls.** Close any foundation cracks with mortar and masonry caulk or hydraulic cement, which expands and fills gaps completely. Seal walls in your basements with waterproofing compounds to avoid seepage. Make sure any floor drains are clear of obstructions.

- **Install flood vents.** Flood vents are small permanent openings that allow floodwater to flow freely through an enclosure such as a crawlspace or garage. Properly positioned and installed flood vents protect homes during floods by preventing water pressure buildup that can destroy walls and foundations. Flood openings may be required for lower enclosures of homes being built in high-risk flood zones, but they can also be installed in existing homes. Once installed, make sure your flood vents are kept free of debris and will allow the free-flow of floodwater.

- **Install a sump pump.** Sump pumps, which pump groundwater away from your home, can be an excellent defense against basement seepage and flooding. They draw in the groundwater from around the house and direct it away from the structure through drainage pipes. Be sure to choose a device with battery-operated backup, in case of electrical power failure.

- **Prevent sewer backups.** Install drain plugs for all basement floor drains to prevent sewer backups. Another recommended option, regardless of the potential flood elevation, is to install sewer backflow valves for all pipes entering the building. These devices, which allow water to flow only one direction, prevent floodwater and wastewater from backing up into your home through toilets, sinks, and other drains. They are available in a variety of designs that range from simple to complex, but they should be installed by a qualified, licensed plumber.

- **Use flood-resistant building materials.**
  - — Replace wooden floorboards and carpets with ceramic tile, vinyl, rubber, or other flood-resistant materials. Use moveable rugs instead of fitted carpets.
  - — Replace internal walls and ceilings with flood-resistant material such as lime plaster, cement board, concrete, or pressure-treated and decay-resistant wood.
  - — Replace wooden doors and window frames with metal or other flood-resistant options.
- **Raise electrical system components.** Increase the height of electric service panels (fuse and circuit breaker boxes) and all outlets, switches, and wiring to at least 1 foot above the potential flood elevation. These modifications should be made by a licensed electrician.
- **Protect utilities and service equipment.** Move the main parts of your heating, ventilation, and air conditioning (HVAC) systems to a higher floor or the attic. Consider raising other major appliances, such as washers, dryers, and hot water heaters, above the ground floor. If relocation or elevation is not possible, you can protect service equipment in place using low floodwalls and shields. Alternative options such as replacing traditional hot water heaters with tankless units should also be considered.
- **Anchor indoor fuel tanks.** Anchor fuel tanks by attaching them to a large concrete slab that weighs enough to resist the force of floodwaters.
- **Install a flood alert system.** A variety of flood sensors and other early warning devices can alert you to the risk of imminent flooding so that you can take preventative or protective actions before extensive damage occurs (see “Flood Preparedness”).

FLOOD PREPAREDNESS

You may be able to take additional actions immediately before an expected flood event that will prevent or reduce flood damage to your home:

- Activate flood protection devices (turn on sump pumps, close backflow valves, etc.).
- Shut off electricity at the breaker panel.
- Safeguard important paperwork and move furniture, rugs, electronics, and other valuable belongings to upper floors, or at least off the floor of the ground level.
- Elevate major appliances onto concrete blocks.
- Clean gutters, downspouts, and splash pads, along with any nearby drainage ditches or storm drains; clear snow and ice away from foundations.
- Deploy temporary flood barriers, such as portable flood gates or shields, sandbags, inflatable floodwalls, and flood skirts.

WANT TO LEARN MORE?

Contact your local community officials. Start with the local planning and zoning office or building department, and ask to speak with the designated floodplain administrator.

Consult local contractors or design professionals with flood mitigation expertise.

Visit the following websites:

FEMA, Protect Your Property
www.fema.gov/protect-your-property

FEMA Region III, Mitigation Division
www.fema.gov/region-iii-mitigation

FloodSmart
www.floodsmart.gov

Read more detailed publications available from FEMA:

Homeowner's Guide to Retrofitting
www.fema.gov/media-library/assets/documents/480

Reducing Flood Risk to Residential Buildings That Cannot Be Elevated.
www.fema.gov/media-library/assets/documents/109669

Protecting Your Home and Property from Flood Damage.
www.fema.gov/media-library/assets/documents/21471

Protecting Building Utility Systems from Flood Damage.
www.fema.gov/media-library/assets/documents/3729

Protect Your Property from Flooding.
www.fema.gov/media-library/assets/documents/13261