

THE NATIONAL FLOOD INSURANCE PROGRAM IN MONTANA

Quick Guide



**Montana Department of Natural Resources
& Conservation**

Floodplain Community Assistance Program

www.mtfloodplain.mt.gov

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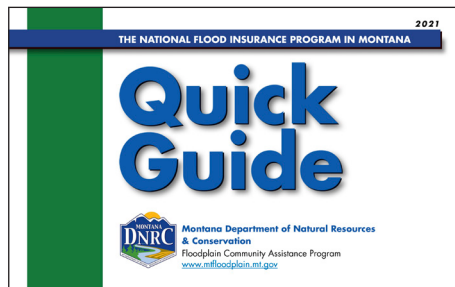
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About This Guide



This **Quick Guide** helps local officials and citizens understand why and how Montana communities must manage development in floodplains to protect people and property.

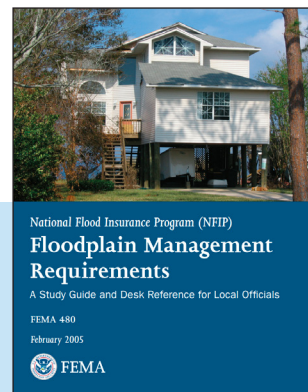
Communities that participate in the National Flood Insurance Program (NFIP) adopt and enforce the floodplain management regulations based on federal and State requirements in Montana Code Annotated (MCA) Title 76, Chapter 5 and Administrative Rules of Montana (ARMs) Chapter 15. In the event of conflict, the local regulations, those regulations and not this Guide, must be followed.

The Montana Department of Natural Resources & Conservation, Floodplain Community Assistance Program and Mapping Program coordinates the NFIP in Montana (www.mtfloodplain.mt.gov). Contact 406-444-6654 if you have questions or comments.

Prepared by:

RCQUINN
CONSULTING, INC.

For more detail on all aspects of floodplain management, please refer to FEMA 480, *National Flood Insurance Program, Floodplain Management Requirements: A Study Guide and Desk Reference for Local Officials*.



Why Do We Regulate the Floodplain?

To protect people and property. Implementing floodplain management regulations reduces vulnerability to future flood risk. If we know low lying land will flood from time to time, we should make reasonable decisions to help protect our families, homes, and businesses.

To make sure federal flood insurance is available. Communities must join the NFIP and administer floodplain management requirements before residents and businesses can purchase federal flood insurance and to be eligible for some types of federal assistance, including flood mitigation grants.

To save tax dollars. Every time communities experience flood disasters local budgets are impacted. If we build more resilient, we'll have fewer problems the next time the water rises. Remember, federal disaster assistance is not available for all floods. Even when the President declares a disaster, communities still must pay a portion of repair and clean-up costs, temporary housing assistance, and evacuation expenses.

To avoid liability and lawsuits. If we know an area is mapped as a flood hazard area, and if we know people could be in danger and buildings could be damaged, doesn't it make sense to take reasonable protective steps as our communities develop and redevelop?

Since 1978, federal flood insurance policy holders in Montana have received over \$122 million in claim payments and public assistance funding. Even though that represents many payments, most of the State's flood-prone property owners do not have flood insurance.

What is the National Flood Insurance Program?

The National Flood Insurance Program (NFIP) was created by Congress in 1968 to protect lives and property and to reduce the financial burden of providing disaster assistance. The NFIP is administered by the Federal Emergency Management Agency (FEMA). Nationwide, over 22,300 communities participate in the NFIP— more than 138 Montana counties, cities and towns participate.

The NFIP is based on a mutual agreement between the Federal Government and communities. Communities that participate agree to enforce regulations on development in mapped flood hazard areas according to certain criteria and standards. The partnership involves:



- **Flood hazard maps.** In partnership with counties, cities, towns, and the State, FEMA produces flood maps in accordance with FEMA standards. The maps are used by communities, surveyors, engineers, insurance agents, real estate professionals, and others.
- **Flood insurance.** Property owners and renters in participating communities are eligible to purchase federal flood insurance for buildings and contents.
- **Regulations.** Communities must adopt and enforce minimum floodplain management regulations so that development, including buildings, is undertaken in ways that reduce exposure to flooding.

To learn more about the NFIP, including your potential flood risk and the approximate cost of a flood insurance policy, go to FEMA's FloodSmart web site www.floodsmart.gov.

Local, State, Regional, and Federal Roles and Responsibilities

■ Communities (cities, counties, towns):

- ❑ Exercise authority to adopt floodplain management ordinances
- ❑ Enroll in the National Flood Insurance Program (NFIP)
- ❑ Administer and enforce ordinances, maintain records ([see page 5](#))

■ Montana Department of Natural Resources & Conservation:

- ❑ Provides technical assistance and training
- ❑ Approves ordinances and ordinance amendments
- ❑ Assists with some flood study data and mapping
- ❑ Coordinates between FEMA and communities

- **FEMA:** Oversees NFIP (enrolls communities; can act to suspend or put communities on probation); and produces and approves flood studies and flood maps and changes to flood maps



NFIP Community Responsibilities

To participate in the National Flood Insurance Program, communities agree to:

- **Recognize** flood hazards in community planning ([see page 8](#))
- **Adopt and enforce** flood maps and a floodplain management ordinance
- **Require** permits for all types of development in the floodplain ([see pages 39, 40, 41, and 42](#))
- **Assure** that building sites are reasonably safe from flooding
- **Review** base flood elevation (BFE) information submitted when BFEs are not shown on Flood Insurance Rate Maps (FIRMs)
- **Require** new and substantially improved homes and manufactured homes to be elevated to/above BFE + 2ft
- **Require** non-residential buildings to be elevated to/above BFE + 2ft, or dry flood proofed
- **Determine** if damaged buildings are substantially damaged
- **Conduct** field inspections; cite and remedy violations
- **Require and maintain** surveyed elevation information to document compliance ([see pages 46, 48, and 49](#))
- **Carefully consider** requests for variances
- **Resolve** non-compliance and violations of floodplain management requirements
- **Advise and work** with FEMA and the State when updates to flood maps are needed
- **Maintain** records for review and respond to periodic requests for reports to FEMA

Flood Insurance: Property Owner's Financial Protection

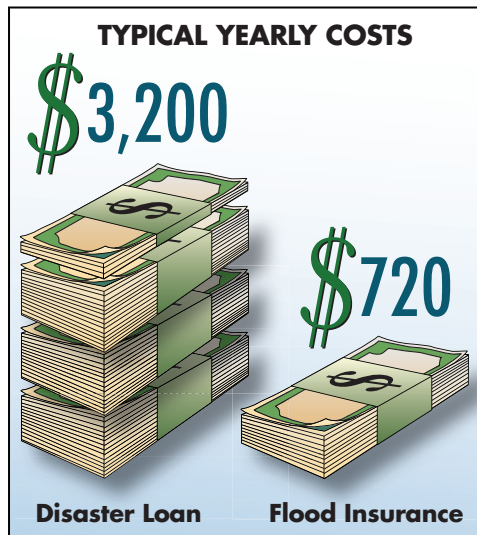
Who needs flood insurance? Federal flood insurance is required for all buildings in mapped flood zones shown on FEMA's maps if they are financed by federally-backed loans or mortgages. All homeowners, business owners, and renters in communities that participate in the NFIP may purchase federal flood insurance on any building and its contents, even if outside of the mapped flood zone. Homes in mapped flood zones are five times more likely to be damaged by flooding than by major fires.

Not in a mapped flood zone? Approximately 25% of all flood damage occurs in low risk zones, commonly described as being "outside the mapped flood zone." Unfortunately, it's often after a flood that many people discover that their home or business property insurance does NOT cover flood damage.

Protected by a levee or dam? Even areas protected by levees or other flood control structures have some risk of flooding if the structures are overtopped or fail. Even when levees provide "100-year" flood protection, there is still a chance that a higher flood will cause flooding.

What about disaster grants and loans? Federal disaster grants do not cover most losses and repayment of a disaster loan can cost many times more than the cost of a flood insurance policy.

Want to know more? Learn more at www.floodsmart.gov. To purchase a policy, call your insurance agent. To find an insurance provider in your neighborhood, click on "How to Buy or Renew."



The NFIP's Community Rating System (CRS)

The NFIP recognizes communities that achieve better flood resiliency by providing policy holders with reduced flood insurance premiums. Communities must apply to participate in CRS and commit to implement and certify activities that contribute to reduced flood risk. Examples of actions communities can take to reduce the cost of flood insurance premiums include:

- Preserve open space in the floodplain
- Enforce higher standards for safer development through zoning, stormwater, subdivision, and floodplain management ordinances
- Develop hazard mitigation plans and watershed and stormwater management plans
- Undertake engineering studies and prepare flood maps
- Obtain grants to buy out or elevate houses or to flood proof businesses
- Maintain drainage systems
- Monitor flood conditions and issue warnings
- Inform people about flood hazards, flood insurance, and how to reduce flood damage



Important

Information

Community officials can request assistance from CRS specialists to help with the application process and prerequisites. Check the online CRS Resource Center ([see page 79](#)).

In 2021, twelve Montana communities participated in the CRS. In those communities, property owners with buildings in mapped special flood hazard areas enjoy NFIP insurance premium discounts of 5% to 15%.

NFIP Recommended Planning Considerations

Montana communities should consider incorporating planning considerations in comprehensive plans, land development codes, floodplain management regulations, and hazard mitigation plans to reflect the long-term goal of increasing resiliency to future flooding. NFIP regulations (Section 60.22(c)) outline 19 factors for consideration, including:

- Divert development to areas outside the SFHA to reduce flood damage
- Full public disclosure to potential buyers of properties in the SFHA
- Acknowledge that SFHA development may increase flood risk of existing development
- Improve local drainage to control increased runoff that increases the probability of flooding on other properties
- Require additional building elevation above the State's minimum freeboard
- Require elevation methods such as pilings or columns rather than fill to maintain the storage capacity of the floodplain and to minimize environmental impacts
- Require evacuation plans for manufactured home parks and subdivisions

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Flash Flooding

Flash flooding is common in watersheds with steep, hilly, or mountainous terrain where rainfall runs off rapidly because water cannot infiltrate into rocks and hard ground. Runoff accumulates in steep stream valleys, generating rushing waters that can quickly rise to considerable depth.

In some cases, flash flooding may occur well away from where heavy rain initially falls. This is especially common in the western United States where low lying areas may be very dry one minute, and filled with rushing water the next.

Urban areas also are prone to flash floods due to the large amounts of concrete and asphalt surfaces that do not allow water to penetrate into the soil.



Flash floods are exactly what the name suggests – floods that happen in a flash! [See page 80](#) for more about the dangers of driving through flooded roads.

Terms and Definitions

Flash flooding

crests in a short length of time and is often characterized by high velocity flow that overflows a confined or narrow waterway. Heavy rainfall over a localized area is the most common cause. Flash flooding can rise from dry washes or normal water levels to several feet deep in less than an hour.

Flooding After Fire

Large-scale wildfires dramatically alter ground conditions, eliminating vegetation that absorbs rainfall and hardening the ground which means more rainfall runs off instead of soaking into the soil. These changes mean downstream flood risks are increased until vegetation grows back, which can take up to five years or more.

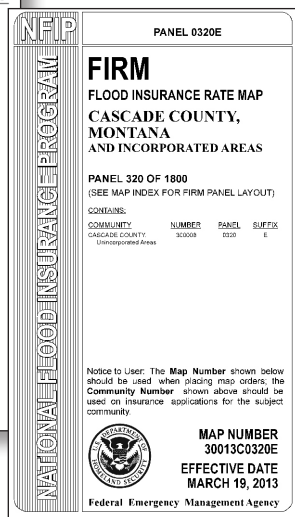
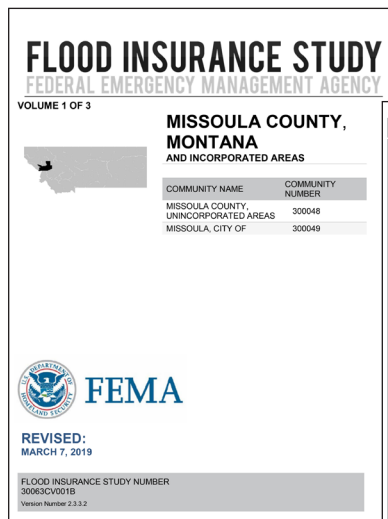
Flooding risks are increased not only because more water runs off the land, but because that water erodes more soil and carries more debris than when the same rainfall occurs over vegetated, unburned areas. Stream channel capacity is reduced or blocked when clogged by sediment and debris transported off of burned areas.



Important Information

Property owners in and near drainages impacted by wildfire should double check their family and business safety plans and flood insurance policies. Always monitor weather and flood warnings and be prepared to evacuate.

Looking for FEMA Flood Map Information?



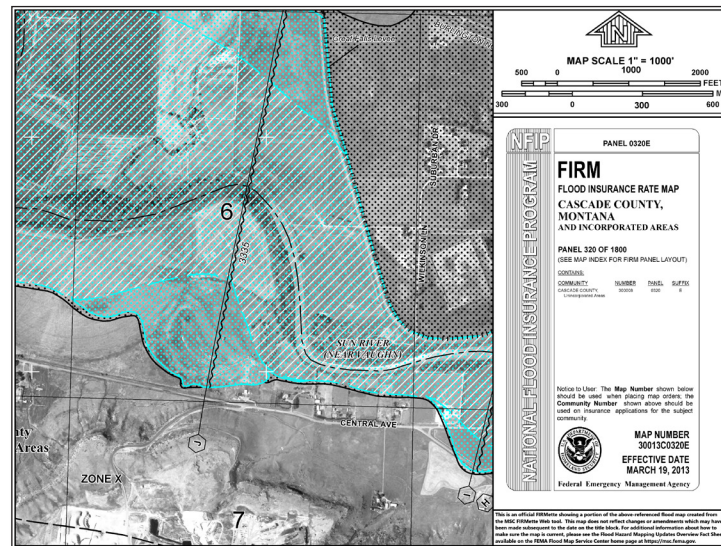
- Flood Insurance Studies (FISs) are compilations of flood risk information used for community planning and development.
- Flood Insurance Rate Maps (FIRMs) show flood zones subject to regulations and where federal flood insurance is required.
- Access FIRMs at the FEMA Flood Map Service Center at <https://msc.fema.gov>, where current and historical flood maps may be viewed and downloaded.
- Access the National Flood Hazard Layer, a geospatial database with current effective data, at <https://www.fema.gov/flood-maps/national-flood-hazard-layer>.
- Many cities and counties also make digital flood maps available online, sometimes with property parcel data.

Need a fast answer? Community planning, engineering, or and/or floodplain administrator offices may also have paper flood maps available for viewing by the public.

FIRMette: FEMA Flood Maps Online

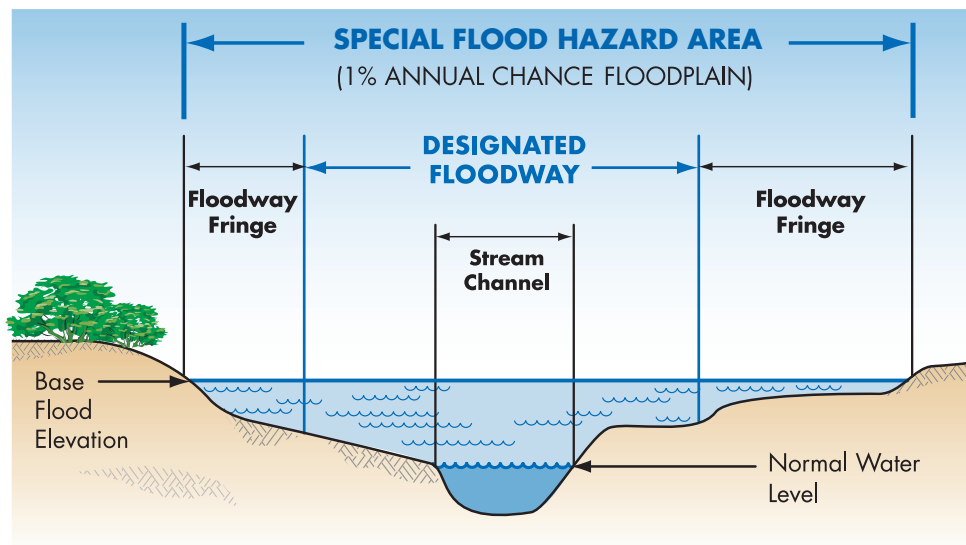
Portions of flood maps can be produced, saved, and printed by making a "FIRMette." FIRMettes are full-scale sections of FIRMs.

- Look for a tutorial on How to Find Your FIRM and Make a FIRMette at www.fema.gov/flood-maps/tutorials.
- Making a FIRMette is easy after a property is located. Use the <Search by Address> link or <Search All Products> to find the community and map panel of interest.
- Earlier versions of FIRMs are available for many communities, so current flood hazard information can be compared to historic data.



Go to www.msc.fema.gov and check out the "MSC Frequently Asked Questions." For step-by-step instructions on how to read flood maps, view the How to Read a Flood Insurance Rate Map Tutorial.

Understanding the Riverine Floodplain



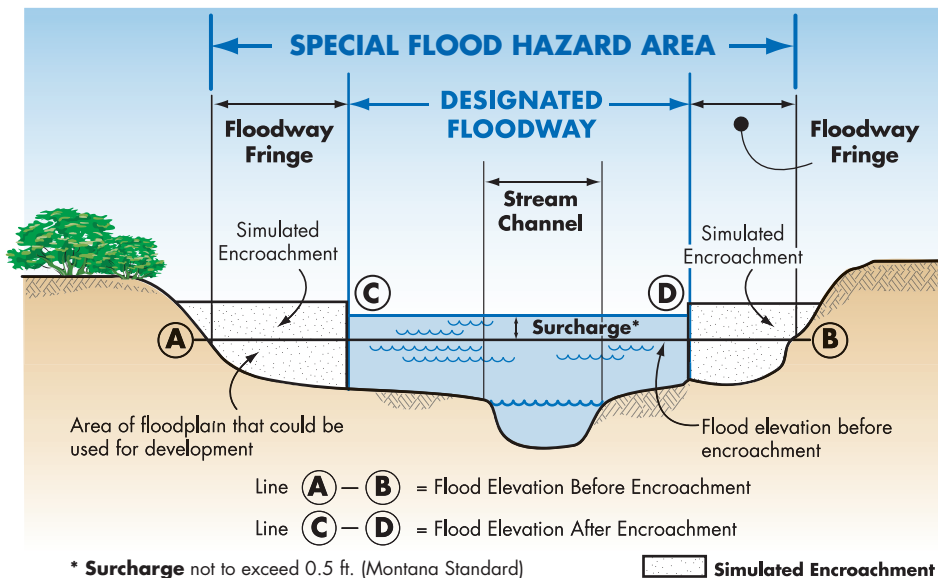
Terms and Definitions

The **Special Flood Hazard Area (SFHA)** is that portion of the floodplain subject to inundation by the base flood (1% annual chance). Riverine SFHAs are shown on FIRMs as Zones A, AE, AH, AO, AR, and A99. Older FIRMs may have Zones A1-A30.

[See page 14](#) to learn about the floodway, the area of the regulatory floodplain where flood waters usually are deeper and flow faster.

For riverine floodplains with base flood elevations (BFEs) determined by detailed flood studies, the Flood Profile in the Flood Insurance Study shows water surface elevations for different frequency floods ([see page 17](#)).

Understanding the FEMA Floodway



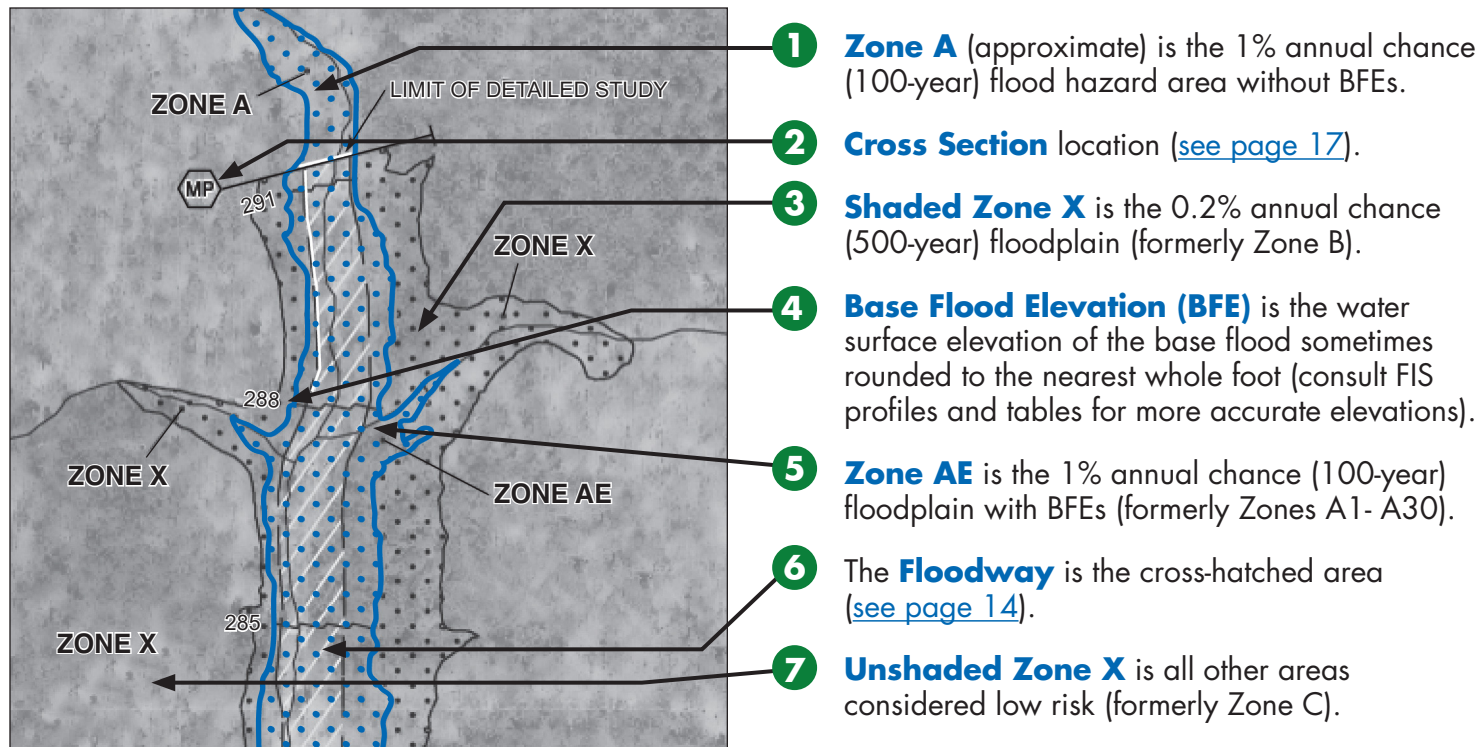
Terms and Definitions

The **Floodway** is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to pass the base flood discharge without cumulatively increasing flood elevations.

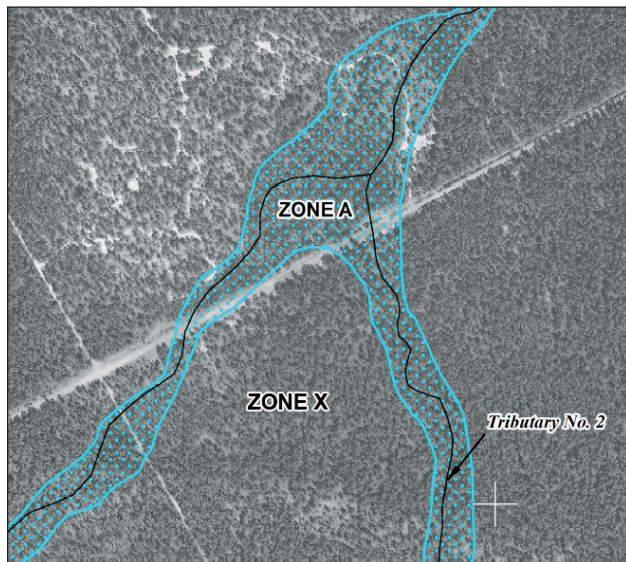
Computer models are used to simulate “encroachment” or development in the floodway fringe in order to predict where and how much the base flood elevation would increase if the floodway fringe is fully developed.

For any proposed floodway development, the applicant must provide evidence that “no rise” in flood elevation will occur or obtain a Conditional Letter of Map Revision (CLOMR) before a local floodplain permit can be issued ([see page 25](#)). Experienced registered professional engineers must make sure proposed projects either won’t increase flooding or that any increases do not impact structures on other properties.

Flood Insurance Rate Map (Riverine)



Approximate Flood Zones



Some Approximate Zone A boundaries were determined from existing information provided by the U.S. Army Corps of Engineers, other federal agencies, State and local agencies, and historic records.

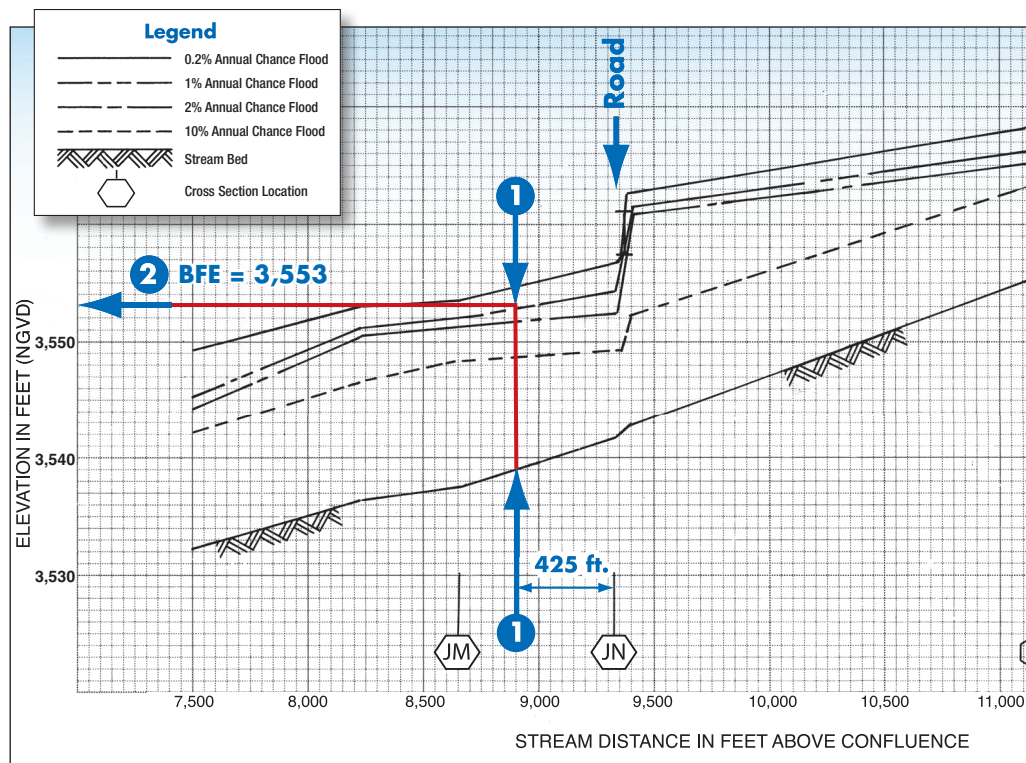
For assistance determining BFEs, contact local floodplain administrators, planning or engineering offices. Useful guidance for local officials and engineers is found in FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas*.

**Terms and Definitions**

An **Approximate Zone A** is a special flood hazard area where BFE information is not provided on the FIRM. Some Flood Insurance Studies include information on flood elevations in Approximate Zone A areas.

If data are not available from another reliable source, BFEs must be determined using appropriate engineering methods and analyses.

Using the Riverine Flood Profile to Determine Riverine BFEs



Flood Profiles from Flood Insurance Study reports can be used to determine the BFE at a specific site. Profiles also show estimated water surface elevations for floods other than the 1% annual chance flood (100-year).

- On the effective flood map, locate the site by measuring the distance, along the profile baseline of the stream channel, from a known point such as a road or cross section, for example, JM or JN.
- Scale that distance on the Flood Profile and read up to the profile of interest, then across to determine the BFE, to the nearest 1/10 of a foot. (Answer: 3,553 feet).

Floodway Data Table

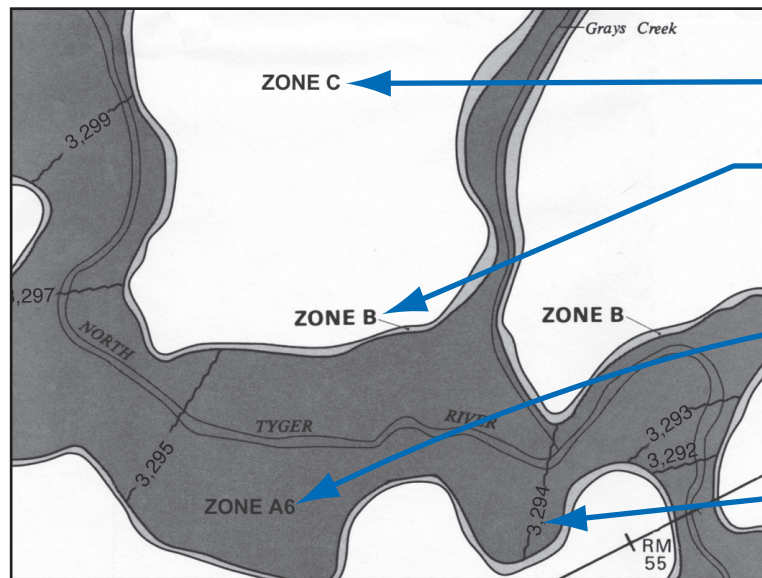
Flood Insurance Studies have Floodway Data Tables for every waterway that was studied by detailed methods for which floodways were delineated.

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
W	76,800	3,707	16,973	4.0	3,021.4	3,021.4	3,021.8	0.4
X	81,400	6,450	25,546	2.6	3,024.7	3,024.7	3,025.0	0.3
Y	82,460	4,451	20,890	3.2	3,025.3	3,025.3	3,025.8	0.5
Z	83,700	3,884	20,820	3.2	3,026.1	3,026.1	3,026.6	0.5
AA	85,020	3,350	17,349	3.9	3,027.0	3,027.0	3,027.5	0.5
AB	86,040	2,489	10,753	6.2	3,028.0	3,028.0	3,028.5	0.5

¹ Feet above Missoula County/Mineral County Line

- ① Velocity estimates based on the mean velocity data may be used to compute hydrodynamic loads.
- ② Computed BFE (sometimes rounded values are shown on FIRMs).
- ③ Elevations may not consider backwater effect from downstream river.
- ④ Amount of allowed increase – not more than 0.5 foot at any location.

Old Format Flood Insurance Rate Map

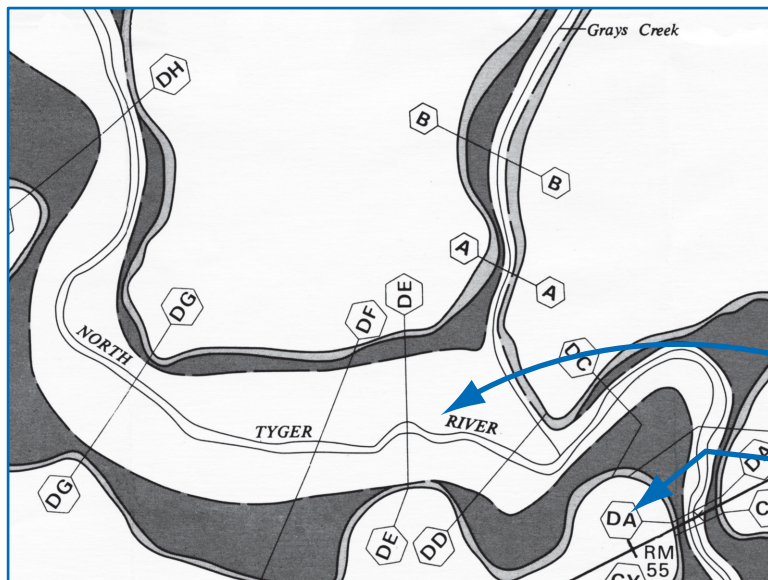


FLOOD HAZARD ZONES

- 1 Zone C** (or Zone X) is all areas considered to be low risk.
- 2 Zone B** (or shaded Zone X) is subject to flooding by the 500-year flood (0.2% annual chance) and considered moderate risk areas.
- 3 Zone A, Zones A1-A30 or Zone AE** are subject to flooding by the base or 100-year flood (1%-annual-chance), and are considered high risk areas.
- 4 Base flood elevation (BFE)**
Water surface elevation of the base flood at specific locations.

FEMA prepares Flood Insurance Rate Maps (FIRMs) to show areas that are at high risk of flooding. These “old format” FIRMs, and companion Flood Boundary and Floodway Maps ([next page](#)), are being revised and digitized as part of FEMA’s nationwide revision initiative ([see page 26](#)).

Old Format Flood Boundary and Floodway Map



Important

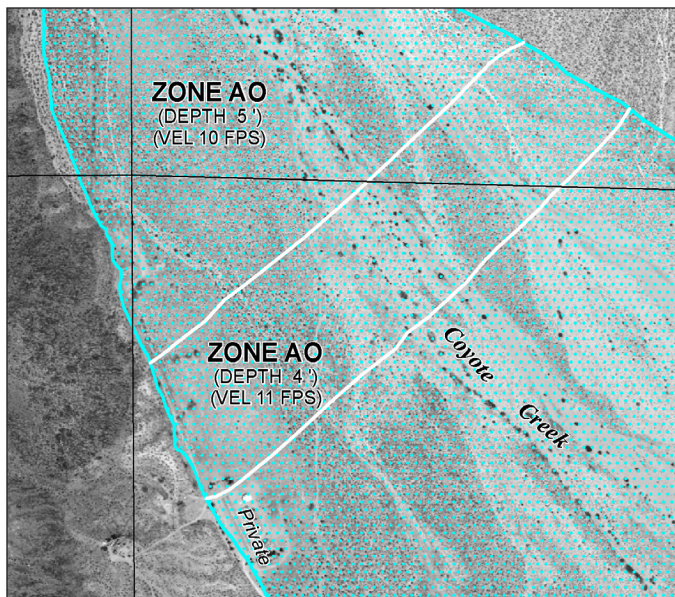
Information

Floodway maps do not show flood zones or BFEs. Check the companion FIRM for that information. [Page 19](#) shows the FIRM that matches the map clip to the left.

- 1 The Floodway** is the white area around the waterway centerline.
- 2 Cross Section** location, where ground surveys determined the shape of the land and how constrictions such as bridges and culverts affect the flow of floodwater.

FEMA prepared Floodway maps as companions to many “old format” FIRMs. You should check to see if your project will be in the Floodway because additional engineering may be required ([see page 45](#)).

Alluvial Fan Flooding Requires Special Attention



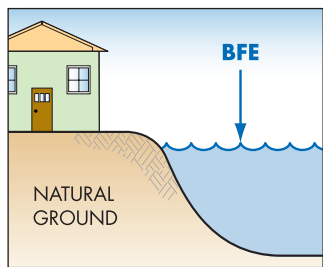
Alluvial fan flood hazard areas are shown on FIRMs as AO Zones with a “depth number” and anticipated velocity. Special attention is required if buildings are proposed in these areas:

- Lowest floors must be elevated at least as high as the depth number above the highest adjacent grade plus 2 feet.
- Buildings may be elevated on a fill pad or a raised foundation – fills and foundations must be designed by a qualified registered professional engineer to resist the anticipated flood depths, erosion, and velocities.
- Drainage and grading must prevent directing water, sediment and debris flows onto adjacent properties.

Some of Montana’s mountains have alluvial fans at their base. Alluvial fans are a landform created where floodwaters rushing off the steep mountains spread out and deposit sand, cobble, and rocks.

FIRM Revisions: LOMAs and LOMR-Fs

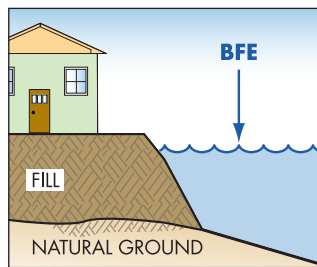
The most accurate information available is used to make flood maps, including topographic base maps and detailed engineering methods or methods of approximation. Some small areas of high ground may be shown in SFHAs because of limitations of the information or map scale. Technical data may be submitted to FEMA to request determinations and FIRM revisions.



Letter of Map Amendment (LOMA).

FEMA may issue a LOMA when a property owner provides additional technical information from a professional land

surveyor, including certified ground elevation relative to the BFE. Lenders may waive the flood insurance requirement if a LOMA is issued because natural ground at the site is at or above the BFE.



Letter of Map Revision Based on Fill (LOMR-F).

FEMA may issue a LOMR-F to document a determination that a structure or parcel of land has been elevated by

fill above the BFE. Any development on filled areas is subject to permit requirements. Lenders may waive the insurance requirement if a LOMR-F has been issued for a building site.

Check www.fema.gov/letter-map-amendment-letter-map-revision-based-fill-process for guidance on map revisions.

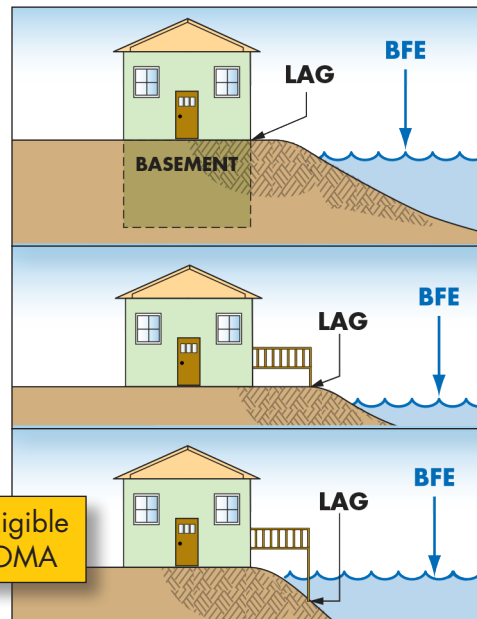
More on LOMAs: Basements and Decks

Owners can obtain LOMAs to show buildings are not in SFHAs even when buildings have basements, provided:

- Earthen fill has not been placed since date of the first FEMA map showing the site in the SFHA.
- The Lowest Adjacent Grade (LAG) is at or above the BFE.

Owners can obtain LOMAs to show buildings are not in SFHAs when buildings have decks or stairs, provided:

- The Lowest Adjacent Grade (LAG) at the lowest deck or stair support is at or above the BFE
- Documentation that the deck or stairs are detached (not structurally connected), as long as the LAG next to the building is at or above the BFE.



LOMAs: “Out as Shown”

Mortgage lenders that are regulated or insured by the Federal Government are mandated to require flood insurance when structures are in, or touch, the SFHA. Lenders sometimes perform automated determinations, where computers compare parcel locations to SFHA maps.

- Owners can ask lenders to reconsider determinations.
- Documentation may be required to clearly show a structure is outside of the SFHA, sometimes called “out as shown.”
- Some lenders may accept FIRMettes as evidence ([see page 12](#)).
- Sometimes lenders require FEMA LOMAs or surveyed site maps, especially if it is a close call ([see page 22](#)).

Lenders have discretion to require flood insurance even when structures are not in the SFHA. This usually occurs when a portion of the lot is in the SFHA.

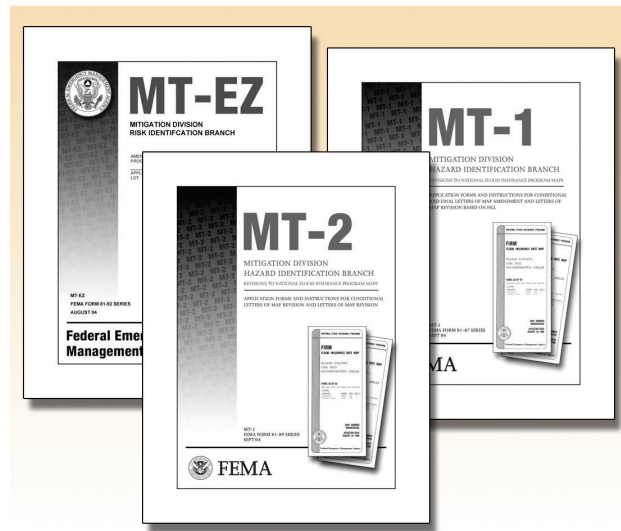


Red Circle: A corner of the structure is in the SFHA. Lenders must require flood insurance unless the owner obtains a Letter of Map Amendment from FEMA.

Yellow Circles: Structures clearly not in the SFHA, but parts of the lots may be in. (Flood insurance is not mandatory, but is encouraged.)

FIRM Revisions: CLOMRs and LOMRs

- **Conditional Letter of Map Revision (CLOMR)** comments on whether a proposed project, if built as shown on the submitted documentation, would meet the standards for a map revision. Communities should require this evidence prior to issuing permits for fill or alteration of a watercourse. Certificates of Occupancy/ Compliance should be withheld until receipt of the final LOMR based on “as-built” documentation and certification.
- **Letter of Map Revision (LOMR)** is an official revision to an effective FIRM that may be issued to change flood insurance risk zones, special flood hazard areas and floodway boundary delineations, BFEs and/ or other map features. Lenders may waive the insurance requirement if the approved map revision shows buildings to be outside of the SFHA.

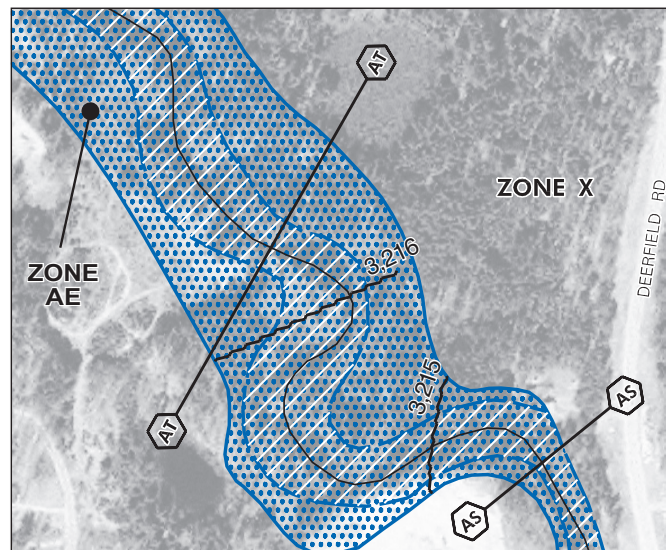


See the MT-2 form for CLOMR and LOMR applications, and the MT-EZ and MT-1 forms for LOMA and LOMR-F applications. Find the forms online by searching key words “MT-EZ,” “MT-1,” and “MT-2.”

Updating FEMA Flood Maps

Montana DNRC, FEMA, the U.S. Army Corps of Engineers, and Montana communities work together to help update older maps and studies.

All new and revised flood maps will be designed to view digitally on a computer within a geographic information system (GIS) or as paper maps. Flood maps will be composites of base data, topographic data, and flood layers which can be overlain with parcel information or other data to more easily determine if a house or other property is or will be located in a special flood hazard area or floodway.



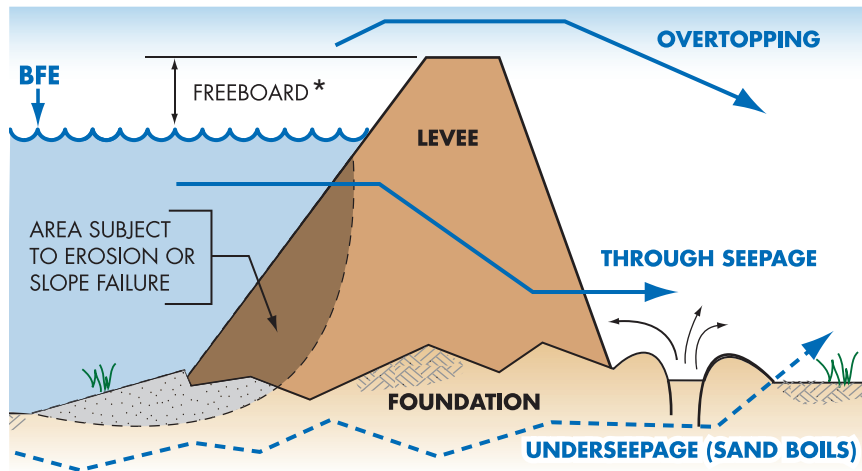
This map uses aerial photography (topographic layer not shown)

Learn more about FEMA's multi-year Risk MAP program at
<https://www.fema.gov/risk-mapping-assessment-and-planning-risk-map>

Levee Certification for FIRMs

Levees reduce flood risk by keeping floodwater away from certain land areas. Communities and levee owners must certify that levees meet certain design criteria before FEMA will show protected areas are outside of the SFHA. Certification presents significant challenges during the map revision process. Pursuant to FEMA's Procedural Memoranda 34 and 43, and as outlined in federal regulations at 44 CFR Section 65.10, the documentation requirements address:

- Freeboard
- Closures
- Embankment protection for erosion
- Embankment and foundation stability
- Settlement
- Interior drainage and seepage
- Operation and maintenance plans
- Emergency action plans
- Other site specific criteria



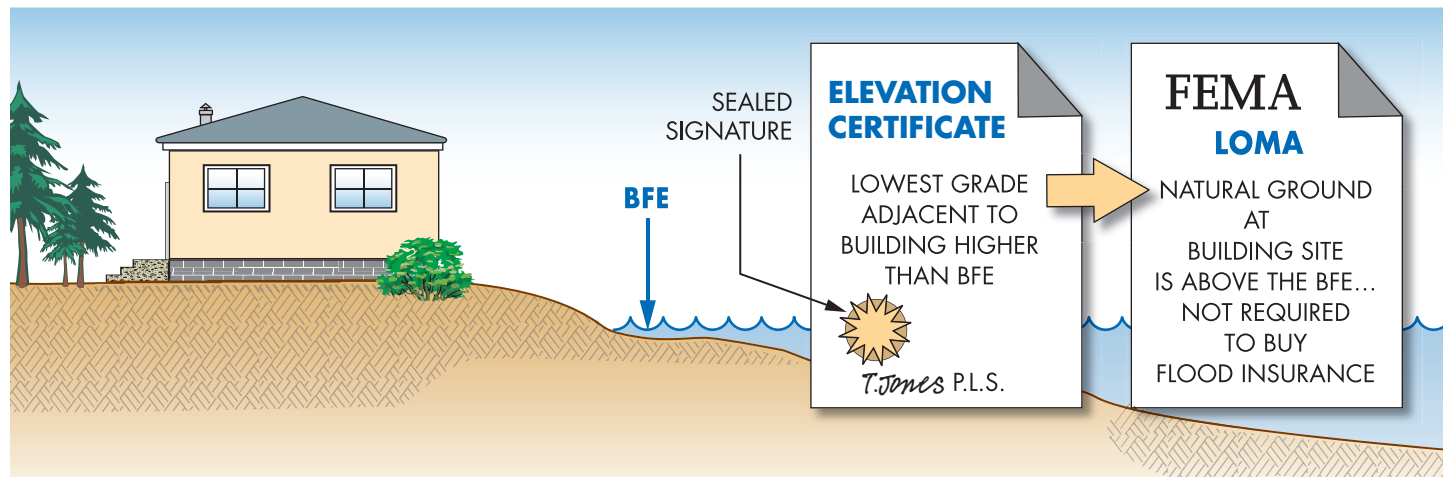
* Freeboard is the distance between the BFE and the top of the levee; for FEMA accreditation freeboard is usually 3 feet

PLANNING DEVELOPMENT TO MINIMIZE FLOOD RISK

- 28** Are Building Sites Higher than the BFE?
- 29** Floods Don't Always Stop at the BFE
- 30** Avoid Flood Hazard Areas When Possible
- 31** Fill Can Adversely Affect Floodplain Functions

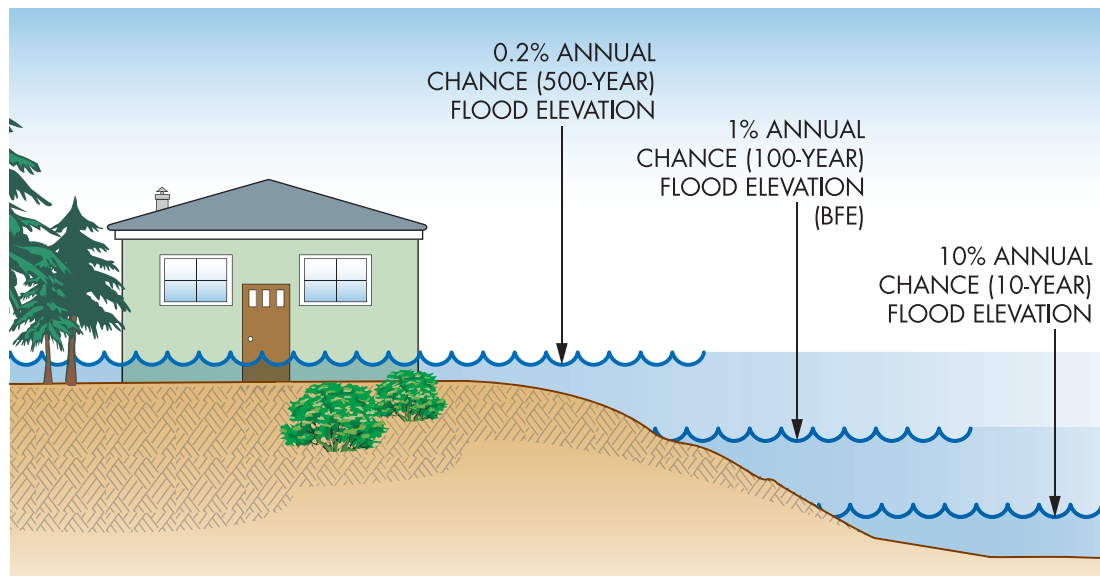


Are Building Sites Higher than the BFE?



If land is shown on a FIRM as “in” the SFHA, but building sites are higher than the base flood elevation (BFE), property owners can have Montana licensed professional land surveyors complete FEMA Elevation Certificates (EC) and submit requests for a Letter of Map Amendment to FEMA along with the EC to verify that structures are above the BFE ([see page 22](#)). If FEMA approves the request, lenders are not required to require flood insurance policies, although some may still require them. Owners should keep certificates and LOMAs with deeds— the documentation will help future buyers.

Floods Don't Always Stop at the BFE



Important

Information

Many people don't understand just how risky building in flood zones can be. There is a greater than 26% chance that a non-elevated home in the SFHA will be flooded during a 30-year mortgage period. The chance that a major fire will occur during the same period is less than 5%!

CAUTION! Major storms and flash floods can cause flooding that rises higher than the base flood elevation (BFE). Be safer – protect your home or business by avoiding flood zones or building higher. [See page 36](#) to see how this will save you money on NFIP flood insurance.

Avoid Flood Hazard Areas When Possible



All land subdivided into lots, some homesites and lots partially or entirely in the floodplain.

NOT RECOMMENDED

All land subdivided into lots, some lots partially in the floodplain, setbacks modified to keep homesites on high ground.

RECOMMENDED



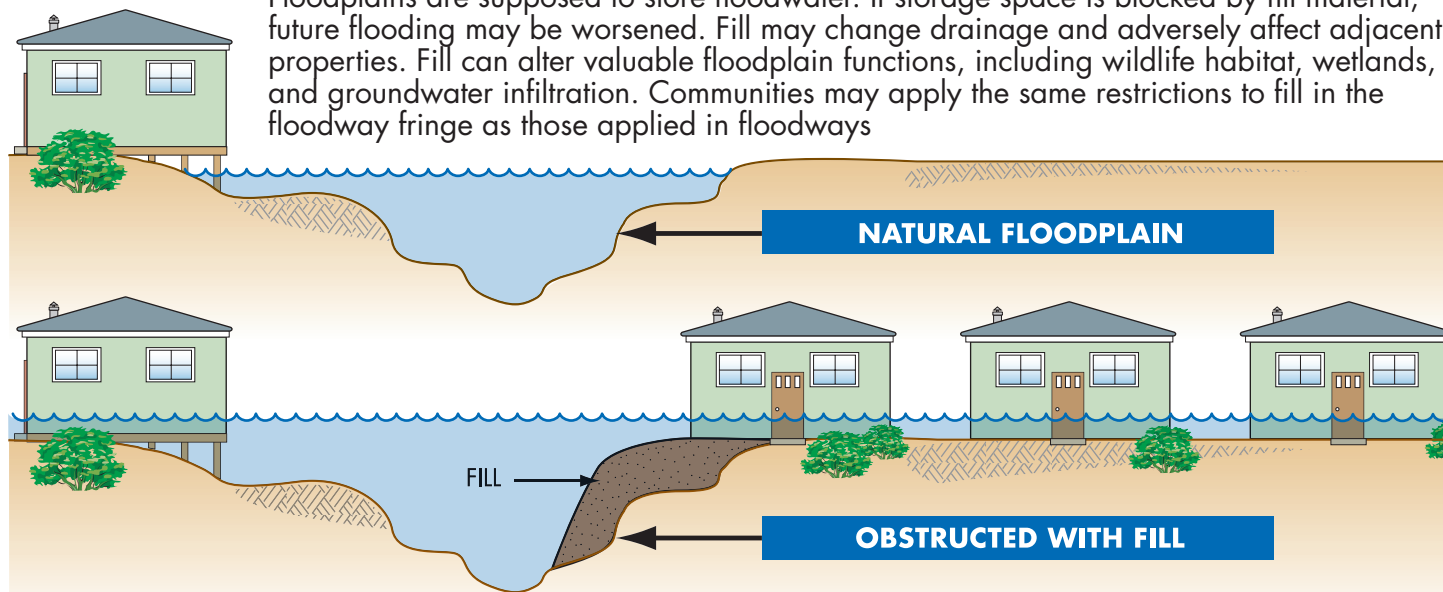
Floodplain land put into public/common open space, net density remains, lot sizes reduced and setbacks modified to keep homesites on high ground.

RECOMMENDED

Let the floodplain perform its natural function – if possible, keep it as open space. Other compatible uses: Recreational areas, playgrounds, reforestation, unpaved parking, gardens, pasture, and created wetlands.

Fill Can Adversely Affect Floodplain Functions

Floodplains are supposed to store floodwater. If storage space is blocked by fill material, future flooding may be worsened. Fill may change drainage and adversely affect adjacent properties. Fill can alter valuable floodplain functions, including wildlife habitat, wetlands, and groundwater infiltration. Communities may apply the same restrictions to fill in the floodway fringe as those applied in floodways



Communities should make sure fill in flood zones won't harm neighboring properties. Before deciding to use fill, property owners should check with local planning, engineering, or floodplain offices. Engineering analyses may be required to demonstrate that fill will cause "no rise" or increase of BFE ([see page 45](#)).

FUNDAMENTALS

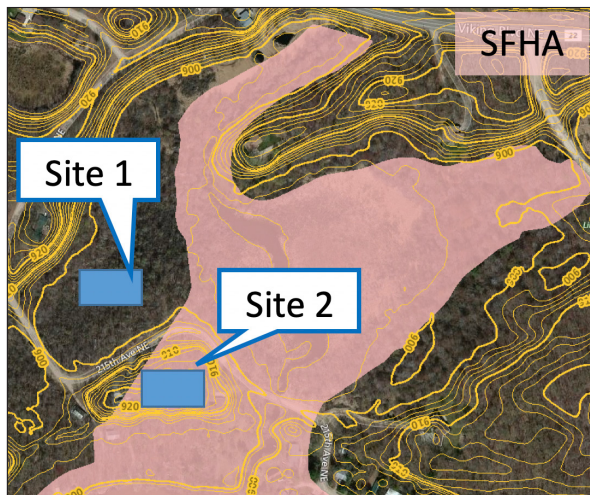
- 32** Minimum Requirements Based on Actual Ground Elevations
- 33** Fundamentals of Flood Resistant Construction
- 34** Flood Provisions in the International Codes
- 35** Specific Requirements in the I-Codes
- 36** Freeboard: Build Higher, Reduce Damage, Save on Insurance
- 37** Regulatory Flood Hazard Area (RFHA)
- 38** Variances From Requirements



Minimum Requirements Based on Actual Ground Elevations

FIRMs sometimes were drawn with SFHAs boundaries that are not consistent with the actual ground elevations. More recent FEMA studies and maps are based on improved topographic mapping and supporting data, including determination of BFEs.

- In Montana, development on land that is below the BFE must meet floodplain requirements, even if not shown on the FEMA map (Site 1).
- Owners with land that is actually above the BFE (see Site 2) may be able to build and still meet the floodplain management requirements, and they can apply to FEMA for a Letter of Map Amendment ([see page 22](#)).



Important

Information

FEMA Flood Insurance Rate Maps can be used as guides for determining whether a property is in or near the Regulated Flood Hazard Area. However, Base Flood Elevations compared to ground elevations determine whether a site is subject to floodplain requirements.

Fundamentals of Flood Resistant Construction

The flood resistant construction requirements of the NFIP and the International Codes share the common objective of increasing resistance to flooding. Although there are some differences between specific requirements, they all include the following fundamentals – buildings should have:

- **Foundations** capable of resisting flood loads (including dry flood proofed non-residential buildings)
- **Structurally sound walls and roofs** capable of minimizing penetration by wind, rain, and debris
- **Lowest floors elevated** to prevent floodwaters from entering during the design event
- **Equipment and utilities** elevated or designed to remain intact and be restored easily
- **Enclosures below elevated floors** limited to parking, limited storage, and building access and are designed to minimize damage
- **Flood damage-resistant materials** used below elevated lowest floors

In short ... flood resistant buildings!

Flood Provisions in the International Codes

The International Codes include flood provisions that meet or exceed the NFIP requirements for buildings and structures. All buildings are subject to building codes. Many Montana communities enforce some “higher standards” than those required by the code.

- **Building:** Flood provisions are primarily in Section 1612 Flood Loads, which refers to the standard *Flood Resistant Design and Construction* (ASCE 24).
- **Residential:** Flood provisions are primarily in Section R322 Flood-Resistant Construction, although there are requirements in several other sections.
- **Existing Building:** Flood provisions are found in sections on repairs, alterations, additions, and historic structures and in sections on prescriptive and performance compliance methods.
- **Mechanical and Plumbing:** Flood provisions are in a number of sections.



Excerpts of the flood provisions of I-Codes, “Highlights of ASCE 24,”
and other building code resource materials are available online

<https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes/flood>.

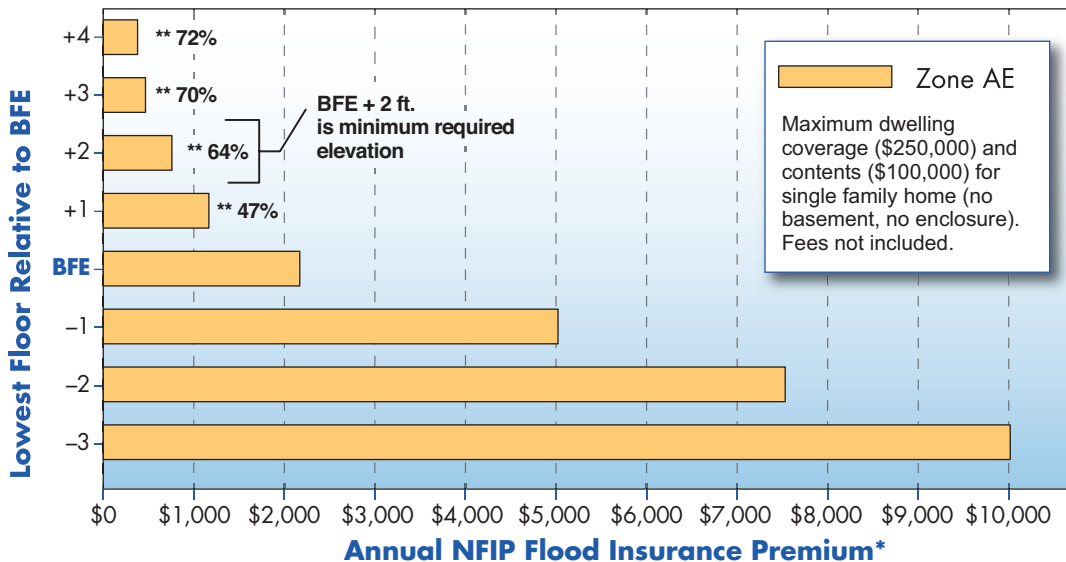
Specific Requirements in the I-Codes

The International Codes include requirements that may differ from NFIP and local floodplain management regulations – the more restrictive prevail:

- **Requires Freeboard.** Minimum BFE plus 1 foot for buildings in all flood zones (superceded by Montana rules)
- **Critical Facilities.** Elevated or protected to the higher of BFE plus 2 feet or 500-year flood elevation
- **Flood Openings.** Required in at least two walls of all enclosures below elevated buildings and performance of engineered flood openings emphasized
- **Dry Flood Proofing.** Permitted only for non-residential buildings and must be designed in accordance with ASCE 24
- **Mixed Use.** Defined in ASCE 24 commentary for limitations on dry flood proofing non-residential portions of mixed use buildings

Freeboard: Build Higher, Reduce Damage, Save on Insurance

Freeboard is additional height – a factor of safety – above the BFE. Buildings that are higher than the BFE experience less damage. Montana requires all buildings to be elevated to at least BFE plus 2 feet. Owners of buildings elevated above the BFE also save on federal flood insurance.



* Unofficial estimates using 2020 rates; use only for comparison purposes

** Savings over at-BFE premium



Important

Information

NOTE! Flood insurance rates and various fees change from time to time. Rather than specific costs for insurance, these figures give a feel for how much difference just a foot or two can make.

Remember! Builders should submit floor elevations as part of foundation inspections. An error of just 6 or 12 inches could more than double the cost of federal flood insurance.

A community may be able to grant a variance, but the owner will probably be required to buy insurance. Imagine trying to sell a house if the bank requires insurance that costs nearly \$10,000 a year!

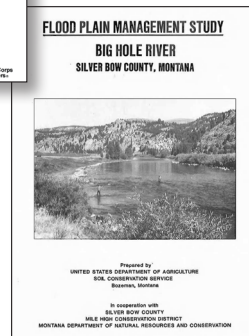
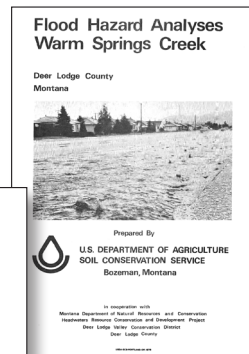
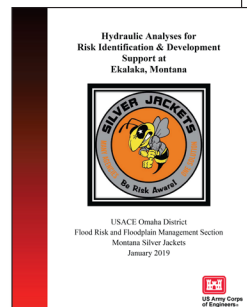
Regulatory Flood Hazard Area (RFHA)

The **Regulatory Flood Hazard Area (RFHA)** refers to flood hazard areas identified in studies and maps prepared by the Natural Resources Conservation Service (NRCS), the U.S. Army Corps of Engineers, and others. The RFHA concept was introduced in the State Floodplain Model Ordinance in 2014.

Although many Montana communities have Flood Insurance Studies and Flood Insurance Rate Maps provided by FEMA, some do not. The small number of communities that do not have FIRMs may adopt and use other studies and maps for regulatory purposes. Other communities use these other studies and maps in combination with the FEMA studies and maps, especially where FIRMs show Zone A areas without BFE.

Terms and Definitions

Regulated Flood Hazard Area. Floodplain area with limits designated pursuant to Part 2, Chapter 5 of Title 76, MCA. It is the area adjoining the watercourse that is expected to be covered by floodwater during a base flood. The Regulated Flood Hazard Area consists of the Floodway and Flood Fringe where those features are designated.



Variances From Requirements

Very specific criteria related to the property (not the owner's actions or preferences) must be satisfied to justify a variance, including:

- Reasonable alternative locations are not available
- A showing of good and sufficient cause
- Potential to result in exceptional hardship (not financial)

Limitations on variances:

- Shall be the minimum necessary to afford relief
- Shall not cause increases in flood levels
- Shall not obstruct flood flows

A variance that allows construction or substantial improvement below the BFE does not waive the lender's flood insurance requirement. Buildings with lowest floors below the BFE will have more expensive flood insurance premium – perhaps nearly \$10,000 per year ([see page 36](#))!

**Terms and Definitions**

Variance means a grant of relief from the floodplain management requirements which permits construction in a manner that would otherwise be prohibited and where specific enforcement would result in exceptional hardship.

Property owners and communities must carefully consider the impacts of variances to allow buildings below the BFE + 2 feet. Not only will buildings be more likely to sustain flood damage, but NFIP flood insurance will be very costly. Communities with a pattern of granting variances may be subject to NFIP sanctions, costing all insurance policyholders even more.

ACTIVITIES, APPLICATIONS, ELEVATION CERTIFICATES

- 39** Activities in SFHAs that Require Local Permits and Approvals
- 40** Open Space Uses Allowed Without Permits
- 41** Floodway Uses: Specific Requirements and Prohibited Uses
- 42** Flood Fringe and Regulated Flood Hazard Area Without Floodway
- 43** Carefully Complete the Joint Permit Application
- 44** Some Key Floodplain Permit Review Steps
- 45** The Floodway “No Rise” Certification
- 46** What is the Elevation Certificate and How is it Used?
- 47** Completing the Elevation Certificate
- 48** Paperwork is Important for Owners
- 49** Communities Must Retain Flood Records Permanently

Activities in SFHAs that Require Local Permits and Approvals

- Any manmade development
- Construction of new buildings
- Additions to buildings
- Substantial improvements of buildings
- Repair of substantially damaged buildings
- Placement of manufactured (mobile) homes
- Subdivision of land
- Construction or placement of temporary buildings and accessory structures
- Construction of agricultural buildings
- Construction of roads, bridges, and culverts
- Placement of fill, grading, excavation, mining, and dredging
- Alteration of stream channels, including restoration and stabilization



Important

Information

- Open spaces allowed without permits are listed on [page 40](#).
- Floodway uses with specific requirements are listed on [page 41](#).
- Uses prohibited in floodways are listed on [page 41](#).
- Uses prohibited in any floodplain are listed on [page 42](#).

Floodplain development and other applicable permits must be obtained before these and **ANY** land-disturbing activities occur in flood zones.

Open Space Uses Allowed Without Permits

Many open spaces uses are allowed without a permit, provided the uses are not prohibited by any other regulation or statute, do not require (or include) structures, and do not require fill, grading, excavation or storage of materials or equipment:

- Agricultural uses such as tilling, irrigation, ranching, harvesting, grazing, etc.
- Accessory uses such as loading and parking areas and emergency landing strips
- Forestry practices
- Recreational vehicles on site for less than 180 days, fully licensed and road ready
- Residential uses such as lawns, gardens, parking areas, and play areas
- Maintenance of existing open space uses
- Public or private recreational uses such as picnic grounds, swimming areas, parks, campgrounds
- Fences that have a low impact on the flow of water
- Highway guard rails and signs
- Irrigation and livestock supply wells, if located at least 500 feet from domestic water supply wells and the top casing is BFE + 18 inches

Floodway Uses: Specific Requirements and Prohibited Uses

Local floodplain regulations have specific development requirements for the following **floodway uses**:

- Mining of material requiring excavation from pits or pools
- Railroad, highway, and street stream crossings
- Limited filling for road and railroad embankments
- Buried or suspended utility transmission lines
- Storage of materials and equipment
- Domestic water supply wells
- Buried and sealed vaults for sewage disposal in campgrounds and recreational areas
- Public and private campgrounds
- Accessory or appurtenant structures
- Construction or modifications to surface water diversions
- Flood control and stream bank stabilization measures

- Stream and bank restoration
- Existing residential and non-residential buildings

Prohibited floodway uses:

- Residential and non-residential buildings
- Structures, fill, or excavation that would cause water to be diverted from the floodway, cause erosion, obstruct the natural flow, or reduce the carrying capacity of the floodway
- Construction or storage of an object (artificial obstruction) subject to flotation or movement during floods
- Solid and hazardous waste disposal, and individual and multiple family sewage disposal systems (unless meet health and sanitation regulations and designed to minimize or eliminate infiltration of floodwaters and avoid impairment or contamination)
- Storage of toxic, flammable, hazardous or explosive materials

Flood Fringe and Regulated Flood Hazard Area Without Floodway

All permitted floodway uses are allowed by permit in the flood fringe and RFHA without floodway. Local regulations have specific requirements for:

- Encroachment analyses
- Flood proofing of electrical, heating and cooling, and plumbing systems
- Structural fill
- Wet flood proofing and dry flood proofing
- Elevation of the Lowest Floor
- Crawl spaces
- Residential buildings, including manufactured homes
- Non-residential building, including agricultural structure

Prohibited uses in the flood fringe or RFHA without floodway:

- Solid and hazardous waste disposal and individual and multiple family sewage disposal systems, unless the systems meet the local health and sanitation regulations and are designed to minimize or eliminate infiltration of flood waters and avoid impairment or contamination
- Storage of toxic, flammable, hazardous or explosive materials

Carefully Complete the Joint Permit Application

Joint Application for Proposed Work in Montana's Streams, Wetlands, Floodplains, and Other Water Bodies

NAME OF STREAM OR WATER BODY: Flint Creek

PROJECT LOCATION: 26564 Main St, Drummond, MT

TYPE OF PROJECT:

- | | |
|---|---|
| ☐ Bridge/Culvert/Ford Construction | ☒ New Residential Structure |
| ☐ Bridge/Culvert/Ford Removal | ☐ Manufactured Home |
| ☐ Bank Stabilization/Alteration | ☐ Improvement, Existing Structure |
| ☐ Channel Alteration | ☐ Commercial Structure |
| ☒ Utilities | ☒ Placement of Fill |

Floodplain Map Number: 30039C0219C

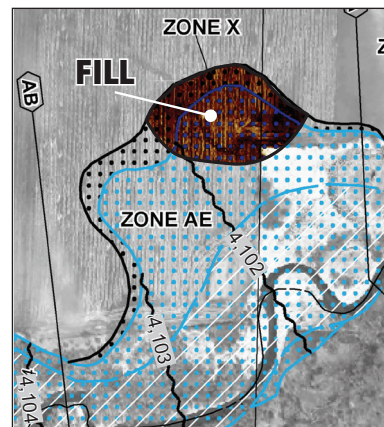
BRIEF DESCRIPTION: : Place and compact fill to height of two (2) feet above the floodplain and build single family home. The site is not in the floodway.



Important

Information

You must get all permits **before** you do work in a flood zone.



Good information will lead to better construction and less exposure to future flood damage.

Some Key Floodplain Permit Review Steps

The permit reviewer must check many things. Some of the key questions are:

- Is the site near a watercourse or shoreline?
- Is the site in a FEMA mapped SFHA flood fringe or floodway?
- Are applicants advised that other State or federal permits must be obtained before work starts?
- Is the site reasonably safe from flooding?
- Does the site plan show the flood zone, base flood elevation and building location?
- Is substantial improvement or repair of substantial damage proposed?
- Is an addition proposed?
- Will new buildings and utilities be elevated properly?
- Will manufactured homes be properly elevated and anchored?
- Do the plans show an appropriate and safe foundation?
- Are all required design certifications submitted?
- Will the owner/builder have to submit an as-built Elevation Certificate?

REVIEW CHECKLIST

- ☒ FLOODPLAIN
- ☒ FLOODWAY
- ☒ BFE
- ☒ NEW CONSTRUCTION
- ☒ IMPROVED EXISTING BUILDING
- ☒ ELEVATED
- ☒ ELEVATION CERTIFICATE
- ☒ ISSUE PERMIT

Roberto Reviewer C.F.M.

The Floodway “No Rise” Certification

- Floodways convey the largest volume of water and may have high velocities.
- Some communities restrict development in designated floodways.
- Engineers must prepare floodway encroachment analyses to evaluate the hydraulic impact of proposed development.
- Development is not allowed unless certified to cause “no rise” (no increase) in base flood elevations.
- “No rise” certifications must be signed, sealed, and dated by a professional engineer licensed in Montana and qualified to conduct hydraulic analyses.

**XYZ Engineering, Inc.,
Anytown, Montana**

Mr. Floodplain Manager
1000 Main Street
Anytown, MT

Re: 1200 Jackson Street
Anytown, MT

This is to certify that I am a duly qualified Professional Engineer licensed to practice in the State of Montana. It is to further certify that the attached technical data supports the fact that the proposed (Name of Development) will not increase Base Flood Elevations, floodway elevations and the floodway widths on (Name of Stream) as published in the Flood Insurance Study for (Name of Community), dated (Date of Effective FIS).

A.J. Smith P.E.



The floodway encroachment analysis must be based on technical data obtained from FEMA.

Reduce flood risk – don't build in the Floodway!

What is the Elevation Certificate and How is it Used?

- The Elevation Certificate (EC) is a FEMA form. Go to www.fema.gov and search for "Elevation Certificate."
- The EC must be completed and sealed by a Montana professional land surveyor or civil engineer.
- Community officials may complete the EC for sites in Approximate Zone A and Zone AO (see Section G of the EC).
- It can be used to show lowest grades adjacent to planned or existing building sites are above the base flood elevation and to support map changes ([see page 28](#)).
- It is used to verify building and equipment elevations.
- Insurance agents use the EC to write and rate NFIP flood insurance policies.
- [See page 82](#) for online Elevation Certificate training information

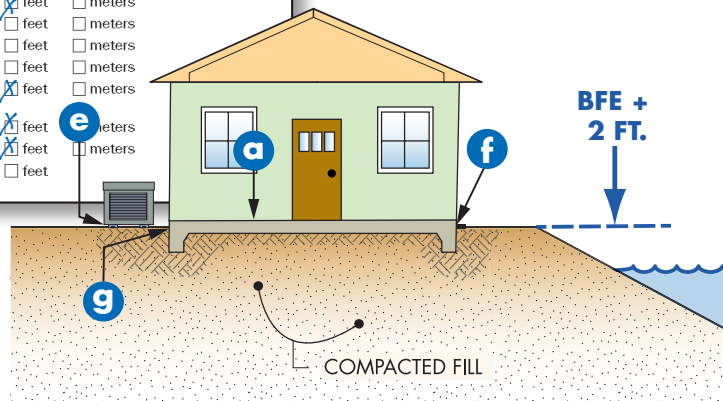
By itself, the EC cannot be used to waive the mortgage lender requirements to obtain flood insurance. [See page 22](#) to learn about FEMA's Letter of Map Amendment process.

U.S. DEPARTMENT OF HOMELAND SECURITY Federal Emergency Management Agency National Flood Insurance Program		OMB No. 1660-0008 Expiration Date: November 30, 2022
ELEVATION CERTIFICATE Important: Follow the instructions on pages 1-9.		
Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.		
SECTION A – PROPERTY INFORMATION		FOR INSURANCE COMPANY USE
A1. Building Owner's Name		Policy Number:
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.		Company NAIC Number:
City	State	ZIP Code
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)		

Completing the Elevation Certificate

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)	
C1. Building elevations are based on:	☐ Construction Drawings* ☐ Building Under Construction* ☒ Finished Construction *A new Elevation Certificate will be required when construction of the building is complete.
C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.	
Benchmark Utilized: _____	Vertical Datum: _____
Indicate elevation datum used for the elevations in items a) through h) below. ☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source: _____	
Datum used for building elevations must be the same as that used for the BFE.	
	Check the measurement used.
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	<u>2,765.0</u> ☒ feet ☐ meters
b) Top of the next higher floor	<u>N/A</u> ☐ feet ☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	<u>N/A</u> ☐ feet ☐ meters
d) Attached garage (top of slab)	<u>N/A</u> ☐ feet ☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	<u>2,764.8</u> ☒ feet ☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	<u>2,764.0</u> ☒ feet ☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	<u>2,764.5</u> ☒ feet ☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	<u>N/A</u> ☐ feet ☐ meters

ELEVATION CERTIFICATE (partial)



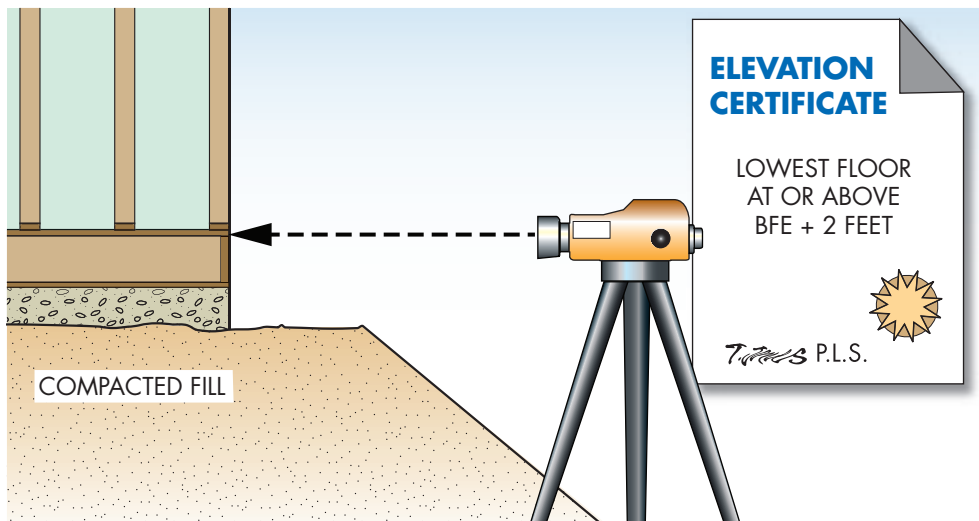
In this example, the BFE is 2,762.0 and the minimum required floor elevation is 2,764.0.

A professional land surveyor or civil engineer must fill out and seal the EC form.

The EC includes diagrams for different building types. Several points must be surveyed.

Although an EC is required only for finished construction (“as-built”), it’s a good practice to complete the EC when the lowest floor is set and prior to further vertical construction.

Paperwork is Important for Owners



Important

Information

Lowest Floor means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure (that is not a basement) is not the lowest floor if the enclosure is limited to parking, limited storage, and building access ([see pages 51 and 52](#)) and it is built as required in local floodplain regulations.

Permittees may be required to submit Elevation Certificates after the lowest floor is placed and prior to further vertical construction. When construction is finished, another Elevation Certificate ("as-built") must be submitted prior to the final inspection.

Owners should keep Elevation Certificates in a safe place. They can be used to demonstrate buildings were compliant at the time of construction. Also, Elevation Certificates may be required to obtain federal flood insurance policies.

Communities Must Retain Flood Records Permanently

Communities that participate in the NFIP agree to maintain certain documentation for all development in flood zones, including:

- Permits issued and variances granted
- Floodway encroachment (no rise) and watercourse alteration
- Design certifications for buildings in floodplains
- Design certifications for dry flood proofed non-residential buildings
- Design certifications for engineered flood openings
- Determinations of whether work on existing buildings is substantial improvement or repair of substantial damage
- Surveyed “as-built” building elevations (Elevation Certificates)

Communities must also retain:

- Current and historic regulations
- Effective and historic Flood Insurance Rate Maps



Important

Information

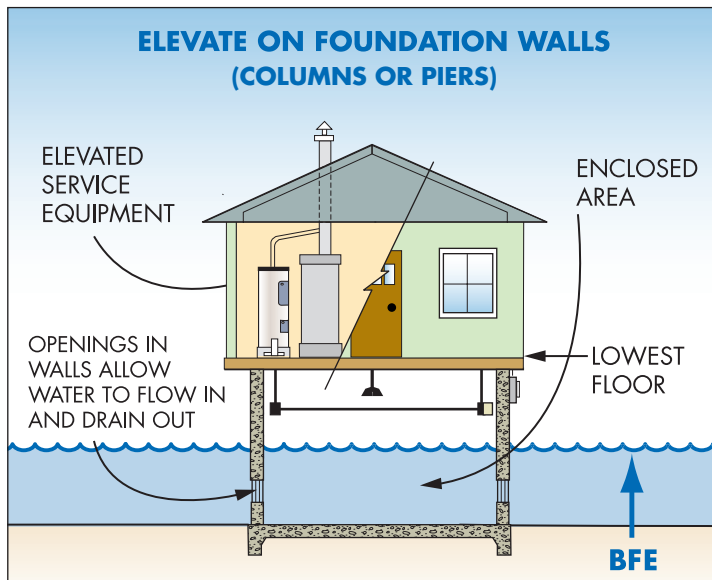
Maintaining permanent records allows communities to respond to citizen inquiries and to provide documentation to FEMA and the Department of Natural Resources & Conservation as part of Community Assistance Visits.

BUILDING REQUIREMENTS

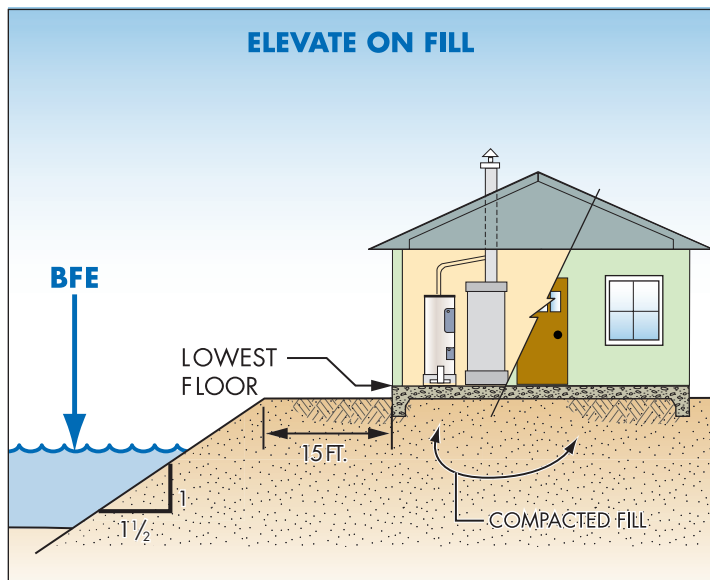
- 50** How to Elevate Buildings in Floodplains
- 51** Enclosures Below the Lowest Floor
- 52** Enclosure Details
- 53** Placement and Compaction of Fill in Zone A/AE
- 54** Basements in Flood Hazard Areas Are Unsafe
- 55** Manufactured Homes Require Special Attention
- 56** Utility Service, Equipment, and Tanks



How to Elevate Buildings in Floodplains



Enclosed areas under elevated buildings can be used only for parking, building access, and limited storage. Enclosures (including crawlspaces) have special requirements ([see pages 51](#) and [52](#)).

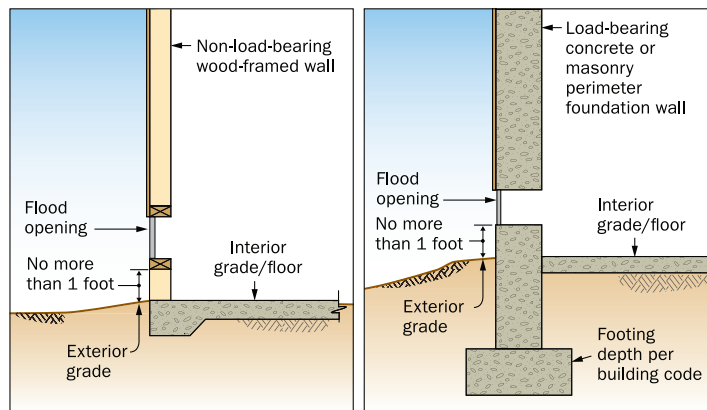


Fill may adversely affect local drainage and flood levels ([see page 31](#)). Fill used to elevate buildings must be placed properly ([see page 53](#)).

Enclosures Below the Lowest Floor

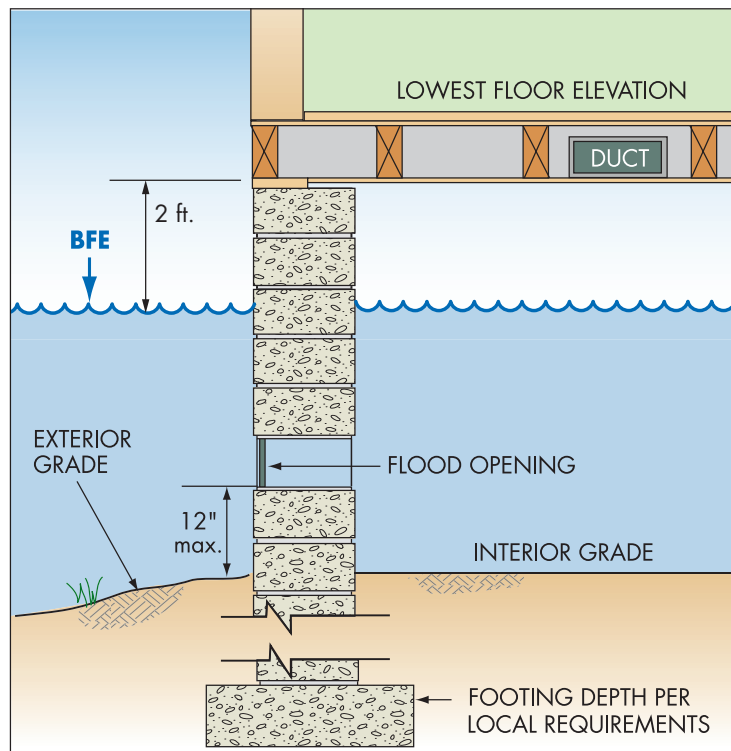
Enclosures below the lowest floor may be formed by load-bearing concrete or masonry perimeter foundation walls or by wood-framed walls under buildings supported on columns.

- The State requires the Lowest Floor at or above BFE plus 2 feet.
- All materials below the lowest floor must be flood resistant.
- Interior grade must be equal to or higher than exterior grade on at least one side.
- Flood openings must provide 1 square inch of net open area for every square foot of area enclosed by the perimeter walls – or certified engineered openings may be used. For example, a 30' x 40' enclosure needs 1,200 square inches of net opening (non-engineered).
- The bottom of flood openings must be no more than 12 inches above the higher of the interior or exterior grades.
- Standard air ventilation units must be permanently disabled in the “open” position to allow water to flow in and out (typical unit provides 42 to 65 square inches of opening).



To learn more about flood openings, see NFIP Technical Bulletin #1
Requirements for Flood Openings in Foundation Walls and Walls of Enclosures.

Enclosure Details



- MCA 76-5-402 (2)(b) requires the Lowest Floor at or above BFE plus 2 feet.
- All materials below the lowest floor must be flood resistant.
- Flood openings must provide 1 square inch of net open area for every square foot of area enclosed by the perimeter walls – or certified engineered openings may be used.
- A 30' x 40' building needs 1,200 square inches of net opening (non-engineered).
- The bottom of flood openings must be no more than 12 inches above the higher of the interior or exterior grades.
- Standard air ventilation units must be permanently disabled in the "open" position to allow water to flow in and out.
- Interior grade must be equal to or higher than exterior grade on at least one side.

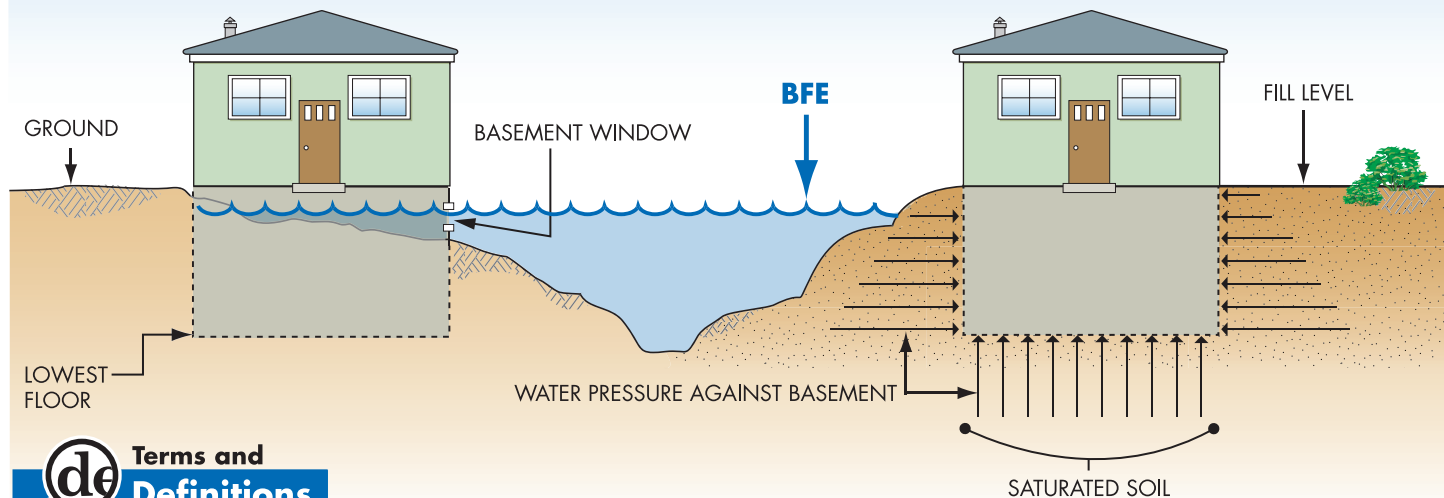
Placement and Compaction of Fill in Zone A/AE

Earthen fill used to raise the ground above the flood elevation must be placed properly for the intended use. Fill must:

- Not be placed in areas with poor drainage or where the fill may divert water onto adjacent properties
- Not be placed in the floodway unless certified to cause “no rise” ([see page 45](#))
- Be good clean soil, free of large rocks, construction debris, trash, and woody material (stumps, roots)
- Have the top surface at or above the BFE
- Must extend 15 feet from the building before sloping down ([see page 50](#))
- Have side slopes not steeper than 1:1 ½ (one foot vertical rise for every 1.5 ft horizontal extent), unless justified and protected from erosion
- Be compacted to 95 percent of the maximum density (certified by an engineer)

Engineers can find more information in FEMA’s instructions for Letters of Map Revision based on Fill (FEMA Form MT-1) and NFIP Technical Bulletin #10.

Basements in Flood Hazard Areas Are Unsafe

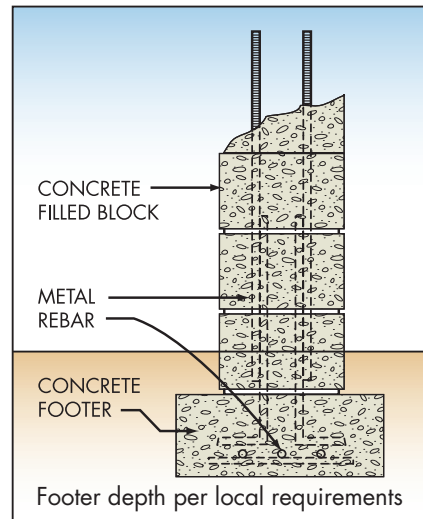
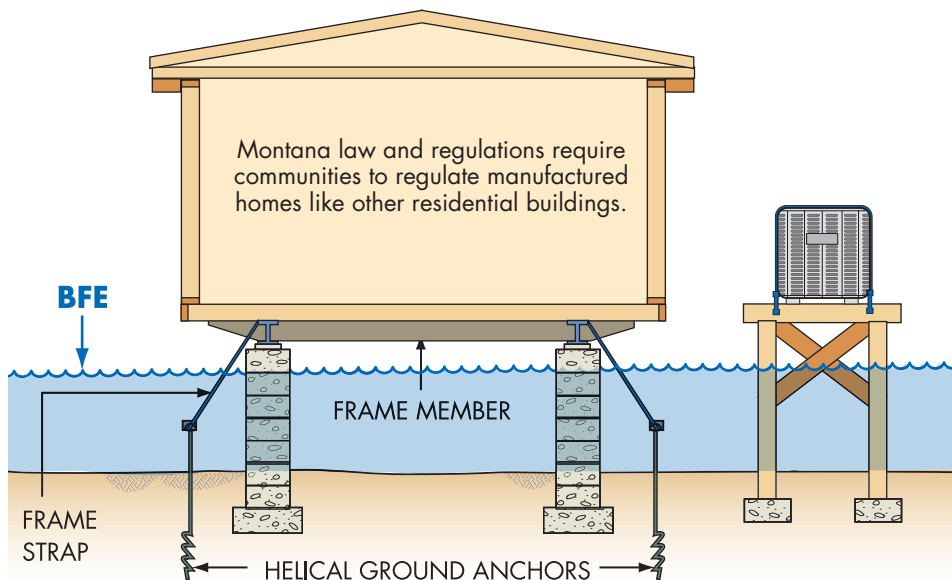


Terms and Definitions

A **basement** is any portion of a building that has its floor sub-grade (below ground level) on all sides.

Basements for new buildings must be 2 feet above the BFE. NFIP flood insurance coverage is very limited in existing basements for a very good reason. It only takes an inch of water over a door threshold or window sill and the entire basement fills up! Excavating a basement into fill doesn't always make it safe because saturated groundwater can damage the walls.

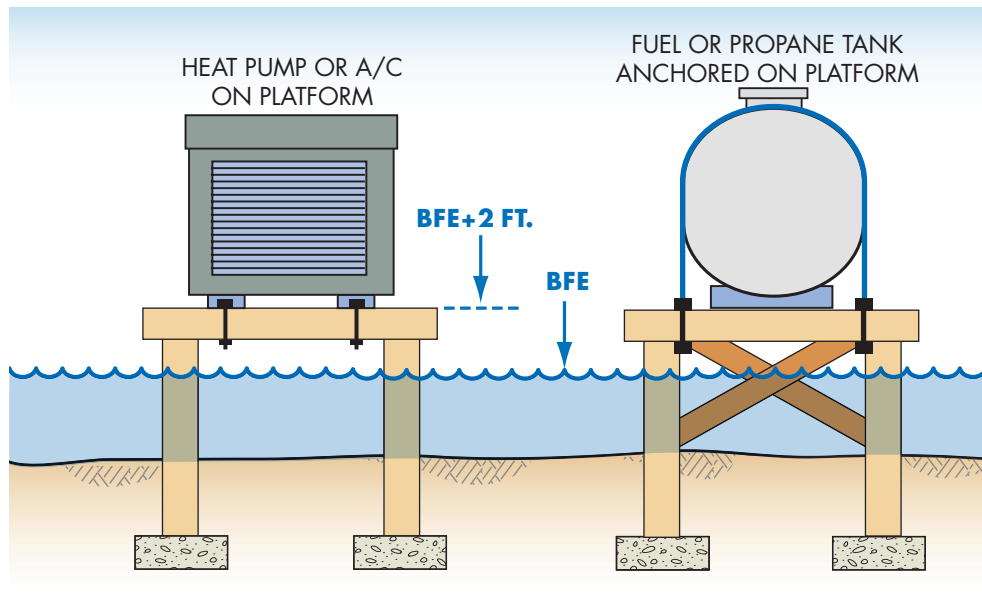
Manufactured Homes Require Special Attention



Experience shows that manufactured homes are easily damaged. Just a few inches of water above the floor can cause substantial damage.

Homes must be anchored to reinforced foundations to resist flotation, collapse, and lateral movement and must be tied down in accordance with community ordinances or the manufacturers' installation specifications for SFHAs. See guidance and some pre-engineered designs in FEMA P-85, *Protecting Manufactured Homes from Floods and Other Hazards*.

Utility Service, Equipment, and Tanks



Important

Information

Tanks may be underground, elevated on platforms or columns, or at-grade and anchored to resist flood loads. Fuel tanks may explode or release contents during flooding. Even shallow water can create large buoyant forces on tanks.

Whether inside or outside the building, all utilities and equipment must be elevated or protected against flooding. Utilities include plumbing, electrical components, gas lines, tanks, and heating and air conditioning equipment.

OTHER DEVELOPMENT

57 Pools in Flood Hazard Areas

58 Accessory Structures

59 Agricultural Structures

60 Recreational Vehicles



Pools in Flood Hazard Areas

Location and whether a pool is in-ground, above-ground, or a combination (perhaps with associated grading and fill) determine which requirements apply. All pools should be installed to be stable under flood conditions, including scour and erosion.

- **Pools in flood Zone A/AE.** When above-ground pools and pools installed with fill are located in floodways and in riverine flood hazard areas where BFEs are specified but floodways have not been designated, the floodway encroachment requirements apply ([see page 45](#)).
- **Pools in floodways.** In designated floodways, above-ground pools and pools with fill must satisfy the floodway requirements ([see page 45](#)).
- **Public swimming pools and other private pools.** Pools located under buildings must not be enclosed by walls (enclosures under elevated buildings must be used only for parking, storage, and building access. Free-standing pools may be installed in dry flood proofed buildings.
- **Pool controls and equipment.** Requirements for utility service apply ([see page 56](#)).

Accessory Structures

Accessory structures must either be elevated with the lowest floor at or above BFE (rather than BFE + 2 feet) or be wet floodproofed. In addition, accessory structures must:

- Not be habitable
- Be used only for parking or storage (not pollutants or hazardous materials)
- Be anchored to resist floating
- Have flood openings
- Be built of flood damage-resistant materials below BFE + 2 feet
- Have elevated utilities above BFE + 2 feet
- Not be modified for different use in the future



Terms and Definitions

Accessory Structure
is a structure that is accessory to and incidental to that of a primary structure located on the same lot.

Even small buildings are “development” and permits or variances with noted conditions are required. They must be elevated or anchored and built to withstand flood damage.

Caution! Remember, everything inside will get wet when flooding rises above the BFE.

Agricultural Structures

Agricultural structures must either be elevated with the lowest floor at or above BFE (rather than BFE + 2 feet) or be dry floodproofed. In addition, agricultural structures must:

- Not be intended or used for human habitation
- Be located as far from channels as possible and on higher ground
- Be placed to offer minimal obstruction to flood flows
- Have low flood damage potential
- Be firmly anchored
- Have electrical, heating, and plumbing systems (if any) elevated to BFE + 2 feet

FEMA issued a policy on agricultural structures and accessory structures in early 2020. The policy, a floodplain management bulletin, and fact sheets are available on FEMA's web site.
Contact DNRC with questions.



Important

Information

Agricultural Structure is defined by FEMA policy as a structure that is used exclusively in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock. Aquaculture is farming conducted in or over water. Structures used for human habitation are not agricultural structures, even when located on agricultural land.

Recreational Vehicles

In flood hazard areas, RVs must:

- Be licensed and titled as an RV (not as a permanent residence)
- Be built on a single chassis
- Must measure 400 square feet or less (measured at largest horizontal projection)
- Be road-ready with inflated tires and be self-propelled or towable by a light-duty truck
- Have no attached deck, porch, shed, or utilities
- Be used for temporary recreational, camping, travel or seasonal use (no more than 180 consecutive days)
- Have quick-disconnect sewage, water, and electrical connectors



Important

Information

Camping near the water?

Ask the campground or RV park operator about flood warnings and plans for safe evacuations.

RVs that do not meet these conditions must be installed and elevated like manufactured homes, including permanent foundations and tie-downs ([see page 55](#)).

EXISTING BUILDINGS

- 61** Improvements and Repairs of Buildings in Flood Zones
- 62** What is Meant by Pre-FIRM and Post-FIRM?
- 63** Estimating Costs of Improvements and Repairs
- 64** FAQs About Substantial Improvement and Substantial Damage
- 65** Substantial Improvement/Substantial Damage Desk Reference
- 66** Non-Substantial Improvements Other than Additions
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- 72** Elevating an Existing Building
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Improvements and Repairs of Buildings in Flood Zones

Permits to improve and repair buildings are required. Local officials must:

- Review costs estimated in construction contracts or other cost estimates (including estimate market value of owner labor and donated labor and materials).
- Estimate the market value using property assessment records or use an independent assessment of market value performed by a licensed appraiser.
- Compare the cost of improvements and repairs to the market value of the building.
- Require buildings to be brought into full compliance if the improvement costs equal or exceed 50% of the market value, called Substantial Improvement.
- Require damaged buildings to be brought into full compliance if the costs to repair to pre-damage condition equal or exceed 50% of the market value, called Substantial Damage
- Encourage owners to consider other ways to reduce future damage if the comparison is less than 50% ([see page 77](#)).



Important

Information

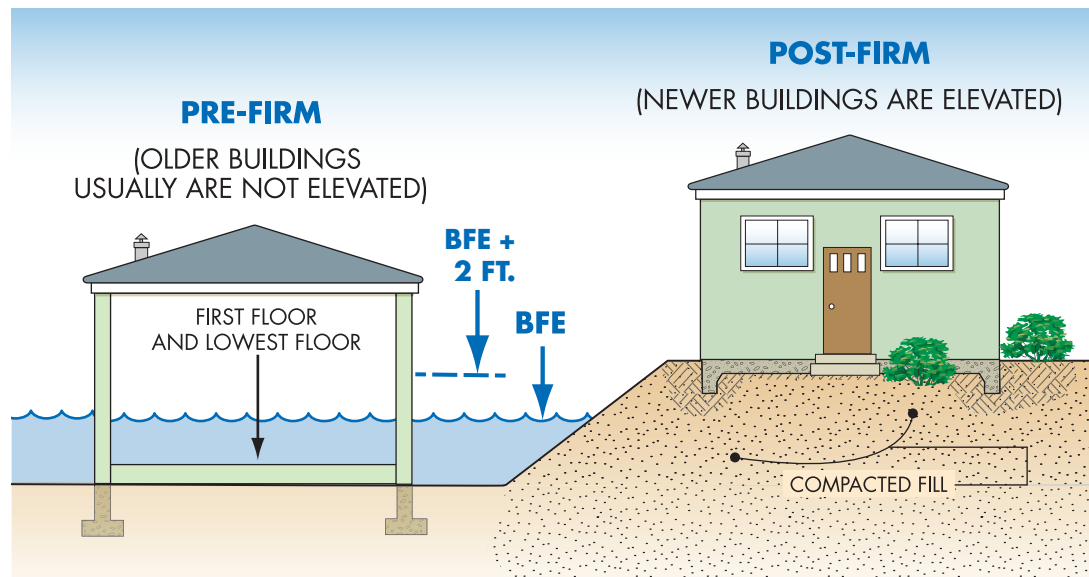
Improvements include:

- Renovation/rehabilitation of the interior of the existing building ([see pages 66 and 68](#))
- Lateral addition, without renovation or structural alteration of the existing building ([see pages 68, 69 and 70](#))
- Lateral addition, with renovation or structural alteration of the existing building ([see page 71](#))
- Vertical addition (add new story)

What is Meant by Pre-FIRM and Post-FIRM?

Pre-FIRM and **Post-FIRM** are NFIP insurance terms tied to a community's initial FIRM. The terms are used to determine flood insurance rates. Although common, the terms should not be used to distinguish between buildings constructed before a community joined the NFIP and those built after, especially in communities where the FIRMs have been revised.

Local floodplain management regulations require building to be brought into compliance when work is determined to be substantial improvement or repair of substantial damage ([see pages 68 through 71](#)).



Estimating Costs of Improvements and Repairs

The costs of improvements (or the costs to repair damaged buildings to pre-damage condition) must be estimated before determining whether proposed work constitutes Substantial Improvement or repair of Substantial Damage.

- **Include** costs of all structural elements, all interior and exterior finishes, built-in appliances, all utility and service equipment
- **Include** site preparation related to the improvement or repair (e.g., foundation excavation or filling in basements)
- **Include** costs of demolition, construction management, contractor overhead and profit
- **Include** costs associated with elevating a structure when the proposed elevation is lower than the BFE + 2 feet
- **Exclude** costs of plans and specifications, land survey, permit and inspection fees, and debris removal
- **Exclude** costs of outside improvements (landscaping, irrigation, sidewalks, driveways, fences, yard lights, pools, detached accessory structures, etc.)

For more details on cost items that must be included and those that are excluded, see the SI/SD Desk Reference ([see page 65](#)).



Important

Information

Written estimates prepared by contractors provide the best cost information.

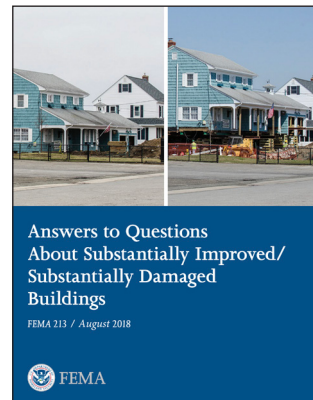
Owners performing work must include estimates of the value of their own labor.

Equivalent costs must be estimated when materials are donated or volunteers help with construction.

FAQs About Substantial Improvement and Substantial Damage

FEMA's *Answers to Questions about Substantially Improved/Substantially Damaged Buildings* (FEMA 213) is a good resource for citizens, elected officials, members of appointed boards, contractors, and real estate and insurance professionals. Each question refers the reader to sections in the *SI/SD Desk Reference* (FEMA P-758) for more details.

- Who makes the substantial improvement and substantial damage determinations?
- What is required when a building is substantially improved or substantially damaged?
- How is market value determined and how are costs of improvements and repairs determined?
- How are NFIP flood insurance rates affected?



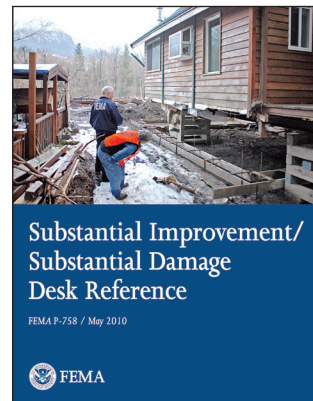
Terms and Definitions

Substantial damage means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Substantial Improvement/Substantial Damage Desk Reference

FEMA's *SI/SD Desk Reference* (FEMA P-758) provides guidance and suggested procedures for:

- Estimating costs of improvements and costs of repairs ([see page 63](#))
- Estimating market values
- Community and property owner responsibilities
- Administrative requirements
- Key aspects of bringing buildings into compliance
- Suggestions for preparing for disasters



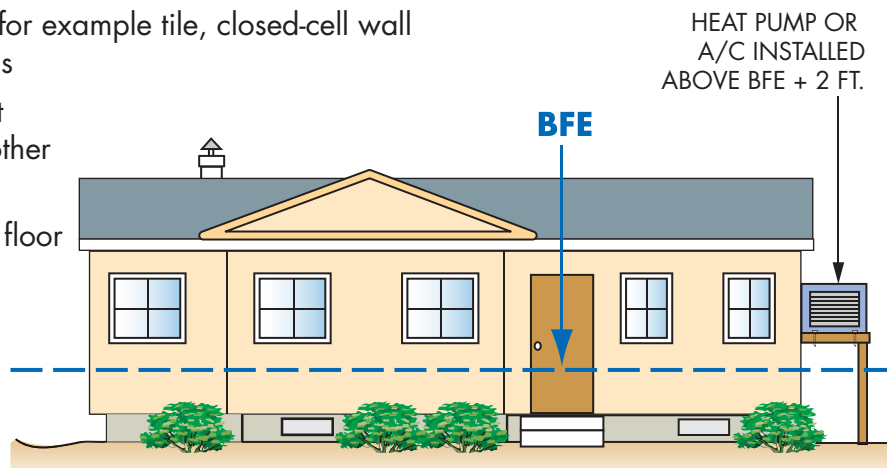
Terms and Definitions

Substantial Improvement means any reconstruction, rehabilitation, alteration addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the start of construction of the improvement. This term includes structures which have incurred “substantial damage” from any cause (flood, fire, hurricanes, tornadoes, etc.), regardless of the actual repair work performed ([see page 75](#)). Some Montana communities track improvements over a period of time and trigger compliance when the cumulative improvement value equals or exceeds 50%.

Non-Substantial Improvements Other than Additions

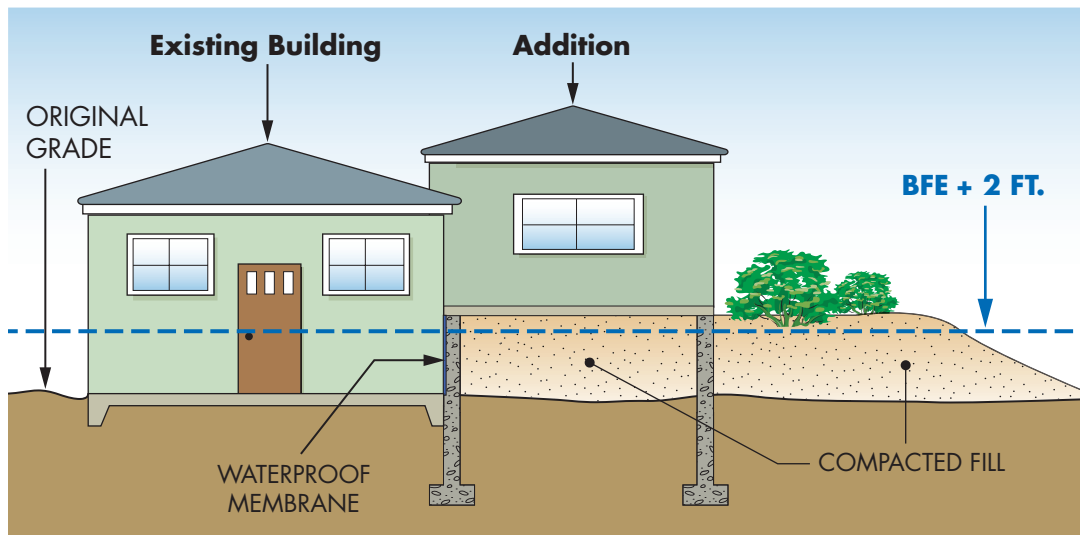
Proposed improvements are “non-substantial” if the costs are less than 50% of the market value of the building. In these cases, buildings are not required to be brought into compliance. However, there are many things owners can do to reduce exposure to future flooding. Owners should consider the following:

- Use flood damage-resistant materials, for example tile, closed-cell wall insulation, and polyvinyl wall coverings
- Raise air conditioning equipment, heat pumps, furnaces, water heaters, and other appliances on platforms
- Move electric outlets higher above the floor
- Add flood openings to crawlspace foundations
- Move ductwork out of crawlspaces
- Fill in below-grade crawlspace



Note! ALL proposed work must be included in permit applications. If more work is proposed or undertaken after a permit is issued, community officials must determine whether the additional work changes the substantial improvement determination.

Non-Substantial Improvement: Lateral Addition Only



Important

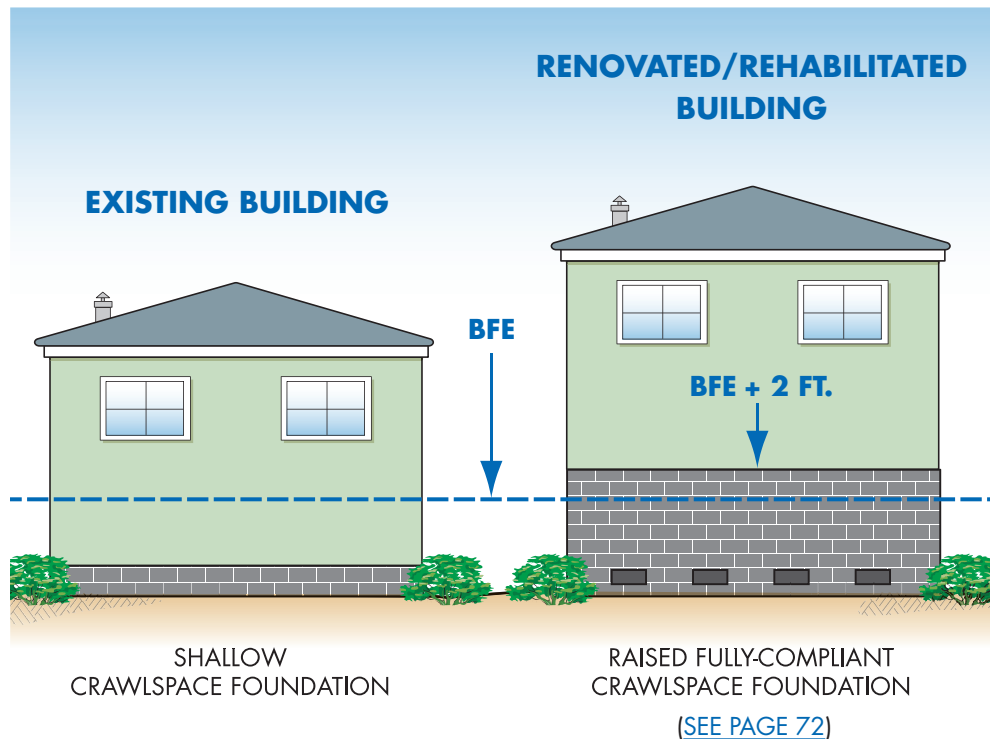
Information

In floodways, non-substantial improvement additions must be elevated on piers or columns (fill is not permitted).

Permits are required to build additions to buildings in SFHAs.

- If an addition is not a substantial improvement, then only the addition must be elevated.
- If an addition is a substantial improvement, the addition and the existing building must be elevated.

Substantial Improvement: Renovation Only



Important

Information

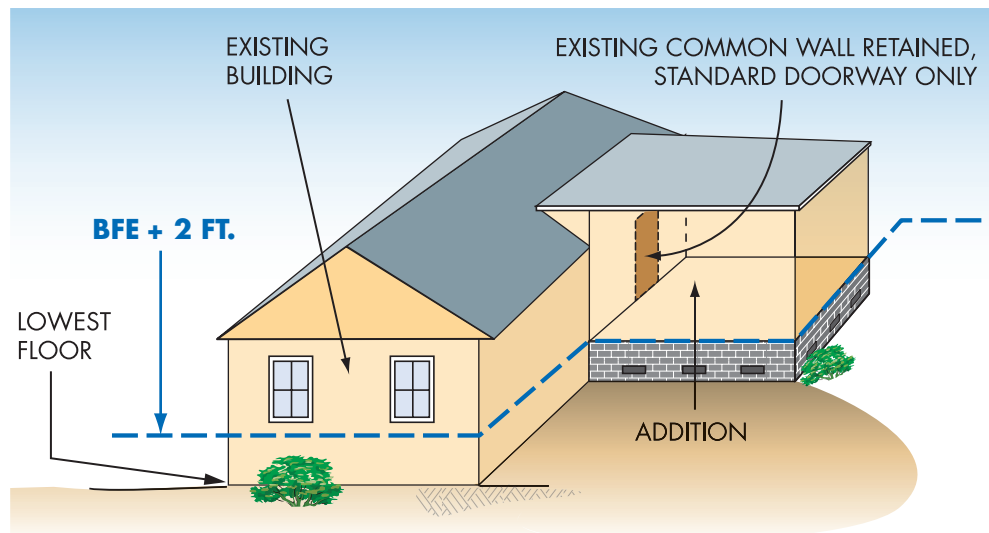
Floodplain buildings can be improved, renovated, rehabilitated or altered, but special rules apply.

Contact local floodplain administrators before beginning work. Provide complete information about all proposed work.

If local code officials have cited violations of State or local health, sanitary, or safety codes, minimum costs to correct violations to provide safe living conditions can be excluded from the cost of renovations.

Alteration of registered historic structures are allowed, by variance, as long as the structures continue to meet the criteria for listing as historic structures.

Substantial Improvement: Lateral Addition Only



Important

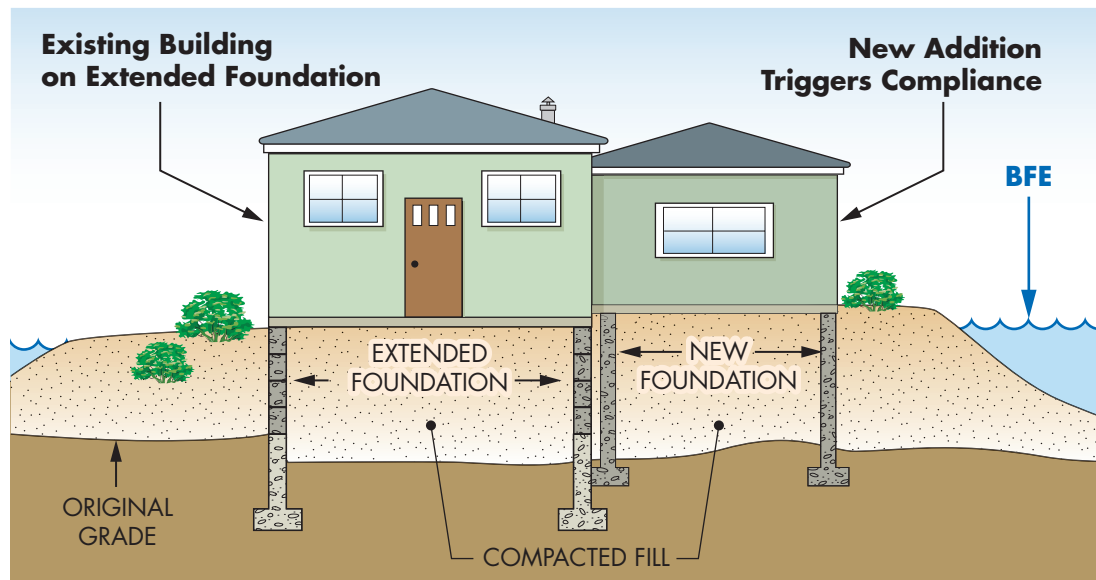
Information

See [page 71](#) for projects to add lateral additions that also modify the interior of the existing building or make structural modifications to the existing common wall.

Permits are required to build additions to buildings in flood zones. Only the addition must be elevated and comply with the building code and floodplain management requirements, provided:

- There are no other modifications to the existing building, and
- There are no structural modifications to the existing common wall other than adding a standard 36" doorway

Substantial Improvement: Additions



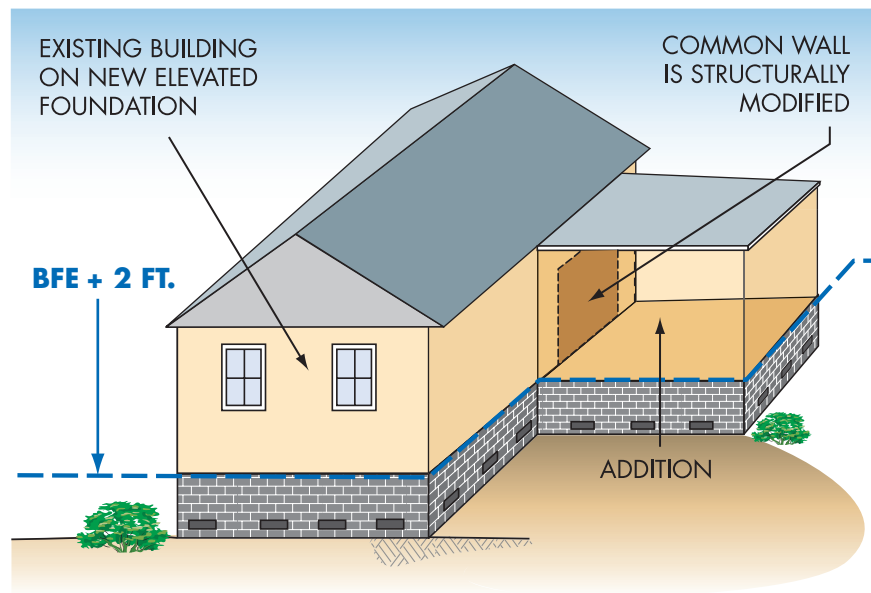
Important

Information

When communities determine an addition is substantial improvement, or an addition plus other improvements are substantial improvements, the addition and the existing building must be elevated in compliance with the floodplain requirements.

Community permit offices can help determine the requirements that apply when buildings must be brought into compliance. A preliminary review of proposed improvements is recommended before projects are designed and before permit applications are submitted.

Substantial Improvement: Addition Plus Other Work

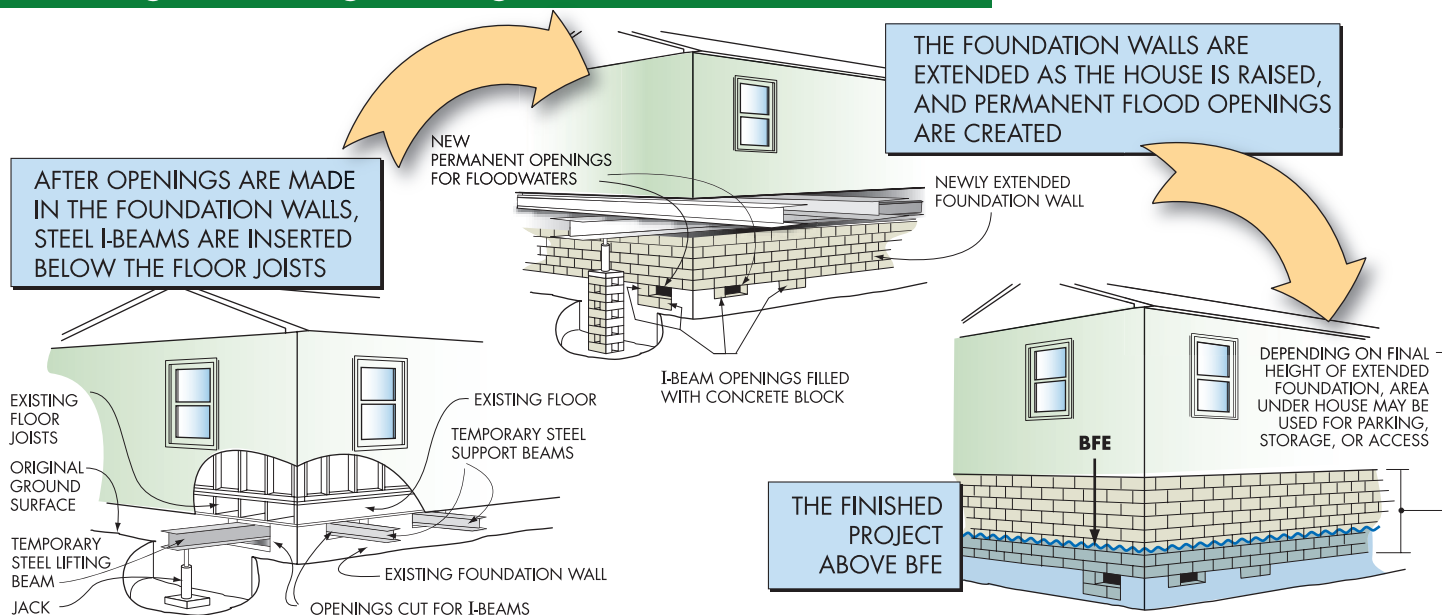


Communities must prepare evaluations to determine if all proposed work will trigger the substantial improvement requirement. Substantial improvement is triggered if:

- The work involves adding a new top floor, modifying the interior of the existing building, or structural modifications to the existing common wall (for lateral addition); and
- The cost of all proposed work plus the cost of improvements equals or exceeds 50% of the market value of the existing building.

Local floodplain administrators can help determine which requirements apply when buildings must be brought into compliance. A preliminary review of proposed improvements is recommended before projects are designed and before permit applications are submitted.

Elevating an Existing Building



This is one way to elevate an existing building to comply with building code and floodplain regulations (also see FEMA P-312, *Homeowner's Guide to Retrofitting*). If an NFIP-insured building is damaged by flood and the community determines it is substantially damaged, the owner may be eligible for an **Increased Cost of Compliance** payment ([see page 76](#)).

When Your Home or Business in the SFHA is Damaged

You must get a building permit from your community to make most repairs. Repairs must comply with requirements in local regulations and the State building code that apply to existing buildings. When your home or business in the SFHA is damaged by any cause, the community will evaluate whether the building has been substantially damaged ([see page 74](#)).

- If your building is damaged, you should contact your community right away to learn about permit requirements. It is OK to make minimum emergency repairs to stabilize the building.
- You will need to estimate the cost to repair the building to its condition before the damage occurred.
- Especially after events that damage many buildings, the community or FEMA may visit your property to estimate the cost of repairs.
- You may receive a letter based on that estimate, advising you about your next steps.



[See page 64](#) for a link to FEMA's *Answers to Questions about Substantially Improved/Substantially Damaged Buildings*.

Estimating Substantial Damage



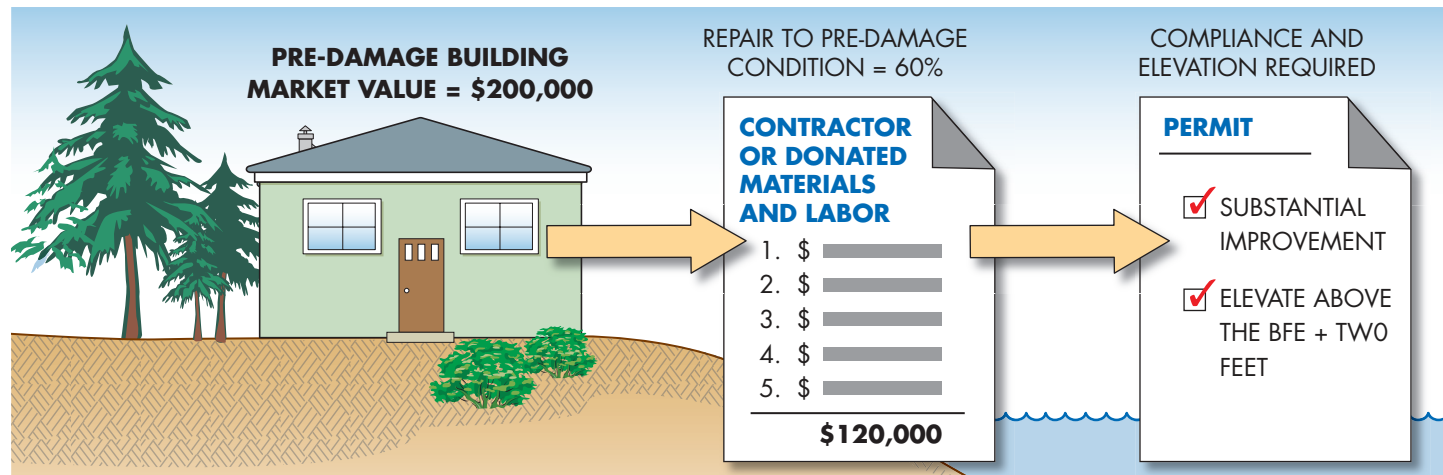
FEMA's Substantial Damage Estimator tool (SDE) was developed to help state and local officials in collecting uniform information needed to make substantial damage determinations for residential and non-residential structures in accordance with local floodplain management requirements.

The SDE tool:

- Can be used to assess flood, wind, wildfire, seismic, and other forms of damage
- Helps provide timely substantial damage determinations so that reconstruction can begin following events that damage buildings
- Is used in conjunction with industry-accepted construction cost-estimating guides

Download the SDE software installation package, *User Manual and Field Workbook*, forms, worksheets and other materials at www.fema.gov.

Repair of Damaged Buildings



Permits are required to repair damaged buildings, regardless of the cause – fire, flood, wind, or even vehicle impact. Detailed estimates of the cost to repair a building to pre-damage condition are required. If the costs are 50% or more of the pre-damage market value of the building, then it is “substantially damaged” and must be brought into compliance, which may involve raising the foundation and other measures. Consult with local permit offices before repairs are started.

[See page 72](#) for an example of elevating an existing building above a crawlspace.

Paying for Post-Flood Compliance

Owners may be eligible for up to \$30,000 (as of 2021) to help pay to bring buildings into compliance with building code and community requirements – if all of the following apply:

- Buildings are located in a special flood hazard area
- Buildings are covered by federal flood insurance, which includes Increased Cost of Compliance (ICC) coverage
- Buildings have lowest floors below the community's required elevation
- The community determined buildings were substantially damaged
- Insurance claims adjusters confirm substantial damage caused by flooding
- Owners act quickly with their claims adjusters and community officials to process all required paperwork

Learn more at www.fema.gov/increased-cost-compliance-coverage.

Owners whose buildings are substantially damaged are required to “bring the building into compliance” with flood zone requirements. Substantial damage is a special case of substantial improvement.

USE THE ICC CLAIM TO:



ELEVATE-IN-PLACE



RELOCATE TO
HIGH GROUND



DEMOLISH



FLOODPROOF
(NON-
RESIDENTIAL
ONLY)

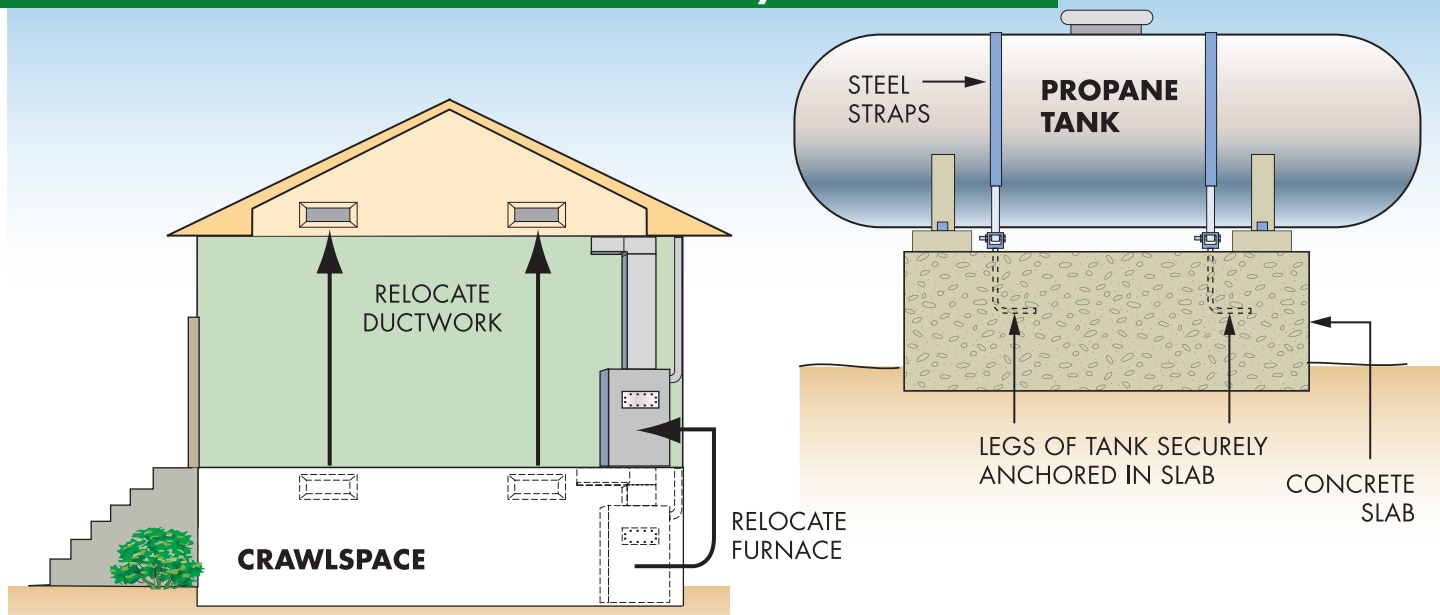
FLOOD PROTECTION AND MITIGATION

77 Some Flood Protection for Older Homes is Easy and Low Cost

78 Some Flood Mitigation Projects are More Costly Up Front



Some Flood Protection for Older Homes is Easy and Low Cost



Move fuse boxes, water heaters, furnaces, and ductwork out of crawlspaces and basements.

Anchor heating oil and propane gas tanks to prevent flotation and lateral movement.

Do not store valuables or hazardous materials in a flood-prone crawlspace or basement.

Use water-resistant materials when repairs are made.

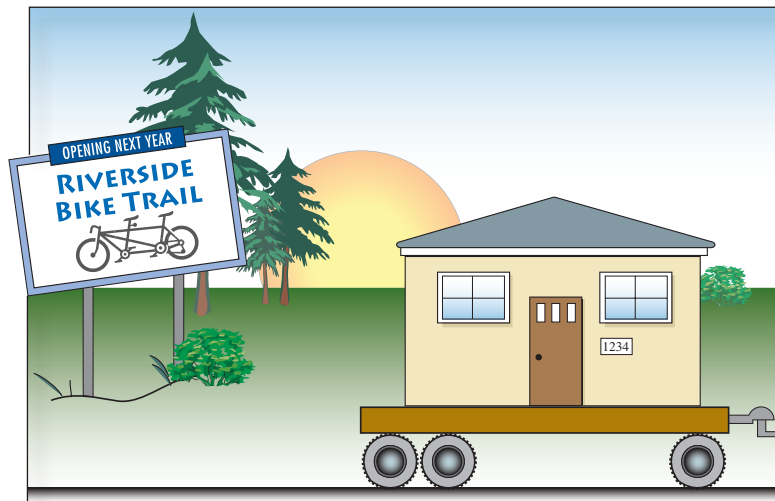
Some Flood Mitigation Projects are More Costly Up Front

But Give More Protection and a Positive Return on Investment

Following floods, some communities purchase and remove damaged homes. The acquired land is dedicated to public open space or stormwater storage and can be used for recreation or to help restore wildlife habitat and wetlands.

Some homes have been elevated on new, higher foundations, and others have been moved to safer high ground outside of high risk flood hazard areas.

Studies indicate these types of projects have a 7:1 return on investment.



The Montana Department of Emergency Services administers pre- and post-disaster mitigation grants and works with communities to develop hazard mitigation plans.

OTHER RESOURCES

79 Useful Resources and Common Acronyms

80 Turn Around Don't Drown®

81 Be Prepared for Flood Emergencies

82 Want to Learn More?



Useful Resources and Common Acronyms

- DNRC Floodplain Management and Permitting: www.mtfloodplain.mt.gov
- Association of Montana Floodplain Managers (AMFM): www.mtfloods.org
- NFIP regulations, Title 44 CFR: www.fema.gov/flood-insurance/rules-legislation/laws
- NFIP Technical Bulletins: <https://www.fema.gov/nfip-technical-bulletins>
- CRS Resources Center: www.fema.gov/national-flood-insurance-program-community-rating-system
- American Red Cross: www.redcross.org/get-help/how-to-prepare-for-emergencies/make-a-plan

Common Acronyms

- BFE = base flood elevation
- DNRC = Department of Natural Resources & Conservation
- EC = Elevation Certificate
- FIRM = Flood Insurance Rate Map
- NFIP = National Flood Insurance Program
- RFHA = regulatory flood hazard area
- SFHA = special flood hazard area (100-year floodplain)

Turn Around Don't Drown®

Learn about flood risks and follow these safety rules:

- When flooding is expected, stay away from creeks, streams, and rivers.
- NEVER drive through flooded roads – they may be washed out.
- Passenger cars may float in only 12-24 inches of water.
- Be especially cautious at night when it is harder to recognize dangers.
- Just 6 inches of fast-moving water can knock you off your feet.
- <https://www.weather.gov/safety/flood-turn-around-dont-drown>.



Be Prepared for Flood Emergencies

Everyone should be prepared for floods and other emergencies. Preparation begins at home, at work places, at schools, and in communities.

Floods and other disasters can strike quickly and without warning, and evacuation may be required. Basic utilities (water, gas, electricity and telephones) may be interrupted, perhaps for days. Local officials and emergency relief workers will be on the scene after disasters, but they cannot reach everyone right away. Families, communities, and businesses should:

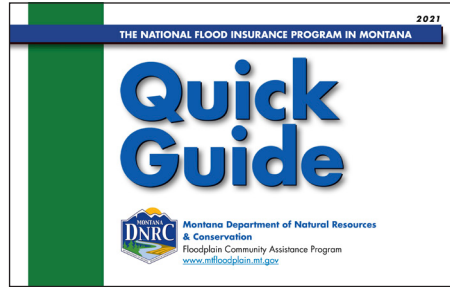
- **Be aware.** Learn if a home or building is in a flood zone by checking the FEMA Flood Map Service Center ([see pages 11](#) and [12](#)). Pay attention to weather forecasts. Listen to local authorities.
- **Be prepared.** Put together a disaster kit with enough non-perishable food and water for a few days. Be prepared to evacuate early and know where to go. Have a plan for what to do with pets. Make a household inventory with copies of critical documents and photographs of belongings. Consider buying flood insurance because homeowners' policies do not cover flood damage.
- **Take action.** Evacuate immediately when official announcements are made.

To learn more about individual preparedness, visit <https://readyandsafe.mt.gov> and contact county emergency management agencies.



Want to Learn More?

- For flood information and advice on permits, contact your local floodplain administrator.
- For information about upcoming workshops and training, go to www.mtfloodplain.mt.gov.
- Contact DNRC Floodplain Programs staff for technical assistance at www.mtfloodplain.mt.gov.
- To learn more about flood maps, go to www.fema.gov/national-flood-insurance-program-flood-hazard-mapping.
- FEMA's on-line publications can be found in the FEMA Library (www.fema.gov/library/) or by using an Internet search engine to search on the publication number or title.
- To learn about federal flood insurance, call an insurance agent. Most insurance companies can write NFIP policies.
- To learn the importance of taking steps to financially protect homes and businesses from flood damage go to www.floodsmart.gov.
- Find out about Elevation Certificates and training for surveyors by searching for Elevation Certificate at www.fema.gov.



This **Quick Guide** may be downloaded from the
Montana Department of Natural Resources & Conservation,
Floodplain Community Assistance Program:

www.mtfloodplain.mt.gov