Quick Guide

FLOODPLAIN MANAGEMENT IN NORTH DAKOTA

NORTH DAKOTA DWR

NORTH Dakota | Water Resources

Be Legendary.

2024

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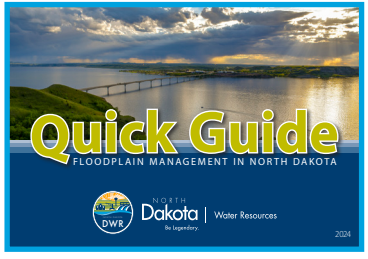
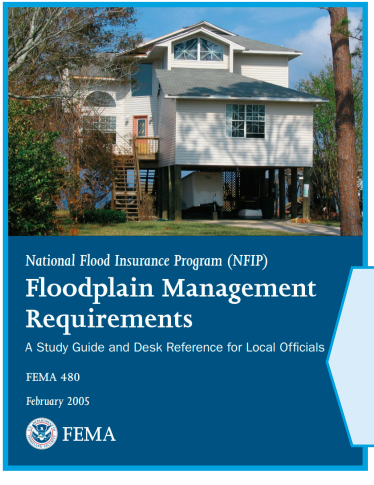
Credit North Dakota Tourism



This **Quick Guide** was prepared by the ND Department of Water Resources (DWR) to help you understand more about why and how communities in the State of North Dakota manage areas of known flood risk (floodplains) to protect people and property. North Dakota's floodplain management programs have been active since 1981. Floodprone communities adopt ordinances that detail the rules and requirements of developing in the floodplain. In case of conflict, the ordinance adopted by the community, and not this publication, must be followed. If you have questions, be sure to talk to your local planning or permitting office.

Communities that participate in the National Flood Insurance Program (NFIP) adopt and enforce the floodplain management regulations based on federal and State requirements in North Dakota Century Code (NDCC) chapter 61-16.2.

The DWR Regulatory Division coordinates the NFIP in North Dakota (http://www.dwr.nd.gov/reg_approp/floodplain_management/). Contact (701) 328-4956 if you have questions.



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*.

The North Dakota DWR is pleased to provide this floodplain management **Quick Guide** informational tool to citizens and community officials.

Counties and local communities regulate the floodplain to:

- **Protect** people and property
- **Reduce** future flood losses
- **Ensure** that federal flood insurance and disaster assistance is available
- **Save** tax dollars
- **Reduce** liability and lawsuits

Floods have been, and continue to be, a destructive natural hazard in terms of economic loss to the citizens of North Dakota. Since 1978, Federal flood insurance policy holders in North Dakota have received nearly $260 million in claim payments. Floodprone areas have been identified in most of North Dakota's counties, cities, and towns.

WHY DO WE REGULATE THE FLOODPLAIN?

- **To protect people and property.** Floodplain management is about building smart and reducing our vulnerability to flooding. If we know the land will flood from time to time, we should make reasonable decisions to help protect our families, homes, and businesses.

- **To reduce future flood losses in North Dakota.** Floodplain development regulations are simply a "good neighbor" policy designed to protect our citizens from future flood losses. Regulating floodplain development helps keep flooding conditions from worsening as development continues.

- **To make sure federal flood insurance and disaster assistance is available.** Your community must join the NFIP before its residents can purchase federal flood insurance. Therefore, in non-participating communities, residents may be unable to secure a mortgage. In addition, your community can be ineligible for some types of federal assistance.

- **To save tax dollars.** Every flood disaster affects your community's budget. If we build smart, we'll have fewer problems the next time the water rises. Remember, federal disaster assistance isn't available for all floods. Even when the President of the United States declares a disaster, your community still has to pay a portion to cover the costs of evacuation, temporary housing, repair, and cleanup.

- **To avoid liability and lawsuits.** If we know an area is mapped as floodplain and likely to flood, if we know people could be in danger, and we know that buildings could be damaged, it makes sense to take reasonable protective steps when we develop and build in such an area.

WHAT IS THE NATIONAL FLOOD INSURANCE PROGRAM?

The NFIP was created by the United States Congress in 1968 to mitigate future flood losses and to provide access to federally back flood insurance protection for property owners. The NFIP is administered by the Federal Emergency Management Agency (FEMA). Nationwide, over 22,000 communities participate in the NFIP - including 338 North Dakota counties, cities, townships, and tribes (Summer 2024).

The NFIP is based on a mutual agreement between the Federal Government and local communities. Communities that participate agree to regulate floodplain development according to certain criteria and standards. The partnership involves:

- **Flood Hazard Maps**
  FEMA prepares maps that are used by communities, insurance agents, and others.
- **Floodplain Management/Regulations**
  Communities must adopt and enforce minimum floodplain management regulations so that development, including buildings, is undertaken in ways that reduce exposure to flooding (see page 61).
- **Flood Insurance**
  Property owners in participating communities are eligible to purchase federal flood insurance for buildings and contents.

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 website at **www.floodsmart.gov**. Flood insurance information is also available through the ND Insurance Department's website at **https://www.insurance.nd.gov/consumers/insurance/flood**

Communities (cities, counties, townships):

- Exercise authority to adopt floodplain management ordinances
- Enroll in the NFIP
- Administer and enforce ordinances, maintain records (see page 60)

North Dakota DWR

- 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)
- Produces and approves flood studies and flood maps and changes to flood maps

To participate in the NFIP and to be compliant with State floodplain management requirements, your community agrees to:

- **Adopt and enforce** a flood damage prevention ordinance
- **Require** permits for all types of development in the floodplain (see page 53)
- **Assure** that building sites are reasonably safe from flooding
- **Require** new or improved homes to be elevated one foot above the Base Flood Elevation (BFE)
- **Require** non-residential buildings to be elevated, one foot above BFE, or flood proofed
- **Conduct** field inspections and cite violations of the ordinance
- **Require** Elevation Certificates to document compliance (see page 57)
- **Carefully** consider requests for variances
- **Advise** FEMA when updates to flood maps are needed

WHO NEEDS FLOOD INSURANCE?

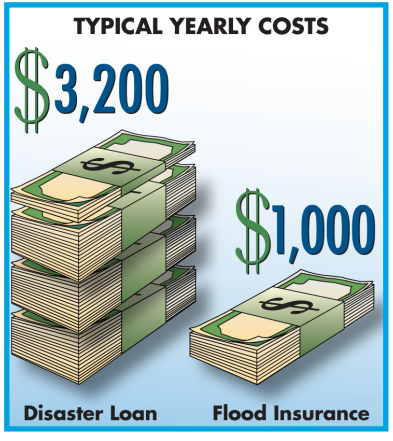
Who needs flood insurance? Everyone should review their insurance options. Every homeowner, business owner, and renter in any of the North Dakota communities that participate in the NFIP may purchase a flood insurance policy - **regardless** of the location of the building. Federal disaster grants do not cover most losses and repayment of a disaster loan can cost many times more than the price of a flood insurance policy.

Unfortunately, it's often after a flood that many people discover that their property insurance policies do not cover flood damages.

Over 45% of all NFIP claims in ND occur in areas outside the identified special flood hazard area.

The North Dakota DWR urges property owners and renters to protect their financial future by getting a flood insurance policy.

To purchase a policy, call your insurance agent. To get the name of an agent in your community, call the NFIP's toll free number 1(877) 336-2627 or visit **www.floodsmart.gov**.



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 45% 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 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's CRS is a voluntary program that provides communities the opportunity to reduce flood insurance premiums for its citizens. Communities must apply to the CRS and commit to implement and certify activities that contribute to reduced flood risk.

Examples of actions your community can take to reduce the cost of your insurance premiums include:

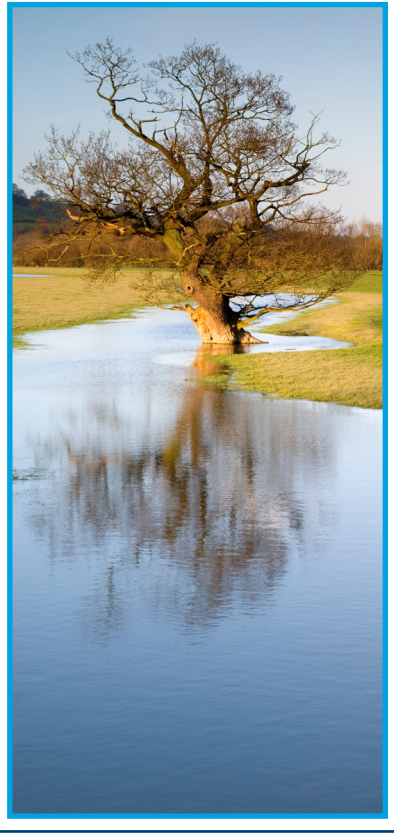
- Preserve open space in the floodplain
- Enforce higher standards for safer development
- Undertake engineering studies and prepare flood maps
- Obtain grants to buy out or elevate houses or to floodproof businesses
- Maintain drainage systems
- Monitor flood conditions and issue warnings
- Inform people about flood hazards, flood insurance, and how to reduce flood damage

Important

Information

Twelve communities in North Dakota participate in the CRS. By going above and beyond the minimum requirements, these communities are saving insurance policy holders roughly $318,000, annually.

Community officials can request assistance from CRS specialists to help with the application process and prerequisites. Check the online CRS Resources Center. Search online for CRS Resources for additional information.



North Dakota 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 (44 CFR section 60.22(c)) outline 19 factors for consideration, including:

- Divert development to areas outside the Special Flood Hazard Area (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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Credit National Park Service

Spring Snow Melt

North Dakota is susceptible to spring flooding due to runoff from melting snow. The melting snow, sometimes combined with spring rains, can cause flooding issues throughout the state. Flooding from spring snow melt is typically well forecasted days to weeks in advance.

Ice Jams

Ice jams are problematic specifically the Red River of the North as melting snow and/or rain usually starts the runoff in the southern part of the basin and sends runoff to the north, which is often still cold enough to have a strong sheet of ice still on the river. Ice jams at bridge crossings in other areas of the state have occurred. Some of the more common areas are the James River near LaMoure, the Knife River at Beulah, Heart River through Mandan, Little Missouri at Medora, the Missouri/Yellowstone Rivers west of Williston, and the Missouri near Bismarck and Mandan.

Flash Flooding

During the middle of the summer, flash floods do occur across the state, but they tend to be on the smaller streams as it's not common to see widespread rains that are heavy enough to affect the Missouri. While it's not common, there have been rain events that sent streams like the James, Heart, Knife, Red, etc. above flood stage.

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 one hour.

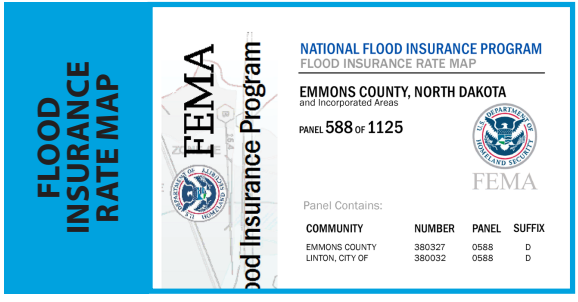
Flash flooding is common in watersheds with steep, hilly, or mountainous terrain where rainfall runs off rapidly because water cannot infiltrate into rocks and hard ground. Runoff accumulates in steep stream valleys, generating rushing waters that can quickly rise to considerable depth.

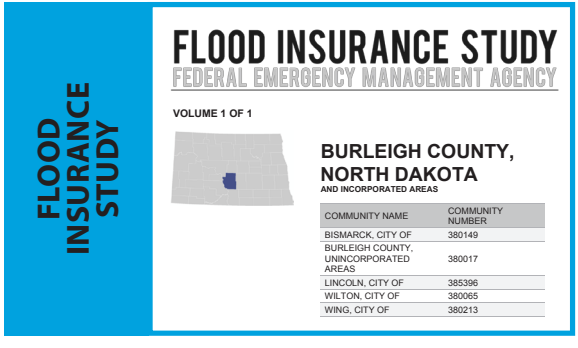
In some cases, flash flooding may occur well away from where heavy rain initially falls. This is especially common in the western United States where low lying areas may be very dry one minute, and filled with rushing water the next.

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 suggest - floods that happen in a flash!
For more about the dangers of driving through flooded roads (see page 96).

LOOKING FOR FLOODPLAIN INFORMATION?





View and download digital flood maps at the FEMA Map Service Center at www.msc.fema.gov.

FEMA prepares Flood Insurance Studies and Flood Insurance Rate Map products (FIRM) for North Dakota's communities.

Most FIRM products show special flood hazard areas and floodways developed by a detailed analysis while other FIRM products show floodplains delineated using only approximate analyses (see page 28).

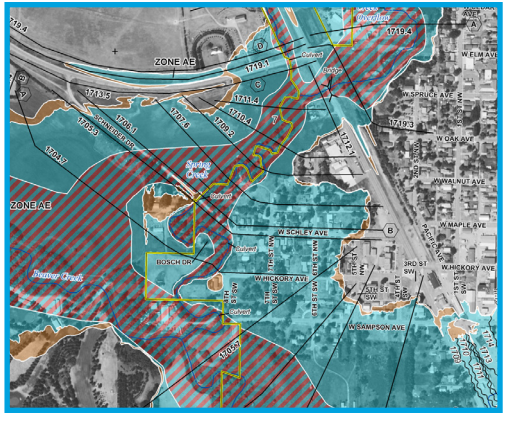
While following FEMA's quality assurance and quality control procedures, flood hazard studies may be prepared by local governments, state and federal agencies, or by engineering companies working for private property owners and developers.

Not all waterways have designated floodplains – but all waterways will flood, even though a floodplain study may not have been prepared.

Flood Maps and Flood Insurance Studies should be available for viewing at your local planning or permitting office.

FEMA's Flood Map Service Center

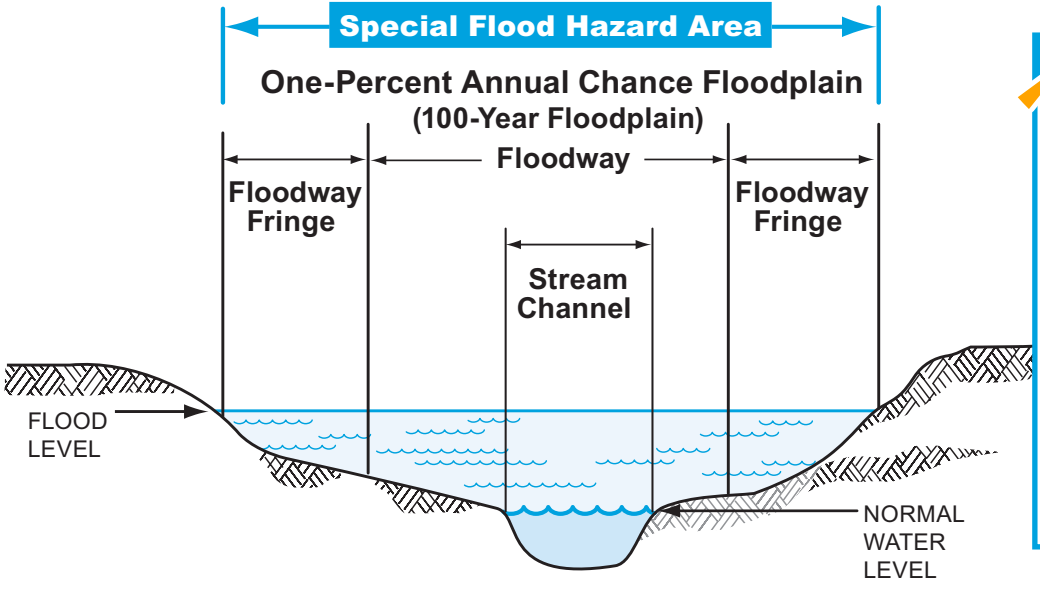
You can view FIRMs and print clips from FIRMs called FIRMettes by using FEMA's online tools on the FEMA Map Service Center website at **www.msc.fema.gov**.



From the Map Service Center you can:

- **Locate** a FIRM by state, county, and community or by FIRM panel number
- **Zoom** in or out to view a specific area of a FIRM
- **Create** a FIRMette showing a specific area of a FIRM, the FIRM Title Block, north arrow, and FIRM approximate scale
- **Print** the FIRMette
- **Save** the FIRMette as an Adobe PDF or an image file
- **Click** on "What is a FIRMette?" on the Map Service Center web page for detailed instructions on how to make a FIRMette

From the Map Service Center you can also purchase a CD-ROM containing the FIRMs and related information for your community.



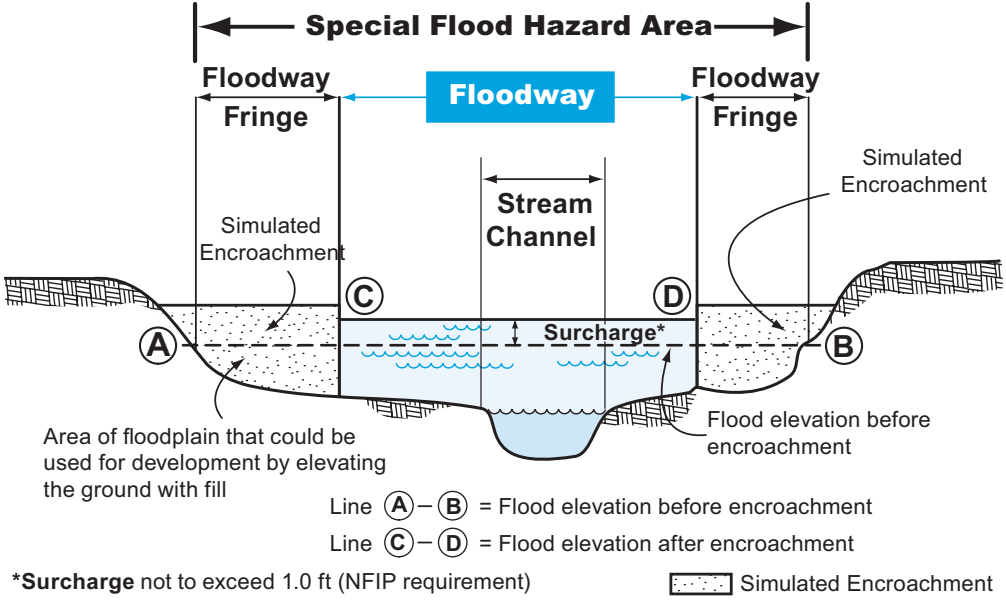
Terms and Definitions

Special Flood Hazard Area (SFHA)

is that portion of the floodplain subject to inundation by the base flood and/or flood-related erosion hazards. SFHAs are shown on FIRMs in ND as Zones A, AE, A1-A30, AH, AO, and AR.

See page 22 to learn about the floodway, the area of the floodplain where floodwaters usually flow faster and deeper.

For floodplains with BFE, check the Flood Profiles, located in the Flood Insurance Study (FIS). These graphs show water surface elevations for a variety of return interval events (see page 29).



Terms and Definitions

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 increasing flood depth.

Engineered models of the floodplain are used to simulate "encroachment" or fill in the flood fringe in order to predict where and how much the base flood elevation would increase if the floodplain is allowed to be filled.

Before a local floodplain permit can be issued for proposed development in the floodway, the applicant must provide evidence that "no rise" (see page 56) will occur or obtain a Conditional Letter of Map Revision (CLOMR) from FEMA. You will need a qualified engineer to make sure your proposed project will not increase flood levels.

"No Adverse Impact" (NAI) floodplain management is essentially a "do-no-harm" policy based on the concept that the actions of any community or property owner should not adversely affect others. It calls for identifying the potential direct and indirect adverse impacts of any development action on people, property, and the environment. Adverse impacts must be avoided or mitigated.

Undeveloped floodplains can serve natural and beneficial functions:

- Store floodwater and stormwater
- Enhance water quality by filtering runoff through wetlands
- Offer habitats for plants and animals
- Sustain biological productivity
- Reduce erosion and sediment runoff
- Offer recreation opportunities

The Association of State Floodplain Managers, Inc. developed the NAI concept in response to rising flood damages, even by communities that administer floodplain management ordinances. At **www.floods.org**, click on the NAI tab to download publications, the NAI Tool Kit, and PowerPoint presentations, as well as several documents about legal issues.

High-Risk Areas (SFHA)

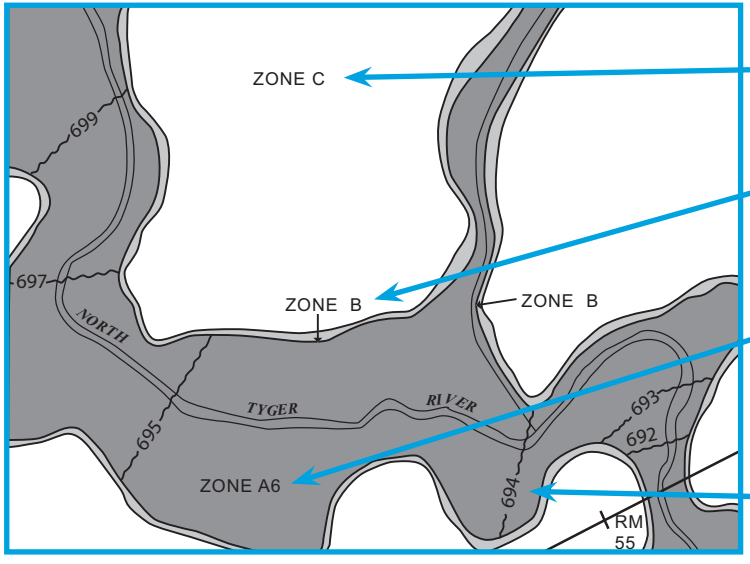
In high-risk areas, there is at least a 1 in 4 chance of flooding during a 30-year mortgage. All home and business owners in these areas with mortgages from federally regulated or insured lenders are required to buy flood insurance. The SFHA is also referred to as the 100-year or base flood event. This area is shown on the flood maps as zones labeled with the letter “A”.

Moderate-To-Low Risk Areas (Non-Special Flood Hazard Area or NSFHA)

In moderate-to-low risk areas, the risk of being flooded is reduced, but not completely removed. Nationally, these areas submit over 20% of NFIP claims and receive one-third of disaster assistance for flooding. Flood insurance isn’t federally required in moderate-to-low risk areas, but it is recommended for all property owners and renters. They are shown on flood maps as zones labeled with the letters “B”, “C”, or “X” (shaded or unshaded).

Undetermined-Risk Areas

No flood hazard analysis has been conducted in these areas, but a risk of flooding still exists. Flood insurance rates reflect the uncertainty of the flood risk. These areas are labeled with the letter “D” on the flood maps.



FLOOD HAZARD ZONES

Zone C (or Zone X) is all areas considered to be low risk.

Zone B (or shaded Zone X) is subject to flooding by the 0.2% annual chance (500-year) flood, and is a moderate risk area.

Zone A, Zones A1-A30 and Zone AE are subject to flooding by the base or 1% annual chance (100-year) flood, and are considered high risk areas.

Base Flood Elevation (BFE) is the water surface elevation, rounded to the nearest foot, of the 1% chance flood event at specific locations.

FEMA prepares FIRMs to show areas that are at high risk of flooding due to storm or snow melt. Most FIRMs show flood elevation (how high the water may rise), called the BFE.

FLOOD HAZARD ZONES

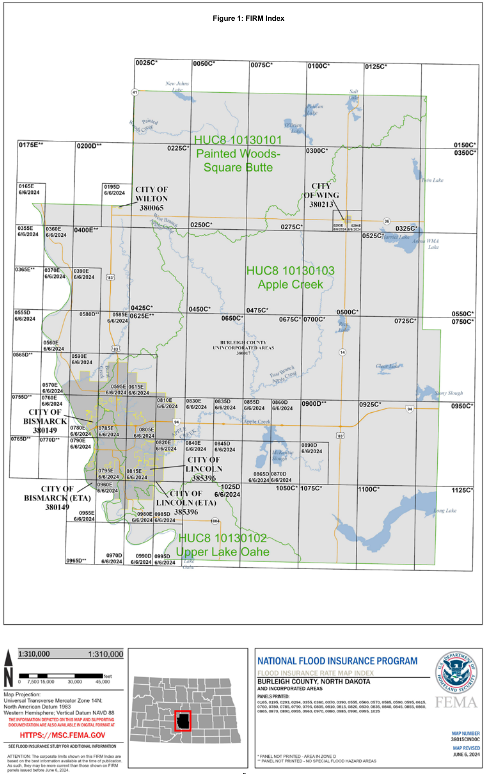
Zone AE is the 1%-annual chance (100-year) floodplain with BFEs (also called Zone A1-A30).

Zone X (shaded or unshaded) is all other areas considered moderate-to-low risk (formerly Zone B or C).

Cross Section location. Associated elevations can be found in the Flood Insurance Study.

Base Flood Elevation (BFE) is the water surface elevation of the 1% chance flood event at specific locations.

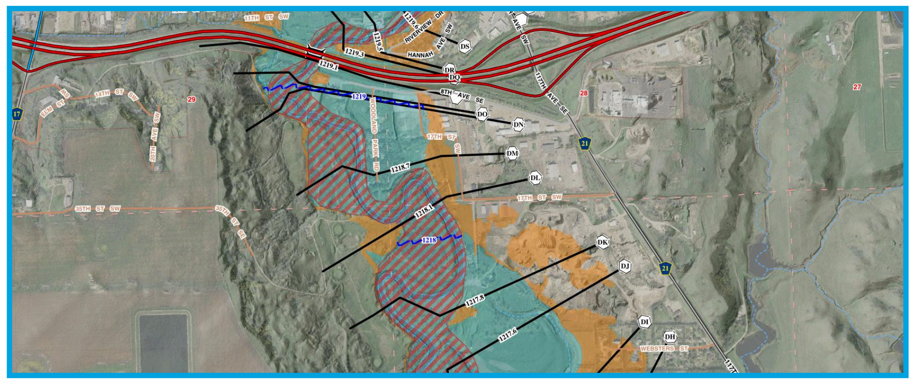
The **Floodway** is the cross-hatched area.



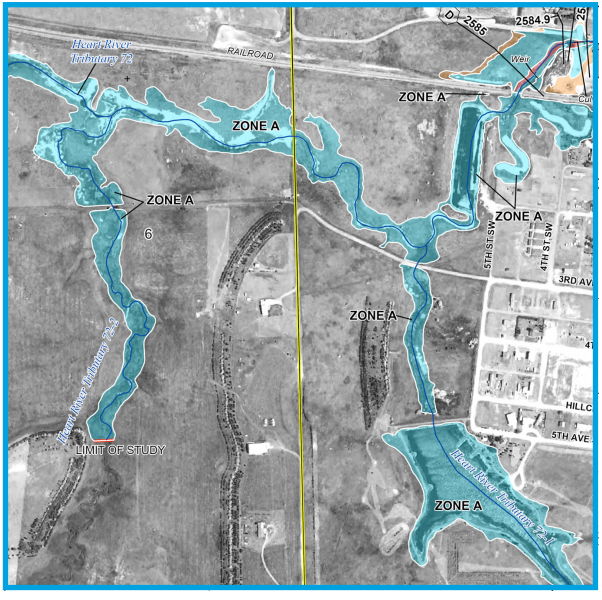
FEMA, in cooperation with state, local, and business partners is producing countywide Digital Flood Insurance Rate Maps (DFIRMs) through the Risk Mapping, Assessment, and Planning (Risk MAP) program.

DFIRMs are in an industry-standard Geographic Information System (GIS) format, that allows users to view information in a graphical format and add or remove layers of data according to their needs.

The flood risk zones, street names, jurisdictional boundaries, and other data can be overlaid on aerial photographs. The digital map format enables more efficient and accurate flood risk determinations.



APPROXIMATE ZONE A



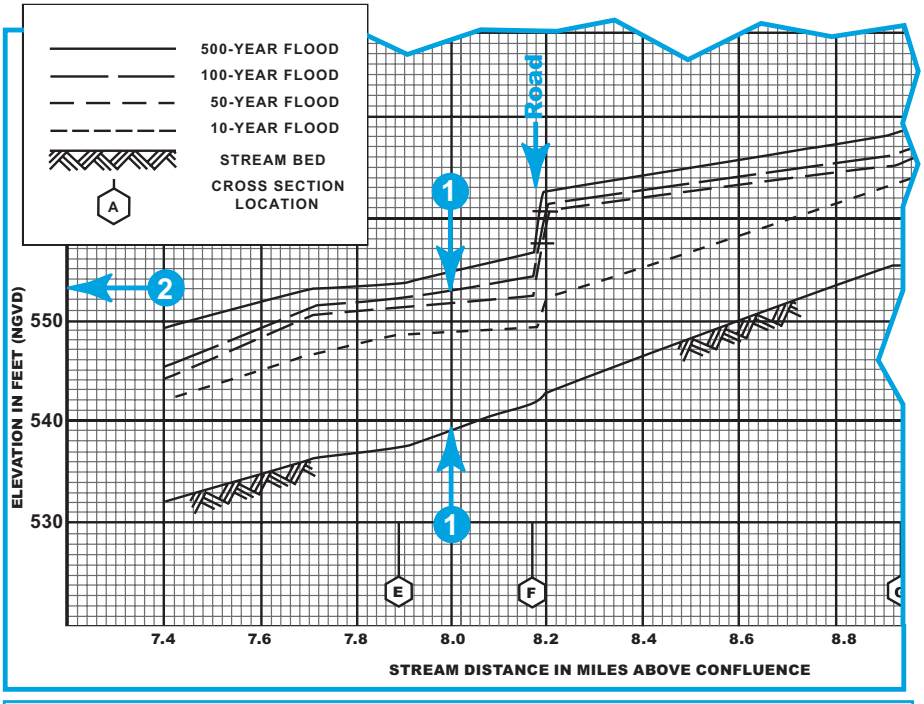
Topographic maps can be used to estimate the BFE.

Approximate A Zones are drawn based on existing information, not engineering studies. FEMA checked with the U.S. Army Corps of Engineers, the U.S. Geological Survey, the State, local offices, and historic records for best available data. When existing information was lacking, an approximate delineation was performed.

As of 2014, FEMA now requires all A zones to have modeled-back engineering data.

If you need help in determining the BFE, check with the ND DWR or your community's planning, engineering, or permitting office. FEMA publication *Managing Floodplain Development in Approximate Zone A Areas* (FEMA 265) is useful for engineers.

USING THE FIRM FLOOD PROFILE TO DETERMINE BFE'S



In this example, at 8 miles above the confluence, the BFE is 553 feet.

The FIS includes flood profiles that 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.

1. On the FIRM locate your site by measuring the distance along the centerline of the stream channel from a cross section, for example E or F.

2. Scale that distance on the flood profile and read up to the profile of interest, then across to determine the elevation.

The Floodway designates a portion of the SFHA that must be reserved to convey the base flood without increasing the water surface elevation more than the amount specified in the Floodway Table.

The FIS has a Floodway Data Table for every waterway that was studied by detailed methods for which floodways were delineated.

Terms and Definitions

For additional Information search online for Guidelines and Standards for Flood Risk Analysis & Mapping.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Rocky River								
A	4,395	115	1,233	6.1	9.9	9.9	10.0	0.1
B	5,537	13	142	9.2	10.4	10.4	10.5	0.1
C	9,610	100	323	8.4	10.9	10.9	11.1	0.2
D	10,995	85	861	7.2	11.2	11.2	11.3	0.1
E	12,695	245	1,887	5.1	11.3	11.3	11.4	0.1
F	13,845	270	2,403	4.5	11.5	11.5	11.5	0.0
G	14,513	230	2,553	3.7	11.6	11.6	11.6	0.0
H	16,625	180	2,000	4.2	11.7	11.7	11.7	0.0
I	18,209	415	2,566	3.9	12.5	12.5	12.7	0.2
J	20,849	230	2,381	4.0	13.0	13.0	13.2	0.2
K	25,360	340	2,924	3.6	14.0	14.0	14.2	0.2
				(1)	(2)			(3)

1. This is the only readily available velocity data to use in computation of hydrodynamic loads.
2. Computed BFE (rounded values are shown on the FIRM).
3. Amount of allowable increase – not more than 1 foot for older studies and 0.5 foot for new studies at any location.

CAPTURING FLOODPLAIN CHANGES

The cornerstone of reliable floodplain management is good floodplain mapping.

If the current map shows only approximate flood information, and you want to develop the land, your community may require you to provide updated flood risk information. If development proposals involve more than 5 acres or 50 lots, then federal regulations require permit applicants to provide detailed information.

New engineering studies typically are required for some projects that involve changing the floodplain, for example placing large quantities of fill or altering a waterway.

Development in the regulatory floodway comes with additional requirements. Before a permit may be issued, the community responsible for permitting such use shall contact the DWR for compliance verification. Additional technical data, including a functioning hydraulic model may be needed.

Contact your local Floodplain Administrator for advice on flood information and permits. Reference NDCC chapter 61-16.2 and the Code of Federal Regulations, Title 44 for additional guidance.

1. **Letter of Map Amendment (LOMA)** is an official change to an effective FIRM that may be issued when a property owner provides additional technical information, such as ground elevation relative to the BFE, SFHA, and the structure. Lenders may waive the flood insurance requirement if the LOMA documents a structure on ground above the base flood elevation.

2. **Letter of Map Revision (LOMR)** is an official change to an effective FIRM that may be issued to change flood insurance risk zones, floodplain, boundary delineations, BFEs, and/or other map features. Lenders may waive the flood insurance requirement if the approved map revision shows the structures to be outside of the SFHA.

3. **Letter of Map Revision Based on Fill (LOMR-F)** is an official change to an effective FIRM that is issued to document FEMA's determination that a structure or parcel of land has been elevated above the BFE by the placement of fill, and therefore is no longer in the SFHA. Lenders may waive the flood insurance requirement if the LOMR-F shows a structure on fill is above the BFE and outside of the SFHA. Areas removed from the floodplain by a LOMR-F are subject to development regulations.

4. **Physical Map Revision (LOMR-PMR)** may be issued for major physical floodplain changes that require engineering analyses, such as bridges, culverts, channel changes, flood control measures, and large fills that change the BFE or Floodway. PMRs are also issued when a new study updates or improves the FIRM.

Important

Information

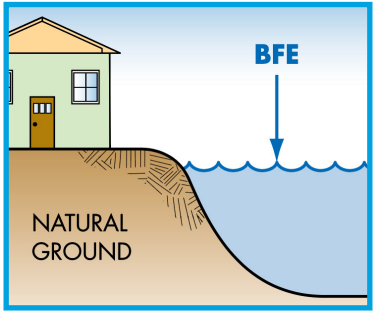
Check FEMA's Flood Hazard Mapping website for more information about map revisions.

To learn the status of Map Change Requests, call FEMA's **Map Service Center:** 1-877-FEMA-MAP 1-877-336-2627).

Information:
Search online for FEMA Map Change Requests

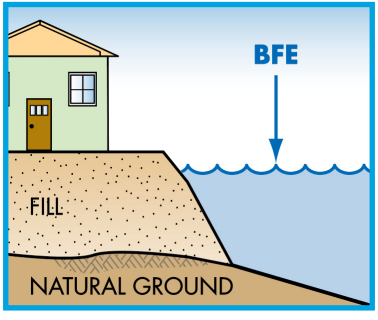
Requests for map revisions must be endorsed by the local community.

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.



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.



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.

Searchable term: FEMA LOMR-F for guidance on map revisions.

LOMA'S: "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 20).
- Sometimes lenders require FEMA LOMAs or surveyed site maps, especially if it is a close call (see page 32).

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 Mop Amendment from FEMA.

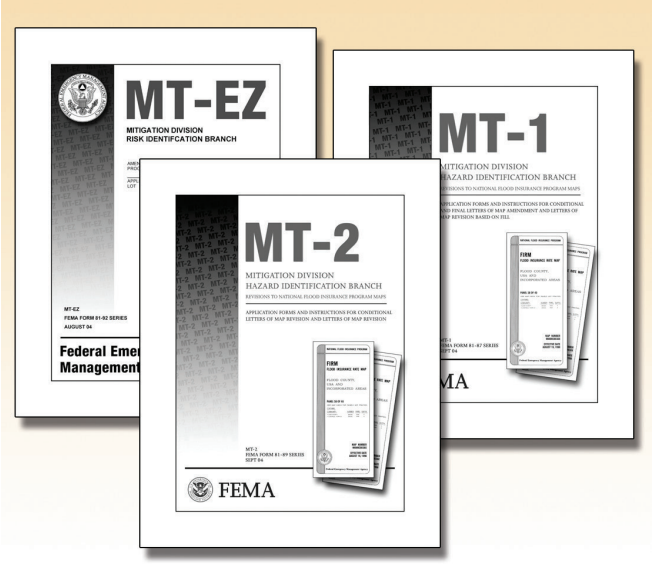
Yellow Circles: Structures clearly not in the SFHA, but parts of the lots may be in. (Flood insurance is not mandatory, but is encouraged).

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)

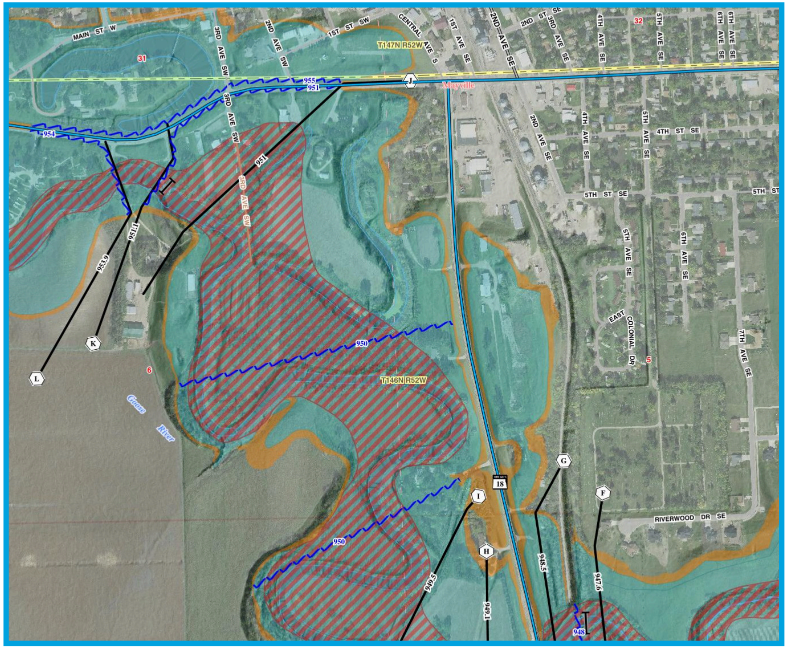
Is an official revision to an effective FIRM that may be issued to change flood insurance risk zones, special flood hazard areas and floodway boundary delineations, BFEs and/or other map features. Lenders may waive the insurance requirement if the approved map revision shows buildings to be outside of the SFHA.



See the MI-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".

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

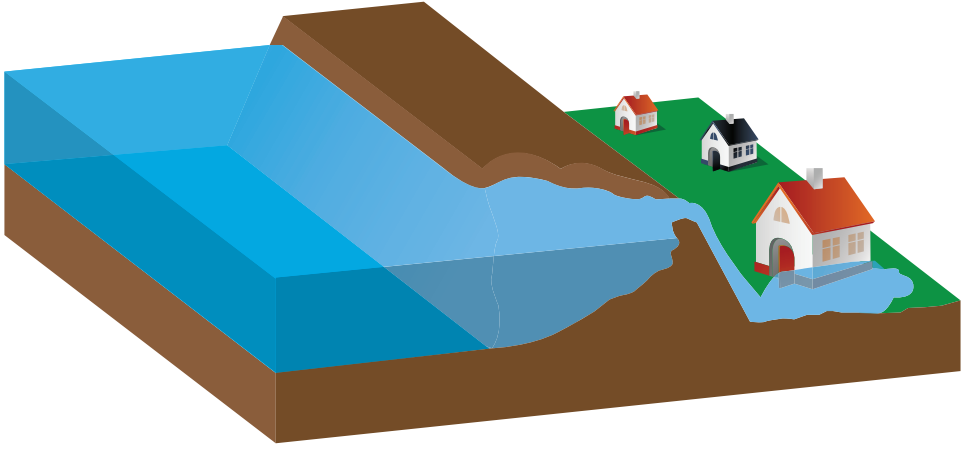
All new and revised flood maps will be designed to view digitally on a computer within a geographic information system (GIS) or as paper maps. Flood maps will be composites of base data, topographic data, and flood layers which can be overlain with parcel information or other data to more easily determine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



Learn more about FEMA's multi-year Risk MAP Program by searching the following: FEMA Risk MAP.

Living with levees is a shared responsibility among the whole community; know your risk, know your role, and take action today!

- Levees and levee systems are designed to provide a specific level of flood risk reduction.
- The levee owner (typically a local community or Water Resource District) is responsible for proper operation and maintenance.
- When levees fail, or are overtopped, the results can be catastrophic.



Terms and Definitions

Levee is a manufactured structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide risk reduction from temporary flooding.

All levee activities work with local and state permitting authorities for any additional requirements.

LEVEES NEED A PERMIT

In addition to a floodplain development permit from your local permitting authority, **a permit from the DWR is required** for all levees capable of protecting an occupied residence or structure, or public infrastructure.

Exceptions to this requirement exist for farmstead ring dikes and agricultural dikes. Levees requiring a permit require plans and specifications completed by a professional engineer registered in North Dakota.

For complete regulations, please refer to NDCC chapter 61-03, 61-04, and § 61-16.1-38, and North Dakota Administrative Code chapter 89-08-02.

If the levee satisfies the regulatory design, maintenance, and operation criteria, FEMA will "accredit" the levee system as providing adequate risk reduction on the FIRM and the levee-impacted area will be shown as a moderate-risk area, labeled Zone X (shaded). Without this accreditation, the FIRM will show the impacted area as being within the SFHA.

For additional FEMA accreditation information, please refer to 44 CFR 65.10 for NFIP regulations.

To learn more about levees, contact your local community official or the North Dakota DWR. Additional information is also provided on FEMA's Living with Levees webpage (see page 37).

FEMA

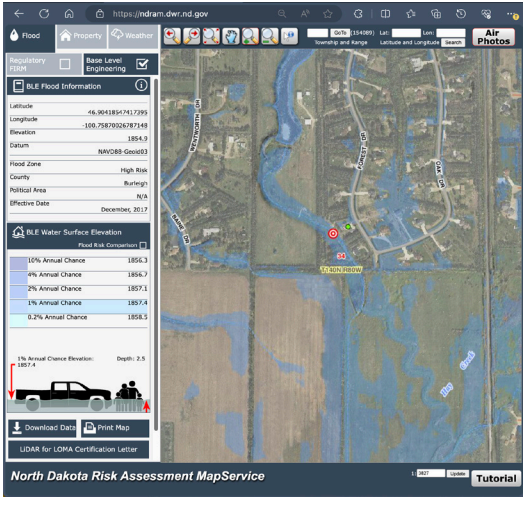
Many people living or working near a levee believe that it will always protect them from flooding. Although levees may be designed to the highest engineering standards, **levees can and do fail**. Protect yourself with flood insurance!

Non-Regulatory Products are described as flood risk information that complements the flood hazard data provided by FEMA's regulatory products - FIRMs, FIS, and the Digital FIRM Database. Examples of beneficial Non-Regulatory datasets include, but are not limited to:

- Changes Since Last FIRM Comparisons
- Flood Depth and Analysis Grids
- Flood Risk Assessments
- Areas of Mitigation Interest
- Climate Change Analysis
- Dam and Levee Structure Analysis

Base Level Engineering (BLE) is a method of generating approximate flood hazard data using high-resolution ground elevation data and two-dimensional hydraulic modeling. BLE offers flood risk information for all 53 counties in North Dakota, complementing the NFIP FIRMs throughout the state. BLE data can be valuable for planning, mitigation, and disaster recovery efforts.

North Dakota Risk Assessment MapService (NDRAM) is an interactive GIS-driven web interface designed by the DWR. NDRAM collaboratively displays the Digital National Flood Hazard Layer and the state's BLE flood risk assessment. This user-friendly tool provides water surface elevations, flood depths, and the ability to download engineering model data and print customized maps. This resource is beneficial for property owners, local officials, and anyone interested in understanding potential flood hazards in North Dakota.



NDRAM -
https://ndram.dwr.nd.gov

42 ..... Are Building Sites Higher than the BFE?

43 ..... Nature Doesn't Read Maps

44 ..... Safe Uses of the Floodplain

45 ..... Floodplain Fill Can Make Things Worse

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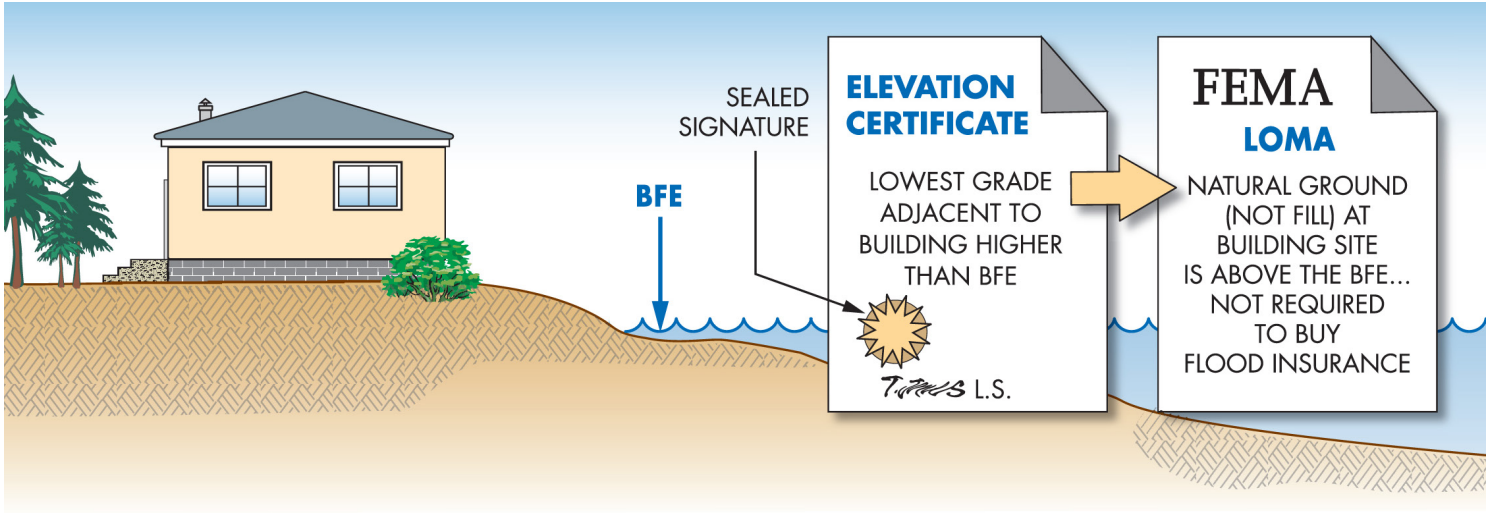
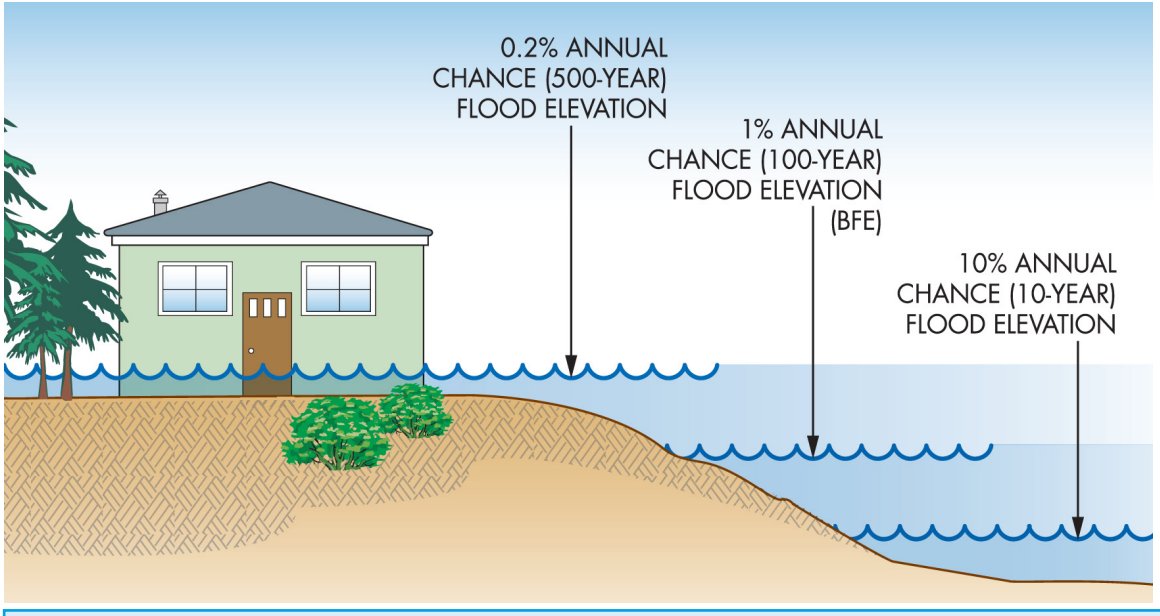
ARE BUILDING SITES HIGHER THAN THE BFE?



If your land is shown to be within Zone A on the FIRM, but your building site is higher, contact an engineer or surveyor to complete a FEMA Elevation Certificate (EC). Submit the EC with an application to FEMA and a LOMA may be issued (see page 20).

This is the **ONLY** way to remove the requirement in order to purchase flood insurance.

Keep the certificate with your deed, it will help future buyers.



Important

Information

Flash floods are the #1 weather-related killer in the U.S., since they can roll boulders, tear out trees, and destroy buildings and bridges. A flash flood is a rapid flooding of low-lying areas in less than six hours, which is caused by intense rainfall from a thunderstorm. Flash floods can also occur from the collapse of a man-made structure or ice jam.

CAUTION! Nature doesn't read flood maps! Major storms, snow melt, and flash floods can cause flooding that rises higher than the 1% annual chance or BFE. Protect your home or business by elevating higher than the minimum standard. See page 48 to see how this will save you money on insurance.

SAFE USES OF THE FLOODPLAIN

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.

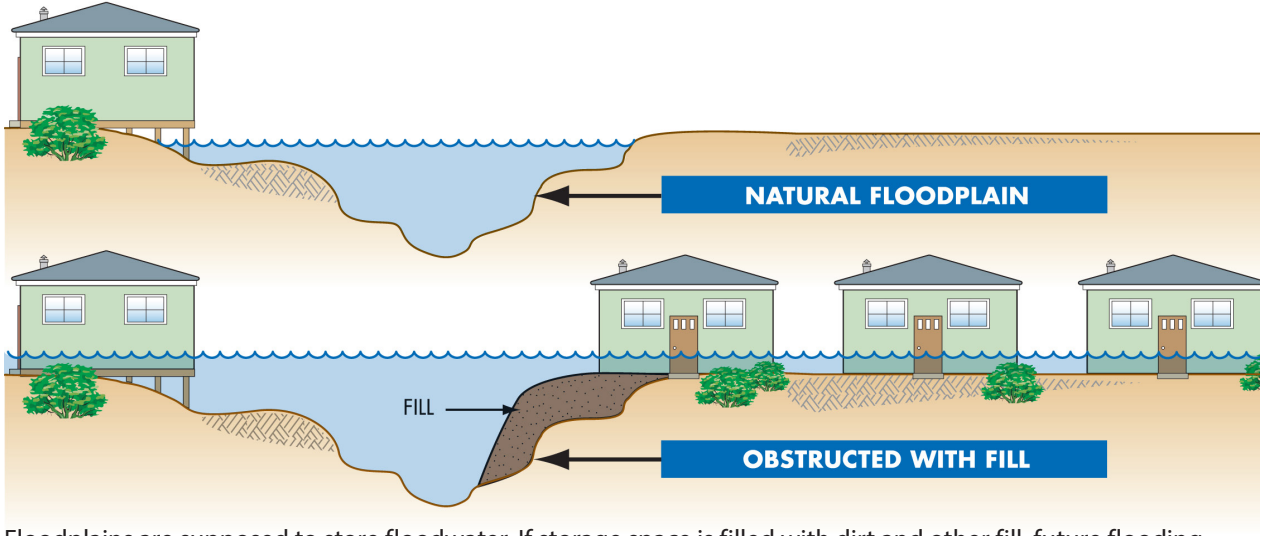
RECOMMENDED

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 do its job! If possible, keep it natural, utilize open space. Other low damage uses: recreational areas, playgrounds, reforestation, parking, gardens, pasture, accessory structures, or created wetlands.

FLOODPLAIN FILL CAN MAKE THINGS WORSE



Floodplains are supposed to store floodwater. If storage space is filled with dirt and other fill, future flooding may be worsened. Your community may require an engineering analysis ("no rise" certificate) to show how floodplain fill will alter flooding. Floodplain fill can alter valuable floodplain functions, including wildlife habitat and wetlands.

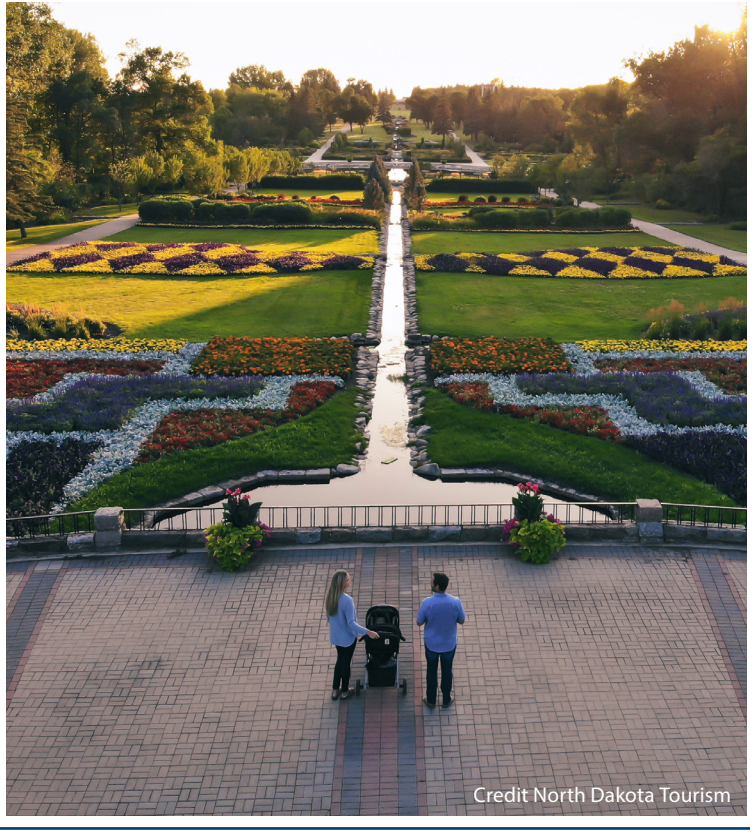
Make sure your floodplain fill project won't harm your neighbors. Floodway fill is allowed **only** if an engineering evaluation demonstrates that "no rise" in flood level will occur (see page 56).

47 ..... Fundamentals of Flood Resistant Construction

48..... Flood Provisions in the International Codes

49..... Freeboard: Go the Extra Foot!

50..... Variance: Use With Caution



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

- 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

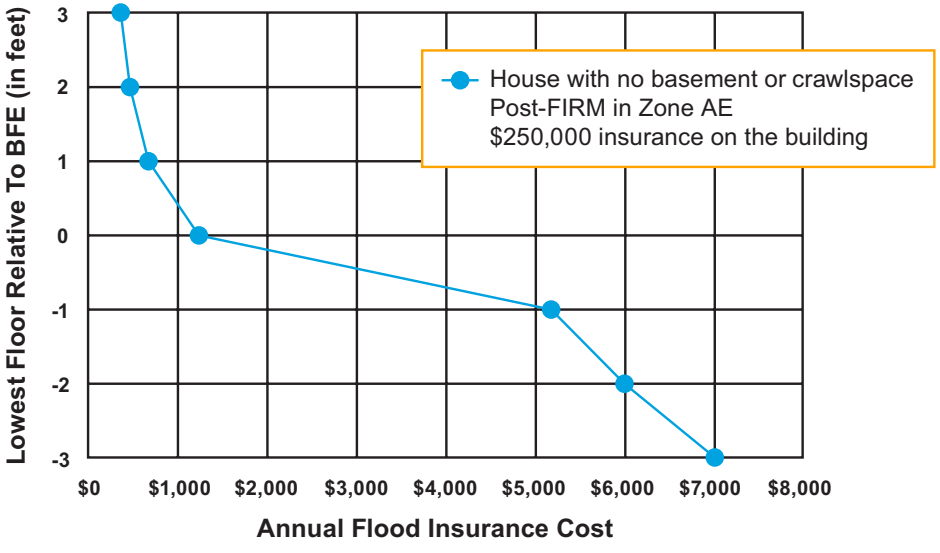
See the FEMA Floodplain Management Requirements Desk Reference for additional information on flood resistant construction.

FLOOD PROVISIONS IN THE INTERNATIONAL CODES

The I-Codes include flood provisions that meet or exceed the NFIP requirements for buildings and structures. All buildings are subject to building codes. Many North Dakota 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 by searching the following: FEMA Building Codes.



Want to save some money and have peace of mind at the same time? Then add freeboard to build higher than the minimum elevation requirement! Freeboard is a factor of safety, usually one or two feet above the BFE. **In North Dakota, one foot of freeboard is required** for residential and non-residential structures, while critical facilities have a higher standard.

Important

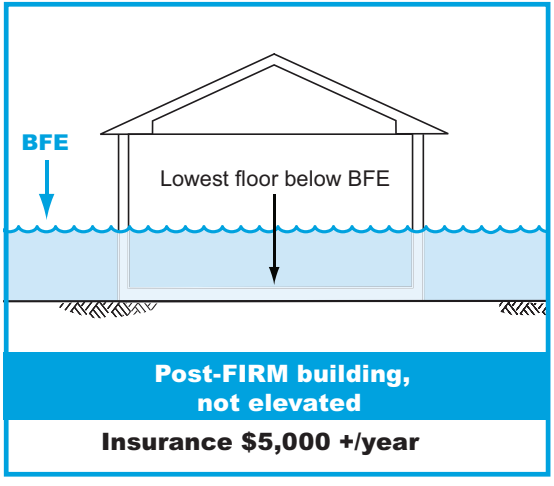
Information

Flood insurance rates and various fees change from time to time. Rather than specific costs for insurance, this figures gives a feel for how much difference just a foot or two can make. Building owners may save insurance costs if they elevate above the BFE, but more impressive is how the cost of insurance can more than double if the building is only one foot below the BFE.

Very specific conditions must be satisfied to justify a variance:

- Good and sufficient cause
- Unique site conditions
- Individual non-economic hardship
- No increase in flood level if in the floodway

A variance that allows construction below the BFE does not waive your lender's flood insurance requirement. Flood insurance will be very expensive – perhaps more than $5,000 per year!



Think carefully about seeking or approving a variance to build below the Base Flood Elevation. Not only will the property be more likely to get damaged, but insurance will be very costly. If the community has a pattern of inconsistent variances, sanctions can be imposed - costing the community even more!

ACTIVITIES, APPLICATIONS, ELEVATION CERTIFICATES

52..... Development Activities Requiring Floodplain Permits

53..... Open Space Uses Allowed Without Permits

54..... Floodway Uses: Specific Requirements and Prohibited Uses

55..... Carefully Complete the Permit Application

56..... Some Key Permit Review Steps

57..... “No Rise” in the Floodway

58..... What is an Elevation Certificate and How is it Used?

59..... Completing the Elevation Certificate

60..... Paperwork is Important - For you and your Community

61 ..... Communities Must Retain Flood Records Permanently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DEVELOPMENT ACTIVITIES REQUIRING FLOODPLAIN PERMITS

- Constructing new buildings
- Additions to existing buildings
- Substantially improving existing buildings
- Placing manufactured (mobile) homes
- Subdivision of land
- Temporary buildings and accessory structures
- Agricultural buildings
- Parking or storage of recreational vehicles
- Storing materials, including gas/liquid tanks
- Roads, bridges, and culverts
- Fill, grading, excavation, mining, and dredging
- Altering stream channels

A floodplain permit is required for **ALL** development that occurs within the SFHA.

OPEN SPACE USES ALLOWED WITHOUT PERMITS

Many open space uses are allowed without a permit, provided the uses are not prohibited by any other regulation or statue, 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

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

Part of a Sample Application
(may vary by community)

Owner's Name: DAVID & SALLY JONES

Site Address, Tax #, Parcel #: 781 REED STREET, 400-55A-002

A. Description of Work

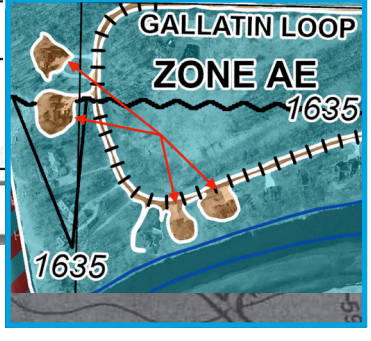
1. Proposed Development Description:
- [x] New Construction
- [ ] Alteration or Repair
- [x] Filling
- [ ] Grading
- [ ] Dredging
- [ ] Manufactured/Modular
- [ ] Logging
- [ ] Other

2. Size and Location of Development
SINGLE FAMILY (2,000 CY FILL);
FLOOD FRINGE OF OAK CREEK

3. Type of Construction
- [x] New Residential
- [ ] New Non-Residential
- [ ] Addition
- [ ] Improvement
- [x] Renovation
- [x] Accessory structure
- [ ] Temporary

Community, Map, and Elevation Data:
1. Community No: 570171
2. Panel No: 37205127001
3. Zone AE
4. Base Flood Elevation 59.2
5. Required Lowest Floor Elevation (including basement) 60.2
6. If floodproofed, required floodproofing elevation N/A
7. Elevation to which all attendant utilities, including all heating, duct work, and electrical equipment will be installed or floodproofed: 60.2

Applicant's Signature: David M. Jones



Important Information

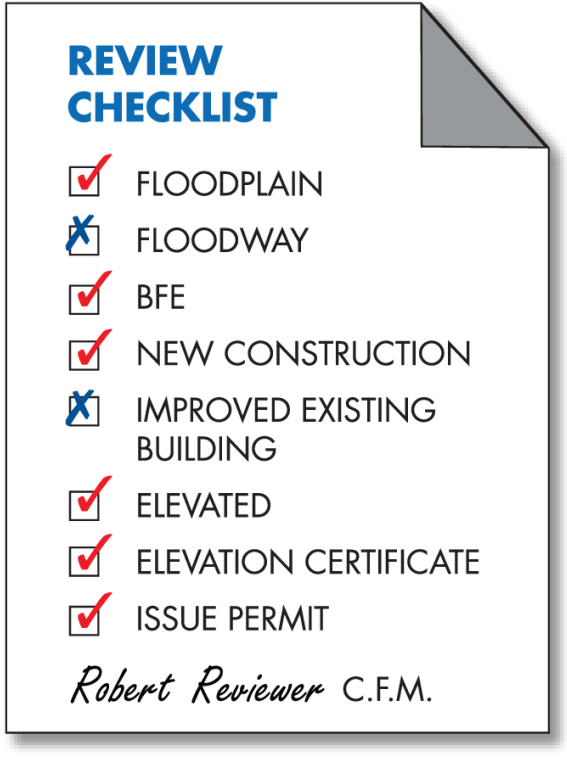
Property owners must get all permits **before** they do work in a floodplain.

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

The Permit Reviewer has to check many things before the permit is issued.

Some of the key questions are:

- Is the site in the mapped floodplain?
- Is the site in the mapped floodway?
- Have other state and federal permits been obtained?
- Does the site plan show the Base Flood Elevation?
- Is substantial improvement of an older building 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?
- Has the owner submitted an Elevation Certificate?



"NO RISE" IN THE FLOODWAY

- The floodway is the most dangerous part of the floodplain
- Development is not allowed unless "no rise" in flood levels is certified "No rise" means no increase in flood elevations greater than 0.00 feet
- A registered professional engineer must evaluate the hydraulic impact of proposed development
- Check with the North Dakota DWR for guidance before you decide to work in a floodway
- The North Dakota DWR shall review all projects proposed in a floodway for no rise before a permit or authorization is allowed

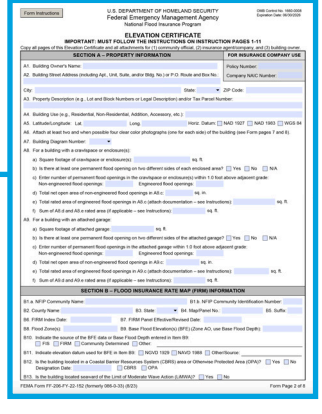
Important

Information

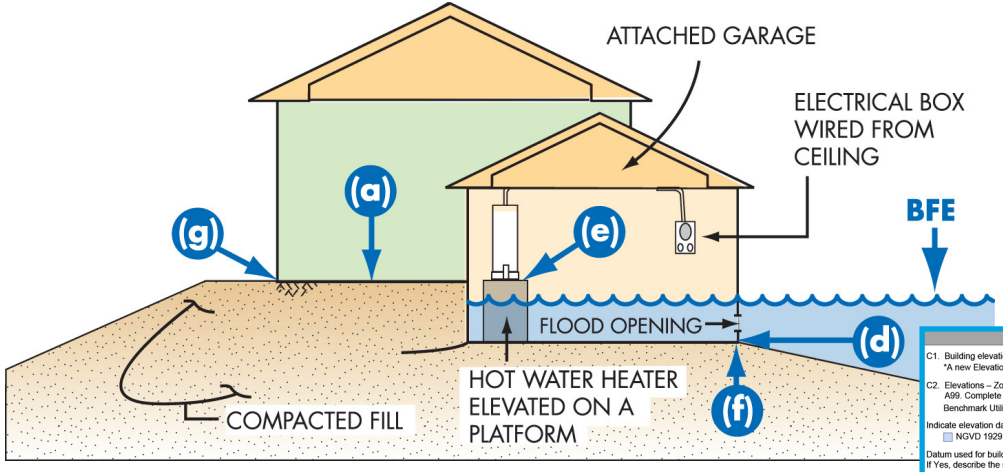
NOTE:
Please refer to NDCC chapter 61-16.2 for additional floodplain management regulations.

Save time and money - don't build in the floodway!

WHAT IS AN ELEVATION CERTIFICATE AND HOW IS IT USED?



- The EC is a FEMA form. Download a copy online by searching: FEMA 2023 Elevation Certificate.
- The EC must be completed and sealed by a registered surveyor or engineer when the floodplain has BFEs.
- A community official or property owner may complete the EC for sites in approximate flood zones.
- It can be used to confirm that structures are on natural ground and above the BFE (see page 41).
- It is used to verify that buildings are elevated properly.
- Insurance agents may use the EC to write flood insurance policies.
- By itself, the EC cannot be used to waive the requirement to get flood insurance. See page 32 to learn about Letters of Map Amendment.



The slab-on-grade house was elevated on fill 1 foot above the BFE, and the vented garage is 3 feet below the BFE.

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, AO, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, A99. 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: _____

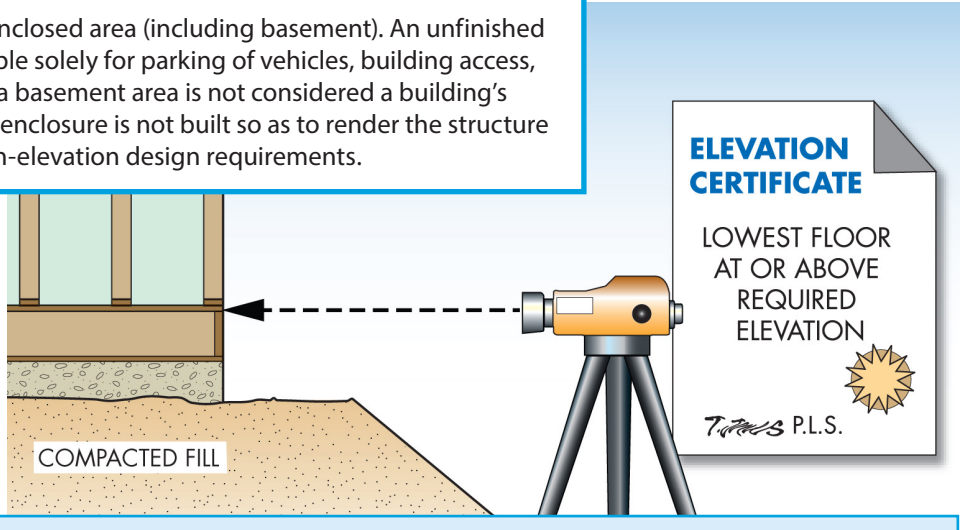
Datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☐ No
If Yes, describe the source of the conversion factor in the Section D Comments area.

		Check the measurement used
a) Top of bottom floor (including basement, crawlspace, or enclosure floor):		☐ feet ☐ meters
b) Top of the next higher floor (see Instructions):		☐ feet ☐ meters
c) Bottom of the lowest horizontal structural member (see Instructions):		☐ feet ☐ meters
d) Attached garage (top of slab):		☐ feet ☐ meters
e) Lowest elevation of Machinery and Equipment (M&E) servicing the building (describe type of M&E and location in Section D Comments area):		☐ feet ☐ meters
f) Lowest Adjacent Grade (LAG) next to building: ☐ Natural ☐ Finished		☐ feet ☐ meters
g) Highest Adjacent Grade (HAG) next to building: ☐ Natural ☐ Finished		☐ feet ☐ meters
h) Finished LAG at lowest elevation of attached deck or stairs, including structural support:		☐ feet ☐ meters

The EC must be completed and certified by a licensed land surveyor or engineer. The EC includes diagrams for several building types which indicate the various elevations that must be surveyed. Several points must be surveyed.

Terms and Definitions

Lowest Floor of the lowest enclosed area (including basement). An unfinished or flood resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area is not considered a building's lowest floor; provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements.



If you get a permit to build in the floodplain, you may need an EC. An "as built" survey and EC may be required by the community ordinance when construction is completed. It proves the homeowner built correctly, and it may help reduce the cost of flood insurance.

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 North Dakota DWR as part of community audits.

63..... How to Elevate Buildings in Floodplains

64..... Enclosures Below the Lowest Floor

65..... Enclosure Details

66..... Certification of Floodplain Fill

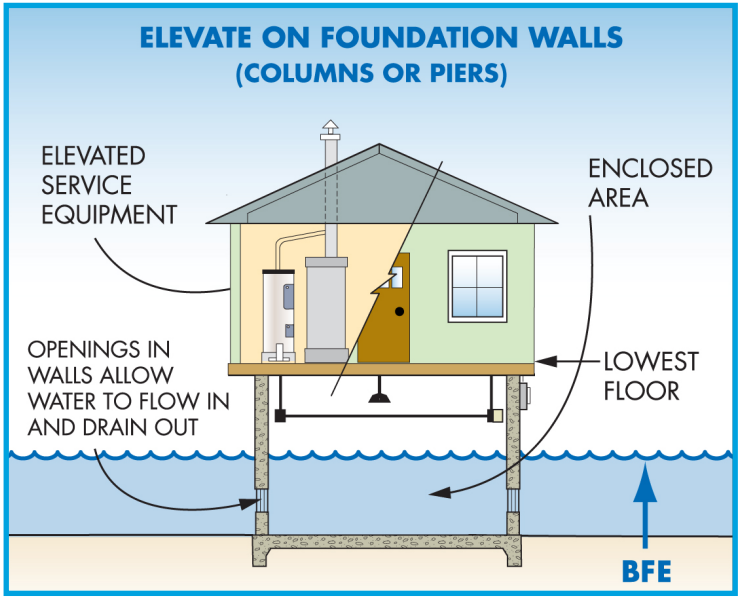
67..... Basements are Especially Floodprone

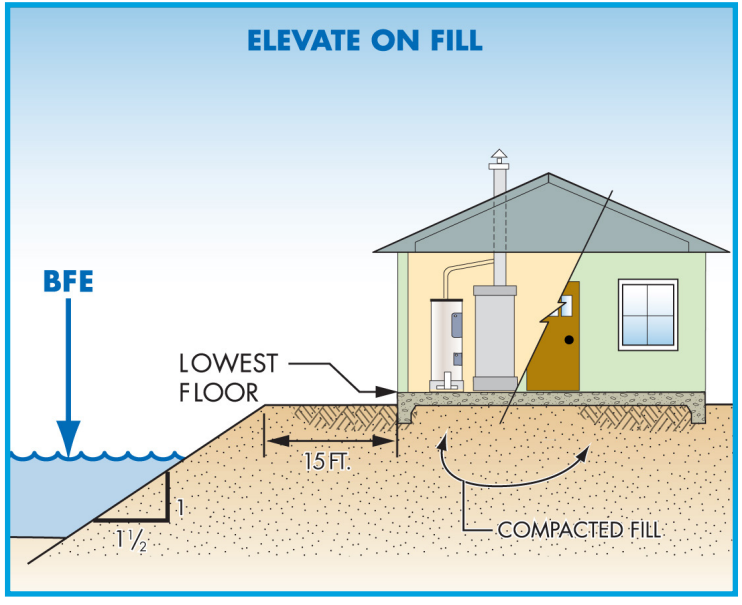
68..... Manufactured Homes Require Special Attention

69..... Utility Service Outside Buildings

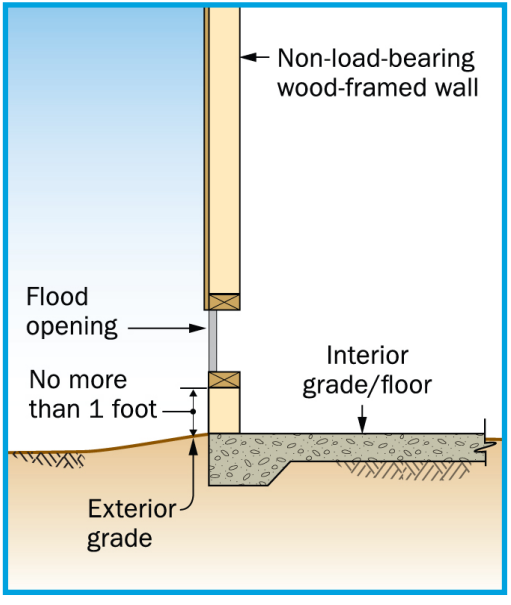
70..... Utility Service Inside Enclosures

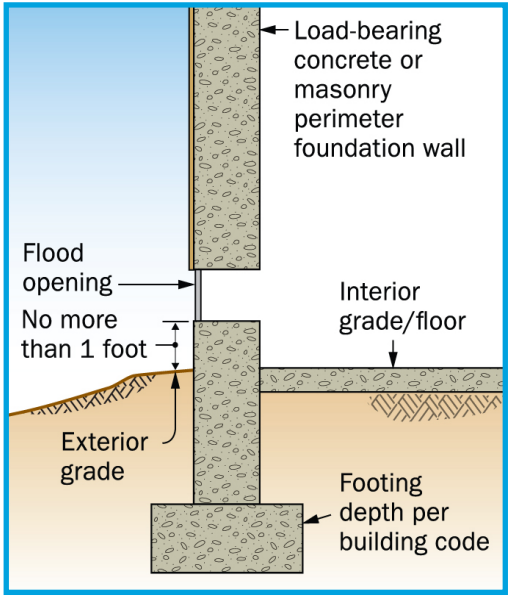
Credit North Dakota Tourism





CAUTION! Enclosures (including crawlspaces) have some special requirements (see page 63). Note: When the walking surface of the lowest floor is at the minimum elevation, under-floor utilities are not allowed. Fill used to elevate buildings must be placed properly (see page 65).





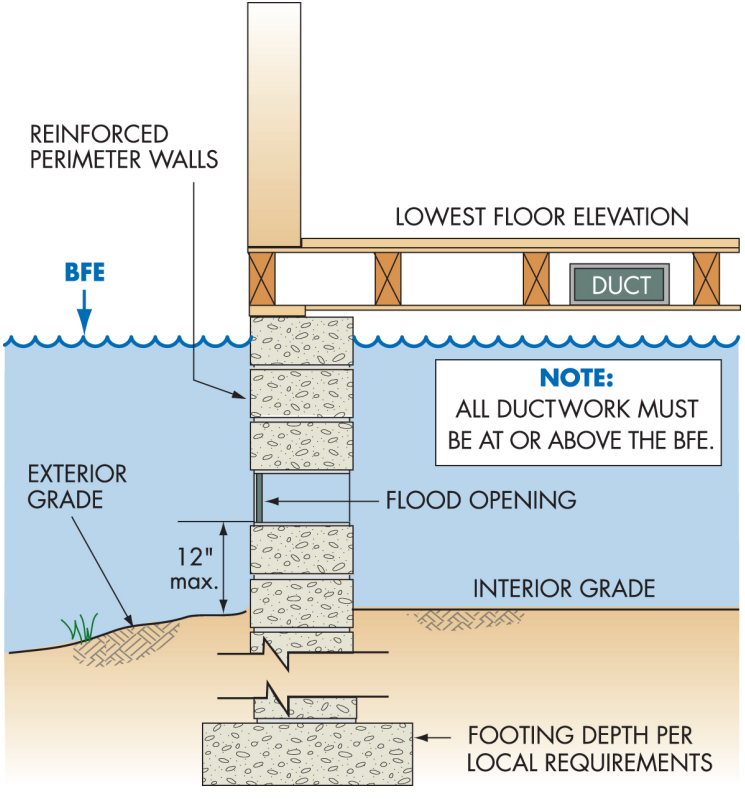
ALTERNATIVE:
Engineered openings are acceptable **if certified** to allow adequate automatic inflow and outflow of floodwaters.

Important

Information

Search online for FEMA Technical Bulletin 1 for more information.

A crawlspace is an acceptable way to elevate just a couple of feet. In all cases, the following are required: openings/vents, elevated utilities, flood resistant materials, and limitation on use.

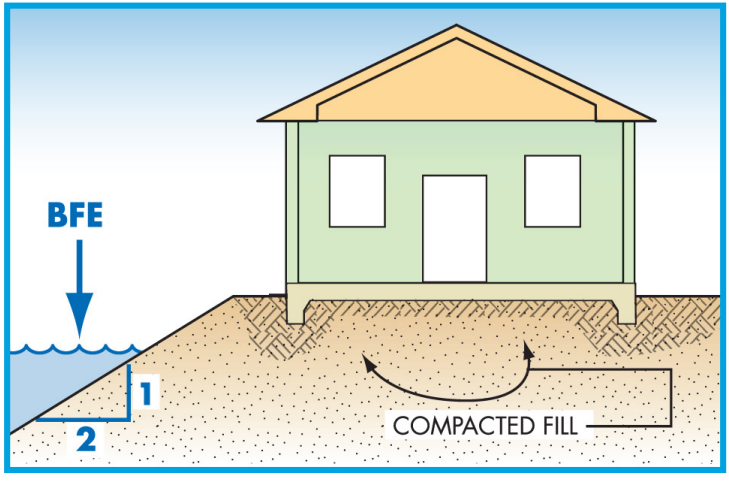


- NDCC § 61-16.2-08 requires the Lowest Floor at or above BFE plus 1 foot.
- All materials below the lowest floor must be flood resistant.
- Flood openings must provide 1 square inch of net open area for every square foot of area enclosed by the perimeter walls – or certified engineered openings may be used.
- A 30 foot x 40 foot 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.

Earthen fill used to raise the ground above the BFE must be placed properly so that it does not erode or slump when water rises.

For safety and to meet floodplain requirements, floodplain fill must:

- Be good clean soil, free of large rocks, construction debris, and woody material (stumps, roots)
- Be machine compacted to 95 percent of the maximum density (determined by a design professional)
- Have graded side slopes that are not steeper than 2:1 (2 feet horizontal extent for every one foot vertical rise)
- Have slopes protected against erosion (vegetation for "low" velocities, durable materials for "high" velocities – determined by a design professional)

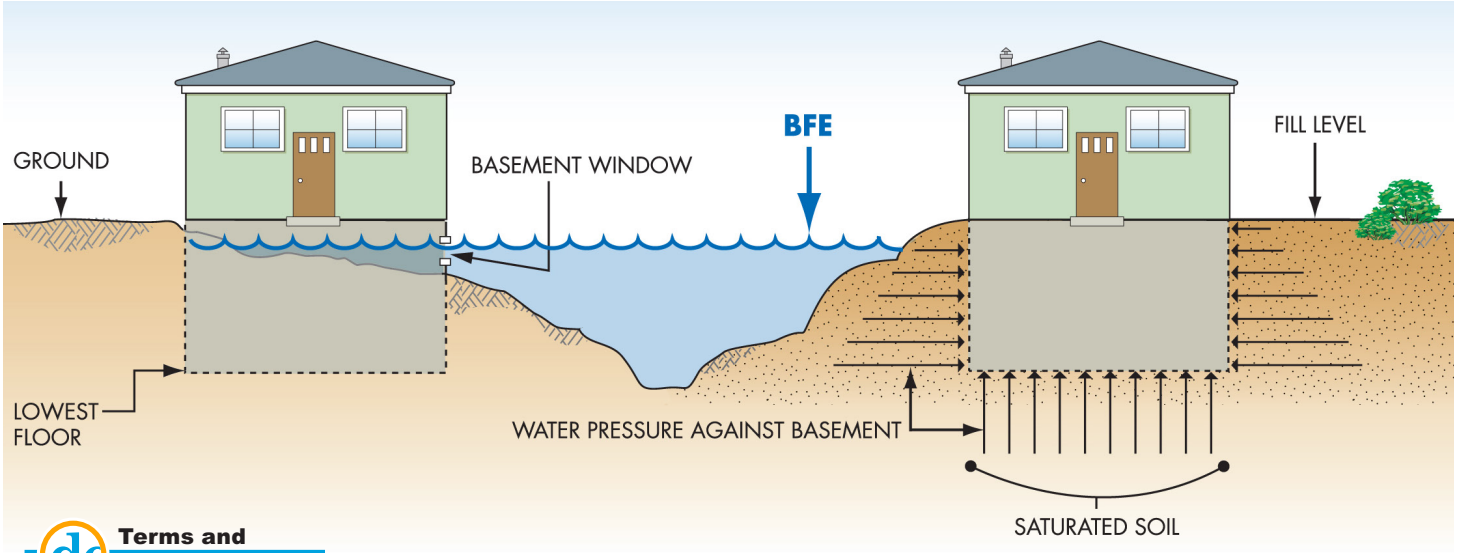


Terms and Definitions

For Additional Information search online for "reasonably safe from flooding".

Your community will require certification of the elevation, compaction, slope, and slope protection materials in order to determine that the proposed structure will be "reasonably safe from flooding".

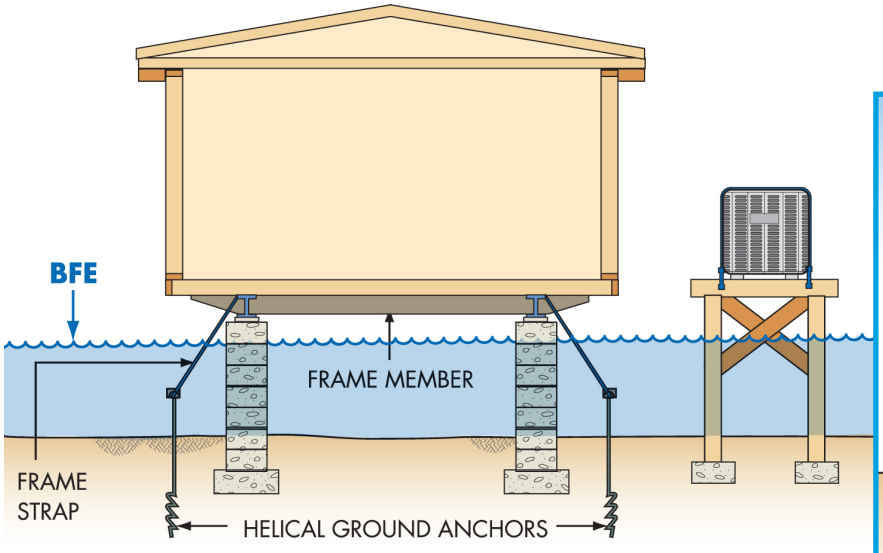
BASEMENTS ARE ESPECIALLY FLOODPRONE

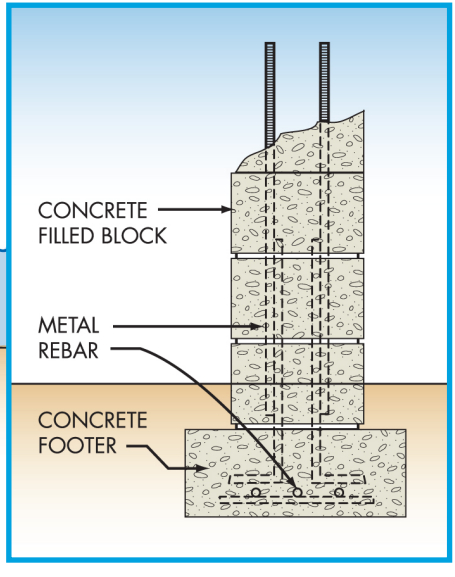


Terms and Definitions

Basement is any portion of a structure that has a subgrade floor (below ground level) on all sides.

Basements below BFE are not allowed in new development, and flood insurance coverage is very limited in existing basements for a very good reason. It only takes an inch of water over the sill and the entire basement can fill up! Excavating a basement into fill doesn't always make it safe because saturated groundwater can damage the walls.

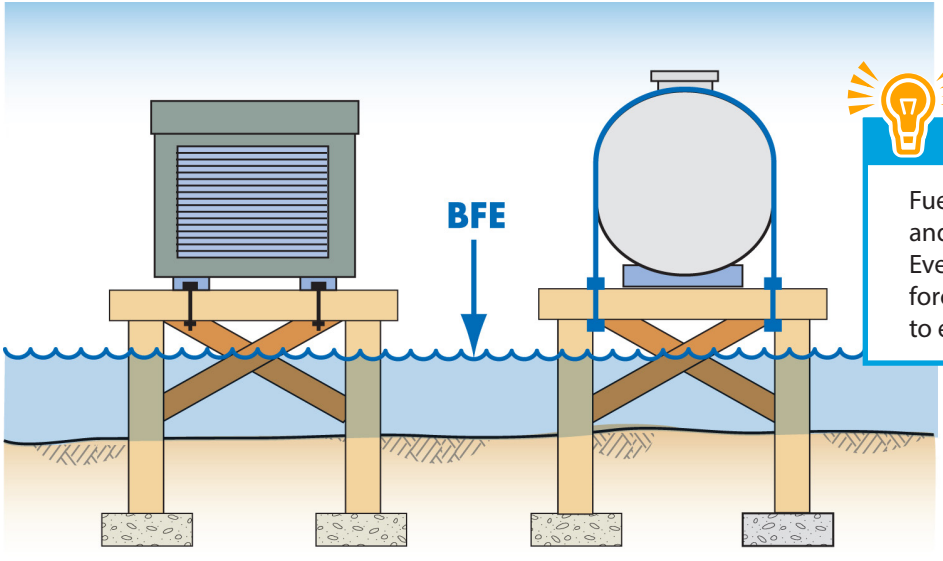




As little as one foot of water can cause substantial damage.

Dry stacked blocks are not acceptable – they will **NOT** withstand a flood.

Manufactured homes must be anchored to resist flotation, collapse, or lateral movement by being tied down in accordance with your community's ordinance, or the manufacturer's installation specifications.

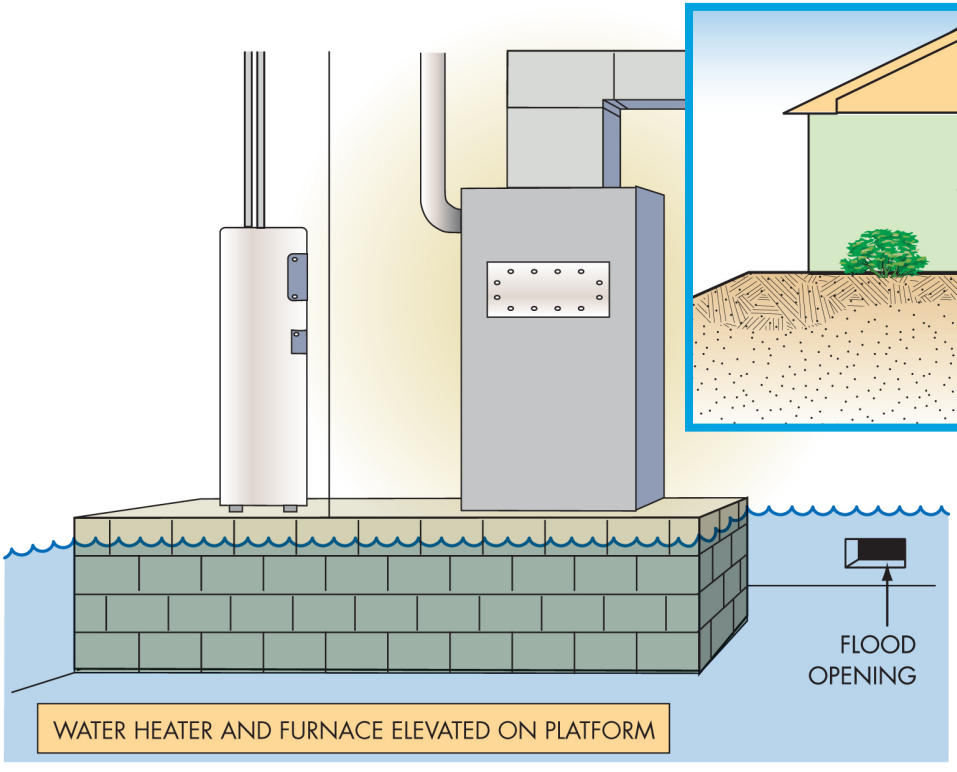


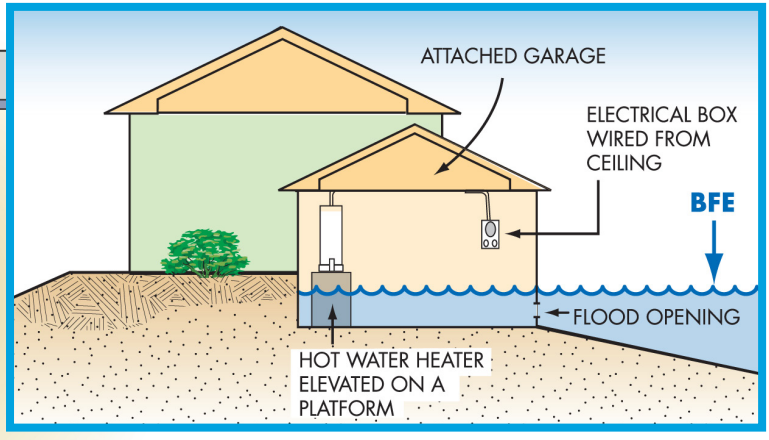
Important

Information

Fuel and propane tanks may cause explosion and pollution risks during flood conditions! Even shallow water can create large buoyant force on tanks, so extra care must be taken to ensure that all tanks are anchored.

All utilities, appliances, and equipment located outside must be elevated one foot above BFE or floodproofed to at least two feet above BFE. Utilities include plumbing, electrical, gas lines, fuel tanks, and heating and air conditioning equipment.





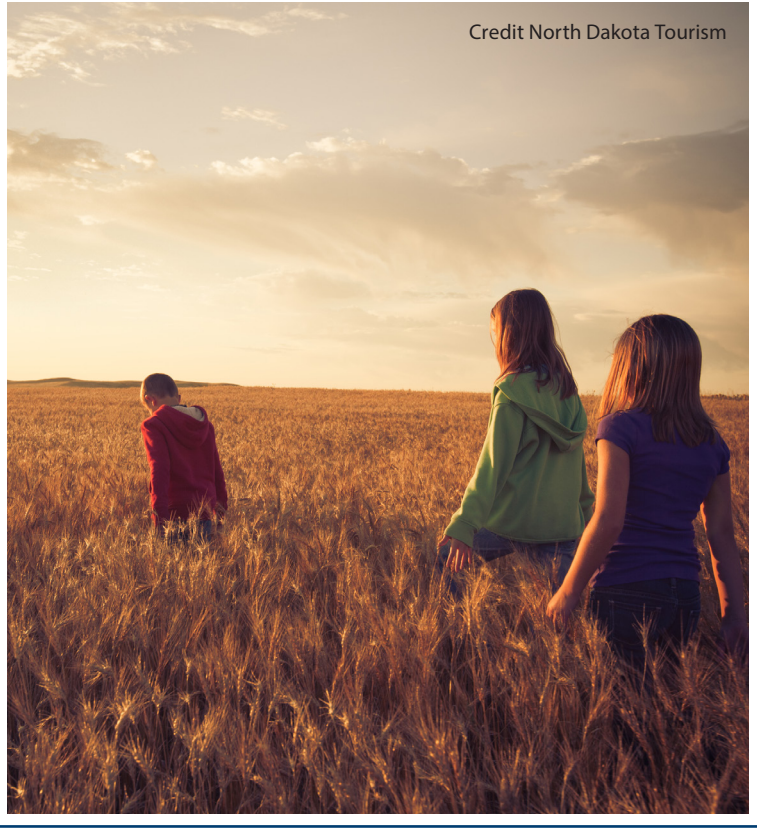
All utilities, appliances and equipment located inside enclosures must also be elevated one foot above BFE or protected two feet above BFE. Again, these utilities include plumbing, electrical, gas lines, heating and air conditioning.

72..... Pools in Flood Hazard Areas

73..... Accessory (Appurtenant) Structures

74. ..... Agricultural Structures

75..... Recreational Vehicles

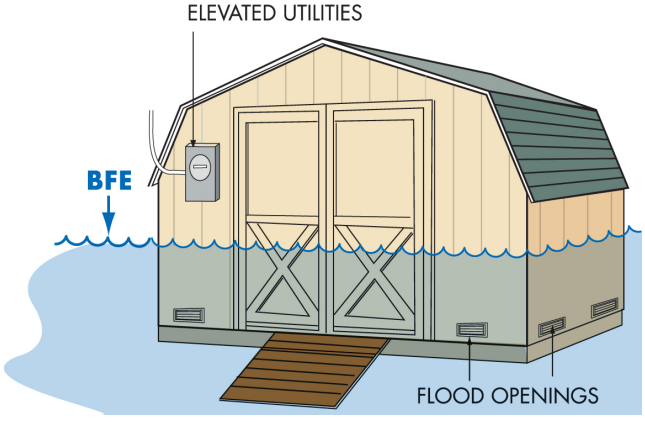

Credit North Dakota Tourism

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.
- **Pools in floodways.** In designated floodways, above-ground pools and pools with fill must satisfy the floodway requirements (see page 56).
- **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 68 and 69).

In SFHA, accessory structures must:

- Not be habitable
- Be anchored to resist floating
- Have flood openings/vents
- Be built of flood resistant materials
- Have elevated utilities
- Be used only for storage or parking
- Not be modified for different use in the future
- Have documented floor elevation



Even small buildings are considered "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 is likely to get wet when flooding occurs.

Terms and Definitions

Accessory (Appurtenant) Structure means a structure that is located on the same parcel of land as a principal structure and whose use is incidental to the use of the principle structure. Accessory structures should be no more than a minimal initial investment, may not be used for human habitation, and must be designed to minimize flood damages. Examples: detached garages, carports, storage sheds, pole barns, and hay sheds.

Variances are allowed for:

- Pole frame buildings
- Steel grain bins
- Steel frame corn cribs
- General purpose feeding barns open on one side

Variances are not allowed for:

- Livestock confinement buildings
- Poultry houses
- Dairy operations
- Similar livestock operations

Important

Information

Farm houses are not agricultural structures. Contact the North Dakota DWR for additional guidance on variances for agricultural structures.

In a SFHA, an RV must:

- Be licensed and titled as an RV or park model (not as a permanent residence)
- Be built on a single chassis
- Have inflated wheels and be self-propelled or towable by a light truck
- Have no attached deck, porch or shed
- Be used for temporary recreational, camping, travel, or seasonal use (no more than 180 days per year)
- Be less than 400 square feet in area (measured at largest horizontal projection)
- 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 67).

77..... Improvements and Repairs of Buildings in the Floodplain
78..... What is Meant by Pre-FIRM and Post-FIRM?
79..... Estimating Costs of Improvements and Repairs
80..... Substantial Improvement / Substantial Damage Resources
81 ..... Substantial Improvement / Substantial Damage Defintions
82..... Estimating Substantial Damage
83..... Non-Substantial Improvements Other than Additions
84..... Non-Substantial Improvement: Lateral Addition Only
85..... Substantial Improvement: Renovation Only
86..... Substantial Improvement: Lateral Addition Only
87..... Substantial Improvement: Additions
88..... Substantial Improvement: Addition Plus Other Work
89..... Elevating an Existing Building
90..... When a Home or Business in the SFHA is Damaged
91 ..... Paying for Post-Flood Compliance

To obtain a permit to improve an existing building:

- The property owner must provide a copy of the construction contract or a cost estimate (including estimated market value of any donated labor and materials).
- The property owner may submit an independent assessment of the market value of the building, if performed by a licensed appraiser.
- The community will compare the cost of the proposed work to the market value of the building and check the value of improvements.
- If the cost of the improvements equals or exceeds 50% of the market value of the building, it is considered a Substantial Improvement and the property owner must bring the building into full compliance with the community floodplain ordinance.

A permit is required to repair substantial damage from any cause – fire, flood, wind, or even a truck running into a building. Check with your community permit office before you begin repairs. The property owner will be asked to provide a detailed cost estimate to repair the building to its pre-damaged condition. If the repair costs are 50% or more of the pre-damage market value of the building, then the building is Substantially Damaged and the property owner must bring the building into full compliance. See page 68 for more information about elevating an existing building on a crawlspace.

Important

Information

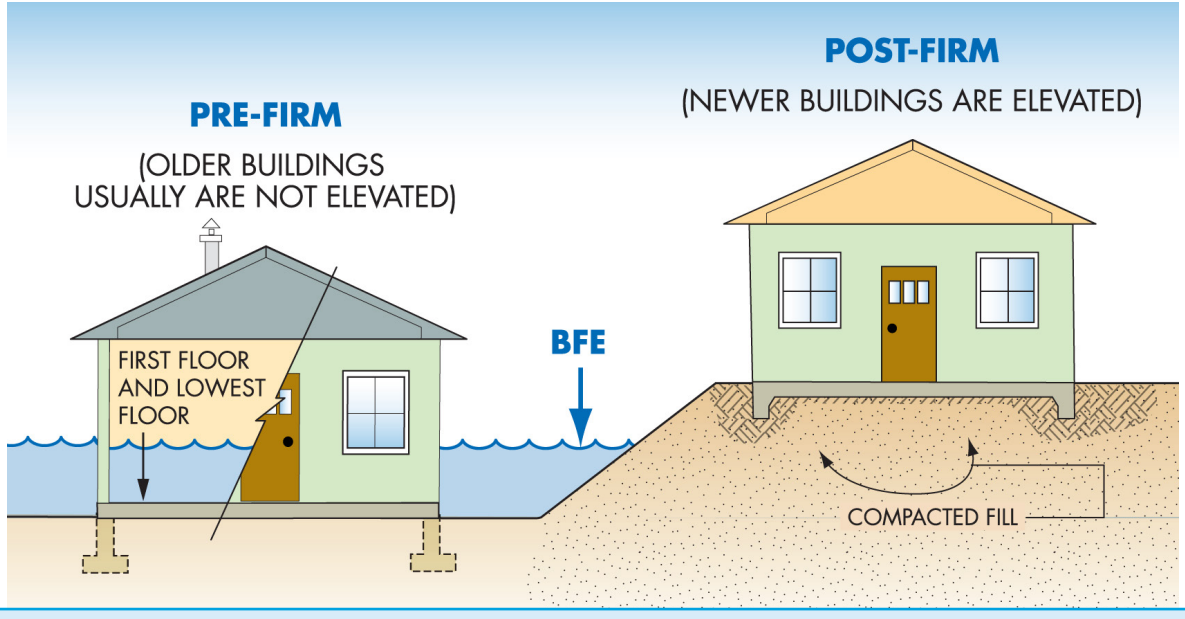
Floodplain buildings can be improved or altered, but special rules may apply!

If the cost of an addition to a Pre-FIRM structure is less than 50% of its market value, only the addition is required to be built 1 foot above the BFE. Check with your local permit office.

The cost to correct previously cited violations of state or local health, sanitary, or safety codes to provide safe living conditions can be excluded.

Alteration of a registered historic structure is allowed, as long as it will continue to meet the criteria for listing as a historic structure.

WHAT IS MEANT BY PRE-FIRM AND POST-FIRM?



A building is **Pre-FIRM** if it was built **before** the date of your community's first FIRM. If built after that date, a building is **Post-FIRM**. Find the initial FIRM date online by searching: FEMA Community Status Book North Dakota or, call your community's planning or call your community's planning, engineering or permitting office. Improvements or repairs to Pre-FIRM buildings may require permits.

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
- 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.)

Important Information

Written estimates prepared by contractors provide the best cost information.

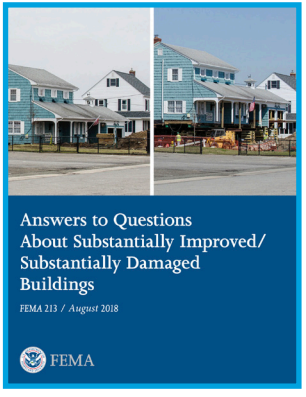
Owners performing work must include estimates of the value of their own labor.

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

For more details on cost items that must be included and those that are excluded, see the Substantial Improvement / Substantial Damage Desk Reference (see page 79).

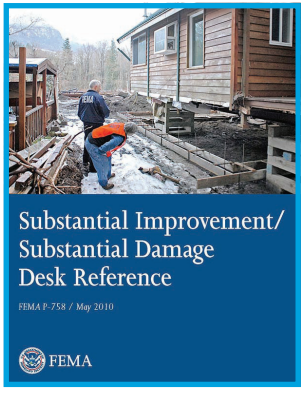
FEMA's *Answers to Questions about Substantially Improved/Substantially Damaged Buildings* (FEMA 213) is a great resources for citizens, elected officials, members of appointed boards, contractors, and real estate and insurance professionals. Each question refers the reader to sections in the *SI/SD 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?



FEMA's *Substantial Improvement / Substantial Damage Desk Reference* (FEMA P-758) provides guidance and suggested procedures for:

- Estimating costs of improvements and costs of repairs
- Estimating market values
- Community and property owner responsibilities
- Administrative requirements
- Key aspects of bringing buildings into compliance
- Suggestions for preparing for disasters

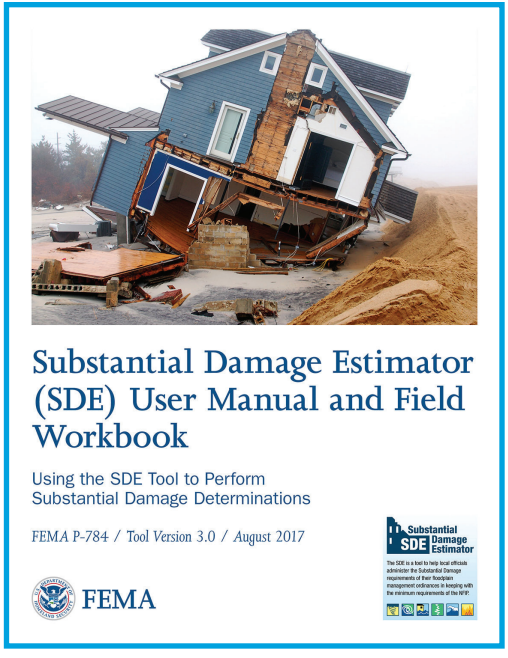


Terms and Definitions

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. Some North Dakota communities track improvements over a period of time and trigger compliance when the cumulative improvement value equals or exceeds 50%.

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.



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:

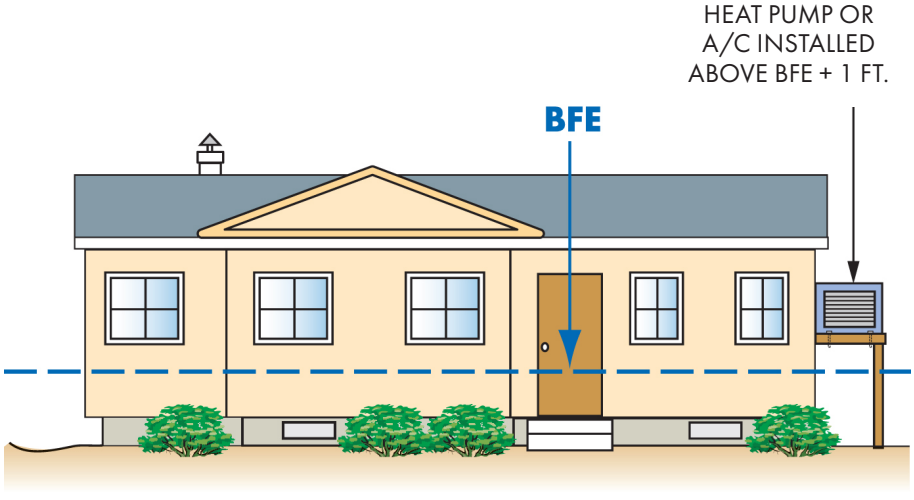
- Can be used to assess flood, wind, wildfire, seismic, and other forms of damage
- Helps provide timely substantial damage determinations so that reconstruction can begin following events that damage buildings
- Is used in conjunction with industry-accepted construction cost-estimating guides

Download the SDE software installation package, User Manual and Field Workbook, forms, worksheets, and other materials by searching online for FEMA SDE User Manual and Field Workbook.

NON-SUBSTANTIAL IMPROVEMENTS OTHER THAN ADDITIONS

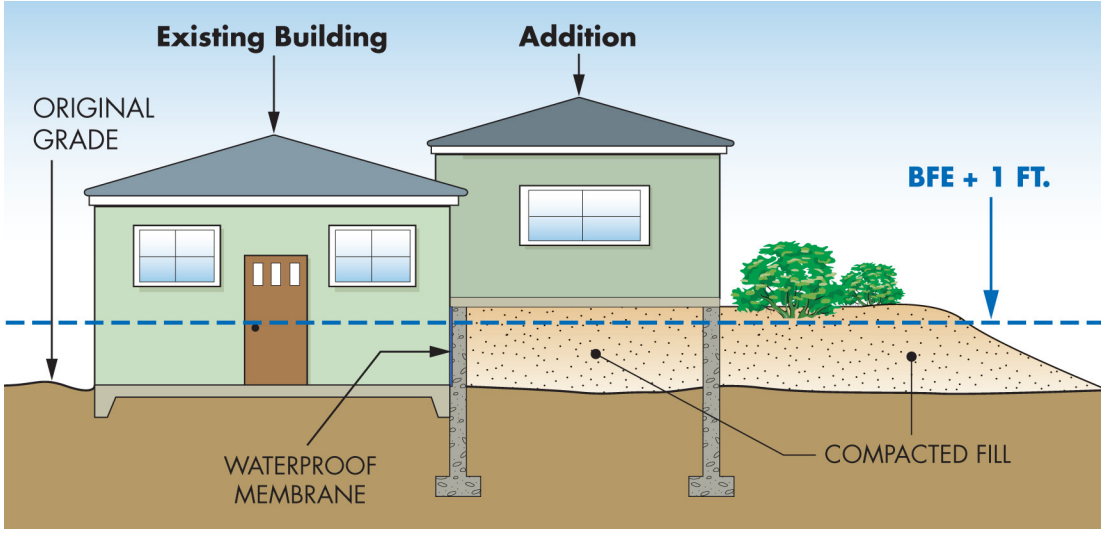
Proposed improvements are "non-substantial" if all costs are less than 50% of the market value of the building. In these cases, buildings are not required to be brought into compliance. However, there are many things owners can do to reduce exposure to future flooding. Owners should consider the following:

- 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



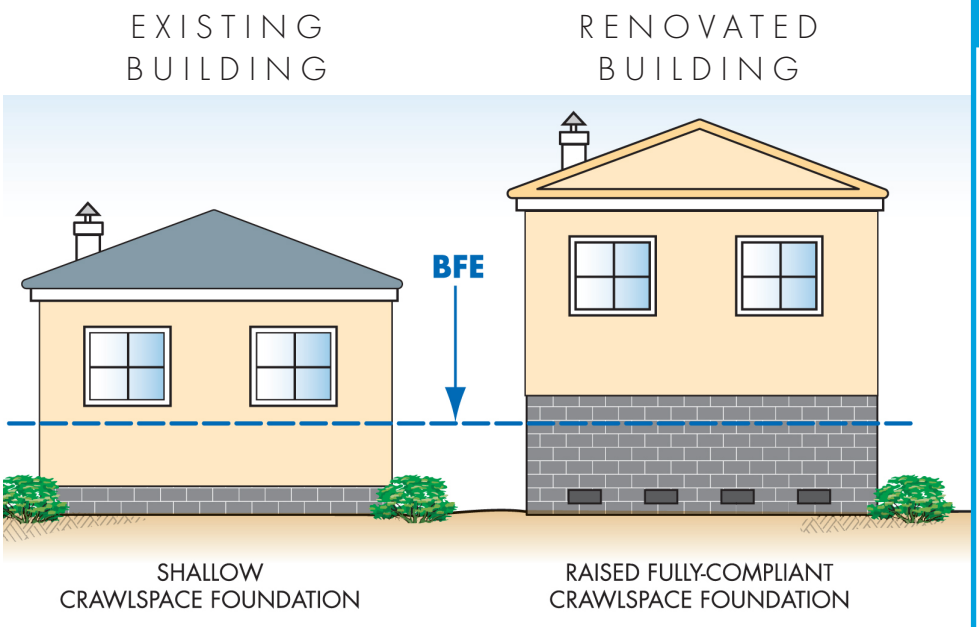
Important Information

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

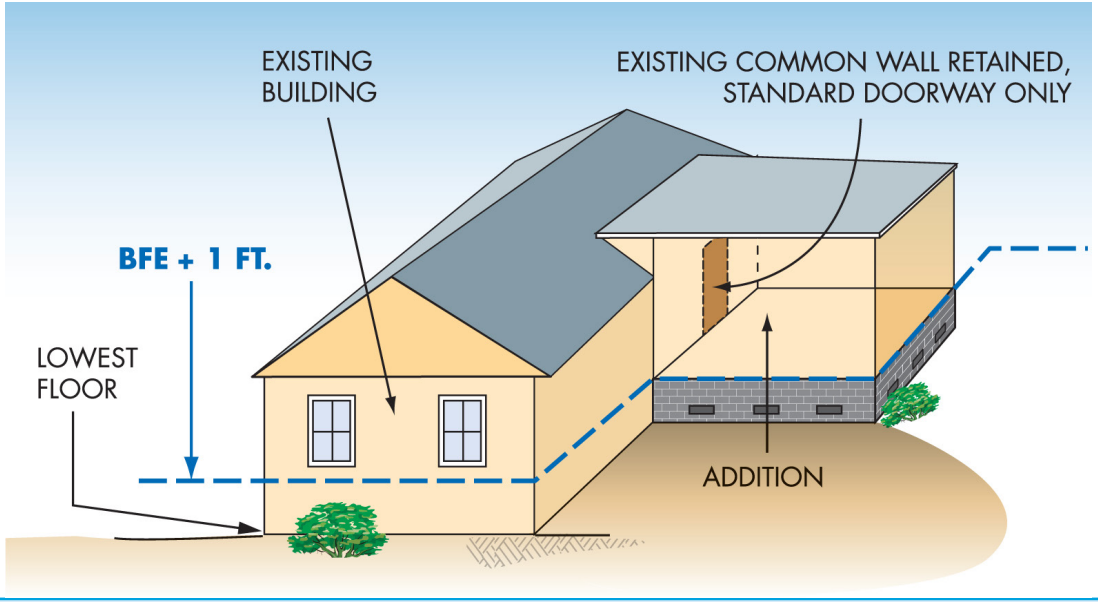
Floodplain buildings can be improved, renovated, rehabilitated or altered, but special rules apply.

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

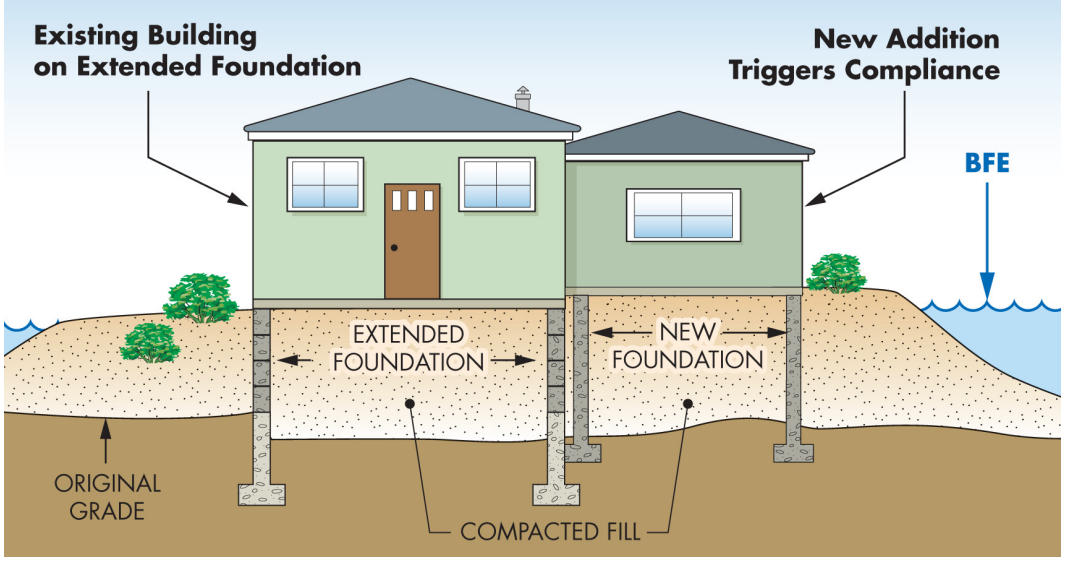


Important Information

See page 87 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 inch doorway



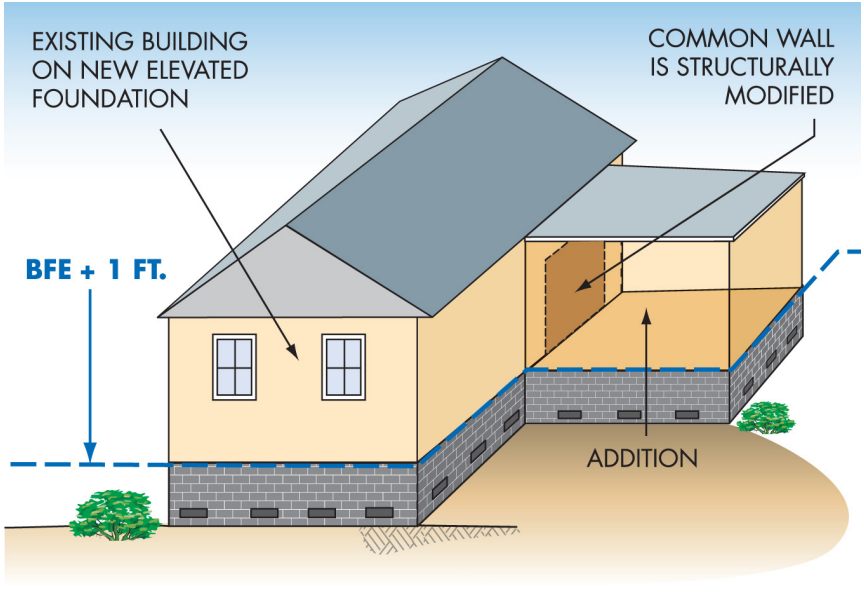
Important

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

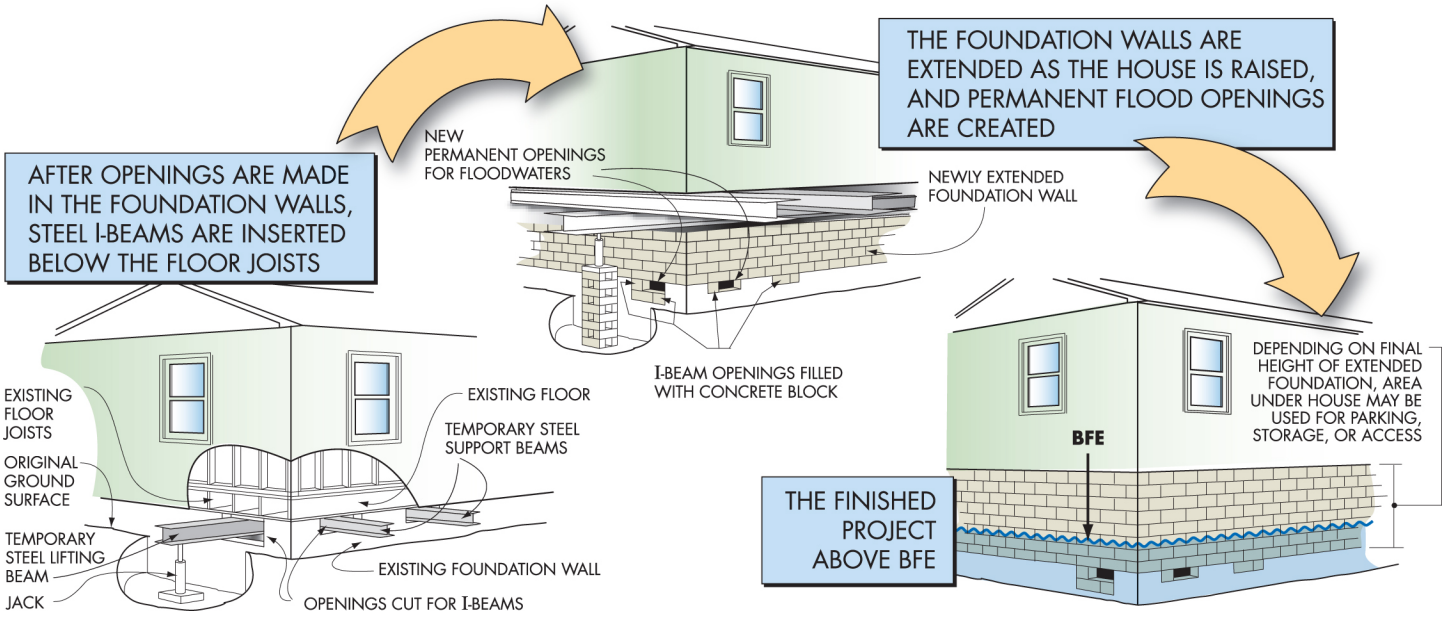


Communities must prepare evaluations to determine if all proposed work will trigger the substantial improvement requirement. Substantial improvement is triggered if:

- 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 90).

WHEN A HOME OR BUSINESS IN THE SFHA IS DAMAGED

Property owners must get a building permit from their community to make most repairs. Repairs must comply with requirements in local regulations and the State building code that apply to existing buildings. When a home or business in the SFHA is damaged by any cause, the community will evaluate whether the building has been substantially damaged.

- If a building is damaged, contact the community right away to learn about permit requirements. It is OK to make minimum emergency repairs to stabilize the building.
- The property owner 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 the property to estimate the cost of repairs.
- The community may send a letter advising the property owner of their next steps.

See page 79 for more information about FEMA's Answers to Questions about Substantially Improved / Substantially Damaged Buildings resource.

USE THE ICC CLAIM TO:

ELEVATE THE HOUSE ON YOUR LOT

DEMOLISH and REBUILD THE HOUSE

MOVE THE HOUSE TO HIGH GROUND

Property owners may be eligible for up to $30,000 to help pay the costs to bring your building into compliance with the community's requirements – if all of the following apply:

- An NFIP flood insurance policy includes Increased Cost of Compliance (ICC) coverage.
- The building is in the mapped SFHA.
- The building's lowest floor is below the elevation required by the community.
- The community has made an official determination that the building was substantially damaged by flooding.
- Act quickly with your claims adjuster and community official to process all the required paperwork.

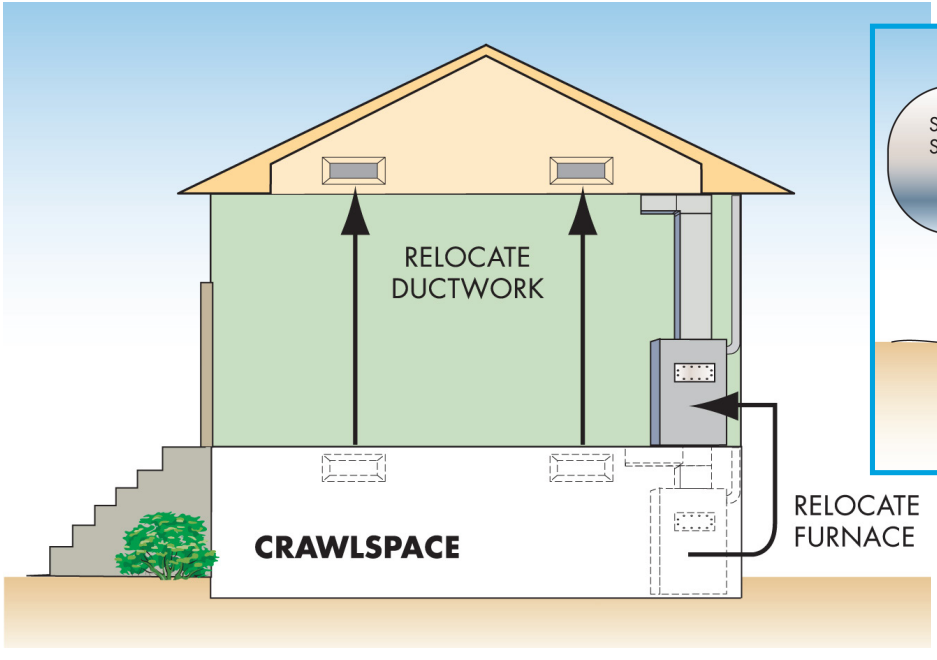
Owners of substantially damaged buildings are required to "bring the building into compliance" with floodplain requirements. Substantial damage is a special case of substantial improvement.

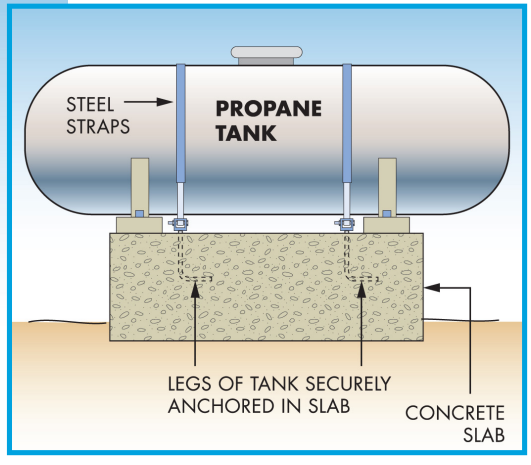
93..... Some Flood Protection for Older Homes is Easy and Low Cost

94..... Some Flood Mitigation Projects are more Costly


Credit National Park Service

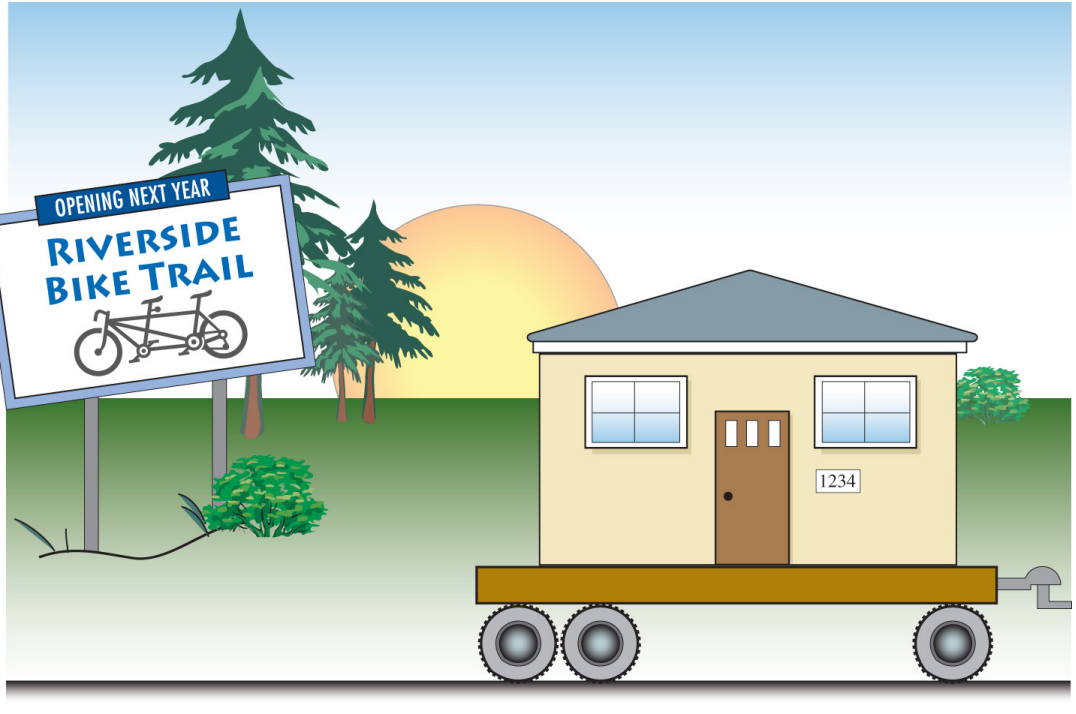
SOME FLOOD PROTECTION FOR OLDER HOMES IS EASY AND LOW COST





Move your hot water heater and furnace out of the basement; or build small platforms for them. Anchor heating oil and propane gas tanks to prevent floatation. **Do not** store valuables in a floodprone basement. Use water-resistant materials when you repair.

But Give You More Protection



Following floods, some communities purchase and remove flood 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 safter high ground outside of high-risk flood hazard areas.

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

OTHER RESOURCES

96..... Useful Resources and Common Acronyms

97..... Be Flood Safe - Don't Drive Through Flooded Roads

98..... Be Prepared for Flood Emergencies

99..... Want to Learn More?

Credit National Park Service

Common Acronyms

- BFE = Base Flood Elevation
- EC = Elevation Certificate
- FEMA = Federal Emergency Management Agency
- FIRM = Flood Insurance Rate Map
- NFIP = National Flood Insurance Program
- SFHA = Special Flood Hazard Area

Useful Resources

- Family Disaster Planning - Search for "Red Cross Family Disaster Planning"
- Information for Flood Victims - Search for "FEMA Flood Victims"
- CRS Resource Center - Search for "FEMA CRS Resources"
- Protecting your Property from Disaster - Search for "FEMA Protecting your Property from Flooding"
- Living with Levees - Search for "FEMA Living with Levees"
- North Dakota DWR: **https://www.dwr.nd.gov/reg_approp/floodplain_management/**

BE FLOOD SAFE - DON'T DRIVE THROUGH FLOODED ROADS

- Flooding is the leading cause of severe weather-related deaths in the U.S.
- Flooded roads, bridges, and culverts may be washed out.
- Passenger cars may float in only 12-18 inches of flowing water.
- Floating cars easily get swept downstream, making it difficult to be rescued.
- Most people who die in floods are trapped in vehicles that become submerged.
- In 2013, three people died in North Dakota trying to cross flooded roadways.

FLASH FLOODS ARE DANGEROUS!
Do not try to walk or drive through moving water.

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 page 20). 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.

Ready

To learn more about individual preparedness, visit ndresponse.gov and contact county emergency management agencies.

WANT TO LEARN MORE?

- For advice on flood information and permits, call your community's building permitting office or planning department.
- The North Dakota DWR coordinates the NFIP, on-line information is available at **http://www.dwr.nd.gov**.
- To order flood maps, call FEMA's Map Service Center at **1(877) FEMAMAP** or order on-line at **http://msc.fema.gov**.
- Learn more about the status of flood map change requests by searching online: FEMA Map Change Status Request.
- You can order printed copies of FEMA publications from the FEMA Distribution Center. To place an order, call **1(800) 480-2520**.
- FEMA's on-line publications can be found in the FEMA Virtual Library. Many are posted in the Portable Document Format (PDF). Go to **http://www.fema.gov/library** for more information.
- To get the best rates for flood insurance, call a local surveyor to complete an Elevation Certificate.
- For additional information about flood insurance, visit **www.floodsmart.gov**.
- For best available flood risk information visit **www.ndram.dwr.nd.gov** for the State's Base Level Engineering Data.

NORTH Dakota | Water Resources

Be Legendary.

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