2024

FLOODPLAIN MANAGEMENT IN OKLAHOMA

QUICK GUIDE

For an overview of our floodplain management program and more resources visit:

oklahoma.gov/owrb

OKLAHOMA
Water Resources Board

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About this Guide

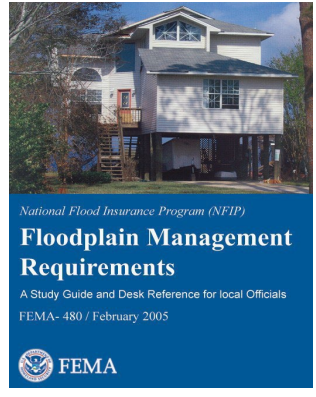
The floodplain management ***Quick Guide*** was originally prepared by our friends and neighbors in Missouri, Alabama, Illinois, Kansas and Mississippi. These states have graciously allowed it to be edited and modified for use in Oklahoma. Copyright laws do not apply.

The development of this ***Quick Guide*** was supported by funding through the Federal Emergency Management Agency (FEMA) as part of the Community Assistance Program – State Support Services Element of the National Flood Insurance Program (NFIP).

Questions, comments, and requests for additional copies should be directed to the Oklahoma Water Resources Board.
We encourage any comments and suggestions for improvements to this guide.

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

https://www.fema.gov/sites/default/files/documents/fema-480_floodplain-management-study-guide_local-officials.pdf



Introduction

The Oklahoma Water Resources Board (OWRB) is pleased to provide this floodplain management ***Quick Guide*** informational tool to community officials.

We regulate the floodplain:

To protect people and property. Floodplain management is about reducing vulnerability to flood risk in our built environment. If we know certain areas will flood from time to time, we should make reasonable decisions to help protect our families, homes, and businesses.

To make sure that federal flood insurance is available. If your home or business is in the floodplain and federal flood insurance isn't available, you may not be eligible for some federal business loans and grants or for some types of federal disaster assistance. Mortgages may be hard to find.

To save tax dollars. Every time you hear about a flood disaster, think about what it means to the town's budget. If we build smart, we'll have fewer problems the next time the river rises. Remember, federal disaster assistance doesn't kick in for all floods. And even when the President declares a disaster, your community still has to pay a portion of repair and clean up costs and could also incur some evacuation expenses.

To avoid liability and lawsuits. If an area is mapped as a floodplain, we know flooding is likely. We also know people could be in danger and buildings could be damaged. Doesn't it make sense to take reasonable protective steps as we develop and build?

To reduce future flood losses in Oklahoma. 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 getting worse as development continues.

Introduction to the National Flood Insurance Program

The National Flood Insurance Program (NFIP) was established by Congress in 1968 to protect lives and property and to reduce the financial burden of providing disaster assistance. The NFIP provides access to flood insurance to homeowners, renters, and business owners if their community participates in the program. Participating communities agree to adopt and enforce ordinances that meet or exceed federal requirements to reduce the risk of flooding.

The Federal Emergency Management Agency (FEMA) oversees the NFIP. https://www.fema.gov

In Oklahoma, the State NFIP Coordinating office is OWRB.

There are three components that work together to support the NFIP:

- **Flood Hazard Identification –** FEMA and its mapping partners (including states and communities) create Flood Insurance Rate Maps and other flood risk products that identify flood hazard areas. These maps are also used to help make informed decisions about regulating development and to determine where flood insurance may be required.
- **Flood Regulations and Mitigation –** To participate, NFIP communities agree to adopt regulations and manage development in identified flood hazard areas to reduce the loss of life and property. Communities can also help lower their flood risks by developing long-term strategies that will reduce the impacts of future events on people, property, and the environment; this is called mitigation planning.
- **Flood Insurance –** Federally-backed flood insurance is available in communities that participate in the NFIP. Flood insurance protects you against some of the risk you can't mitigate and is a better form of support than disaster assistance. *Individuals in communities that don't participate in the NFIP are ineligible to obtain NFIP flood insurance policies.*

Community Responsibilities in the NFIP

To participate in the NFIP in Oklahoma, a community agrees to:

- **Adopt and enforce** a floodplain management ordinance
- **Require** permits for all types of development (see page 21) in the mapped floodplain
- **Ensure** that building sites are reasonably safe from flooding
- **Require** new or improved residential structures and manufactured homes to be elevated to at least the Base Flood Elevation (BFE)
- **Require** non-residential structures to be elevated to at least the BFE or dry-floodproofed
- **Require** elevation certifications to document compliance (see pages 29 and 30)
- **Conduct** field inspections and cite any violations to the community's floodplain management ordinance
- **Carefully** consider requests for a variance
- **Notify** FEMA when revisions to flood maps are needed

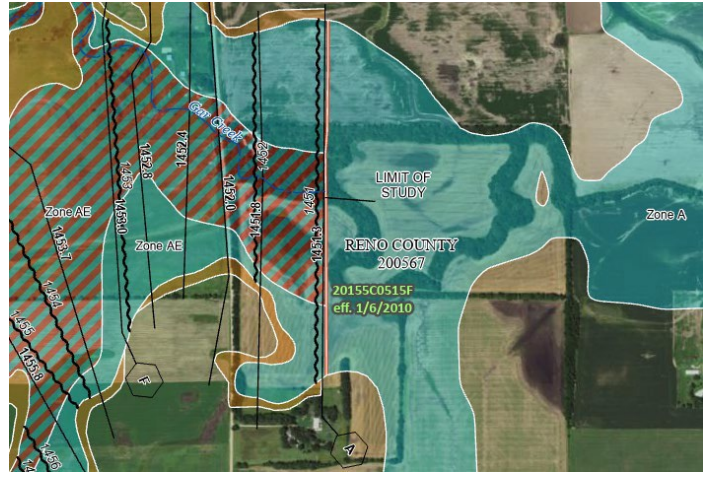
Communities that do not participate in the NFIP may not regulate to these same standards and may have increased exposure to flood risks as a result.

Flood Zones

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's **Flood Hazard Boundary Map (FHBM)** or **Flood Insurance Rate Map (FIRM).**

Mortgage lenders require the purchase of flood insurance for properties in the **Special Flood Hazard Area (SFHA).** SFHA flood zones begin either with A (in inland areas) or V (in coastal areas). In Oklahoma you can find:

- **Zone A –** Areas with a 1% or greater annual chance of flooding (100-year floodplain). Hydraulic analyses not performed. No BFEs shown.
- **Zone AE –** Areas with a 1% or greater annual chance of flooding (100-year floodplain). Hydraulic analyses performed. Base flood elevations shown.
- **Zone AH –** Areas with a 1% or greater annual chance of shallow flooding (ponding) with an average depth of 1 to 3 feet. Hydraulic analyses performed. Base flood elevations shown.
- **Zone AO –** Areas with a 1% or greater annual chance of shallow flooding (sheet flow), with an average depth of 1 to 3 feet. Hydraulic analyses performed. Base flood depths shown (no BFEs).
- **Zone AR –** Areas with a 1% or greater annual chance of flooding protected behind a decertified levee that is being reconstructed to restore 100-year flood protection.



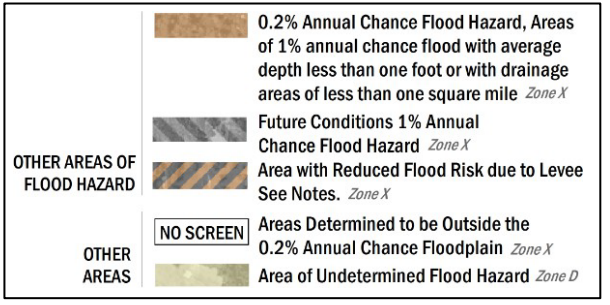
Flood Zones (continued)

Additional flood zones outside the SFHA are also displayed on FIRMs. They include:

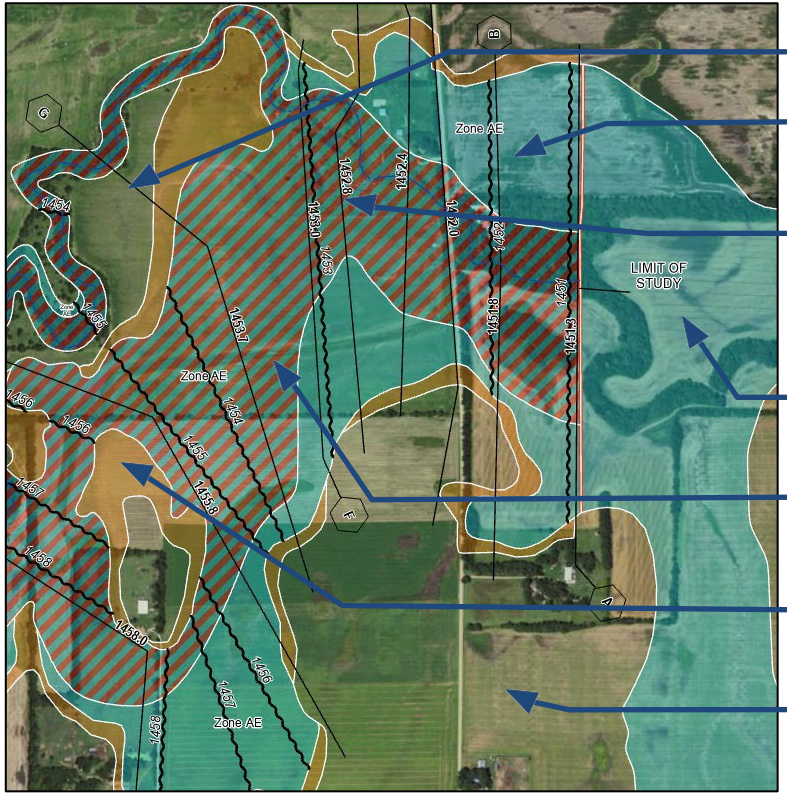
- **Zone X (Shaded) –** Moderate risk areas located outside the 1% annual chance floodplain (100-year floodplain) but within the 0.2% annual chance (500-year) floodplain.
- **Zone X (Unshaded) –** Lower risk areas outside the 0.2% annual chance floodplain. Includes areas with reduced flood risk due to protection by 100-year-certified levees.
- **Zone D –** Unstudied areas of undetermined but possible flood hazards. No flood hazard analysis has been conducted by FEMA.

Anywhere it can rain, it can flood!

In participating communities, NFIP flood insurance is available to property owners and renters in all flood zones, not just in the SFHA.

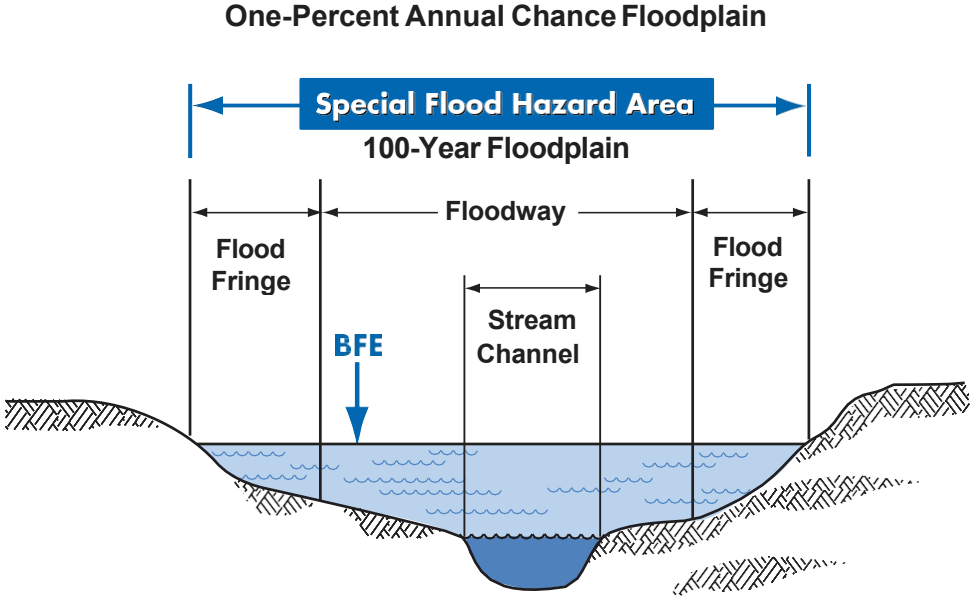


Example Flood Insurance Rate Map Symbology



1. **Cross Section** location (see page 12).
2. **Zone AE** is the 1% annual chance (100-year) floodplain with BFEs (formerly Zones A1-A30).
3. **Base Flood Elevation (BFE)** is the water surface elevation of the 1% annual chance flood (consult FIS profiles and tables for specific elevations to the nearest 0.1 foot).
4. **Zone A** (approximate) is the special flood hazard area without BFEs.
5. The **Floodway** is the cross-hatched area (see page 11).
6. **Shaded Zone X** is the 0.2% annual chance (500-year) floodplain (formerly Zone B).
7. **Unshaded Zone X** is all other areas considered low risk (formerly Zone C).

Understanding the Riverine Floodplain

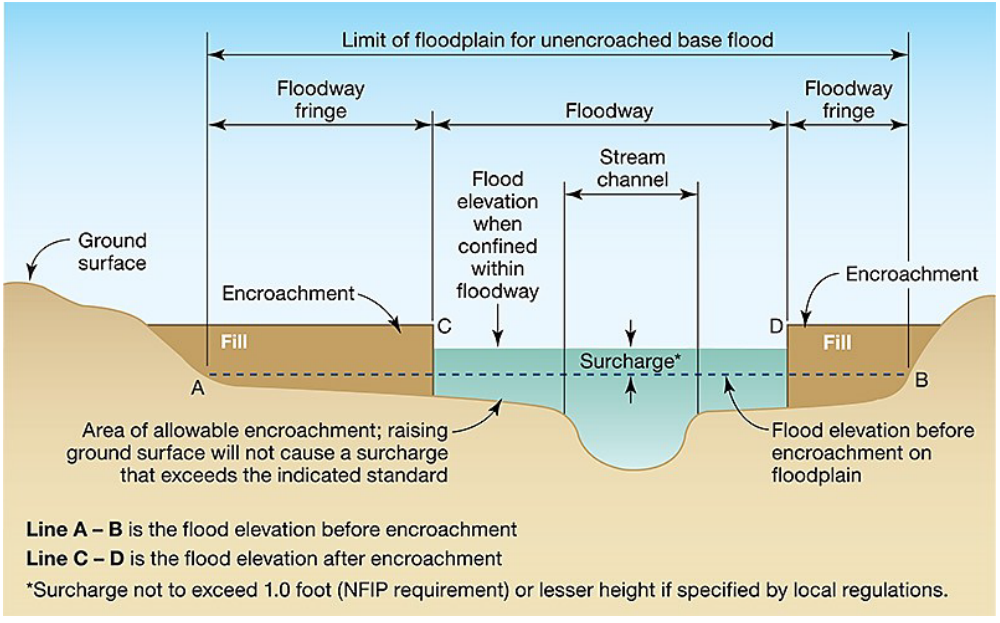


Terms and Definitions

Riverine floodplains are usually comprised of a floodway and flood fringe. The floodway encompasses the channel and adjacent overbank areas that must be reserved to convey floodwaters. The remainder of the SFHA is the flood fringe, where water may be shallower and slower. The **Base Flood Elevation (BFE)** is the modelled height of the 1% annual chance flood. The SFHA boundary, BFE, and the extent of the regulatory floodway are determined using hydraulic modeling techniques.

For floodplains with BFEs (see pages 54-56), check the Flood Insurance Study (FIS) to find the Flood Profiles which show water surface elevations for the different frequency floods (see page 12).

Understanding the Floodway



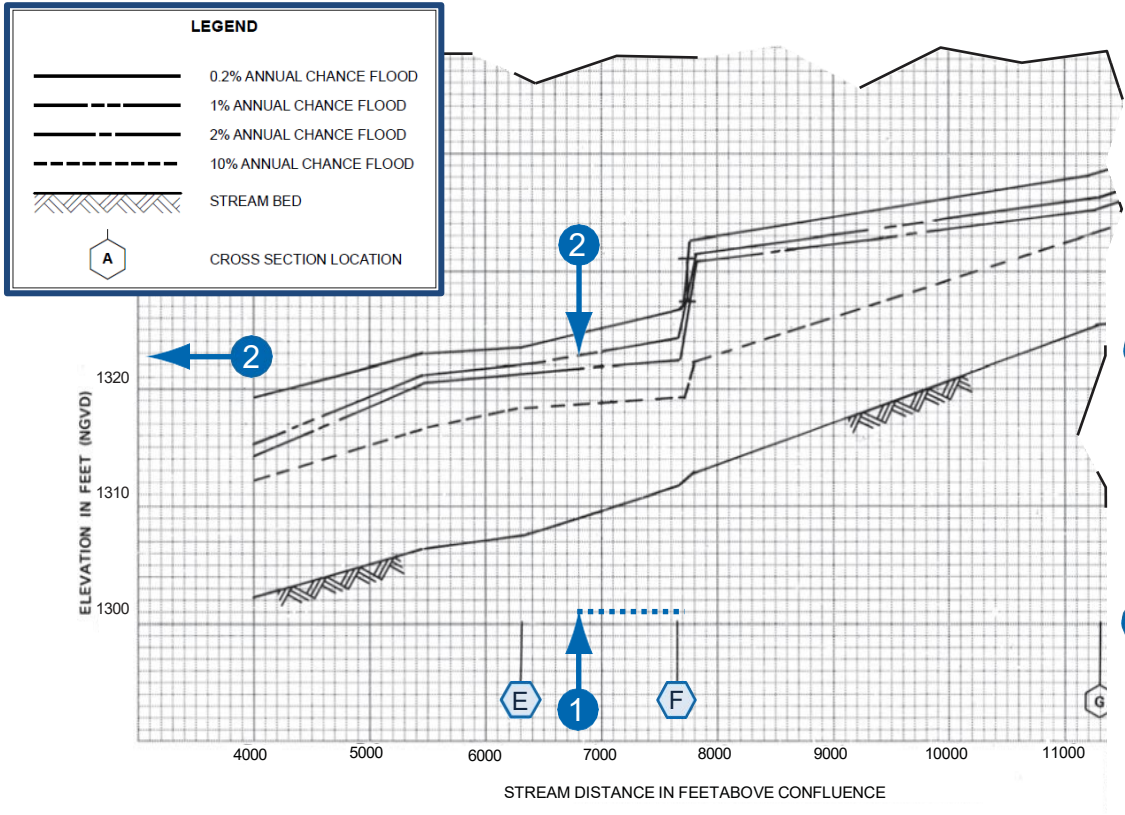
Important Information

To determine the floodway location, computer models will simulate development (encroachment) filling up the floodplain, causing a rise in the base flood height, up to 1.0 foot.

Once this surcharge in modelled flood height is reached, the floodway boundary limits are drawn. No encroachment or "rise" is permitted inside the defined regulatory floodway.

Before a local permit can be issued for proposed development in the regulatory floodway, a "no-rise" certification must be submitted (see page 28). A qualified engineer must evaluate any proposed project to ensure that it will not increase flooding.

Use Riverine Flood Profiles to Determine BFEs



Flood profiles are used to determine the BFE at a specific site to the nearest 0.1 foot. Profiles also show water surface elevations for floods other than the 1% annual chance flood.

1. On the Flood Insurance Rate Map, locate your site by measuring the distance along the center line of the stream channel from a cross section, for example E or F.

2. Scale that distance on the Flood Profile and then read up to the 1% profile line, then across to determine the BFE. (*Answer: 1,322.8 feet*)

Base Level Engineering (BLE)

Some areas shown on FIRMs are designated as Zone A – where FEMA depicts the areas subject to the 1% annual chance flood event but does not publish a Base Flood Elevation (BFE). Where no BFEs have been established, NFIP communities must obtain, review, and reasonably utilize other best available data to manage development in their flood-prone areas.

Base Level Engineering (BLE) data provides additional floodplain data for local communities with A Zones and helps local communities without a published FIRM to identify flood-prone areas and permit all development activity to assure it is "reasonably safe from flooding."

Oklahoma now has BLE data in many areas, using efficient modeling and mapping approaches to show credible flood hazards. Communities may use BLE as best available data where it is more restrictive than the data shown on the FIRM. This data can also be used for hazard mitigation planning, certain map change submittals, supporting emergency management, and education and outreach.

Additional BLE Resources are available at https://www.fema.gov/flood-maps/tools-resources/risk-map/base-level-engineering.

Lowest Floor and the NFIP

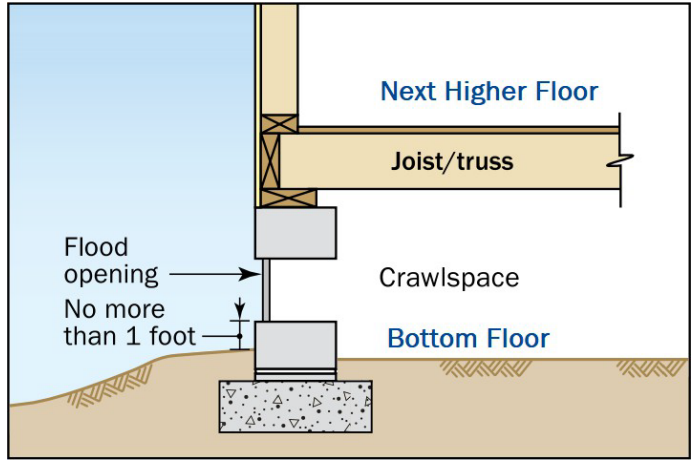
All new and substantially improved structures in the SFHA must have the lowest floor, including basement, elevated to the Base Flood Elevation (BFE) in Oklahoma. Non-residential buildings may be dry floodproofed instead of elevated.

A building's **lowest floor** is interpreted by the local official and is not necessarily a direct measurement. The lowest floor may be the same as the bottom floor (i.e., a slab-on-grade building), or it may be different.

An unfinished or flood resistant enclosure, used 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 the enclosure is fully compliant with all NFIP requirements for enclosures below BFE (see next page).

For example: if a crawlspace enclosure at grade is properly vented with flood openings, remains unfinished space, and meets all other NFIP limitations, then the next higher finished floor, not the bottom floor of the crawlspace, may be the "lowest floor" for floodplain management compliance.

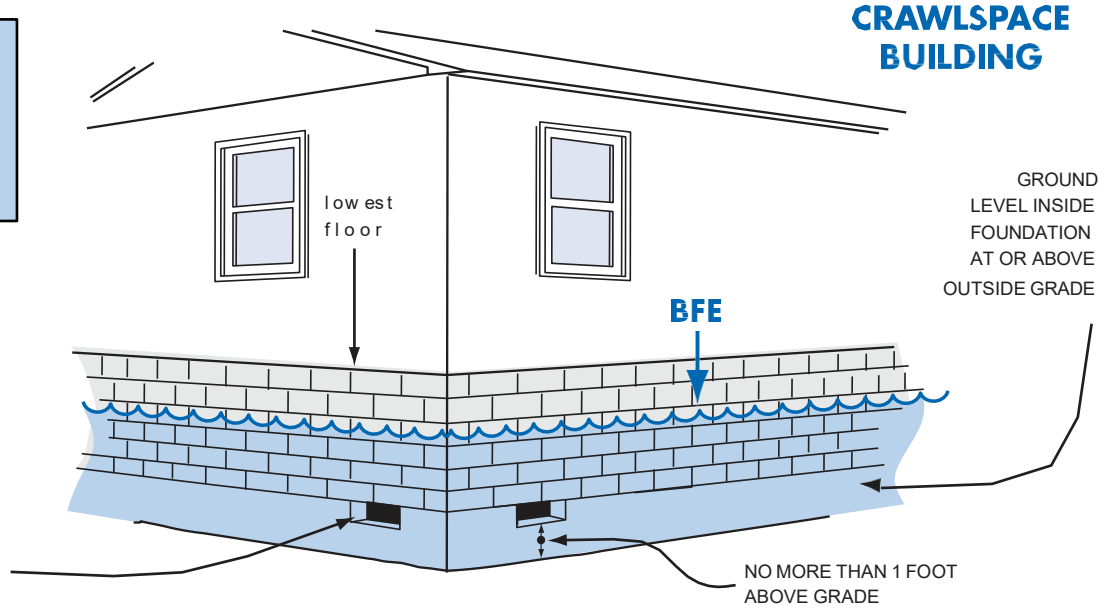
Review building plans closely and conduct inspections to verify that the building's elevations are compliant with the NFIP and your local ordinance.



Enclosures Below BFE

NOTE:

- OPENINGS REQUIRED: AREA OF AT LEAST 1 SQ. IN. PER SQ. FT. OF ENCLOSED SPACE
- A 1,200 SQ. FT. BUILDING WOULD NEED 1,200 SQ. IN. OF NET OPENINGS

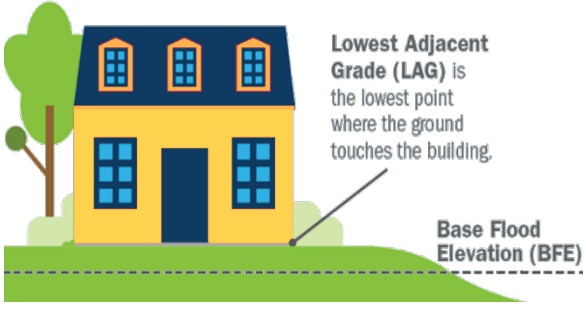


Crawlspace foundations are commonly used to elevate just a few feet. In all cases the following are required: openings/vents, elevated utilities, flood resistant material, and limitation on use. Crawlspaces cannot be below-grade on all sides (the NFIP definition of a “basement”) without specific ordinance allowances (see FEMA Technical Bulletin 11).

Letter of Map Change (LOMC) Types

Letters of Map Change (LOMC) requests are applications to FEMA for a formal determination of the property's location and/or elevation relative to the SFHA. There are *Amendments* and *Revisions*.

1. **Letter of Map Amendment (LOMA)** is an official amendment to an effective FIRM stating that an existing structure that is on naturally high ground (not elevated by fill) would not be inundated by the base flood. To qualify, surveyed elevations must show the structure's Lowest Adjacent Grade (LAG) to be at or above the Base Flood Elevation (BFE).



2. **Letter of Map Amendment Out-As-Shown (LOMA-OAS)** is an amendment to an effective FIRM that may be issued without a full elevation survey, provided the owner has clear visual evidence that the structure is outside the SFHA. Details and directions can be found at: https://www.fema.gov/sites/default/files/documents/fema_letter-map-amendment-out-shown.pdf.

Important Information

Check FEMA's Flood Hazard Mapping website for more information about map revisions: https://www.fema.gov/flood-maps/change-your-flood-zone

Because LOMCs change the effective NFIP maps, they are official records that the community must maintain. Any LOMA should be noted on the community's master flood map and filed by panel number in an accessible location.

Removing a property from the SFHA doesn't eliminate risk! More destructive floods than the 1% annual chance can occur.

Letter of Map Change (LOMC) Types (continued)

3. **Letter of Map Revision (LOMR)** is an official revision to an effective FIRM that may be issued to change flood insurance risk zones, floodplain and boundary delineations, BFEs, and/or other map features.

4. **Letter of Map Revision Based on Fill (LOMR-F)** is an official revision to an effective FIRM that is issued to document FEMA's determination that a structure or parcel of land has been **elevated by fill** above BFE, and therefore is no longer in the SFHA.
The participating community must also determine that the land and any structures to be removed from the SFHA are "reasonably safe from flooding."

   Locations of LOMCs can be seen on FEMA's NFHL Viewer: https://msc.fema.gov/nfhl

5. **Conditional Letter of Map Revision (CLOMR)** is a letter from FEMA commenting on whether a *proposed* project, if built as proposed, would result in a change to the SFHA boundary, change the BFE, or modify the effective regulatory floodway.
Endangered Species Act (ESA) compliance documentation is required with the CLOMR application. See: https://www.fema.gov/flood-maps/change-your-flood-zone/esa

   A CLOMR (or a CLOMR-F, for proposed projects involving fill) **does not** officially change the FIRM. Thus, building permits **cannot** be issued based on a CLOMR. After a project is completed, a LOMR request must be completed to officially revise the effective map.

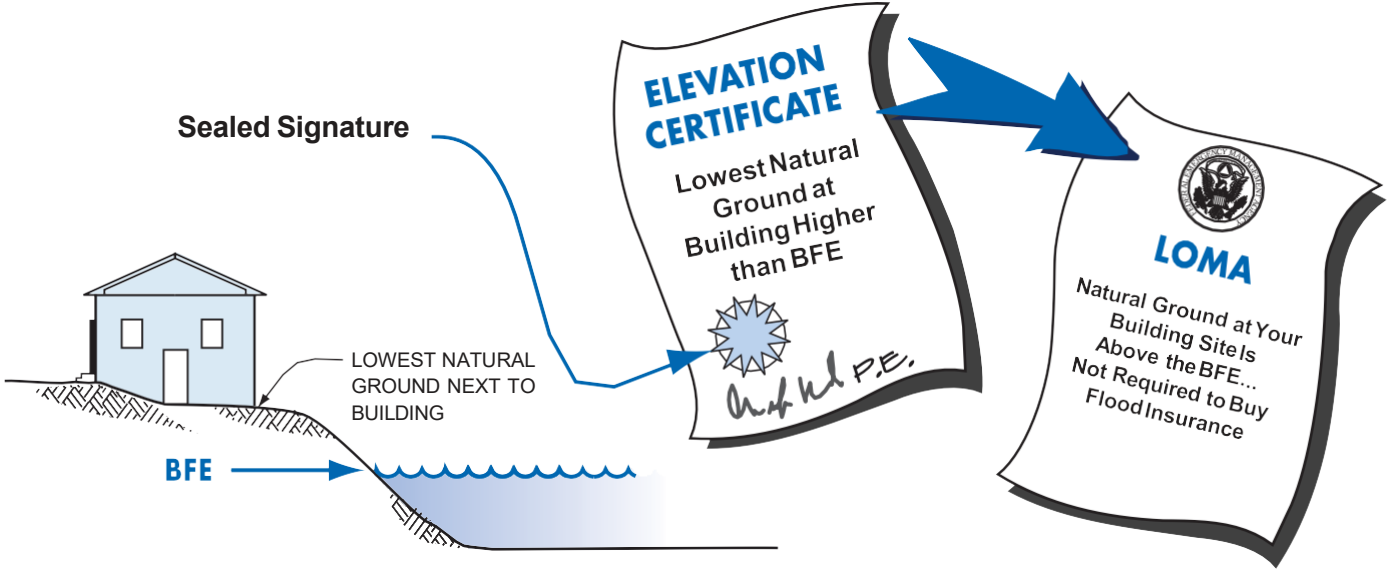
You may complete the LOMC request online or send paper forms by mail.

How to Request a LOMA or LOMR-F:
https://www.fema.gov/sites/default/files/documents/fema_request-loma-lomrf.pdf

Access the paper forms (MT-EZ, MT-1, and MT-2):
https://www.fema.gov/flood-maps/change-your-flood-zone/paper-application-forms

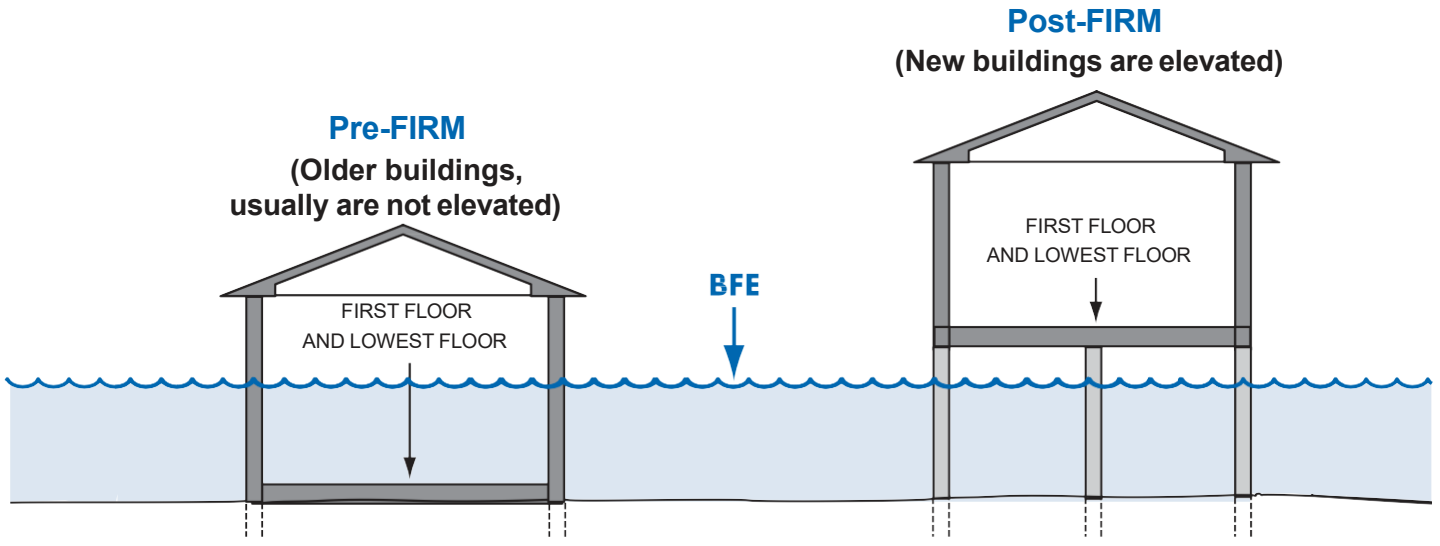
If FEMA grants a map amendment or revision request, the federal flood insurance purchase requirement for mortgages is removed; however, the mortgage lender may still require it, regardless of a property's location.

Is Your Building Site Higher than the BFE?



If your land is shown as within the floodplain, but your building site is higher than the BFE, you can get a surveyor or engineer to complete a FEMA Elevation Certificate (EC). Submit the EC with an application for a LOMA to FEMA (see page 16). Alternatively, you can provide elevation information on the LOMA application itself (but the elevation information must still be certified by a surveyor or engineer). A LOMA may then be issued which removes the federal requirement to purchase flood insurance (but a lender may still require it). Keep the certificate with your deed – it will help future buyers.

What do Pre-FIRM and Post-FIRM Mean?



A building is Pre-FIRM if it was built **on or before** December 31, 1974, or before the effective date of your community's first Flood Insurance Rate Map (FIRM). These buildings were built before the community's floodplain management regulations came into effect.

If it was built after December 31, 1974, or the effective date of the first FIRM (whichever is later), it is Post-FIRM.

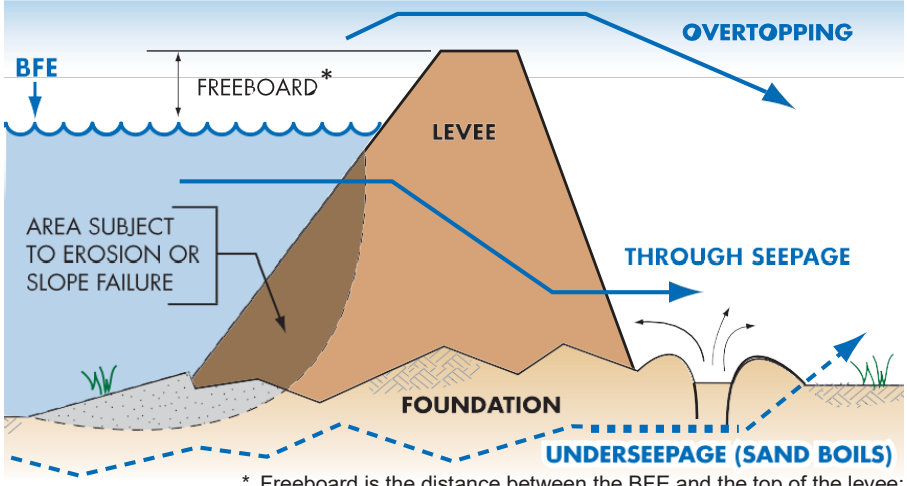
Levee Accreditation for FIRMs

Many levees are designed to protect land against flooding from the base flood. For FEMA to show those areas as outside of the Special Flood Hazard Area (SFHA), communities and levee owners must certify that levees meet certain design criteria. Certification can present significant challenges during the map revision process. If the levee is not certified, previous mapping regulations remain in effect.

Communities that have levees should determine as soon as possible whether certification will be required.

Pursuant to FEMA's Procedural Memoranda 34 and 43, and as outlined in Federal regulations at 44 CFR § 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
- 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

All Development in the Floodplain Requires a Permit

NFIP participating communities must regulate all **development** in their identified floodplain (SFHA). This means requiring permits for any man-made changes to real estate – not just for new buildings, but changes to existing structures, as well as non-structural development.

Development, as broadly defined by the NFIP, can include:

- New construction
- Improvements or repairs to existing structures (such as renovations)
- Placing manufactured homes
- Subdivision development
- Temporary buildings and accessory structures
- Agricultural buildings
- Parking or storage of recreational vehicles
- Storing materials, including fuel/chemical tanks
- Roads, bridges, and culverts
- Fill, grading, excavation, mining, and dredging
- Stream alteration
- … and more

Important Information

OWRB has created an NFIP Resources webpage to provide communities in Oklahoma with ready-to-use templates, **including a floodplain development permit template**.

Find it under the Guidance Page: https://oklahoma.gov/owrb/floodplain-management/forms-and-guidance.html.

Key Steps in Floodplain Development Permit Review

The Permit Reviewer must check many things. Some Key Questions are:

1. Is the site in the mapped floodplain?
2. Is the site in the mapped floodway? If so, is there a no-rise study?
3. Does the site plan show the flood zone and BFE?
4. Is an addition or repair of an existing building proposed?
5. Has the applicant submitted an Elevation Certificate?
6. Does the site plan show existing ground contours?
7. Will the manufactured home be properly elevated and anchored?
8. Will new structures and utilities be properly elevated and anchored?
9. Do the plans show an appropriate and safe foundation?
10. Have all state and Federal permits been obtained?

For information about permits on state owned/operated property, visit OWRB's permitting webpage at https://oklahoma.gov/owrb/floodplain-management/forms-and-guidance.html or contact them at (405) 530-8800.

Issuing a permit for compliant development is just the first step in ensuring development is reasonably safe from flooding! **Inspections should also be done** to ensure the project is compliant with the work that was proposed.

Carefully Complete the Permit Application

Floodplain Development Permit Application
(See Terms and Conditions)
Flood City, KS

Permit Number:	XYZ-001
Issue Date:	02/01/2024
Expiration Date:	07/30/2024

Section C: Project Type
(select all that apply)

Structural Development	Other Development
☒ Residential (# units, if applicable: _____)	☐ Subdivision
☐ Non-residential	☐ Fill (avg. height: _____ ft)
☐ Manufactured Home	☒ Paving
☐ Agricultural Structure	☐ Dredging, excavation, grading, drilling, mining
☐ Accessory Structure	☒ Fence, wall, retaining wall
☐ Critical Facility	☒ Utilities work
	☐ Demolition
Channel Improvements	☐ Clearing of trees, vegetation, or debris
☐ Watercourse Alteration	☐ Drainage improvement *(culverts)*
☐ Bank Stabilization	☐ Storage of material & equipment
☐ Fill (avg. height: _____ ft)	☐ Other *(describe)*: _____
☐ Grade Control, Drop Structure, Outfall	

Modification Type

☐ New Construction	☒ Repair or Rehabilitation*	☐ Temporary
☐ Addition or Improvement*	☐ Emergency Repair*	☐ Maintenance*
☐ Other (describe):		

***Is the work within or connected to an existing structure?** ☐ Yes ☐ No *If yes, provide the information below.*

Estimated Cost of Project: $165,500
Include all materials and labor, even if donated or discounted.
Attach supporting documentation.

Valuation of Existing Structure *(without land value)*: $398,000
Source of Valuation: tax assessor's office

Year built: 1997

Section D: Elevation and Floodplain Information

Elevation Information

Elevation of Bottom Floor, including basement, crawlspace, or enclosure: 725.5
☐ crawlspace ☐ enclosure ☐ basement ☒ lowest finish floor (slab)

Elevation of Lowest, Habitable Floor: 725.5
**(Indicate presence of flood openings and elevation of machinery and equipment on Elevation Certificate)*

Elevation of Dry Floodproofing *(non-residential)*: N/A

Floodplain Information

FEMA Flood Zone:	☐ A ☒ AE ☐ AE–Regulatory Floodway ☐ AH ☐ AO ☐ X-Shaded
Base Flood Elevation (BFE) or Depth:	722.6

(Continue and sign on next page)

- Identify all proposed work and development types.
- If the application is to modify an existing structure, provide all costs of the improvement or repair work, and the structure's market value.
- For structures, provide the elevation(s) of the floor(s), and the height of dry-floodproofing where applicable.
- Indicate the flood zone and determine the BFE at the location of the proposed development.
- Attach additional information as necessary, along with all required documentation, such as a FEMA Elevation Certificate.
- Sign and date the application form.

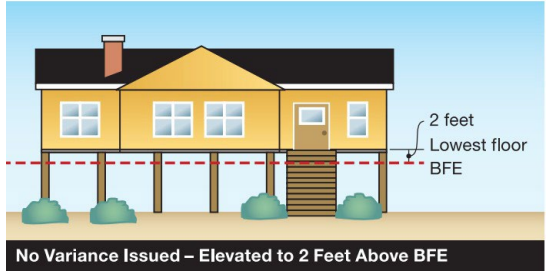
Think Carefully Before Issuing a Variance

A **variance** is an authorization for development that would otherwise be prohibited by the community's floodplain management regulation. Because variances increase risk and reduce resilience, they should be rarely issued. Several specific conditions must be satisfied to justify a variance, including:

- Good and sufficient cause
- Hardship is site-specific (pertaining to the land, not the person)
- No additional threats to public safety or fraud/victimization of public
- Minimum necessary to afford relief.

The community shall notify the applicant in writing that a variance results in increased risk to life and property and may increase flood insurance premium rates.

FEMA P-993 "Variances and the NFIP" provides a full list of conditions. https://www.fema.gov/sites/default/files/2020-08/FEMA_P-993_FPM-Bulletin_Variance.pdf



Think carefully before issuing a variance. Not only will the property be more likely to get damaged, but insurance will be very costly. If your community has a pattern of granting variances inconsistent with the local ordinance, communities may be subject to sanctions from FEMA, including NFIP probation and suspension.

Communities Must Keep Records Permanently

NFIP Participating communities agree to maintain documentation for all development in flood zones, including:

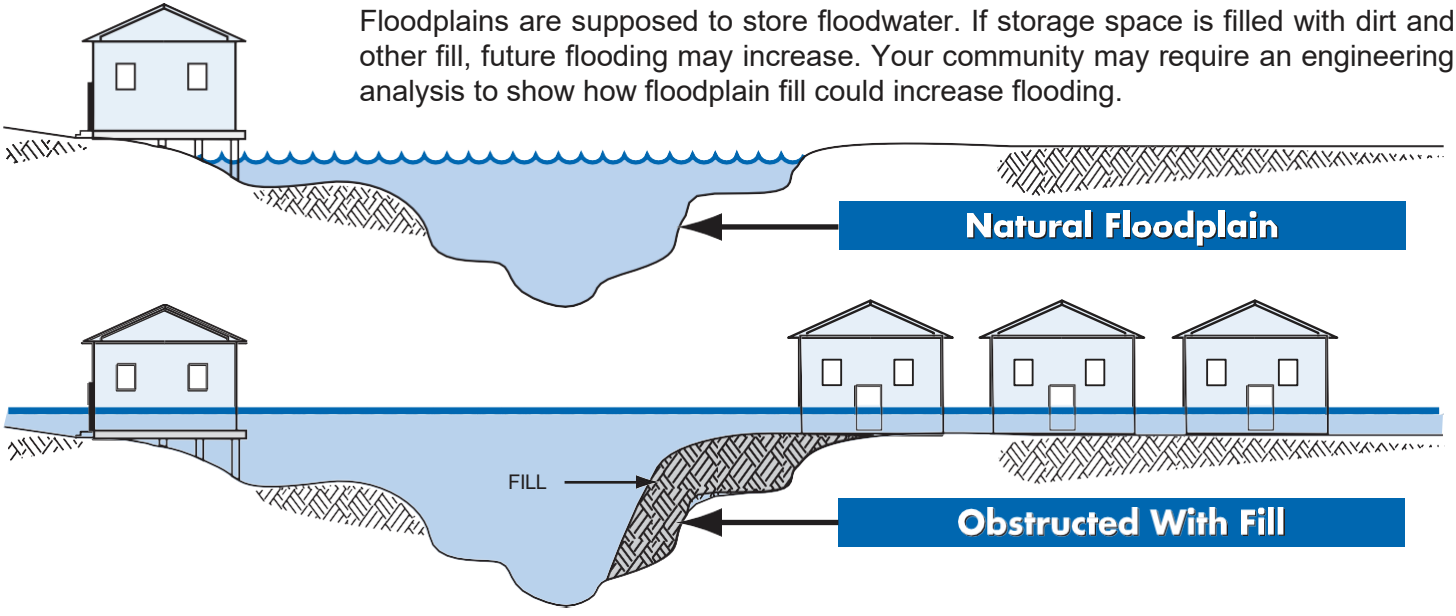
- Permits issued and variances granted
- Floodway encroachment (no-rise) and watercourse alteration
- Design certifications for dry floodproofed non-residential buildings
- Design certification for engineered flood openings
- Determinations of whether work on existing buildings is substantial improvement or repair of substantial damage
- Surveyed “as-built” building elevations (Elevation Certificates)
- Letters of Map Change
- Copies of applicable state or federal permits

Maintaining copies of Elevation Certificates based on finished construction is also a prerequisite for participation in the Community Rating System (CRS).

FEMA requires that floodplain development records are kept “in perpetuity,” which means permanently. FEMA or state NFIP specialists will likely request to see copies of your old permit records in the event of an audit, to show compliance.

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 increase. Your community may require an engineering analysis to show how floodplain fill could increase flooding.



Fill in the floodway is allowed ONLY if an engineering evaluation demonstrates there will be no rise in flood level.

Floodway Development Restrictions – "No-Rise"

- Floodways convey the largest volume of water and may have high velocities.
- Once a community has a designated regulatory floodway on the FIRM, they must prohibit development within that floodway, unless an engineering analysis shows the work will not cause any increase in flood levels – which means no rise in the BFE.
- "No-rise" certifications must be signed, sealed, and dated by a Professional Engineer licensed in Oklahoma and qualified to conduct hydraulic analyses.
- Some communities restrict all development in regulatory floodways even if a no-rise is met.
- Fencing in floodways should be open or permeable to allow floodwater to flow through; solid fences (stockade, privacy) are floodway encroachments.

The Floodway "No-Rise" Certification

When applying for a permit for any development activities in a regulatory floodway, an applicant must certify that the proposed development will not obstruct the floodway and will result in no increase (rise of 0.00 feet) in the height of the base flood elevation.

This "no-rise" certification must be supported by technical data – a full hydraulic analysis is required in most cases.

The supporting technical data should be based upon the standard step-backwater computer model utilized to develop the 1% annual chance (100-year) floodway shown on the community's effective Flood Insurance Rate Map (FIRM) and the results tabulated in the community's Flood Insurance Study (FIS).

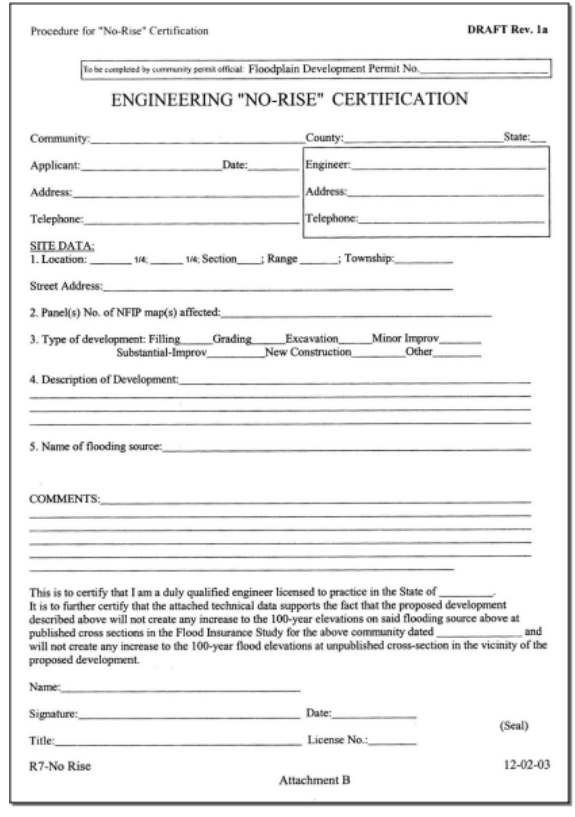
For guidance, see https://oklahoma.gov/owrb/floodplain-management/forms-and-guidance.html

During permitting, the community must first review the "no-rise" certification and engineering data submittal prior to issuing a decision.

Copies of no-rise documentation must be kept with the permit file.

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

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



Procedure for "No-Rise" Certification — DRAFT Rev. 1a

To be completed by community permit official: Floodplain Development Permit No.

ENGINEERING "NO-RISE" CERTIFICATION

Community: County: State:

Applicant: Date: Engineer:

Address: Address:

Telephone: Telephone:

SITE DATA:
1. Location: 1/4; 1/4; Section; Range ; Township:

Street Address:

2. Panel(s) No. of NFIP map(s) affected:

3. Type of development: Filling Grading Excavation Minor Improv
Substantial-Improv New Construction Other

4. Description of Development:

5. Name of flooding source:

COMMENTS:

This is to certify that I am a duly qualified engineer licensed to practice in the State of .
It is to further certify that the attached technical data supports the fact that the proposed development described above will not create any increase to the 100-year elevations on said flooding source above at published cross sections in the Flood Insurance Study for the above community dated and will not create any increase to the 100-year flood elevations at unpublished cross-section in the vicinity of the proposed development.

Name:

Signature: Date: (Seal)

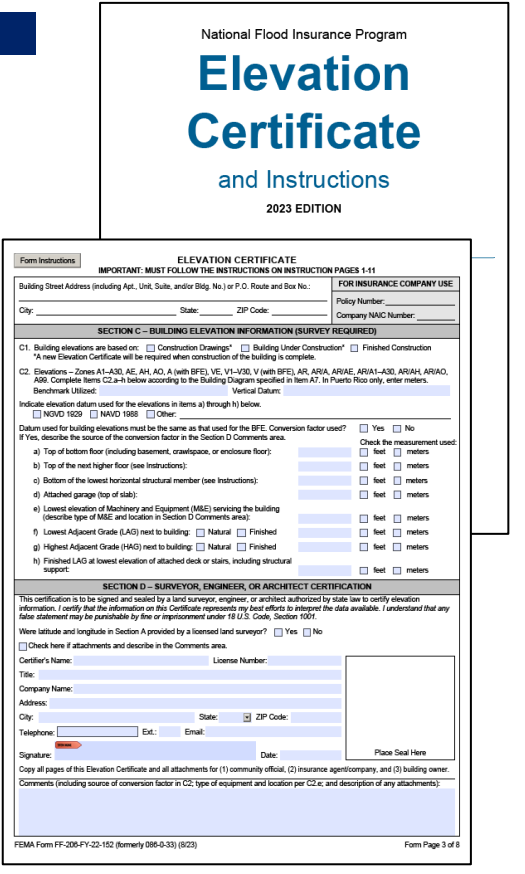
Title: License No.:

R7-No Rise 12-02-03

Attachment B

FEMA Elevation Certificate (EC) Form

- An **Elevation Certificate (EC)** is a FEMA form used to collect information that local floodplain administrators can use to verify that buildings in any flood zone are elevated properly.
- When the floodplain has BFEs, the EC should be completed and sealed by a registered surveyor or engineer.
- Insurance agents use the EC to write flood insurance policies, although an EC is no longer a requirement for rating a policy. However, an EC may still be required to verify compliance with floodplain management regulations.
- The EC cannot be used alone to waive the requirement to purchase flood insurance, but is used to support a Letter of Map Change application (see page 16).
- The current version of the FEMA EC form can be downloaded at: https://www.fema.gov/flood-insurance/find-form/underwriting.



National Flood Insurance Program

Elevation Certificate

and Instructions

2023 EDITION

Form Instructions

ELEVATION CERTIFICATE

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON INSTRUCTION PAGES 1-11

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.:

City: State: ZIP Code:

FOR INSURANCE COMPANY USE

Policy Number:

Company NAIC Number:

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

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by state law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

Were latitude and longitude in Section A provided by a licensed land surveyor? Yes No

Check here if attachments and describe in the Comments area.

Certifier's Name: License Number:

Title:

Company Name:

Address:

City: State: ZIP Code:

Telephone: Ext.: Email:

Signature: Date:

Place Seal Here

Copy all pages of this Elevation Certificate and all attachments for (1) community official, (2) insurance agent/company, and (3) building owner.

Comments (including source of conversion factor in C2; type of equipment and location per C2.e; and description of any attachments):

FEMA Form FF-206-FY-22-152 (formerly 086-0-33) (8/23) Form Page 3 of 8

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, 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: N/A Vertical Datum: NAVD 88

Indicate elevation datum used for the elevations in items a) through h) below.
☐ NGVD 1929 ☒ NAVD 1988 ☐ Other: _____

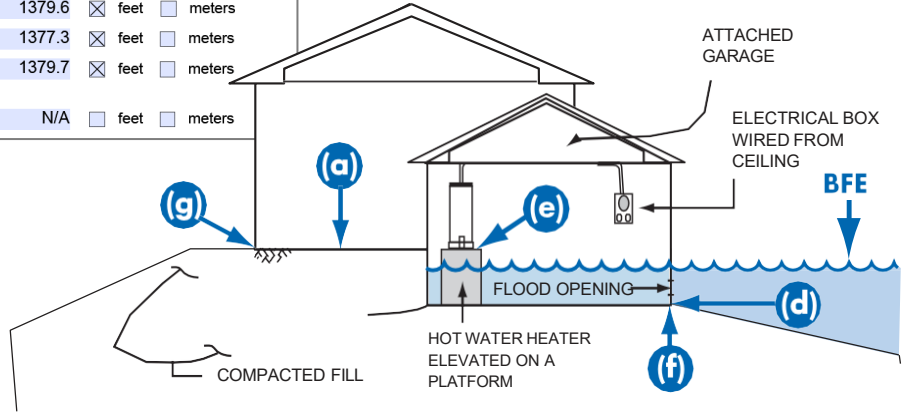
Datum used for building elevations must be the same as that used for the BFE. Conversion factor used? ☐ Yes ☒ No
If Yes, describe the source of the conversion factor in the Section D Comments area.

		Check the measurement used:	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor):	1379.8	☒ feet	☐ meters
b) Top of the next higher floor (see Instructions):	N/A	☐ feet	☐ meters
c) Bottom of the lowest horizontal structural member (see Instructions):	N/A	☐ feet	☐ meters
d) Attached garage (top of slab):	1377.3	☒ 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):	1379.6	☒ feet	☐ meters
f) Lowest Adjacent Grade (LAG) next to building: ☐ Natural ☒ Finished	1377.3	☒ feet	☐ meters
g) Highest Adjacent Grade (HAG) next to building: ☐ Natural ☒ Finished	1379.7	☒ feet	☐ meters
h) Finished LAG at lowest elevation of attached deck or stairs, including structural support:	N/A	☐ feet	☐ meters

Elevation Certificate (Partial)

In this example, the BFE is **1378.8**.

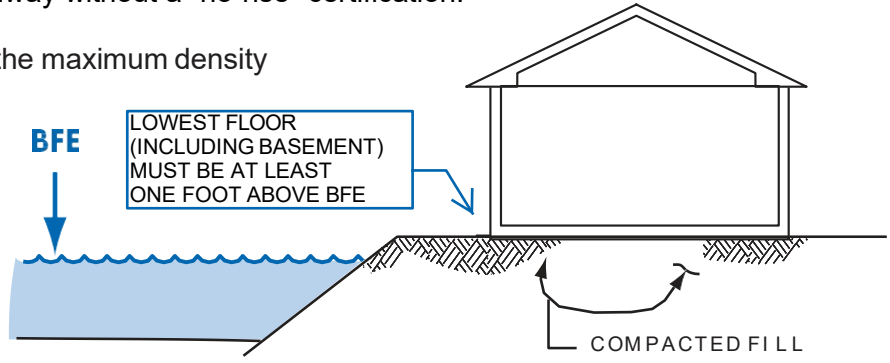
The slab-on-grade house was elevated on fill 1' above the BFE, and the vented garage is 1.5' below BFE.



Compaction of Floodplain Fill

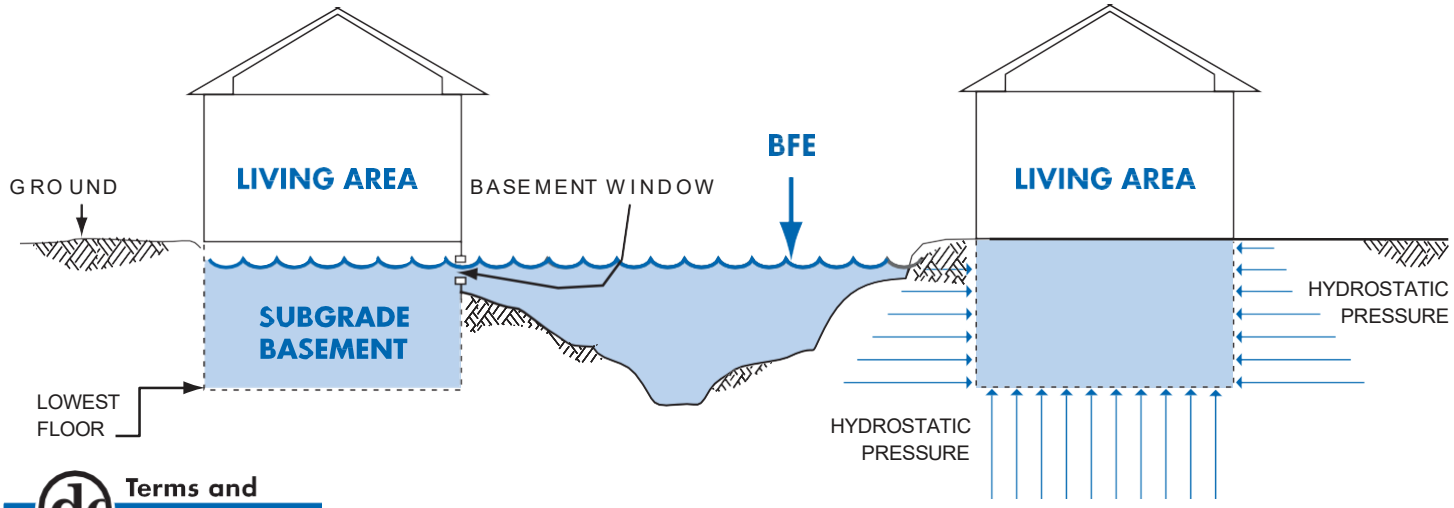
Earthen fill used to raise the ground above the BFE must be placed properly so that it does not erode or slump when water rises. For safety and to meet floodplain requirements, floodplain fill should:

- Have graded side slopes determined by engineering analysis (OWRB recommends that side slopes for fill not be steeper that a ratio of one vertical to three horizontal) and protected against erosion.
- Not be placed in areas of poor drainage or where fill may impact flooding of adjacent properties, and not be placed in the floodway without a “no-rise” certification.
- Be machine compacted to 95 percent of the maximum density (determined by a design professional).
- Be good clean soil, free of large rocks, construction debris, and woody material (stumps, roots, etc.).



For additional details and requirements, refer to FEMA’s Technical Bulletin 10: https://www.fema.gov/sites/default/files/documents/fema_nfip-technical-bulletin-10.pdf.

Basements in Special Flood Hazard Areas



Terms and Definitions

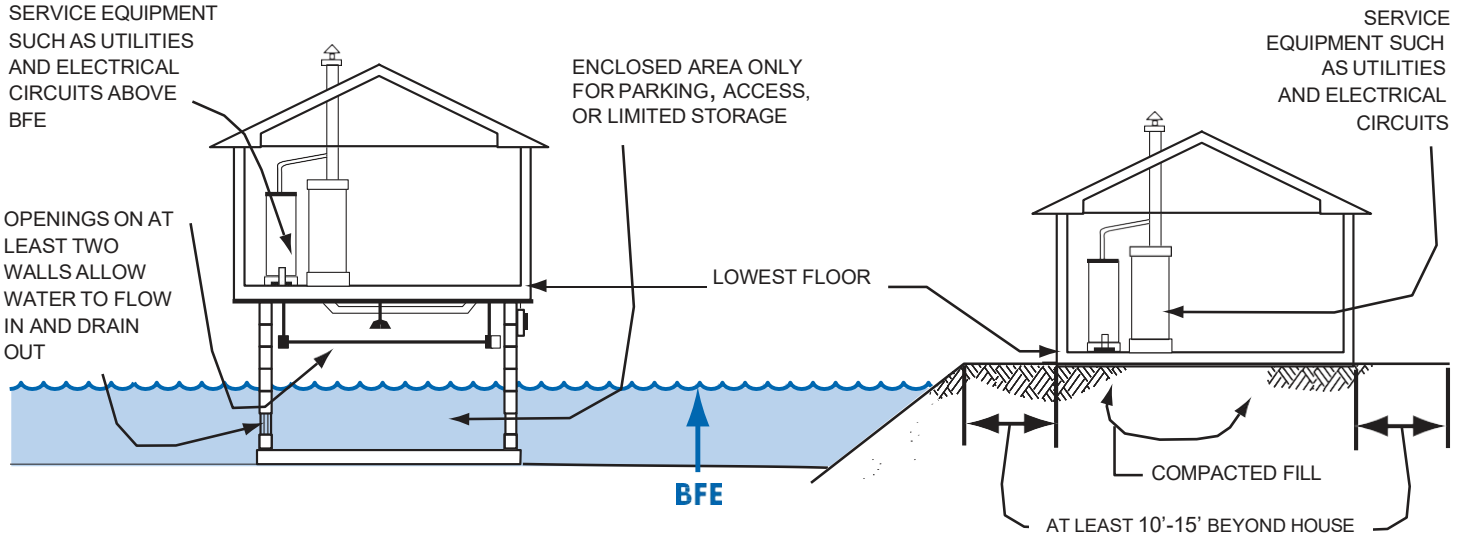
A **basement** is any portion of a structure that has a subgrade floor (below ground level) on all sides.

Basements below BFE are not allowed as new development or substantial improvement in the SFHA. For a good reason, flood insurance coverage is very limited in existing basements. As little as an inch of water pouring continuously through a basement window can fill the basement! When basement walls collapse, the entire home becomes unstable and no longer safe to occupy.

Elevating Structures in the Floodplain above BFE + 1

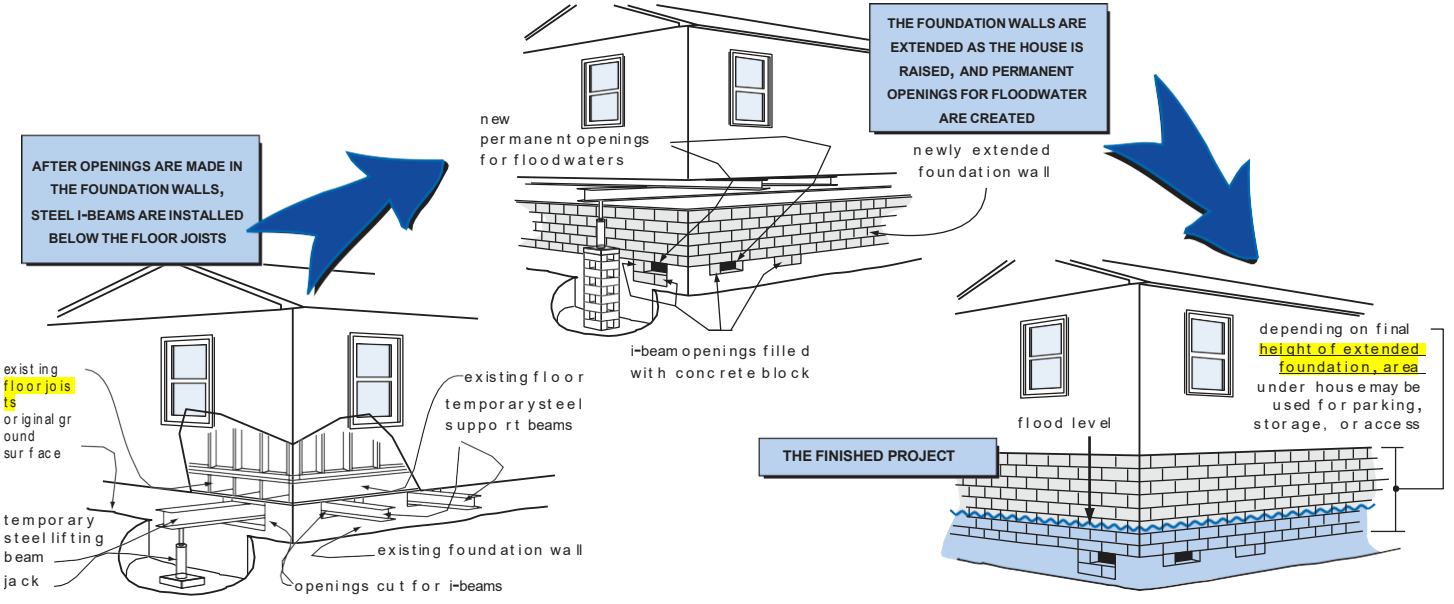
Elevate on Foundation Walls

Elevate on Fill



CAUTION! Enclosures (including crawlspaces) have special requirements (see page 15). NOTE: When the walking surface of the lowest floor is at the minimum elevation, under floor utilities are not allowed.

Elevating An Existing Structure



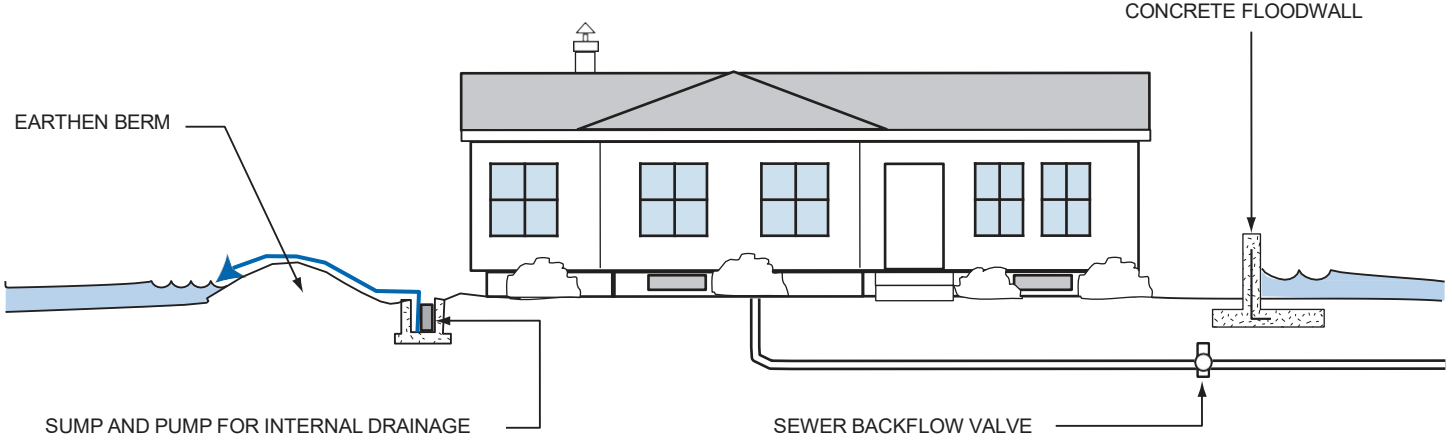
This is one way to elevate an existing building to comply with floodplain regulations. OWRB and FEMA can help with more information and options.

Small Berms and Floodwalls Can Protect Some Older Structures

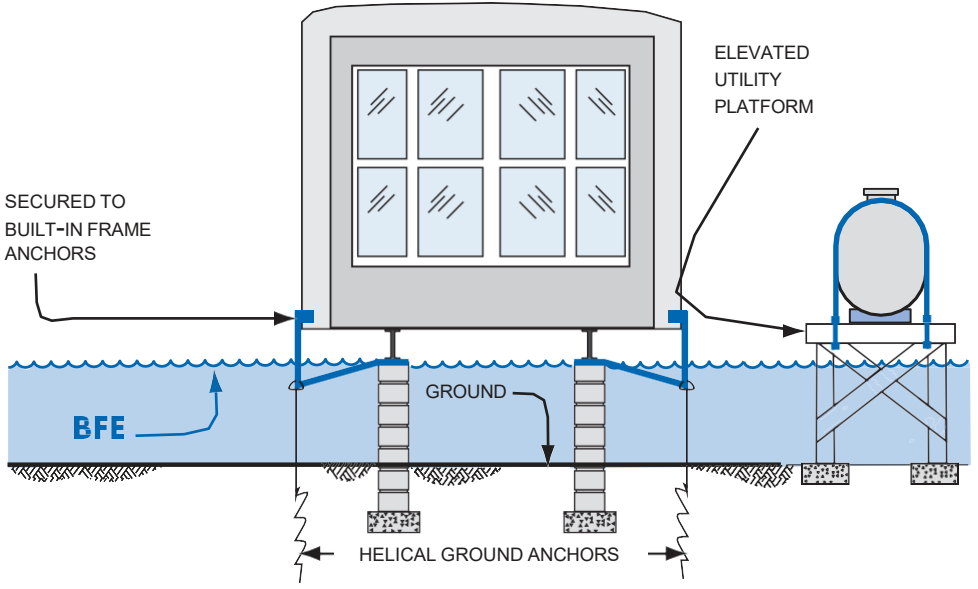
In areas where flood waters are not expected to be deep, sometimes individual buildings can be protected by earthen berms or concrete floodwalls. Permits are required for those protection measures, and extra care must be taken if the site is in a floodway, where obstructions such as fill are not allowed (see pages 27 and 28).

A berm or floodwall does not remove building elevation requirements and CANNOT be used to protect a new or substantially improved structure, or one that is repaired after substantial damage.

IMPORTANT! These protective measures WILL NOT reduce flood insurance premiums!



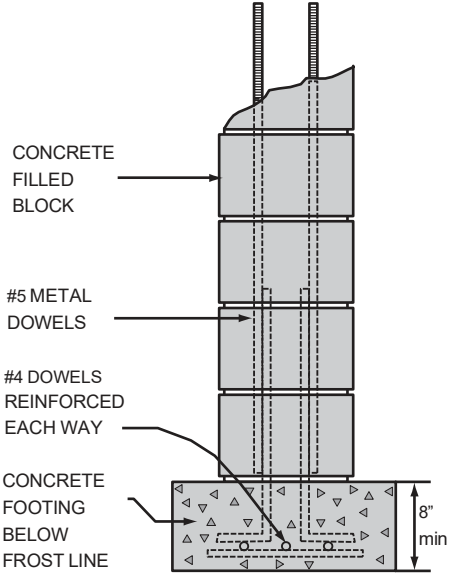
Manufactured Homes Deserve Special Attention



Manufactured homes must be anchored to resist flotation, collapse, or lateral movement by being tied down in accordance with your community floodplain ordinance. For detailed information, visit https://www.fema.gov/emergency-managers/risk-management/building-science/publications and search for "Publication P-85: Protect Your Property From Flooding: Protecting Manufactured Homes from Floods and Other Hazards."

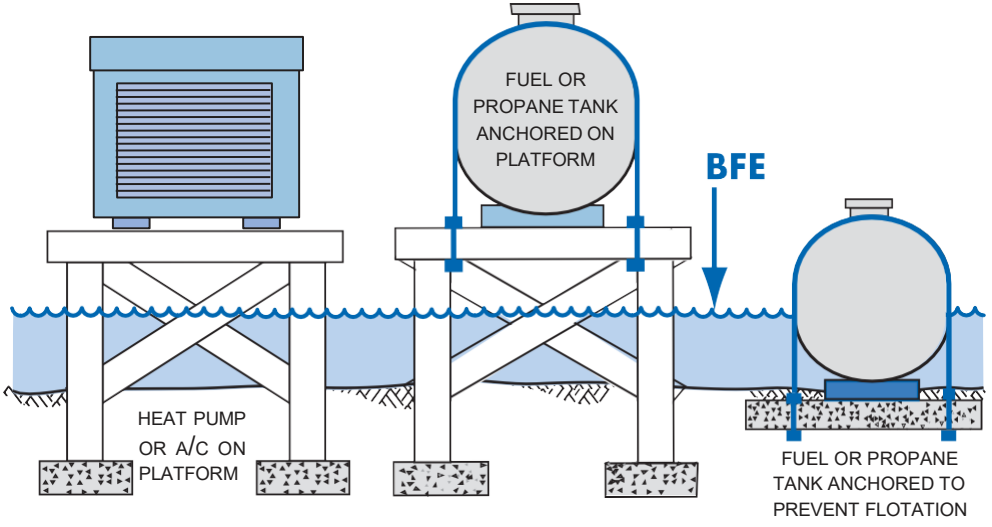
Important Information

Dry stacked blocks should not be used – they will NOT withstand a flood.



Utility Service / Fuel Tanks

All utilities, appliances and equipment must be elevated at or above the BFE or protected against flood damage. Utilities include plumbing, electrical, gas lines, fuel tanks and heating and air conditioning equipment.



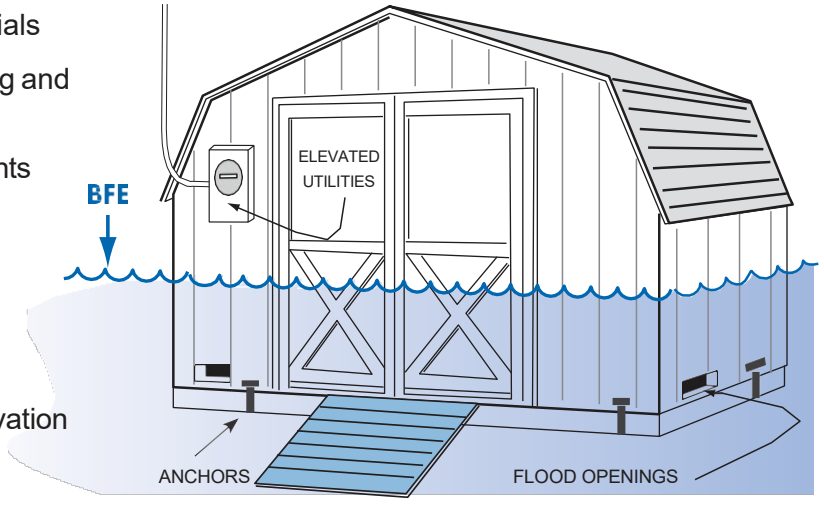
Important Information

In the SFHA, an above ground liquid propane gas (LPG) or home heating oil fuel tank should be elevated at or above the BFE or the fuel tank should be designed, constructed, installed and ground anchored to resist all flood-related and other loads including the force of buoyancy during the base flood without release of contents into floodwaters or infiltration by floodwaters into the contents.

Fuel and propane tanks can pose serious threats to people, property and the environment during flood conditions. Even shallow water can create a large buoyant force on tanks. Information on anchoring fuel tanks is available through FEMA's Publication P-348: Protecting Building Utility Systems from Flood Damage.
fema.gov/sites/default/files/2020-07/fema_p-348_protecting_building_utility_systems_from_flood_damage_2017.pdf

Accessory (Appurtenant) Structures

- Cannot be modified for a different use in the future
- Must be constructed of flood-proofed materials
- Used only for parking and storage
- Flood openings / vents
- Elevated utilities
- Anchored to resist flotation
- Not habitable
- Document flood elevation



Terms and Definitions

An **Accessory (Appurtenant) Structure** is defined by FEMA Technical Bulletin 7 as a small, low-cost structure that is located on the same parcel of land as a principal structure and whose use is incidental to the use of the principal 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 damage. Examples include detached garages, carports, storage sheds, pole barns, and hay sheds.

Even small buildings are considered “development” and permits or variances with noted conditions are required. They must be elevated, anchored, and built to withstand flood damage.
CAUTION! Remember: Everything inside is likely to get wet when flooding occurs.

Agricultural Structures

FEMA has developed a guidance bulletin that clarifies and refines the requirements that apply to certain agricultural structures and accessory structures located in the floodplain. The best flood protection is to elevate or dry-floodproof agricultural structures, but certain types can be approved by variance if they are wet floodproofed.

Communities that elect to allow wet floodproofed agricultural structures may:

- Grant variances on a case-by-case basis,
- Issue permits for repair and restoration of certain previously flooded agricultural structures, after adopting regulations approved by FEMA, or
- Issue permits after obtaining FEMA approval of a community-wide exception.

OWRB has updated the state model ordinance to reflect FEMA's Agricultural and Accessory Structures Policy. Contact OWRB for more information, and see https://www.fema.gov/sites/default/files/2020-09/fema_agricultural-structures_policy-guidance_08-20-20.pdf

Terms and Definitions

An **agricultural structure** is a structure used solely for agricultural purposes in which the use is exclusively in connection with the production, harvesting, storage, drying, or raising of agricultural commodities, including the raising of livestock. These structures differ from other non-residential structures, such as factories, churches, retail and office buildings, and schools.

Farmhouses are **NOT** included in the agriculturalstructure definition. https://www.fema.gov/glossary/agricultural-structure

For more details and requirements, see FEMA Floodplain Management Bulletin P-2140. https://www.fema.gov/sites/default/files/documents/fema_agricultural-and-accessory-structures_8132021.pdf

Recreational Vehicles

Recreational vehicles placed in flood zones on the community's FIRM are required to either:

- Remain on site for fewer than 180 consecutive days;
- Be fully licensed and ready for highway use; or
- Meet the permitting, elevation, and anchoring requirements for manufactured homes of the community's Floodplain Management Ordinance.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, attached to the site only by quick-disconnect type utilities and security devices, and has no permanent attachments (such as a deck or porch).

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 a manufactured home, including a permanent foundation and tie-down (see page 36).

Improvements and Repairs of Buildings in Flood Zones

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

- Review costs as estimated in construction contracts or other cost estimates (including an estimated value of any donated labor and materials).
- Estimate the structure's market value using property assessment records or an independent assessment of market value performed by a licensed appraiser.
- Compare the costs of improvements or repairs to the structure's market value.
- Require buildings to be brought into full compliance if the costs equal or exceed 50% of the market value, called **Substantial Improvement (SI)** or repair of **Substantial Damage (SD)**. Note: some communities may have stricter requirements, such as a threshold below 50%.
- Encourage owners to consider other ways to reduce future damage if the comparison is less than 50% (see page 35).

Information

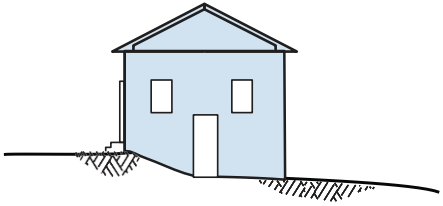
Improvements include:

- Renovation/ rehabilitation of the interior of the existing building
- Lateral additions
- Vertical additions (adding another story)
- Other external structural work

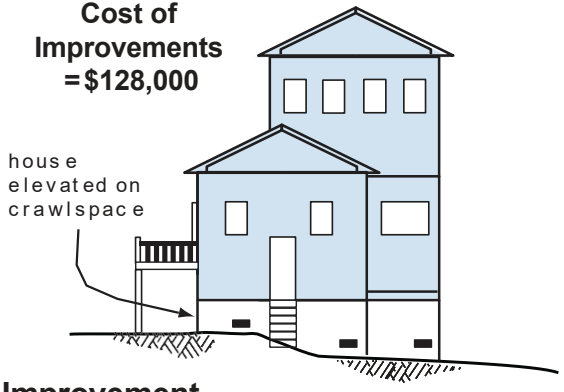
FEMA's P-312: Homeowner's Guide to Retrofitting has information specifically for homeowners who want to protect their homes from flooding. https://www.fema.gov/sites/default/files/2020-08/FEMA_P-312.pdf

Planning to Improve Your Floodplain Structure?

Before Improvements
Building Market Value = $200,000
(excluding land value)



Cost of Improvements = $128,000



64% = Substantial Improvement

Structure must be elevated at least one foot above BFE

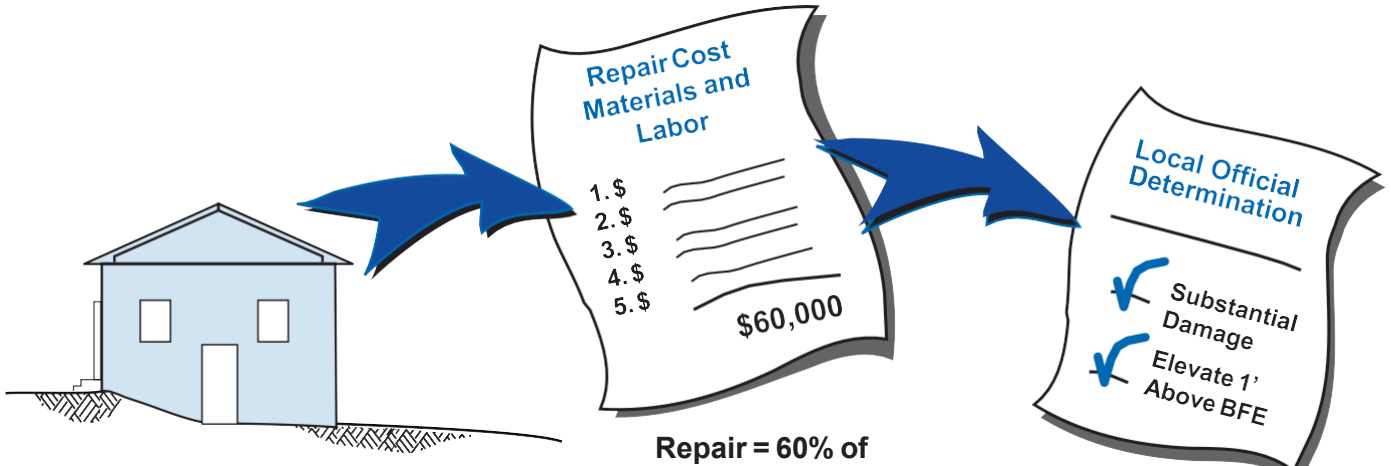
Terms and Definitions

Substantial Improvement means any reconstruction, rehabilitation, 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**, regardless of the actual repair work performed (see next page).

Important Information

See Chapter 4 of the FEMA SI/SD Desk Reference for a detailed description of substantial improvement, and guidance on determining the full cost of work and market value. The value of donated materials and labor must be included. Costs to correct existing health, sanitary, or safety violations may be excluded. Alteration of a registered historic structure is allowed, provided the repaired or improved structure will continue to meet the criteria for listing as a registered historic structure.

What About After Damage?



Pre-Damage Building Market Value = $100,000

Repair = 60% of Market Value

Elevation Required to Today's Floodplain Standards

Terms and Definitions

Substantial Damage means damage of any origin (floods, fires, tornadoes, etc.) sustained by a building whereby the cost of restoring the building to its before-damaged condition would equal or exceed 50% percent of the market value of the building before the damage occurred. The determination is regardless of the actual repair work performed.

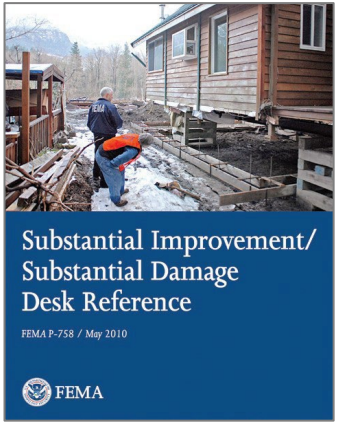
Substantial Improvement/Substantial Damage Resources

FEMA's SI/SD Desk Reference (FEMA P-758) provides detailed guidance on SI/SD regulations and best practices, including:

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

https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf

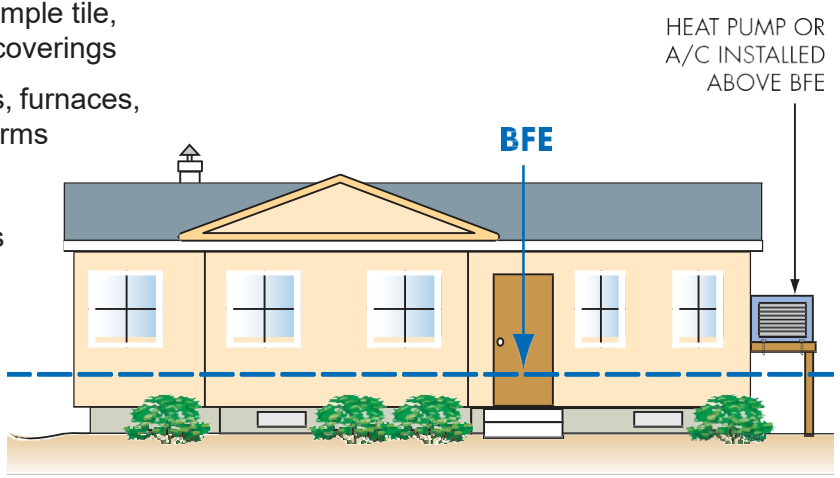
Additionally, OWRB has a developed a **Disaster Damage Assessment Packet** for Oklahoma communities**,** which is available on the state's NFIP Resources page.



Non-Substantial Improvements

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 an owner 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 a below-grade crawlspace



Note: ALL proposed work must be included in permit applications. If more work is proposed after a permit is issued, community officials must determine whether the additional work changes the substantial improvement determination. Some communities consider all work done within a certain timeframe, such as five years, to count towards the cumulative substantial improvement threshold.

Substantial Damage Estimator (SDE) Tool

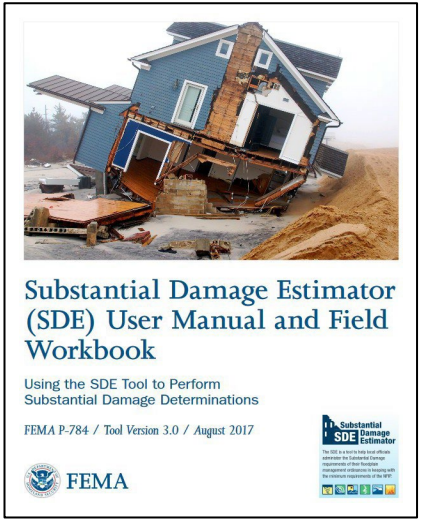
NFIP communities often have difficulty determining whether buildings are substantially damaged. This difficulty is magnified after a major flood or other disaster where a large number of buildings have been damaged and there is a need to provide timely substantial damage determinations so that reconstruction can begin.

Buildings located in the SFHA that are determined to be substantially damaged must be brought into compliance with the minimum requirements of the community's floodplain management laws or ordinances.

FEMA has developed a free computer program called the **Substantial Damage Estimator (SDE) Tool** to assist state and local officials in estimating building value and damage costs for structures.

The tool contains step-by-step directions with accompanying illustrations showing where data regarding the pre-disaster fair market value of a structure, the cost of repair, and percentage of damage to components of a structure can be entered. Based on the data provided, the program computes the overall damage percentage.

Download the FEMA SDE Tool and Manual:
https://www.fema.gov/emergency-managers/risk-management/building-science/substantial-damage-estimator-tool



FEMA has a free independent study course on successfully using the SDE Tool (Version 3.0): https://emilms.fema.gov/is_0284a/curriculum/1.html

Paying for Post-Flood Compliance - ICC

Increased Cost of Compliance (ICC) coverage is part of most NFIP policies. Claims for ICC benefits are filed separately from your claim for contents or building loss and must be submitted in a timely manner. If eligible, you can collect up to $30,000 to help bring your home or business into compliance with floodplain ordinances. You are eligible to file for ICC if your property is in a SFHA and your community floodplain administrator determines one of the following:

- Your property is "substantially damaged" by a flood (other sources of damage such as fire or wind are not considered). This means that your community says the cost to repair your flooded building is 50% or more of its pre-disaster market value.
- Your property sustained "repetitive damage." This term applies to homes or businesses that were damaged by flooding twice in the past 10 years, where the cost of repairing the flood damage, on average, equaled or exceeded 25% of the property market value at the time of each flood. Also, there must have been flood insurance claim payments for each of the flood losses, and the community's floodplain ordinance must have a repetitive loss provision.

ICC funding can be used to elevate or demolish homes, relocate them to higher ground, or floodproof non-residential properties. Also, when participating in a community sponsored FEMA funded mitigation project, the policyholder may assign ICC benefits to the community to integrate into the project. The community then becomes responsible for submitting all appropriate paperwork.

Detailed information on ICC is available at https://www.fema.gov/increased-cost-compliance-coverage.

Hazard Mitigation Assistance Funding

FEMA's new **Building Resilient Infrastructure and Communities (BRIC)** program gives states, local communities, and federally recognized tribal governments funding to address future risks to natural disasters, including wildfires, drought, earthquakes, extreme heat, and flooding. Additionally, the BRIC program offers help to communities and tribes in the form of non-financial technical planning assistance.

The **Flood Mitigation Assistance (FMA)** grant program provides federal funding to states, local, tribal, and territorial governments for projects that reduce the risk of repetitive flood damage to NFIP insured buildings.

FEMA administers the **Hazard Mitigation Grant Program (HMGP)** to provide grants to states, and through states to eligible applicants, to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to take mitigation actions during the immediate recovery from a disaster.

Participation in HMGP acquisition projects is totally voluntary: jurisdictions are not required to apply for funds and homeowners are not required to sell. Generally, the cost share is 75% federal and 25% non-federal funding. The program is administered by the Oklahoma Division of Emergency Management (ODEM). Eligible HMGP project applicants include states, local, tribal, and territorial governments. Individuals must work through their local government.

For more information on FEMA mitigation assistance, visit https://www.fema.gov/grants/mitigation.

Flood Insurance is Your Best Protection

Who needs flood insurance? ***EVERYONE!*** Every homeowner, business owner, and renter in one of Oklahoma's more than 400 communities participating in the NFIP may purchase a flood insurance policy - regardless of flood zone location.

Unfortunately, it's usually after a flood that most people discover their homeowners insurance does not cover flood damages. Every building is located within a flood zone - zones in the mapped Special Flood Hazard Area are considered high risk, others have lower risks, but there is almost never zero risk. About 40% of flood claims occur in low to moderate risk zones, commonly described as "outside the mapped floodplain."

The Oklahoma Water Resources Board and the Oklahoma Floodplain Managers Association urge you to protect your financial future by getting a flood insurance policy.

To purchase a policy, call your insurance agent or visit https://www.floodsmart.gov/flood-insurance-provider. To get the name of an agent in your community, call the NFIP's toll free number **1-888-FLOOD29**.

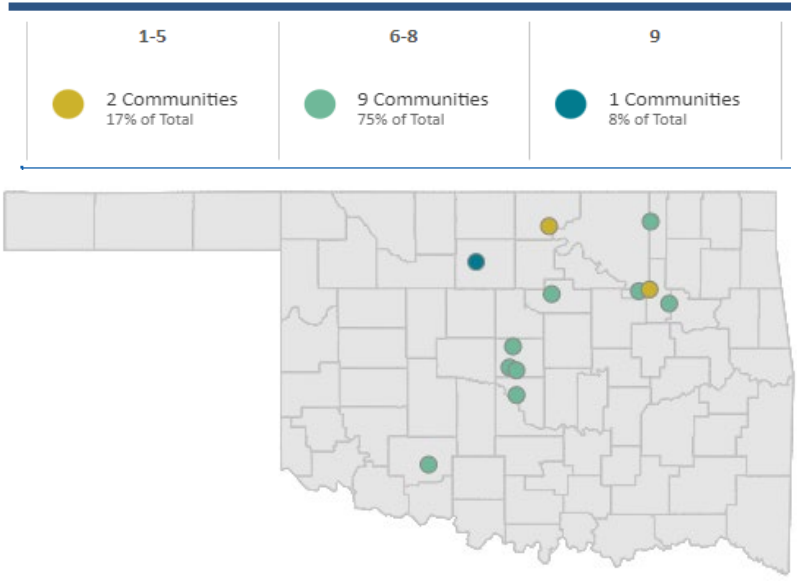
https://okflood.org/

Reduce Flood Premiums with CRS!

The **Community Rating System (CRS)** program is a voluntary program for recognizing floodplain management activities that exceed minimum NFIP standards. It uses a rating system to determine flood insurance premium reductions for residents.

CRS participants receive several benefits:

- Discounts on flood insurance premiums ranging from 5% to 45% and are discounted in increments of 5%. Classes, or levels, range from 10 (not participating and receiving no discount) to 1 (receiving a 45% premium discount).
- Increased opportunities for citizens and first responders to stay safe by learning about flood risk, evaluating their vulnerabilities, and staying informed about mitigation measures
- Enhanced protection of community investments through CRS-creditable activities that provide enhanced public safety, reduced infrastructure damage, and avoidance of economic disruption



Detailed information on CRS is available online at https://www.fema.gov/floodplain-management/community-rating-system.

Be Prepared for Flood Emergencies

Everyone should be prepared for floods and other emergencies. Preparation begins at homes businesses, schools, and across communities, not just at the local official's offices.

Sometimes floods and other disasters can strike quickly and without warning and evacuation may be required. Basic services (water, gas, electricity and telephones) may be interrupted, perhaps for several days. Local officials and emergency relief works will be on the scene after disasters, but they cannot reach everyone right away. Families, businesses, and communities should prepare before disasters occur by:

- Learning about natural hazards (Oklahoma communities participate in developing Hazard Mitigation Plans)
- Making family and workplace emergency plans
- Knowing where to go if evacuations are required
- Putting together disaster kits with supplies to last a few days

Turn Around, Don't Drown!®

Learn about flood risks and follow these safety rules:

- Passenger cars may float in only 12-24 inches of water. Over half of all flood-related drownings occur when a vehicle is driven into hazardous flood water.
- The second highest percentage is flood-related deaths is due to walking into or near flood waters. Just 6 inches of fast-moving water can knock you off your feet.
- When flooding is expected, stay away from creeks, streams, and rivers.
- NEVER drive through flooded roads – they may be washed out.
- Be especially cautious at night when it is harder to recognize dangers.
- Learn more by visiting: https://www.weather.gov/safety/flood-turn-around-dont-drown

Want to Learn More?

For information and advice on permits and managing flood hazards, contact the NFIP State Coordinator at (405) 530-8800 or visit the OWRB Floodplain Management Program website at Oklahoma.gov/owrb.

For information about flood reduction programs, call the State Hazard Mitigation Officer at (405) 521-2481.

To order FEMA flood maps, learn more about flood maps, and check the status of map change requests, call FEMA's Map Service Center at 1-800-358-9616 or visit https://msc.fema.gov/.

Many of FEMA's online publications can be found in PDF format in the FEMA Virtual Library. Go to https://www.fema.gov/multimedia-library for more information. You can order printed copies of FEMA publications from the FEMA Distribution Center at 1-800-480-2520 or FEMAPubs@gpo.gov.

To learn about flood insurance, call your insurance agent. Most insurance companies can write an NFIP policy for you. Call the National Flood Insurance Program's toll-free number, 1-888-356-6329, to get the name of an agent in your area who writes flood insurance.

For an overview of flood preparedness and recovery measures, visit https://www.floodsmart.gov.

Selected Definitions

Flood Insurance Rate Map (FIRM) – The FIRM is the basis for floodplain management, mitigation, and insurance activities for the NFIP. Insurance applications include enforcing the mandatory purchase requirement of the Flood Disaster Protection Act which "...requires the purchase of flood insurance by property owners who are being assisted by Federal programs or by Federally supervised, regulated or insured agencies or institutions in the acquisition or improvement of land facilities located or to be located in identified areas having special flood hazards" (Section 2 (b) (4) of the 1973 Flood Disaster Protection Act).

Base Flood – A flood which has a one-percent annual chance of being equaled or exceeded in any given year. Also known as a 100-Year Flood or 1% Annual Chance Flood.

Special Flood Hazard Area (SFHA) – The portion of the floodplain subject to inundation by the base flood and/or flood related erosion hazards. SFHAs are shown on FHBMs or FIRMs as Zones A, AE, A1-30, AH, AO, and AR.

Base Flood Elevation (BFE) – (1) The height in relation to mean sea level (MSL) expected to be reached by the waters of the Base Flood at specific points in the floodplain of riverine areas; (2) The elevation for which there is a one-percent chance in any given year that flood levels will equal or exceed it; (3) The elevation shown on the Flood Insurance Rate Map (FIRM) for Zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH and AR/AO that indicates the water surface elevation resulting from a flood that has a one-percent or greater chance of being equaled or exceeded in any given year. The BFE is generally based on statistical analysis of stream flow records for the watershed and rainfall and runoff characteristics in the general region of the watershed, and application of hydraulic backwater models.

Selected Definitions (continued)

Development – Any human-made change to improved or unimproved real estate, including (but not limited to) buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of materials. A permit is required for all development in the SFHA shown on the FIRM.

Substantial Damage (SD) – Damage of any origin sustained by a structure whereby the cost of restoring the structure to its pre-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred. All structures that are determined to be substantially damaged are automatically considered to be substantial improvements, regardless of the actual repair work performed. Substantial improvements must meet all current local, state, and federal floodplain management requirements.

Substantial Improvement (SI) – Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage," regardless of the actual repair work performed. Floodplain management requirements for new construction apply to substantial improvements. Increased Cost of Compliance (ICC) coverage does not apply to substantial improvements unless a structure is substantially damaged due to flooding. For full details, see FEMA's SI/SD Desk Reference: https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf.

Reasonably Safe from Flooding – Base flood waters will not inundate the land or damage structures to be removed from the SFHA and that any subsurface waters related to the base flood will not damage existing or proposed buildings.

Selected Definitions (continued)

Regulatory Floodway – The stream channel plus the portion of the overbanks that must be kept free from encroachment in order to discharge the 1% annual chance flood without increasing flood levels by more than 1.0 foot. Any proposed work in the regulatory floodway requires an engineering analysis to show no rise in flood heights will result from the development.

Freeboard – Freeboard means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. “Freeboard” tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

Variance – A grant of relief by a community from the terms of a floodplain management regulation. Because a variance can create an increased risk to life and property, variances from flood elevation or other requirements in the flood ordinance should be rare. Insurance premium rates are required by statute to be based on actuarial risk and will not be modified by the granting of a variance. FEMA may review a community’s findings justifying the granting of variances, and if that review indicates a pattern inconsistent with the objectives of sound floodplain management, FEMA may take appropriate action up to and including suspending the community from the NFIP.

Useful Resources

Common Acronyms

BFE – Base Flood Elevation
BRIC – Building Resilient Infrastructure and Communities
CLOMA – Conditional Letter of Map Amendment
CLOMR – Conditional Letter of Map Revision
CLOMR-F – Conditional Letter of Map Revision based on Fill
CRS – Community Rating System
EC – Elevation Certificate
FEMA – Federal Emergency Management Agency
FHBM – Flood Hazard Boundary Map
FIRM – Flood Insurance Rate Map
FIS – Flood Insurance Study
FMA – Flood Mitigation Assistance
HMGP – Hazard Mitigation Grant Program
ICC – Increased Cost of Compliance
OWRB – Oklahoma Water Resources Board
LOMA – Letter of Map Amendment
LOMC – Letter of Map Change
LOMR – Letter of Map Revision
LOMR-F – Letter of Map Revision based on Fill
NFIP – National Flood Insurance Program
SFHA – Special Flood Hazard Area
SI – Substantial Improvement
SD – Substantial Damage

Webpage Links

Red Cross Disaster Relief Information:
http://www.redcross.org/services/disaster

Red Cross Flood Safety Information:
https://www.redcross.org/get-help/how-to-prepare-for-emergencies/types-of-emergencies/flood.html

OWRB Homepage: Oklahoma.gov/owrb

NFIP Information:
https://www.fema.gov/floodplain-management

FEMA 480: Floodplain Management Requirements:
https://www.fema.gov/sites/default/files/documents/fema-480_floodplain-management-study-guide_local-officials.pdf

ICC Information: https://www.fema.gov/increased-cost-compliance-coverage

FEMA Underwriting Forms, Including Elevation Certificate:
https://www.fema.gov/flood-insurance/find-form/underwriting

This *Quick Guide* may be downloaded from the Oklahoma Water Resources Board at:

Oklahoma.gov/owrb