NFIP Essentials of Floodplain Management—Half Day Course

Student Manual

Date Released: February 2024

Version 1.0

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Contents

Unit 0: Introduction

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Course Goal

The goal of this course is to have participants explain the foundational roles and responsibilities of a Floodplain Administrator.

Course Objectives

Upon completion of this course, participants will be able to:

- Explain the roles and responsibilities of Federal, State, and local agencies in the NFIP.
- Describe how a Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) are used to determine the flood zone and Base Flood Elevation (BFE).
- Identify the minimum NFIP regulations applicable to floodplain management.
- Explain the Floodplain Administrator's responsibilities in providing oversight and ensuring compliance.
- Describe the basic concepts of flood insurance under the NFIP; and
- Identify additional resources, training, and contacts that support floodplain management.

Course Overview

This course provides local, State, Tribal, territorial, and Federal officials with foundational knowledge of how Floodplain Administrators and the NFIP operate in floodplain management. The course will focus on the NFIP, concepts of floodplain management, Floodplain Administrator responsibilities, flood maps and studies, ordinance administration, and the relationship between floodplain management and flood insurance.

Prerequisites

RECOMMENDED:

FEMA recommends participants take the following trainings before attending this course:

- IS-0273: How to Read a Flood Insurance Rate Map (FIRM) (https://training.fema.gov/is/courseoverview.aspx?code=IS-273)
- IS-274: How to Use a Flood Insurance Study (FIS) (https://emilms.fema.gov/is_0274/curriculum/1.html)
- IS-1100.a: Increased Cost of Compliance (https://emilms.fema.gov/is_1100a/curriculum/1.html)

- IS-1113: Coastal Barrier Resources Act
  (https://emilms.fema.gov/is_1113/curriculum/1.html)
- IS-1119: Letters of Map Amendment (LOMAs) and Letters of Map Revision—Based on Fill (LOMR-Fs)
  (https://training.fema.gov/is/courseoverview.aspx?code=IS-1119)

Course Schedule

The course includes four hours of instruction. Instructors will present seven units:

- Unit 1: Course Introduction
- Unit 2: Introduction to Floodplain Management
- Unit 3: Risk Determination: Maps and Studies
- Unit 4: Floodplain Management Regulations Overview
- Unit 5: Oversight and Compliance: The Permitting Process
- Unit 6: Flood Insurance
- Unit 7: Course Summary

Evaluation Plan

Since this is a non-credited course, a course assessment is not applicable. Therefore, FEMA does not require a testing evaluation plan.

Unit 1: Course Introduction

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Visual 1: Course Introduction

Student Notes

Welcome to the NFIP Essentials of Floodplain Management course. Over the next four hours, this course will introduce you to the foundational concepts associated with floodplain management, Floodplain Administrator responsibilities, and the National Flood Insurance Program (NFIP).

Visual 2: Disclaimer

Please Note:

This course does not adequately prepare participants to become a Floodplain Administrator.

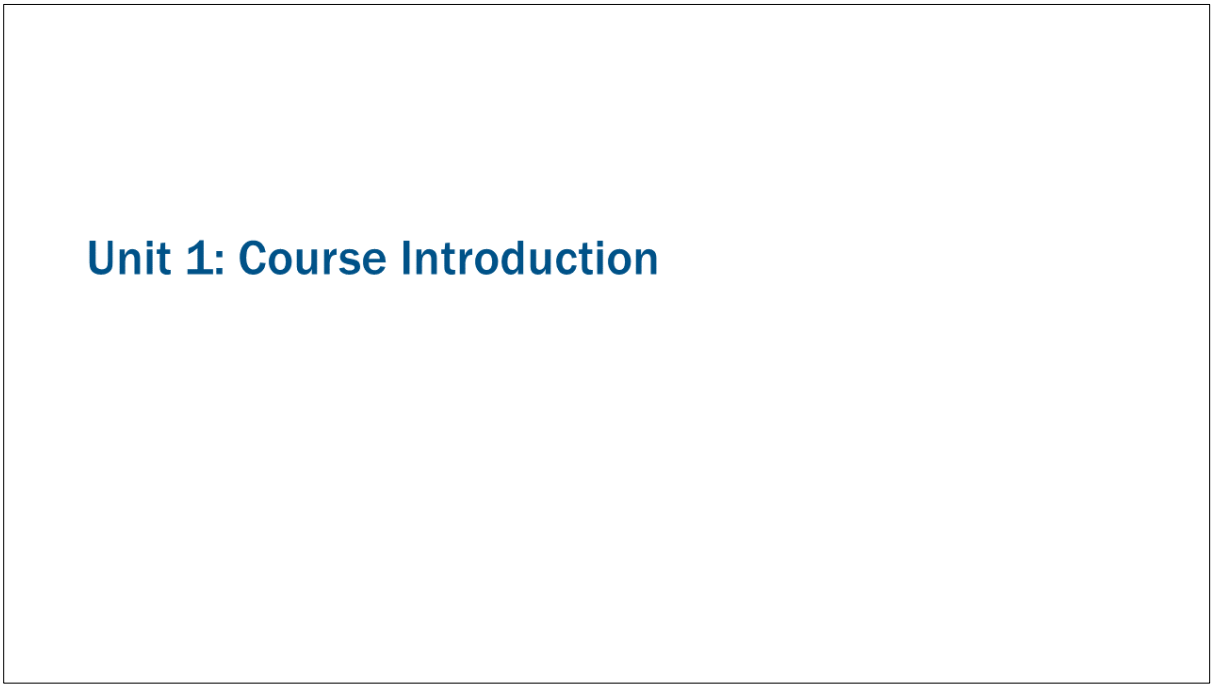
This is a Not-for-Credit course consisting of a broad overview of floodplain management.

This course should be considered a condensed introduction to the four-day EL273 course and/or NFIP 101.

Student Notes

This course is an introduction to E/L 0273 and does NOT adequately prepare you to become a Floodplain Administrator. This course is a shortened, not-for-credit course that includes a broad overview of floodplain management. If you would like to become a Floodplain Administrator, you MUST take the four-day E/L 0273 course and/or the online NFIP 101: Introduction to Floodplain Management course.

Visual 3: Unit 1: Course Introduction



Student Notes

This is Unit 1: Course Introduction.

Visual 4: Unit 1 Topics

- Unit Objectives
- Course Goal and Objectives
- Introductions
- Course Agenda
- Unit Summary

Student Notes

In this unit, you will review the Unit 1 Objectives, Course Goal, and Objectives; conduct Participant Introductions; and review Course Agenda and Unit Summary.

Visual 5: Unit 1 Objectives

After completing this unit, you should be able to:

- Describe the course goal.
- Describe the course objectives.

Student Notes

After completing this unit, you should be able to:

- Describe the course goal.
- Describe the course objectives.

Visual 6: Course Goal

The goal of this course is to have participants explain the foundational roles and responsibilities of a Floodplain Administrator.

If you wish to learn more comprehensive information to become a Floodplain Administrator, consider additional FEMA training courses:

- E/L 0273: Managing Floodplain Development Through the National Floodplain Insurance Program (NFIP)
- NFIP 101: Introduction to Floodplain Management

Student Notes

The goal of this course is for you to explain the foundational roles and responsibilities of a Floodplain Administrator.

This is an introductory course covering a wide range of topics. This course does not adequately prepare you to become a Floodplain Administrator. If you wish to pursue additional training for floodplain management, consider taking EMI's E/L 0273: Managing Floodplain Development Through the National Floodplain Insurance Program (NFIP) classroom course and the Association of State Floodplain Managers (ASFPM) NFIP 101: Introduction to Floodplain Management online course.

Online Resource

- NFIP 101: Introduction to Floodplain Management (https://www.floods.org/training-center/online-training/asfpm-on-demand-learning/nfip101/).
- To take the E/L 0273 course, you will need to register with FEMA Emergency Management Institute (EMI) at https://training.fema.gov/.

Visual 7: Course Objectives

After completing this course, you should be able to:

- Explain the roles and responsibilities of Federal, State, and local agencies in the NFIP.
- Describe how a Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) are used to determine the flood zone and Base Flood Elevation (BFE).
- Identify the minimum NFIP regulations applicable to floodplain management.
- Explain the Floodplain Administrator's responsibilities in providing oversight and ensuring compliance.
- Describe the basic concepts of flood insurance under the NFIP.
- Identify additional resources, training, and contacts that support floodplain management.

Student Notes

After completing this course, you should be able to:

- Explain the roles and responsibilities of Federal, State, and local agencies in the NFIP;
- Describe how a Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) are used to determine the flood zone and Base Flood Elevation (BFE);
- Identify the minimum NFIP regulations applicable to floodplain management;
- Explain the Floodplain Administrator’s responsibilities in providing oversight and ensuring compliance;
- Describe the basic concepts of flood insurance under the NFIP; and
- Identify additional resources, training, and contacts that support floodplain management.

Visual 8: Introductions

Provide your:

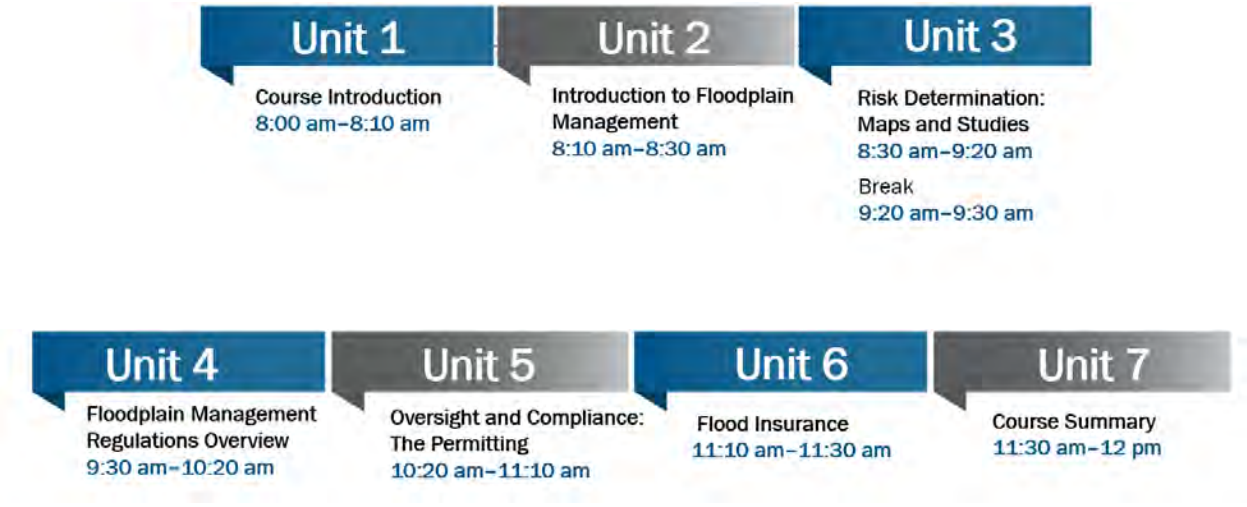
- Name
- Locality
- Course expectations

Student Notes

When asked by the instructor, provide your:

- Name,
- Locality, and
- Course expectations.

Visual 9: Course Agenda



Student Notes

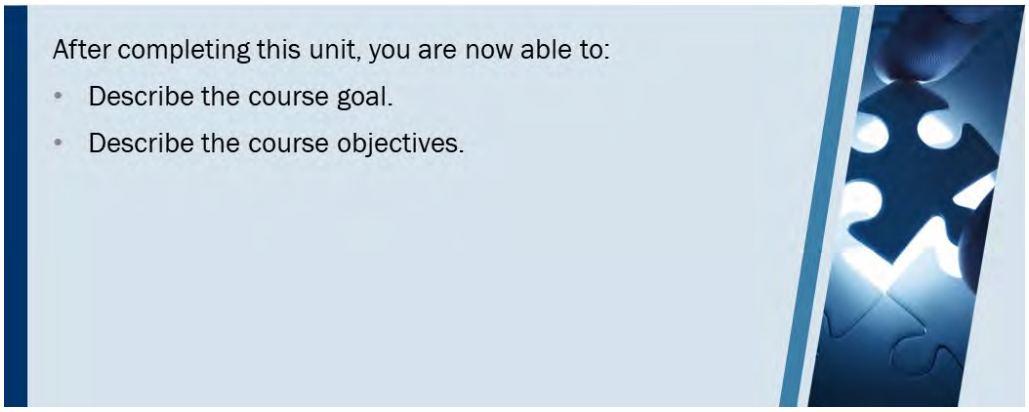
This is a 4-hour course with one 10-minute intermediate break.

Table 1: Course Agenda provides a detailed unit schedule.

TABLE 1: COURSE AGENDA

Unit Name	Schedule
Unit 1: Course Introduction	8:00 am–8:10 am
Unit 2: Introduction to Floodplain Management	8:10 am–8:30 am
Unit 3: Risk Determination: Maps and Studies	8:30 am–9:20 am
Break	9:20 am–9:30 am
Unit 4: Floodplain Management Regulations	9:30 am–10:20 am
Unit 5: Oversight and Compliance: The	10:20 am–11:10 am
Unit 6: Flood Insurance	11:10 am–11:30 am
Unit 7: Course Summary	11:30 am–12:00 pm

Visual 10: Unit 1 Summary



Student Notes

You have completed Unit 1. You are now able to:

- Describe the course goal.
- Describe the course objectives.

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Unit 2: Introduction to Floodplain Management

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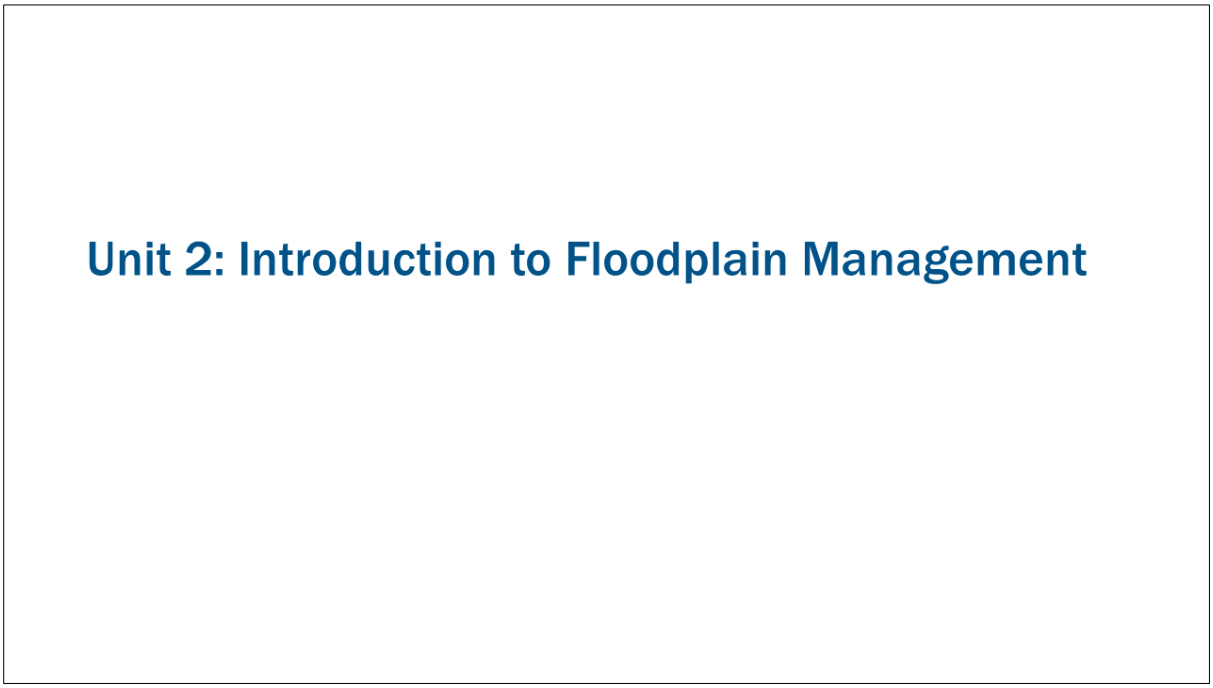
Visual 1: Unit 2: Introduction to Floodplain Management



Student Notes

Welcome to Unit 2: Introduction to Floodplain Management. The main purpose of this unit is to provide you with an overview of the NFIP and associated floodplain management activities.

Visual 2: Course Map Umbrella

Student Notes

This umbrella will serve as a guide to help you identify where you are in this course. Know the Risk, Mitigate the Risk, and Insure the Risk are the three main elements of this umbrella. For Unit 2, we will discuss Know the Risk. Some of the unit topics include floodplain management basics and an overview of the NFIP.

Visual 3: Unit 2 Objectives

After completing this unit, you should be able to:

- Describe the general framework of the NFIP.
- Explain the roles and responsibilities of Federal, State, and local governments in the NFIP.

Instructor Notes

After completing this unit, you should be able to:

- Describe the general framework of the NFIP.
- Explain the roles and responsibilities of Federal, State, and local governments in the NFIP.

Visual 4: Unit 2 Topics

- Floodplains and the Community
- Introduction to the National Flood Insurance Program (NFIP)
- NFIP Framework
- Federal, State, and Local NFIP Roles and Responsibilities
- Unit Summary

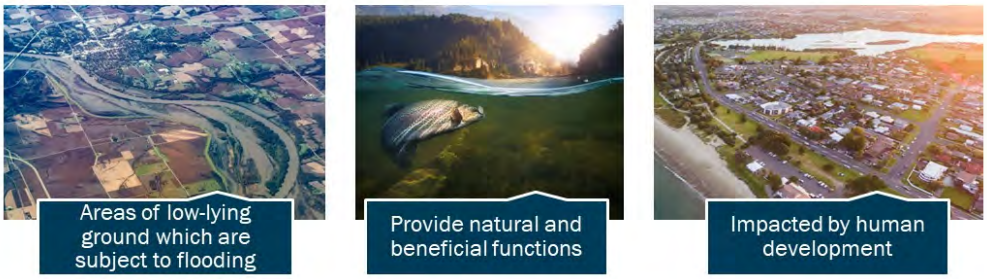
Student Notes

Floodplain management is a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community. Floodplain Administrators play an important role in achieving this goal, which we will discuss throughout this course.

The topics for this unit are:

- Floodplains and the Community;
- Introduction to the National Flood Insurance Program (NFIP);
- NFIP Framework; and
- Federal, State, and Local NFIP Roles and Responsibilities.
- Unit Summary

Visual 5: Floodplains on the Landscape



Student Notes

Anywhere it can rain, it can flood. Floodplains can be found across many different environments. These are low-lying ground areas (typically adjacent to a river or coastline) that can flood during high-water events.

Floodplains provide many natural and beneficial functions, including:

- Store and convey floodwaters.
- Improve water quality through natural vegetation filtering runoff.
- Recharge groundwater aquifers.
- Provide habitats for diverse species of plants and animals.

Human activities also influence and alter floodplain landscapes.

The influx of people and industry to waterways has altered floodplains and the dynamics of flooding. The result has been increasing levels of damage and destruction from the combination of natural forces and human development.

Visual 6: Benefits of Floodplain Management

- Reduces flood damage risk
- Increases resiliency
- Comprehensive planning can help:
  - Maintain natural and beneficial functions
  - Direct development away from floodplains
  - Avoid new infrastructure such as roads that promote further development
- Regulatory development requirements are important, but are not the only approaches.

Student Notes

Floodplain management strategies can help reduce the negative impact of development in floodplains and increase resiliency. A good floodplain management program acknowledges that floodplains may also offer many benefits, as we discussed earlier. Smart development in floodplains requires comprehensive planning. This approach considers more than just how to build new houses and structures safely. Comprehensive planning helps to:

- Maintain the natural and beneficial functions of floodplains,
- Direct development away from floodplains, and
- Avoid new infrastructure, such as roads, that promotes further development.

Much of this course will cover the development requirements of the NFIP, which are designed to reduce flood damage risk and increase resiliency. NFIP regulations are not the only approaches to a good floodplain management program. For example, when planning for new development, stakeholders should always consider the potential for future development. For instance, approving the development of roads and sewer services may promote more residential development in that area.

Visual 7: History of the NFIP

Student Notes

The NFIP was established in 1968 with the passage of the National Flood Insurance Act. Since its inception in 1968, the NFIP has been updated and strengthened with the passage of a number of laws.

Important dates in the development of the NFIP:

- 1973: The Flood Disaster Protection Act. This act mandated that when federally-regulated lenders make, increase, extend, or renew any loan for structures in a Special Flood Hazard Area, flood insurance must be purchased.
- 1994: The National Flood Insurance Reform Act. This act:
  - Reinforced the requirement to obtain and maintain flood insurance.
  - Required that lenders review the current Flood Insurance Rate Map any time an action is taken on a loan and added monetary penalties for lenders that are not following the rules.
- 2004: The Flood Insurance Reform Act. This included several reforms, including help for repetitive loss properties (those with multiple flood claims).
- 2012: Biggert Waters Flood Insurance Reform Act. Congress sought to build a sounder financial framework for the NFIP by directing FEMA to remove historic discounts for some policyholders and to move towards actuarial risk rating. Congress also authorized and funded the national mapping program and certain rate increases. These actions ensured the fiscal soundness of the program.
- 2014: Homeowner Flood Insurance Affordability Act (HFIAA). This act rolled back some of the changes implemented in 2012. HFIAA continued with rate increases but included limits to them. HFIAA also updated the approach to

ensure the fiscal soundness of the fund by applying an annual surcharge to all policyholders.

Visual 8: NFIP Framework

- Voluntary program
- Federal Government maps the hazard
- Local community agrees to adopt and enforce minimum NFIP standards
- Federal Government provides flood insurance and disaster assistance

Student Notes

FEMA is responsible for managing and administering the NFIP and is focused on establishing a partnership with local communities to ensure the proper implementation of the NFIP. Let's examine the dynamic of this mutually beneficial partnership:

- The NFIP is a voluntary program that communities may choose to join, but joining is not a requirement.
- If communities choose to join the program, they are required to meet certain expectations. To support local communities, the Federal Government maps the hazards that the community uses to regulate development and understand their risk. FEMA also makes Federal flood insurance available to residents of the community.
- The local communities' role in this NFIP partnership is to adopt and enforce local floodplain management ordinances that meet or exceed Federal minimum standards. So, local communities play a significant role by adopting and enforcing the NFIP requirements.

Visual 9: NFIP Participation

- Participation is voluntary.
- Benefits include:
  - NFIP flood insurance
  - Safer, stronger development in flood-prone areas
  - Increased resilience in your community
  - Eligibility for grants and loans

Student Notes

Participation in the NFIP is voluntary; however, it is highly encouraged because of its multiple benefits:

- NFIP flood insurance is available for residents, renters, and business owners in both high-risk and moderate-to-low-risk areas. Buildings in high-risk areas that have loans from federally regulated or insured lenders must carry flood insurance. NFIP flood insurance is only available in participating communities.
- The NFIP helps create safer and stronger development in flood-prone areas through regulations and standards. NFIP minimum regulations and higher standards protect property, save lives, and break the cycle of flood damage.
- As a result of these regulations and standards, NFIP participating communities have increased resilience. Damage to infrastructure, utilities, and property is lessened, helping government, critical facilities, and businesses to stay open or reopen more quickly following an event.
- Participating in the NFIP makes your community eligible for grant and loan support from FEMA, the Department of Housing and Urban Development (HUD), the Small Business Administration (SBA), other Federal agencies, and some State grants and loan programs for mitigation and rebuilding.

Visual 10: Knowledge Checks 1 and 2

Who is responsible for enforcing NFIP regulations?

What are the benefits of NFIP participation?

Student Notes

Answer the questions:

- Who is responsible for enforcing NFIP regulations?
- What are the benefits of NFIP participation?

Prepare to share your responses with the group.

Visual 11: NFIP Roles and Responsibilities

- Federal
- State
- Local

Student Notes

All levels of government have a role in protecting citizens and property from flooding. The Federal Government (more specifically, FEMA) provides oversight of the NFIP. States support local NFIP communities with items such as land use authority. Local communities administer the NFIP by enforcing floodplain management standards in their adopted local floodplain ordinances.

Visual 12: Federal Roles

Federal Government provides:

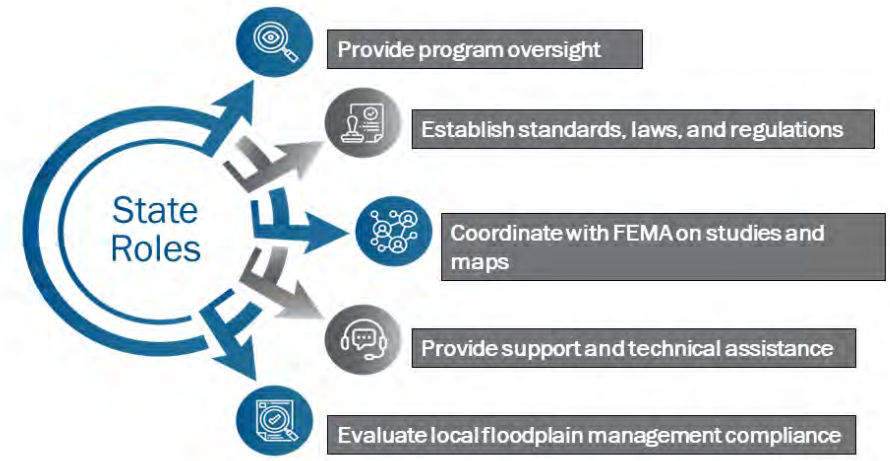
- National program oversight
- Flood hazard maps and products
- Minimum development standards
- Federally-backed flood insurance
- Mitigation planning and technical assistance
- Federal grant funding

Student Notes

FEMA provides NFIP oversight. FEMA has ten regional offices, each with a Mitigation Division that coordinates the NFIP with States and local communities. To support local and government agencies, FEMA and its mapping partners develop and maintain flood hazard data on an ongoing basis. FEMA and the Federal Government also help State and local government agencies by:

- Establishing the minimum standards for development and construction in the floodplains;
- Providing Federal flood insurance coverage in communities that participate in the NFIP;
- Encouraging mitigation planning and providing technical guidance to local, State, Tribal, and territorial governments, as well as property owners, developers, and other NFIP constituents; and
- Administering Federal mitigation grant programs that provide funding to State, local, Tribal, and territorial governments, ensuring these communities can rebuild in a way that reduces or mitigates future disaster losses.

Visual 13: State Roles



Student Notes

State government's responsibilities in floodplain management:

Responsibilities include:

- Providing enabling land use authority for communities to be able to enforce NFIP regulations and to join the program. Many States also have adopted floodplain management statutes and regulations that go above and beyond FEMA's minimums through their own floodplain management programs.
- Establishing and enforcing floodplain management regulations for State-owned properties. These properties must meet minimum NFIP standards and any other higher standards. Some States also manage their own FEMA mapping projects through a cooperative agreement with FEMA. If you're not sure where your land use authority comes from, contact your State's NFIP Coordinator or FEMA Regional Office.
- State NFIP Coordinators ensure that other State agencies have policies and regulations that are compliant with the minimum NFIP standards. FEMA also works with States to provide technical assistance to communities on NFIP requirements. Finally, both States and FEMA coordinate efforts to evaluate and document local compliance with floodplain management standards.

Visual 14: Local Roles

- Adopt a local floodplain management ordinance that meets federal NFIP minimums (and state higher standards)
- Designate a Floodplain Administrator (FPA)
- Permit development and enforce regulations
- Promote good floodplain management
- Tribal governments have unique roles in the NFIP

Student Notes

The local community has the authority to adopt and enforce floodplain management regulations. FEMA does not have land use authority at the local level.

NFIP participating communities must do the following actions:

- Enforce floodplain management standards by adopting local floodplain ordinances. They must enforce these regulations in the mapped flood hazard areas, but they are encouraged to adopt standards higher than the NFIP minimum requirements, as applicable.
- Appoint an official with the responsibility, authority, and means to implement the commitments of the program. This person is generally called the community's Floodplain Administrator (FPA).
- Promote proactive floodplain management:
  - The Floodplain Administrator should become a trusted and knowledgeable resource who administers the program in an equitable fashion.
  - Communities also help their local citizens understand their flood risk by explaining the importance of good floodplain management and what is being done to protect them.

Tribal governments' unique authorities, roles, and responsibilities within the NFIP are a combination of State and local community roles. Federally recognized Tribal governments have powers and NFIP roles similar to those of a State, whereas the land use authority and power of local governments are dictated by their respective

States. Any Tribal government with land use authority can join the NFIP and are considered an NFIP participating community.

Visual 15: Floodplain Administrator Responsibilities

- Issue or deny permits for buildings and all floodplain development
- Inspect development to assure compliance with local regulations
- Pursue code enforcement action on non-compliant development
- Make Substantial Improvement (SI) and Substantial Damage (SD) determinations
- Maintain records in perpetuity
- Provide technical assistance to citizens
- Assist FEMA with flood map preparation and revision

Student Notes

Remember, regulating floodplain development is a local responsibility. After a locality has designated a Floodplain Administrator, one of their major responsibilities is permitting. Floodplain Administrator's permitting responsibilities include the following:

- Issue or deny permits for buildings and all floodplain development
- Inspect development to assure compliance with local regulations
- Pursue code enforcement action on non-compliant development
- Make Substantial Improvement (SI) and Substantial Damage (SD) determinations
- Maintain records in perpetuity
- Provide technical assistance and information to citizens on flood hazards, map data, flood insurance, and proper development
- Assist FEMA with flood map preparation and revision so that the maps most accurately depict the community's flood risk

These responsibilities should be included in any local flood damage prevention ordinance.

Visual 16: Knowledge Checks 3 and 4

Is the State or Federal Government responsible for providing enabling land use authority for communities to adopt NFIP regulations?

Who is responsible for permitting floodplain development?

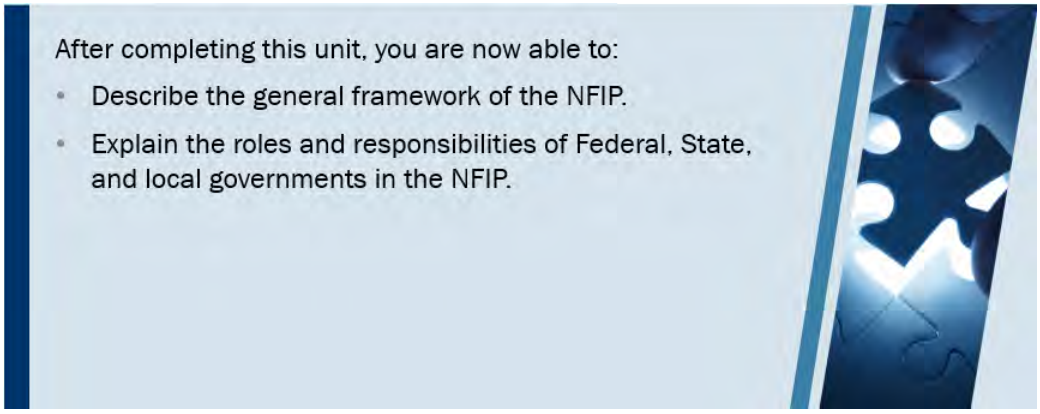
Student Notes

Answer the questions:

- Is the State or Federal Government responsible for providing enabling land use authority for communities to adopt NFIP regulations?
- Who is responsible for permitting floodplain development?

Prepare to share your responses with the group.

Visual 17: Unit 2 Summary



Student Notes

You have completed Unit 2. You are now able to:

- Describe the general framework of the NFIP.
- Explain the roles and responsibilities of Federal, State, and local governments in the NFIP.

Remember that administering and enforcing NFIP requirements are local responsibilities; however, Federal and State partners provide support to communities in administering their programs.

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Unit 3: Risk Determination: Maps and Studies

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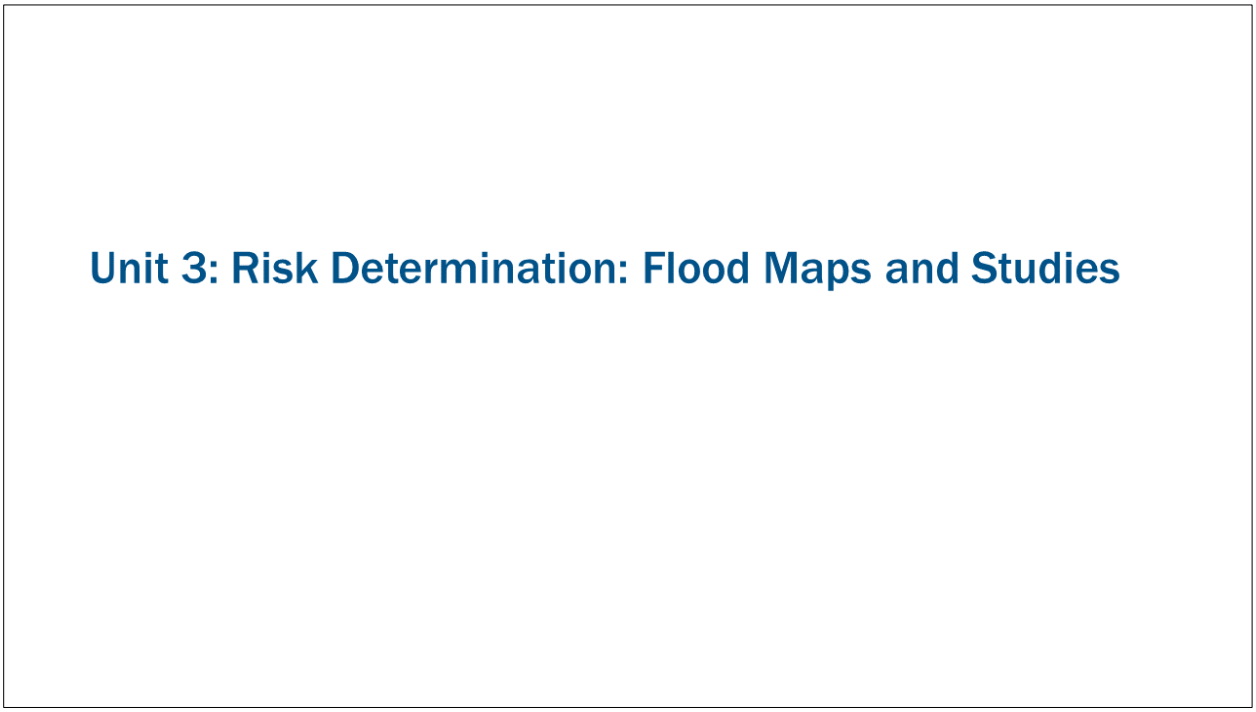
Visual 1: Unit 3: Risk Determination: Maps and Studies



Student Notes

Welcome to Unit 3: Risk Determination: Maps and Studies: This unit should take about 50 minutes to complete.

Visual 2: Course Map Umbrella

Student Notes

You are now reviewing the Know the Risk element of the National Flood Insurance Program umbrella. Some topics we will discuss under this part of the umbrella include determining Base Flood Elevation (BFE) and the Floodplain Administrator's responsibilities regarding map changes.

Visual 3: Unit 3 Objectives

After completing this unit, you should be able to:

- Define the impact of water forces.
- Describe the maps and flood studies Floodplain Administrators use to identify hazard information and determine the Base Flood Elevation (BFE).
- Describe the resources available on the FEMA Flood Map Service Center (MSC).

Student Notes

After completing this unit, you should be able to:

- Define the impact of water forces,
- Describe the maps and flood studies Floodplain Administrators use to identify hazard information and determine the Base Flood Elevation (BFE), and
- Describe the resources available on the FEMA Flood Map Service Center (MSC).

Visual 4: Unit 3 Topics

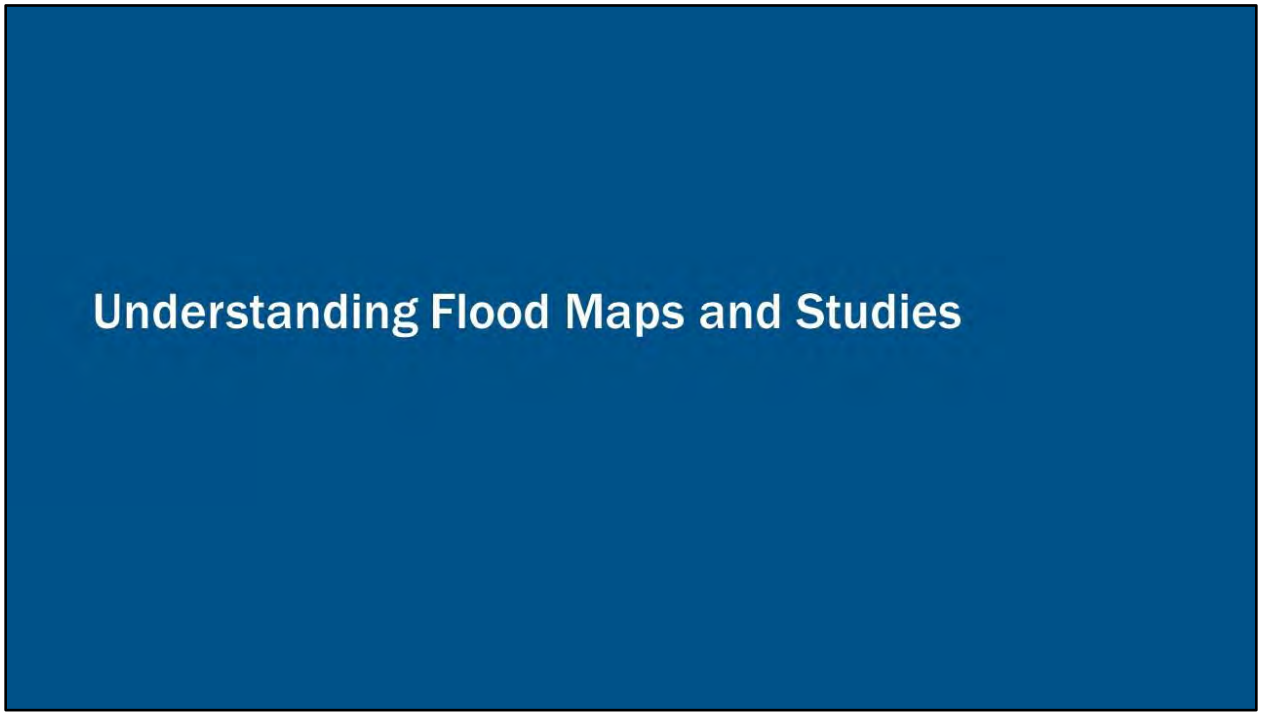
- Understanding Flood Maps and Studies
- Determining Base Flood Elevation
- (BFE)Overview: The FEMA Flood Map Service Center (MSC)
- Overview: Changing Maps
- Unit Summary

Student Notes

Topics in this unit:

- Understanding Flood Maps and Studies
- Determining the Base Flood Elevation (BFE)
- Overview: The FEMA MSC
- Overview: Changing Maps
- Unit Summary

Visual 5: Understanding Flood Maps and Studies



Student Notes

Foundational concepts of flood maps and studies.

Visual 6: Forces of Floodwater

- Floodwaters threaten structures encroaching on the floodplain, causing **flotation, collapse, and lateral movement.**
- Flood forces can cause damage in different ways:
  - Buoyant forces: Uplift or float
  - Hydrostatic forces: Standing water
  - Hydrodynamic forces: Moving water
- Debris impacts and water damage

Student Notes

A review the forces involved with flooding:

Floodwaters can exert severe forces, causing the flotation, collapse, or lateral movement of structures encroaching on the floodplain. This is what the minimum NFIP construction standards aim to prevent.

Flood forces can cause damage in different ways:

- Buoyant forces: Floodwaters can uplift or float a building.
- Hydrostatic forces: The force of standing water can collapse a building.
- Hydrodynamic forces: The force of moving water can push a building laterally (sideways) off its foundation.

Additionally, debris floating in floodwaters can damage structures and cause injury to individuals responding to or evacuating the flooding. Water damage to structures also occurs during a flood.

Visual 7: Base Flood

- The base flood is a flood having a 1% chance of being equaled or exceeded in any given year.
- Base Flood Elevation (BFE) is the expected water surface elevation of the base flood.
- To determine a community's risk to flood hazards, FEMA performs an engineering study to determine the extent and elevation of the 1% annual chance flood event.

Student Notes

Key terms to help you understand flood maps and studies.

A base flood is a flood having a 1% chance of being equaled or exceeded in any given year. While you may see the term "100-year flood," this term is not preferred because it can be misleading. Having a big flood in 1 year does not mean you are safe for the next 99 years; the 1% annual chance exists every year.

The Base Flood Elevation, or BFE, is the water surface elevation in a flood that has a 1% chance of being equaled or exceeded in any given year.

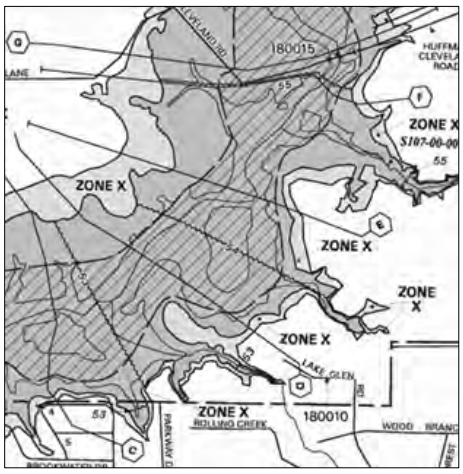
Many of the regulations you will learn in this course will reference the BFE. Particularly when referring to elevating buildings and utilities above the BFE or protecting any part of a building that is below BFE and thus subject to flooding.

To determine a community's flood hazard risks, FEMA performs an engineering study to calculate the extent (size) and depth (or elevation) of the base flood event, also known as the 1% annual chance flood.

Visual 8: Special Flood Hazard Area (SFHA)

- Zones identified on the Flood Insurance Rate Map (FIRM) as being inundated by the 1% annual chance flood.
- Special Flood Hazard Areas (SFHA) zones start with letters A or V.
- Required enforcement of floodplain standards in local ordinance applies.

Mandatory purchase of flood insurance



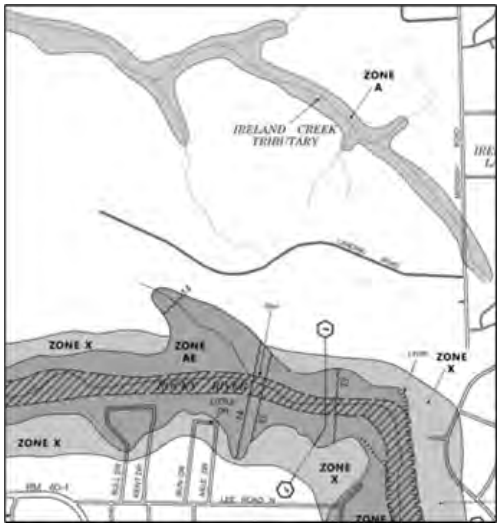
Student Notes

The Special Flood Hazard Area (SFHA) is the portion of the natural landscape that is predicted by a flood study to be inundated (flooded) under the base flood event. The SFHA is identified by zones starting with the letter "A" or "V."

The NFIP floodplain management regulations must be enforced in the SFHA, so the SFHA is also referred to as the regulatory floodplain. The SFHA is also where property owners with federally-backed loans are required to purchase flood insurance. We will talk more about these requirements later in Unit 6: Flood Insurance.

Visual 9: Non-Coastal (Riverine) Flood Zones

- **Zone A:**
  - Areas with a 1% annual chance of flooding mapped by approximate methods
  - BFEs **not** determined
- **Zone AE:**
  - Areas with a 1% annual chance of flooding where BFEs have been determined
  - Called Zones A1-A30 on older FIRMs



Student Notes

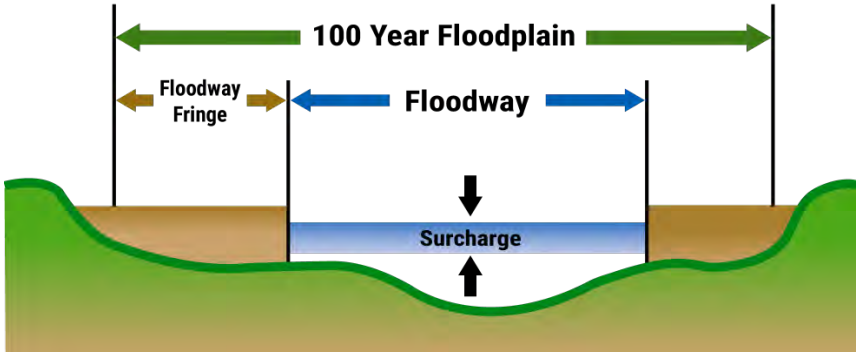
Riverine flooding occurs when streams and rivers exceed the capacity of their natural or constructed channels, and water overflows the banks, spilling out into adjacent low-lying, dry land. The following riverine flood zones are the most common on a FIRM:

- **Zone A:** Areas with a 1% annual chance of flooding mapped by an approximate or non-detailed flood study. Here, the extent (or size) of the base flood is mapped, but depths or BFEs are not shown.
- **Zone AE**: Areas with a 1% annual chance of flooding where the BFEs are determined by a detailed flood study. This zone may or may not include a regulatory floodway.

Older FIRMs used numbering (Zones A1-A30) for detailed study areas, while newer FIRMs simply use an "E" to indicate that elevations are established in these zones.

Visual 10: Regulatory Floodway

- The channel of a river or other watercourse and adjacent land areas that **must be reserved** in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
- May be mapped in riverine AE Zones as part of a detailed flood study



Student Notes

Sometimes, riverine AE zones also have what is called a regulatory floodway. The NFIP defines the regulatory floodway as "the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height."

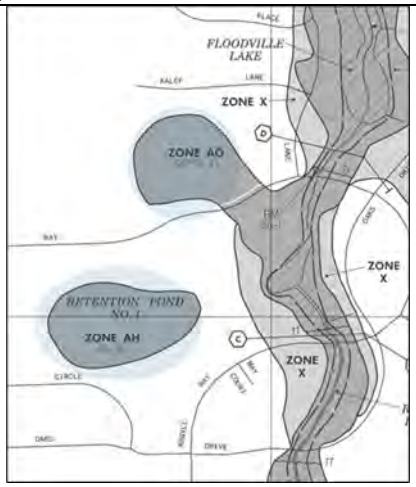
The regulatory floodway is the result of a flood modeling exercise. The model designates a portion of the floodplain that must be kept open (free of development and encroachments) to safely convey the floodwaters.

An extra level of regulatory protection applies to the mapped floodway, which you'll learn about in Unit 4.

Once a floodway is designated within an AE zone, the remainder of the AE zone, where development and encroachments are permitted, is called the flood fringe.

Visual 11: Shallow Flooding Zones

- Average flooding depths of 1–3 feet
- Velocities of 1–5 feet per second
- Zone AO: Sheet Flow
- Zone AH: Ponding



Student Notes

Shallow flooding zones are mapped in areas where no defined channel exists, and the ground is relatively flat. The floodwaters are shallow and are either still or are slow-moving. Average flood depths in these zones are 1–3 feet and water velocities are usually between 1 foot and 5 feet per second.

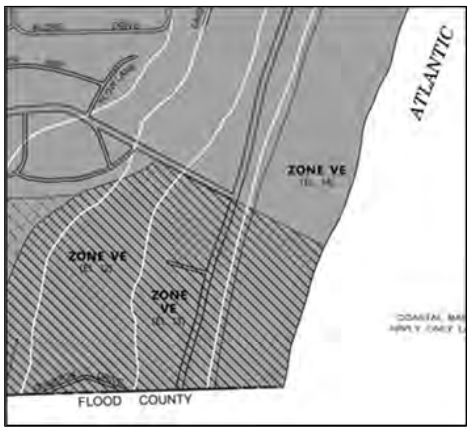
Shallow flooding zones are labeled on maps as Zones AO or AH. The "O" in AO is for overland flow, and the "H" in AH is for holding (or standing water) areas.

Zone AOs are areas inundated by the 1% annual chance flood event where the flooding is usually in the form of sheet flow or water flowing over sloped terrain.

Zone AHs are areas inundated by the 1% annual chance flood event where the flooding is usually areas of ponding or standing water.

Visual 12: Coastal High Hazard Areas

- **Zone V:** BFEs not determined
- **Zone VE:** BFEs determined
  - Called Zone V1-30 on older FIRMs
- Wave heights greater than three feet
- Subject to flooding:
  - Storm surge and wave action
  - Coastal erosion



Student Notes

Coastal High Hazard Areas are subject to additional hazards due to wind and wave action that occur from severe storms, hurricanes, and seismic sources.

These areas are identified on FIRMs as zones with the letters V, or VE where BFEs have been determined. Like Zones A and AE, BFEs may or may not be determined.

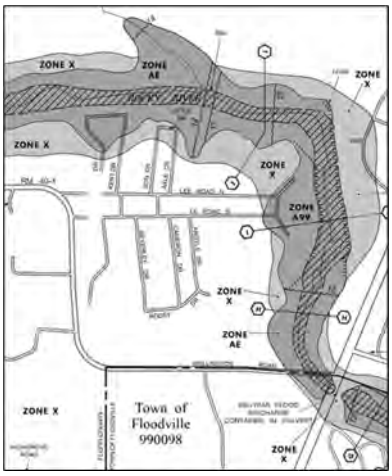
Wave heights of 3 feet or higher are expected.

In addition to wave action or wave runup flooding, coastal high-hazard areas are also subject to flooding from coastal erosion.

V zones appear along the Atlantic and Pacific Oceans, the Gulf of Mexico, and large lakes, such as the Great Lakes or the Great Salt Lake, where wind action can generate large waves.

Visual 13: Outside of the SFHA

- **Zone X (shaded):** Moderate flood hazard
  - 0.2% annual chance floodplain or "500-year"
  - Called Zone B on older FIRMs
- **Zone X:** Low flood hazard
  - Called Zone C on older FIRMs
- **Zone D:** Area of undetermined risk



Student Notes

Zones that are outside the SFHA include X (shaded), X, and D. Minimum NFIP regulations and mandatory flood insurance purchase rules do not apply to these zones; however, building code rules or other community flood protections may still apply.

Areas of moderate flood hazard have a different shading or coloring than SFHA zones. These are Zone X (Shaded) or "Shaded X" Zones, and they represent the areas between the limits of the 1% annual chance flood and the 0.2% annual chance or 500-year flood. On older FIRMs, these were labeled Zone B.

The areas of minimal flood hazard, which are outside the SFHA and higher than the elevation of the 0.2% annual chance flood, are unshaded and appear white on this map. They are labeled Zone X. On older flood maps these are labeled Zone C.

Zone D areas are those of undetermined risk, with possible but undetermined flood hazards. No flood hazard analysis has been conducted in these areas.

Visual 14: Knowledge Check 1

What flood zone letter designation matches the following flood zone description?

Coastal areas with a 1% annual chance of flooding and additional hazards associated with wind and wave action, wave heights greater than three feet, and BFEs shown at selected intervals

Student Notes

Answer the question:

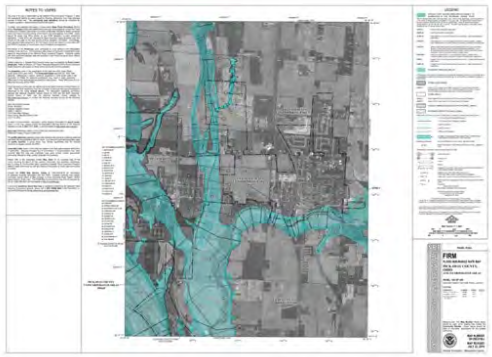
What flood zone letter designation matches the following flood zone description?

Coastal areas with a 1% annual chance of flooding and additional hazards associated with wind and wave action, wave heights greater than three feet, and BFEs shown at selected intervals

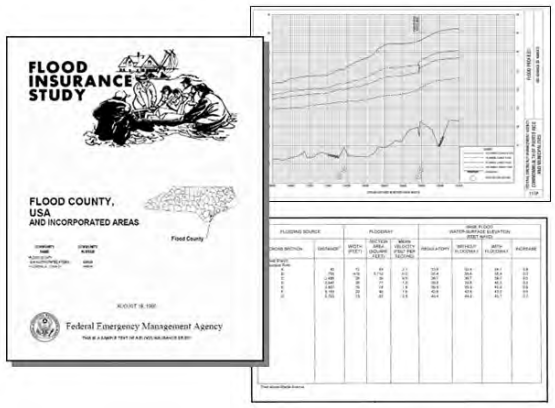
Prepare to share your responses with the group.

Visual 15: Flood Study Regulatory Products

FIRM



FIS



Student Notes

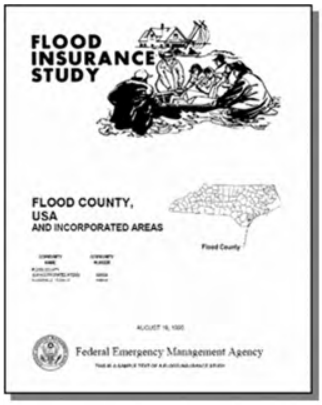
The Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS) are FEMA's two regulatory products that go together to support floodplain management activities.

Floodplain Administrators and supporting partners use these two products to identify and mitigate flood risk for various situations ranging from new construction to explaining high-risk areas to administrative officials.

Communities must maintain adequate copies of their current (or effective) maps and studies and keep them updated. It's important to keep copies of old revised maps, as they provide a historical record.

Visual 16: Flood Insurance Study (FIS)

- Includes background information on the area studied
- Describes engineering methods and data used to determine the BFE
- May contain additional detailed data:
  - Floodway Data Tables
  - Flood Profiles
  - Stillwater Elevation Data Tables
  - Coastal Transect Parameters



Student Notes

An FIS is the source of technical data and risk information for the adoption of floodplain regulations. The FIS provides the history of flooding in the community and describes engineering methods and data used to establish BFEs.

The FIS also contains flood profiles and other tables with additional detailed information. Depending on the type of flood hazards studied (e.g., riverine, coastal, lakes) in an area, some or all of these data tables and profile graphs will be present.

Because profile graphs and tables in the FIS contain more detailed data than the FIRM displays, they are very important for Floodplain Administrators to use when determining BFEs as accurately as possible (i.e., to the nearest 0.1 foot).

Due to the detail and thoroughness involved with a study, a FIS is often a large multi-volume document.

Visual 17: Flood Insurance Rate Map (FIRM)

- Identifies:
  - Flood Zones, based on the FIS
  - BFEs (rounded)
  - Community names and boundaries
  - Streets, geographic features, watercourse names, and other relevant labels
- Includes:
  - Title block
  - Map legend
  - Scale bar and north arrow

Student Notes

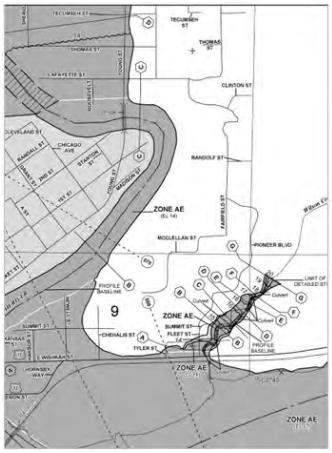
The FIRM identifies the SFHA and the specific flood zones applicable to that community. Map panels are quite large, so only a portion of a FIRM is displayed on the screen.

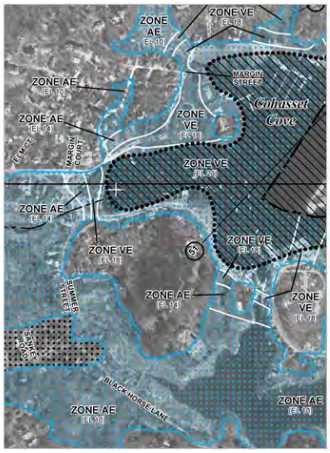
Depending on the type of flood study and the flood risks present, the FIRM may show regulatory floodplains with or without BFEs. The FIRM may include riverine areas where a regulatory floodway has been delineated. Coastal high-hazard areas may have additional information. In addition, the FIRM panel contains several elements, including the following:

- Title block: Lists the title of the flood study, the unique map panel number and effective date, and the communities shown
- Map legend: Describes the symbols and features that are displayed
- Scale bar
- North arrow

Other lines and symbols are used to indicate things like the approximate BFE, riverine cross sections, and other features like roads, bridges, and culverts. Community boundary lines on the FIRM may be colored or dashed.

Visual 18: Various Styles of FIRMs



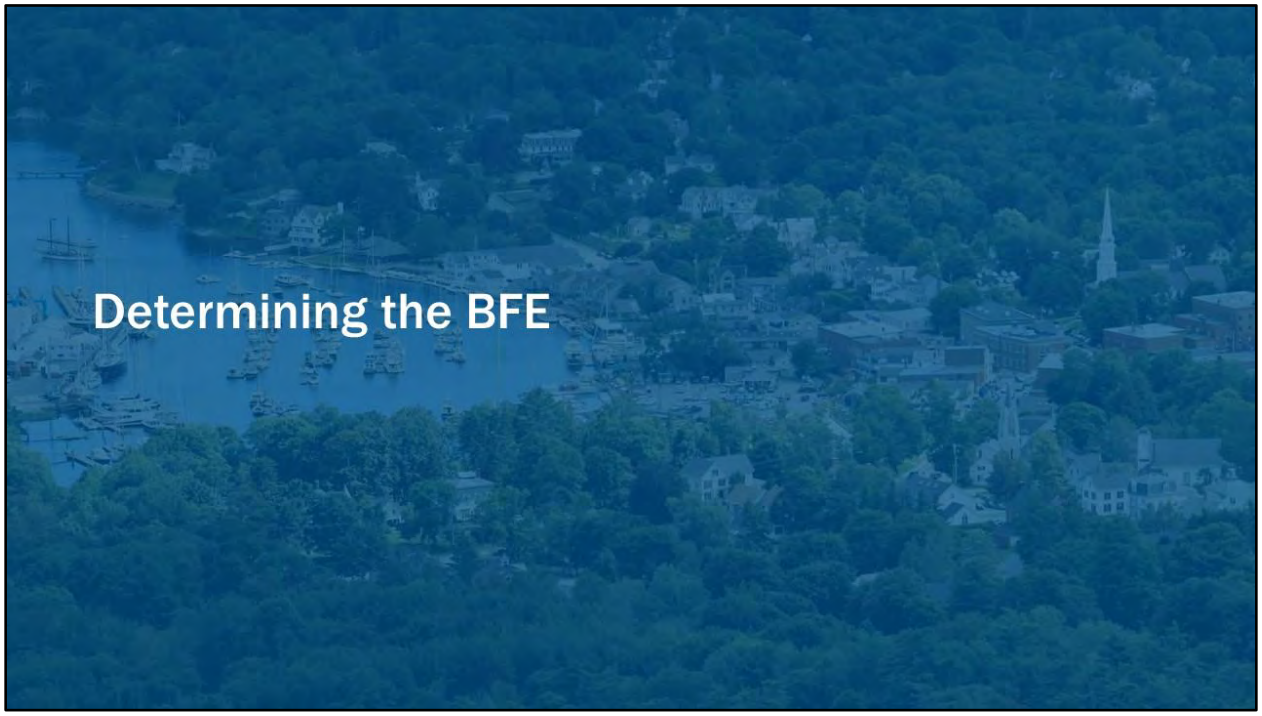


Student Notes

Review the examples of various map styles on the screen. Depending on when the map was made, the FIRM may be entirely gray scale, contain a single blue color with variations in shading, or be multi-colored. The FIRM may or may not include aerial imagery.

Note that the legend for each FIRM will match that particular version.

Visual 19: Determining the BFE



Student Notes

Common approaches to determining the BFE.

Visual 20: Identify the Risk and Determine the BFE

- To guide permitting and development decisions, Floodplain Administrators will:
  - Locate a specific property on the FIRM.
  - Use the FIRM and FIS to determine the BFE at a specific site.
- The steps to determine the BFE depend in part on the flood zone.
  - Riverine
  - Shallow flooding
  - Coastal High Hazard Areas
  - A zones

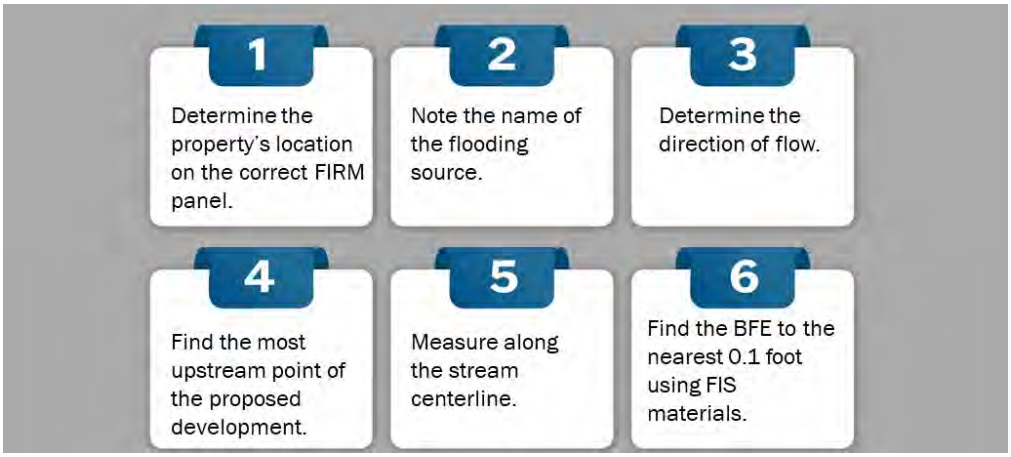
Student Notes

To guide permitting and development decisions, Floodplain Administrators must use the FIRM and the FIS. The FIRM is used to locate a specific property in relation to the SFHA. In many cases, both the FIRM and the FIS are used together to determine the BFE at a specific site.

The steps to determine the BFE depend on the flood zone designation. For this unit, we will explain how to identify risk and determine the BFE for:

- Riverine areas,
- Shallow flooding areas,
- Coastal High Hazard Areas, and
- A zones.

Visual 21: Determining the BFE in Riverine Areas (Zone AE)



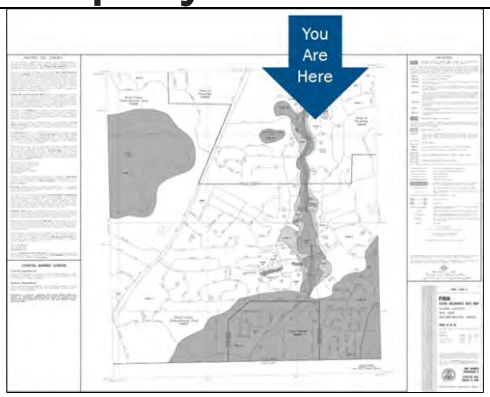
Student Notes

The following steps are necessary to determine the BFE for Riverine Areas (Zone AE):

1. Determine the property's location on the correct FIRM panel.
2. Note the name of the flooding source.
3. Determine the direction of flow. Understanding which direction the water is flowing helps you determine upstream/downstream.
4. Find the most upstream point of the proposed development and draw a new cross section line perpendicular to the stream flow.
5. Measure along the stream centerline, from that new cross section to the nearest lettered cross section on the FIRM.
6. Find the BFE to the nearest 0.1 foot using FIS materials (i.e., data tables and Flood Profiles).

Visual 22: 1. Determine the Property's Location

- Find and use the correct FIRM panel.
- Confirm using the FIRM Index or the FEMA MSC address search.



Student Notes

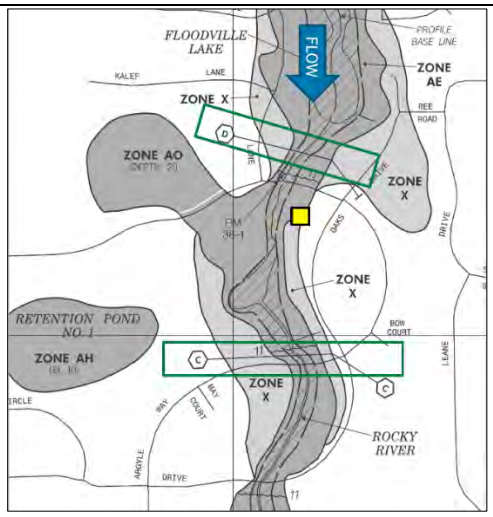
To determine the BFE for a riverine area, first determine the property's location and the correct FIRM panel. For example, if a property is near Argyle Way and Oaks Drive in Floodville, you need to find the FIRM panel that displays that part of town.

If you are not sure which FIRM panel to use, use the map index to acquire a countywide view of all the FIRM panels or you can use the FEMA MSC to perform an address search for the correct FIRM panel (explained later in this unit).

FIGURE 1. FIRM PART 1

Visual 23: 2. Flooding Source and 3. Direction of Flow

- Identify the name of flooding source.
- Determine upstream and downstream.
- Upstream indicated by:
  - Higher number BFE wavy lines
  - Later letters of the alphabet
  - Stream slope on Flood Profile in FIS



Student Notes

We are focused on the portion of the FIRM with the example property location. The yellow box on the screen represents the exact location of the property.

Note the flood source name. Here, it is the Rocky River.

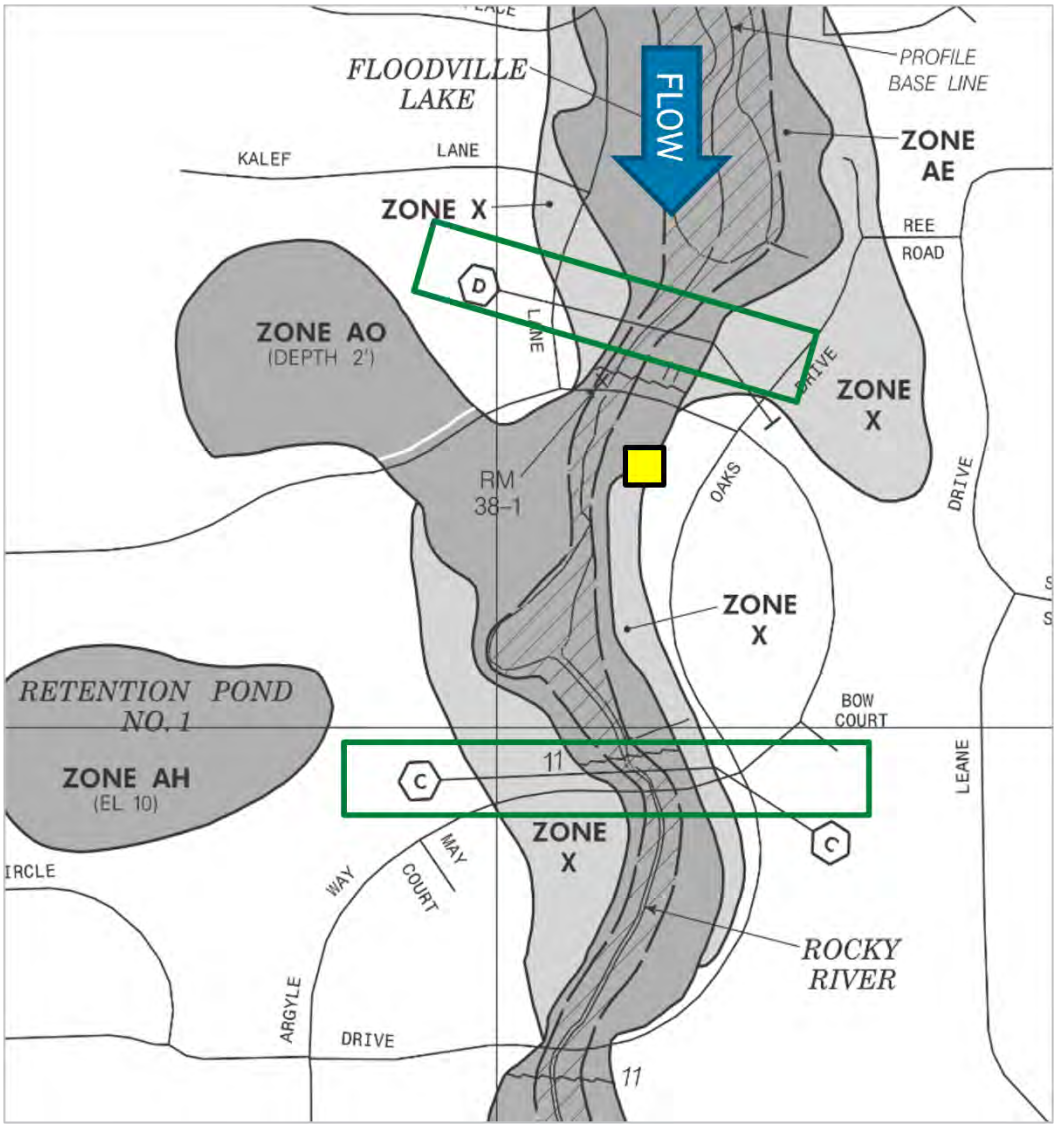
Next, you'll need to determine the direction the Rocky River is flowing to find the property's upstream boundary. Remember that upstream is not always to the north. To determine which direction is upstream, you can:

- Refer to the rounded BFE wavy lines on the FIRM. The higher numbers indicate the upstream direction.
- Refer to the order of the lettered cross sections. As you travel upstream, the labeling goes up the alphabet: A, B, C, D, and so on. Cross section A is always the most downstream point. On long rivers, the labeling after the letter Z starts over at AA.

Keep in mind that riverine AE sites are typically located between lettered cross sections. So, gather some measurements of the nearby riverine cross sections, and use the flood profiles in the FIS as the source for the regulatory BFE.

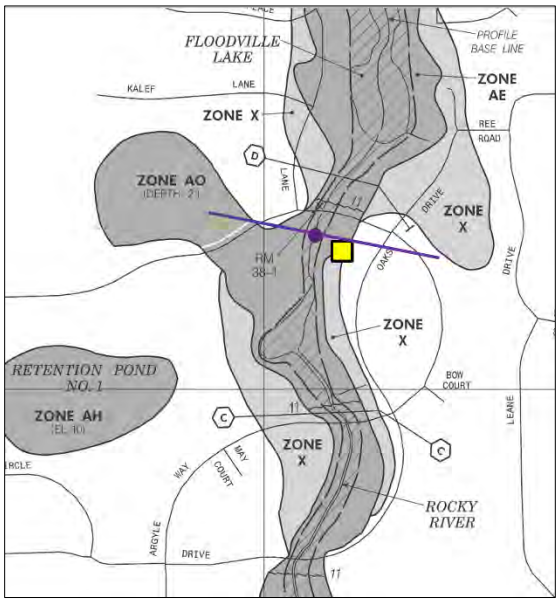
FIGURE 2. FIRM DIRECTION OF FLOW

A FIRM map showing a property on the edge of Zone AE, with an arrow pointing down to indicate direction of flow is south. Lettered cross sections D (at the top) and then C (at the bottom) are highlighted.



Visual 24: 4. Find the Most Upstream Point of the Proposed Development

- Draw a new line at the upstream point, across the flooding source.
- Draw line perpendicular to the stream flow.

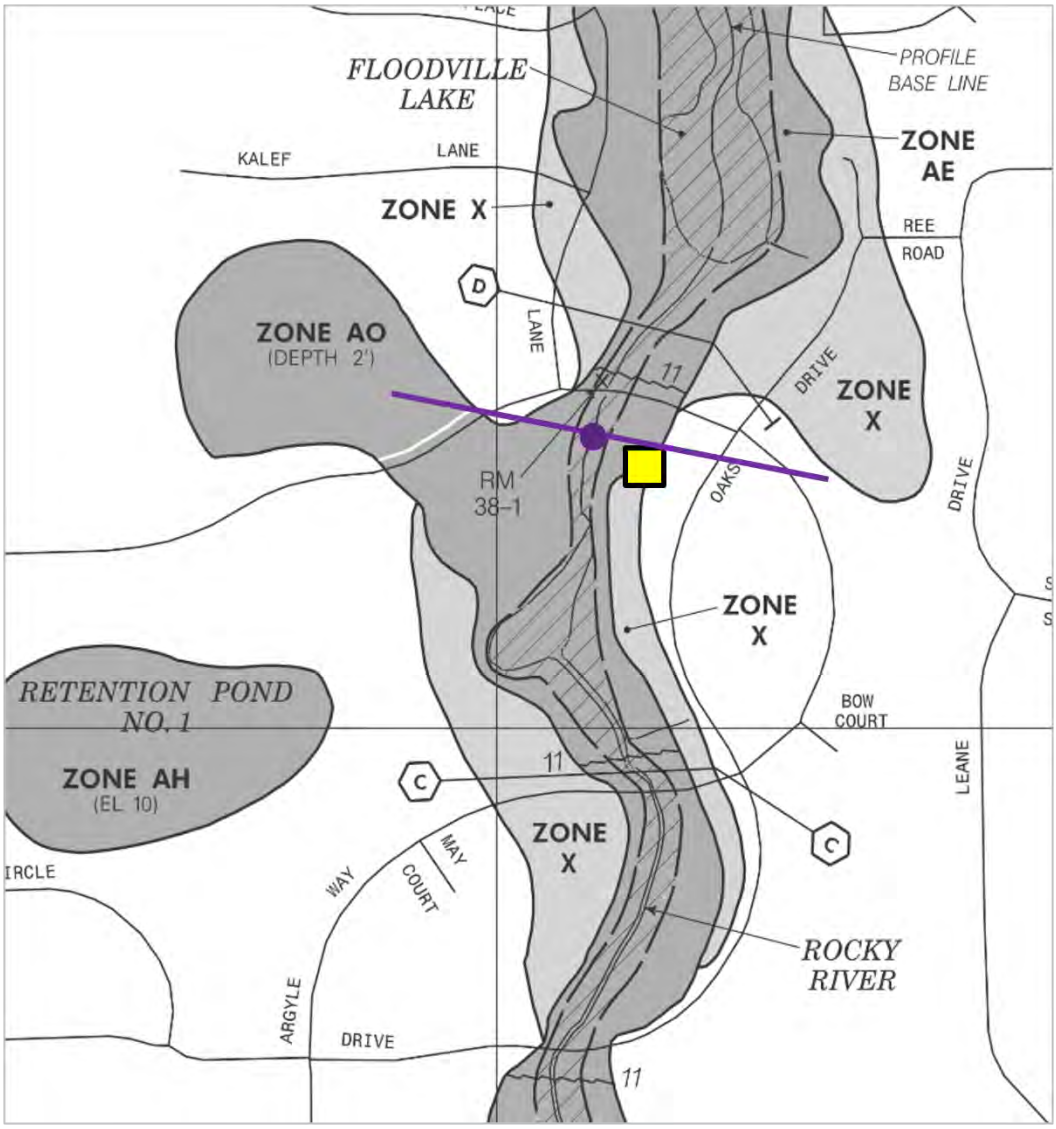


Student Notes

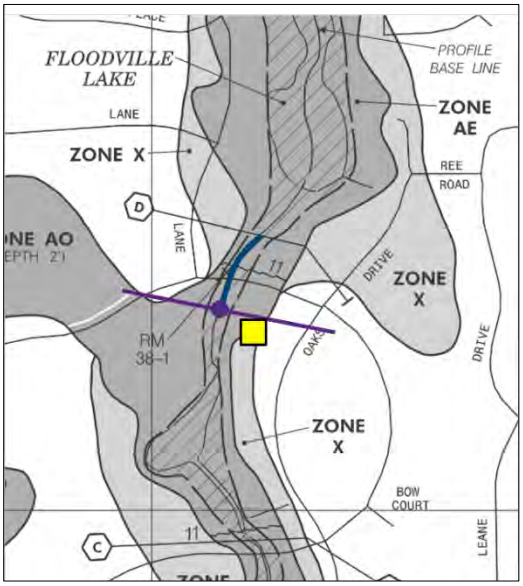
For riverine properties located between lettered cross sections on the FIRM, participants need to determine the distance from the property's upstream point to the nearest cross section using the Flood Profiles in the FIS. Review Figure 3 in your Student Manual.

To determine the property distance, first draw a line from the upstream edge of the property across the stream, perpendicular to the stream flow. In meandering river sections, use the orientation of the nearby cross sections and estimated BFE isopleths (wavy lines) to guide you in orienting your line. Then, mark where your drawn line and the stream center line intersect.

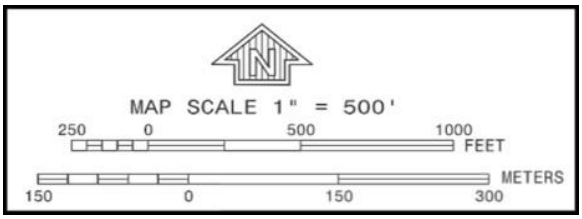
FIGURE 3. FIRM PART 4



Visual 25: 5. Measure Along the Stream Centerline



- Find the centerline or profile base line.
- Measure along the stream centerline (from the new cross section) to nearest lettered cross section.
- Use the scale on the FIRM Panel.



Student Notes

The stream centerline is shown as a thin black line inside the floodway on this map and is labeled as the Profile Base Line.

Using the map scale on the FIRM, measure the distance from your cross section to the nearest lettered cross section.

Note the letter, the distance between the cross section and the property, and the direction (whether the property is upstream or downstream from the cross section).

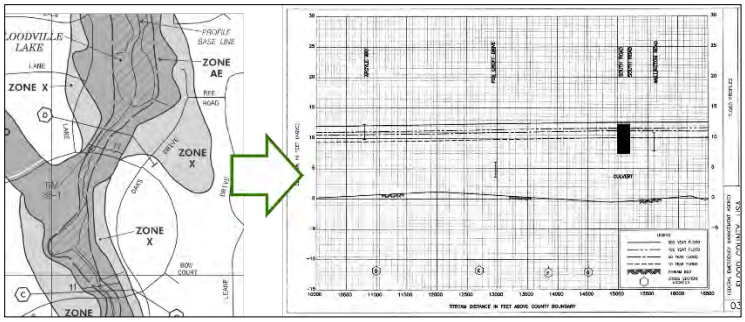
Each map has a unique scale. Use the scale on that FIRM panel to measure distance along the thalweg, which is curved and meanders like the river. Taking a straight-line measurement is incorrect.

In this scenario, the property is 300 feet downstream of Cross Section D.

Visual 26: 6. Find the BFE to the Nearest 0.1 Foot Using FIS Materials

Flood profiles in the FIS contain more detailed information for riverine AE zones.

- Obtain the correct FIS profile page
- Always check for the correct flooding source and cross sections.



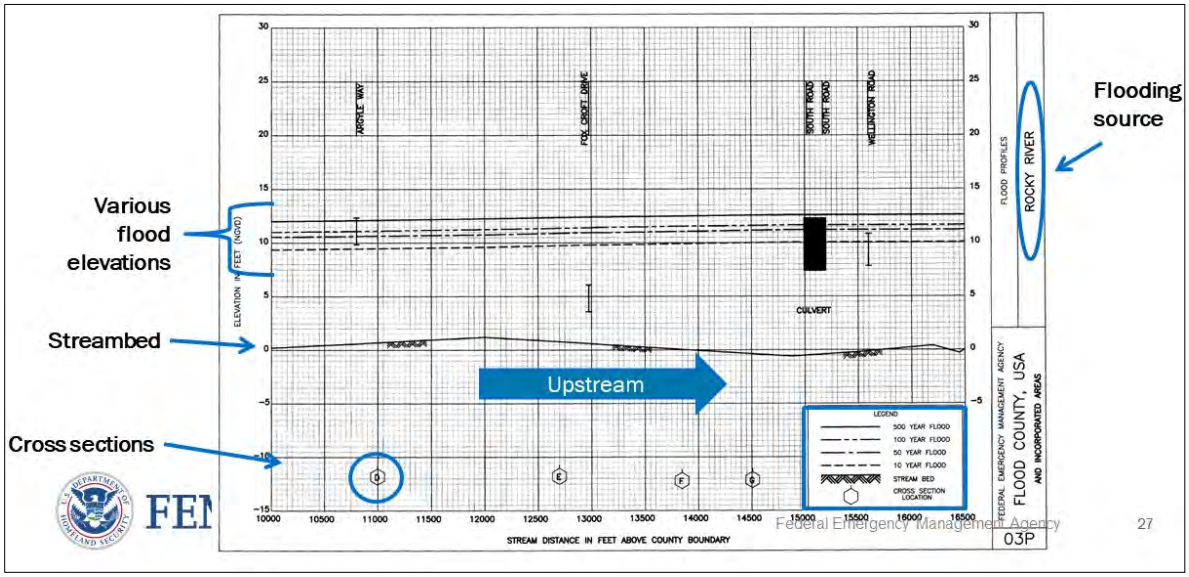
Student Notes

When determining the BFE, it's important to check the FIS for more detailed information. For riverine AE zones, flood profiles in the FIS contain more detail than the FIRM alone.

Note that there are typically several FIS profile pages for each flooding source studied, so you'll have to confirm you have the correct one. To confirm you have the correct FIS profile page, always check the labels to confirm that they match the correct flooding source name and cross section letters.

The letters along the bottom of the flood profile should match the letters representing the cross sections on the portion of the stream you are analyzing.

Visual 27: Information on an FIS Flood Profile



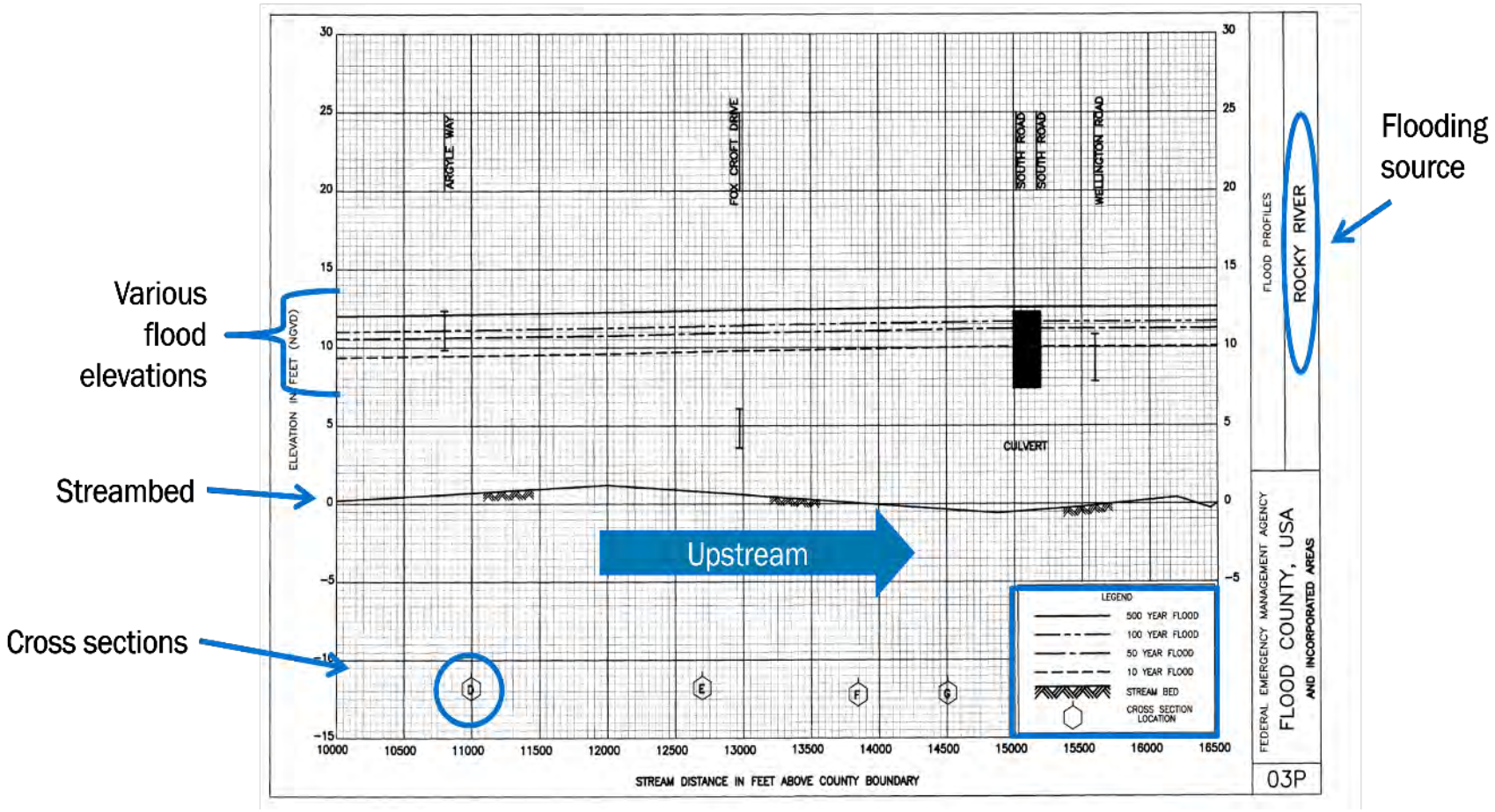
Student Notes

Examine the information you will need to verify in the flood profile. We will continue to use the Rocky River Flood Profile example. Review Figure 4 in your Student Manual. To find the flood source name in a flood profile graph, check the right side of the graph. Remember, there are many pages in the FIS. To ensure they have the correct page, they will also need to ensure the letters along the bottom of the flood profile match the letters representing the cross sections on this portion of the stream. This example measures from the structure, upstream to Cross Section D. So, this would be the correct Rocky River page.

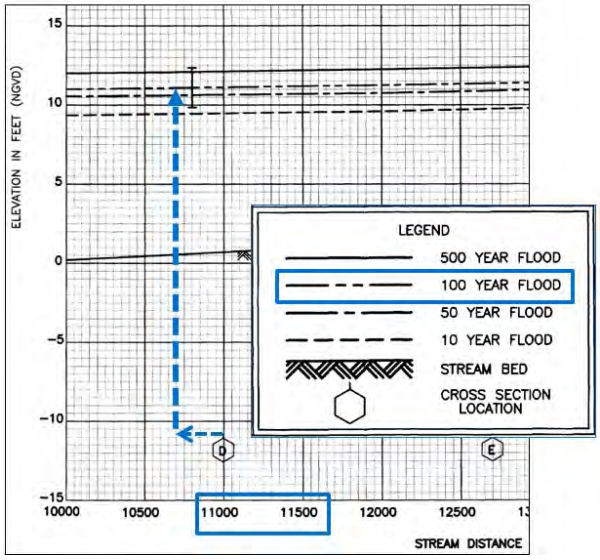
There are several flood elevation lines drawn across this flood profile, which depicts the streambed and the elevation of the floodwater for the different modeled floods. The legend lists each of these lines. The line we are interested in for determining the BFE is the 100-year flood (1% annual chance flood) line.

The bottom of the profile graph measures stream distance from a downstream point like a river confluence or county boundary line. Remember that, as with the FIRMs, the cross sections go upstream beginning with A as the most downstream point. You'll need to use this information to determine which direction to make your measurement.

FIGURE 4. FIS FLOOD PROFILE



Visual 28: 6.1 Locate the Property on the Flood Profile



- Check the scale and legend.
- Each grid = 500’ and square = 50”
- Structure is 300’ downstream from cross section D.
  - 300’ = 6 single squares
- Draw a horizontal line 300’ downstream from cross section D.
- Draw the vertical line up to the 1% annual chance (100-year) flood line.

Student Notes

When using the flood profile, locate the property relative to the same lettered cross section by measuring horizontally along the bottom. Use the streamline measurement from the previous step. This example structure is 300 feet downstream from cross section D.

Note that each 10-grid square along the x-axis on this profile represents 500 feet of stream distance, and each individual grid square represents 50 feet or one-tenth of 500 feet. Remember to always check the scale, as the scale may be different on a different profile.

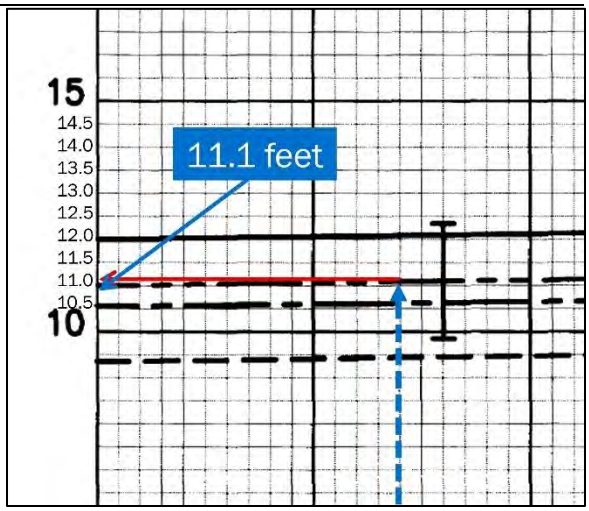
The measurement from cross section D downstream to our new cross section was 300 feet, or 6 grid squares.

Next, draw a line vertically from that point up to the profile’s 1% annual chance flood line. On this profile, it’s labeled as the 100-year flood. Check the legend to make sure you are using the correct 100-year or 1% annual chance flood line. There may also be lines for other flood recurrence intervals.

You are ready to find the BFE to the nearest 0.1 foot.

Visual 29: 6.2 Find the BFE to the Nearest 0.1 Foot

- Draw a horizontal line to vertical axis.
- Count squares from the nearest major division.
- Note the scale of the vertical axis.
- Determine the BFE to nearest 0.1 feet.



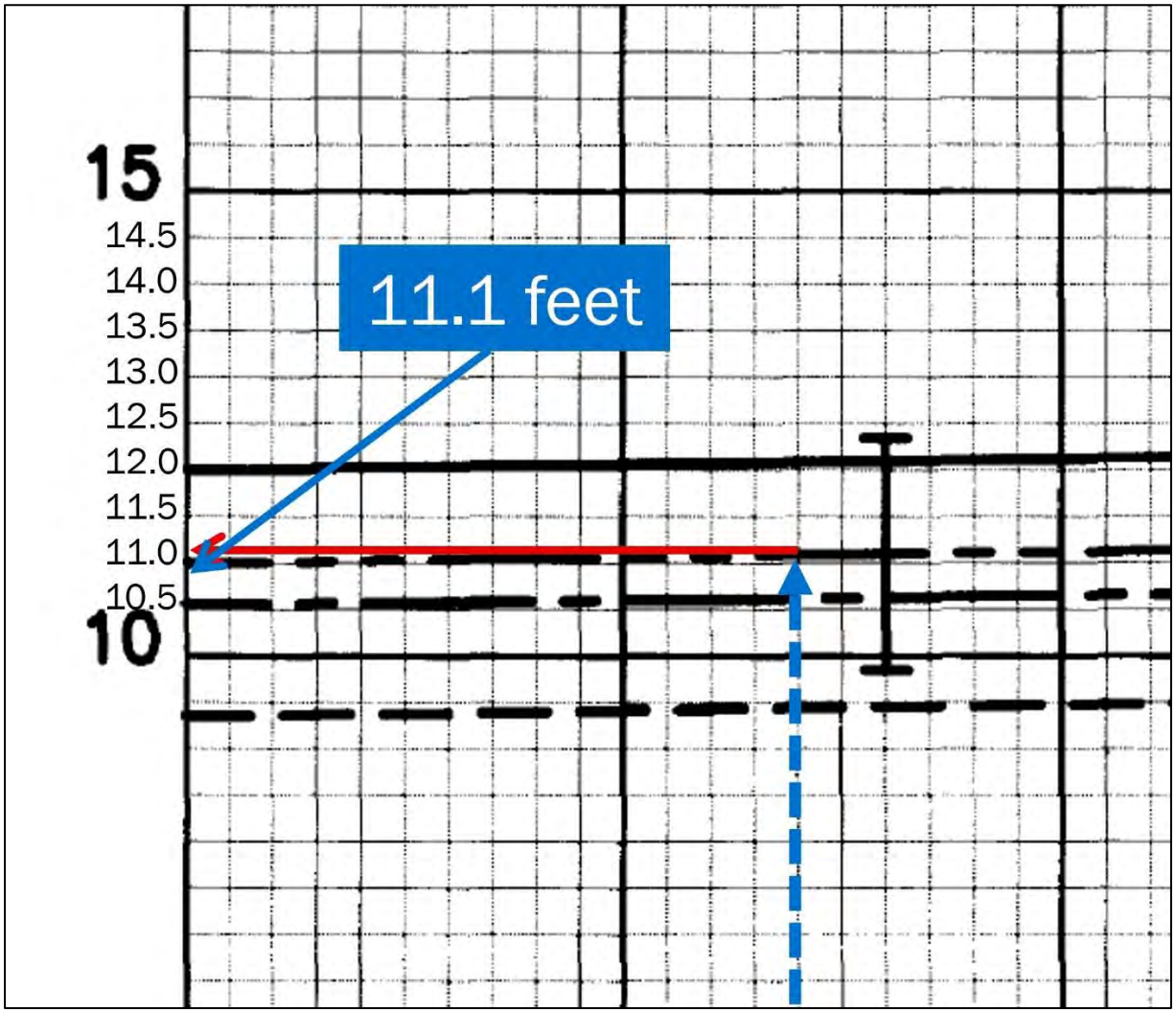
Student Notes

This is a close-up of the flood profile to highlight additional details. Review Figure 5 in your Student Manual. To determine the BFE to the nearest tenth of a foot, draw a horizontal line from where your line intersects the 1% annual chance line over to the opposite vertical axis of the profile.

Next, count the squares from the nearest major division or labeled number on the y-axis. Check the increments on the grid, as scales may vary. For example, each square may represent 1 foot, 0.5 feet, or another increment.

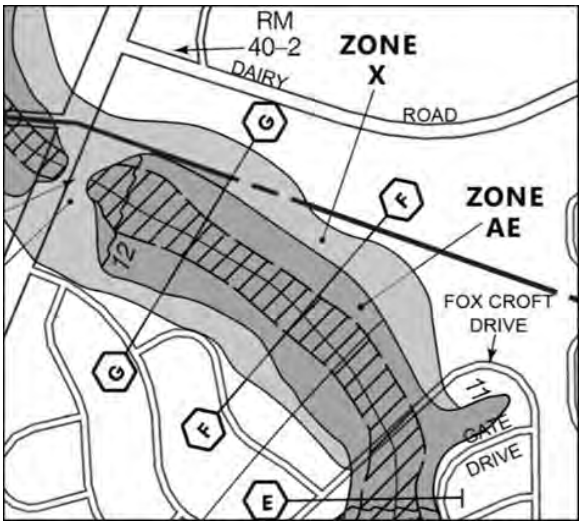
After drawing the line across the y-axis, your answer should be 11.1 feet for the BFE.

FIGURE 5. FIND THE BFE PART 6



Visual 30: Knowledge Check 2

Which direction is upstream on the map?



Student Notes

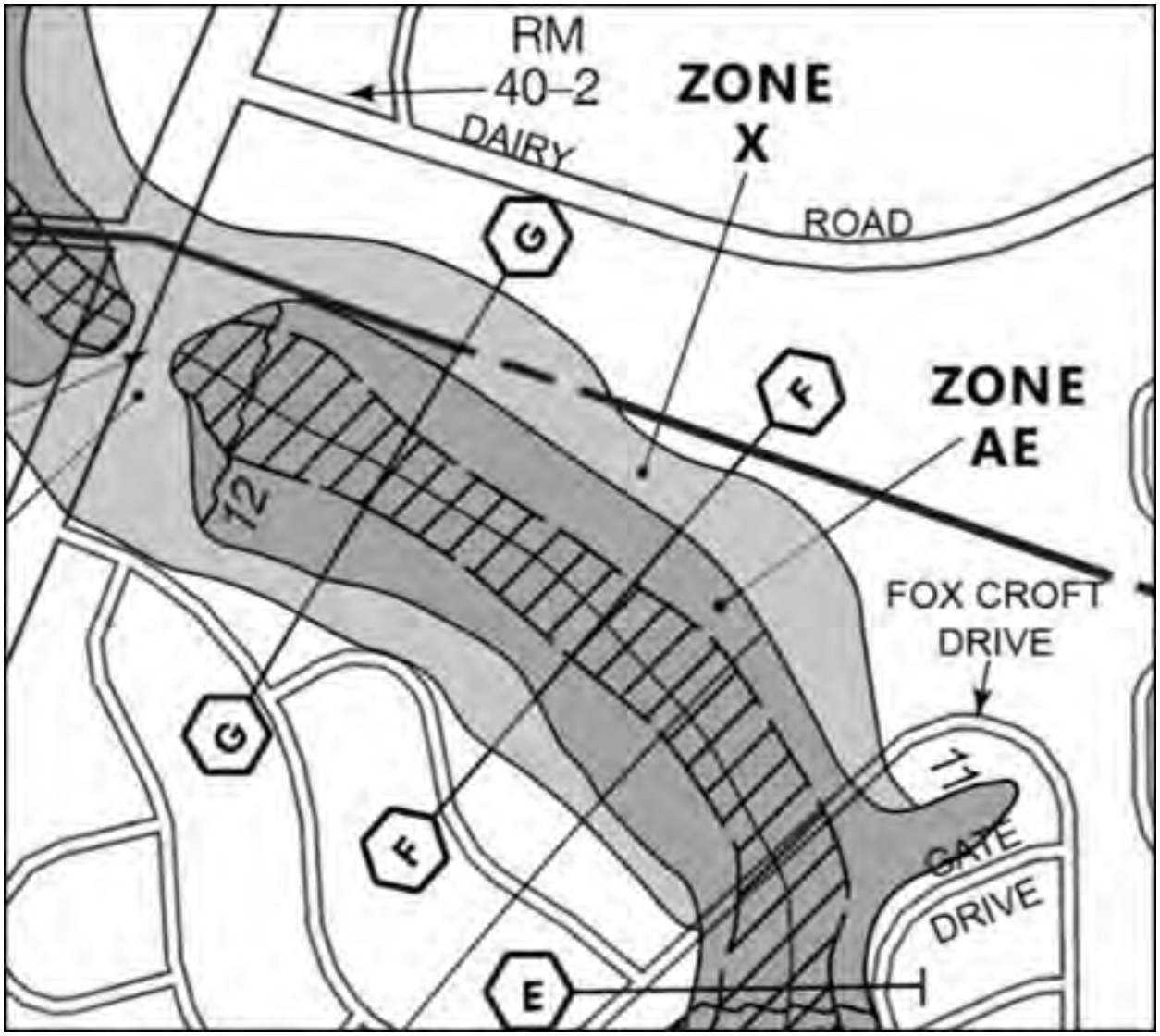
Review Figure 6 in their Student Manual.

Answer the question:

Which direction is upstream on the map?

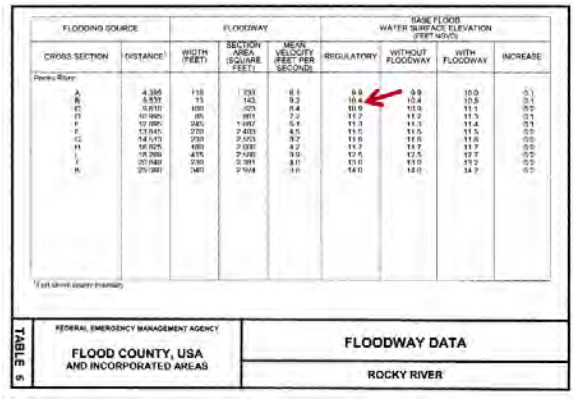
Prepare to share your responses with the group.

FIGURE 6. KNOWLEDGE CHECK 2 MAP



Visual 31: Unique Situations: Riverine Structure on a Cross Section

Floodway Data Table method: Only appropriate If upstream boundary of the structure/property touches the cross section. "Regulatory" column provides the BFE.



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NGVD)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Peeks River								
A	4,356	110	720	6.1	9.9	9.9	10.0	0.1
B	5,531	115	743	5.9	10.4	10.4	10.5	0.1
C	6,611	100	625	6.4	10.9	10.9	11.1	0.2
D	10,995	85	661	7.2	11.2	11.2	11.3	0.1
E	12,695	245	1,982	5.1	11.3	11.3	11.4	0.1
F	13,945	270	2,403	4.5	11.5	11.5	11.5	0.0
G	14,571	230	2,053	5.2	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	19,269	415	2,480	3.6	12.5	12.5	12.7	0.2
J	20,640	230	2,381	3.7	13.0	13.0	13.2	0.2
K	23,980	340	2,904	3.0	14.0	14.0	14.2	0.2

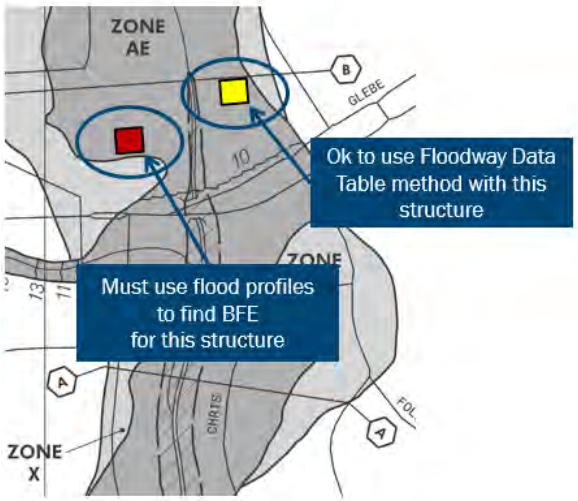
TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

FLOOD COUNTY, USA
AND INCORPORATED AREAS

FLOODWAY DATA

ROCKY RIVER



Student Notes

Understand this important point.

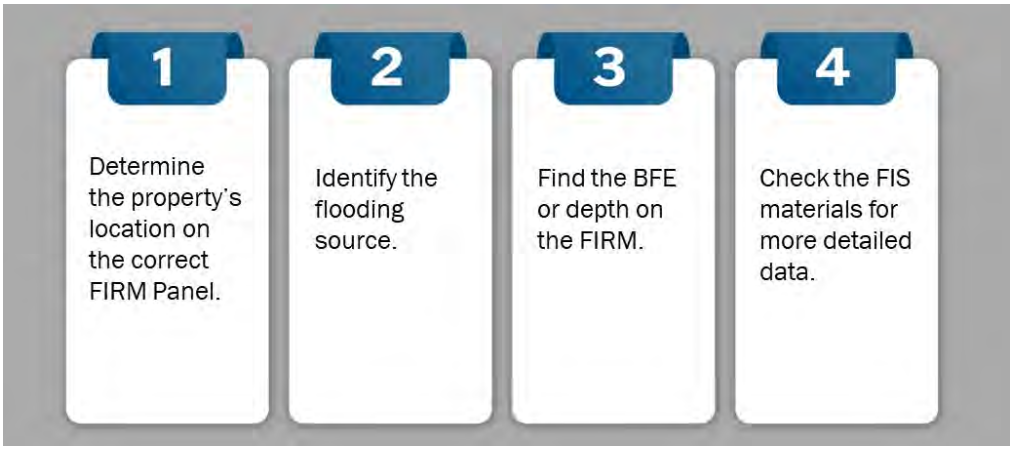
The floodway data table method can only be used as the best source for the regulatory BFE for structures in special cases.

To use this method, a structure's upstream boundary must be touching the lettered cross section. This is rare, but it can happen! The northern-most structure shown here meets this criteria since it touches cross section B.

The Regulatory column of the Floodway Data table in the FIS provides the BFE to the nearest tenth of a foot. Like the FIS profile graphs, there may be many pages. Check the labels to ensure that you have the page with the correct flood source name and cross section letters.

In this example, the structure at cross section B has a Regulatory BFE of 10.4 feet.

Visual 32: Steps to Determine the BFE in Shallow Flooding Zones



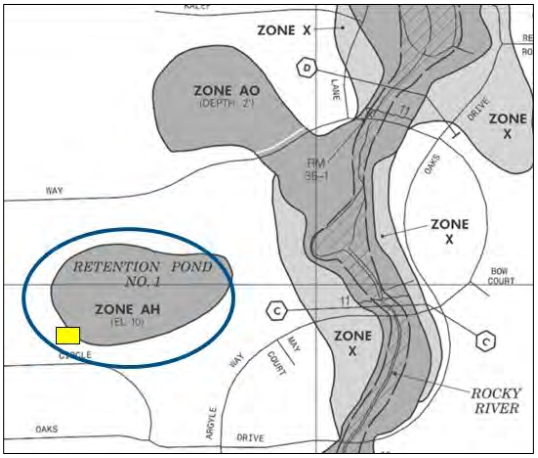
Student Notes

How to determine the BFE for shallow flood areas.

To determine the BFE in shallow flooding zones, you will need to complete the following steps:

1. Determine the property's location on the correct FIRM panel.
2. Identify the flooding source.
3. Find the BFE or depth on the FIRM.
   - AH = BFE
   - AO = Base Flood Depth
4. Check the FIS materials for more detailed data.

Visual 33: Determining the BFE in Zone AH



- Identify the flooding source.
  - Retention Pond 1
- Elevation on FIRM is displayed to nearest whole foot.
- Check the FIS materials for more detailed data.
  - Review the Stillwater Elevation Table.

Student Notes

To determine the BFE for shallow flooding areas, first determine the property's location on the correct FIRM panel and identify the flooding source. Examine the pond just to the west of the Rocky River. Begin by checking the map for the flood zone and the name of the flooding source. This example shows a property within an AH Zone on the FIRM.

The flooding source is labeled on the FIRM as Retention Pond Number 1. The BFE is displayed as 10 feet. Base Flood Elevations are rounded to the nearest whole foot on the map.

The Summary of Stillwater Elevations table in the FIS provides more detail on the BFE in these AH Zone areas.

Visual 34: Determining the BFE in a Zone AH: Stillwater Elevations Table

- Locate the table in the FIS.
- Find correct flooding source.
- Find 1% (100-year) flood data.
- BFE is 10.0.

TABLE 2 - SUMMARY OF STILLWATER ELEVATIONS

FLOODING SOURCE AND LOCATION	ELEVATION (feet NGVD) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
ATLANTIC OCEAN Entire open coast shoreline within Flood County	6.7	8.7	10.0[1]	12.6
JESCO LAKE Entire shoreline within Flood County	6.9	8.9	10.3	12.8
SILVER LAKES Entire shoreline within Flood County	8.6	9.6	10.4	13.5
SOUTH LAKE Entire shoreline within Flood County	6.9	8.9	10.3	12.8
STONE LAKE Entire shoreline within Flood County	7.0	9.0	10.2	12.8
RETENTION POND NO. 1 Entire shoreline within Flood County	N/A	N/A	10.0	N/A

[1] Includes wave set-up of 0.5 foot

Student Notes

Find the BFE.

A Summary of Stillwater Elevations Table may include information about several lakes, ponds, and other stillwater flooding sources. These areas are shown as AE or AH zones on the FIRMs, depending on the depth of flooding.

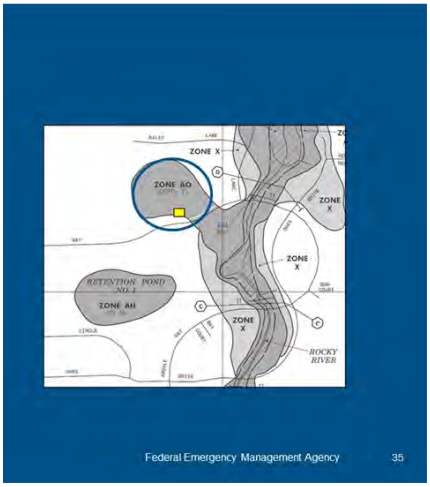
Next, find the name of the flooding source of interest. In this case, find Retention Pond Number 1.

Then, find the BFE or 1% annual chance (100-year) flood elevation column, the third column on this example table. Notice that the elevations are displayed in tenth-of-a-foot increments instead of whole-foot elevations, as they are on the maps.

In this case, the regulatory BFE for Retention Pond 1 is 10.0 feet. This is more specific than simply 10 as printed on the FIRM.

Visual 35: Determining BFE (Depth) in Zone AO

- **Zone AO is unique: base flood depth, not elevation**
- There is no more detail in the FIS.
- Use the number on the FIRM.

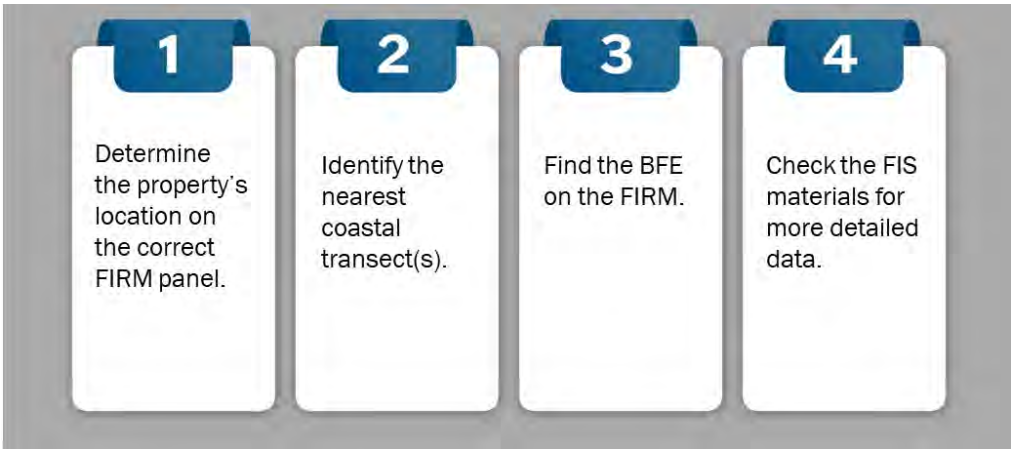


Student Notes

Zone AO is also an area of shallow flooding with average depths between one and three feet, but it represents an area where water tends to flow in large sheets over the land. For a structure located in this zone, how do we determine the BFE? And how is the regulatory flood information shown on the map in this zone?

AO zones are unique in that the flooding is measured as a depth. The BFE is actually a base flood depth, not an elevation. For an AO zone, the regulatory flood depth is this depth number, which is printed directly on the FIRM. The regulatory flood depth in this example is two feet.

Visual 36: Steps to Determine the BFE in Zone VE



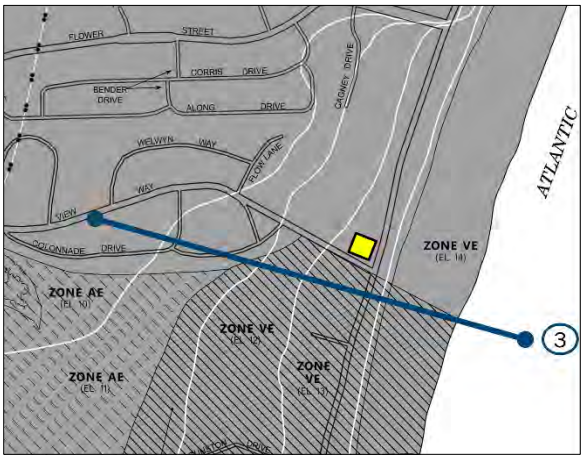
Student Notes

How to determine the BFE for Coastal High Hazard Areas.

To determine the BFE in Coastal High Hazard Areas, you will need to complete the following steps:

1. Determine the property's location on the correct FIRM panel.
2. Identify the nearest coastal transect(s).
3. Find the BFE on the FIRM.
4. Check the FIS materials for more detailed data. Coastal Transect Data Tables may provide more specific (0.1 foot) information.

Visual 37: Determine the Property's Location, Identify the Nearest Coastal Transect, and Find the BFE on the FIRM



Coastal transects:

- Perpendicular to shoreline
- Numbered, not lettered
- Correlated to detailed info in the FIS

Student Notes

This map panel shows the Atlantic Ocean coastline with Zone VE and coastal Zone AE areas. The boundaries dividing flood zones and areas of differing BFEs are shown as solid white lines.

Numbered coastal transects are located along the coastline, oriented perpendicular to the shore, and indicate locations where wave heights are analyzed. In this case, the example property is near coastal transect number 3. Just as the riverine cross sections mapped on the FIRM have corresponding information in the FIS, these coastal transects also have detailed corresponding information in the FIS.

In coastal areas, the whole-foot flood elevation is printed on the FIRM. The FIRM shows this example property is in Zone VE, and the "(EL 13)" indicates the BFE is 13.

Finally, check the FIS materials for more detailed data.

Visual 38: Check the FIS Coastal Transect Data Table

- Identify the transect.
- In this case, the most detailed information in the FIS confirms the same BFE as the FIRM.
- BFE is 13 feet.

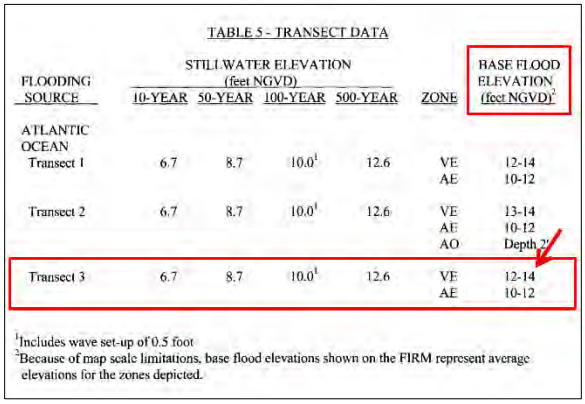


TABLE 5 - TRANSECT DATA

FLOODING SOURCE	STILLWATER ELEVATION (feet NGVD) 10-YEAR	50-YEAR	100-YEAR	500-YEAR	ZONE	BASE FLOOD ELEVATION (feet NGVD)[2]
ATLANTIC OCEAN						
Transect 1	6.7	8.7	10.0[1]	12.6	VE AE	12-14 10-12
Transect 2	6.7	8.7	10.0[1]	12.6	VE AE AO	13-14 10-12 Depth 2
Transect 3	6.7	8.7	10.0[1]	12.6	VE AE	12-14 10-12

[1]Includes wave set-up of 0.5 foot
[2]Because of map scale limitations, base flood elevations shown on the FIRM represent average elevations for the zones depicted.

Student Notes

In the FIS, Coastal Transect Data Tables contain more flood elevation data specifically calculated at each coastal transect. Find the BFE column, which for this example shows a range of BFEs for VE zones for Transect 3. This matches the information printed on the FIRM, showing VE zones of elevation 12, 13, and 14 feet.

Because the most detailed information that can be found in the FIS confirms the same BFE as the FIRM, you can use the number printed on the FIRM. The BFE at the location of this structure is 13 feet. In other situations, the FIS may contain information to 0.1 foot, so it is always important to check.

There is a job aid is available in your Student Manuals to help you determine the BFE. Consider using this job aid as you continue your education and training as a Floodplain Administrator.

DETERMINE THE BFE JOB AID

Riverine Sites:

1. First, locate the property on the FIRM.
2. Determine the name of the stream or watercourse affecting the property. Note that BFEs, shown as wavy lines crossing a stream, are rounded to the nearest foot, and cannot be used alone to get a BFE.
3. Determine the property's upstream limit for riverine BFEs. To determine which direction is "upstream," refer to the BFEs on the FIRM, where the higher numbers indicate the upstream direction, or to the stream profile on the FIS, where the slope of the channel bottom visually indicates the direction of flow. Locate the nearest lettered cross sections to the property.
4. For riverine properties located between lettered cross sections on the FIRM, determine the property's location relative to the stream profile on the Flood Profiles in the FIS.
5. Then, draw a line from the upstream point of the property across the stream center line, perpendicular to the stream flow. In meandering river sections, use the orientation of the nearby cross sections and estimated BFE lines to guide you in orienting your drawn line.
6. Mark a dot where your drawn line and the stream center line intersect.
7. Using the scale on the FIRM, measure the distance from your marked dot to the nearest cross section, and make a note of this distance and the letter of the cross section. Remember to measure distance along the stream centerline (which is probably curved) and not as a straight line to the cross section.
8. Using the Flood Profile, locate the property relative to that same lettered cross section by measuring horizontally along the bottom using your measurement from the previous step. Increments for distance are along the horizontal x-axis of the profile. The vertical y-axis of the profile contains the elevation information. Always check the scale and direction to locate the property upstream or downstream correctly.
9. Then, draw a line vertically from that point up to the profile's 1% annual chance flood line. Check the legend to make sure you are using the 1% line. There may also be 10%, 2%, and 0.2% lines.
10. Finally, to determine the BFE to the nearest tenth of a foot, draw a horizontal line from where your line intersects the 1% annual chance line, over to the left vertical axis of the profile. Check the increments on the grid, as scales may vary. Each square may represent 1 foot, 0.5 feet, or some other increment.
11. Or, if a riverine property's upstream boundary is on or touching the cross section line, use the FIS Floodway Data Table to determine the BFE to the nearest tenth of a foot. The Regulatory column in the data table provides the BFE at each lettered cross section, displayed in the rows of the data table.

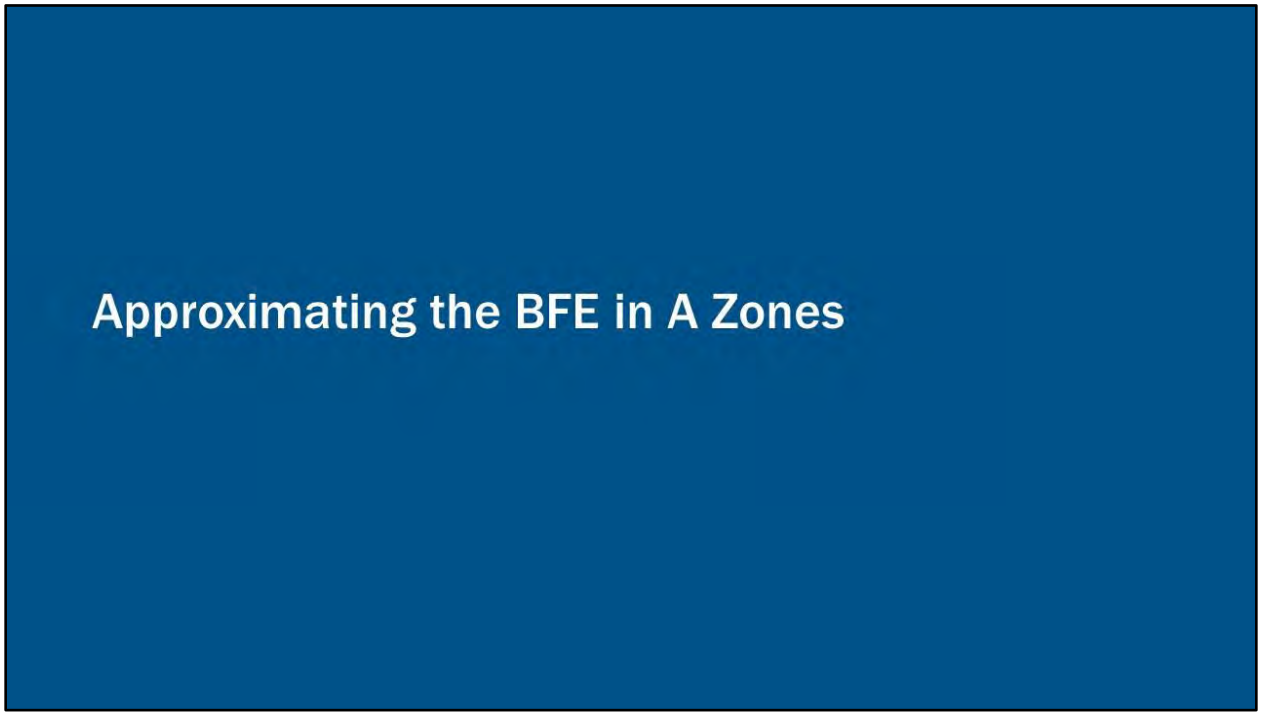
Coastal Sites:

1. First, locate the property on the FIRM.
2. Determine the name of the flooding source affecting the property.
3. Coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. These coastal transects are numbered, rather than lettered.
4. Coastal BFEs may be printed on FIRMs in whole foot or 0.1-foot increments.
5. Check the FIS Coastal Transect tables to see if a more detailed BFE is provided for the nearest numbered coastal transect. If not, use the number printed on the FIRM.

Shallow Flooding Sites:

1. First, locate the property on the FIRM.
2. Determine the name of the flooding source affecting the property.
3. In AH zones, BFEs may be printed on FIRMs in whole foot or 0.1-foot increments. Check the FIS for Stillwater Elevation Tables to see if a more detailed BFE is provided for that flooding source. If not, use the number printed on the FIRM.
4. In the case of AO zones, the depth number printed on the FIRM is the regulatory Base Flood Depth.

Visual 39: Approximating the BFE in A Zones



Student Notes

Approximating the BFA in A Zones

Visual 40: Zone A: Approximate A Zones

- No BFE data published by FEMA.
- Obtain, review, reasonably utilize other best available data to regulate development.
- Federal, State, and/or local sources may include:
  - USACE
  - USGS
  - Dept. of Transportation
  - Dept. of Natural Resources
  - County Flood Control District
  - Base Level Engineering (BLE) data

Student Notes

Determining the BFE for Zone A is different than our previous discussions, because no BFE data is published by FEMA in these zones. They are mapped by approximate, not detailed, flood studies. In these approximate A zones, a Floodplain Administrator is required to obtain, review, and utilize other best available data to guide them in regulating development. Data may be available from other Federal, State, or local sources, including:

- United States Army Corps of Engineers (USACE),
- United States Geological Survey (USGS),
- Department of Transportation,
- Department of Natural Resources, and
- County Flood Control District.

There also may be Base Level Engineering (BLE) data available in newer studies where the Zone A is model-backed.

Visual 41: How to Approximate the BFE in A Zones

- FEMA provides two methods for estimating BFE for floodplain management purposes:
  - Contour Interpolation
  - Data Extrapolation
- Key Resource:
  - FEMA Publication 265 Managing Floodplain Development in Approximate Zone A Areas

Student Notes

There are situations in which a simplified approach for estimating the BFE is acceptable.

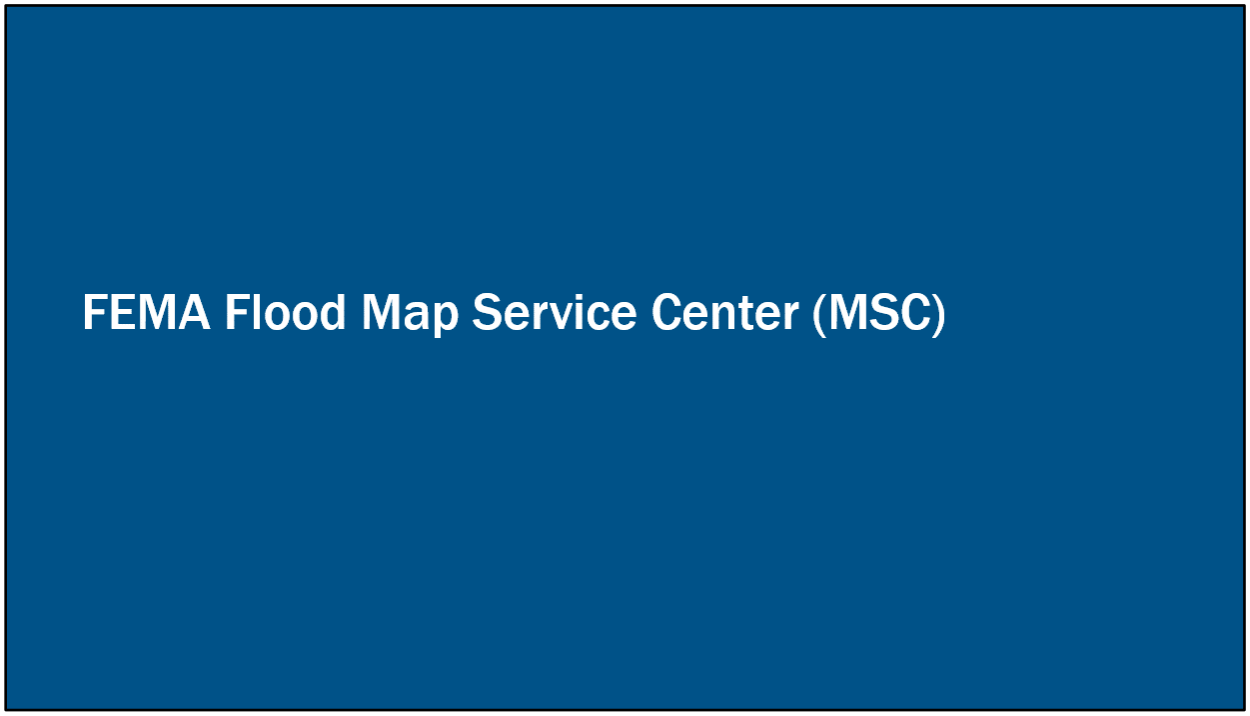
FEMA guidance describes two simplified methods for estimating BFE in approximate Zone A areas: contour interpolation and data extrapolation. Contour interpolation overlays topographic maps on the FIRM. Data extrapolation extends flood profiles beyond a detailed study area.

These simplified methods are appropriate for floodplain management purposes but cannot be used to support LOMA and LOMR-F applications.

Online Resource

A valuable FEMA resource is available to help you in these situations. This resource is called FEMA Publication 265 Managing Floodplain Development in Approximate Zone A Areas. It is available on FEMA's website at https://www.fema.gov/sites/default/files/documents/fema_approx-zone-a-guide.pdf

Visual 42: FEMA Flood Map Service Center (MSC)



Student Notes

Basic steps to access and use FEMA's Flood Map Service Center (MSC).

Visual 43: Overview of the FEMA MSC

- Official public source for flood hazard products (https://msc.fema.gov/portal/home)
- Uses:
  - Search for a community/specific location
  - Make a FIRMette
  - Download a FIRM/FIS
  - Search all products to look for old (historic)/upcoming (preliminary) maps
  - Utilize the National Flood Hazard Layer (NFHL) viewer

Student Notes

The FEMA MSC is the official public source for flood hazard information produced in support of the NFIP. Use the FEMA MSC to find your official flood map, access a range of other flood hazard products, and take advantage of tools for better understanding flood risk. At the website, you can:

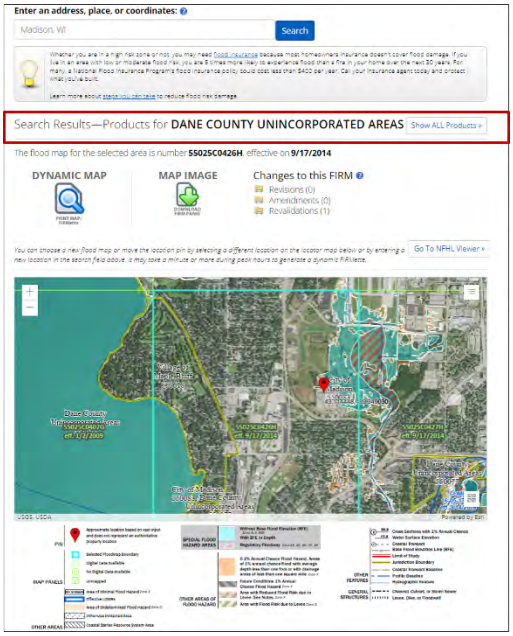
- Search for a community or specific location,
- Make a FIRMette,
- Download a FIRM and FIS,
- Search all products to look for old (historic) or upcoming (preliminary) maps, and
- Utilize the National Flood Hazard Layer (NFHL) viewer.

Online Resource

Open a web browser on your computer (if one is available) or mobile device. Then, access the FEMA MSC site at https://msc.fema.gov/portal/home. Follow along with the instructor as they walk through the FEMA MSC.

Visual 44: Search by Address or Product: Results Screen

- Displays FIRM panel number and effective date
- Provides two printing options:
  - Dynamic map
  - Map image
- "Show All Products" button
- "Go to NFHL Viewer" button



Student Notes

From the home page, enter in the field at the top of the page either an address or a community name. If you're looking for every flood hazard product for a jurisdiction or for a specific FEMA product, choose the Search All Products link below the address box to use the Search all Products feature.

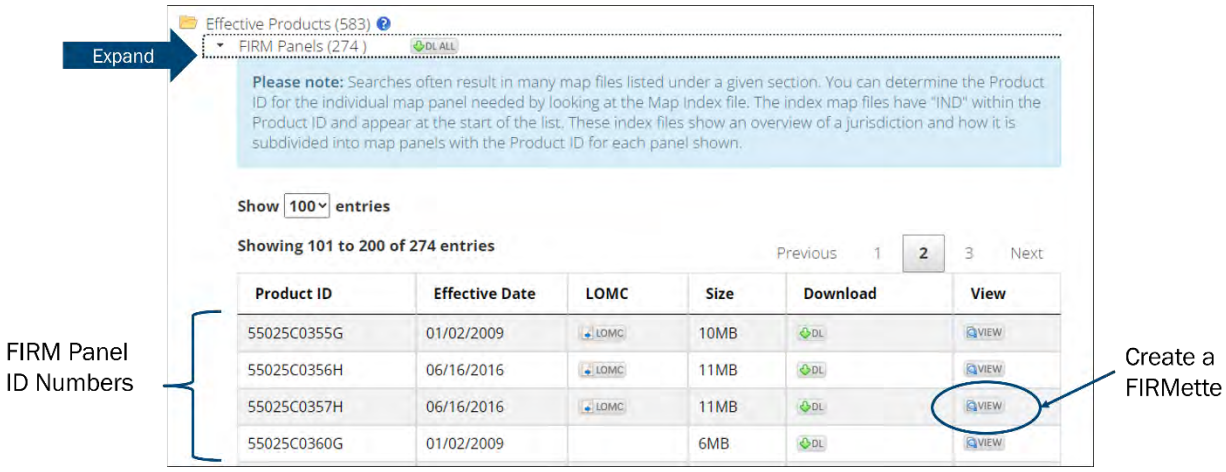
The search results screen provides a great deal of map information, including the flood map panel number and the date that the panel became effective. You will also receive options for downloading a dynamic map or a map image.

The Dynamic Map button automatically creates a FIRMette based on the center of the sample map image. You can re-center the map before selecting the Dynamic Map icon. The FIRMette is based on the NFHL and can be printed.

The Map Image button allows you to download the entire FIRM panel to a ZIP file. This is especially useful if you need to review the same map panels frequently or need to make a large-scale printed copy.

The Show All Products button will take you to the listing of all products available for the location. That results page will display FEMA's effective (current) regulatory flood hazard products, as well as any preliminary, pending, and historic products available for the community or area searched.

Visual 45: Effective Products: FIRM Panels



Student Notes

Each category of product can be expanded. In this example, we've expanded the view of all Effective FIRM Panels. This screen displays the total number of FIRM panels their product ID, effective date, an indication of any Letters of Map Change (LOMCs) present on the panel, and the file size. Note that because FIS Reports are not automatically updated by LOMRs, participants will need to download items in the LOMC folder to view the most recent Flood Profiles for a LOMR area.

There is also a file download and view button for each item. Use the view button to create a FIRMette for a panel.

Visual 46: How to Make a FIRMette

1. Select “View” to open the FIRMette Web Tool
2. Select “Create a FIRMette”
3. Follow the tool instructions
4. Select “Download” (.png or .pdf)

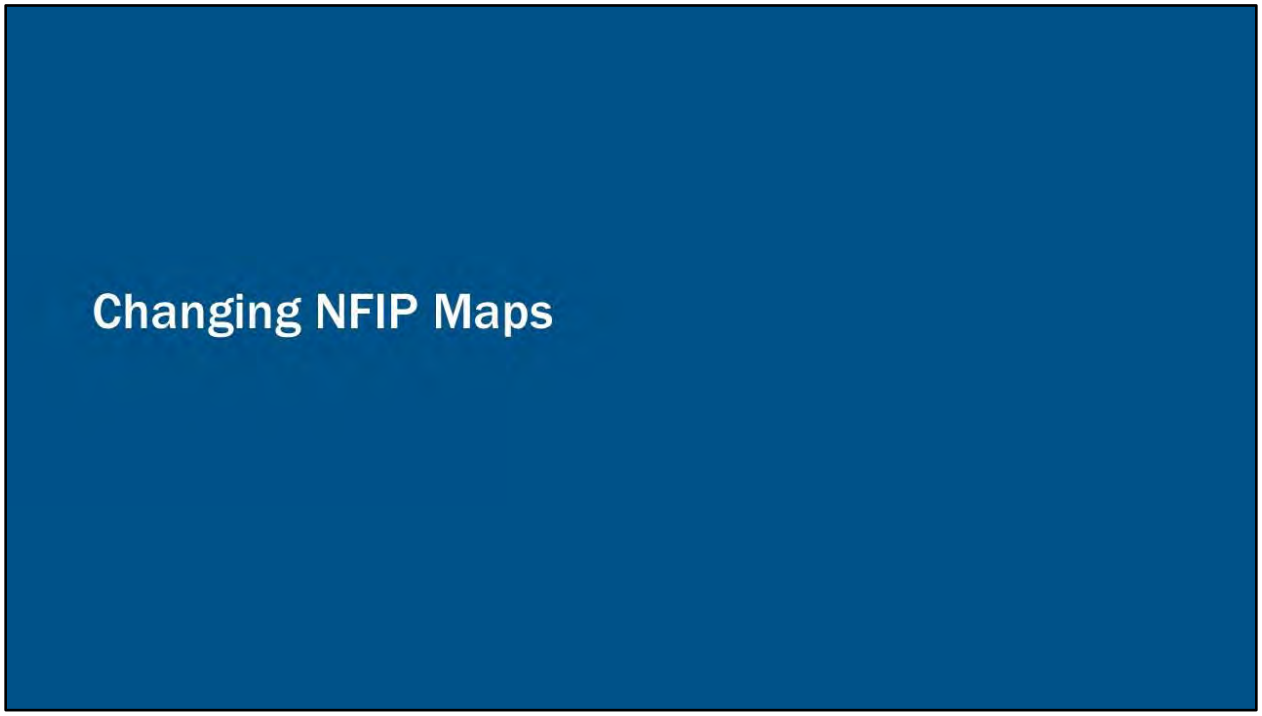
Example FIRMette

Student Notes

To create a FIRMette:

1. Choose the FIRM panel of interest from the menu under Effective Products. Searches often result in many map files listed under a given section, so note your FIRM number or search for it on the FIRM index map. Index files have "IND" within the Product ID and appear at the start of the list.
2. Select View to open the FIRMette Web Tool. A new window will open with the FIRM Panel and the Web tool.
3. Select Create a FIRMette in the upper left corner to begin.
4. Follow the instructions in the mapper.
5. Select the Download button to save it to your computer as a PDF or a PNG image file.

Visual 47: Changing NFIP Maps



Student Notes

Changing NFIP Maps.

Visual 48: Letter of Map Change (LOMC) Requests

- Administrative procedures to change the SFHA
- Requested by property owners, project leads, or community officials
- Issued by FEMA to amend or revise an Effective FIRM
- Several types of LOMCs

Present the following content:

Explain:

- Flood maps may change for a variety of reasons, such as changes in flood risk over time or changes in technology that make more precise mapping possible. As communities grow and development occurs, FEMA relies on new technical information to keep flood maps current.
- A map update may be needed for the following reasons:
  - Correct non-flood-related features, like a change in the community's corporate limits
  - Include better ground elevation data
  - Reflect changes in ground elevations in the floodplain
  - Revise flood data, like revising an existing study based on an error or more accurate data
  - Submit new flood data, such as when a flood study is prepared for a new development in an approximate A zone
  - Reflect new development, such as a new levee or channel modification that affects the flow of the base flood. This can include new development where fill was placed and building sites were raised above BFE
- Only FEMA can officially issue a Letter of Map Change (LOMC) and change a flood designation. There are several types of Letters of Map Change.

Student Notes

State that you will discuss the following types of letters of map changes on the coming slides:

- Letter of Map Amendment (LOMA)
- Letter of Map Revision (LOMR)
- Letter of Map Revision Based on Fill (LOMR-F)
- Conditional Letters of Map Revision (CLOMR)

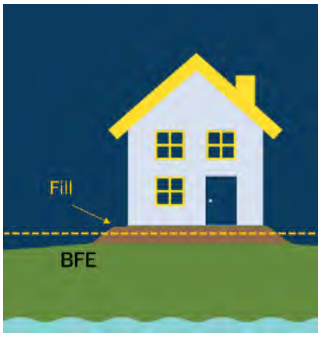
Visual 49: LOMC Types: LOMA and LOMR-F

Letter of Map Amendment (LOMA)

- Single structure on **natural high ground**

Letter of Map Revision based on Fill (LOMR-F)

- Structure **elevated by earthen fill**



Student Notes

Present the following content:

Explain:

- A LOMA is an official amendment to an effective FIRM. A LOMA establishes a property's location in relation to the SFHA. LOMAs are usually issued because an individual structure or property has been inadvertently mapped as being in the floodplain when it is actually on a natural high ground (not elevated by fill) above the BFE.
- If a comparison of the structure's lowest adjacent grade to the BFE on the map determines the structure is above the BFE, then a letter is issued removing the structure from the SFHA. No new map is published, but the letter amends the map.
- If the structure is elevated on fill instead of natural high ground, a different letter of map change type is needed. A LOMR-F is a letter from FEMA stating that an existing structure or parcel of land has been **elevated by** earthen fill and will not be inundated by the base flood. Like LOMAs, LOMR-Fs are amendments, so no new map is published.
- A LOMR-F can only be used in locations outside the existing regulatory floodway because floodway encroachment is not permitted.

State that next, you will discuss CLOMRs and LOMRs.

Visual 50: LOMC Types: CLOMR and LOMR

Conditional Letter of Map Revision (CLOMR)

- FEMA's comment on the impact of a **proposed** project
  - If built as proposed, would it justify a map revision?
  - If fill is involved, use a CLOMR-F.
- Does **not** change the effective FIRM

Letter of Map Revision (LOMR)

- Officially revises an effective FIRM, based on **as-built** physical measures
- Can include changes to:
  - SFHA boundary
  - Floodway boundary
  - BFE

Present the following content:

Explain:

- A Conditional Letter of Map Revision (CLOMR) is FEMA's comment on the impact of a proposed project. It asks if this development was built as proposed, could a map revision by FEMA be justified and accepted? If fill is involved, a CLOMR-F is used. Remember, F stands for Fill. The CLOMR does not revise the effective FIRM.
- A Letter of Map Revision (LOMR) is FEMA's modification to an effective FIRM, officially revising (or changing) and republishing a portion of the FIRM. LOMRs are generally based on the implementation of physical measures that affect the hydrologic or hydraulic characteristics of a flooding source. The result is a modification or change to the existing SFHA boundary, regulatory floodway boundary, and/or the effective BFEs.
- The LOMR is generally accompanied by an annotated copy of the affected portions of the FIRM and/or FIS report (as shown in this example). Any LOMR should be noted on the community's master flood map and filed by panel number in an accessible location.

Student Notes

State that next, you will assess what participants have learned using a knowledge check.

Visual 51: Knowledge Check 3

What is the difference between a LOMA and a LOMR-F?
Select the best response.

A. LOMA is a conditional determination, and LOMR-F is the final determination.

B. LOMA is based on natural ground, and LOMR-F is based on fill.

C. LOMA is always used for a large area, and LOMR-F is only used for a single family home.

D. LOMA is based on artificial ground, and LOMR-F is based on fill.

Student Notes

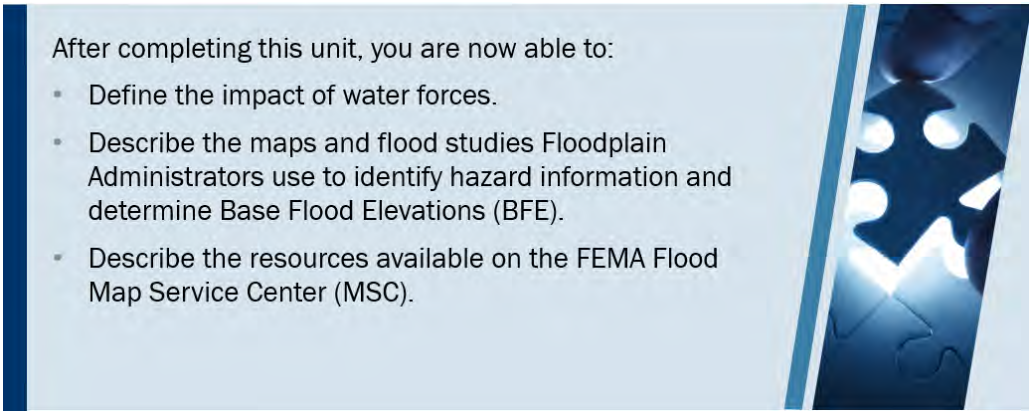
Present the following content:

Ask the question:

What is the difference between a LOMA and a LOMR-F?

Prepare to share your response with the group.

Visual 52: Unit 3 Summary



Student Notes

Present the following content:

State that after completing this unit, you are now able to:

- Define the impact of water forces,
- Describe the maps and flood studies Floodplain Administrators use to identify hazard information and determine Base Flood Elevations (BFE), and
- Describe the resources available on the FEMA Flood Map Service Center (MSC).

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Unit 4: Floodplain Management Regulations Overview

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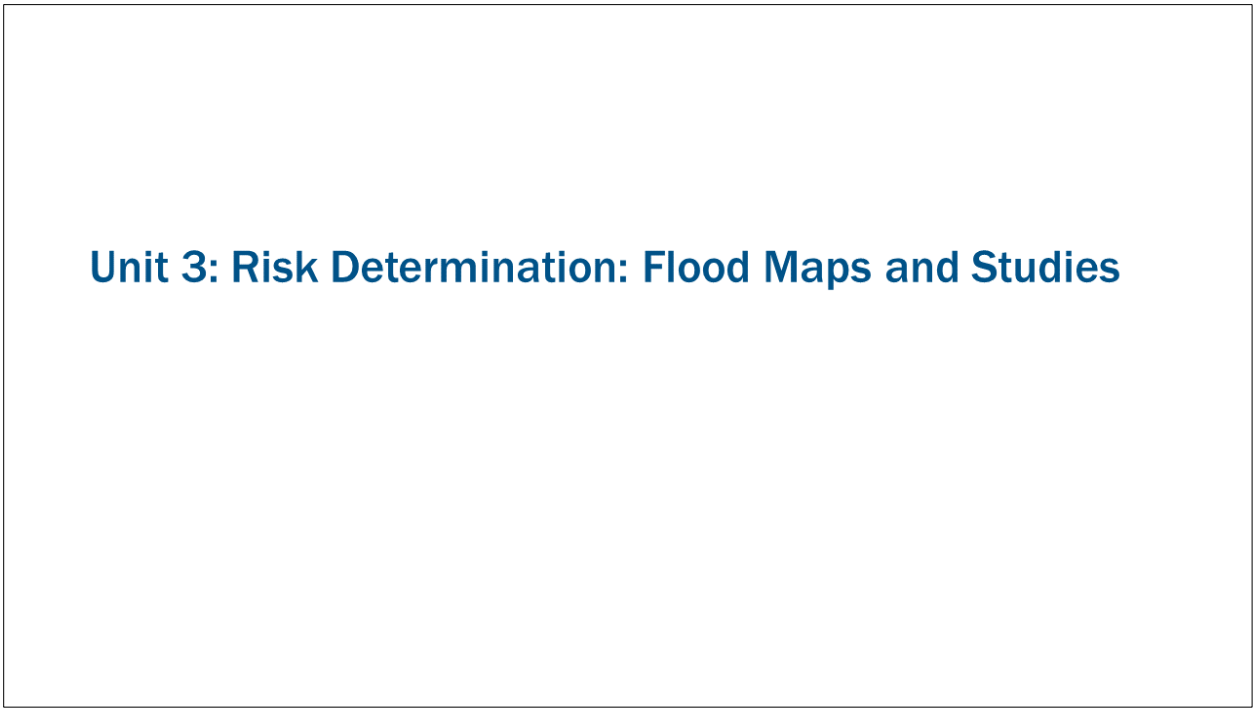
Visual 1: Unit 4: Floodplain Management Regulations Overview



Student Notes

Welcome to Unit 4: Floodplain Management Regulations Overview. This unit should take about 50 minutes to complete. In this unit, we will discuss legal authorities for floodplain management.

Visual 2: Course Map Umbrella

Student Notes

You are now reviewing the Mitigate the Risk element of the NFIP umbrella. Some topics we will discuss under this part of the umbrella include explaining the NFIP regulations that apply to floodplain management

Visual 3: Unit 4 Objectives

After completing this unit, you should be able to:

- Identify the legal authority for community floodplain regulation.
- Identify the National Flood Insurance Program (NFIP) Federal regulations minimum standards.

Student Notes

After completing this unit, you should be able to:

- Identify the legal authority for community floodplain regulation.
- Identify the National Flood Insurance Program (NFIP) Federal regulations minimum standards.

Visual 4: Unit 4 Topics

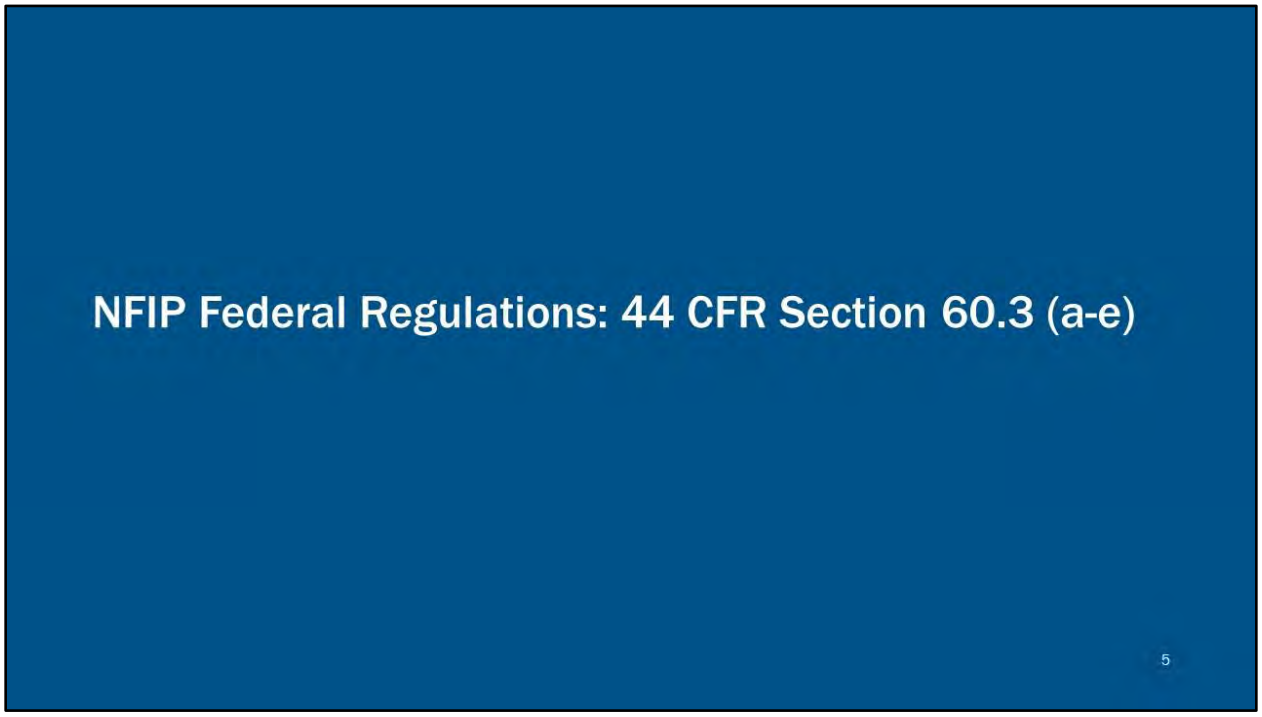
- NFIP Federal Regulations: 44 CFR Section 60.3 (a-e)
- Unit Summary

Student Notes

The topics in this unit include the following:

- NFIP Federal Regulations: 44 CFR Section 60.3(a-e)
- Unit Summary

Visual 5: NFIP Federal Regulations: 44 CFR Section 60.3(a-e)



Student Notes

NFIP Federal Regulations: 44 CFR § 60.3(a-e).

Visual 6: Knowledge Check 1

What are the legal authorities for the local, State, and Federal Governments that we discussed in Unit 2?

Student Notes

Answer the question:

What are the legal authorities for the local, State, and Federal Governments that we discussed in Unit 2?

Prepare to share your responses with the group.

Visual 7: Legal Authorities Governing Floodplain Management

- Federal Government:
  - Sets minimum NFIP standards (44 CFR § 60.3)
- State Legislature:
  - Delegates local land use authority
  - Sets recommended and/or required higher standards
- Local community:
  - Adopts and enforces local ordinances and regulations
  - Responsible for permitting

Student Notes

The Federal Government sets the minimum regulatory standards for floodplain development, found in the Code of Federal Regulations.

States legally delegate the authority for local governments to adopt regulations that meet or exceed minimum NFIP standards. These standards are designed to promote public health, safety, and general welfare. Some states may require local communities to adopt building codes or other higher standards, such as freeboard, which is a designated height above the Base Flood Elevation (BFE).

Local communities that participate in the NFIP must adopt and enforce flood damage prevention ordinances that reflect these requirements. It is the responsibility of the local community, not the responsibility of FEMA, to enforce these regulations within a local jurisdiction. FEMA is not responsible for enforcing local regulations, nor do they have the authority to issue local permits. Only the community can issue permits.

Visual 8: 44 Code of Federal Regulations (CFR) Section 60.3

- Flood zones and floodplain mapping detail determine the applicable regulations.
- Standards in 44 CFR § 60.3 are cumulative.
- Each regulatory step reflects more risk knowledge (more detailed mapping information).
  - Areas with less detailed maps (i.e., Zone A, no BFEs) have broader regulations.
  - Areas with more detailed maps (i.e., Zone AE, detailed BFEs and floodways) have additional, more specific regulations.

Student Notes

Title 44 CFR Section 60.3: Floodplain Management Criteria for Flood-prone Areas is the foundation for the floodplain management standards communities adopt and enforce as part of their participation in the NFIP.

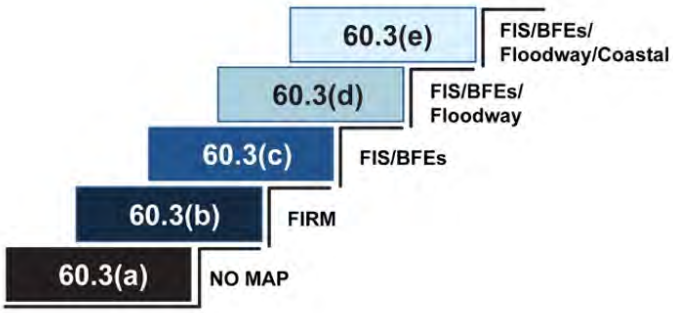
These regulations build cumulatively in increments (steps) according to the community's Flood Insurance Rate Map (FIRM) and the associated Special Flood Hazard Area (SFHA) designations. Each step adds more requirements as the available information about the risk increases.

The flood hazard map information and regulatory standards are related:

- Areas with less detailed maps (Zone A, no BFEs) have broader regulations.
- Areas with more detailed maps (Zone AE with BFEs and floodways) have additional, more specific regulations.

These are Federal minimums. Many States have additional, more stringent standards that communities adopt and enforce.

Visual 9: NFIP Regulatory Staircase: 44 CFR Section 60.3



Student Notes

This is a frequently used NFIP regulatory staircase that demonstrates the cumulative nature of 44 CFR Section 60.3(a-e). As the flood risk information (flood mapping) available increases in detail, so do the regulatory standards. FEMA hazard data (mapping) determines the minimum criteria.

Within 44 CFR, the mapping criteria are:

- § 60.3(a): FEMA has provided no maps.
- § 60.3(b): FEMA has provided a map with approximate A zones.
- § 60.3(c): FEMA has published a FIRM with BFEs.
- § 60.3(d): FEMA has published a FIRM with BFEs and a regulatory floodway.
- § 60.3(e): FEMA has published a FIRM that shows Coastal High Hazard Areas (V zones).

Visual 10: NFIP Definition of Development

"Any man-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 equipment or materials." (44 CFR § 59.1)

Includes:

- New structures
- Changes to existing structures
- Non-structural activities

Student Notes

The NFIP defines development as any human-made change to improved or unimproved real estate, including, but not limited to:

- New construction, additions, reconstruction, and rehabilitations to existing structures in flood-prone areas;
- Changes to land surface, such as mining, dredging, fill/grade, or paving
- Storage of materials; and
- Changes to culverts, bridges, stream crossings, and bulkheads.

Visual 11: Substantial Improvement (SI) and Substantial Damage (SD)

SI

"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."

- Treat as new construction.

SD

"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% of the market value of the structure before the damage occurred."

- Repair of a structure that has been substantially damaged is considered SI.

Student Notes

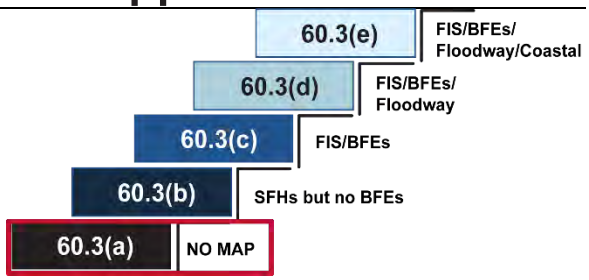
Substantial Improvement (SI) is defined in 44 CFR 59.1 as, "Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the "start of construction" of the improvement."

Repair of a structure that has been Substantially Damaged is considered SI.

Substantial Damage (SD) is defined as, "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% of the market value of the structure before the damage occurred.

Visual 12: 44 CFR 60.3(a): Unmapped Communities

- Applies to NFIP communities where FEMA has no flood maps prepared
- Basis for the rest of the regulations, applicable to all communities



Student Notes

A community does not need a flood hazard map from FEMA to participate in the NFIP. 44 CFR 60.3(a) is the first layer of regulations and is initially applicable in communities where FEMA has not produced official flood maps. Over the more than 50 years since the NFIP was created, many communities have received some level of mapping from FEMA, so this situation has become rarer.

These communities can still implement good floodplain management practices using data they've collected or maintained over the years, such as high-water marks or known areas of historic flooding.

Also remember that because of the cumulative nature of these regulations, the first paragraph of the requirements forms the basis for the rest of the regulations. Paragraph A applies to all NFIP communities.

Visual 13: 44 CFR 60.3(a): Requirements Overview

- Require permits for all proposed development
- Ensure all other necessary permits are obtained (ex: federal or state permits)
- Determine if reasonably safe from flooding

Student Notes

44 CFR 60.3(a)(1) requires permits for all proposed construction or other development in the community, including the placement of manufactured homes, to determine whether such construction or other development is proposed within flood-prone areas.

44 CFR 60.3(a)(2) requires the local Floodplain Administrators to also ensure that permits have been received from those governmental agencies from which approval is required by local, State, or Federal law.

- For example, the United States Army Corps of Engineers (USACE) might require a 404 permit for development in a wetland. Another example is the United States Fish and Wildlife Service (USFWS), which may require incidental take permits. Your State may have some water quality permits or requirements, or the local health department may have a process and requirements for septic systems and wells.

44 CFR 60.3(a)(3) requires all permit applications to be reviewed to determine whether the proposed building sites will be reasonably safe from flooding.

Visual 14: 44 CFR 60.3(a)(3): Reasonably Safe from Flooding

All new and Substantially Improved structures must:

- Be anchored and designed to prevent flotation, collapse, or lateral movement.
- Use flood damage-resistant materials.
- Use methods and practices that minimize flood damage.
- Protect utilities from flooding.

Student Notes

A fundamental reason for requiring and reviewing permit applications for all development is to determine whether proposed building sites will be reasonably safe from flooding. New construction and Substantial Improvements are considered reasonably safe from flooding when they are:

- Designed and anchored to prevent flotation, collapse, and lateral movement. The building must adequately resist the forces of floodwater if it is to be considered reasonably safe from flooding.
- Built with materials that are resistant to floods and water damage.
- Constructed by methods and practices that minimize flood damages.
- Designed to have utilities protected from flooding. Utilities servicing all new and Substantially Improved structures need to be designed or located so that floodwaters cannot enter or accumulate within their components during a flood.

Visual 15: 44 CFR 60.3(a): Requirements

- Review subdivisions and manufactured home park proposals.
  - Locate and construct public utilities/facilities to minimize and eliminate flood damage.
  - Provide adequate drainage.
- Ensure new and replacement water supply systems and sanitary sewage systems minimize or eliminate infiltration of floodwaters.
- Locate onsite waste disposal systems to avoid impairment or contamination.

Student Notes

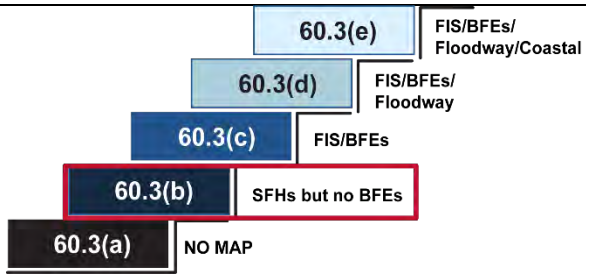
The fourth requirement, 44 CFR 60.3(a)(4), addresses the review of subdivision and other new development proposals, including manufactured home parks. These requirements include locating and constructing public utilities in a way that eliminates flood damage. The subdivision must also provide adequate drainage of floodwaters.

The fifth requirement of 44 CFR 60.3(a) is about water systems. It requires that new and replacement water supply systems within flood-prone areas be designed to minimize or eliminate infiltration of floodwaters into the systems.

The sixth requirement of 44 CFR 60.3(a) is for sewage and waste disposal systems. This requirement states that new or replacement sewage systems that minimize or eliminate the infiltration of floodwaters must be used within flood-prone areas. In addition, developers should locate onsite waste disposal systems so that they are not impaired during a flood and don't cause contamination during a flood.

Visual 16: 44 CFR 60.3(b): Zone A Without BFEs

- Special Flood Hazard Area (SFHA) is defined and adopted.
- BFE is not determined.



Student Notes

44 CFR Section 60.3(b) is the second step on the regulatory staircase. Communities regulate at this level when the SFHA is defined and adopted, but detailed elevation information (BFEs) has not been determined. Only Approximate A zones are present. Communities with a flood map that has the SFHA defined and adopted into their floodplain management ordinance have the full authority to impose requirements and compliance with their regulations. When the maps were adopted within the community, a legal adoption process, including a public notice, occurred.

Remember that this regulatory staircase is cumulative. 44 CFR 60.3(a) regulations still apply, but only in the mapped SFHA. So, 44 CFR 60.3(b)(1) requires permits for all proposed construction in the SFHA. 44 CFR 60.3(b)(2) requires that all other applicable requirements of 44 CFR 60.3(a) (2-6) are followed. For example, the structures must be reasonably safe from flooding and all other necessary local, State, or Federal permits are obtained.

Visual 17: 44 CFR 60.3(b) Summary of Requirements

- Subdivision proposals greater than 50 lots or 5 acres must develop BFE data.
- **Obtain, review, and reasonably utilize** any BFE and floodway data available from a Federal, State, or other source.
- Obtain data for structures: Lowest floor elevation and dry floodproofing elevation.
- Notify adjacent communities and State coordinating office of proposed watercourse alterations, and maintain flood carrying capacity of altered watercourses.
- Install Manufactured Homes using methods and practices that minimize flood damage.

Student Notes

Requirement 44 CFR 60.3(b) includes the foundational 44 CFR 60.3(a) standards: permits are required for development in the SFHA; you must obtain all other local, State, and Federal permits; structures should be anchored, the building must use flood resistant materials and methods, and utilities are to be protected.

In addition, 44 CFR 60.3(b) requires the following:

- Development of BFE data is required for proposed subdivisions or developments greater than 50 lots or 5 acres (whichever is less) in Zone A.
- For all new and Substantially Improved structures, when you have BFE data, obtain the lowest floor elevation for all structures (including basements) and the Dry Floodproofing elevation for non-residential structures.
- Watercourse alterations: Communities must notify adjacent communities and their State Coordinating Office prior to altering or relocating a riverine watercourse and must maintain the flood-carrying capacity of any altered or relocated watercourse.
- Manufactured homes within Zone A must be installed using methods and practices that minimize flood damage. This means manufactured homes must be elevated and anchored to resist flotation, collapse, or lateral movement.

Visual 18: Knowledge Check 2

What are the requirements of 44 CFR 60.3(b) for subdivision proposals and other proposed developments?

Student Notes

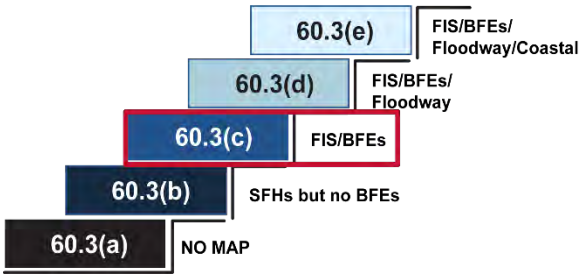
Answer the question:

What are the requirements of 44 CFR 60.3(b) for subdivision proposals and other proposed developments?

Prepare to share your responses with the group.

Visual 19: 44 CFR 60.3(c): SFHAs with BFEs

- FIRM identifies BFEs
  - Zones: AE, A1-30, AO, and AH
- No regulatory floodways
- No Coastal High-Hazard Zones



Student Notes

44 CFR section 60.3(c) is the third step on the regulatory staircase. Communities regulate this step when their FIS and FIRM identify SFHAs and BFEs, but no regulatory floodways or Coastal High Hazard Areas are delineated.

This includes regulation in:

- Zone AE and Zones A1-A30, where BFEs are determined;
- Zone AH, which generally indicates areas of shallow flooding from ponding, and where BFEs are determined; and,
- Zone AO, which generally indicates areas of shallow flooding from sheet flow, with the base flood depths determined.

Remember, this regulatory staircase is cumulative. 44 CFR 60.3(c)(1) requires application of 60.3(a)(2-6) and all of 60.3(b) standards, with 44 CFR 60.3(c)(2-14) adding additional requirements.

Visual 20: 44 CFR 60.3(c): Summary of Structure Requirements in AE, AO, AH Zones

- Elevate lowest floor at or above BFE (or can dry floodproof non-residential structures)
- Limitations on enclosures: Unfinished, limited uses, with sufficient flood openings
- Elevate manufactured homes
- Adequate drainage paths away from structures in Zones AH and AO

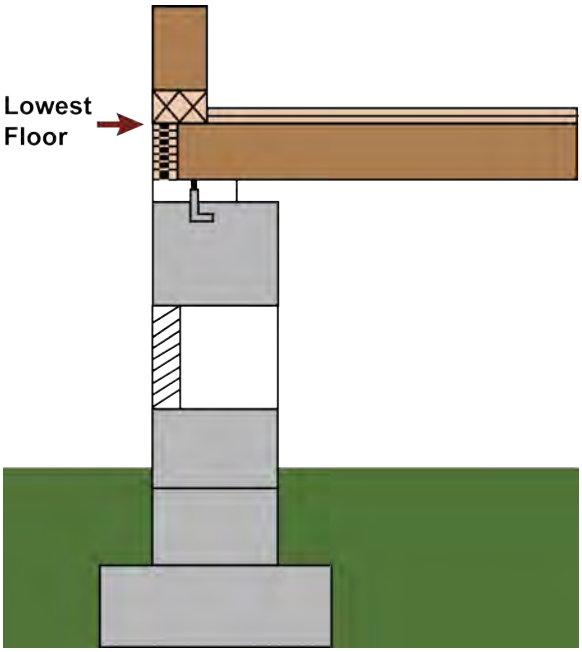
Student Notes

These points summarize the requirements in 44 CFR 60.3(c) that apply to new or Substantially Improved structures:

- A structure's lowest floor must be elevated at or above BFE. We'll define lowest floor on the next slide.
- Alternatively, non-residential buildings may be dry-floodproofed. This means they must be designed so that the structure is watertight below the BFE and resistant to hydrostatic and hydrodynamic loads and the effects of buoyancy.
- Enclosed areas below the lowest floor have certain limitations. They must be unfinished, used solely for storage, parking, or access to the building, and have sufficient flood openings to automatically allow floodwaters to enter and equalize the pressures or forces of flood loads.
- Manufactured homes must likewise be elevated to or above the BFE on a permanent foundation and properly anchored to the foundation system to resist flotation, collapse, or lateral movement. There is an exception in 44 CFR 60.3(c)(12) that applies only to certain existing manufactured home parks that have not experienced flood damage. In certain situations, the manufactured home may be elevated 36 inches above grade instead of to the BFE.
- In shallow flooding Zones AH and AO, proposed structures must have adequate drainage paths to guide floodwaters around and away from the structure.

Visual 21: Lowest Floor Elevation Definition

- Top of lowest floor of the lowest enclosed area (including basement)
- Doesn't include unfinished, flood-resistant enclosures, with proper flood openings used solely for:
  - Parking
  - Building access
  - Storage



Student Notes

Defining the lowest floor elevation.

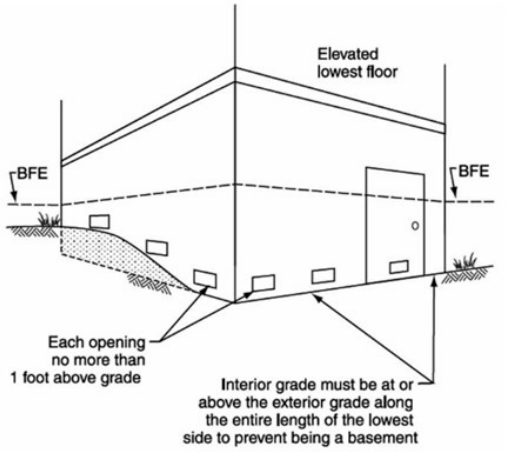
It's important to know that the lowest floor elevation means the top of the lowest floor of the lowest enclosed area, including a basement if one exists. An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area, is not considered a building's lowest floor provided that such enclosure is not built to render the structure in violation of the applicable non-elevation design requirements of 44 CFR section 60.3.

An unfinished or flood-resistant enclosure, such as a crawlspace, with proper flood openings is not considered a building's lowest floor when it is used solely for parking vehicles, building access, or storage. Utilities need to be elevated or otherwise protected if they are below the BFE.

Visual 22: 44 CFR 60.3(c) Requirements: Flood Openings in Enclosures

Passive openings to **automatically equalize flood forces** on exterior walls:

- At least 2 openings
- Net area: **1 inch of opening for every 1 square foot of enclosed space**
- Bottom of opening no higher than 1 foot above grade
- Not be blocked or closed



Student Notes

The image on the screen is a diagram of a building with several flood openings installed in the enclosure below the lowest floor. By allowing floodwater to enter and exit the building, flood openings relieve hydrostatic and hydrodynamic loads on the building's walls during a flood. As a result, flood openings help to prevent structural collapse.

According to the 44 CFR 60.3(c)(5) requirement, there must be at least two openings with a net area of at least one square inch per square foot of enclosure.

Best Practice

Industry best practices recommend that vents be installed on at least two sides of each enclosed area. This reduces blockage from debris.

The bottom of the openings must be no higher than one foot above grade. The operation of these openings should be automatic. That is, they should require no human intervention. In addition to being no more than one foot above grade, the openings should be in the area subject to flooding,

Engineered flood openings are an alternative option to passive openings. If used, they must be certified by a registered professional engineer or architect to automatically equalize hydrodynamic and hydrostatic flood forces on exterior walls.

Technical Bulletin 1: Openings in Foundation Walls and Walls of Enclosures is an excellent resource for more information.

Visual 23: Knowledge Check 3

Scenario: This building's attached garage has sufficient flood openings for its size and is used only for parking. Also, there is no crawlspace.

Which is the Lowest Floor Elevation for this structure in an AE zone?

Student Notes

Read the scenario:

This building's attached garage has sufficient flood openings for its size and is used only for parking. Also, there is no crawlspace.

Answer the question:

Which is the Lowest Floor Elevation for this structure in an AE zone?

Prepare to share your answer with the instructor.

Visual 24: 60.3(c): Summary of Additional Requirements in AE, AO, AH Zones

- In Zone AE where no floodway is developed, no new development (including fill) is permitted if it will cumulatively increase the BFE more than one foot.
- Permit recreational vehicles (RVs) only if either:
  - On site less than 180 days
  - Fully licensed and highway ready
  - Or elevated and anchored as a manufactured home

Student Notes

These points summarize the remaining requirements in 44 CFR 60.3(c):

- Where an AE zone has been provided but a floodway has not, 44 CFR 60.3(c)(10) states that "no new construction, Substantial Improvements, or other development, including fill, shall be permitted unless it is demonstrated that the **cumulative effect** of the proposed development (when combined with all other existing and anticipated development) will not increase the water surface elevation of the base flood **more than one foot** at any point within the community." **You must treat the entire floodplain with more care** to avoid over-developing areas that would convey flood flows.
  - Recreational Vehicles in the SFHA must either be:
  - On the site for fewer than 180 consecutive days, and
  - Fully-licensed and ready for highway use, or
  - Elevated and anchored as a manufactured home.
- RVs are defined by the NFIP as:
  - Built on a single chassis,
  - 400 square feet or smaller when measured at the largest horizontal projection,
  - Designed to be self-propelled or permanently towable by a light-duty truck, and
  - Primarily not for use as a permanent dwelling, but as temporary living quarters for recreational, camping, travel, or seasonal use.

Visual 25: Knowledge Check 4

Which of the following is not an appropriate use for an enclosure below the lowest floor?

A. Vehicle and motorcycle parking

B. Limited storage of garden equipment

C. A game room with a pool table and TV

D. Stairs to access the main living floor

Student Notes

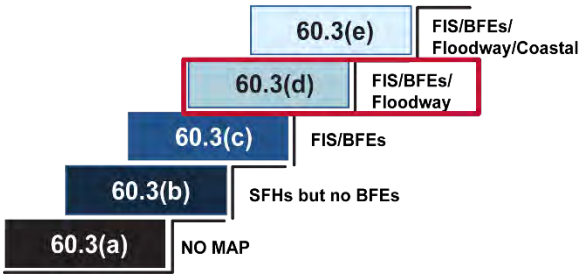
Answer the question:

Which of the following is not an appropriate use for an enclosure below the lowest floor?

Prepare to share your responses with the group.

Visual 26: 44 CFR 60.3(d): SFHAs with Regulatory Floodway

- SFHA with BFEs and regulatory floodway(s) mapped
- No Coastal High Hazard Areas

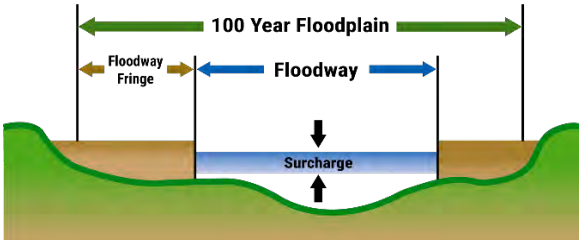


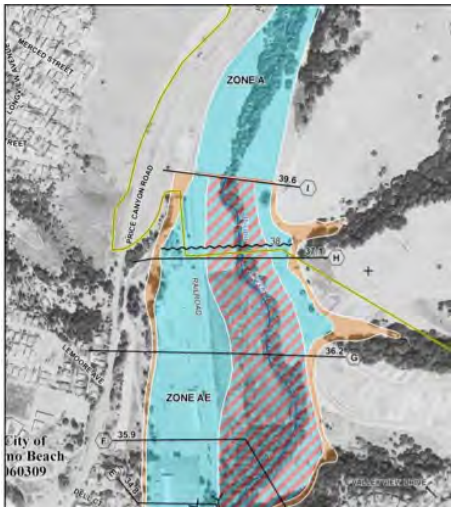
Student Notes

The next step on the regulatory staircase is 44 CFR section 60.3(d), which applies to Zone AE with BFEs and Floodways. At this level of regulation, the flood maps now delineate SFHAs, BFEs have been determined, and floodways have been mapped. Coastal High Hazards are not yet present on the FIRMs.

Visual 27: 60.3(d) Requirements: No Floodway Encroachment

Encroachments (e.g., buildings, roads, fill) are prohibited in floodway unless "hydrologic and hydraulic (H&H) analyses demonstrate that the proposed encroachment would not result in any increase in flood levels during the base flood discharge."





Student Notes

44 CFR 60.3(d)(3) prohibits encroachments within an adopted regulatory floodway unless hydrologic and hydraulic analyses demonstrate that the proposed encroachment would not result in any increase in flood levels during the base flood discharge. Encroachments may include fill, new construction, SI, and other developments.

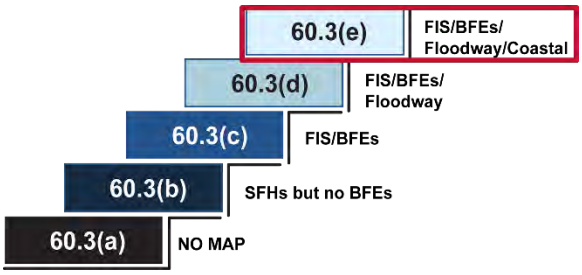
A floodway encroachment analysis is required to demonstrate no-rise in the base flood level. This means the engineering model must show 0.00 feet of rise. Not even a tenth or a hundredth of a foot is allowed. This is often called a No-Rise analysis because it certifies that the proposed development will make no impact that will increase the BFE.

A No-Rise analysis must be conducted before using a permit. The No-Rise certification must be supported by technical data, signed by a registered professional engineer, and included in the submittal for the permit file. The technical data the certification is based on should be derived from the hydrologic and hydraulic model employed to develop the floodway identified on the community's map.

It is preferable to keep development out of the floodway. Even if it is possible to build, it doesn't mean that it is safe or wise to do so. In addition, all buildings must be elevated, or otherwise protected, to the BFE. That said, some States or communities may have regulations that prohibit any new development in a floodway.

Visual 28: 44 CFR 60.3(e): Coastal High Hazard Areas

- SFHA with BFEs and Coastal High Hazard Areas mapped
- Zones VE, V1-30



Student Notes

The final step on the regulatory staircase is 44 CFR section 60.3(e), which presents the requirements for Zones VE and V1-30. Section 60.3(e) adds additional requirements for coastal high-risk floodplains.

Buildings in V zones are subject to a greater hazard than buildings built in other types of floodplains. Thus, not only do buildings have to be elevated above the BFE, they must also be protected from the impact of waves, hurricane-force winds, and erosion.

Additional Information

Next, we will discuss 44 CFR 60.3(e): Site Requirements.

These points summarize the requirements for 44 CFR 60.3(e):

- Development located landward of the mean high tide
- Foundation and elevation requirements
- Lowest horizontal structural member above BFE
- Breakaway walls
- V Zone Certification required
- Manufactured homes must meet the same standards as other residential structures
- Recreational vehicles must meet 44 CFR 60.3(c) requirements

Visual 29: 44 CFR 60.3(e): Site Requirements

- All new construction within Zones V1-30, VE, and V shall be located landward of the reach of the mean high tide.
- Not permitted: Human-made alteration of sand dunes and mangrove stands

Student Notes

Site requirements in 44 CFR 60.3(e)(3) state that all new construction within Zones V1-30, VE, and V are to be located landward of the reach of the mean high tide. In addition, 44 CFR 60.3(e)(7) prohibits any human-made alteration of sand dunes and mangrove stands in these zones. This requirement is in place because of the potential for increased flood damage if sand dunes and mangrove stands were altered. Mangroves, sand dunes, and other coastal features have been proven to provide significant protection against damage from coastal storms.

Visual 30: 44 CFR 60.3(e) Requirements: Foundation Type and Elevation

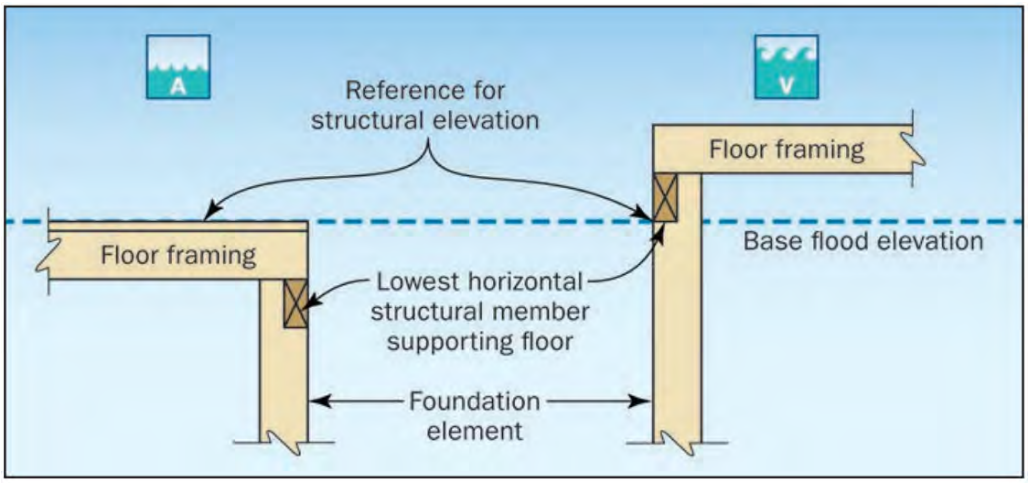
- Elevated on piers, posts, pilings, or column foundations:
  - No solid wall foundations
  - No use of fill for structural support
- Free from obstruction:
  - Open underneath or using breakaway walls or screening
- Elevation requirement:
  - The bottom of the lowest horizontal structural member is elevated to or above the BFE

Student Notes

44 CFR section 60.3(e)(4-6) pertains to elevation and both wind and water loads. Structures must be elevated on pilings and columns foundations, not solid foundation walls. Structural fill is also prohibited in V zones. Buildings must have the space below the lowest floor either free of obstruction or constructed with non-supporting breakaway walls, open wood lattice-work, or insect screening intended to collapse under wind and water loads.

Breakaway walls are designed to collapse from a water load less than would occur during the base flood without causing collapse, displacement, or other structural damage to the elevated portion of the building or supporting foundation system. The term "free of obstruction" means that there is no enclosure below the elevated floor. Additionally, the pile or column foundation and the structure are both anchored to resist flotation, collapse, and lateral movement caused by wind and water loads acting simultaneously on all building components. Wind and water loads can push and twist a structure in different directions at the same time, adding additional stressors to a building's integrity.

Visual 31: 44 CFR 60.3(e) Requirements: Lowest Horizontal Structural Member



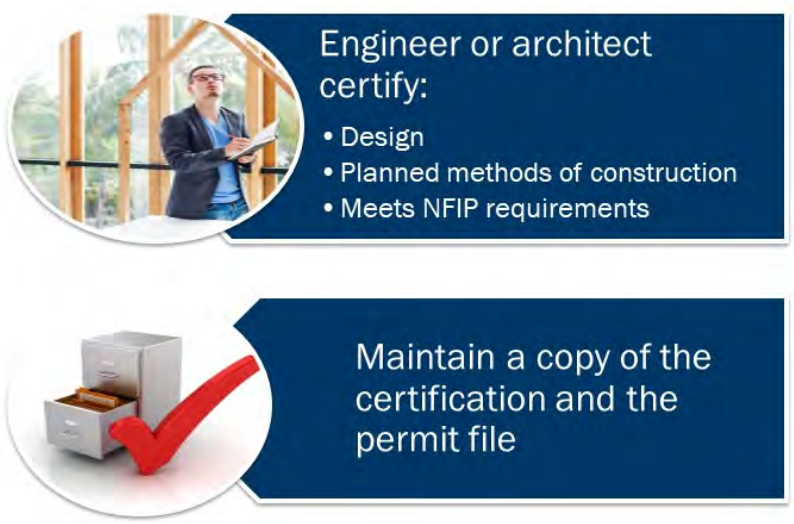
Student Notes

This diagram demonstrates together the foundation and elevation elements of V zones that we discussed in the last slide:

- Pier/Post construction
- Open underneath the building
- Bottom of the lowest horizontal structural member of the lowest floor (excluding pilings and columns) at or above the BFE

In Zone V areas, the lowest floor elevation for floodplain regulations is the bottom of the lowest horizontal structural member. This is the underside of the floor. This is different than in Zone As, where the lowest floor elevation for floodplain regulations is the top side of a floor.

Visual 32: 44 CFR 60.3(e) Requirements: V Zone Certificate



Student Notes

Requirements in 44 CFR 60.3(e)(4) state that to be compliant, a registered professional engineer or architect must certify that the design and planned methods of construction in V zones meet the NFIP requirements. It also requires that the community must maintain a copy of this V zone certification in the permit file.

For more information about V zones, visit FEMA's website V-Zone Certificate at https://www.fema.gov/glossary/v-zone-certificate.

Visual 33: 44 CFR 60.3(e) Requirements: Manufactured Homes and RVs

Manufactured Homes

- Must meet the same Zone V standards as other residential structures:
  - Anchoring
  - Elevation of Lowest Horizontal Structural Member above BFE

RVs

- Must be:
  - On site for fewer than 180 consecutive days
  - Fully licensed and ready for highway use
  - Elevated and anchored to requirements of manufactured homes

Student Notes

In general, 44 CFR 60.3(e)(8) requires that manufactured homes must meet the same requirements as other structures in the V Zones. This means that they must be properly anchored, and elevated so that the lowest horizontal structural member is at or above the BFE.

As with the AE zone, the regulations do allow for replacement manufactured homes in VE zones that are damaged by something other than a flood to be elevated so that the lowest horizontal structural member is at or above the BFE or 36 inches above grade.

44 CFR 60.3(e)(9) requires RVs in V zones to meet the same temporary or permanent placement requirements as AE zones. RVs must be:

- On the site for fewer than 180 consecutive days,
- Fully licensed and ready for highway use, or
- Elevated and anchored to the requirements of manufactured homes.

An RV is ready for highway use if it:

- Is on its wheels or jacking system,
- Is attached to the site only by quick disconnect type utilities and security devices, and
- Has no permanently attached additions.

Visual 34: Knowledge Check 5

This building has breakaway walls enclosing a parking area and is in a VE zone.

Which is the Lowest Floor Elevation for this structure?

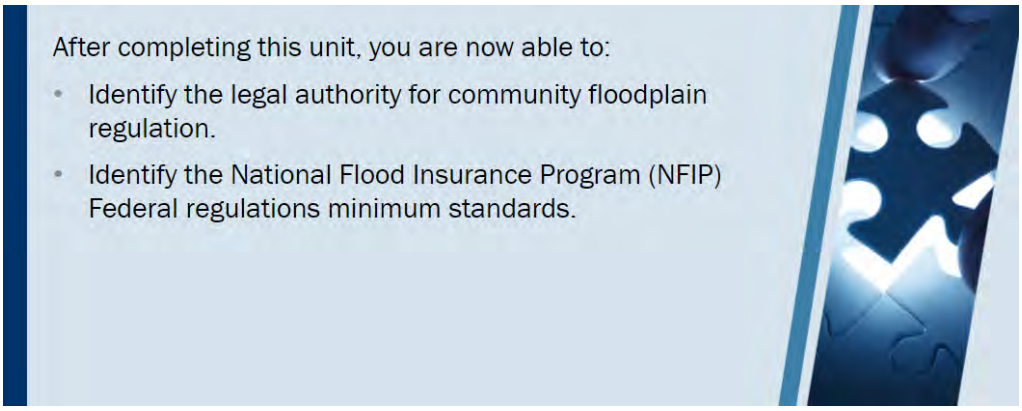
Student Notes

Answer the question:

This building has breakaway walls enclosing a parking area and is in a VE zone. Which is the Lowest Floor Elevation for this structure?

Prepare to share your response with the group.

Visual 35: Unit 4 Summary



Student Notes

You have completed Unit 4. You are now able to:

- Identify the legal authority for community floodplain regulation.
- Identify the National Flood Insurance Program (NFIP) Federal regulations minimum standards.

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Unit 5: Oversight and Compliance: The Permitting Process

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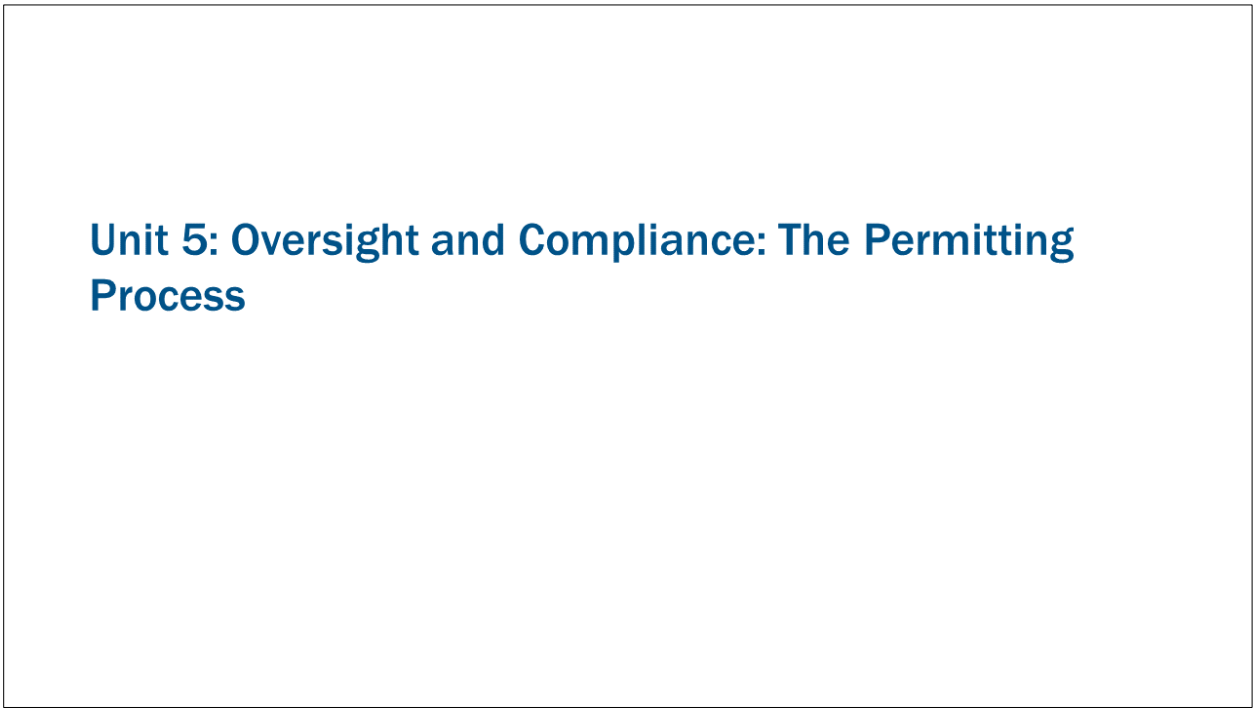
Visual 1: Unit 5: Oversight and Compliance: The Permitting Process



Student Notes

Welcome to Unit 5: Oversight and Compliance: The Permitting Process.

The main purpose of this unit is to provide you with an overview of the Floodplain Administrator's responsibilities in providing oversight and ensuring compliance.

Visual 2: Course Map Umbrella

Student Notes

You are now reviewing the Mitigate the Risk element of the NFIP umbrella. The topics we will discuss under this part of the umbrella include oversight and compliance and pre- and post-event activities.

Visual 3: Unit 5 Objectives

After completing this unit, you should be able to:

- Explain the Floodplain Administrator's roles, responsibilities, and oversight and compliance authority.
- Identify the permit development process steps.
- Explain the permitting review steps.
- Describe the Floodplain Administrator's post-event operations responsibilities

Student Notes

After completing this unit, you should be able to:

- Explain the Floodplain Administrator's roles, responsibilities, and oversight and compliance authority;
- Identify the permit development process steps;
- Explain the permitting review process; and
- Describe the Floodplain Administrator's post-event operations responsibilities.

Visual 4: Unit 5 Topics

- Development Permitting Process
- Permit Review Steps
- Post-Disaster Permitting and Mitigation and Recovery Funding
- Unit Summary

Student Notes

The topics for this unit are:

- Development Permitting Process
- Permit Review Steps
- Post-Disaster Permitting and Mitigation and Recovery Funding
- Unit Summary

Visual 5: Development Permitting Process

Student Notes

Development Permitting Process

Visual 6: Local Government Land Use Authority

Statutory authorization: States, territories, or Tribal governments grant local communities the right to enact regulations to reduce flood losses.

Regulations promote public health, safety, and general welfare.

Authority includes the duty and authority to administer and enforce these regulations.

Local community is responsible for enforcing its own regulations within its jurisdiction.

Student Notes

In most States or commonwealths, the land use authority is passed to local governments from a specific State law or set of laws. In territories, insular areas, and Tribal communities, the authority to enact floodplain regulations comes from these entities.

The purpose of granting land use authority is to protect or promote the health, safety, and general welfare of the citizens.

To participate in the NFIP, a community must adopt and enforce the floodplain regulations we discussed in the previous unit. It is the community's duty, not FEMA's, to enforce the requirements of their ordinance in their jurisdiction.

Visual 7: Floodplain Regulations and The Permit Process

Student Notes

Community floodplain regulations and ordinances provide the framework for permitting development in the floodplain.

Since the local community has the authority to administer their NFIP program, there can be many ways that a community regulates this development.

NFIP minimum standards require that permits be obtained for all floodplain development, that communities ensure their ordinance is followed, and that the community maintains certain records and information.

It's up to the local community to determine how to meet these requirements in a way that works best for them. Not every community is the same. Specific permit processes or pathways may vary. For example, a community may issue a standalone permit or several integrated permits.

Visual 8: Community Permitting Process

- Issue or deny permits for buildings and all other floodplain development
- Ensures all development within the SFHA is reviewed for compliance with the community's flood damage protection ordinance
- Includes all:
  - Structural development (homes, businesses, accessory buildings, etc.)
  - Non-structural development (fill, grading, excavation, decks, etc.)

Student Notes

NFIP participating communities are required to issue or deny permits for buildings and all other floodplain development. Communities must establish permitting processes that ensure all development within the Special Flood Hazard Area (SFHA) is reviewed for compliance with the community's flood damage prevention ordinance.

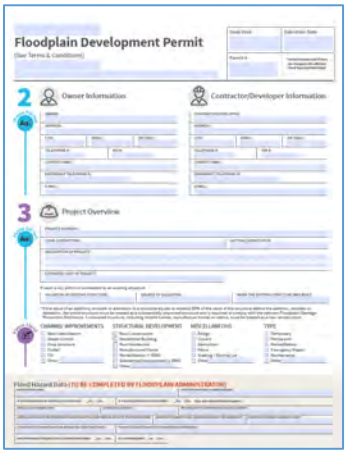
Floodplain development encompasses more than traditional residential and non-residential construction.

Recall the definition of Development from Unit 4. Since the NFIP broadly defines development, as a rule, anything that alters the natural topography of the floodplain needs a permit review.

Structural development includes homes, businesses, accessory structures, etc.

Non-structural development includes things like fill/grade work, excavation, decks, etc.

Visual 9: Sample Floodplain Development Permit Application



Handout

Refer to Handout 5.1: Sample Floodplain Development Permit Application.

Student Notes

This is a sample Floodplain Development Permit application developed by FEMA Region 8. This Floodplain Development Permit application is easy to use. It uses clear, concise language and was designed to be intuitive and easily populated.

Here are some of the highlights of this form:

- Clear numbering and sections that clearly identify who should be filling out the form
- Terms and conditions associated with the permit that help to communicate floodplain information to stakeholders
- Fields for the valuation of the project, valuation of the structure, and SI definition to assess if proposed development is considered substantial improvement.
- Checklist of required documents to be submitted with the application which helps to ensure all information is obtained to assess the project for compliance.
- Checkboxes to clearly identify the status of the permit application (approved, approved with conditions, denied, or variance granted)

Visual 10: Development Permit Review Process

Student Notes

High-level steps involved in the permit process.

This process may vary for any incomplete applications, noncompliance, appeals, variances, or violations.

The permit process steps:

1. An applicant prepares an application and submits it to the community.
2. The application is then checked for completeness. If the application is incomplete, it's returned to the applicant with an explanation of missing or incomplete elements that the applicant must remedy.
3. Once the application is complete, it's reviewed for technical compliance. The reviewer checks that the application meets the ordinance requirements. If there are any technical issues with the permit, the application is returned to the applicant with an explanation of the issues with the permit.
4. Once the application is complete and includes the technical information required, the application is reviewed and either a permit is denied and returned to the applicant, or it is approved and issued.
5. Once the permit is issued, the applicant can move forward with developing the proposed project.
6. After the construction has started, the Floodplain Administrator will conduct inspections and collect the required data.
7. When the project is complete and has met all floodplain management standards, a certificate of occupancy may be issued to compliant, complete projects.

Floodplain permitting is mostly focused on making sure that the technical elements of meeting your community's ordinance are there, so we will spend most of our time focusing on checking for completeness and compliance.

Visual 11: Knowledge Check 1

Which of these activities are considered development and would need a permit if located in the SFHA? Select all that apply.

A. Remodeled homes

B. New commercial building

C. Installation of a shed

D. New fence

Student Notes

Answer the question:

Which of these activities are considered development and would need a permit if located in the SFHA? Select all that apply.

Visual 12: Permit and Compliance Review Process

Student Notes

Core steps of the permit process: checking the application for completeness and technical compliance.

Visual 13: Reviewing for Completeness

- Permit forms, completed and signed
- Technical documents
- Copies of all applicable Federal and State permits
- Local department reviews
- Certifications

Student Notes

The application package should contain all the permit forms, plans, blueprints, and technical documentation required for you to review the proposed project for regulatory compliance. This will vary based on the kind of development being proposed and where in the SFHA the proposed development is located in. For example, a permit application for a project such as a fence will require less documentation than a large subdivision.

Floodplain Administrators are required to ensure that all other necessary permits have been obtained by the permit applicant.

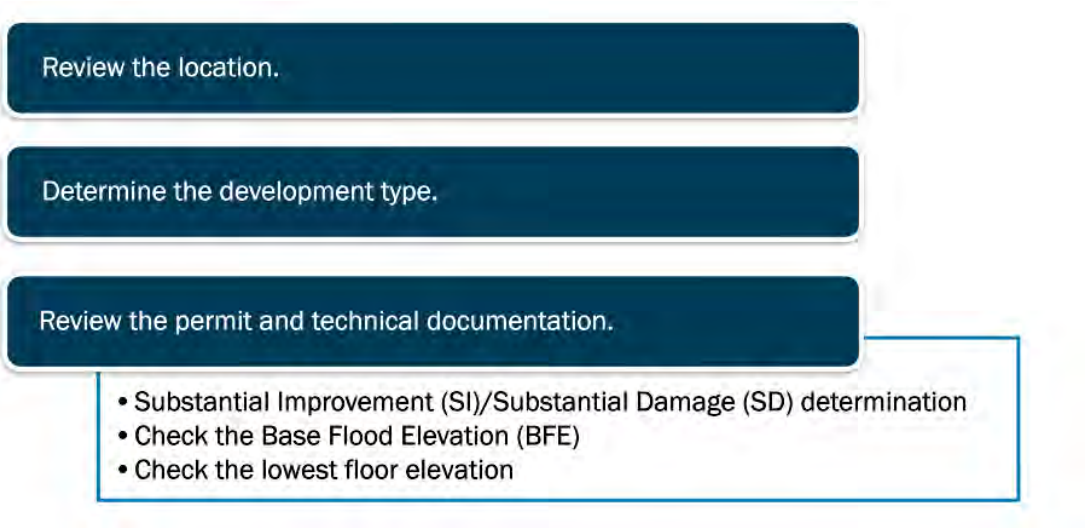
Ensure that appropriate local department reviews have occurred and all certifications are provided.

The final thing to check for in the completeness review is that the application includes the required certifications.

The permit forms should be filled out completely and signed. If the application is incomplete, it's returned to the applicant with an explanation of missing or incomplete elements that the applicant must remedy. There will be other documents that the applicant should submit with the application.

Once the completeness check shows that all required documentation has been provided, you can move on to checking for technical compliance. We will discuss this on the next slide.

Visual 14: Reviewing for Compliance



Student Notes

In this next step, you will check if the proposed development meets the requirements of the local flood damage prevention ordinance.

When conducting a review of a development permit application, the Floodplain Administrator will do the following actions:

- Review the location: Is the development inside or outside of the SFHA? If so, what flood zone? Is it in the floodway?
- Determine the development type: Is this residential or non-residential construction? Is the development structural or non-structural?
- Confirm the BFE or base flood depth: What is the BFE at the site of the proposed development?
- Review the Lowest Floor Elevation: This is the elevation that the lowest floor of living space in a structure is required to be at. The lowest floor should be at or above the Base Flood Elevation.
- Check the Substantial Improvement (SI)/Substantial Damage (SD) determination(s): A cost estimate should be included for any remodels, renovations, additions, etc.
- Review all technical documentation: All required additional documents should be reviewed. This may include elevations signed and sealed by a registered professional engineer or surveyor, no-rise analyses, and V-Zone certificates.

Visual 15: Reviewing for Compliance: Location of Proposed Development

- Is the proposed development in the SFHA where the floodplain ordinance applies?
- Use the Flood Insurance Rate Map (FIRM) and locate the proposed development and the regulatory floodplain.
- What flood zone or zones present? This informs what rules apply.
  - SFHA? Floodway? Coastal Area? Alluvial Fan?
  - Even if a portion of a proposed structure is in the SFHA, the floodplain ordinance applies to the whole structure.

Student Notes

To determine if the development permit application is compliant, start by locating the development site on the community's floodplain map.

The Floodplain Administrator will need to identify the flood zone(s) of the proposed project location using the Flood Insurance Rate Map (FIRM). Some of the fundamental questions to ask when reviewing permits are:

- Is the project in the SFHA?
- If so, is it in a floodway where additional no-rise requirements apply? Is it in a coastal zone where additional building standards apply?

If any part of the development is in the floodplain, the ordinance applies to the whole structure. If the property is across two zones, the most restrictive zone must be used.

Visual 16: Reviewing for Compliance: Determine the Development Type

Structural Development Examples

- Residential
- Non-residential
- Manufactured homes
- Subdivisions
- Agricultural buildings
- Detached garages

Non-structural Development Examples

- Fill/grade
- Excavation
- Decks
- Fences
- Recreational vehicles (RVs)
- Storage of materials

Student Notes

After determining the location of the development, the Floodplain Administrator must determine the development type. The development type will determine what documentation is required for review.

Examples of structural development include:

- Residential,
- Non-residential,
- Manufactured homes,
- Subdivisions,
- Agricultural buildings, and
- Detached garages.

Examples of non-structural development include:

- Fill/Grade,
- Excavation,
- Decks,

- Fences,
- Recreational vehicles (RVs), and
- Storage of materials.

After determining the development type, the Floodplain Administrator will review the permit and supporting technical documentation for compliance.

Visual 17: Reviewing for Compliance: Is the Work SI/SD?

Substantial Improvement (SI)/Substantial Damage (SD)

- Proposed changes to existing structures in the SFHA must be assessed for SI or repair of SD:
  - Vertical or lateral additions
  - Rehabilitation or remodeling (exterior and/or interior)
  - Restoration, reconstruction, or repair of damage from any origin
- A structure that is **Substantially Improved** or has been **Substantially Damaged** must meet standards for **new construction**.

Student Notes

Administration of the SI/SD requirements is an important local permitting responsibility. In many communities, some buildings existed before the flood maps were made and the high-risk zones were known.

These buildings were not built to the same flood safety standards as today. Buildings that are repaired, improved, or replaced must meet current code requirements.

When there are proposed changes to existing structures in the SFHA, they must be assessed for SI or repair of SD. This includes:

- Vertical or lateral additions,
- Rehabilitation or remodeling (both exterior and/or interior), and
- Restoration, reconstruction, or repair of damage from any origin.

Recall from previous units that the NFIP provides definitions for both SI and SD in 44 CFR § 59.1:

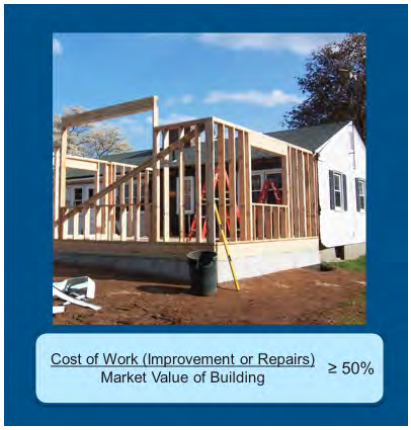
- SI is defined as, “Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50% of the market value of the structure before the “start of construction” of the improvement.”

- SD is defined as, "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% of the market value of the structure before the damage occurred."

Repair of a structure that has been Substantially Damaged is considered a Substantial Improvement. If a structure has been declared SI or SD, it must meet the standards for new construction.

Visual 18: Substantial Improvement and Substantial Damage (SI/SD) Determination Steps

1. Determine Cost of Work
2. Determine Market Value
3. Calculate Percentage (%)
4. Provide Determination Letter



Student Notes

The four steps to making Substantial Improvement or Substantial Damage determinations are:

1. Determine Cost of Work: First, the applicant provides the estimates for the full cost of work involved on all items directly associated with the structure, even if discounted or donated materials and labor are used.
2. Determine Market Value: Next, the structure's market value is determined. Market value must be based on only the structure at its pre-damage or pre-improvement condition.
3. Calculate Percentage (%): Then, the Floodplain Administrator divides the cost of work by the market value of the structure. If the ratio is greater than 50%, then it is considered SI or SD. *If it is considered SI or SD, the work that is done to improve or repair the structure must meet the development standards for new construction.
4. Provide Determination Letter: Finally, a letter with this determination must be sent to the applicant.

Online Resource

Refer to the SI/SD Desk Reference (https://www.fema.gov/sites/default/files/documents/fema_nfip_substantial-improvement-substantial-damage-desk-reference.pdf) for a detailed list of the costs that should be included and excluded.

State that next, we will discuss the next step of the permit review process: Determine the Base Flood Elevation (BFE) or depth.

Visual 19: Check the BFE or Depth

- Use both the FIRM and FIS.
- Determine the BFE to the nearest 0.1 foot wherever possible.
- In Approximate A zones:
  - Obtain/review/reasonably utilize other BFE sources.
  - For certain development types (subdivisions ≥50 lots or ≥5 acres), the applicant must conduct an analysis and generate a BFE as part of the permit application.

Student Notes

The next step in the permit review process after checking for SI and SD is to get the BFE or depth. Any new construction will need to be built with the lowest floor above the BFE.

To determine the BFE, you'll need both the FIRM and the FIS. It's important that the BFE is as precise as possible. BFEs obtained from the FIRM should be rounded to whole numbers. BFEs from the FIS should be written to the nearest tenth of a foot.

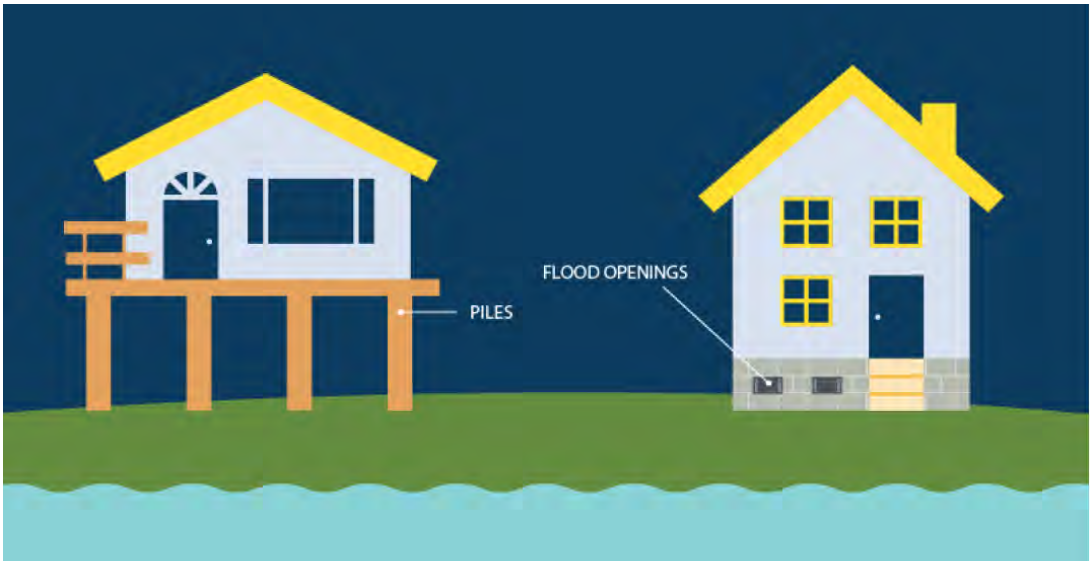
If the existing structure is considered SI or SD, the lowest floor will need to be built to BFE. If it's not considered SI/SD, the entire structure does not need to be built to BFE; however, the additions to the building may need to be built in compliance with current flood ordinance requirements.

In Approximate A zones where BFEs have not been developed:

- Obtain, review, and reasonably utilize other BFE sources.
- For subdivisions greater than 50 lots or 5 acres, the ordinance requires the applicant to conduct a detailed study to generate the BFE as part of the permit application.

Visual 20: Check the Lowest Floor Elevation

Review plans to verify the building's lowest floor elevation (LFE) is **at or above the BFE.**



Student Notes

Review the construction plans to make sure that the lowest floor of the building is built to, or above, the BFE.

Some communities and newer building codes require the lowest floor to be built one or two feet above the BFE. This higher standard is called freeboard.

Elevating the building's lowest floor above the BFE can be done through various methods:

- Elevating on piers, posts, columns
- Elevating on solid walls
- Elevating on properly compacted fill
- Floodproofing (only for non-residential)

Some methods are not appropriate for all building types or in all flood zones. For instance, no structural fill or solid wall foundations are permitted in V zones, and dry floodproofing is not allowed for residential structures.

If the proposed development does not comply with floodplain regulations, deny the permit.

Visual 21: Reviewing Site Plans and Building Design Plans

- Note areas where the site and/or building plans:
  - Are unclear
  - Conflicts with the permit application
  - Flood-related delineations inconsistent with FIS
- Ensure all proposed development is shown
- Assess elevation data

Student Notes

Once the BFE and lowest floor elevation are determined, the Floodplain Administrator needs to check the site plans and building design plans. This involves the following:

Examining the site information in detail for the location of property lines, streets, watercourses, existing and proposed structures, topographic information, and floodway and floodplain boundaries

Noting areas where the plan is unclear or where flood-related delineations are not consistent with FIS

Be careful with plans where not all proposed development is shown on the site. Without a full and clear picture of what is proposed, you cannot accurately assess if it is in compliance with the floodplain regulations.

The Floodplain Administrator will also need to assess the elevation data in the application.

Document any deficiencies in the elevation data on the plans and ask the applicant for clarification. The applicant should correct inaccurate data and supply any missing data.

If the building plans conflict with or are inconsistent with applicable regulations, the Floodplain Administrator must require the applicant to make structural adjustments to the plans. Once the Floodplain Administrator reviews the site plans and the

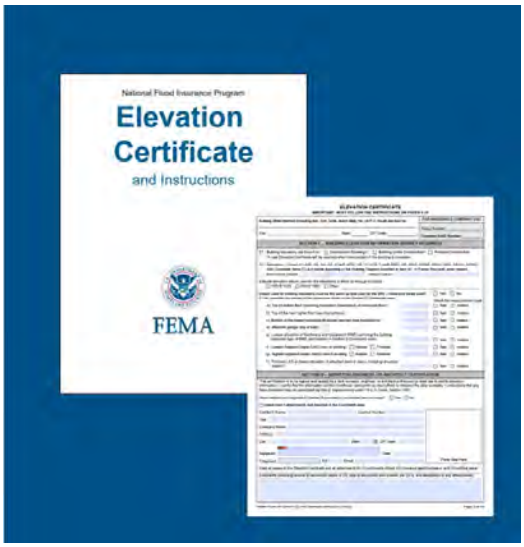
building design plans, they must then review other technical documentation for compliance.

Remember that the current FIRM, including any effective Letter of Map Revision (LOMR), should be the basis of the review. Be sure to note whether a Conditional Letter of Map Revision (CLOMR) or other map change process is needed.

Visual 22: Technical Documentation

Varies based on the development type:

- Elevation Certificate
- No-Rise Certification for floodway encroachment
- Floodproofing certificates
- Engineered flood openings
- V zone construction/breakaway walls



Student Notes

In addition to the site and building design plans, the Floodplain Administrator will need to check other technical documentation.

Recall that the Floodplain Administrator must verify that the document is complete and has the appropriate signatures and seals.

During the review of a development application permit for compliance, the Floodplain Administrator will need to review these forms in more detail.

Performing this step ensures the information in the application indicates that the structure is compliant with local regulations. Technical documentation requirements will depend on the proposed development type.

Some examples of technical documentation include:

- **Elevation Certificate:** FEMA form that communities often use to collect the required elevation information to show a structure is properly elevated.
- **A No-Rise Certification for floodway encroachment (for development in the floodway):** A floodway analysis that results in an engineer's certification that the development will cause no rise, along with the associated engineering analysis, is required. This is commonly called a No-Rise Certification for short. These must be signed by a licensed engineer. The document must indicate no rise, meaning zero, not even 0.001 ft, of rise.
- **Floodproofing certificates**: Required for any non-residential structure that will be floodproofed instead of elevated. There are a limited number of communities

that have FEMA exemptions for floodproofed residential basements. Those would also require a floodproofing certificate.

- **Engineered flood openings**: If engineered flood openings are to be used, a copy of the Individual Engineered Flood Openings Certification or an Evaluation Report issued by the International Code Council Evaluation Service must be attached that shows the rated area of the openings. The document must show that the openings allow for one square inch of net area flow for every square foot of enclosed space in the structure.

- **V zone construction/breakaway walls**: Construction in V zones requires special certification. If breakaway walls are used to enclose areas below the building that exceed a design-safe loading resistance of 20 pounds per square foot, the walls must be certified by a registered professional engineer or architect.

Visual 23: Issue or Deny the Permit

Issue Permit

- Only if in full compliance
- Permit Issued = start of construction date
- Monitor to ensure construction starts promptly

Deny Permit

- If not in compliance
- If denied, the applicant can:
  - Withdraw the application
  - Redesign to bring into compliance
  - Appeal to the board of appeals
  - Request a variance

Student Notes

Once the application review is complete, a decision must be made to issue or deny the permit based on the compliance information provided.

If the proposed development is compliant with the ordinance and the application is complete, issue the permit. The permit allows the applicant to proceed with development based on the information they've presented. The day the permit is issued becomes the start of construction date. Monitor the site to be sure that construction begins promptly. Most communities require construction to begin within 180 days.

Alternatively, if the proposed development is not in compliance with regulations, you must deny the permit. Disclose the reasons for denying an application in writing. This tells the applicant what areas are noncompliant, so that if they wish to resubmit the application, appropriate corrections can be made.

If the applicant is unhappy with the decision, they can:

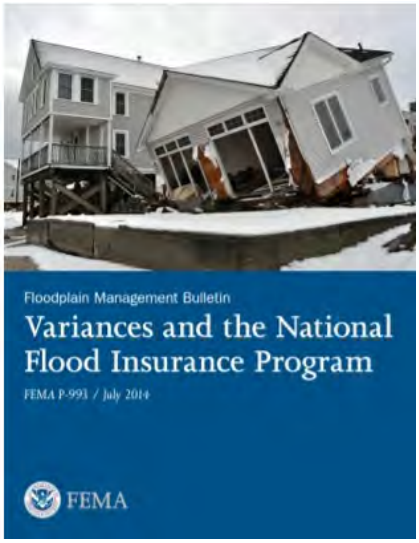
- Withdraw the application: This pulls their application from the process. Typically, the applicant will need to re-apply and start the process over if they later decide they want to pursue the same project.
- Redesign the project to bring it into compliance: The applicant will need to make the required changes that the community has requested for the project to be compliant.
- Appeal to the Board of Appeals: Your flood damage prevention ordinance should have a process for referring these disagreements to a Board of Appeals which will interpret the ordinance and settle the dispute.

- Request a variance to the regulations: This gives the applicant a way to seek permission to vary from the letter of the rules because of a special situation.

Your floodplain regulations should include variance and appeals procedures. Next, we'll briefly discuss variances from floodplain regulations.

Visual 24: Variances and the NFIP

- Defined as "a grant of relief by a community from the terms of a floodplain management regulation"
- Can be granted when minimum NFIP standards can't be met because of special circumstances
  - Many specific criteria for when a variance is allowable
- **Should be rare!**
- Does not change flood insurance requirements



Student Notes

Applicants whose permits are denied because their project does not meet the requirements may try to apply for a variance from the requirements.

Floodplain variances are defined by the NFIP as the grant of relief by a community from the terms of one or more of your floodplain management regulations.

Under the regulations in 44 CFR 60.6, variances can be granted when the minimum NFIP standards can't be met because of special circumstances pertaining to the site (and not to the person applying for a variance). The reconstruction, rehabilitation, or restoration of designated historic structures is one such example.

For a variance to be allowed to occur, the community must determine:

- That there is good and sufficient cause to issue the variance.
- That exceptional hardship would exist by denying the variance. Things that are not exceptional hardship reasons are if it would be too expensive or inconvenient to comply with the rules.
- That the variance will not result in additional threats to public safety, extraordinary public expense, fraud, or victimization of the public.
- That the variance must be the minimum action necessary to avoid relief.

Because variances create increased risk to life and property, relief from flood elevation and other requirements should be rare. A community must decide if the

hardship claimed by the applicant outweighs the long-term risk, the community's liability, and whether granting a variance will jeopardize the community's participation in the NFIP.

Any variances that are granted will not relieve the property owner of any mandatory flood insurance purchase requirements. Variance applicants should also understand that a variance may save money in the short term; however, it may result in higher costs over the long term as a result of higher insurance premiums or, if uninsured, flood losses.

Online Resource

Access Variances and the National Flood Insurance Program FEMA P-993 (https://www.fema.gov/sites/default/files/2020-08/FEMA_P-993_FPM-Bulletin_Variance.pdf) for more information.

Visual 25: Conduct Inspections

Pre-construction site inspection:

- Check for correct location and no encroachment.

During construction inspection:

- Check the Lowest Floor Elevation vs the BFE.

Finished construction inspection:

- Check that as-built matches approved plans.
- Verify all compliance elements in place.
- Complete before issuing a certificate of occupancy.

Student Notes

Once a permit has been approved, inspections should occur throughout the development process. Inspections ensure the project is being built according to the plans and compliance.

Depending on the development type, inspections may be conducted once or several times. For buildings, at least three inspections are strongly recommended.

Pre-construction site inspection:

- This inspection should occur when the site is staked out to compare the plans to the physical layout of the property. If you require a pre-construction Elevation Certificate, you will want to have that on hand at this inspection.
- Check that the location is correct and there's no encroachment into flood zones that weren't already identified in the plans and approved for permitting.

During construction inspection:

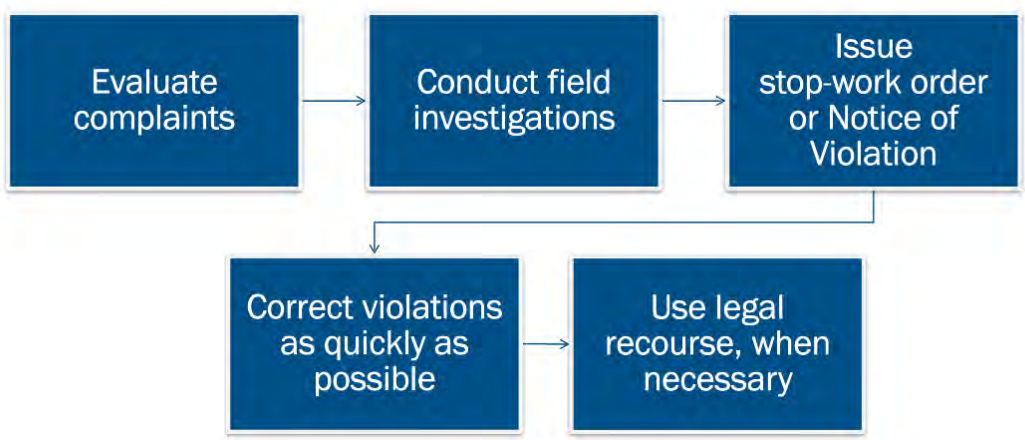
- It should occur after the foundation and lowest floor is constructed but before the vertical walls are in place, when the foundation height can be changed without major difficulty.

- Check that the Lowest Floor Elevation is at or above the BFE. You collect the "during construction" (second) elevation certificate after the lowest floor has been placed to verify that the floor has been constructed above BFE.

Finished construction inspection:

- The last inspection occurs after all construction has been completed, including the installation of accessory items or utilities servicing the building.
- Collect and review the final construction Elevation Certificate to use during this inspection. Check that the "as built" matches approved plans.
- Verify all compliance elements are in place.
- Conduct this inspection before issuing a certificate of occupancy or completion to indicate the project is finished.

Visual 26: Inspections: Identifying Floodplain Violations



Student Notes

Inspections may uncover noncompliant development and other floodplain violations. To address violations in your community, it is necessary to:

- Evaluate complaints,
- Conduct field investigations to determine if a violation is in fact occurring,
- Issue a stop-work order or Notice of Violation to initiate your administrative code enforcement, and
- Use legal recourse, when necessary.

Local floodplain management law or ordinance should contain clear language and process to address violations. Field inspections are crucial to identify violations and correct them as quickly as possible.

A final Elevation Certificate should be obtained to help determine compliance. Always coordinate with the community's attorneys. Violation enforcement options can include:

- Administrative orders,
- Fines or injunctions,
- Imprisonment, and
- Section 1316 from FEMA.

Visual 27: FEMA Oversight/Consequences of Noncompliance

- Compliance issues usually found through:
  - Community compliance audit process
  - LOMC applications
  - Complaints from the public
- NFIP sanctions:
  - CRS rating retrograde to Class 10 (i.e., loss of flood insurance discounts)
  - Probation: An additional $50 surcharge is added on new/renewed policies
  - Suspension: Community cannot purchase NFIP policies and prohibited from receiving Federal disaster assistance

Student Notes

Just as a community must hold developers responsible for complying with local floodplain requirements, FEMA must hold participating communities responsible for enforcing their local floodplain requirements.

For communities that fail to enforce their ordinance or make efforts to correct violations, FEMA may take certain enforcement steps.

Community compliance issues may be found through compliance audits, LOMC applications, complaints from the public, or other means.

FEMA will provide the community time and assistance to correct non-compliant development and improve its procedures; however, if a community remains noncompliant after receiving technical assistance, various enforcement actions from FEMA can follow.

If the community is participating in the CRS program, they may be retrograded to Class 10. This means that individual policy holders will no longer receive discounts on their NFIP insurance.

If the community is placed on probation, an additional $50 surcharge is added to every new or renewed flood insurance policy in the community, and local and congressional elected officials are notified. The probationary period lasts at least until all program deficiencies have been corrected and violations have been remedied to the maximum extent possible. If the community does not fix their program deficiencies, they will be suspended.

In some cases, communities will be suspended without going through the probationary period. This is most common when communities fail to adopt their new FIRMS before they go effective. When a community is suspended, no NFIP insurance policies are available, and the community is prohibited from receiving Federal disaster assistance.

Visual 28: Issue Certificate of Occupancy and Maintain Records

- Coordinate with other building code requirements.
- Consider establishing a policy concerning "renewable" (1-year) occupancy permits.
- File with all records related to the project.
- Maintain all permit records in perpetuity.

Student Notes

A Certificate of Occupancy is a tool that many communities use to verify that a project is complete. In communities with adopted building codes, this may sometimes be called a Certificate of Compliance, where more appropriate.

If your community requires a final Elevation Certificate after construction is complete, it's recommended to wait until you've received that document before issuing a Certificate of Occupancy or Compliance. File the Certificate of Occupancy or compliance with all records related to the project.

The community is required to maintain records in perpetuity (forever), to demonstrate compliance with their floodplain management regulations.

Keeping records protects the community and the property owner. It can provide proof that a structure has been built in compliance, or that changes have occurred to the structure that were not permitted by the community.

Maintain these records using digital or paper copies.

Visual 29: Knowledge Check 2

Review Figure 7 in your Student Manual. A new commercial structure is being proposed at site 1.

What permit guidance or recommendation would you give the applicant regarding development siting?

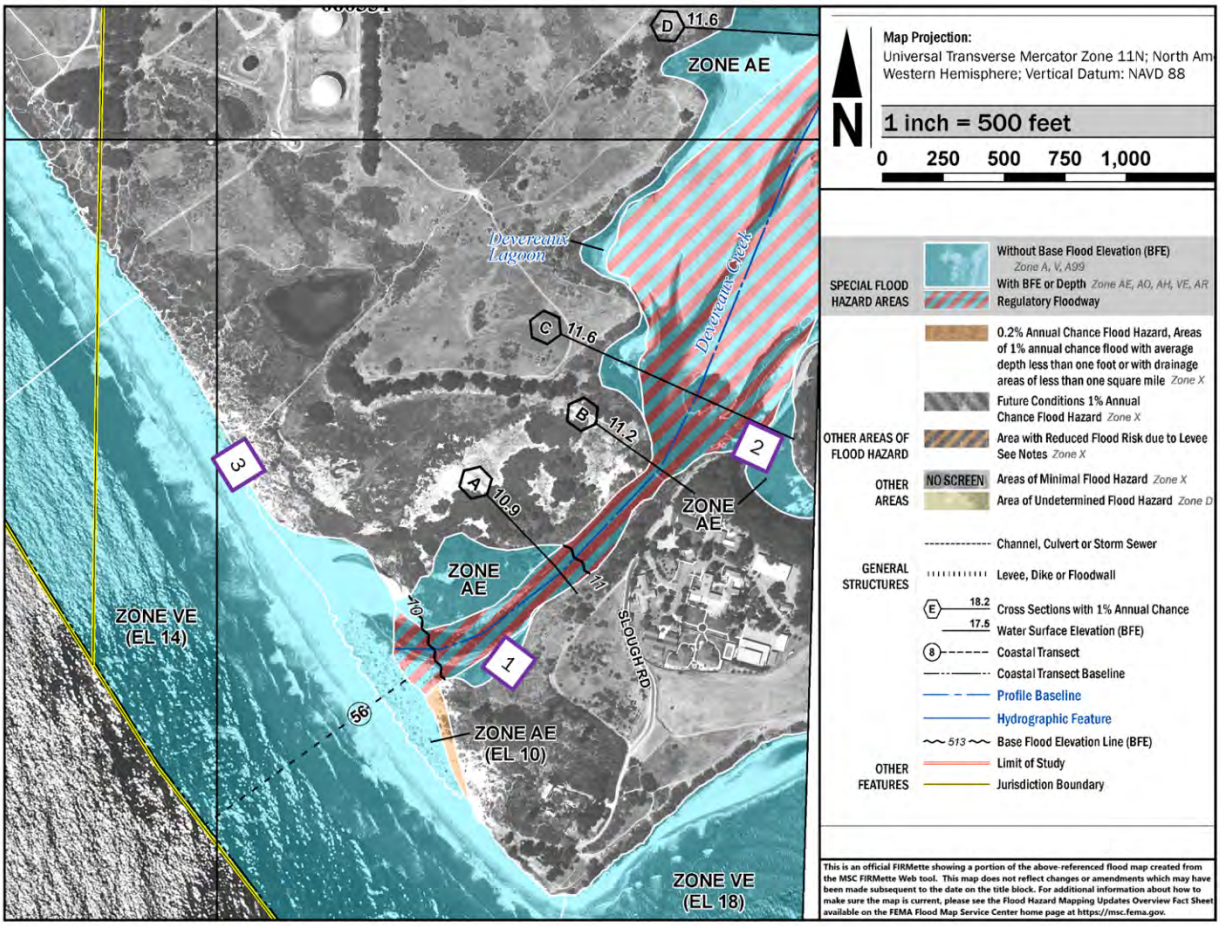
Student Notes

Answer the question:

A new commercial structure is being proposed at Site 1. What permit guidance or recommendation would you give the applicant with regards to development siting?

Prepare to share your response with the group.

FIGURE 7. PROPERTIES SITE MAP



Visual 30: Knowledge Check 3

Review Figure 7 in your Student Manual. A homeowner wants to remodel their home at Site 2. They'd like to add a lateral addition to the house.

In addition to a detailed site plan, what information do you need to collect about the work during the permit review that you would not need to collect if this was new construction?

Student Notes

Answer the question:

A homeowner wants to remodel their home at Site 2. They'd like to add a lateral addition to the house. In addition to a detailed site plan, what information do you need to collect about the work during the permit review that you would not need to collect if this was new construction?

Prepare to share your response with the group.

Visual 31: Knowledge Check 4

Review Figure 7 in your Student Manual. A new structure is being proposed at Site 3.

What type of certification would be required in this coastal high hazard area?

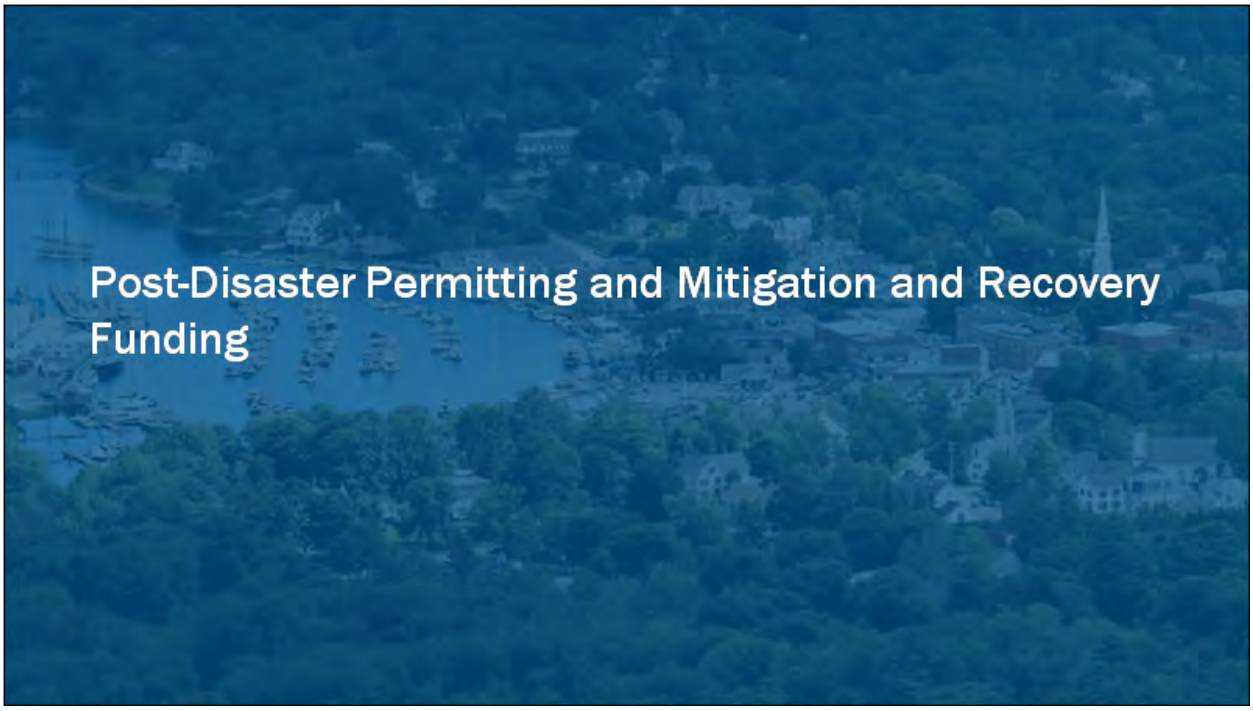
Student Notes

Answer the question:

A new structure is being proposed at site 3. What type of certification would be required in this coastal high hazard area?

Prepare to share your response with the group.

Visual 32: Post-Disaster Permitting and Mitigation and Recovery Funding



Student Notes

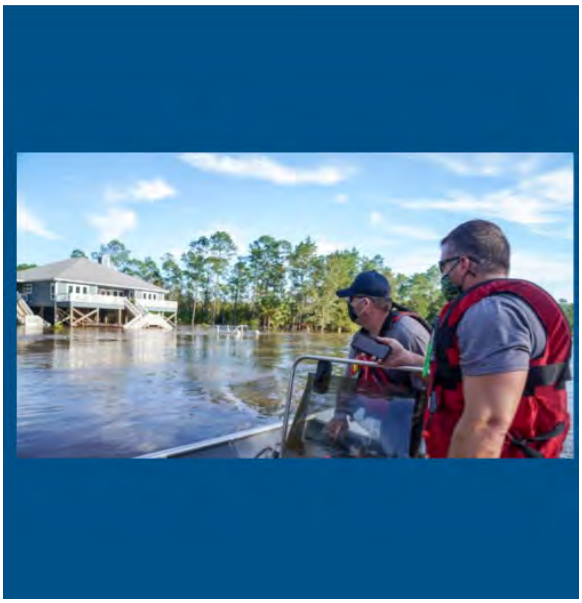
- Permitting after a disaster or damaging event in a community and f
- Funding for mitigation and recovery.

Visual 33: Post-Disaster Permitting and Damage Assessments

After any disaster, communities may need to:

- Rapidly process large numbers of permits.
- Quickly assess damage to SFHA structures.

Permit fees can be waived but permit requirements cannot!



Student Notes

After a disaster, even if it's not a State or federally declared disaster, a local community has the responsibility to issue permits and document damages.

In this unit, we also discussed SD requirements. Communities need to quickly conduct SD assessments and build lists of Substantially Damaged structures and those that are not Substantially Damaged.

Communicate to folks what permit requirements apply to them.

SD assessments should occur for damage of any origin to structures in the regulatory floodplain—recall the SD definition we learned earlier. Damaging events can include natural hazards like fires, tornadoes, snowstorms, or a car driving through a house.

It's also important that the community communicates to individuals what permit requirements will apply under these circumstances. Permit fees can be waived but requirements cannot! All development in the SFHA needs a permit.

Visual 34: Community Post-Disaster Permitting and Damage Assessment Actions

- Perform damage assessments and inspections.
- Determine if structures are Substantially Damaged.
- Provide determination letters before permitting.
- Require permits for development activity in the floodplain.
- Apply floodplain ordinance.
- Bring violations into compliance.

Student Notes

Communities are often in a hurry to rebuild after a disaster. Everyone in the community wants to return to normalcy and feel safe again; however, it is important to remember that floodplain development rules still apply.

The Floodplain Administrator and community must take several actions after a disaster including:

- Performing damage assessments and inspections,
- Determining if structures are Substantially Damaged – this includes verifying the address, describing damages inside and outside the structure, estimating flood depth and taking photographs
- Provide SD determination letters to landowners prior to issuing any permits,
- Requiring permits for development activity in the floodplain,
- Applying floodplain ordinance as appropriate, and
- Bringing violations into compliance.

FEMA has a tool that will help with these assessments. The FEMA Substantial Damage Estimator (SDE) Tool is to collect and organize data to help make SD assessments in the field. The SDE Tool provides a formalized methodology for collecting and organizing the data required to make defensible determinations that meet the NFIP criteria.

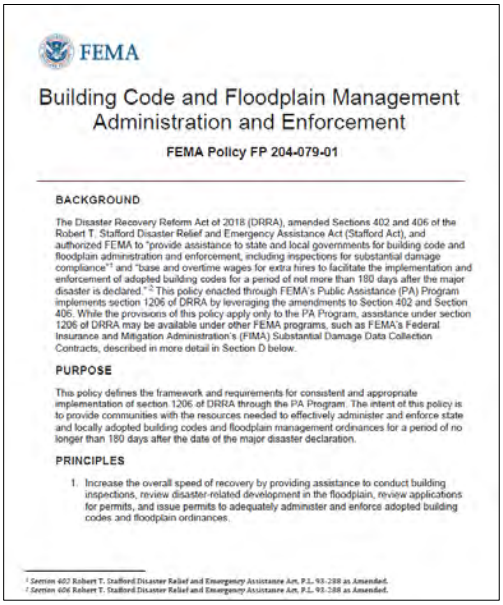
Online Resource

Access the following resource:

FEMA Independent Study Course 285 (https://training.fema.gov/is/courseoverview.aspx?code=IS-285) to learn more about the tool.

Visual 35: Disaster Recovery Reform Act of 2018

- Authorizes Federal assistance after major disaster declarations
- Eligible work:
  - Building code administration
  - Code enforcement
  - Floodplain ordinance administration and enforcement
  - SD determinations
- Recordkeeping responsibilities are very important!



FEMA

Building Code and Floodplain Management Administration and Enforcement

FEMA Policy FP 204-079-01

BACKGROUND

The Disaster Recovery Reform Act of 2018 (DRRA), amended Sections 402 and 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), and authorized FEMA to "provide assistance to state and local governments for building code and floodplain administration and enforcement, including inspections for substantial damage compliance"[1] and "base and overtime wages for extra hires to facilitate the implementation and enforcement of adopted building codes for a period of not more than 180 days after the major disaster is declared."[2] This policy enacted through FEMA's Public Assistance (PA) Program implements section 1206 of DRRA by leveraging the amendments to Section 402 and Section 406. While the provisions of this policy apply only to the PA Program, assistance under section 1206 of DRRA may be available under other FEMA programs, such as FEMA's Federal Insurance and Mitigation Administration's (FIMA) Substantial Damage Data Collection Contracts, described in more detail in Section D below.

PURPOSE

This policy defines the framework and requirements for consistent and appropriate implementation of section 1206 of DRRA through the PA Program. The intent of this policy is to provide communities with the resources needed to effectively administer and enforce state and locally adopted building codes and floodplain management ordinances for a period of no longer than 180 days after the date of the major disaster declaration.

PRINCIPLES

1. Increase the overall speed of recovery by providing assistance to conduct building inspections, review disaster-related development in the floodplain, review applications for permits, and issue permits to adequately administer and enforce adopted building codes and floodplain ordinances.

[1] Section 402 Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288 as Amended.
[2] Section 406 Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288 as Amended.

Student Notes

The Disaster Recovery Reform Act Section 1206 authorizes FEMA to provide communities approved for Public Assistance after a Presidentially Declared Disaster with resources needed to administer their floodplain management programs.

Work eligible for reimbursement includes the following:

- Building code administration: Review and process building permits, provide training and outreach, establish plan review and inspection processes.
- Code enforcement: Inspect structures, carry out corrective actions, review and issue Elevation Certificates.
- Floodplain ordinance administration and enforcement
- SD determinations: Conduct field surveys, collect data, prepare repair cost and market value information, damage inventory, hire or train staff

Recordkeeping responsibilities are very important in the post-disaster environment and are critical to reimbursement through this program.

Funding is available for properly documented eligible activities occurring within 180 days after a major disaster declaration.

Online Resources

Access the following resources:

- Fact Sheet (https://www.fema.gov/sites/default/files/documents/fema_drra-1206-companion-document.pdf)
- Policy Document (https://www.fema.gov/sites/default/files/documents/fema_building-code-floodplain-management-drra-1206_policy_10-15-2020_0.pdf)

Visual 36: Knowledge Check 5

What are some important community responsibilities after a damage event?

Student Notes

Answer the question:

What are some important community responsibilities after a damage event?

Prepare to share your response with the group.

Visual 37: FEMA Hazard Mitigation Assistance (HMA)

Provides funding to help prevent or lessen future damages:

- Hazard Mitigation Grant Program (HMGP)
- Hazard Mitigation Post-Fire Grant Program (HMGP Post-Fire)
- Building Resilient Infrastructure and Communities (BRIC)
- Flood Mitigation Assistance (FMA)

Student Notes

FEMA's Hazard Mitigation Assistance (HMA) programs provide funding via grants to eligible applicants (typically local governments and non-profit agencies) for eligible mitigation measures that reduce disaster losses. “Hazard mitigation" is any sustainable action that reduces or eliminates long-term risk to people and property from future disasters.

There are several HMA grant programs:

- Hazard Mitigation Grant Program (HMGP): The main disaster-related program, which also includes a post-fire grant program. HMGP assists in implementing long-term hazard mitigation planning and projects following a Presidential Disaster Declaration. HMGP funding is available when authorized through a major disaster declaration. The community must also have a current Hazard Mitigation Plan adopted to qualify for funding.
- HMGP Post Fire: HMGP Post Fire Grants provide assistance to help communities implement hazard mitigation measures after wildfire disasters.
- Building Resilient Infrastructure and Communities (BRIC): This grant program provides support for States, local communities, Tribes, and territories as they undertake hazard mitigation projects to reduce the risks they face from

disasters and natural hazards.States and territories that have had a major disaster declaration under the Stafford Act in the seven years prior to the annual application period start date are eligible to apply.

- Flood Mitigation Assistance (FMA): FMA is a non-disaster-related grant program that provides funds for planning and projects to reduce or eliminate the risk of flood damage to NFIP-insured buildings. This is a competitive program that provides funding annually to States, local communities, federally recognized Tribes, and territories.

In addition to FEMA's HMA programs, there are two other forms of disaster assistance for federally declared disasters, called Individual Assistance (IA) and Public Assistance (PA).

Online Resources

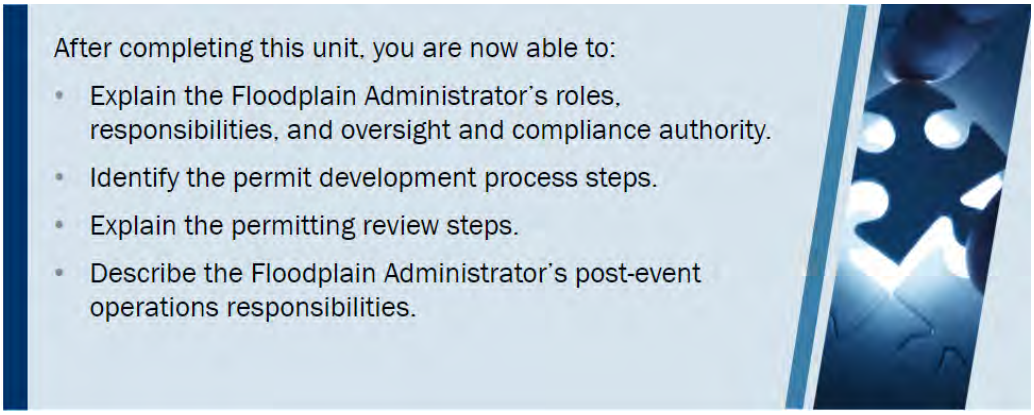
Refer to the following FEMA resources:

- BRIC (https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities)
- Flood Mitigation Assistance (FMA) program (https://www.fema.gov/grants/mitigation/floods)
- HMGP (https://www.fema.gov/grants/mitigation/hazard-mitigation)
- IA and PA (https://www.fema.gov/assistance)

Handout

Refer to Handout 5.2 HMA Program Comparison to participants for them to learn

Visual 38: Unit 5 Summary



Student Notes

You have completed Unit 5. You are now able to:

- Explain the Floodplain Administrator's roles, responsibilities, and oversight and compliance authority;
- Identify the permit development process steps;
- Explain the permitting review steps; and
- Describe the Floodplain Administrator's post-event operations responsibilities.

Unit 6: Flood Insurance

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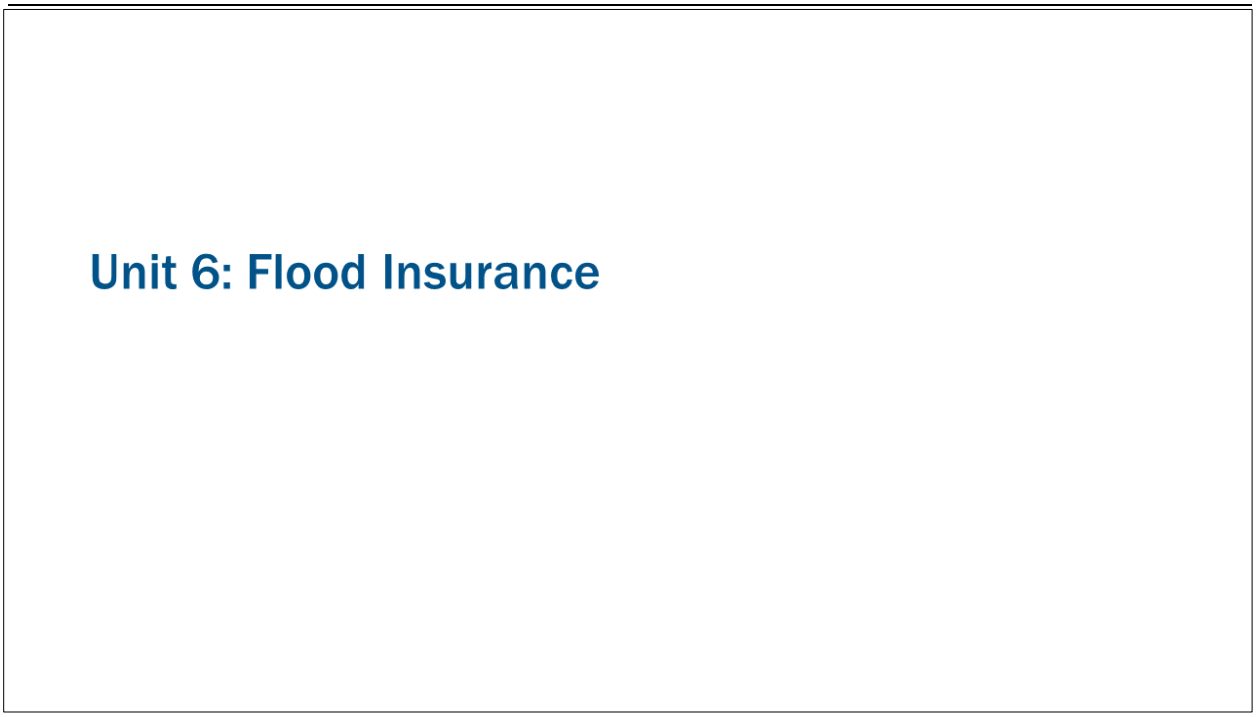
Visual 1: Unit 6: Flood Insurance



Student Notes

Welcome to Unit 6: Flood Insurance. This unit should take about 20 minutes to complete.

Visual 2: Course Map Umbrella

Student Notes

You are now reviewing the Insure the Risk portion of the NFIP umbrella. Some topics we will discuss under this part of the umbrella include mandatory purchase requirements and insurance and floodplain management.

Visual 3: Unit 6 Objectives

After completing this unit, you should be able to:

- Describe the basic elements of flood insurance under the NFIP.
- Identify Repetitive Loss (RL)/Severe Repetitive Loss (SRL) properties.
- Describe the purpose of Increased Cost of Compliance (ICC) coverage.

Student Notes

After completing this unit, you should be able to:

- Describe the basic elements of flood insurance under the NFIP,
- Identify Repetitive Loss (RL)/Severe Repetitive Loss (SRL) properties, and
- Describe the purpose of Increased Cost of Compliance (ICC) coverage.

Visual 4: Unit 6 Topics

Flood Insurance Availability

- Mandatory Purchase Requirements
- Flood Insurance Rating Factors
- Insurance and Floodplain Management
- Repetitive Loss (RL)/Severe Repetitive Loss (SRL) Properties
- Increased Cost of Compliance (ICC) Coverage
- Unit Summary

Student Notes

Flood insurance is a very important element of the National Flood Insurance Program (NFIP). This unit will cover the following topics related to flood insurance:

- Flood Insurance Availability
- Mandatory Purchase Requirements
- Flood Insurance Rating Factors
- Insurance and Floodplain Management
- Repetitive Loss (RL)/Severe Repetitive Loss (SRL) Properties
- Increased Cost of Compliance (ICC) Coverage
- Unit Summary

Visual 5: Flood Insurance Definition: Flood (44 CFR § 59.1)

"A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area, or of two or more properties, from:

- Overflow of inland or tidal waters,
- Unusual and rapid accumulation or runoff of surface waters from any source,
- Mudflows and/or
- Collapse or subsidence of land

Student Notes

A flood as "a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area, or of two or more properties, from:

- Overflow of inland or tidal waters,
- Unusual, rapid accumulation or runoff of surface waters from any source,
- Mudflows, and/or
- Collapse or subsidence of land due to waves or currents above anticipated levels.

For the purpose of flood insurance claims, surface waters from any source include artificial sources (e.g., a dam breach or a water main failure) not just rivers or oceans.

Visual 6: Flood Insurance Definition: Structure

- A walled and roofed building
- Principally above ground
- Affixed to a permanent site or foundation
- Manufactured homes and travel trailers built on a permanent chassis
- Includes finished construction or under construction

Student Notes

Definition of a structure.

The NFIP defines a structure, for flood insurance purposes, as "a walled and roofed building, other than a gas or liquid storage tank, principally above ground and affixed to a permanent site or foundation; as well as a manufactured home on a permanent foundation." Finished construction buildings, as well as buildings under construction, are eligible to be insurable.

Visual 7: NFIP Flood Insurance Availability

- Available community wide in NFIP participating communities to those who are:
  - Inside and outside the Special Flood Hazard Area (SFHA)
  - Homeowners and Business Owners
  - Renters or Lessees
- Insurance is obtained from local insurance agents.
- One-year policy term
- Effective after 30-day waiting period
  - No waiting period if purchased at loan closing

Student Notes

The NFIP flood insurance is available to everyone in a participating community. This includes those who are:

- Inside and outside the Special Flood Hazard Area (SFHA),
- Homeowners,
- Business Owners, and/or
- Renters or Lessees (in any zone).

Acquiring flood insurance in the community is very important. For example, many homeowners do not know their homeowner's policy does not cover flood damage, and renters often do not know they are also eligible for a flood insurance policy.

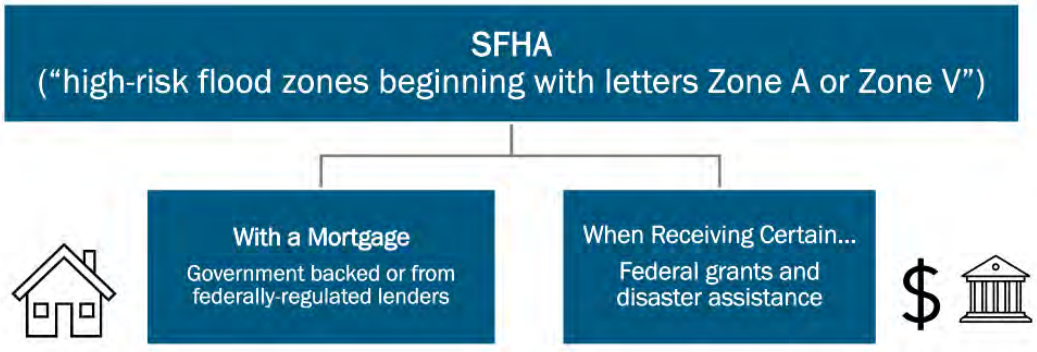
To acquire flood insurance, the community contacts a local insurance agent.

Flood insurance policies have a one-year policy term. FEMA sets rates and coverage rules and limitations.

Building and contents flood insurance coverage can be purchased at any time; however, there's usually a 30-day waiting period before the policy is effective. This is to discourage property owners from waiting to purchase insurance until a storm is approaching.

There are a few exceptions to the 30-day waiting period. For example, if flood insurance is purchased at loan closing, then the policy takes effect immediately. Other exceptions are outlined in the Flood Insurance Manual.

Visual 8: Flood Insurance: Mandatory Purchase Requirements



Student Notes

While flood insurance can be purchased anywhere in a participating community, there are some situations where flood insurance is mandatory. As just discussed, the Flood Disaster Protection Act of 1973 mandates the purchase of flood insurance for properties in the designated SFHA.

If a structure is in a high-risk flood zone (A or V), the lender must require flood insurance as a condition of a government-backed loan. Flood insurance is also mandatory if a federally-backed mortgage is changed, extended, or discovered (e.g., mapped into the SFHA after a map revision).

The mandatory purchase of flood insurance also applies to any Federal financial assistance (disaster assistance or Federal grants) that involves the acquisition or construction of a building in the SFHA.

Visual 9: Knowledge Checks 1 and 2

Scenario: A business owner in Floodville, a NFIP-participating community, is planning to build a complex of restaurants, shops, and entertainment centers near a body of water. These facilities will not be located in the SFHA.

Is flood insurance available for this development?

Is flood insurance mandatory for this development?

Student Notes

Read the scenario: A business owner in Floodville, a NFIP-participating community, is planning to build a complex of restaurants, shops, and entertainment centers near a body of water. These facilities will not be located in the SFHA.

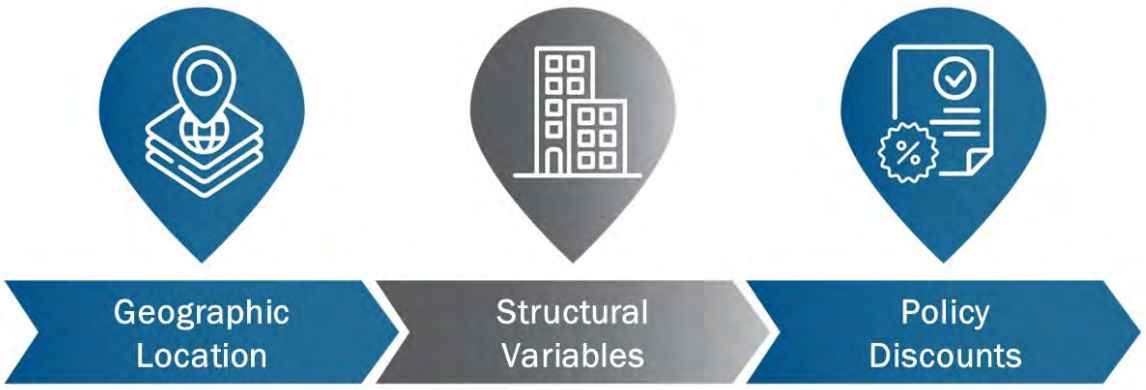
Answer the questions:

Is flood insurance available for this development?

Is flood insurance mandatory for this development?

Prepare to share your responses with the group.

Visual 10: Flood Insurance Rating Factors Overview



Student Notes

The price of a flood insurance policy (its annual premium) is based on variables and flood hazards that are unique to each building. The categories of rating variables include the following:

- Geographic location of the building: Factors such as a structure's address or latitude/longitude, the distances to the nearest flooding source, and relative elevations are calculated to reflect the flood risks at that unique location.
- Structural variables of the building: Building characteristics such as occupancy type, construction type, foundation type, first floor height, and replacement cost value.
- Policy discounts: Various discounts are available for mitigation actions, using certain construction elements, Community Rating System (CRS) participation, and other statutory factors.

Property-specific pricing more accurately reflects the risk, helping policyholders make risk-informed decisions to lessen the effects of flooding and helping communities become more resilient.

Visual 11: Floodplain Management and Flood Insurance

Floodplain Management Regulations	Flood Insurance
Floodplain Administrators must ensure all floodplain development is compliant.	Compliance can impact flood insurance rates.
Regulations must apply in the SFHA; the community can apply them to a larger area.	Mandatory purchase applies inside the SFHA.
Higher standard regulations can apply to all flood zones.	Insurance is available in all flood zones.
Higher regulatory standards are optional.	Higher standards may lower premiums.
Violations must have legal penalties.	Violations lead to higher premiums and lost discounts.

Student Notes

The similarities and differences between floodplain management decisions and flood insurance policy requirements.

Communities must document and enforce compliance with local floodplain management ordinances and regulations that are tied to flood zones. The Floodplain Administrator is responsible for ensuring all floodplain development is compliant.

FIRMs reflect the current flood risk, impact flood insurance purchase requirements, and help communities make good floodplain management decisions.

Federally regulated lenders enforce the flood insurance mandatory purchase requirement for properties located in SFHAs.

Remember, flood insurance is generally available for all insurable structures in a participating community, whether inside or outside the SFHA.

Because insurance premiums are actuarially based (risk-based), structures that violate floodplain management regulations could also have higher flood insurance premiums.

Foundation types, elevation of machinery and equipment, and other building plan decisions can impact flood insurance rates.

	Higher regulatory standards in a community, such as freeboard or foundation requirements may result in lower premiums. CRS participation can reduce premiums throughout the community.

Visual 12: Compliance Enforcement: Section 1316

- Local community can request action from FEMA after exhausting all compliance enforcement options on a non-compliant structure.
- Section 1316 declarations are authorized by the National Flood Insurance Act of 1968.
- **FEMA issues a Section 1316 declaration**, denying flood insurance coverage for that property:
  - Stays with the property
  - Reduced market value
  - Risk of damage with no insurance compensation
  - Denial of most types of disaster assistance

Student Notes

Communities have a responsibility to enforce all adopted floodplain development regulations in their local floodplain ordinance, but sometimes, property owners don't play along.

FEMA can support a community's efforts to gain compliance, but only after the community has exhausted all compliance enforcement provisions in their adopted ordinance.

If all other compliance enforcement measures have failed, the community can formally request that FEMA issue a Section 1316 declaration on the non-compliant structure.

The authority for this comes from Section 1316 of the National Flood Insurance Act of 1968. It denies flood insurance coverage for any property that is found to be in violation of State or local floodplain laws, regulations, or ordinances.

There must be a clear and unequivocal declaration of the violation of laws or ordinances, a statement and citation of authority, and a notice of violation to the property owner for FEMA to deny coverage on the structure.

First, the property becomes ineligible for NFIP flood insurance. A 1316 declaration stays with the structure until it is fixed. It is not tied to the owner, and it is also not permanent. Once the structure is remedied and found to be fully compliant, the 1316 declaration can be rescinded.

	A structure with a 1316 declaration risks having a reduced market value, possible mortgage foreclosure, exposure to damages with no insurance compensation, and denial of most types of disaster assistance.

Visual 13: Structures with Multiple Flood Claims: Definitions

Repetitive Loss (RL) Structure

NFIP-insured structures with:

- Two or more flood losses of $1,000 each in any 10-year period since 1978

Severe Repetitive Loss (SRL) Structure

A building with historical flood-related losses of:

- Four or more losses of at least $5,000 each (building and/or contents) or
- Two separate losses exceeding the structure's market value

Student Notes

Multiple flood insurance claims may be a sign that the flood risk is higher for that structure, and it may need more attention.

A Repetitive Loss ("rep loss"/RL) structure is defined as an insured (or insurable) building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling ten-year period since 1978.

Severe Repetitive Loss structures are those structures with a high frequency of losses or a high value of claims.

The Severe Repetitive Loss group consists of any NFIP-insured structure that has had one of these two things occur since 1978:

- Four or more separate claim payments of more than $5,000 each (this includes building and contents payments) and cumulative claims that exceed $20,000.
- Two or more separate claim payments (for the building only) where the total of the payments exceeds the current value of the property.

Flood insurance premiums will increase for these structures. A Severe Repetitive Loss property will have higher insurance rates but may also qualify for mitigation funding options. Next, we'll compare RL and Substantial Damage.

Visual 14: Repetitive Loss and Substantial Damage (SD)

RL structures:

- NFIP-insured
- Two or more flood losses of $1,000 each in any 10-year period since 1978

Substantially Damaged by flood:

- Flood-damaged by a single event
- Costs 50% or more of the pre-flood market value to restore

Student Notes

Substantially Damaged structures must be treated as new construction when repair work begins, regardless of the cause of the damage.

Comparing the Substantial Damage (SD) definition with the Repetitive Loss definition, you can imagine how a structure may have multiple smaller-cost damages and be a RL structure instead of a Substantially Damaged structure.

One way a community can prevent future losses and break the damage-repair cycle is to adopt a higher standard in their floodplain ordinance that applies Substantial Damage requirements to Repetitive Loss buildings. Doing so may make additional mitigation funding available for NFIP policyholders, such as Increased Cost of Compliance (ICC) Coverage.

Visual 15: Knowledge Check 3

Scenario: In 2007, a homeowner's flood insurance claim was paid in the amount of $3,159 for flood damage on the first floor. In 2013, a second insurance claim was paid in the amount of $1,989 for a different flood event. The homeowner has an NFIP policy.

What type of loss structure would FEMA consider this building?

Student Notes

In 2007, a homeowner's flood insurance claim was paid in the amount of $3,159 for flood damage on the first floor. In 2013, a second insurance claim was paid in the amount of $1,989 for a different flood event. The homeowner has an NFIP policy.

What type of loss structure would FEMA consider this building?

Prepare to share your responses with the group.

Visual 16: Increased Cost of Compliance (ICC) Coverage

- Standard flood insurance policy benefit
- Helps pay to repair or rebuild a flood-damaged building
- Available for buildings declared **SD by the local official:**
  - **Up to $30,000** to help cover the cost of mitigation measures
- **Available for RL by flood buildings:**
  - Only if an adopted/enforced RL provision is in the local floodplain ordinance
  - Provision adds RL definition to the SD definition.

Student Notes

Increased Cost of Compliance, or ICC coverage, is part of most standard flood insurance policies under the NFIP.

If a policyholder qualifies to file an ICC claim, that ICC policy benefit helps to pay to repair or rebuild a flood-damaged building in compliance with current State or local floodplain management ordinances or laws.

ICC coverage provides up to $30,000 to help cover the cost of mitigation measures for NFIP-insured structures that are declared Substantially Damaged by the community official.

If a community is enforcing a higher standard in their floodplain management ordinance that treats Repetitive Loss the same as SD, then those NFIP-insured buildings also become eligible for ICC after a determination by the local official.

Visual 17: ICC Mitigation Solutions

- **F**loodproofing (non-residential properties only)
- **R**elocating to a new site
- **E**levating above the flood level in the community
- **D**emolishing the building

Student Notes

You can remember the mitigation methods eligible for ICC coverage using the acronym "F.R.E.D."

F: Floodproofing (only an option for non-residential buildings). For a building to be certified as floodproofed, it must be watertight below the Base Flood Elevation. The walls must be substantially impermeable to water and designed to resist the stresses imposed by floods.

R: Relocation. This relates to moving the entire building to another location (on the same lot or a different lot) on higher ground or usually outside the floodplain.

E: Elevation. This is the most common means of reducing a building's flood risk. It means raising the building to or above the BFE.

D: Demolition. This may be necessary in cases where the damage is too severe, the cost to mitigate is too high, or the building is in such poor condition that none of the other activities are feasible.

The Floodplain Administrator plays an important role in promoting ICC coverage and providing owners with documents relevant to their ICC claims. Substantial Damage determination letters from the local official are part of the process, as is the Certificate of Occupancy or Compliance once the work is finished. The full amount of the property owner's ICC claim is not paid until the community issues that certificate.

Visual 18: Knowledge Check 4

How much coverage under ICC is available to a policyholder to repair or rebuild a flood-damaged building to comply with their current local floodplain management ordinance?

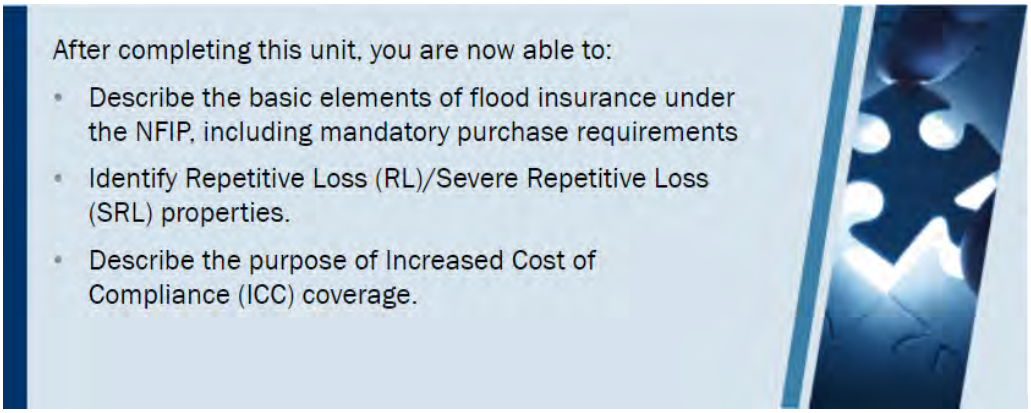
Student Notes

Answer the question:

How much coverage under ICC is available to a policyholder to repair or rebuild a flood-damaged building to comply with their current local floodplain management ordinance?

Prepare to share your responses with the group.

Visual 19: Unit 6 Summary



Student Notes

You have completed Unit 6. You are now able to:

- Describe the basic elements of flood insurance under the NFIP, including mandatory purchase requirements,
- Identify Repetitive Loss (RL)/Severe Repetitive Loss (SRL) properties, and
- Describe the purpose of Increased Cost of Compliance (ICC) Coverage.

Remember that under the NFIP, flood insurance is available to everyone in a participating community. This means that it's not just for those who live in high-risk floodplains.

Additional Information

Floodplain Administrators play an important role in this process, including:

- Raising awareness about flood insurance in the community,
- Tracking all map revisions and updates, and
- Ensuring all floodplain development is compliant.

Online Resources

Refer to NFIP publications, videos, and online tools that help stakeholders navigate the flood insurance process.

For more information about flood insurance, go to FEMA's Flood Insurance Outreach Publications website (https://www.fema.gov/flood-insurance/outreach-resources).

Specialists at the FEMA Mapping and Insurance eXchange (FMIX) Customer Care Center can answer general inquiries about mapping and flood insurance.

If you have questions, call 1-877-336-2627 (1-877-FEMA-MAP) or visit FEMA's Mapping and Insurance eXchange (https://www.floodmaps.fema.gov/fhm/fmx_main.html) to access live chat and email functions.

FEMA's Office of the Flood Insurance Advocate (OFIA) advocates for the fair treatment of policyholders and property owners.

You can contact the OFIA by visiting the Flood Insurance Advocate page at (https://www.fema.gov/flood-insurance/advocate). Select the Ask the Advocate button located near the bottom of the page.

Applying these Floodplain Administrator responsibilities will help improve the chances of better flood insurance policies in a community.

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Unit 7: Course Summary

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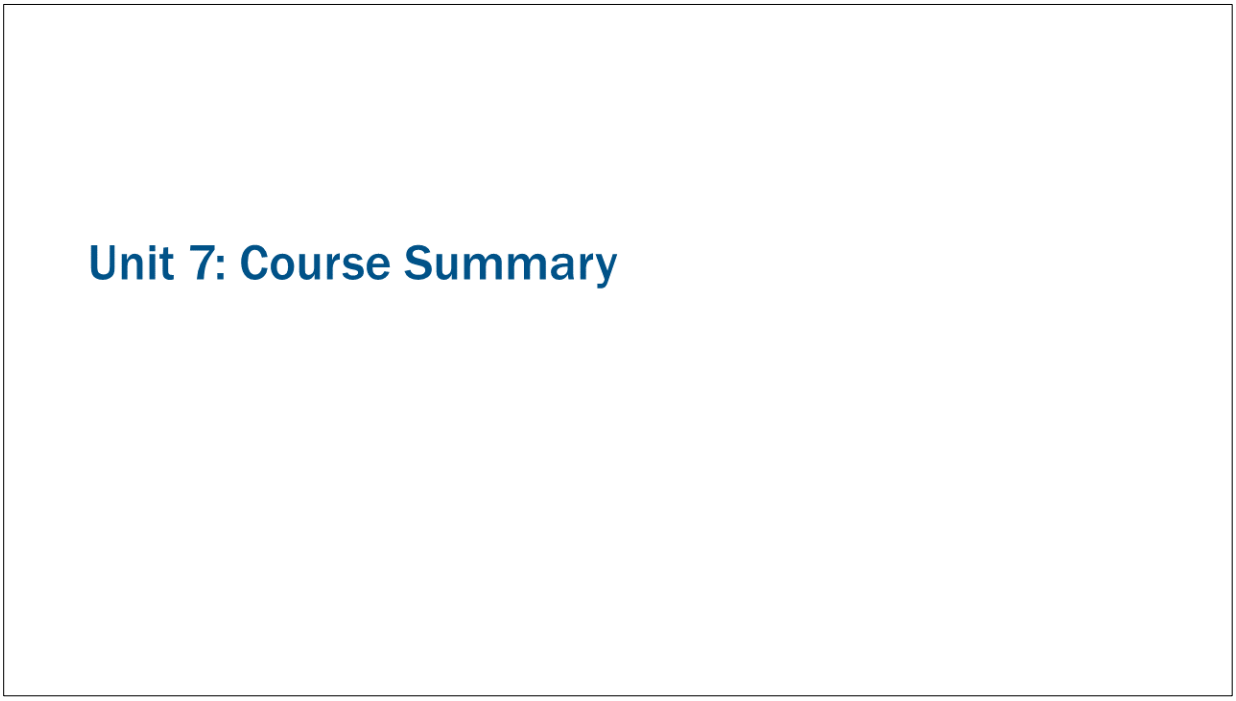
Visual 1: Unit 7: Course Summary



Student Notes

In this unit, we will review the course learning objectives; provide you with additional resources, training, and contact information; complete a capstone activity; and review the course learning objectives.

Visual 2: Unit 7 Objectives

After completing this unit, you should be able to:

- Identify additional resources, training, and contacts that support floodplain management.
- Identify the primary course learning objectives in an activity.

Student Notes

After completing this unit, you should be able to:

- Identify additional resources, training, and contacts that support floodplain management.
- Identify the primary course learning objectives in an activity.

Visual 3: Unit 7 Topics

- Resources, Training, and Contacts
- Activity 7.1: Capstone
- Course Objectives Summary
- Unit Summary

Student Notes

The topics we will present in this unit include:

- Resources, Training, and Contacts;
- Activity 7.1: Capstone; and
- Course Objectives Summary.
- Unit Summary

Visual 4: Resources, Training, and Contacts

Resources and Training

- NFIP 101: Introduction to Floodplain Management
- FEMA E/L 0273: Managing Floodplain Development Through the NFIP
- FEMA National Flood Insurance Technical Bulletins
- FEMA Flood Insurance Publications
- FEMA Flood Map Service Center (MSC)
- Association of State Floodplain Managers (ASFPM)

Contacts

- FEMA Regional Office
- State NFIP Coordinator
- State Floodplain Management Office

Student Notes

Consider these resources, training, and contacts to support their floodplain management goals and training needs.

Contacts can include your:

- FEMA Regional Office,
- State NFIP Coordinator,
- State Floodplain Management Office, and
- Local Floodplain Administrator.

Online Resources

Resources and Training:

- NFIP 101: Introduction to Floodplain Management (https://www.floods.org/training-center/online-training/asfpm-on-demand-learning/nfip101)
- FEMA E/L 0273: Managing Floodplain Development Through the NFIP (https://www.firstrespondertraining.gov/frts/npccatalog?catalog=EMI)
- FEMA National Flood Insurance Technical Bulletins (https://www.fema.gov/emergency-managers/risk-management/building-science/national-flood-insurance-technical-bulletins)
- FEMA Flood Insurance Publications (https://www.fema.gov/flood-insurance/outreach-resources/publications)
- Association of State Floodplain Managers (ASFPM) (https://www.floods.org/)
- FEMA Flood Map Servicing Center (MSC) (https://msc.fema.gov/portal/home)

Visual 5: Activity 7.1: Capstone

- Break into groups.
- Read the scenario.
- Review the capstone map.
- Respond to questions from the elected leadership's office.
- Prepare to share your responses.

Activity

Activity 7.1: Capstone

Purpose:

The purpose of this activity is to serve as a capstone to assess the participants' knowledge of the course objectives.

Time: 20 minutes

Materials: (Located in Student Manual)

- Activity 7.1 Scenario
- Figure 8. Capstone Map
- Activity 7.1 Capstone Activity Discussion Questions

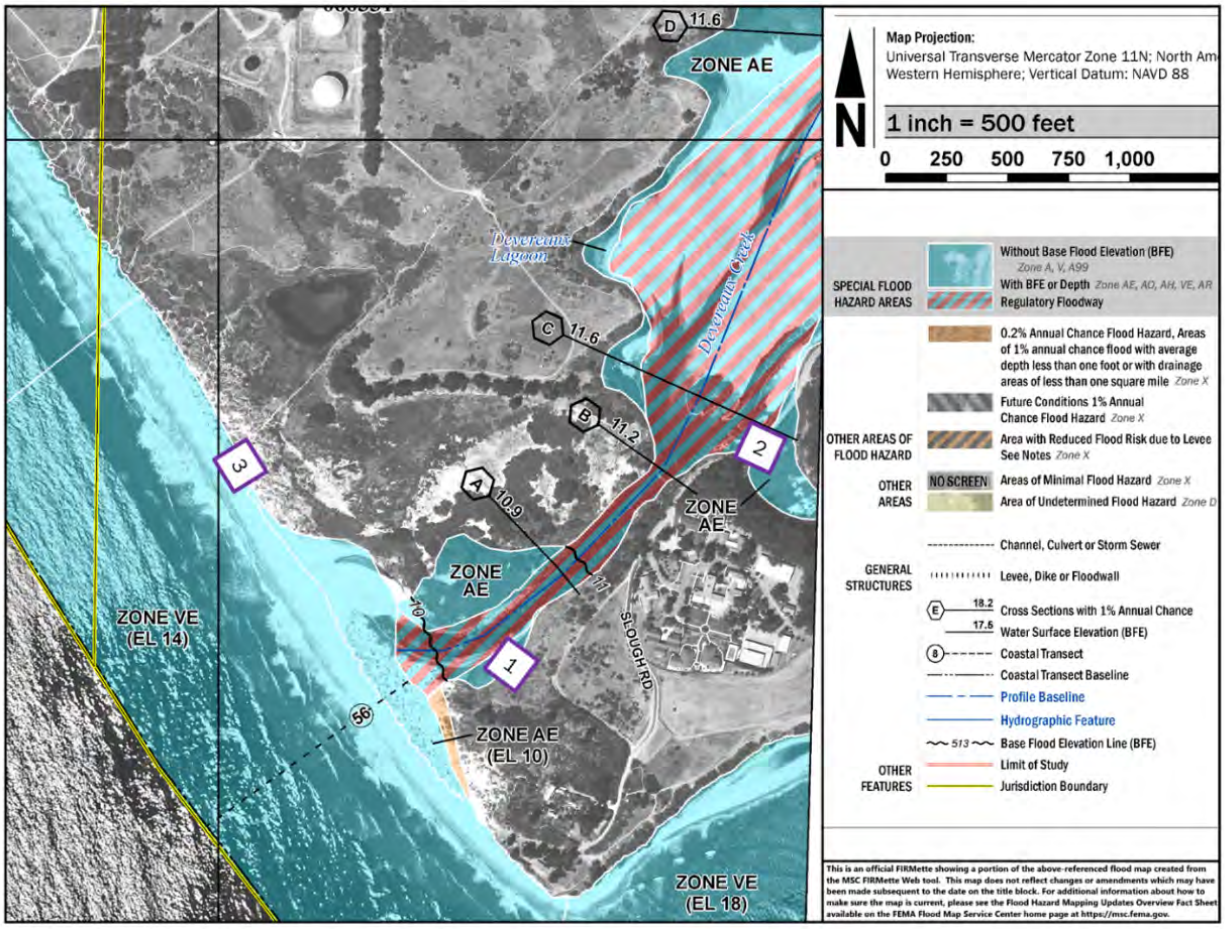
Instructions:

1. Break into groups of six people per team.
2. Read Activity 7.1 Scenario.
3. Refer to Figure 8. Capstone Map.
4. Answer the questions that relate to the Activity 7.1 Scenario.
5. Assign someone from your group to share your responses.
6. Prepare to share your responses.

ACTIVITY 7.1 SCENARIO

Scenario: You are a local Floodplain Administrator. There is newly elected leadership in your community. Their office has received some questions from the public about potential development projects and the NFIP. The elected leadership's office has emailed you and would like you to respond to the public's questions.

FIGURE 8. CAPSTONE MAP



ACTIVITY 7.1 CAPSTONE ACTIVITY DISCUSSION QUESTIONS

- **Question 1:** What are the roles of each level of government?

- **Question 2:** How does a Floodplain Administrator provide development oversight in the Special Flood Hazard Area (SFHA) and ensure NFIP compliance?

- **Question 3** When is flood insurance mandatory?

Site 1 on Figure 8 Capstone Map

- **Question 4**: What zone is Site 1 located in?

- **Question 5** What does the shading at this site indicate?

- **Question 6** Fill in the blank for the steps that determine the BFE at Site 1.
  - Determine the property's _____.
  - Note the _____ of the flooding source.
  - Determine the _____ of flow.
  - Find the most _____ point of the proposed development.
  - Measure along the _____ from the new cross section to the nearest lettered cross section on the FIRM.
  - Find the BFE to the nearest 0.1 ft using the _____.

Site 2 on Figure 8 Capstone Map

- **Question 7:** What portion(s) of 44 CFR 60.3(a–e) are relevant to Site 2?

- **Question 8:** The structure at Site 2 cannot encroach into the floodway unless _____ demonstrate(s) that the proposed encroachment would not result in any increase in flood levels during the base flood discharge.

Site 3 on Figure 8 Capstone Map

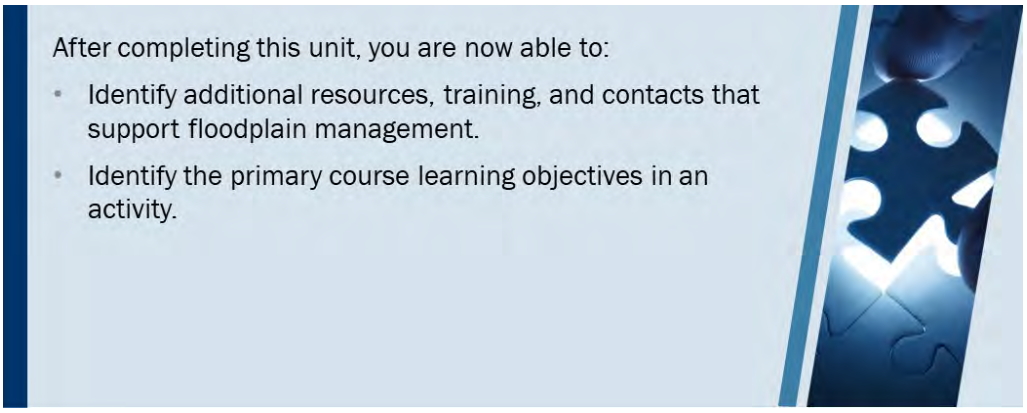
- **Question 9:** What is the Base Flood Elevation (BFE) at this site, as indicated on the FIRM?

- **Question 10:** What source should be checked for more detailed data?

- **Question 11:** What portion(s) of 44 CFR 60.3(a–e) are relevant to this site?

- **Question 12:** A proposed structure at Site 3 must have which portion of the building elevated to or above the BFE?

Visual 6: Unit 7 Summary



Student Notes

You have completed Unit 7. You are now able to

- Identify additional resources, training, and contacts that support floodplain management.
- Identify the primary course learning objectives in an activity.

Visual 7: Course Objectives Summary

After completing this course, you are now able to:

- Explain the roles and responsibilities of Federal, State, and local agencies in the NFIP.
- Describe how a Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) are used to determine the flood zone and Base Flood Elevation (BFE).
- Identify the minimum NFIP regulations applicable to floodplain management.
- Explain the Floodplain Administrator's responsibilities in providing oversight and ensuring compliance.
- Describe the basic concepts of flood insurance under the NFIP.
- Identify additional resources, training, and contacts that support floodplain management.

Student Notes

After completing this course, you are now able to:

- Explain the roles and responsibilities of Federal, State, and local agencies in the NFIP;
- Describe how a Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM) are used to determine the flood zone and Base Flood Elevation (BFE);
- Identify the minimum NFIP regulations applicable to floodplain management;
- Explain the Floodplain Administrator's responsibilities in providing oversight and ensuring compliance;
- Describe the basic concepts of flood insurance under the NFIP; and
- Identify additional resources, training, and contacts that support floodplain management.

Visual 8: Course Completion

Student Notes

Congratulations, you have completed this course. Feel free to meet with your instructors if you have additional questions about this training.