

SECTION 25: CFM LEARNING CHECK

One purpose of this desk reference is to prepare floodplain administrators for the Illinois Association for Floodplain and Stormwater Management's Floodplain Manager Certification Exam. If you pass the learning checks in this section successfully, you should be ready for the Certification Exam. Contact the Association's office (see Section 24) for more information on certification.

25.1. LEARNING CHECK

25.1.1. Section 1

- 1-1. This section describes a number of types of floods. Which types occur in your community?

- 1-2. Which is larger, a watershed or a basin?

- 1-3. What are the two most common types of flooding in Illinois?

- 1-4. Which type of flooding has accounted for the most flood-related deaths in recent history?

- 1-5. What is a “meander?”

- 1-6. What areas are conducive to flash flooding?

- 1-7. What is “ponding?”

- 1-8. What does a lake’s “fetch” influence?

- 1-9. What are the three most common causes of dam failure?

1-10. What three hazards are presented by ice jams?

1-11. Are plants and animals the only beneficiaries of the “natural and beneficial functions” of floodplains?

1-12. List at least three benefits that floodplains, in a relatively undisturbed condition, actually contribute or could contribute to your community.

25.1.2. Section 2

2-1. What two problems result from floodplain development?

2-2. What does watershed development do to flooding?

2-3. What are some of the safety hazards that accompany floods?

- 2-4. What are some of the health hazards that accompany floods?
- 2-5. What are the five main causes of flood damage?
- 2-6. Hydrodynamic forces are caused by _____ water and hydrostatic forces are caused by _____ water.
- 2-7. Standing water as little as ____ feet deep can collapse the walls of a frame house.
- 2-8. List three materials or household items that are particularly susceptible to flood damage by soaking.

- 3-6. What are some of the floodplain management regulatory authorities of the Illinois Department of Natural Resources' Office of Water Resources?
- 3-7. If the Lake County Stormwater Management Commission has a floodplain regulatory standard that is more restrictive than the standard of a city in the County, which requirement takes precedence?
- 3-8. What professional associations provide training and newsletters for floodplain managers?
- 3-9. What are the objectives of the NFIP?
- 3-10. Where does most of the money come from to pay the expenses of the NFIP?
- 3-11. How many communities currently participate in the NFIP in the US?
- 3-12. How many communities currently participate in the NFIP in Illinois?

- 3-13. What are the three basic parts of the NFIP?
- 3-14. Who uses NFIP maps?
- 3-15. What is a “pre-FIRM” building?
- 3-16. What should happen to buildings in NFIP communities over time?
- 3-17. Is there any relation between how a community regulates new construction and flood insurance rates?
- 3-18. What governmental bodies in Illinois are considered to be “communities” by the NFIP?
- 3-19. What office is the state NFIP Coordinating Agency for Illinois?
- 3-20. Which FEMA office works directly with Illinois communities?

- 3-21. List two things your community committed itself to when it joined the NFIP.
- 3-22. Insurance companies set flood insurance rates and coverage rules. True or false?
- 3-23. What compliance actions can FEMA take if a community is not properly enforcing its floodplain management regulations?
- 3-24. What are the sanctions if a community does not participate in the NFIP?

3-25. What are the sanctions if a community is suspended from the NFIP?

25.1.4. Section 4

4-1. FEMA conducts flood studies in order to determine _____ and _____.

4-2. The base flood is a flood that has a _____ of occurring in any year.

4-3. The base flood is also called the _____ - year flood.

4-4. Answer the following questions (circle T for True and F for False):

A 100-year flood will occur only once every 100 years. T F

A 100-year flood could occur two times in one year. T F

The 100-year flood might not occur in a 200 year period. T F

The base flood could occur in two consecutive years in a row. T F

4-5. On NFIP maps, the 100-year floodplain is called the _____
_____ Area.

4-6. BFE is the acronym for _____ .

4-7. What are the three components of a Flood Insurance Study?

- 4-8. What agency decides whether a flood study can be used for regulatory purposes?
- 4-9. For purposes of a riverine flood study, hydrology is the study of a _____ behavior, and hydraulics is the study of a _____ behavior.
- 4-10. The rate at which runoff flows downstream is called the flood _____ .
- 4-11. To locate the true elevations at a site, surveyors have established _____ marks also known as _____ .
- 4-12. What is the datum used for your flood insurance study, FIRM and profiles?
- 4-13. Cross sections describe the _____ of the floodplain.
- 4-14. A hydraulic study uses the hydrology, cross section information, and stream characteristics to determine the flood _____ .
- 4-15. Flood profiles are developed by plotting the flood elevations at the _____ and connecting the plotted points.
- 4-16. Flood profiles are used to determine what?
- 4-17. How is a bridge shown on a profile?

- 4-18. To make a floodplain map, the base flood elevations are plotted on a _____ map or a _____ map.
- 4-19. The floodway is defined as the stream channel and _____ .
- 4-20. A floodway analysis conducted to the State of Illinois standard allows the fringe to be obstructed until the base flood level is increased by how much?
- 4-21. What differentiates shallow flooding from riverine flooding?
- 4-22. Instead of using a base flood elevation, some shallow flooding areas are defined using a base flood _____ .
- 4-23. Flood studies that do not identify BFEs are called _____ Studies.
- 4-24. An approximate study shows the _____ but does not show the base flood _____ .

25.1.5. Section 5

- 5-1. The maps published with an FIS are the _____ and the _____.
- 5-2. Is your community's FIRM a flat or Z-fold map?
- 5-3. How many panels does your FIRM have?

- 5-4. How many digits are there in an NFIP community number?
- 5-5. What is your community's NFIP number?
- 5-6. What is the map scale of your FIRM?
- 5-7. What is an AO Zone?
- 5-8. Using the Pontiac FIRM, what is the approximate BFE for the Vermilion River near Oak Street?
- 5-9. Is the BFE on a FIRM as accurate as the BFE taken from a profile?
- 5-10. When was Pontiac's FIRM first revised?
- 5-11. Using Pontiac's Floodway Map, what cross section is closest to Mill Street?
- 5-12. How is a floodway shown on the Flood Boundary and Floodway Map?
- 5-13. An area on Pontiac's Floodway Map is bordered by Henry, Moulton, Court and Oak Streets. There is no zone designation, but it is shaded. What type of floodplain is this area?

- 5-14. The two major changes in the Post-1985 format FIRMs are:
- 5-15. How is a floodway shown on the Post-1985 format FIRM?
- 5-16. A Zone C on an old format FIRM is shown as an unshaded Zone ____ on a Post-1985 format FIRM.
- 5-17. What was the problem with the way the floodway was shown on the Pre-1985 format Flood Boundary and Floodway Maps?
- 5-18. Where can you find the most accurate source for the base flood elevation for a lake floodplain?
- 5-19. In Figure 5-14, why do the AH Zones have a much lower base flood elevation than the A20 Zone?
- 5-20. What communities' floodplains are shown on a countywide FIRM?
- 5-21. In Figure 5-16, why is Lake County's number listed as 170357 when the Lake County FIRM's Map Number is 17097C?

5-22. Why would FEMA turn a Flood Hazard Boundary Map into a FIRM?

25.1.6. Section 6

6-1. What is the base flood discharge on the Vermilion River at Pontiac's downstream corporate limits?

6-2. What is the 10-year peak discharge for the Vermilion River at Lowell?

6-3. Why is the 10-year discharge at Lowell larger than the 100-year discharge in Pontiac?

6-4. How many cross sections were surveyed for the Vermilion River in Pontiac?

6-5. What is the width of the floodway for the Vermilion River just downstream of Mill Street?

6-6. What is the best source of base flood elevation data for regulatory purposes for a lake floodplain?

- 6-7. The FIRM shows the BFE between Harward and Vermilion Streets to be 639 feet. You want to know the regulatory BFE at a point half way between those two streets. Using the Floodway Data Table, what is a more accurate figure for the BFE?
- 6-8. How many feet does one inch on Pontiac's FIRM represent?
- 6-9. How many feet does one inch on Pontiac's Floodway Map represent?
- 6-10. Using the Floodway Map and the engineer's scale, what is the width of the floodway at cross section J?
- 6-11. Using the Floodway Data Table, what is the floodway width at cross section G on the Vermilion River?
- 6-12. Using the Floodway Map and an engineer's scale, what is the distance between cross sections C and D on the Vermilion River?
- 6-13. What is the distance between cross sections C and D on the Vermilion River according to the Floodway Data Table?
- 6-14. Using the FIRM, what is the approximate BFE at the downstream side of the Ladd Street Bridge?
- 6-15. RM 6 is on Mill Street, north of the Vermilion River. How far is RM 6 from the closest SFHA?
- 6-16. What is the base flood elevation at RM 6?

- 6-17. A vacant lot between sites G and H was recently purchased. The new owners ask for your help in locating the best spot to build a new house. The FIRM shows the entire property in the SFHA. You are handy with a transit, so you survey the proposed building site during a visit to the property. You find that the building site is above the BFE. The owners want you to inform their bank so they won't have to buy flood insurance. What do you say?
- 6-18. What is the base flood elevation at cross section G at the downstream side of the Vermilion Street bridge?
- Using the Flood Profiles in the report?
 - Using the Floodway Data Table?
 - If these numbers are different, which BFE should you use?
- 6-19. Two "T" symbols are plotted at 8,300 and 8,500 feet above Airport Road on the Vermilion River profile 01P. What do these symbols represent?
- 6-20. Is Route 66 upstream or downstream from Ladd Street?
- 6-21. Site J is on the east side of Main Street (see the street map, page 23-7). Using the flood profile, determine the BFE for the Vermilion River at Site J.
- 6-22. How far is the Vermilion Street bridge from cross section H on the Vermilion River?

- 6-23. A developer proposes to place a structure at Site B, 325 feet downstream from the southbound Route 66 bridge on the Vermilion River. Using the Flood Profiles, tell the developer how high the structure would have to be elevated to be protected to the base flood level and to the 500-year flood level.

25.1.7. Section 7

- 7-1. List three reasons why a FIRM should be changed.
- 7-2. Mrs. Murphy says she has a survey that shows that her house is higher than the flood level. What type of map change should she request?
- 7-3. For which locations on her property will Mrs. Murphy need elevation data?
- 7-4. Scrapem Construction wants to get a bank loan to develop an area. Mr. Scrapem's plans are to fill some low spots and get all the building sites out of the floodplain. His banker will not grant a loan for the project unless she is reassured that the FIRM will be changed when the project is finished. What type of map change should Mr. Scrapem request?

- 7-5. Scrapem Construction's project is now finished and individual homes have been built on the lots. Are the homeowners now exempt from the mandatory flood insurance purchase requirement?
- 7-6. A developer of a single lot prepared a flood study to produce a BFE in an unnumbered A Zone. How can he get the FIRM to reflect this study?
- 7-7. What papers are needed to request a LOMA for a single lot?
- 7-8. What FEMA form is submitted to request a Conditional Letter of Map Revision (CLOMR-F) not based on fill?
- 7-9. Who has to approve a request to revise a floodway?
- 7-10. What office is the primary repository for your FIS, FIRM, and/or Floodway Map?
- 7-11. How does that office keep track of revisions, amendments and other changes to the maps?
- 7-12. Is there a master list of all revisions, amendments and other changes to your community's maps?
- 7-13. How do you get more copies of your FIRM?

- 8-8. Can a floodplain regulation ever prohibit new buildings from a portion of the floodplain?
- 8-9. What publication lists the NFIP requirements for communities?
- 8-10. In what part of the Code of Federal Regulations would you find the definition for “development?”
- 8-11. Does your ordinance comply with the latest NFIP requirements?
- 8-12. Based on the flood data provided with your FIRM, what type of community is yours?
60.3(____).
- 8-13. If your community follows the requirements of 44 CFR 60.3(d), does it have to worry about what’s in 44 CFR 60.3(b)?
- 8-14. If a State requirement is more restrictive than the Federal NFIP requirements, which set of rules must a community follow?
- 8-15. What NFIP program recognizes local regulatory standards that are more restrictive than the minimum NFIP regulations?

8-16. What two approaches are used by IDNR to manage floodplain development?

25.1.9. Section 9

9-1. What is “Basic rule #1” for using maps and data?

9-2. A building official finds it easier to read an old flood map prepared on an aerial photograph by the Corps of Engineers. He doesn't want to use the current FIRM because it doesn't show all the buildings and features that the photograph does. Can he make permit decisions based on the Corps map instead of the FIRM?

9-3. What map do you use if recently annexed areas do not show up on your community's FIRM?

9-4. If you find information that shows the ground to be higher than the BFE, can a bank use that data when determining whether a flood insurance policy must be purchased?

9-5. A developer receives a CLOMR that states that when the project is completed, his site will be out of the floodplain. He submits applications for building permits for buildings with basements below the BFE. What do you tell him?

- 9-6. A restudy was performed on the Vermilion River. The preliminary study will not be final for another five months. It shows a new base flood elevation at a site that is two feet higher than the BFE in your current FIS. Which one do you use to determine the flood protection level for a new home at that site?
- 9-7. A building site is in an approximate A Zone in a downstate community. A developer wants to build a small commercial building on a 3 acre site. Where do you get a base flood elevation for this site?
- 9-8. A developer upstream of the same site wants to build a 40 acre subdivision. You need a base flood elevation before you review the plans. What options do you tell the developer he has?
- 9-9. Joe Hunter wants to build a small hunting cabin in an approximate A Zone in southern Illinois. It will be the only building within two miles. There are no known sources of a base flood elevation. The cabin will cost less than \$10,000 and he does not want to pay \$2,000 for an engineering study to develop a BFE. What can you do to make sure the property is protected from flooding?

9-10. Will a developer in an approximate A Zone in northeastern Illinois have to prepare a detailed study to calculate base flood elevations if the development is:

4 acres?

60 lots?

Reserving all the SFHA as open space?

25.1.10. Section 10

10-1. What is basic rule #2 on what needs a permit in the floodplain?

10-2. Define “development” as the term is used in your ordinance.

10-3. Do the following activities in the SFHA need a development permit from your community?

Placing fill in a vacant lot

Dredging a creek to make it deeper to reduce flood levels

Storage of road salt by your public works department

Storage of road salt by the Illinois Department of Transportation

Regrading the riverfront in a city park

Erecting an 8' x 8' storage shed in a back yard

10-4. If a subdivider makes sure that all building sites are above the BFE, does he need to do anything more to meet floodplain requirements?

10-5. How can you protect a sewer system from flooding?

10-6. Does your ordinance prohibit storing large amounts of chlorine in a Special Flood Hazard Area?

10-7. What other departments in your community need to review a potential floodplain development permit?

10-8. What other local governments need to review a potential floodplain development permit in your community?

10-9. What State and Federal agencies should a developer contact before you issue a permit for the following projects?

A beach improvement project on Lake Michigan

Tearing down a 150-year old hotel

Filling in a wetland

Dredging in the Illinois River

Construction of a small dam

10-10. Where does the developer send the three copies of the joint permit application form for a project in Madison County?

25.1.11. Section 11

11-1. What is Basic rule #3 as it relates to the floodway concept?

11-2. Is the floodway concept designed to prohibit development in floodways?

11-3. What agencies must issue a permit for a new subdivision in the floodway?

11-4. What agencies must issue a permit for a new subdivision in a floodplain where there is no mapped floodway?

11-5. Where does IDNR have floodway permit jurisdiction?

11-6. What form is used to apply for an IDNR floodway permit?

11-7. Which of the following projects are exempt from the IDNR floodway permit requirement?

Clearing brush along the channel bank

A boat dock on a private lake

A footbridge

A barn restricted to agricultural use

- 11-8. What's the difference between a Statewide Permit and a formal permit?
- 11-9. Does your community have to apply to IDNR for a permit to erect light poles and playground equipment in a park in a floodway?
- 11-10. Does a homeowner have to apply for IDNR for a permit to build a room addition to a house in a floodway?
- 11-11. A developer wants to move the floodway and the stream channel to provide a larger developable area on his property. What agencies must be advised of this project before it is approved?
- 11-12. What types of development are allowed in the floodway in northeastern Illinois?
- 11-13. Which of the following are deemed appropriate uses in the floodway in northeastern Illinois?
- A flood control dam
 - An industrial park
 - A subdivision limited to single family homes
 - A detached garage
 - A highway bridge
 - Storage of highway construction materials

11-14. If your community is in northeastern Illinois and it wanted to develop an athletic field in the floodway, could it be done without applying to IDNR for a floodway permit?

11-15. Where is compensatory storage required?

11-16. How does compensatory storage work?

25.1.12. Section 12

12-1. What does Basic rule #4 say about new buildings in the floodplain?

12-2. The rules for protecting new buildings apply to which of the following?

Single family homes

Gas storage tanks

Open carports

Mobile homes

Substantial improvements

Sheds valued at \$500

12-3. What are the benefits of requiring freeboard?

- 12-4. Does your ordinance require freeboard? If so, how much?
- 12-5. Does your ordinance have any special requirements for buildings built on fill?
- 12-6. Where would elevation on piles or columns be preferred?
- 12-7. If a residence is elevated above the BFE in an AE Zone, where do you measure how high the building is?
- 12-8. What can be allowed under the lowest floor of an elevated building?
- 12-9. Mr. Jones shows you plans for a house elevated on a concrete block crawlspace. The area of the crawlspace will be 1,750 square feet.
- a. How many standard 8" x 16" openings will be needed?
 - b. How high can they be above ground level?
 - c. Can Mr. Jones put his hot water heater in the crawlspace?
- 12-10. Mrs. Smith is elevating a house in the AE Zone 8' above grade. Is there anything special you should look for during your inspections of the lower area?

- 12-11. What three things do you need to check for to ensure that a building is floodproofed?
- 12-12. Can a new home in the flood fringe be floodproofed?
- 12-13. How high should a new residential building be elevated in an AO Zone?
- 12-14. What's the NFIP definition of "basement?"
- 12-15. An area under a multi-family building is open, reserved for parking and not a walkout. The floor is 3 feet below grade. Is this considered a basement?
- 12-16. Scrapem Construction wants to build a "Bi-level" house where the lowest floor is three feet below grade. The lowest floor has large windows and includes three bedrooms and a bathroom. Because it is habitable space, Mr. Scrapem does not consider this a "basement." Does your ordinance consider this a "basement?"
- 12-17. If a building is proposed to be located in a riverine floodplain with flood velocities of 8-10 feet per second, what should you ask the builder to provide to assure you that the building won't get washed away during a flood?
- 12-18. The builder of a house to be elevated on concrete walls wants to use wood for the stairway. He is concerned that wood will swell and warp if it gets wet during a flood. Can a portion of the house below the BFE be built of wood?

12-19. A homeowner wants to build a detached garage, but does not want to elevate it in order to minimize the amount of fill and to make it easier to drive into the garage. Can this be done?

12-20. How is a manufactured home outside of a manufactured housing park treated differently from a conventional “stick built” home?

12-21. How is a 600 square foot motor home that is permanently attached to a reinforced block wall foundation treated differently from a manufactured home?

25.1.13. Section 13

13-1. What is the preferred flood protection approach for critical facilities?

13-2. Where can you find example ordinance language for regulating critical facilities?

13-3. Name two regulatory approaches that can be used to encourage building sites completely out of the floodplain?

13-4. What’s the benefit of a setback requirement?

13-5. Does your ordinance prohibit mobile homes in the floodway?

- 13-6. Does your ordinance have special requirements for building foundations?
- 13-7. Name two types of floodprone areas where many communities prohibit development.
- 13-8. What's the advantage of requiring dry land access if buildings are protected from flooding?
- 13-9. How could a developer of an 80-acre subdivision reduce the amount of runoff that leaves the property during a storm?
- 13-10. Are there any dams upstream from your community that pose a potential threat if they failed?
- 13-11. Is your community subject to ice jam flooding?
- 13-12. Do Federal agencies have to meet any floodplain development rules similar to the NFIP requirements?
- 13-13. Since there are several Federal agencies that regulate wetland development, protect rare and endangered species, etc., is there any need for your community to consider any additional environmental protection measures?

13-14. Name three types of regulations that can protect natural resources in your floodplains.

25.1.14. Section 14

14-1. What's the most important duty of the person responsible for administering your community's floodplain regulations?

14-2. True or false: The administrator's job starts when a person applies for a permit to develop in the floodplain.

14-3. Is the administrator of your community's ordinance responsible for making sure a person gets a State permit?

14-4. Does your community have any responsibility for making sure the flood maps are accurate?

14-5. What are the minimum requirements to be a floodplain management ordinance administrator in Illinois?

14-6. Where can a person receive training on administering a floodplain management ordinance?

14-7. For which of the following activities does your community require a floodplain development permit?

Repairing a flooded home

Moving fill into a yard

Erecting a fence

Placing rip rap along a stream channel

14-8. Does your community's public works director know that he needs to make sure that all new and replacement bridges must meet your ordinance's requirements?

14-9. What six items need to be checked to ensure an application for a permit is complete?

14-10. Jack Scrapem wants to build a house in the floodplain. You tell him his permit application needs to include a building plan. What does he need to show on the building plan?

14-11. What departments or offices in your community should review a permit application before it is approved?

14-12. Match the list of proposed projects with the documents that will be needed before you can issue a floodplain development permit.

PROPOSED PROJECTS

New shopping center parking lot in the floodway

New house in the fringe

Reconstruction of a state highway bridge

New business in an unnumbered A Zone

DOCUMENTS

a. Floodplain development permit application

b. Site and/or building plans

c. IDNR permit

d. Floodproofing Certificate

e. Elevation Certificate

f. Base flood elevation and floodway study

14-13. During your permit review, you find that the applicant's site plan shows that the ground is currently higher than the BFE. Should you continue to treat this as a floodplain development permit?

14-14. What's the best way to make sure the applicant's engineering certifications are sufficient?

14-15. Jack Scrapem's building plans show that his project will not comply with your ordinance. You deny his permit application. He wants to know what recourses he has. What do you tell him?

14-16. What are the NFIP procedures for submitting an appeal to your Board of Appeals?

14-17. Mr. Wilson wants to build a new house at grade instead of to the FPE, six feet above grade. You tell him he will need a variance. Which of the following are good and sufficient causes for granting him a variance?

-An elevated house will look bad.

-Mrs. Wilson is old and has trouble with stairs.

-It will cost more money than the builder can afford.

-The builder has a contract with the bank to have it completed and sold in four months and changing plans will prevent meeting that deadline.

-No one has ever seen a flood on that site.

14-18. Can your community grant a variance to allow a project in the floodway that will cause a ½ foot increase in flood heights?

14-19. Name two situations where special exceptions may be granted for a variance.

14-20. Mr. Wilson is applying for a variance to build his house below the FPE. What two things must you tell him (in writing)?

25.1.15. Section 15

15-1. When is the best time to make the first site inspection?

15-2. What should you check for during the first site inspection?

15-3. When should you make the second inspection of a building on a slab foundation?

15-4. When should you make the second inspection for a building to be elevated on a crawlspace?

- 15-5. What are your two options for making sure a new building is high enough before you allow construction to proceed after the second inspection?
- 15-6. When is the best time to see if a crawlspace has adequate openings?
- 15-7. What should you check for during the third inspection?
- 15-8. If the third inspection reveals that the builder of an apartment house has made a change to the structure that results in a major violation of your floodplain regulations, what can you do?
- 15-9. If a project meets all of the ordinance requirements and is built according to the approved plans, what does the owner get after the final inspection?
- 15-10. If a FEMA staff person finds a project in violation of the FEMA NFIP requirements in your community, who is responsible for correcting the violation?

15-11. You discover that Mrs. Murphy has ordered five truckloads of fill to raise her back yard in the floodway. She never asked for a permit. What is the recommended first step to dealing with this situation?

15-12. If Mrs. Murphy does not apply for a permit, what is the next step you should take?

15-13. What legal recourses do you and your attorney have to bring a violation into compliance?

15-14. How can Section 1316 help a local permit official faced with a subdivider who refuses to build houses in compliance with the floodplain regulations?

15-15. If you can get flood insurance denied for a building in violation of your ordinance, do you need to do any more enforcement work?

15-16. Why should you keep permit records?

15-17. What records should be kept in your permit file?

15-18. Does your ordinance require that building elevation records be kept on the FEMA Elevation Certificate?

15-19. Who is responsible for ensuring that the elevation certificate is completed correctly?

15-20. What are the two situations when a record of an engineer's or surveyor's certification is needed?

15-21. A property has been annexed from the county into your city, but the FIRM has not been revised to reflect the annexation and a countywide FIRM is not yet available as the regulatory map. What is the NFIP community number that is recorded in Item B1, Section B of the FEMA Elevation Certificate?

15-22. Mr. Murphy is building a house on a slab on compacted fill. What diagram number is entered in Item C2 of the FEMA Elevation Certificate?

15-23. Mr. McGillicuddy is surveying a building on a crawlspace in an AE Zone. He is completing a FEMA Elevation Certificate and asks you what floor level he is supposed to survey. What do you tell him?

15-24. Can a building official who is not an engineer, architect or surveyor sign Section D?

15-25. The Village of East Bottomland, Illinois, has a large AO Zone. What is needed to complete a FEMA Elevation Certificate for new buildings in the AO Zone?

25.1.16. Section 16

16-1. What is the basic rule on improvements and repairs to existing buildings in the floodplain?

16-2. Mrs. Murphy got a permit two months ago to remodel her living room and kitchen. Now she wants a permit to remodel three bedrooms and two bathrooms. Should you check each of these separately to determine if each project is a substantial improvement?

16-3. What is the substantial improvement formula?

16-4. Which of the following items must be included when calculating the cost of an improvement project?

Attached deck

Plumbing

Permit fees

Contractor's overhead and profit

Architect's plans

Landscaping

Built-in bookcases

16-5. What factors are considered when determining market value?

16-6. What are three good sources for obtaining the market value of a house?

16-7. Mr. Jones proposes a \$50,000 addition to his \$80,000 home in the floodplain. Is this a substantial improvement?

16-8. If Mr. Jones' project will be a substantial improvement, what do you need to check to see if the whole house has to be elevated or just the addition?

16-9. How does your ordinance treat increases in the first floor greater than 20%?

16-10. What is the formula for determining substantial damage?

16-11. What is the basic rule on calculating the cost of the damage?

16-12. A tornado swept through town and substantially damaged 25 buildings in the floodplain. How can you help the property owners comply with the floodplain ordinance's substantial damage regulations?

16-13. Mr. Johnson prepared a list of everything he has to do to repair his flooded home. Which of the following items are counted toward the cost of repairs when determining substantial damage? What is the dollar amount that should be counted?

Clearing broken trees and debris away from the house (\$2,500)

Replacing the warped flooring (\$3,000)

New doors (\$1,000) to replace old ones (worth \$500)

Replacing the old kitchen cabinets (valued at \$5,000) with custom hardwood cabinets valued at \$15,000.

New wall to wall carpeting (\$1,800)

New furniture (\$12,000)

New wiring (\$2,000) to bring the building up to current code (This is a standard requirement of the community. The building was not cited as having a code violation.)

Permit fee (\$500)

Clean out and test the furnace (done free as a public service by the utility company, but otherwise worth \$250 if done by a private contractor)

New bushes and replacement fence (\$1,500)

16-14. What's the best way to determine if a building is "historic" and eligible for exemption from the substantial improvement requirement?

25.1.17. Section 17

17-1. Where does a property owner go to buy a flood insurance policy?

17-2. What are the two types of flood insurance coverage available?

- 17-3. Can I buy a flood insurance policy with building coverage on the following?
- An apartment building
 - A septic tank
 - An open sided park pavilion
 - A motor home
 - A boat dock
 - A mobile home on a foundation in a mobile home park
 - A flower garden
- 17-4. Can I get flood insurance coverage for furniture in a basement?
- 17-5. What is the maximum amount of contents coverage I can get for a single family dwelling?
- 17-6. Can I wait and buy a flood insurance policy after I hear the National Weather Service issue a flood warning?
- 17-7. Which of the following programs is likely to require a flood insurance policy as a condition of financial assistance?
- Department of Veterans Affairs mortgage loan guarantees
 - HUD Community Development Block Grants
 - Federal disaster assistance
 - Home improvement loans from a bank participating in FDIC
 - Mortgage from a federal credit union
- 17-8. Can a bank require flood insurance for a property outside the SFHA shown on the latest FIRM?

- 17-9. Does your local government have flood insurance coverage on the buildings it owns in the floodplain?
- 17-10. Do I need an elevation certificate to purchase a flood insurance policy on a pre-FIRM building?
- 17-11. What are the two key factors in rating post-FIRM buildings?
- 17-12. Is there much of a cost savings on flood insurance if the lowest floor of a post-FIRM building is one foot above the BFE instead of at the BFE?
- 17-13. How do I know how much a flood insurance policy will cost for a post-FIRM building with the lowest floor four feet below the BFE?
- 17-14. Can I get a good flood insurance rate on a building in an AE Zone that is floodproofed to the base flood elevation?
- 17-15. What's the best way to get a good flood insurance rate for a new building in an approximate A Zone?

25.1.18. Section 18

- 18-1. What is the basic prerequisite that a community must meet before it can apply to join the Community Rating System?

- 18-2. Who administers the CRS on behalf of FEMA?

- 18-3. How much does it cost to join the CRS?

- 18-4. What are some of the benefits of joining the Community Rating System?

- 18-5. What four general types of floodplain management activities are recognized by the CRS?

- 18-6. Can a city get CRS credit for activities implemented by a county agency within the city?

- 18-7. How many points are needed for a community to receive a CRS premium reduction?

18-8. If a community decides to join the CRS, are any of the activities mandatory?

18-9. Does your community implement any of the 18 activities credited by the CRS?

18-10. Can non-CRS communities obtain and benefit from CRS publications?

25.1.19. Section 19

19-1. Who is responsible for disaster and emergency response activities in your community?

19-2. Is there a written emergency response plan that identifies your department's duties during and after a disaster?

19-3. What are the objectives of a building condition survey?

- 19-4. What are the three categories of building condition that are determined during the building condition survey?
- 19-5. What is one of the best guides you can give to owners and residents of flooded buildings?
- 19-6. Can your community waive the requirement for a development permit so people can repair their flooded homes more quickly?
- 19-7. Once you advise an owner that a permit is necessary, do you need to inspect the building or can you save time and just wait for a permit application?
- 19-8. When you inspect a flooded building to determine if the structure is substantially damaged, which of the following items should you check?
- Walls and ceiling
 - Foundation
 - Deck or porch
 - Molding and built-in bookcase
 - Ductwork
 - Water heater
 - Kitchen cabinets

19-9. Who can help you make sure people don't reoccupy damaged buildings before they have passed an inspection?

19-10. Does your community license contractors or have procedures to prevent "fly by night" unqualified contractors from preying on disaster victims?

19-11. What sources of assistance are there to help your post-disaster operations?

25.1.20. Section 20

20-1. What's a good definition of "flood hazard mitigation?"

20-2. What are the six basic strategies of flood hazard mitigation measures?

20-3. What are some of the benefits of preparing a mitigation plan?

20-4. Where can you get technical help in planning and implementing a mitigation program?

20-5. List some of the sources of financial assistance that are available for a mitigation program.

- 20-6. What are the two types of grants available through the Flood Mitigation Assistance Program?
- 20-7. Could my community be eligible for a Section 404 Hazard Mitigation Grant even if it did not receive a disaster declaration?
- 20-8. If a flood is bad enough to result in a Presidential disaster declaration, why should my city need flood insurance policies on the buildings it owns in the floodplain?

25.2. ANSWERS TO THE LEARNING CHECK

25.2.1. Section 1

1-1. This section describes a number of types of floods. Which types occur in your community?

Depends on the community (refer to Section 1)

1-2. Which is larger, a watershed or a basin?

They are two terms for the same thing.

1-3. What are the two most common types of flooding in Illinois?

Riverine, shallow

1-4. Which type of flooding has accounted for the most flood-related deaths in recent history?

Flash flooding.

1-5. What is a “meander?”

It's a curve or turn in a river channel.

1-6. What areas are conducive to flash flooding?

*-Hilly areas with steep slopes and narrow valleys
-Urban areas with large amounts of impervious surfaces and storm sewers
-Areas downstream of dams or subject to ice jams*

1-7. What is “ponding?”

Where stormwater runoff collects in depressions and cannot drain out.

1-8. What does a lake's “fetch” influence?

Wind and waves

1-9. What are the three most common causes of dam failure?

- 1. The foundation fails due to seepage, settling or earthquake.*
- 2. The design, construction, materials or operation were deficient.*
- 3. Flooding exceeds the capacity of the dam's spillway.*

1-10. What three hazards are presented by ice jams?

1. *Sudden flooding with little or no warning.*
2. *Movement of ice chunks (floes)*
3. *Sudden flooding of areas downstream when an ice jam breaks.*

1-11. Are plants and animals the only beneficiaries of the “natural and beneficial functions” of floodplains?

No. People benefit from floodplains through the food they provide, the recreational opportunities they afford and the scientific knowledge gained in studying them. Floodplains also recharge groundwater supplies and their filtering actions help improve water quality.

1-12. List at least three benefits that floodplains, in a relatively undisturbed condition, actually contribute or could contribute to your community.

Depends on the community (see page 1-10 – 1-11)

25.2.2. Section 2

2-1. What two problems result from floodplain development?

- Development alters the floodplain and the dynamics of flooding.*
- Buildings and infrastructure are damaged by periodic flooding.*

2-2. What does watershed development do to flooding?

The increase in impervious surface results in increased runoff and higher flood levels.

2-3. What are some of the safety hazards that accompany floods?

- Drowning (on foot or in vehicles)*
- Disruption of public utilities*
- Electrocution*
- Fire*

2-4. What are some of the health hazards that accompany floods?

-Contamination of water supplies

-Animal carcasses, garbage and ponds that can become breeding grounds for germs and mosquitoes.

-Mold, mildew and bacteria that grow in damp, flooded areas

-Contaminated air from dirty heating ducts

-Stress and mental health problems.

2-5. What are the five main causes of flood damage?

-Hydrodynamic forces

-Debris impact

-Hydrostatic forces

-Soaking

-Sediment and contaminants

2-6. Hydrodynamic forces are caused by _____ water and hydrostatic forces are caused by _____ water.

Moving, standing

2-7. Standing water as little as ____ feet deep can collapse the walls of a frame house.

Three

2-8. List three materials or household items that are particularly susceptible to flood damage by soaking.

-Wood

-Gypsum wallboard

-Furniture and upholstery

-Carpeting

-Mattresses

-Books

-Electrical appliances

-Gasoline engines

25.2.3. Section 3

3-1. Prior to the 1960s what was the primary way to reduce flood losses?

Structural flood control projects

3-2. What is the Unified National Program for Floodplain Management's definition of "floodplain management?"

"A decision-making process that aims to achieve the wise use of the nation's floodplains."

3-3. What are the two primary goals of floodplain management?

To reduce the loss of life, disruption, and damage caused by floods.

To preserve and restore the natural resources and functions of floodplains.

3-4. What are examples of non-structural flood protection measures?

-Regulations to prohibit development in high-hazard areas.

-Building codes requiring flood-resistant construction for new buildings in floodprone areas.

-Acquisition and relocation of buildings in high hazard areas.

-Modifying or retrofitting existing buildings.

-Installing flood warning systems.

-Controlling stormwater runoff.

-Providing self-help advice to property owners.

3-5. What are the Unified National Program for Floodplain Management's four main floodplain management strategies?

-Modify human susceptibility to flood damage

-Modify the impact of flooding

-Modify flooding itself

-Preserve and restore natural resources

3-6. What are some of the floodplain management regulatory authorities of the Illinois Department of Natural Resources' Office of Water Resources?

-Regulation of construction in the floodways of rivers and streams

-Regulation of construction of appropriate uses in designated floodways in northeastern Illinois

-Regulation of construction along the waters of Lake Michigan

-Protection of public bodies of water from private encroachment and wrongful use

-Regulation of dam safety

3-7. If the Lake County Stormwater Management Commission has a floodplain regulatory standard that is more restrictive than the standard of a city in the County, which requirement takes precedence?

The County's

3-8. What professional associations provide training and newsletters for floodplain managers?

Association of State Floodplain Managers

Illinois Association for Floodplain and Stormwater Management

3-9. What are the objectives of the NFIP?

The National Flood Insurance Act created the National Flood Insurance Program (NFIP) to:

-Transfer the costs of private property flood losses from the taxpayers to floodplain property owners through flood insurance premiums.

-Provide floodplain residents and property owners with financial aid after floods, especially smaller floods that do not warrant federal disaster aid.

-Guide development away from flood hazard areas.

-Require that new and substantially improved buildings be constructed in ways that would minimize or prevent damage in a flood.

3-10. Where does most of the money come from to pay the expenses of the NFIP?

Premium income. The NFIP has been self-supporting since 1986.

3-11. How many communities currently participate in the NFIP in the US?

More than 20,000

3-12. How many communities currently participate in the NFIP in Illinois?

Nearly 800

3-13. What are the three basic parts of the NFIP?

-Mapping

-Insurance

-Regulations

3-14. Who uses NFIP maps?

-Communities, states and Federal agencies use them as the basis for the regulating new floodprone construction,

-Insurance agents use them when rating flood insurance policies, and

-Lenders and Federal agencies use them to determine when flood insurance must be purchased as a condition of a loan or financial assistance.

3-15. What is a “pre-FIRM” building?

A building built before the initial identification date of the community’s Flood Insurance Rate Map.

3-16. What should happen to buildings in NFIP communities over time?

Over time, exposure to flood damage should be reduced, as the stock of older pre-FIRM buildings is replaced by post-FIRM buildings. Eventually a community should have only post-FIRM buildings subject to little or no flood damage.

3-17. Is there any relation between how a community regulates new construction and flood insurance rates?

Yes. Buildings built in accordance with the community’s regulations have a lower risk of flooding and can be insured at lower rates.

3-18. What governmental bodies in Illinois are considered to be “communities” by the NFIP?

City, villages, special towns and counties (for unincorporated areas).

3-19. What office is the state NFIP Coordinating Agency for Illinois?

Illinois Department of Natural Resources, Office of Water Resources

3-20. Which FEMA office works directly with Illinois communities?

Region V, Chicago

3-21. List two things your community committed itself to when it joined the NFIP.

-Issuing or denying floodplain development/building permits.

-Inspecting all development to assure compliance with the local ordinance.

-Maintaining records of floodplain development.

-Making flood maps and elevation and floodproofing certificates available for public inspection.

-Assisting in the preparation and revision of floodplain maps.

-Helping residents obtain information on flood hazards, floodplain map data, flood insurance and proper construction measures.

-Cooperating with neighboring communities' floodplain management activities

-Designating an agency or official as responsible to implement the community's commitments.

3-22. Insurance companies set flood insurance rates and coverage rules. True or false?

False. Flood insurance rates and coverage rules are set by FEMA.

3-23. What compliance actions can FEMA take if a community is not properly enforcing its floodplain management regulations?

-If the community is in the Community Rating System, it can reclassify it to a Class 10 (no insurance premium discount).

-The community can be put on probation.

-The community can be suspended.

3-24. What are the sanctions if a community does not participate in the NFIP?

-Flood insurance will not be available. No resident will be able to purchase a flood insurance policy through the NFIP.

-If the community withdraws or is suspended, existing flood insurance policies will not be renewed.

-No Federal grants or loans for development may be made in identified flood hazard areas under programs administered by Federal agencies such as HUD, EPA, and SBA.

-No Federal disaster assistance may be provided to repair insurable buildings located in identified flood hazard areas for damage caused by a flood.

-No Federal mortgage insurance or loan guarantees may be provided in identified flood hazard areas. This includes policies written by FHA, VA, and others.

-Federally insured or regulated lending institutions, such as banks and credit unions, must notify applicants seeking loans for insurable buildings in flood hazard areas that:

There is a flood hazard and The property is not eligible for Federal disaster relief.

3-25. What are the sanctions if a community is suspended from the NFIP?

The same as for nonparticipation (see question 3-24). Suspension means the community is no longer a participant in the NFIP.

25.2.4. Section 4

4-1. FEMA conducts flood studies in order to determine _____ and _____.

floodprone areas and flood risk zones

4-2. The base flood is a flood that has a _____ of occurring in any year.

one percent chance

4-3. The base flood is also called the _____ - year flood.

100-year

4-4. Answer the following questions (circle T for True and F for False):

A 100-year flood will occur only once every 100 years. T F

A 100-year flood could occur two times in one year. T F

The 100-year flood might not occur in a 200 year period. T F

The base flood could occur in two consecutive years in a row. T F

4-5. On NFIP maps, the 100-year floodplain is called the _____ Area.

Special Flood Hazard

4-6. BFE is the acronym for _____ .

base flood elevation

4-7. What are the three components of a Flood Insurance Study?

-The FIS — Flood Insurance Study report.

-The FIRM — Flood Insurance Rate Map.

-The Flood Boundary and Floodway Map, which is included in studies prepared before 1985. (Since 1985, floodways are shown on the FIRM.)

4-8. What agency decides whether a flood study can be used for regulatory purposes?

Illinois Department of Natural Resources – Office of Water Resources

4-9. For purposes of a riverine flood study, hydrology is the study of a _____ behavior, and hydraulics is the study of a _____ behavior.

Watershed's, river or stream's

4-10. The rate at which runoff flows downstream is called the flood _____ .

Discharge

4-11. To locate the true elevations at a site, surveyors have established _____ marks also known as _____ .

elevation reference, benchmarks

4-12. What is the datum used for your flood insurance study, FIRM and profiles?

Depends on the community. Check the Key to your FIRM.

4-13. Cross sections describe the _____ of the floodplain.

Shape

4-14. A hydraulic study uses the hydrology, cross section information, and stream characteristics to determine the flood _____ .

Elevation (also velocities and floodplain widths)

4-15. Flood profiles are developed by plotting the flood elevations at the _____ and connecting the plotted points.

cross sections

4-16. Flood profiles are used to determine what?

Flood elevations along a river or a stream between cross sections

4-17. How is a bridge shown on a profile?

Bridges are indicated with an "I" shaped symbol.

4-18. To make a floodplain map, the base flood elevations are plotted on a _____ map or a _____ map.

topographic or contour

4-19. The floodway is defined as the stream channel and _____ .

that portion of the adjacent floodplain which must remain open to permit passage of the base flood

4-20. A floodway analysis conducted to the State of Illinois standard allows the fringe to be obstructed until the base flood level is increased by how much?

0.1" (one-tenth of a foot)

4-21. What differentiates shallow flooding from riverine flooding?

Shallow flooding is distinguishable from riverine or coastal flooding because it occurs in areas where there is no channel or identifiable flow path.

4-22. Instead of using a base flood elevation, some shallow flooding areas are defined using a base flood _____ .

depth

4-23. Flood studies that do not identify BFEs are called _____ Studies.

Approximate

4-24. An approximate study shows the _____ but does not show the base flood _____ .

Floodplain or SFHA, elevation

25.2.5. Section 5

5-1. The maps published with an FIS are the _____ and the _____.

FIRM (or DFIRM), FBFM or Floodway Map

5-2. Is your community's FIRM a flat or Z-fold map?

Depends on the community (See Section 5)

5-3. How many panels does your FIRM have?

Depends on the community. (See pages 5-3 and 5-4 on Map index)

5-4. How many digits are there in an NFIP community number?

They always have six digits. This is important to avoid confusion with the five digit county-wide FIRM Number. The community identification number does not include the panel number and other numbers that appear near it on the FIRM title box.

5-5. What is your community's NFIP number?

Depends on the community, but if it's in Illinois, it must start with "17." (See discussion on the Title box on page 5-6)

5-6. What is the map scale of your FIRM?

Depends on the community. (See the bar scale near the north arrow on your map)

5-7. What is an AO Zone?

The base floodplain subject to sheet flow, ponding or shallow flooding

5-8. Using the Pontiac FIRM, what is the approximate BFE for the Vermilion River near Oak Street?

640 feet above sea level (NGVD)

5-9. Is the BFE on a FIRM as accurate as the BFE taken from a profile?

No. The flood elevations in the profile are more accurate and can usually be determined to 0.1 foot.

5-10. When was Pontiac's FIRM first revised?

Pontiac's FIRM has only had one revision. It was on July 5, 1983. The FIRM became effective on December 4, 1979. Earlier map revisions were to the Flood Hazard Boundary Map, not to the FIRM.

5-11. Using Pontiac's Floodway Map, what cross section is closest to Mill Street?

Cross section I

5-12. How is a floodway shown on the Flood Boundary and Floodway Map?

It's the white area adjacent to and including the channel, within the dashed lines

5-13. An area on Pontiac's Floodway Map is bordered by Henry, Moulton, Court and Oak Streets. There is no zone designation, but it is shaded. What type of floodplain is this area?

It is the area between the base flood elevation and the 500-year flood elevation. On the FIRM, it is labeled the B Zone.

5-14. The two major changes in the Post-1985 format FIRMs are:

-They show floodways and other floodplain management information, such as cross section locations, that was previously provided on separate Flood Boundary and Floodway Maps (Floodway Maps).

-The flood insurance zone designations have been simplified.

5-15. How is a floodway shown on the Post-1985 format FIRM?

It is a shaded area with diagonal lines

5-16. A Zone C on an old format FIRM is shown as an unshaded Zone ____ on a Post-1985 format FIRM.

Zone X

5-17. What was the problem with the way the floodway was shown on the Pre-1985 format Flood Boundary and Floodway Maps?

The white area looked like it was a C zone outside the floodplain. Also people who had only a FIRM did not know of the floodway hazard.

5-18. Where can you find the most accurate source for the base flood elevation for a lake floodplain?

From the "Summary of Stillwater Elevations" in the Flood Insurance Study text.

5-19. In Figure 5-14, why do the AH Zones have a much lower base flood elevation than the A20 Zone?

They are shallow flooding areas that are protected from the Mississippi River's flood levels by the levee.

5-20. What communities' floodplains are shown on a countywide FIRM?

All the communities in the county, even those not in the NFIP.

5-21. In Figure 5-16, why is Lake County's number listed as 170357 when the Lake County FIRM's Map Number is 17097C?

170357 is the 6 digit NFIP community number for unincorporated Lake County, not to be confused with the 5 digit number for the countywide FIRM.

5-22. Why would FEMA turn a Flood Hazard Boundary Map into a FIRM?

Where development is so sparse and unlikely that an expensive detailed flood study cannot be justified. The conversion process is an inexpensive way of preparing an official Flood Insurance Rate Map.

25.2.6. Section 6

6-1. What is the base flood discharge on the Vermilion River at Pontiac's downstream corporate limits?

16,500 cubic feet per second (cfs)

6-2. What is the 10-year peak discharge for the Vermilion River at Lowell?

22,500

6-3. Why is the 10-year discharge at Lowell larger than the 100-year discharge in Pontiac?

Because it is farther downstream where the drainage area of the Vermilion River at Lowell is more than twice as big than at Pontiac.

6-4. How many cross sections were surveyed for the Vermilion River in Pontiac?

14 (cross sections A – N)

6-5. What is the width of the floodway for the Vermilion River just downstream of Mill Street?

182 feet. See the Floodway Data Table for cross section I

6-6. What is the best source of base flood elevation data for regulatory purposes for a lake floodplain?

The Summary of Stillwater Elevations table in the Flood Insurance Study

- 6-7. The FIRM shows the BFE between Harward and Vermilion Streets to be 639 feet. You want to know the regulatory BFE at a point half way between those two streets. Using the Floodway Data Table, what is a more accurate figure for the BFE?

639.3, the “without floodway” base flood elevation for cross section G

- 6-8. How many feet does one inch on Pontiac’s FIRM represent?

600

- 6-9. How many feet does one inch on Pontiac’s Floodway Map represent?

600

- 6-10. Using the Floodway Map and the engineer’s scale, what is the width of the floodway at cross section J?

640 feet

- 6-11. Using the Floodway Data Table, what is the floodway width at cross section G on the Vermilion River?

498 feet

- 6-12. Using the Floodway Map and an engineer’s scale, what is the distance between cross sections C and D on the Vermilion River?

1250 feet

- 6-13. What is the distance between cross sections C and D on the Vermilion River according to the Floodway Data Table?

1,325 (9,810 – 8,485) The map does not accurately show the bends in the river, so the distance looks shorter on the map.

- 6-14. Using the FIRM, what is the approximate BFE at the downstream side of the Ladd Street Bridge?

The site is between the “638” and the “639” wavy lines, so the elevation is between 638 and 639.

- 6-15. RM 6 is on Mill Street, north of the Vermilion River. How far is RM 6 from the closest SFHA?

300 feet

- 6-16. What is the base flood elevation at RM 6?

There is no BFE in a C Zone

- 6-17. A vacant lot between sites G and H was recently purchased. The new owners ask for your help in locating the best spot to build a new house. The FIRM shows the entire property in the SFHA. You are handy with a transit, so you survey the proposed building site during a visit to the property. You find that the building site is above the BFE. The owners want you to inform their bank so they won't have to buy flood insurance. What do you say?

Banks (and others who must read the FIRM to determine if flood insurance is required) must go by the map. They cannot make on-site interpretations based on data other than the FIRM. However, they may recommend that the property owner submit a letter of map revision or map amendment so the map can be officially changed to reflect the more accurate data.

- 6-18. What is the base flood elevation at cross section G at the downstream side of the Vermilion Street bridge?

- d. Using the Flood Profiles in the report? *639.2*
- e. Using the Floodway Data Table? *639.4*
- f. If these numbers are different, which BFE should you use?

The Floodway Data Table's, 639.4

- 6-19. Two "I" symbols are plotted at 8,300 and 8,500 feet above Airport Road on the Vermilion River profile 01P. What do these symbols represent?

The two bridges for U.S. Route 66

- 6-20. Is Route 66 upstream or downstream from Ladd Street?

Downstream

- 6-21. Site J is on the east side of Main Street (see the street map, page 23-7). Using the flood profile, determine the BFE for the Vermilion River at Site J.

Main Street is not identified on the profile because it doesn't cross the river. Using the map scale and the Floodway Map, the east side is measured as 140 feet upstream of cross section J. Cross section J is at 12,900 feet above Airport Road, so Main Street's east side is at 13,040 feet. Profile 01P ends 100 feet upstream of cross section J at 13,000 feet above Airport Road. Therefore use profile 02P. At 13,040, the BFE is 640.6 feet, NGVD.

- 6-22. How far is the Vermilion Street bridge from cross section H on the Vermilion River?

1,350 feet downstream

- 6-23. A developer proposes to place a structure at Site B, 325 feet downstream from the southbound Route 66 bridge on the Vermilion River. Using the Flood Profiles, tell the developer how high the structure would have to be elevated to be protected to the base flood level and to the 500-year flood level.

The BFE is 636.4, the 500-year flood level is 637.7 feet NGVD.

Answer to the Pontiac map exercise on page 6-9. Site F is approximately 450 feet west of Route 116.

Measuring 450 feet on the FIRM places Site F outside the floodplain. If Site F was on the south side of Washington Street, it is a very close call and should be considered in the floodplain until more information can be collected to make a more accurate determination.

25.2.7. Section 7

- 7-1. List three reasons why a FIRM should be changed.

-To correct an error in non-flood-related features

-To include better ground elevation data

-To reflect changes in ground elevations in the floodplain

-To revise flood data

-To submit new flood data

-To reflect a flood control project

- 7-2. Mrs. Murphy says she has a survey that shows that her house is higher than the flood level. What type of map change should she request?

A Letter of Map Amendment (LOMA) is the appropriate way to remove a single lot from the SFHA based on elevation data.

- 7-3. For which locations on her property will Mrs. Murphy need elevation data?

If a pre-FIRM building: the lowest adjacent grade. If post-FIRM: the lowest adjacent grade and the lowest floor (including basement).

- 7-4. Scrapem Construction wants to get a bank loan to develop an area. Mr. Scrapem's plans are to fill some low spots and get all the building sites out of the floodplain. His banker will not grant a loan for the project unless she is reassured that the FIRM will be changed when the project is finished. What type of map change should Mr. Scrapem request?

A Conditional Letter of Map Revision based on fill (CLOMR-F).

7-5. Scrapem Construction's project is now finished and individual homes have been built on the lots. Are the homeowners now exempt from the mandatory flood insurance purchase requirement?

Not unless they follow up and submit requests for Letters of Map Revision based on fill (LOMR-F). If a LOMR-F is issued, the bank still has the prerogative to require a flood insurance policy on the property.

7-6. A developer of a single lot prepared a flood study to produce a BFE in an unnumbered A Zone. How can he get the FIRM to reflect this study?

He should submit a request for a LOMR to FEMA

7-7. What papers are needed to request a LOMA for a single lot?

-FEMA's MT-EZ Form

-Copy of subdivision plan map or property deed

-Other papers as noted on the 2nd page of the MT-EZ form

7-8. What FEMA form is submitted to request a Conditional Letter of Map Revision (CLOMR-F) not based on fill?

MT-2

7-9. Who has to approve a request to revise a floodway?

The community, FEMA and IDNR

7-10. What office is the primary repository for your FIS, FIRM, and/or Floodway Map?

Depends on the community, but it is a local community office

7-11. How does that office keep track of revisions, amendments and other changes to the maps?

Depends on the community, but a system is needed. (See page 7-13 for suggestions)

7-12. Is there a master list of all revisions, amendments and other changes to your community's maps?

If you haven't maintained one, an FIS Data List or a Summary of Map Actions can be requested from the Mapping Coordination Contractor.

7-13. How do you get more copies of your FIRM?

Call or send a mail or fax request to the Map Service Center in Jessup, Maryland

25.2.8. Section 8

- 8-1. What statute does your ordinance refer to as the basis for your community to regulate floodplain development?

Depends on the community. It should be referenced at the beginning of the ordinance. (See Section 8.2)

- 8-2. Can a sanitary district build an office building in a floodway without getting a permit from the city or county?

Probably not. A sanitary district has a statutory responsibility to construct wastewater treatment plants and it may be hard to avoid a floodplain location for one. However, it can locate its offices anywhere and still do its job. It would be difficult for it to prove that putting its office in a floodway is vital to its work and that no other location will do.

Even if the district's attorney proved their case, a permit from IDNR is still required for all floodway projects.

- 8-3. If a regulatory requirement prohibits an owner from any use of his land, it is referred to by the legal term _____ .

Taking

- 8-4. In how many court cases have the NFIP regulations been overruled as unconstitutional?

None

- 8-5. List three ways you can protect yourself and your community from a lawsuit if a property is damaged by a flood.

-Adopt sound and appropriate flood protection standard

-Become technically competent in the field

-Get an insurance policy for the community

-Encourage property owners to buy flood insurance

-Adopt a "Disclaimer of Liability" provision in your ordinance

- 8-6. List all of your community's ordinances that have floodplain management provisions in them.

Depends on the community

- 8-7. What is the disadvantage of a stand alone ordinance based on the IDNR model?

Standards and procedures may not be coordinated with other ordinances

8-8. Can a floodplain regulation ever prohibit new buildings from a portion of the floodplain?

Yes, but the reason for prohibiting buildings must be reasonable, tied to the flood hazard and support public objectives. Generally it is not a taking if a person still gets to use some of the land and the hazard is severe enough to warrant the prohibition. The Illinois Supreme Court upheld the State's prohibition of buildings in floodways in northeastern Illinois.

8-9. What publication lists the NFIP requirements for communities?

Chapter 44 of the Code of Federal Regulations

8-10. In what part of the Code of Federal Regulations would you find the definition for "development?"

44 CFR 59.1 Definitions

8-11. Does your ordinance comply with the latest NFIP requirements?

Check with IDNR or the FEMA Regional Office

8-12. Based on the flood data provided with your FIRM, what type of community is yours? 60.3(____).

Depends on the community:

60.3(a) if FEMA has not provided any maps or data

60.3(b) if FEMA has provided a map with approximate A Zones

60.3(c) if FEMA has provided a FIRM with base flood elevations

60.3(d) if FEMA has provided a FIRM with base flood elevations and a Floodway Map

8-13. If your community follows the requirements of 44 CFR 60.3(d), does it have to worry about what's in 44 CFR 60.3(b)?

Yes. The requirements are cumulative in Section 60.3

8-14. If a State requirement is more restrictive than the Federal NFIP requirements, which set of rules must a community follow?

The more restrictive State requirement

8-15. What NFIP program recognizes local regulatory standards that are more restrictive than the minimum NFIP regulations?

The Community Rating System

8-16. What two approaches are used by IDNR to manage floodplain development?

Direct permitting of floodplain development and setting standards for local regulatory programs

25.2.9. Section 9

9-1. What is “Basic rule #1” for using maps and data?

You must use the latest maps and flood data published by FEMA

9-2. A building official finds it easier to read an old flood map prepared on an aerial photograph by the Corps of Engineers. He doesn't want to use the current FIRM because it doesn't show all the buildings and features that the photograph does. Can he make permit decisions based on the Corps map instead of the FIRM?

No. The community must use the latest maps and data provided by FEMA. If the other map shows a higher BFE and a larger floodplain, the community may adopt it in its ordinance as the regulatory floodplain and exceed the minimum NFIP requirements. The map must be approved by the FEMA Regional Office before this is done.

9-3. What map do you use if recently annexed areas do not show up on your community's FIRM?

The FIRM for the county or the community the property used to be in. If a countywide FIRM is the regulatory map for the community then annexations will not be a concern since the countywide map shows all flood zones within the county.

9-4. If you find information that shows the ground to be higher than the BFE, can a bank use that data when determining whether a flood insurance policy must be purchased?

No. Insurance agents and lenders must use the current FIRM when setting insurance rates and determining whether flood insurance is required. If a person wants to vary from the current FIRM to obtain different premium rates or to not have to purchase a flood insurance policy, the FIRM must be officially revised or amended.

9-5. A developer receives a CLOMR that states that when the project is completed, his site will be out of the floodplain. He submits applications for building permits for buildings with basements below the BFE. What do you tell him?

Until the final LOMR is issued, the site is considered SFHA and all floodplain regulatory requirements must be met. You may also want him to review FEMA's "Ensuring That Structures Built on Fill In or Near Special Flood Hazard Areas Are Reasonably Safe From Flooding in Accordance with the National Flood Insurance Program" (Technical Bulletin 10-01).

- 9-6. A restudy was performed on the Vermilion River. The preliminary study will not be final for another five months. It shows a new base flood elevation at a site that is two feet higher than the BFE in your current FIS. Which one do you use to determine the flood protection level for a new home at that site?

The draft revised data should be used unless the community disagrees with the data and intends to appeal it.

- 9-7. A building site is in an approximate A Zone in a downstate community. A developer wants to build a small commercial building on a 3 acre site. Where do you get a base flood elevation for this site?

In order of preference:

- 1. See if the State Water Survey has an existing study for the area.*
- 2. The developer can set the A Zone aside as open space and not conduct a flood study*
- 3. The developer conducts a new study to determine the BFE.*

- 9-8. A developer upstream of the same site wants to build a 40 acre subdivision. You need a base flood elevation before you review the plans. What options do you tell the developer he has?

In order of preference:

- 1. See if the State Water Survey has an existing study for the area.*
- 2. The developer can set the A Zone aside as open space and not conduct a flood study*
- 3. The developer conducts a new study to determine the BFE.*

- 9-9. Joe Hunter wants to build a small hunting cabin in an approximate A Zone in southern Illinois. It will be the only building within two miles. There are no known sources of a base flood elevation. The cabin will cost less than \$10,000 and he does not want to pay \$2,000 for an engineering study to develop a BFE. What can you do to make sure the property is protected from flooding?

In order of preference:

- 1. See if the State Water Survey has an existing study for the area.*
- 2. Use an elevation based on an historical flood*
- 3. Require that the lowest floor of the cabin be at least five feet above grade.*

9-10. Will a developer in an approximate A Zone in northeastern Illinois have to prepare a detailed study to calculate base flood elevations if the development is:

4 acres? *YES*

60 lots? *YES*

Reserving all the SFHA as open space? *NO*

25.2.10. Section 10

10-1. What is basic rule #2 on what needs a permit in the floodplain?

A permit is required for all development in the SFHA shown on your FIRM.

10-2. Define “development” as the term is used in your ordinance.

Depends on the community’s ordinance. It should read something like:

“Development” means 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.

10-3. Do the following activities in the SFHA need a development permit from your community?

Placing fill in a vacant lot *Yes*

Dredging a creek to make it deeper to reduce flood levels *Yes*

Storage of road salt by your public works department *Yes*

Storage of road salt by the Illinois Department of Transportation

No. State agencies are exempt from your ordinance but they have their own rules that require them to meet similar standards

Regrading the riverfront in a city park

Yes if it is a city park. If it belongs to a park district, it may be exempt as discussed under statutory authority in Section 8.

Erecting an 8’ x 8’ storage shed in a back yard

If your ordinance specifies, such a small project could be exempt from the permit requirements.

10-4. If a subdivider makes sure that all building sites are above the BFE, does he need to do anything more to meet floodplain requirements?

The subdivider also needs to make sure that:

- *All public utilities and facilities, such as sewer, gas, electrical, and water systems are located and constructed to minimize or eliminate flood damage,*
- *Adequate drainage is provided to reduce exposure to flood hazards,*
- *The plat shows the SFHA and floodway boundaries and BFEs, and*
- *The plat includes an engineer's statement that it accounts for "changes in the drainage of surface waters."*

10-5. How can you protect a sewer system from flooding?

Through careful system design. Manholes should be raised above the 100-year flood level or equipped with seals to prevent leakage. Pumping stations should have electrical panels elevated above the BFE.

10-6. Does your ordinance prohibit storing large amounts of chlorine in a Special Flood Hazard Area?

It should if it has the hazardous materials language from the IDNR model ordinance.

10-7. What other departments in your community need to review a potential floodplain development permit?

Depends on the community

10-8. What other local governments need to review a potential floodplain development permit in your community?

Depends on the community. (See discussion on page 10-8)

10-9. What State and Federal agencies should a developer contact before you issue a permit for the following projects?

A beach improvement project on Lake Michigan *IDNR/OWR*

Tearing down a 150-year old hotel *Illinois Historic Preservation Agency*

Filling in a wetland *IDNR/OWR, U.S. Army Corps of Engineers, IEPA*

Dredging in the Illinois River *IDNR/OWR, U.S. Army Corps of Engineers*

Construction of a small dam *IDNR-OWR*

10-10. Where does the developer send the three copies of the joint permit application form for a project in Madison County?

IDNR-OWR, Springfield

IEPA, Springfield

U.S. Army Corps of Engineers, St. Louis

See Figure 10-2 for the full addresses

25.2.11. Section 11

11-1. What is Basic rule #3 as it relates to the floodway concept?

Development must not increase the flood hazard on other properties

11-2. Is the floodway concept designed to prohibit development in floodways?

No. Property owners should be allowed to develop their land provided they do not obstruct flood flows and cause damage to others.

11-3. What agencies must issue a permit for a new subdivision in the floodway?

The community and IDNR

11-4. What agencies must issue a permit for a new subdivision in a floodplain where there is no mapped floodway?

The community and IDNR

11-5. Where does IDNR have floodway permit jurisdiction?

In the floodways of streams:

◆ *draining 1 square mile (640 acres) or more in urban areas and*

◆ *10 square miles (6400 acres) or more in rural areas.*

11-6. What form is used to apply for an IDNR floodway permit?

The joint permit application form discussed at the end of Section 10.

11-7. Which of the following projects are exempt from the IDNR floodway permit requirement?

Clearing brush along the channel bank *YES*

A boat dock on a private lake *YES*

A footbridge *NO*

A barn restricted to agricultural use *NO*

11-8. What's the difference between a Statewide Permit and a formal permit?

A Statewide Permit authorizes projects built to certain terms and conditions without applying to IDNR. A formal permit must be issued by IDNR for the specific project.

11-9. Does your community have to apply to IDNR for a permit to erect light poles and playground equipment in a park in a floodway?

Not if the project is built in accordance with Statewide Permit No. 6.

11-10. Does a homeowner have to apply for IDNR for a permit to build a room addition to a house in a floodway?

Not if the addition is located in the conveyance shadow of the house. It is authorized under Statewide Permit No. 10.

11-11. A developer wants to move the floodway and the stream channel to provide a larger developable area on his property. What agencies must be advised of this project before it is approved?

-It needs an IDNR permit

-Adjacent communities must be told

-Copies of the letters to IDNR and adjacent communities must be submitted to FEMA

-A CLOMR request should be submitted to FEMA for large-scale projects.

11-12. What types of development are allowed in the floodway in northeastern Illinois?

-“appropriate uses,”

-which will not cause a rise in the BFE and

-will not create a damaging increase in flood heights or velocity.

11-13. Which of the following are deemed appropriate uses in the floodway in northeastern Illinois?

A flood control dam *YES*

An industrial park *NO*

A subdivision limited to single family homes *NO*

A detached garage *YES*

A highway bridge *YES*

Storage of highway construction materials *NO*

11-14. If your community is in northeastern Illinois and it wanted to develop an athletic field in the floodway, could it be done without applying to IDNR for a floodway permit?

Yes, if done in accordance with Regional Permit No. 3.

11-15. Where is compensatory storage required?

-In the floodways of northeastern Illinois

-Anywhere else required by your ordinance

11-16. How does compensatory storage work?

Fill is removed from the floodplain in an amount equal to or greater than the amount of flood storage lost due to the development. The fill must be removed from a site hydraulically equivalent to the development's site.

25.2.12. Section 12

12-1. What does Basic rule #4 say about new buildings in the floodplain?

New, substantially improved, or substantially damaged buildings must be protected from damage by the base flood

12-2. The rules for protecting new buildings apply to which of the following?

Single family homes -YES

Gas storage tanks -YES

Open carports -NO

Mobile homes -YES

Substantial improvements -YES

Sheds valued at \$500 -YES

12-3. What are the benefits of requiring freeboard?

-It accounts for future increases in flood stages.

-It acts as a hedge against backwater conditions caused by ice jams and debris dams.

-It reflects uncertainties inherent in flood hazard modeling, topography, mapping limitations and floodplain encroachments.

-It provides an added measure of safety against flooding.

-It results in significantly lower flood insurance rates due to lower flood risk.

12-4. Does your ordinance require freeboard? If so, how much?

Depends on your ordinance. It is likely in the definitions section for “flood protection elevation” or “FPE.” The amount of freeboard is the number of feet the FPE is above the base flood elevation.

12-5. Does your ordinance have any special requirements for buildings built on fill?

Check to see if the following are required:

-Compaction

-Sloping and erosion protection

-Fill must be above the BFE so many feet out from the building wall

-Compensatory storage

12-6. Where would elevation on piles or columns be preferred?

In areas where flooding is likely to have high velocities or waves.

12-7. If a residence is elevated above the BFE in an AE Zone, where do you measure how high the building is?

At the top of the lowest floor

12-8. What can be allowed under the lowest floor of an elevated building?

Only building access, vehicle parking, and storage

12-9. Mr. Jones shows you plans for a house elevated on a concrete block crawlspace. The area of the crawlspace will be 1,750 square feet.

a. How many standard 8” x 16” openings will be needed?

14 (1,750 divided by 128 = 13.67, rounded up to 14 openings)

b. How high can they be above ground level?

The bottom of the openings must be no higher than one foot above grade

c. Can Mr. Jones put his hot water heater in the crawlspace?

No. Unless the water heater can be entirely above the BFE

12-10. Mrs. Smith is elevating a house in the AE Zone 8’ above grade. Is there anything special you should look for during your inspections of the lower area?

It may be tempting for the owner to finish off the lower area. During your review of the plans and during inspections, look for plumbing, sliding glass doors and other indicators that the owner will convert the area to a use other than building access, vehicle parking, and storage.

12-11. What three things do you need to check for to ensure that a building is floodproofed?

-Walls are watertight (substantially impermeable to the passage of water)

-Structural components can resist hydrostatic and hydrodynamic loads and effects of buoyancy

-Utilities are protected from flood damage

12-12. Can a new home in the flood fringe be floodproofed?

No. Elevation is the only method allowed for new residential buildings in the SFHA.

12-13. How high should a new residential building be elevated in an AO Zone?

-At least as high as the depth number specified in feet on the community's FIRM, or

-At least two feet if no depth number is specified

12-14. What's the NFIP definition of "basement?"

"Basement" means any area of the building having its floor subgrade (below ground level) on all sides.

12-15. An area under a multi-family building is open, reserved for parking, and not a walkout. The floor is 3 feet below grade. Is this considered a basement?

Yes

12-16. Scrapem Construction wants to build a "Bi-level" house where the lowest floor is three feet below grade. The lowest floor has large windows and includes three bedrooms and a bathroom. Because it is habitable space, Mr. Scrapem does not consider this a "basement." Does your ordinance consider this a "basement?"

Yes and the lowest floor (i.e., the basement) must be above the FPE

12-17. If a building is proposed to be located in a riverine floodplain with flood velocities of 8 – 10 feet per second, what should you ask the builder to provide to assure you that the building won't get washed away during a flood?

A statement from an architect or engineer that the design of the building includes "anchoring adequate to prevent flotation, collapse and lateral movement" during the base flood.

12-18. The builder of a house to be elevated on concrete walls wants to use wood for the stairway. He is concerned that wood will swell and warp if it gets wet during a flood. Can a portion of the house below the BFE be built of wood?

Yes, provided it is pressure treated (.40 CIA minimum), naturally decay resistant lumber or marine grade plywood

12-19. A homeowner wants to build a detached garage, but does not want to elevate it in order to minimize the amount of fill and to make it easier to drive into the garage. Can this be done?

Yes in shallow, low velocity, slow rising floodplains. It is done through the variance procedure. The garage must be wet floodproofed.

12-20. How is a manufactured home outside of a manufactured housing park treated differently from a conventional “stick built” home?

They are both treated the same. They must meet the same construction and elevation requirements.

12-21. How is a 600 square foot motor home that is permanently attached to a reinforced block wall foundation treated differently from a manufactured home?

They are both treated the same. They must meet the same construction and elevation requirements.

25.2.13. Section 13

13-1. What is the preferred flood protection approach for critical facilities?

Keep them out of the 500-year floodplain. The next best approach is to protect them to the 500-year flood level.

13-2. Where can you find example ordinance language for regulating critical facilities?

“CRS Credit for Higher Regulatory Standards.”

13-3. Name two regulatory approaches that can be used to encourage building sites completely out of the floodplain?

-Subdivision design that encourages cluster development on high ground

-Low density zoning that gives owners large lots large enough to avoid small floodplains

13-4. What’s the benefit of a setback requirement?

-They keep development back from the channel or shoreline,

-They prevent disruption to the channel banks

-They protect riparian habitat.

-They keep non-point sources of pollution farther from the water.

13-5. Does your ordinance prohibit mobile homes in the floodway?

Depends on the community.

13-6. Does your ordinance have special requirements for building foundations?

Probably, if you adopted the Illinois model ordinance. The section on buildings on fill receives CRS credit for foundation protection

13-7. Name two types of floodprone areas where many communities prohibit development.

-High hazard areas, such as flash flood areas and very deep floodways

-Natural or sensitive areas, such as wetlands

13-8. What's the advantage of requiring dry land access if buildings are protected from flooding?

It protects health and safety by allowing people to evacuate and emergency service vehicles to protect the properties during a flood.

13-9. How could a developer of an 80-acre subdivision reduce the amount of runoff that leaves the property during a storm?

Include stormwater detention or retention basins to hold or delay the runoff from the site.

13-10. Are there any dams upstream from your community that pose a potential threat if they failed?

Depends on the community, but it sure is an important thing to check. (See the discussion on page 13-12)

13-11. Is your community subject to ice jam flooding?

Depends on the community, but it sure is an important thing to check. (See the discussion on page 13-13)

13-12. Do Federal agencies have to meet any floodplain development rules similar to the NFIP requirements?

Yes. The National Environmental Policy Act (NEPA) and Executive Order 11988 require Federal agencies to meet the same or more restrictive development standards.

13-13. Since there are several Federal agencies that regulate wetland development, protect rare and endangered species, etc., is there any need for your community to consider any additional environmental protection measures?

Probably. Federal programs may not address the particular needs of your locality.

13-14. Name three types of regulations that can protect natural resources in your floodplains.

-Wetland protection regulations

-Habitat protection regulations

-Restrictions on on-site sewage disposal

-Water quality regulations and rules on stormwater runoff (non point sources of pollution)

-Designating unique or valuable areas for special protection

25.2.14. Section 14

14-1. What's the most important duty of the person responsible for administering your community's floodplain regulations?

Understand the regulations

14-2. True or false: The administrator's job starts when a person applies for a permit to develop in the floodplain.

False: The administrator needs to make sure people know they have to apply for a permit and must pursue those violators who build without a permit.

14-3. Is the administrator of your community's ordinance responsible for making sure a person gets a State permit?

Yes, where your ordinance requires a state permit as a condition of a local permit, such as for projects in the floodway.

14-4. Does your community have any responsibility for making sure the flood maps are accurate?

Yes. The NFIP requires that the community keep FEMA updated on changes to your corporate limits and send new flood studies to FEMA.

14-5. What are the minimum requirements to be a floodplain management ordinance administrator in Illinois?

There are none.

14-6. Where can a person receive training on administering a floodplain management ordinance?

-This IAFSM Floodplain Management Desk Reference

-Spend time with the floodplain administrator in another community

-Workshops put on by IDNR or IAFSM

-Meetings or conference put on by IAFSM

-FEMA's Emergency Management Institute

14-7. For which of the following activities does your community require a floodplain development permit?

Repairing a flooded home -YES

Moving fill into a yard-YES

Erecting a fence-YES

Placing rip rap along a stream channel-YES

14-8. Does your community's public works director know that he needs to make sure that all new and replacement bridges must meet your ordinance's requirements?

He better. One good way to do this is to make sure that the floodplain ordinance administrator reviews all bridge plans. The community may not have to issue an actual permit, but the project must meet the standards of your ordinance.

14-9. What six items need to be checked to ensure an application for a permit is complete?

-All forms are completed and signed

-Site plans are complete

-Building plans are complete

-All necessary certifications are provided

-All necessary state and federal permits are being obtained

-Copies of the application are forwarded to other departments

14-10. Jack Scrapem wants to build a house in the floodplain. You tell him his permit application needs to include a building plan. What does he need to show on the building plan?

-The kind and potential use of the structure.

-The elevation of the lowest floor.

-Proposed elevations of adjacent grades.

-The type of foundation system.

-Information on any enclosure below the lowest floor.

14-11. What departments or offices in your community should review a permit application before it is approved?

Depends on the community. This is a very important procedure to check to be sure that a project will meet all of your community's development requirements. (See discussion on page 14-15)

14-12. Match the list of proposed projects with the documents that will be needed before you can issue a floodplain development permit.

PROPOSED PROJECTS

New shopping center parking lot in the floodway *a, b, c*

New house in the fringe *a, b*

Reconstruction of a state highway bridge *see below*

New business in an unnumbered A Zone *a, b, f, and maybe c and d*

DOCUMENTS

a. Floodplain development permit application

b. Site and/or building plans

c. IDNR permit

d. Floodproofing Certificate

e. Elevation Certificate

f. Base flood elevation and floodway study

IDOT is exempt from local regulations. However, it is a good idea to talk to IDNR to ensure that the project meets all state floodplain management requirements.

Note that if a new building will be elevated, an elevation certificate is not needed at the time of permit application. An as-built certification will be needed later. If a nonresidential building will be floodproofed, a floodproofing certificate is needed at the time of application and an as-built certification will be needed later.

An IDNR permit would be needed in an unnumbered A Zone unless the developer's conducts a floodway study that shows the property to be in the flood fringe.

14-13. During your permit review, you find that the applicant's site plan shows that the ground is currently higher than the BFE. Should you continue to treat this as a floodplain development permit?

You do not have to. It's still a good idea to encourage the applicant to incorporate flood protection measures in case a future flood is higher than the predicted BFE (e.g., don't build any homes with basements). Make sure the grading plans won't put land into the floodplain.

14-14. What's the best way to make sure the applicant's engineering certifications are sufficient?

Have your community's engineer review them

14-15. Jack Scrapem's building plans show that his project will not comply with your ordinance. You deny his permit application. He wants to know what recourses he has. What do you tell him?

He can:

-Withdraw the permit application,

-Redesign the project to bring it into compliance with regulations,

-Appeal to the Board of Appeals, or

-Ask for a variance to the regulations.

14-16. What are the NFIP procedures for submitting an appeal to your Board of Appeals?

There are none, or, more correctly, they are whatever your ordinance specifies.

14-17. Mr. Wilson wants to build a new house at grade instead of to the FPE, six feet above grade. You tell him he will need a variance. Which of the following are good and sufficient causes for granting him a variance?

-An elevated house will look bad.

-Mrs. Wilson is old and has trouble with stairs.

-It will cost more money than the builder can afford.

-The builder has a contract with the bank to have it completed and sold in four months and changing plans will prevent meeting that deadline.

-No one has ever seen a flood on that site.

None of these. They do not show an exceptional hardship, they are not unique to the property, nor do they pertain to the land, not the owners.

14-18. Can your community grant a variance to allow a project in the floodway that will cause a ½ foot increase in flood heights?

No. “Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge would result...” (44 CFR 60.6(a)1.) Secondly, the community does not have the authority to issue a variance to a State requirement as specified in an IDNR floodway permit.

14-19. Name two situations where special exceptions may be granted for a variance.

Historic buildings and functionally dependent uses.

14-20. Mr. Wilson is applying for a variance to build his house below the FPE. What two things must you tell him (in writing)?

(i) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and;

(ii) such construction below the base flood level increases risks to life and property.

25.2.15. Section 15

15-1. When is the best time to make the first site inspection?

After the site is staked out and before permanent foundation work has begun.

15-2. What should you check for during the first site inspection?

The location of the floodplain and floodway boundaries.

Setbacks from lot lines, channel banks, etc.

Floodway encroachments, if applicable.

15-3. When should you make the second inspection of a building on a slab foundation?

When the forms are in place, but before the concrete is poured

15-4. When should you make the second inspection for a building to be elevated on a crawlspace?

After the foundation is completed, so you can check if it is high enough before the lowest floor is built. Also check the level of the crawlspace floor (it can't be lower than the lowest grade outside the building).

15-5. What are your two options for making sure a new building is high enough before you allow construction to proceed after the second inspection?

-Have the builder provide an elevation certificate

-Check the elevation yourself during the second inspection

15-6. When is the best time to see if a crawlspace has adequate openings?

During the second inspection, before the floor is built. This will allow the builder to install the needed openings with a minimum of disruption to the structure.

15-7. What should you check for during the third inspection?

-Ensure that the foundation and floor elevation have not been altered since the second inspection.

-Obtain an as-built elevation or floodproofing certificate.

-Verify that enclosures below the lowest floors have adequate openings.

-Ensure that nothing subject to flood damage, such as a furnace or air conditioning unit, has been located below the lowest floor.

-Check for floodway encroachments.

-Check the anchoring system used in securing manufactured homes.

15-8. If the third inspection reveals that the builder of an apartment house has made a change to the structure that results in a major violation of your floodplain regulations, what can you do?

Withhold the certificate of occupancy. (This assumes that you have an ordinance that states that utilities cannot be turned on and/or apartments cannot be rented until the certificate is issued.)

15-9. If a project meets all of the ordinance requirements and is built according to the approved plans, what does the owner get after the final inspection?

A certificate of occupancy, certificate of compliance, use permit or other official document that allows the building to be occupied or used.

15-10. If a FEMA staff person finds a project in violation of the FEMA NFIP requirements in your community, who is responsible for correcting the violation?

Because the NFIP requirements are included in your ordinance, the local permit official is responsible.

15-11. You discover that Mrs. Murphy has ordered five truckloads of fill to raise her back yard in the floodway. She never asked for a permit. What is the recommended first step to dealing with this situation?

Talk to Mrs. Murphy and explain why a permit is needed and why it is important not to fill in the floodway. You should get voluntary compliance.

15-12. If Mrs. Murphy does not apply for a permit, what is the next step you should take?

Advise her (in writing) why a permit is required and what the community will do if she proceeds and fills in the floodway.

15-13. What legal recourses do you and your attorney have to bring a violation into compliance?

-A fine (that can increase for each day the violation continues)

-Recording the violation in the property's deed records

-A court injunction to stop work

15-14. How can Section 1316 help a local permit official faced with a subdivider who refuses to build houses in compliance with the floodplain regulations?

It authorizes FEMA to deny flood insurance to a property declared in violation of the community's ordinance. Among other things, this will prevent the property from receiving any federal grants or loans and may limit mortgages from federally regulated or insured lending institutions.

15-15. If you can get flood insurance denied for a building in violation of your ordinance, do you need to do any more enforcement work?

Yes. You still need to bring the building into compliance with your ordinance.

15-16. Why should you keep permit records?

Records do the following:

-Show what you approved and what you told the developer.

-Form a "paper trail" needed for administrative or legal proceedings.

-Give future owners information about the property.

-Are checked by FEMA or the state to determine if your community is in full compliance with the NFIP.

15-17. What records should be kept in your permit file?

- The permit application form and all attachments, including the site plan.*
- All correspondence pertinent to the project.*
- Flood and floodway data prepared by the developer.*
- Engineering analyses of floodway encroachments and watercourse alterations.*
- Special engineering designs for enclosures below the BFE.*
- Any variances or appeals proceedings.*
- Records of inspections of the project while under construction.*
- Documentation of the "as-built" lowest floor elevation of all new and substantially improved buildings.*
- Certification of elevation to which any nonresidential building has been floodproofed.*
- Certificates of compliance or occupancy.*

15-18. Does your ordinance require that building elevation records be kept on the FEMA Elevation Certificate?

Depends on the community. (See the discussion on page 15-12 and check the sections of your ordinance on administration, duties of the enforcement official and definitions.)

15-19. Who is responsible for ensuring that the elevation certificate is completed correctly?

The permit official

15-20. What are the two situations when a record of an engineer's or surveyor's certification is needed?

-Elevation certificate: needed for new or substantially improved buildings that are elevated in the SFHA

-Floodproofing certificate: needed for new or substantially improved nonresidential buildings that are floodproofed.

15-21. A property has been annexed from the county into your city, but the FIRM has not been revised to reflect the annexation and a countywide FIRM is not yet available as the regulatory map. What is the NFIP community number that is recorded in Item B1, Section B of the FEMA Elevation Certificate?

Your city's NFIP number

15-22. Mr. Murphy is building a house on a slab on compacted fill. What diagram number is entered in Item C2 of the FEMA Elevation Certificate?

Diagram 1

- 15-23. Mr. McGillicuddy is surveying a building on a crawlspace in an AE Zone. He is completing a FEMA Elevation Certificate and asks you what floor level he is supposed to survey. What do you tell him?

See Diagram 8. He needs to shoot the elevations for points a, b, f and g as well as record the number of openings and their total area (h and i). This information is recorded in Item C3.

- 15-24. Can a building official who is not an engineer, architect or surveyor sign Section D?

No. The building official can copy information from another certificate into Sections A, B, and C. Item G1 should be checked and the building official would sign at the bottom of Section G.

- 15-25. The Village of East Bottomland, Illinois, has a large AO Zone. What is needed to complete a FEMA Elevation Certificate for new buildings in the AO Zone?

In addition to the property and FIRM information in Sections A and B, Sections E and G must be completed. Section E needs the following items:

E1 – Building diagram number

E2 – The distance that the top of the bottom floor is above or below the highest adjacent grade.

E3 – If no flood depth number is available, a certification that the bottom floor is elevated in accordance with the village's ordinance.

Section G needs the following items:

G2 – Check that a local official completed Section E

G3 – G7 permit information

G9 – Depth of flooding shown on the FIRM

Complete local official's name, address, etc.

25.2.16. Section 16

- 16-1. What is the basic rule on improvements and repairs to existing buildings in the floodplain?

If the cost of improvements or the cost to repair the damage exceeds 50 percent of the market value of the building, it must be brought up to current floodplain management standards.

- 16-2. Mrs. Murphy got a permit two months ago to remodel her living room and kitchen. Now she wants a permit to remodel three bedrooms and two bathrooms. Should you check each of these separately to determine if each project is a substantial improvement?

No. They should be counted as one project and their total cost combined

16-3. What is the substantial improvement formula?

A project is a substantial improvement if:

$\frac{\text{Cost of improvement project}}{\text{Market value of the building}} \geq 50 \text{ percent}$

16-4. Which of the following items must be included when calculating the cost of an improvement project?

Attached deck *-YES*

Plumbing *-YES*

Permit fees *-NO*

Contractor's overhead and profit *-YES*

Architect's plans *-NO*

Landscaping *-NO*

Built-in bookcases *-YES*

16-5. What factors are considered when determining market value?

"The price a willing buyer and seller agree upon." Factors to consider are the building's original quality, subsequent improvements, age and current condition.

16-6. What are three good sources for obtaining the market value of a house?

-An independent appraisal by a professional appraiser.

-Detailed estimates of the structure's actual cash value (the replacement cost for a building, minus a depreciation percentage based on age and condition).

-Property appraisals used for tax assessment purposes with an adjustment recommended by the tax appraiser to reflect market conditions (adjusted assessed value).

-The value of buildings taken from NFIP claims data (usually actual cash value).

-Qualified estimates based on sound professional judgment made by the staff of the local building department or tax assessor's office.

16-7. Mr. Jones proposes a \$50,000 addition to his \$80,000 home in the floodplain. Is this a substantial improvement?

Yes, $50,000 \text{ divided by } 80,000 = 0.625$, more than 50%

- 16-8. If Mr. Jones' project will be a substantial improvement, what do you need to check to see if the whole house has to be elevated or just the addition?

Check the extent of work on the common wall and the existing building. If the common wall is demolished as part of the project, the existing building and the addition must be elevated.

- 16-9. How does your ordinance treat increases in the first floor greater than 20%?

Depends on the community. Check the beginning of the section on "Protection Buildings."

- 16-10. What is the formula for determining substantial damage?

A building was substantially damaged if:

$$\frac{\text{Cost to repair}}{\text{Market value of the building}} \geq 50 \text{ percent}$$

- 16-11. What is the basic rule on calculating the cost of the damage?

Substantial damage is determined regardless of the actual cost to the owner. You must figure the true cost of bringing the building back to its pre-damage condition using qualified labor and materials obtained at market prices.

- 16-12. A tornado swept through town and substantially damaged 25 buildings in the floodplain. How can you help the property owners comply with the floodplain ordinance's substantial damage regulations?

Help the owner obtain financial assistance. Many programs are available after a disaster declaration.

16-13. Mr. Johnson prepared a list of everything he has to do to repair his flooded home. Which of the following items are counted toward the cost of repairs when determining substantial damage? What is the dollar amount that should be counted?

Clearing broken trees and debris away from the house (\$2,500) *\$0*

Replacing the warped flooring (\$3,000) *\$3,000*

New doors (\$1,000) to replace old ones (worth \$500) *\$1,000*

Replacing the old kitchen cabinets (valued at \$5,000) with custom hardwood cabinets valued at \$15,000. *\$15,000*

New wall to wall carpeting (\$1,800) *\$1,800*

New furniture (\$12,000) *\$0 (not part of the structure)*

New wiring (\$2,000) to bring the building up to current code (This is a standard requirement of the community. The building was not cited as having a code violation.) *\$2,000*

Permit fee (\$500) *\$0*

Clean out and test the furnace (done free as a public service by the utility company, but otherwise worth \$250 if done by a private contractor) *\$250*

New bushes and replacement fence (\$1,500) *\$0 (not part of the structure)*

16-14. What's the best way to determine if a building is "historic" and eligible for exemption from the substantial improvement requirement?

See if it's on a list of historic structures approved by the Illinois Historic Preservation Agency.

25.2.17. Section 17

17-1. Where does a property owner go to buy a flood insurance policy?

To any licensed casualty insurance agent

17-2. What are the two types of flood insurance coverage available?

Building and contents coverage

17-3. Can I buy a flood insurance policy with building coverage on the following?

An apartment building *YES*

A septic tank *NO*

An open sided park pavilion *NO*

A motor home *NO, unless it's permanently attached to a foundation*

A boat dock *NO*

A mobile home on a foundation in a mobile home park *YES*

A flower garden *NO*

17-4. Can I get flood insurance coverage for furniture in a basement?

NO

17-5. What is the maximum amount of contents coverage I can get for a single family dwelling?

\$100,000

17-6. Can I wait and buy a flood insurance policy after I hear the National Weather Service issue a flood warning?

No. There is a 30-day waiting period before coverage takes effect

17-7. Which of the following programs is likely to require a flood insurance policy as a condition of financial assistance?

Department of Veterans Affairs mortgage loan guarantees *YES*

HUD Community Development Block Grants *YES*

Federal disaster assistance *YES*

Home improvement loans from a bank participating in FDIC *YES*

Mortgage from a federal credit union *YES*

17-8. Can a bank require flood insurance for a property outside the SFHA shown on the latest FIRM?

Yes. Any lender can require flood insurance wherever it wants (Federal law doesn't give lenders a choice for properties in the SFHA).

17-9. Does your local government have flood insurance coverage on the buildings it owns in the floodplain?

Depends on the community. This is an important thing to check because flood insurance may be the only source of funds to rebuild and repair those buildings after a flood. (See the discussion on page 17-9)

17-10. Do I need an elevation certificate to purchase a flood insurance policy on a pre-FIRM building?

No. However, if you have one that shows the building to be at or above the BFE, you can get a post-FIRM actuarial rate that is lower than the rate for pre-FIRM buildings.

17-11. What are the two key factors in rating post-FIRM buildings?

FIRM Zone and the lowest floor's elevation in relation to the BFE

17-12. Is there much of a cost savings on flood insurance if the lowest floor of a post-FIRM building is one foot above the BFE instead of at the BFE?

Yes. For example, the rate for the first layer of building coverage in an AE Zone goes from \$0.59/\$100 coverage to \$1.08.

17-13. How do I know how much a flood insurance policy will cost for a post-FIRM building with the lowest floor four feet below the BFE?

The insurance agent has to send information on the building in for a special individualized rating known as "submit to rate."

17-14. Can I get a good flood insurance rate on a building in an AE Zone that is floodproofed to the base flood elevation?

Probably not. Unless the building is floodproofed to at least one foot above the BFE, the rate will be based on the elevation of the lowest floor. If the lowest floor is two or more feet below the BFE, it will be a submit to rate.

17-15. What's the best way to get a good flood insurance rate for a new building in an approximate A Zone?

Obtain or develop a base flood elevation for the site and require the building to be elevated above it.

25.2.18. Section 18

- 18-1. What is the basic prerequisite that a community must meet before it can apply to join the Community Rating System?

It must be deemed in full compliance with the NFIP, based on a Community Assistance Visit conducted no more than one year before the application is submitted.

- 18-2. Who administers the CRS on behalf of FEMA?

The Insurance Services Office, Inc., (ISO)

- 18-3. How much does it cost to join the CRS?

No fee is charged for a community to apply for participation in the CRS. The only costs the community incurs are those of implementing creditable floodplain management activities and the staff time needed to prepare the application.

- 18-4. What are some of the benefits of joining the Community Rating System?

-Residents get reduced flood insurance premiums

-The community's flood program receives recognition from a national evaluation program.

-Technical assistance in designing and implementing some activities is available at no charge from ISO.

-It encourages the community to maintain its program during times of diminished interest in flood issues.

- 18-5. What four general types of floodplain management activities are recognized by the CRS?

Public information

Mapping and regulations

Flood damage reduction

Flood preparedness

- 18-6. Can a city get CRS credit for activities implemented by a county agency within the city?

Yes

- 18-7. How many points are needed for a community to receive a CRS premium reduction?

500

18-8. If a community decides to join the CRS, are any of the activities mandatory?

Yes. All CRS communities must maintain FEMA's elevation certificates for all new and substantially improved construction in the floodplain after the date of application for CRS classification.

Repetitive loss communities have additional requirements related to their repetitive loss areas.

18-9. Does your community implement any of the 18 activities credited by the CRS?

Depends on the community. If your community implements the activities listed, it may be worth your while to obtain a copy of the CRS Application or contact the ISO/CRS Specialist for Illinois.

18-10. Can non-CRS communities obtain and benefit from CRS publications?

Yes

25.2.19. Section 19

19-1. Who is responsible for disaster and emergency response activities in your community?

Each community may have a different name for the emergency manager. Get to know yours. (See Emergency Operations on page 19-2)

19-2. Is there a written emergency response plan that identifies your department's duties during and after a disaster?

Depends on the community. There should be one that clearly identifies what is expected of your office. Check with the emergency manager. (See Emergency Operations on page 19-3)

19-3. What are the objectives of a building condition survey?

To determine if any building is so dangerous that it should not be reentered without a careful inspection, and

To determine which buildings will need a floodplain development permit before they can be repaired or reoccupied.

- 19-4. What are the three categories of building condition that are determined during the building condition survey?

Apparently safe: No exterior signs of structural damage. People can be allowed back in, but they will need building permits for repairs.

Building obviously substantially damaged: The flood swept the building away, it has collapsed or it is missing one or more walls. The building cannot be reoccupied without major structural work.

Could be substantially damaged: The building may be substantially damaged, but such damage is not obvious.

- 19-5. What is one of the best guides you can give to owners and residents of flooded buildings?

Repairing Your Flooded Home

- 19-6. Can your community waive the requirement for a development permit so people can repair their flooded homes more quickly?

No. You can waive the permit fee, but you must require permits to see if the buildings could be substantially damaged and subject to your floodplain ordinance's requirements.

- 19-7. Once you advise an owner that a permit is necessary, do you need to inspect the building or can you save time and just wait for a permit application?

As soon as possible after the notice is delivered, your office should inspect each flooded property to review needed repairs and determine if a permit is needed.

- 19-8. When you inspect a flooded building to determine if the structure is substantially damaged, which of the following items should you check?

Walls and ceiling

Foundation

Deck or porch

Molding and built-in bookcase

Ductwork

Water heater

Kitchen cabinets

All of the above need to be checked because the NFIP considers all of them part of the building's structure.

19-9. Who can help you make sure people don't reoccupy damaged buildings before they have passed an inspection?

Make sure that utility companies won't turn service back on unless there is an "Approved to Connect" sign posted on the building.

Instruct police and other departments about the permit requirements and ask them to report to you any construction projects under way without posted permit signs.

Get the news media to help spread the word on the requirements and why they are needed.

19-10. Does your community license contractors or have procedures to prevent "fly by night" unqualified contractors from preying on disaster victims?

Depends on the community. It's worth checking out before the disaster

19-11. What sources of assistance are there to help your post-disaster operations?

-IDNR

-FEMA Regional Office

-Local or county health department

-Cooperative Extension Service

-Other communities willing to provide mutual aid

-Building officials association

25.2.20. Section 20

20-1. What's a good definition of "flood hazard mitigation?"

All actions that can be taken to reduce property damage and the threat to life and public health from flooding.

20-2. What are the six basic strategies of flood hazard mitigation measures?

-Preventive measures

-Property protection

-Natural resource protection

-Emergency services

-Structural projects

-Public information

20-3. What are some of the benefits of preparing a mitigation plan?

Preparing a plan will:

- Ensure that all possible activities are reviewed and implemented.*
- Link floodplain management policies to specific activities.*
- Ensure that activities are coordinated.*
- Educate residents*
- Build public and political support*
- Guide development away from hazardous areas.*
- Fulfill planning requirements for state or federal assistance programs.*
- Facilitate implementation of floodplain management activities*

20-4. Where can you get technical help in planning and implementing a mitigation program?

- The soil and water conservation district*
- Agencies of the U.S. Department of Agriculture that work with watershed property owners, such as the Natural Resources Conservation and Cooperative Extension services.*
- County stormwater management commissions*
- Regional or metropolitan water, sewer or sanitary districts*
- County emergency management agency (ESDA)*
- Illinois Emergency Management Agency*
- Illinois Department of Natural Resources*
- FEMA Regional Office*
- The district office of the U.S. Army Corps of Engineers*
- Illinois Association for Floodplain and Stormwater Management*

20-5. List some of the sources of financial assistance that are available for a mitigation program.

- Property owners willing to cost share on projects that help them*
- FEMA's Flood Mitigation Assistance Program*
- FEMA's Public/Infrastructure Program*
- FEMA's Human Services programs*
- FEMA's Hazard Mitigation Grant Program*

- IDNR/OWR's State Programs*

20-6. What are the two types of grants available through the Flood Mitigation Assistance Program?

-Planning grants to help develop or update a flood mitigation plan

-Project grants to implement projects in conformance with the plan

20-7. Could my community be eligible for a Section 404 Hazard Mitigation Grant even if it did not receive a disaster declaration?

Yes. All communities in the state are eligible after the disaster declaration, but priority funding is usually given to communities in declared counties.

20-8. If a flood is bad enough to result in a Presidential disaster declaration, why should my city need flood insurance policies on the buildings it owns in the floodplain?

Federal disaster assistance for a flooded public building will be reduced by the amount of flood insurance coverage the community should have on that building. It does not matter whether the building is insured; FEMA will still only provide assistance for damage that exceeded the level of insurance.