



# FLOODPLAIN MANAGEMENT WORKSHOP

June 7, 2023

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014





# ***Floodplain Management Workshop Program Schedule***

10:00AM	WELCOME AND INTRODUCTIONS
10:10AM	INTRODUCTION TO FLOODPLAIN MANAGEMENT
10:20AM	FLOODPLAIN MAPS AND STUDIES
10:50AM	BREAK
11:00AM	REGULATORY REQUIREMENTS: MAPS AND PERMITS
11:30AM	REGULATORY REQUIREMENTS: FLOODWAYS
12:00PM	LUNCH BREAK
1:00PM	REGULATORY REQUIREMENTS: NEW BUILDINGS
1:40PM	REGULATORY REQUIREMENTS: EXISTING BUILDINGS
2:20PM	BREAK
2:30PM	ADMINISTRATION AND INSPECTIONS
2:50PM	WRAP UP
3:00PM	ADJOURN



# FLOODPLAIN MANAGEMENT WORKSHOP

The image shows a Zoom meeting window with a dark theme. At the top, the name 'George' is visible. The bottom toolbar contains several icons: Unmute (with a yellow arrow pointing to it), Start Video, Participants (2), Chat, Share Screen (with a yellow arrow pointing to it), Record (with a yellow arrow pointing to it), Reactions (with a yellow arrow pointing to it), and Leave. A reactions menu is open over the Reactions button, showing various emojis and a 'Leave' button. The chat window on the right is empty, with a 'To: Everyone' dropdown and a 'File' icon.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Webinar Logistics**

- All lines will be automatically muted
- Use “Chat” window in control panel to submit questions or comments to the webinar organizer.
- Select questions will be read to the presenter and answered.



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## **Continuing Education Credits**

- Certified Floodplain Managers are eligible for 4 CECs for participation.
- Eligibility for CEC is dependent on your participation in poll questions and time spent viewing the webinar.
- You must have registered individually in order to be eligible for CEC. Attending the webinar in a group setting or viewing the recording is NOT eligible for CEC.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Organizers and Presenters**

- Ken Bouma - IDNR
- Jason Conn - IDNR
- Adrienne Ricehill - IDNR



# OBJECTIVES

REVIEW THE BASIC RULES OF  
ADMINISTERING A LOCAL  
FLOODPLAIN MANAGEMENT  
ORDINANCE

BECOME FAMILIAR WITH THE  
*FLOODPLAIN MANAGEMENT DESK  
REFERENCE*



# FLOODPLAIN MANAGEMENT WORKSHOP

## Workshop Materials

- *Presentation Notes*
- *2014 Floodplain Management Desk Reference*

### Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014







# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



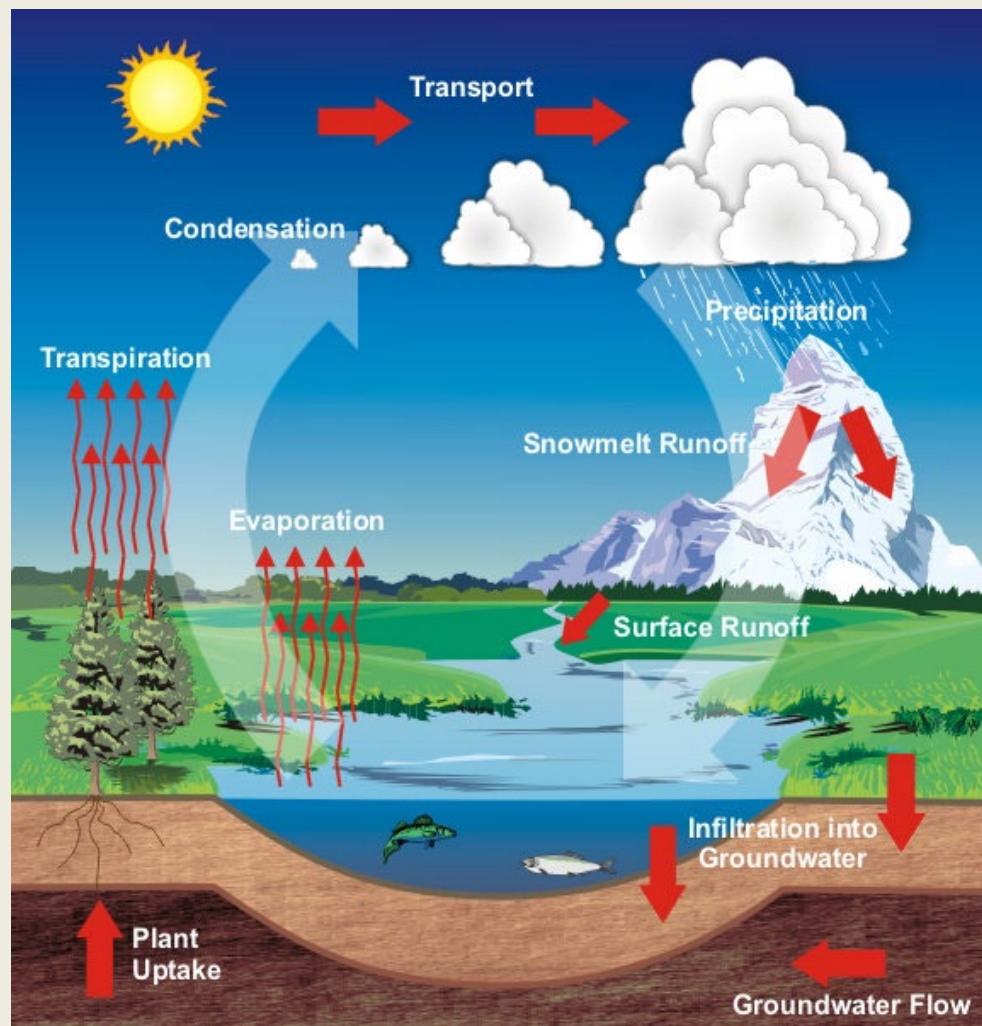
## Section 1

### *Flooding and Floodplain Dynamics*



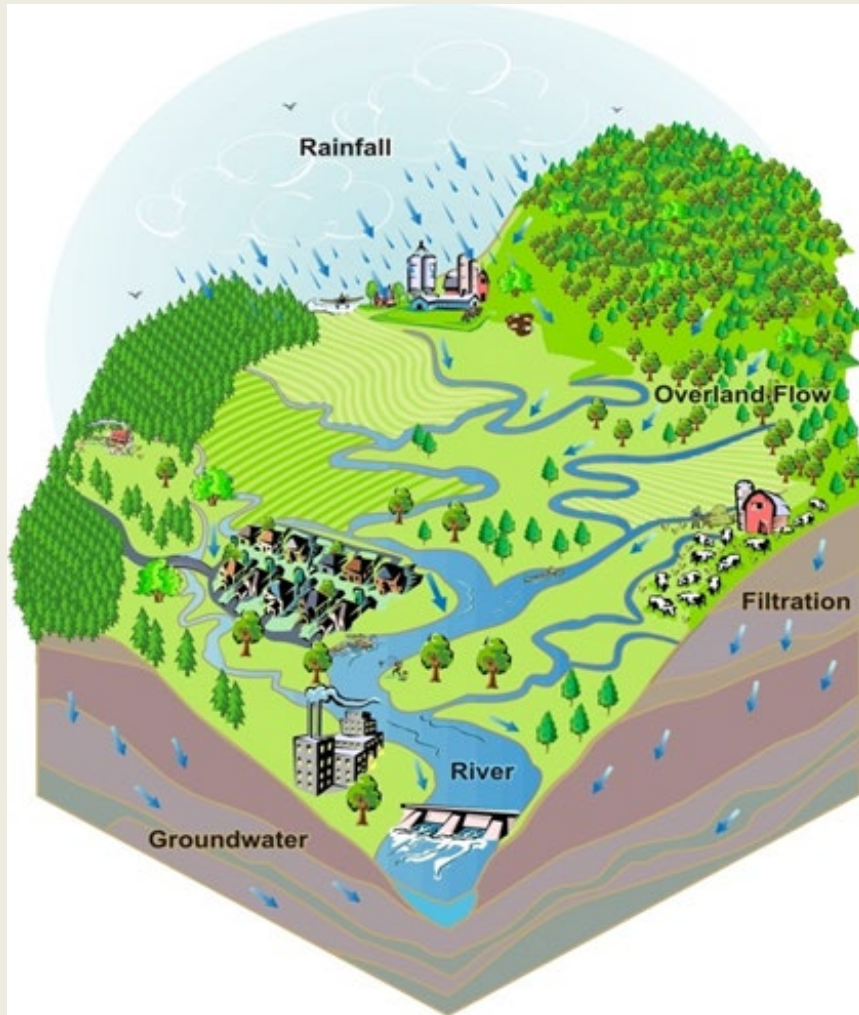
# INTRODUCTION TO FLOODPLAIN MANAGEMENT

Flooding is a  
natural process





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Flood problems are caused by people





# FLOODPLAIN MANAGEMENT WORKSHOP

Flooding of developed areas  
creates safety hazards





# FLOODPLAIN MANAGEMENT WORKSHOP

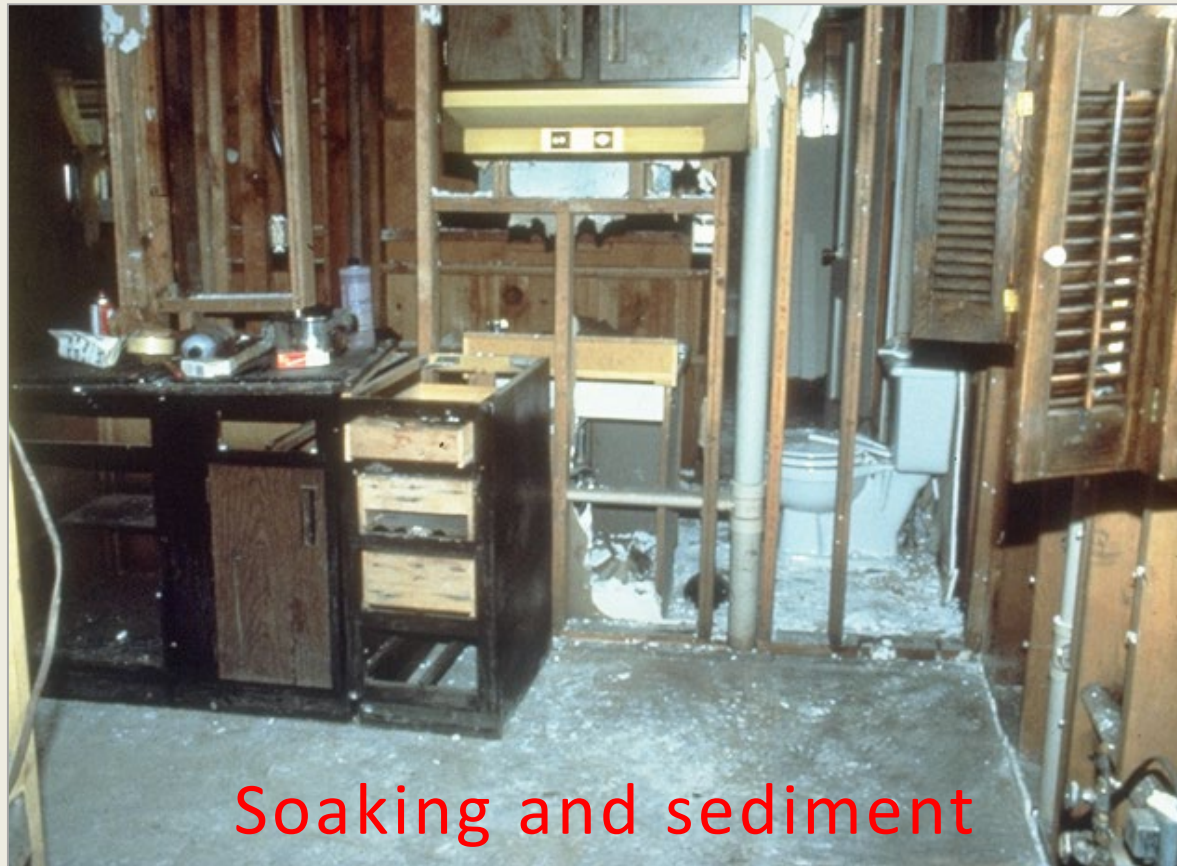
Flooding of developed areas  
creates health hazards





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## Flooding damages buildings



Soaking and sediment



# FLOODPLAIN MANAGEMENT WORKSHOP

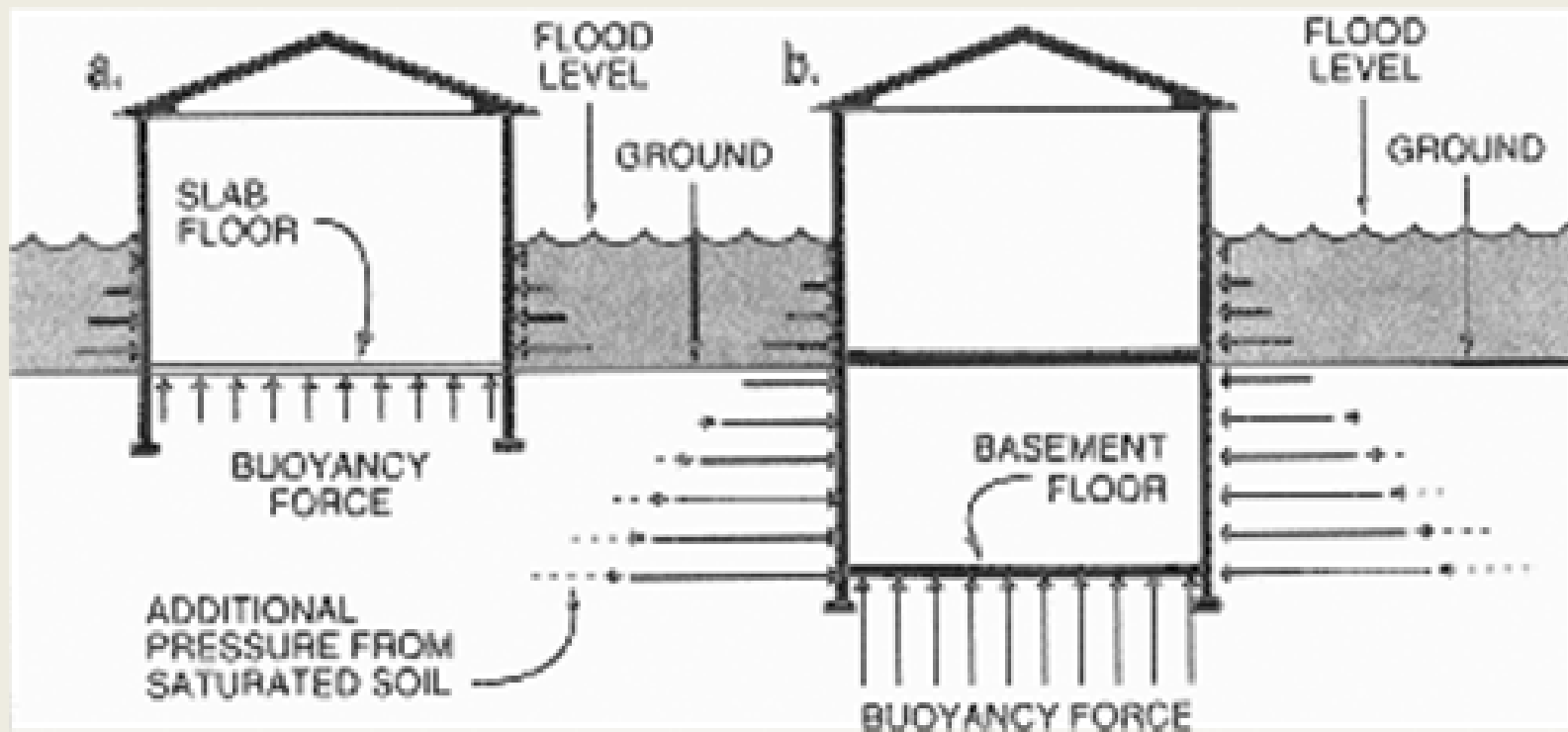
Flooding  
damages  
buildings





# FLOODPLAIN MANAGEMENT WORKSHOP

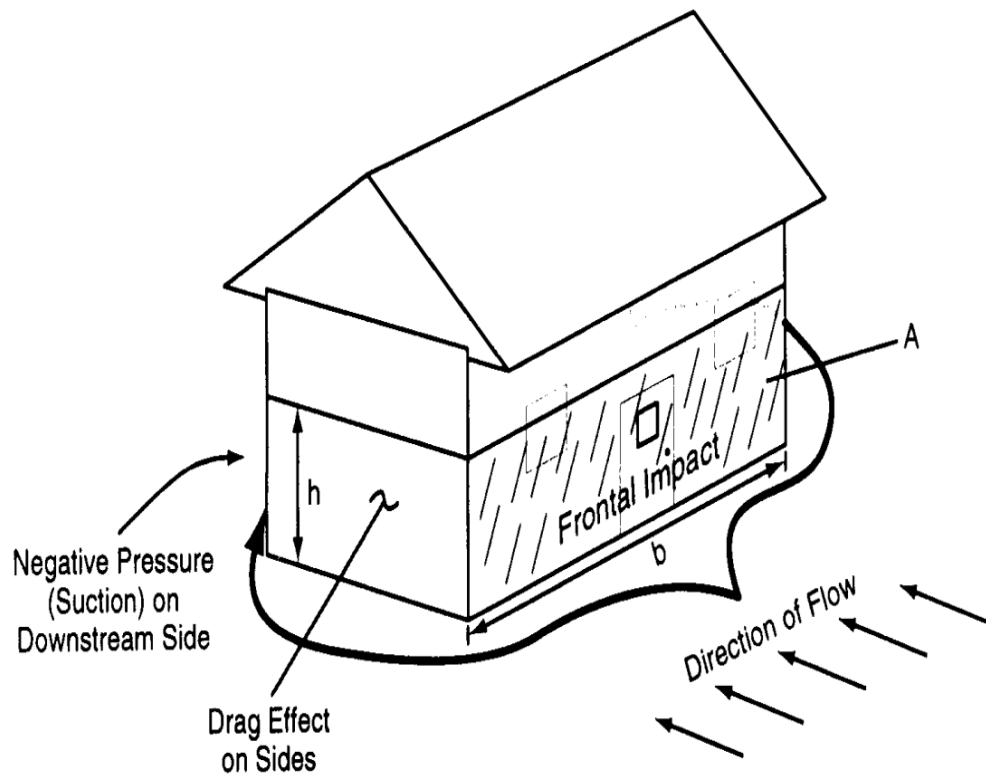
## Hydrostatic Forces







# FLOODPLAIN MANAGEMENT WORKSHOP



## Hydrodynamic forces

Moving water creates a hydrodynamic force that can damage a building's walls



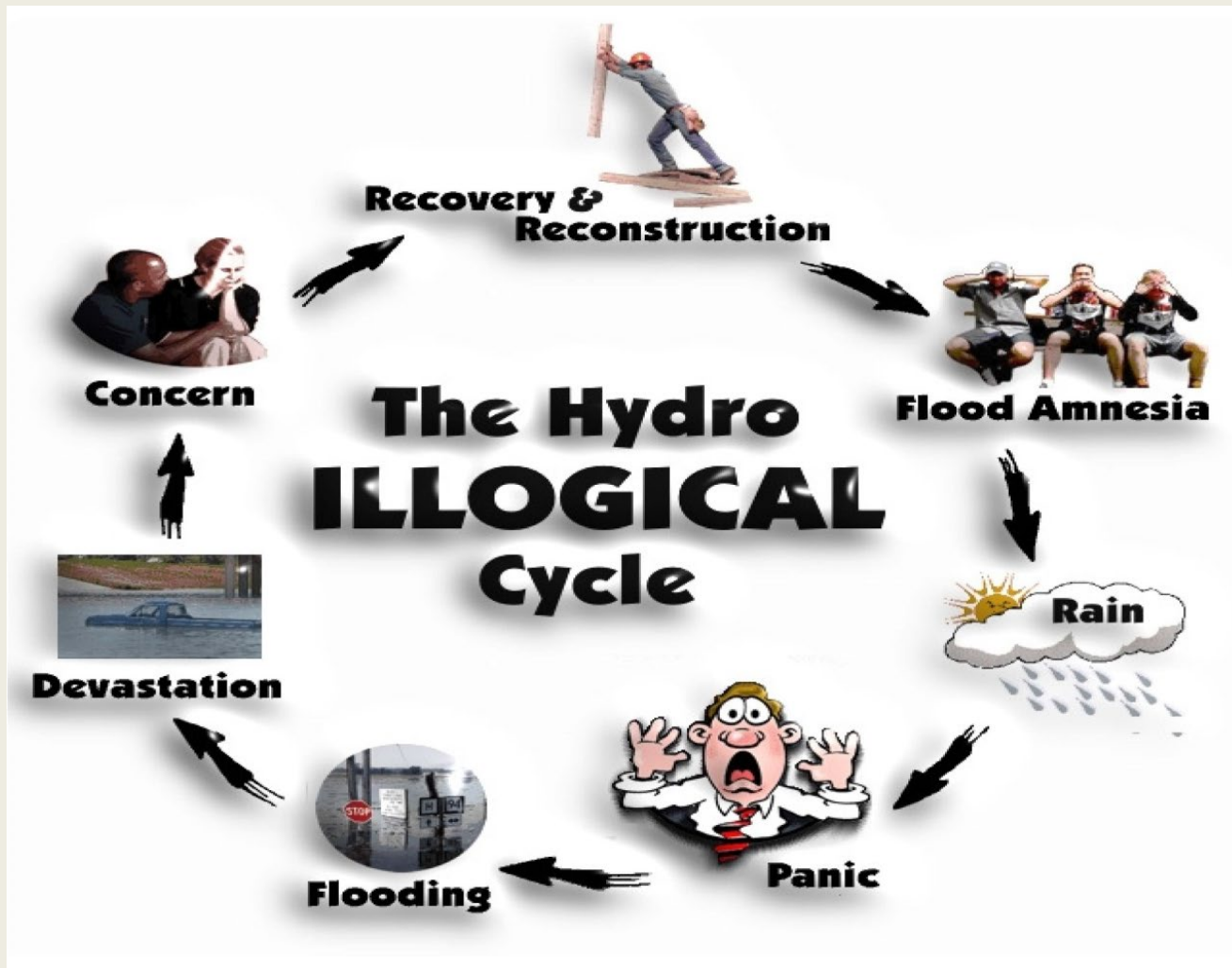
# *FLOODPLAIN MANAGEMENT WORKSHOP*

## Debris Impact

- Floodwaters can and will pick up anything that will float—logs, lumber, ice, even propane and farm chemical tanks and vehicles.
- Moving water will also drag or roll objects that don't float.
- Debris acts as battering rams that can knock holes in walls and demolish foundations.



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# FLOODPLAIN MANAGEMENT WORKSHOP

## Key to Acronyms

**BFE:** Base Flood Elevation

**CFR:** Code of Federal Regulations

**CRS:** Community Rating System

**DNR:** Iowa Department of Natural Resources

**FEMA:** Federal Emergency Management Agency

**FIRM:** Flood Insurance Rate Map

**FIS:** Flood Insurance Study

**LOMA:** Letter of Map Amendment

**LOMR:** Letter of Map Revision

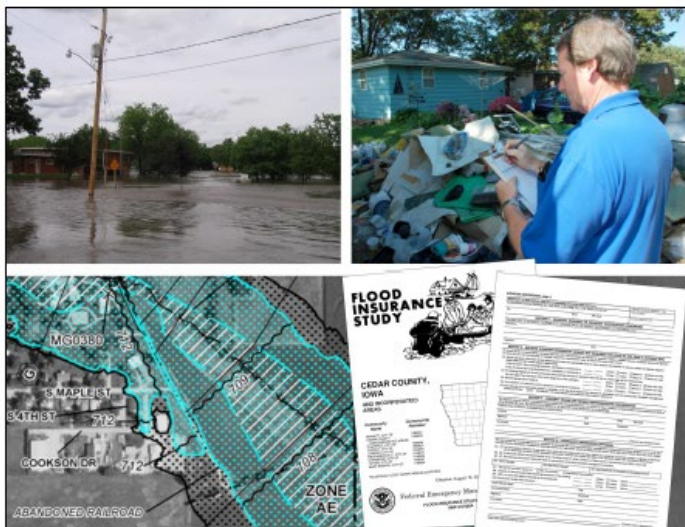
**NFIP:** National Flood Insurance Program

**SFHA:** Special Flood Hazard Area



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## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 2

# The National Flood Insurance Program



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## National Flood Insurance Program (NFIP)

- Transfer costs from taxpayer to floodplain property owner
- Provide assistance after any flood
- Guide development away from floodplains
- Require protection of buildings





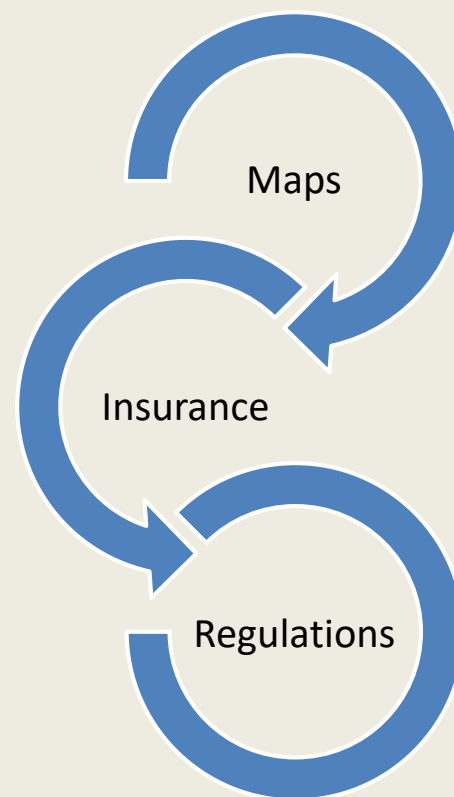
# FLOODPLAIN MANAGEMENT WORKSHOP

## Three parts of the NFIP

Floodplain maps

Flood insurance - Rates based on  
flood risk

Floodplain management  
regulations - Rules based on  
floodplain maps





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **NFIP Profile as of June 2023**

> 22,500 communities participate nationwide

711 Iowa communities participate

> 3.9 million flood insurance policies are in effect nationwide

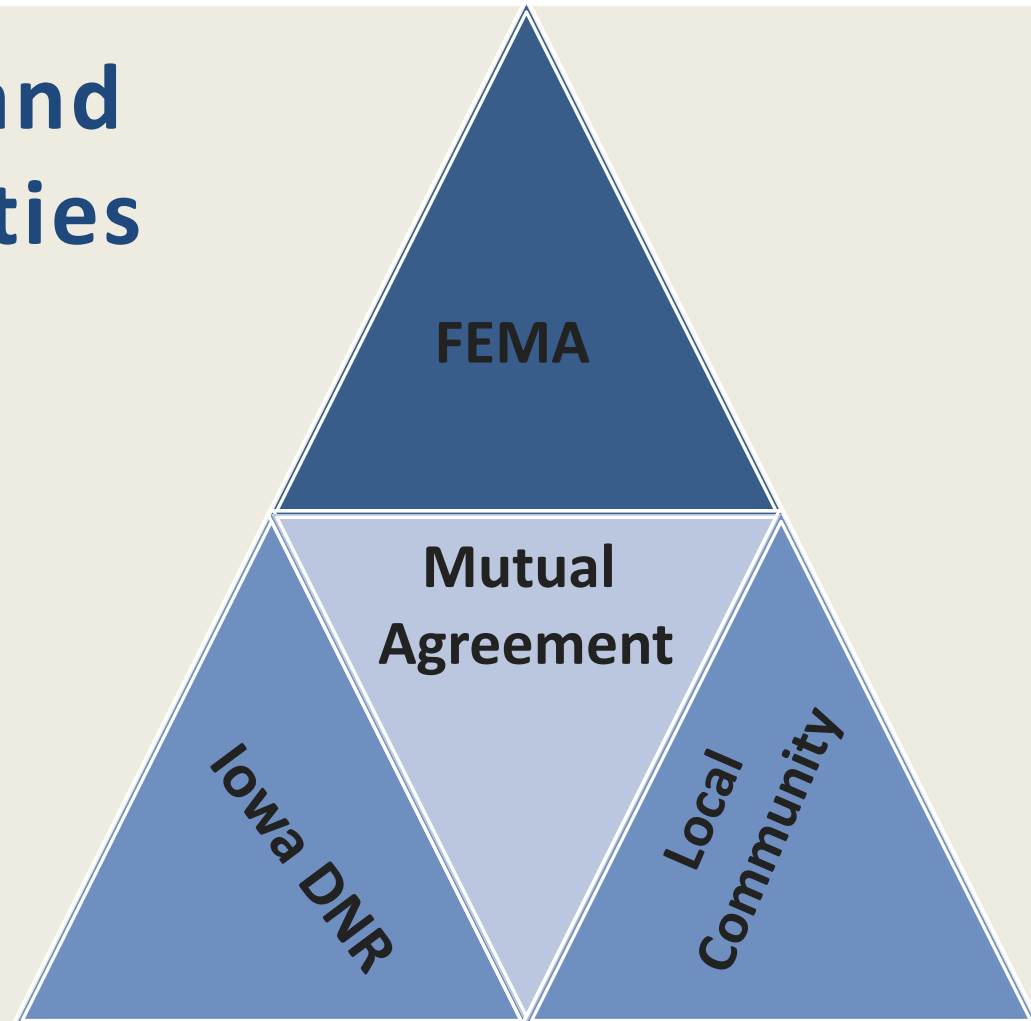
~ 8,600 flood insurance policies are in effect in Iowa





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## NFIP Roles and Responsibilities





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## NFIP roles and responsibilities

- Federal – FEMA
  - Maps
  - Insurance
  - Community compliance
- State – DNR
  - Administer state regulations
  - Help communities



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## NFIP roles and responsibilities

- Community – cities and counties
  - Enforce the ordinance
  - Help keep maps updated
  - Help residents with maps and construction questions



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## Lack of enforcement

New construction subject to flood damage

Probation - \$50 premium surcharge

Suspension – sanctions

- No flood insurance
- No federal aid for floodplain buildings  
VA, FHA, EPA, HUD, FEMA, etc.
- Lender notice to loan recipient



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## Floodplain Management Desk Reference



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## Section 3

How maps are prepared

## Section 4

NFIP maps

## Section 5

Using maps and data



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Section 3 - How maps are prepared**

- Technical background to mapping



# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood study terminology

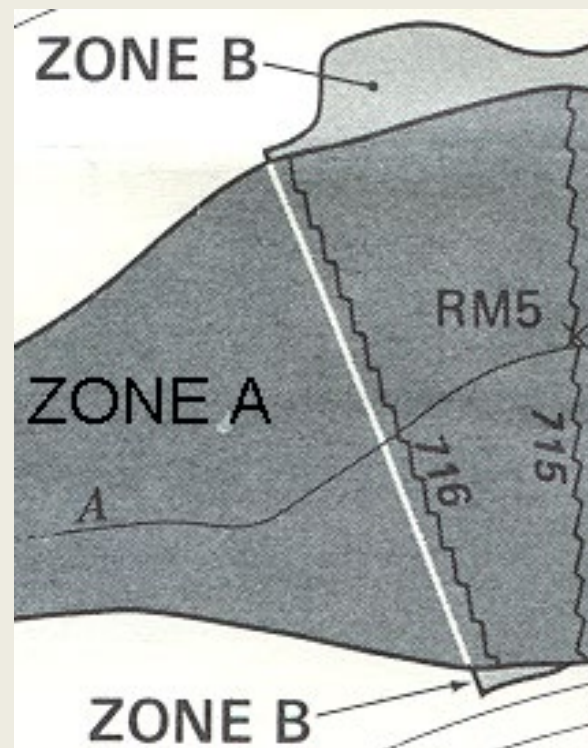
- 100-year flood
- = 1% chance flood
- = Base flood



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## Flood study terminology

- 100-year floodplain
- = Special Flood Hazard Area
- = Zone A, AE, A#, AH and AO







# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood Insurance Study

- Text and maps
- How study was done
- Data tables
- Flood profiles
- Page 26-9


**FLOOD INSURANCE STUDY**

**CEDAR COUNTY, IOWA AND INCORPORATED AREAS**

Community Name	Community Number
SENNETT, CITY OF CEDAR COUNTY (UNINCORPORATED AREAS)	190051 190053
*CLARENCE, CITY OF	190045
DURIANT, CITY OF	190022
LOWDEN, CITY OF	190054
MECHANICSVILLE, CITY OF	190070
STANWOOD, CITY OF	190056
TIPTON, CITY OF	190057
<b>WEST BRANCH, CITY OF</b>	<b>190058</b>

\*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

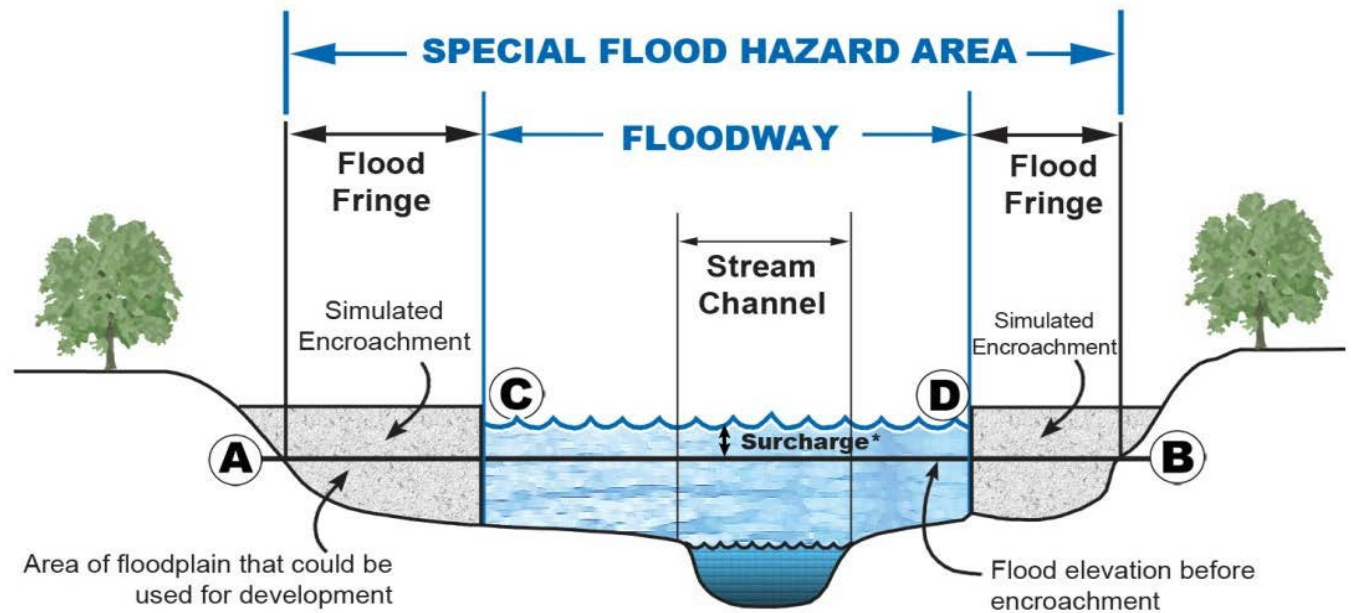
Effective: August 19, 2013

 Federal Emergency Management Agency  
FLOOD INSURANCE STUDY NUMBER  
19031CV000A



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## Floodway



Area of floodplain that could be used for development

Flood elevation before encroachment

Line **(A) — (B)** = Flood Elevation Before Encroachment

Line **(C) — (D)** = Flood Elevation After Encroachment

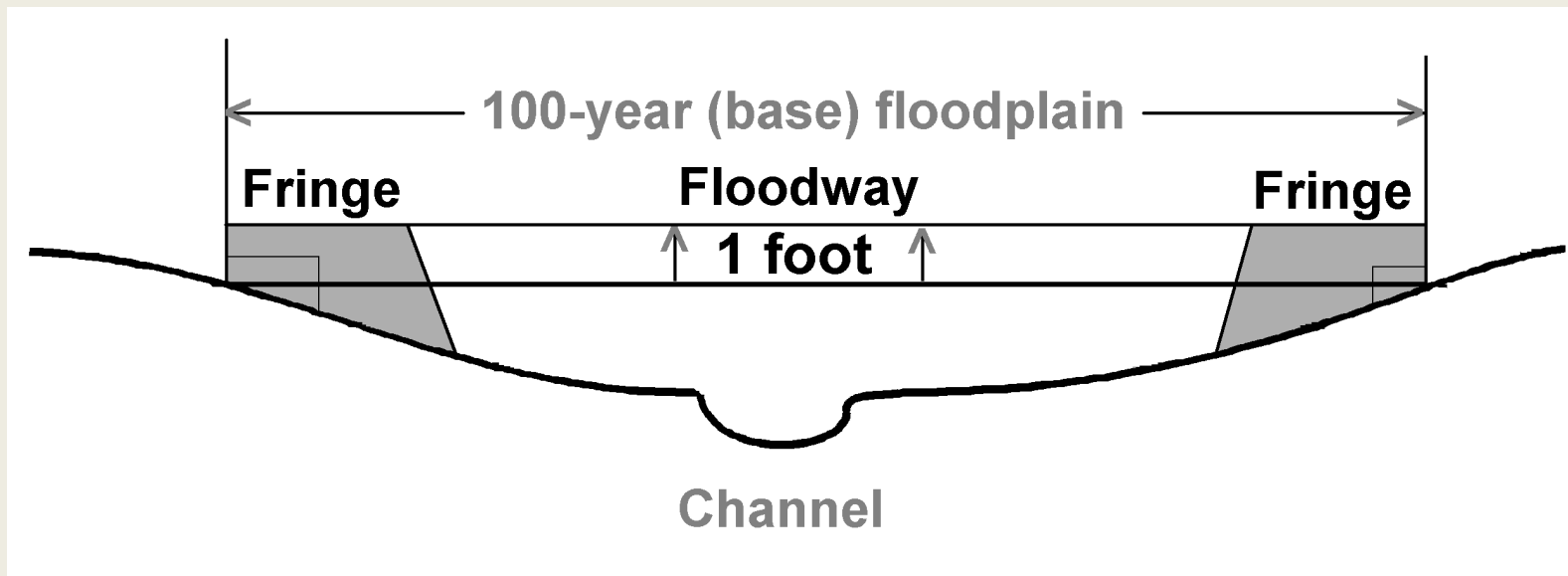
\* **Surcharge** not to exceed 1.0 foot (FEMA requirement)

 **Simulated Encroachment**



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## Concept of the Floodway

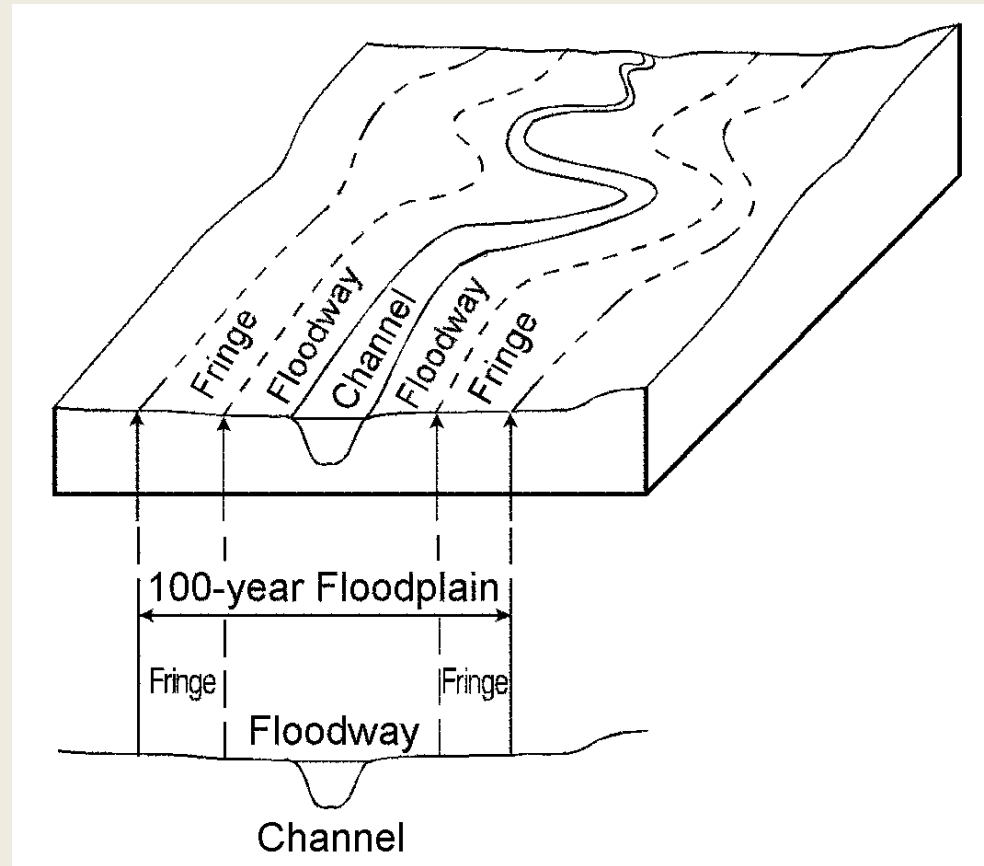


Boundaries determined by horizontal distance



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## Floodway Map





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## **Section 4 - NFIP maps**

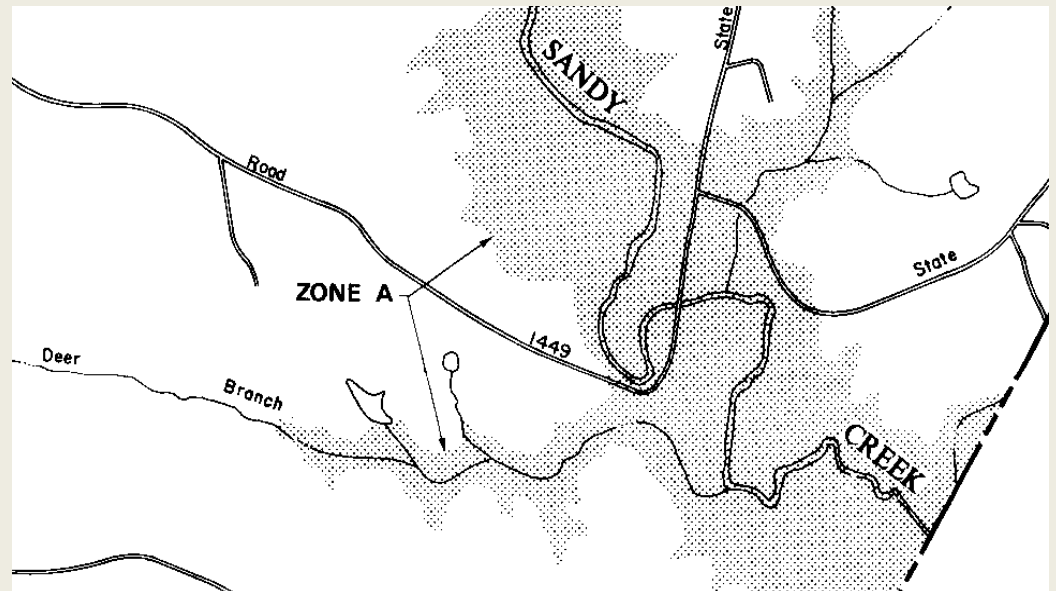
- FEMA map formats



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## Flood Hazard Boundary Map

- First map from FEMA
- A Zone
- No elevations





# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood Hazard Boundary Map

- Special Conversion Letters (page 4-3)



Federal Emergency Management Agency

Washington, D.C. 20472

IA-RA-TO:198

THIS IS A SPECIAL NOTICE REGARDING THE CONVERSION FROM THE EMERGENCY TO THE REGULAR PROGRAM, WHICH SHOULD BE ATTACHED TO THE MAP FOR:

<u>190085</u> Community Number	<u>Volga</u> Community Name	<u>Clayton</u> County Name	<u>IA</u> State
<u>1/9/76</u> Flood Hazard Boundary Map Date	<u>A</u> Old Suffix	<u>8/1/86</u> Regular Program Entry and Initial Flood Insurance Rate Map Date	<u>B</u> New Suffix

This community will be converted to the Regular Program of the National Flood Insurance Program, effective as indicated above. This action has the effect of converting the Flood Hazard Boundary Map (FHBM), which is referenced above, to a Flood Insurance Rate Map (FIRM). The Federal Insurance Administration does not intend to republish the FHBM as a FIRM at this time. Therefore, for insurance application and rating purposes please note that the map suffix has been advanced from that shown on the FHBM to the next letter shown above. Also note that the Special Flood Hazard Area, which is the shaded area on the map, is designated Zone A and all other areas are Zone X. The conversion of a community to the Regular Program affords additional limits of insurance coverage. If the above is unclear, please call (800) 638-6620 for more details.

YOU ARE ONLY BEING SENT ONE COPY OF THE NOTICE TO SAVE PRINTING, DISTRIBUTION AND POSTAGE. YOU MAY REPRODUCE THE NOTICE AS NEEDED.

FOR YOUR CONVENIENCE, PLEASE PERMANENTLY MARK YOUR COPY OR COPIES OF THE APPLICABLE FHBM AS A FIRM WITH THE NEW EFFECTIVE DATE AND SUFFIX.

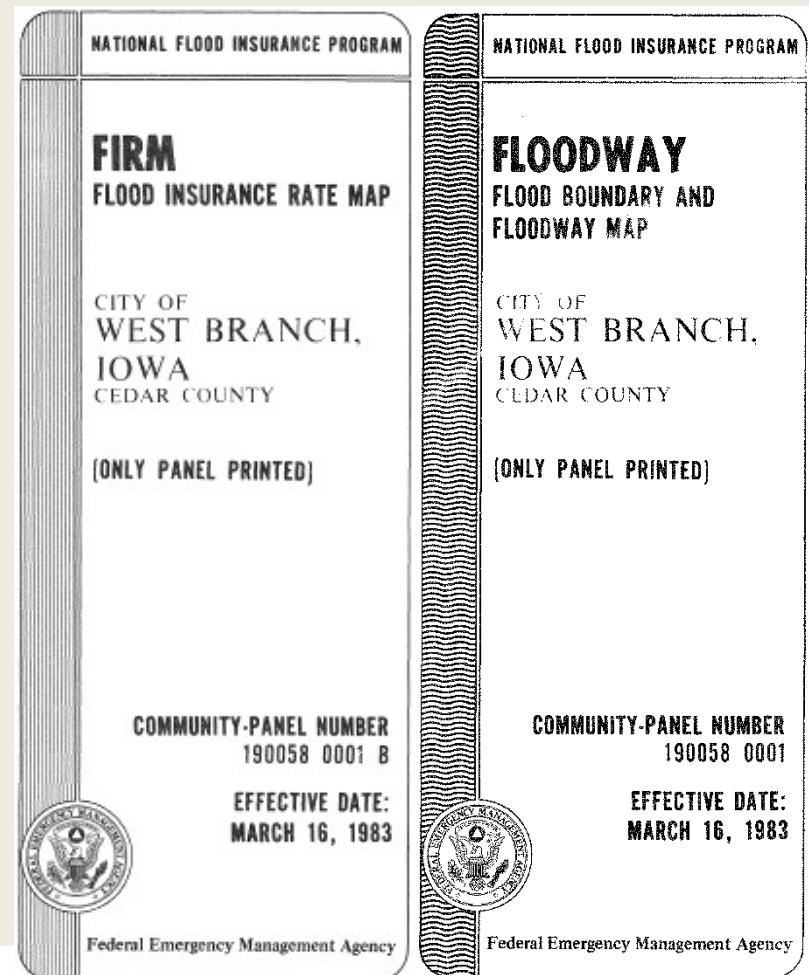


# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood Insurance Rate Map

### Map Index

- If >1 map panel
- If panel not printed – no SFHA



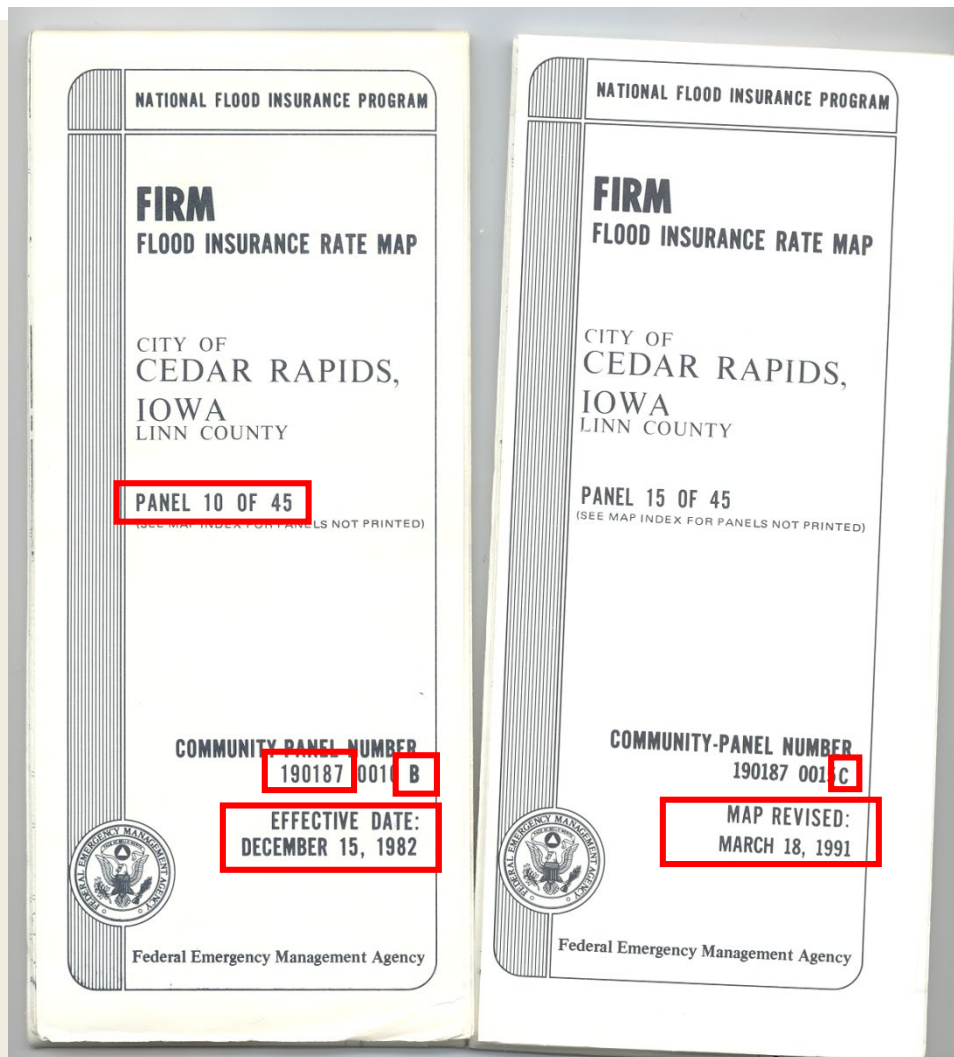




# FLOODPLAIN MANAGEMENT WORKSHOP

## Title box

Older Generation  
FIRM





# FLOODPLAIN MANAGEMENT WORKSHOP

## *Title block*

### *Newer Generation FIRM*

The title block is located in the lower right portion of each unopened Index and FIRM panel. Included in the title block are:

- The community name (in this case the county);
- The Map Panel number;
- The names of the individual communities shown on this Panel;
- The six-digit community identification numbers (CID) for the communities shown on the;
- Map Panel suffix – a letter, e.g., B, C;
- Map number (for a countywide FIRM the sixth digit is always a “C”);
- Map effective or map revision date

**NFIP**

PANEL 0211C

**FIRM**  
FLOOD INSURANCE RATE MAP

**CEDAR COUNTY,  
IOWA  
AND INCORPORATED AREAS**

**PANEL 211 OF 400**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CEDAR COUNTY	190050	0211	C
WEST BRANCH, CITY OF	190058	0211	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
19031C0211C

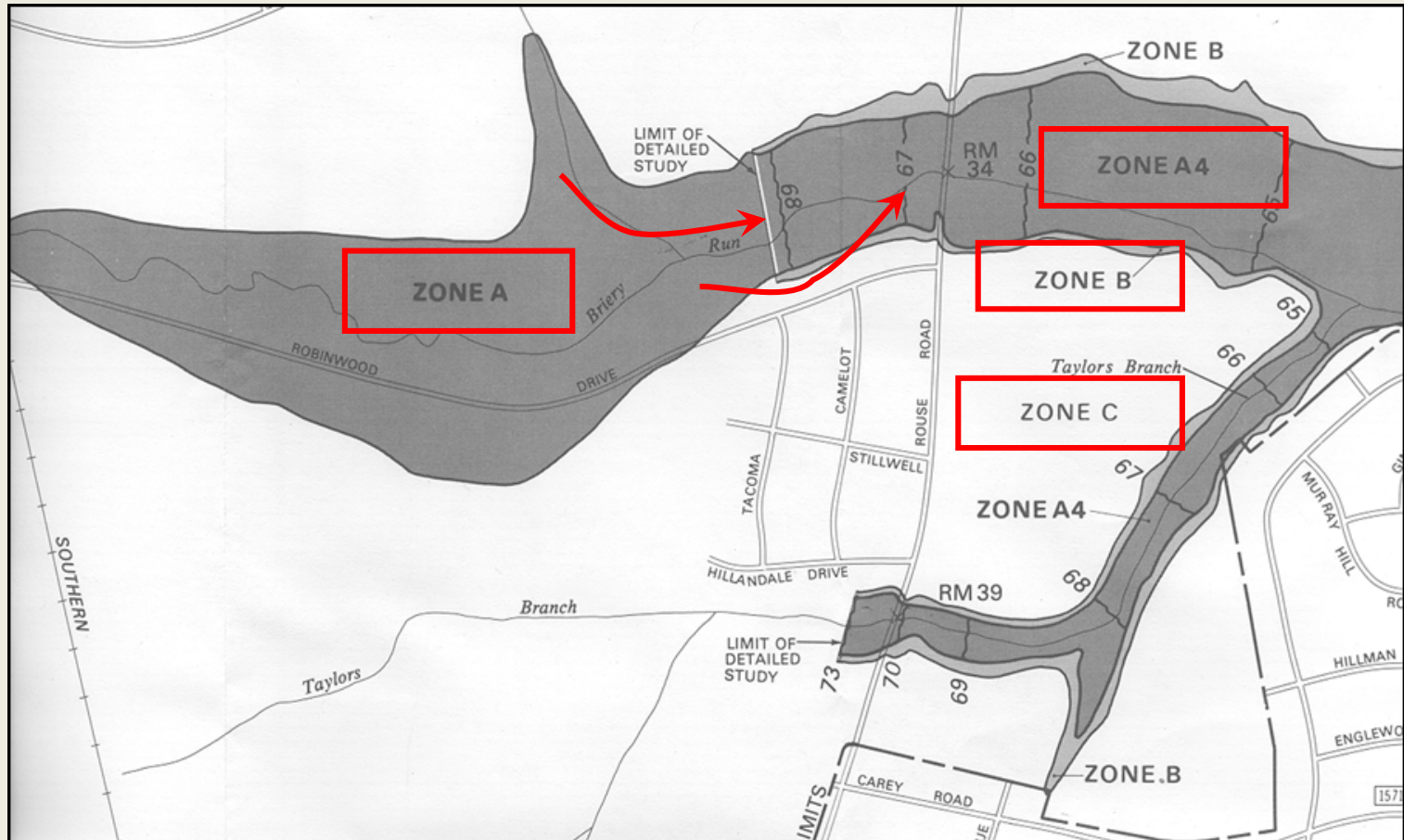
**EFFECTIVE DATE**  
AUGUST 19, 2013

Federal Emergency Management Agency



# FLOODPLAIN MANAGEMENT WORKSHOP

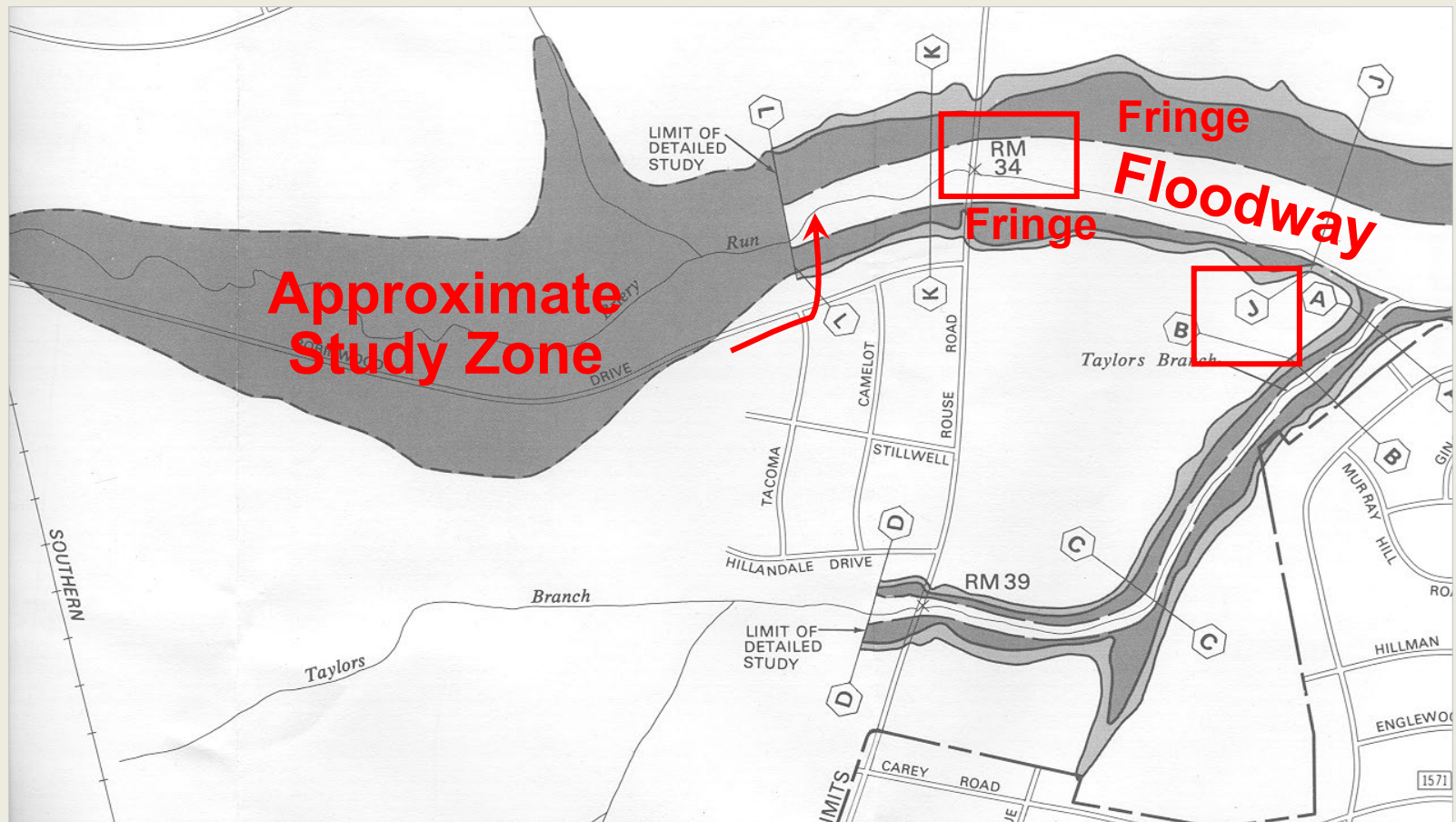
## FIRM Features (before 1986)





# FLOODPLAIN MANAGEMENT WORKSHOP

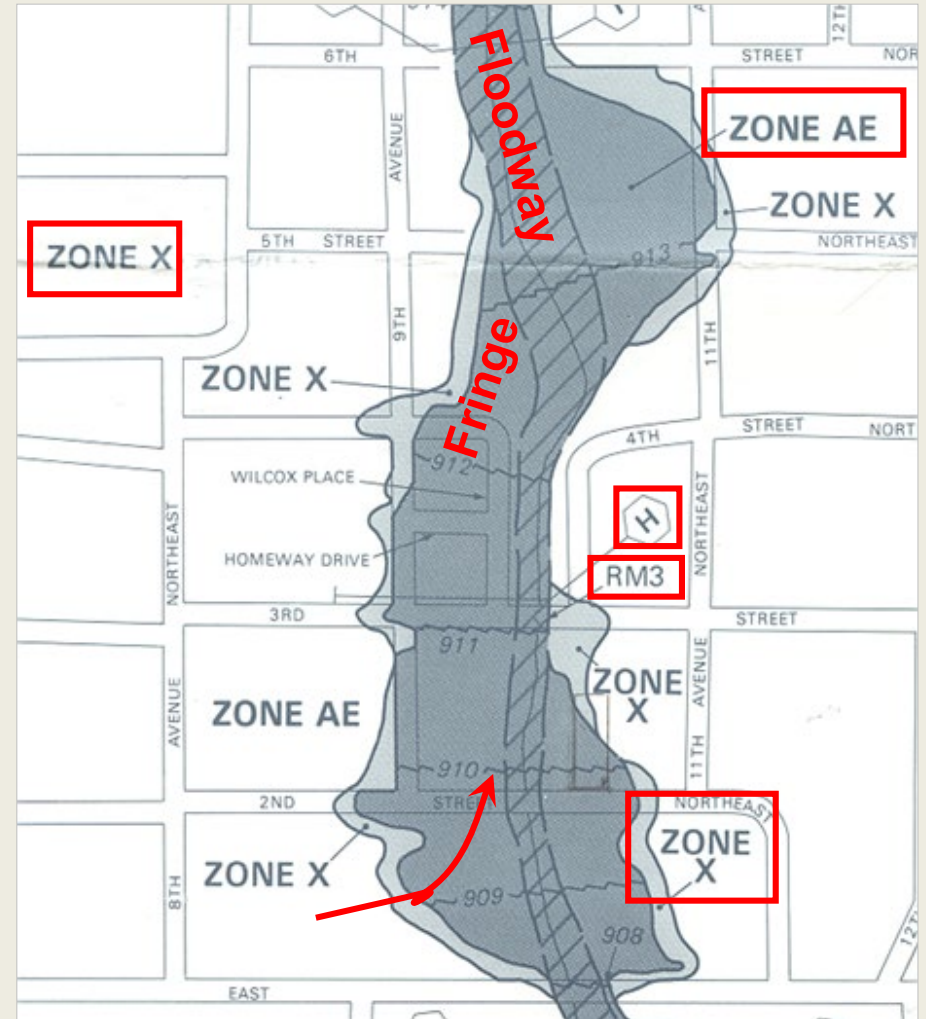
## Floodway Map Features (before 1986)





# FLOODPLAIN MANAGEMENT WORKSHOP

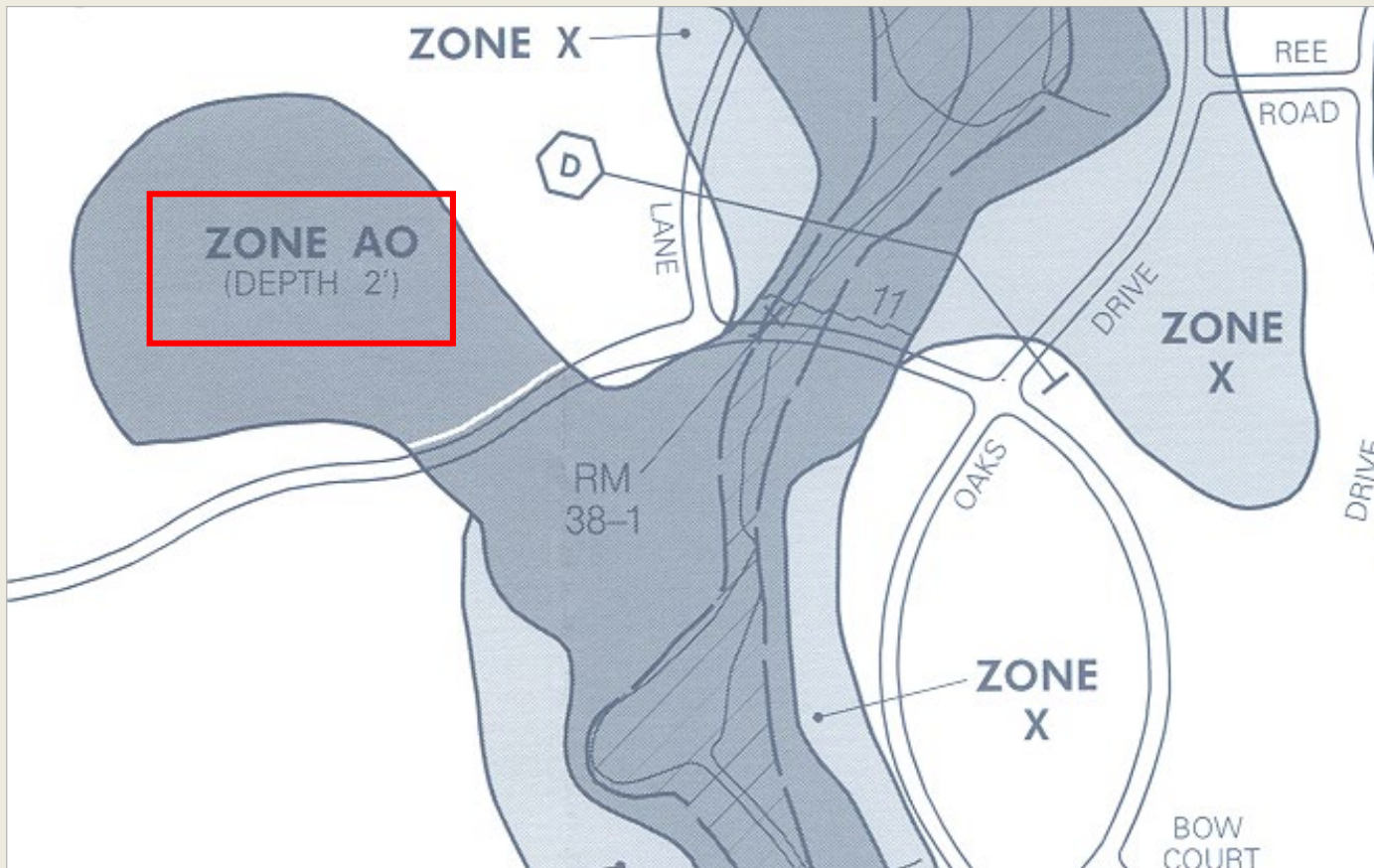
## FIRM Features (after 1986)





# FLOODPLAIN MANAGEMENT WORKSHOP

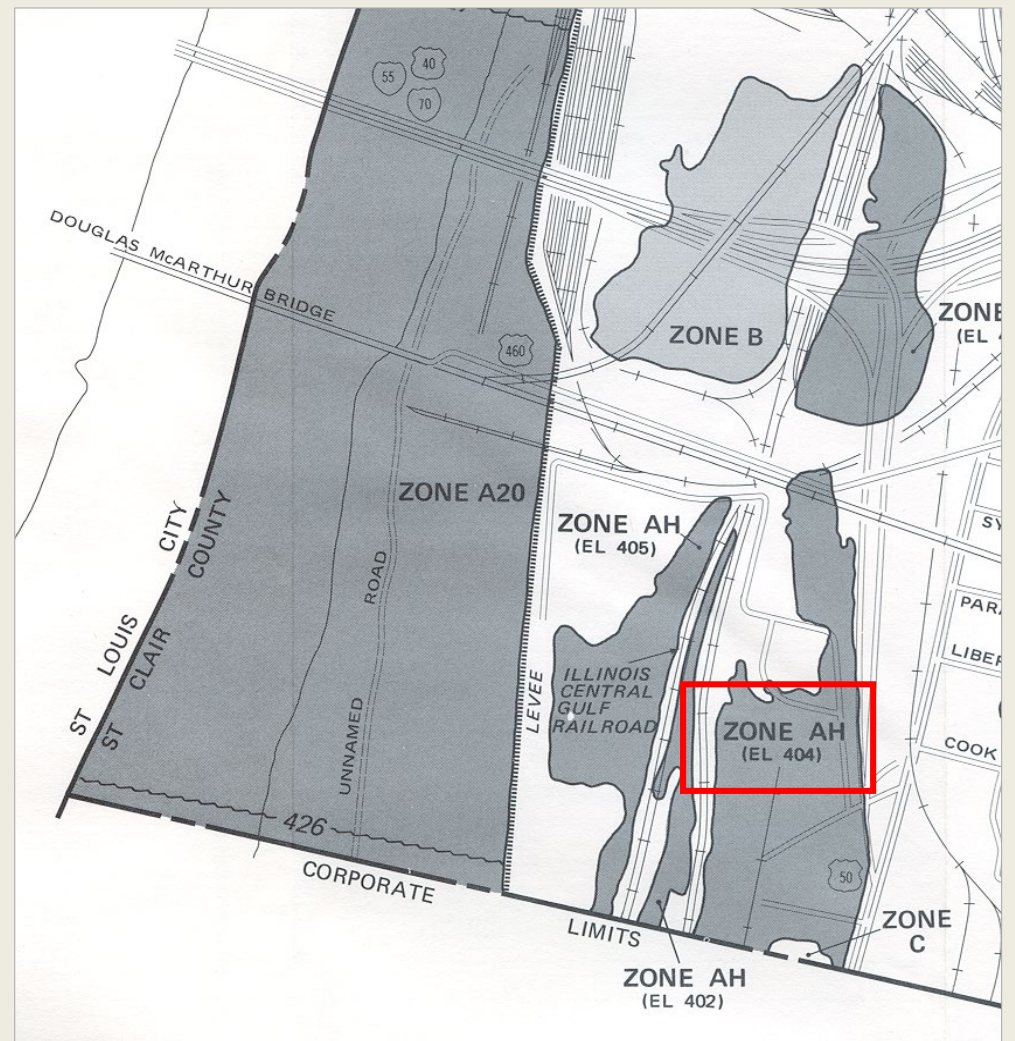
## FIRM Features (Shallow flooding)





# FLOODPLAIN MANAGEMENT WORKSHOP

## *FIRM Features (Shallow flooding)*

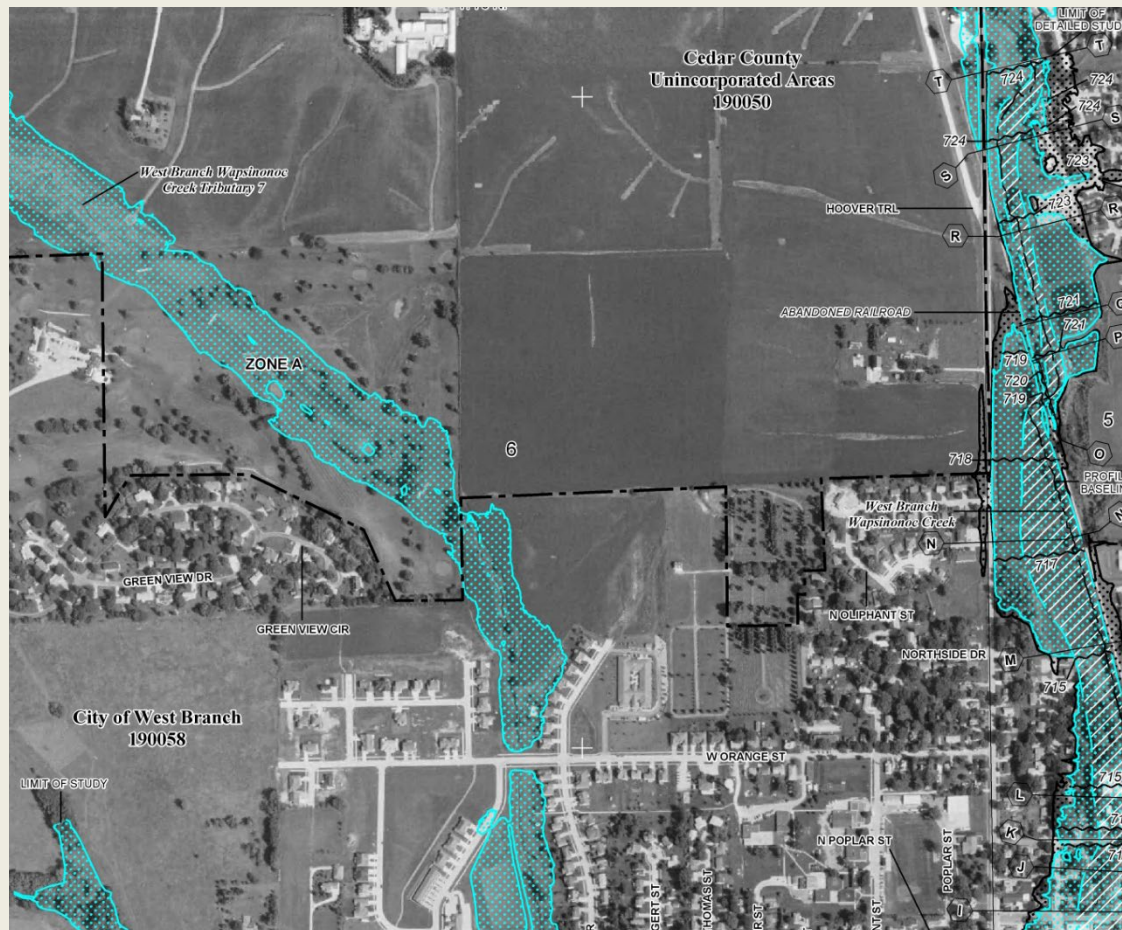




# FLOODPLAIN MANAGEMENT WORKSHOP

## Countywide

## FIRM







# FLOODPLAIN MANAGEMENT WORKSHOP

## National Flood Hazard Layer

The screenshot displays the FEMA's National Flood Hazard Layer (NFHL) Viewer web application. The interface includes a search bar at the top left with the text "Find address or place" and a magnifying glass icon. Below the search bar are navigation icons for home, refresh, and a print tool. A central map shows the United States with a red grid overlay representing flood hazard zones. A "NFHL Print Tool" dialog box is open in the foreground, featuring two tabs: "Input" and "Output". The "Input" tab is active and contains the following instructions:

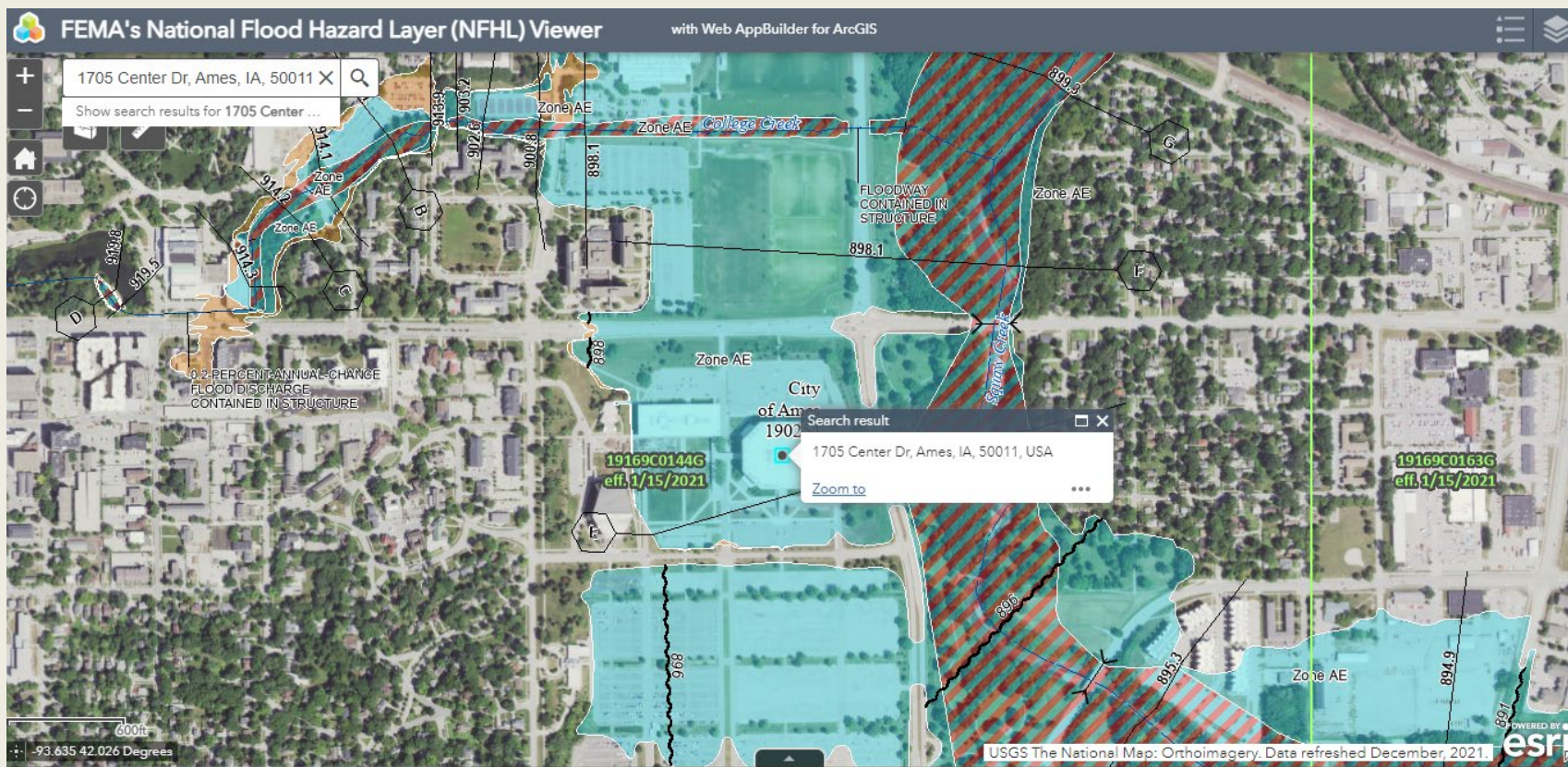
To print NFHL FIRMette or Full FIRM:  
1) Click the pin tool, and click on the map to place the pin.  
2) Choose to create a print-size FIRMette or full-size FIRM.  
3) Press "Execute" - The process may take up to 1 minute.\*

Below the instructions are two icons: a black pin icon and a red trash can icon. Further down, there is a "Size\*" dropdown menu currently set to "FIRMETTE" and a "File Format\*" dropdown menu. The bottom of the application shows a scale bar for 600 miles, coordinates (-50,943 34,162 Degrees), and a footer that reads "USGS The National Map: Orthoimagery, Data refreshed December, 2021." and "POWERED BY esri".



# FLOODPLAIN MANAGEMENT WORKSHOP

## National Flood Hazard Layer





# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood Insurance Study

**FLOOD INSURANCE STUDY**

**SCOTT COUNTY, IOWA AND INCORPORATED AREAS**

COMMUNITY NAME	COMMUNITY NUMBER
BETTSBORO, CITY OF	190240
BLUE GRASS, CITY OF	190254
BUFFALO, CITY OF	190241
DAVENPORT, CITY OF	190242
DIXON, CITY OF	190178
DONAHUE, CITY OF	190205
ELDRIDGE, CITY OF	190274
LE CLARE, CITY OF	190243
LONG GROVE, CITY OF	190764
MAVILLIE, CITY OF	190252
MCCALLSAND, CITY OF	190771
NEW LIBERTY, CITY OF	190270
PANORAMA PARK, CITY OF	190206
PRINCETON, CITY OF	190244
RIVERDALE, CITY OF	190245
SCOTT COUNTY UNINCORPORATED AREAS	190229
WALCOTT, CITY OF	190275

NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

February 18, 2011

**Federal Emergency Management Agency**  
Flood Insurance Study Number 19163CV000A

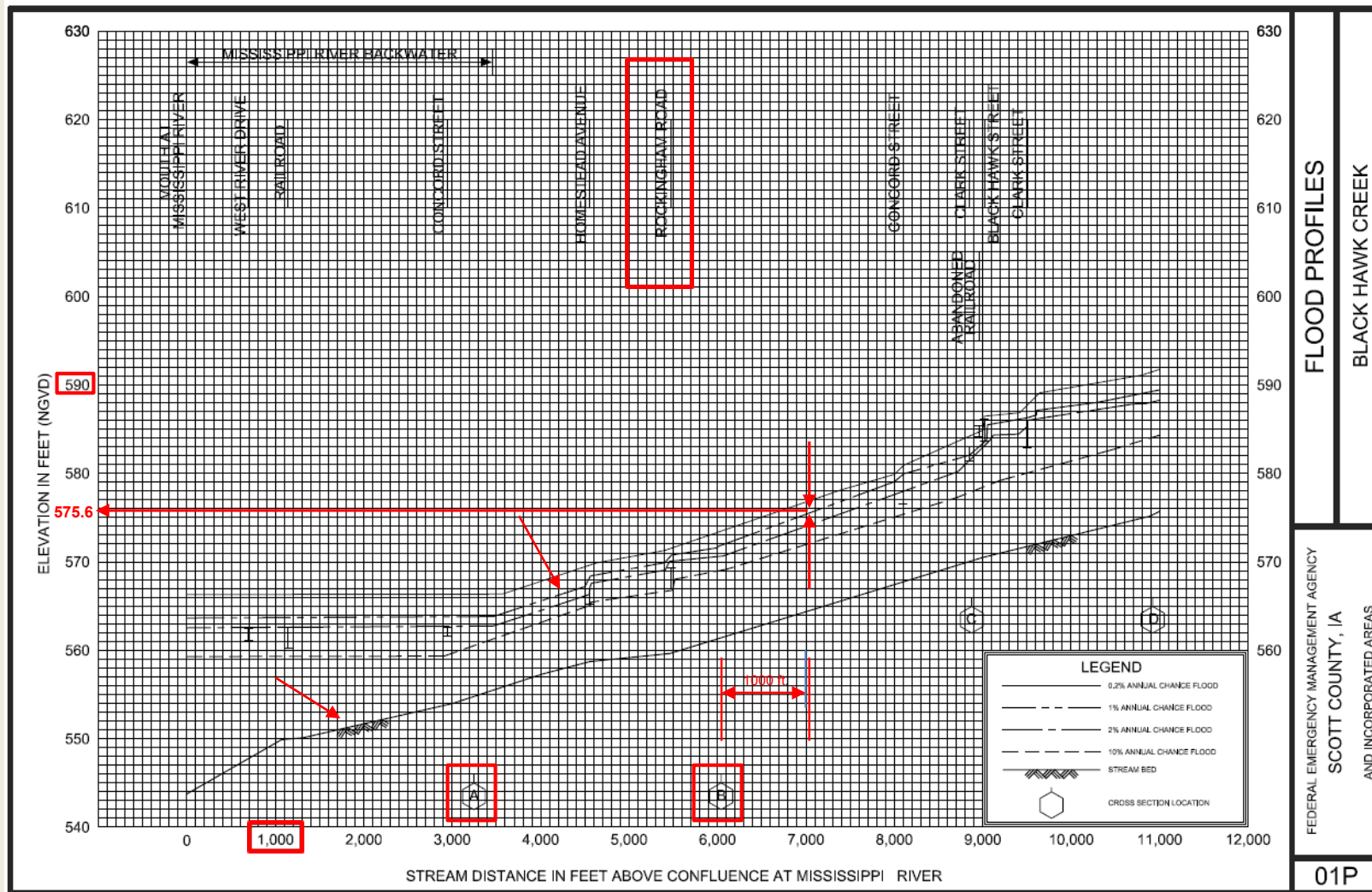
FLOODING SOURCE		FLOODWAY			1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE <sup>(1)</sup>	WIDTH (FT.)	SECTION AREA (SQ. FT.)	MEAN VELOCITY (F.P.S.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FT.)
BLACK HAWK CREEK								
A	3,250	200	690	7.11	563.6 <sup>2</sup>	563.6 <sup>2</sup>	564.3	0.7
B	6,050	100	505	9.68	571.5	571.5	571.7	0.2
C	8,880	100	580	8.43	582.2	582.2	582.2	0.0
D	10,920	90	850	5.25	589.1	589.1	589.3	0.2
E	13,870	90	860	5.19	598.0	598.0	598.3	0.3
F	16,850	65	585	7.62	610.0	610.0	611.0	1.0
G	19,100	120	890	5.01	617.4	617.4	618.4	1.0
H	21,020	140	695	6.42	623.9	623.9	624.5	0.6
I	23,250	90	760	5.00	633.3	633.3	633.8	0.5
J	26,500	90	495	6.63	647.9	647.9	648.1	0.2
K	29,520	100	520	5.48	661.4	661.4	662.1	0.7
L	30,600	262	1,544	2.52	671.3	671.3	672.3	1.0
M	31,400	38	391	9.97	671.8	671.8	671.8	0.0

<sup>1</sup>Feet above confluence of Mississippi River  
<sup>2</sup>Elevations without considering backwater effect from Mississippi River

TABLE 8	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	<b>SCOTT COUNTY, IA AND INCORPORATED AREAS</b>	<b>BLACK HAWK CREEK</b>

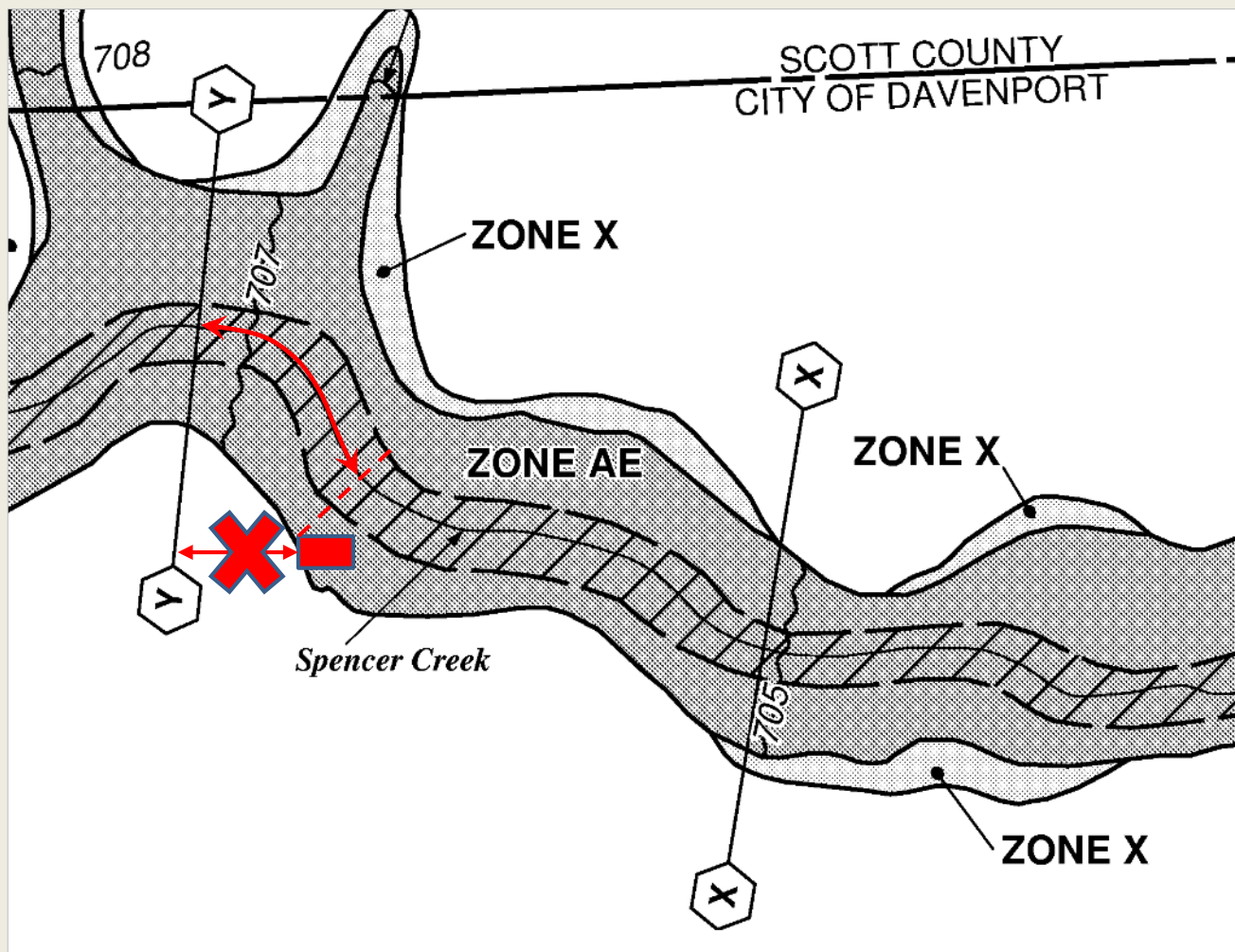


# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #1**

What is the first flood map that most communities received in the 1970's?



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #2**

What change to floodplain maps did FEMA make in the late 1980's?



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## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 6

Revising NFIP Maps  
Using Letters of  
Map Change  
(LOMC)

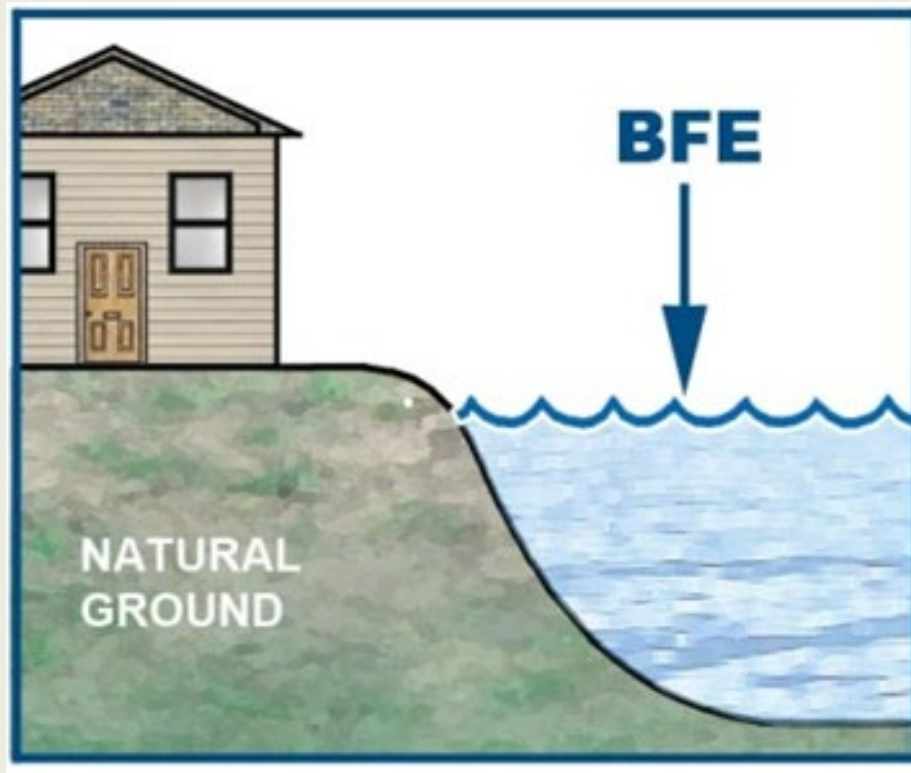




# FLOODPLAIN MANAGEMENT WORKSHOP



## Letter of Map Amendment (LOMA)

A LOMA can be requested if it can be shown that a structure or property (or portion of a property) is on natural high ground that is at or above the BFE.





# FLOODPLAIN MANAGEMENT WORKSHOP

Page 1 of 2		Date: August 22, 2013	Case No.: 13-07-2166A	LOMA				
 <p>Federal Emergency Management Agency Washington, D.C. 20472</p>								
<b>LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)</b>								
COMMUNITY AND MAP PANEL INFORMATION			LEGAL PROPERTY DESCRIPTION					
COMMUNITY	CITY OF WEST BRANCH, CEDAR COUNTY, IOWA		Lot 7, Pedersen Valley, Part Two, as described in the Warranty Deed, recorded as Document No. 1208, in Book 487, Page 57, in the Office of the Recorder, Cedar County, Iowa					
	COMMUNITY NO.: 190058							
AFFECTED MAP PANEL	NUMBER: 19031C0211C							
	DATE: 8/19/2013							
FLOODING SOURCE: LOCAL FLOODING			APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 41.675, -91.354 SOURCE OF LAT & LONG: ARCGIS 10.1 DATUM: NAD 83					
<b>DETERMINATION</b>								
LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
2	--	Pedersen Valley, Part Two	208 Scott Drive	Structure	X (unshaded)	719.5 feet	721.6 feet	--
<p><b>Special Flood Hazard Area (SFHA)</b> - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).</p>								
<p><b>ADDITIONAL CONSIDERATIONS</b> (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)</p>								
<p>PORTIONS REMAIN IN THE SFHA ZONE A STUDY UNDERWAY</p>								
<p>This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the structure(s) on the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document amends the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.</p>								
<p>This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4805.</p>								
 Luis Rodriguez, P. E., Chief Engineering Management Branch Federal Insurance and Mitigation Administration								

## LOMA

A LOMA can be requested if it can be shown that a structure or property (or portion of a property) is on natural high ground that is at or above the BFE.



# FLOODPLAIN MANAGEMENT WORKSHOP

## Map changes

### Letter of Map Revision (LOMR)

- New flood study

### New fill (LOMR–F)

- New fill, properly compacted
- Reasonably Safe From Flooding (TB 10-10)

### Conditional letters

- (CLOMA, CLOMR)



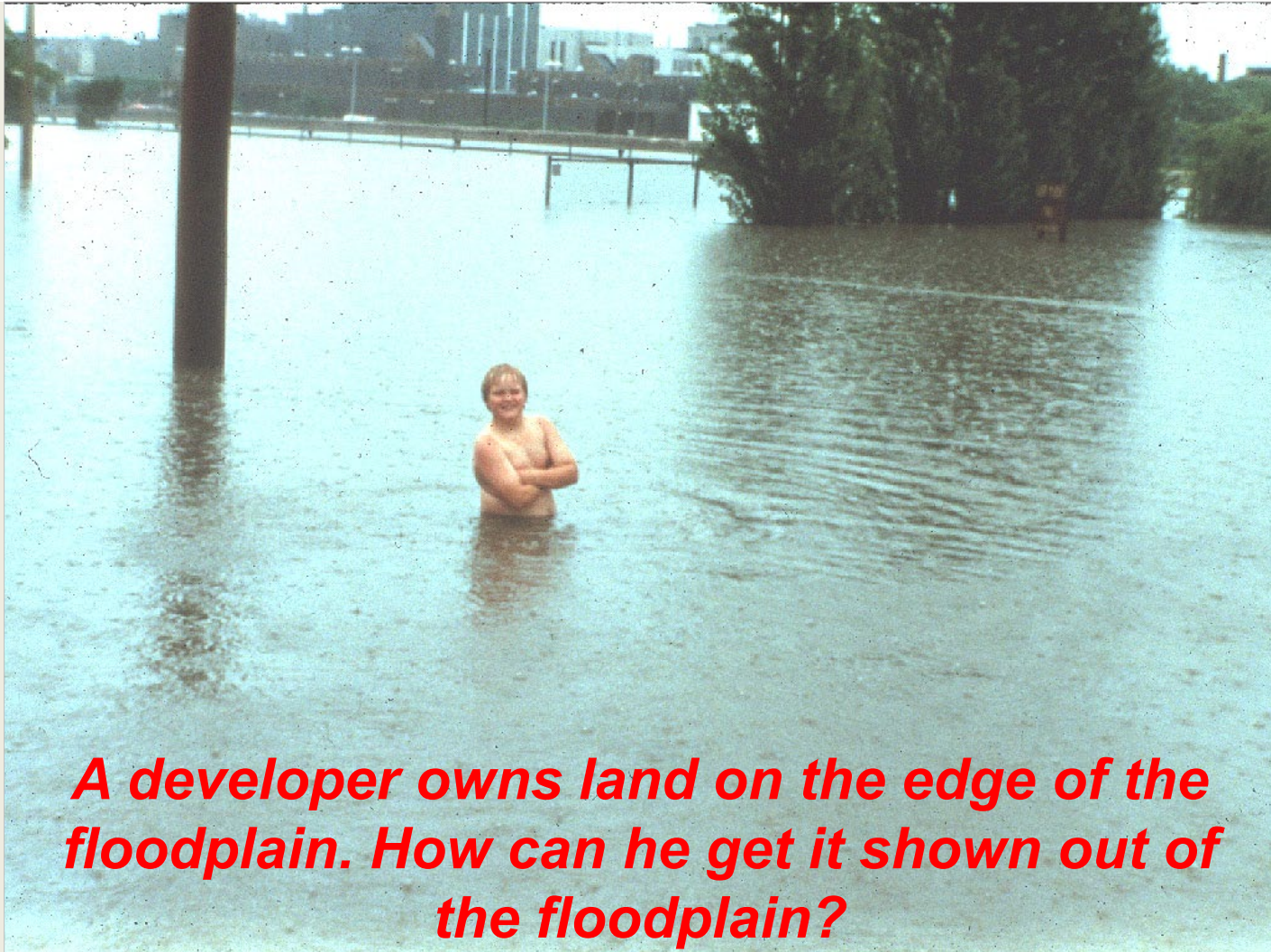
# FLOODPLAIN MANAGEMENT WORKSHOP

## Map changes

- Usually submitted by owner
- FEMA MT forms
  - MT-EZ (single lot LOMA)
  - MT-1 (LOMR-F)
  - MT-2 (LOMR)
  - Download from web site (Section 27)



# FLOODPLAIN MANAGEMENT WORKSHOP



***A developer owns land on the edge of the floodplain. How can he get it shown out of the floodplain?***



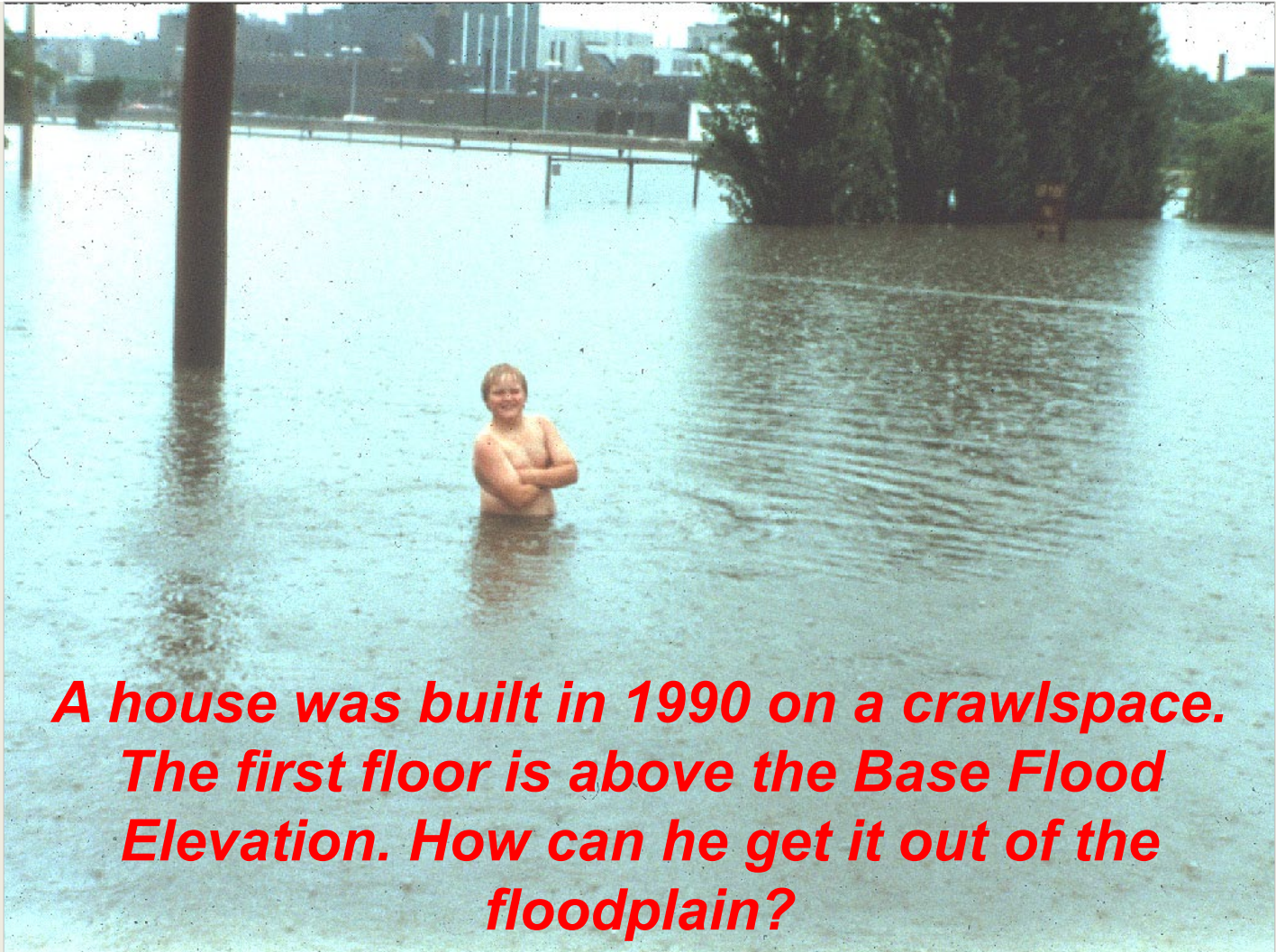
# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Get a map change**

- If the ground is higher than BFE: LOMA
- Fill the site and get a LOMR-F
- Do a new flood study and get a LOMR



# FLOODPLAIN MANAGEMENT WORKSHOP



***A house was built in 1990 on a crawlspace.  
The first floor is above the Base Flood  
Elevation. How can he get it out of the  
floodplain?***



# FLOODPLAIN MANAGEMENT WORKSHOP

## Get a map change

- If the ground is higher than BFE: LOMA
- If only the floor is higher, but the lowest adjacent grade is not, no LOMA
- Do a new flood study and get a LOMR





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #3**

In order for a building to be removed from the SFHA by LOMA, which of the following must be at/above the BFE?



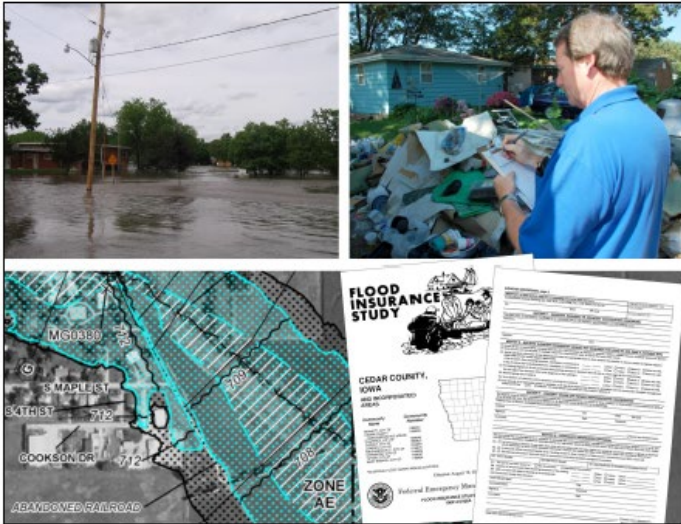
# *FLOODPLAIN MANAGEMENT WORKSHOP*

Break



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 7 Regulatory Framework



# FLOODPLAIN MANAGEMENT WORKSHOP

## *Statutory Authority*

- **335.2 Farms exempt.** Except to the extent required to implement section 335.27, no ordinance adopted under this chapter applies to land, farm houses, farm barns, farm outbuildings or other buildings or structures which are primarily adapted, by reason of nature and area, for use for agricultural purposes, while so used. ***However, the ordinances may apply to any structure, building, dam, obstruction, deposit or excavation in or on the flood plains of any river or stream. (Italics added)***
- Activities beyond local legal authority still need a permit from DNR.



# FLOODPLAIN MANAGEMENT WORKSHOP

## The Ordinance

### Delegated communities

- Detailed flood data and maps
- Ordinance approved by DNR
- Issue permits without waiting for DNR
- Ordinance changes need DNR approval

### Non delegated communities

- Wait for DNR floodplain permit
- Ordinance changes needs DNR review



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 8

Regulatory  
Requirements:  
Maps and Data



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Basic Rule #1**

You must use the effective maps and flood data published by FEMA.



# FLOODPLAIN MANAGEMENT WORKSHOP

## Exceptions to Using Current Map

- Ground elevations conflict
  - Ground > BFE and FIRM says in
    - Need a permit, unless LOMA
  - Ground < BFE and FIRM says out
    - It's out, but need a DNR permit
- FEMA has provided more restrictive draft or preliminary data
- FEMA has issued more restrictive advisory flood hazard data after a flood





# FLOODPLAIN MANAGEMENT WORKSHOP

## Approximate A Zones





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Approximate A Zones**

DNR has jurisdiction over:

- Incorporated areas with drainage areas 2 square miles or greater
- Unincorporated areas with drainage areas 10 square miles or greater



# FLOODPLAIN MANAGEMENT WORKSHOP

## Within DNR Jurisdiction

- Applicants must provide DNR the data necessary to calculate the Base Flood Elevation.
- DNR provides BFE information to delegated communities to use for local permitting
- Non-delegated communities use BFE information contained in DNR Floodplain Permit for local permitting



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Outside DNR Jurisdiction**

- Submit request to DNR for a Base Flood Elevation and/or floodway determination



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #4**

Which of the following is an acceptable reason to use something other than the effective FEMA FIRM?



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 9

Regulatory  
Requirements:  
What needs a  
permit?



# FLOODPLAIN MANAGEMENT WORKSHOP

## Basic Rule #2

A permit is required for all development w/in the Special Flood Hazard Area shown on the Flood Insurance Rate Map.



# FLOODPLAIN MANAGEMENT WORKSHOP

## Development:

Any man-made change to improved or unimproved real estate, including but not limited to:

- New buildings & structures
- Additions or remodeling
- Fencing
- Filling, grading, excavation, dredging
- Paving, including state highways
- Storage of materials or equipment





# FLOODPLAIN MANAGEMENT WORKSHOP

## Permits required for development

- Throughout the mapped SFHA
- More than just building permits
- Public projects must be regulated

**44 CFR 60.3(a)(1)**  
[“60.3(a) communities” that do not have a FIRM must] Require permits for all proposed construction or other development in the community, including the placement of manufactured homes, so that it may determine whether such construction or other development is proposed within flood-prone areas.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Small project exemptions**

- Gardening
- Farming
- Resurfacing roads
- Routine Maintenance
- Mailboxes, flagpoles, etc.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Minor Projects & Routine Maintenance**

“Development” does not include “minor projects” or “routine maintenance of existing buildings and facilities” as defined in this section. It also does not include gardening, plowing, and similar practices that do not involve filling or grading.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Minor Projects**

Small development activities (except for filling, grading and excavating) valued at less than \$500.



# FLOODPLAIN MANAGEMENT WORKSHOP

## Routine Maintenance

ROUTINE MAINTENANCE OF EXISTING BUILDINGS AND FACILITIES  
– Repairs necessary to keep a structure in a safe and habitable condition that do not trigger a building permit, provided they are not associated with a general improvement of the structure or repair of a damaged structure. Such repairs include:

- Normal maintenance of structures such as re-roofing, replacing roofing tiles and replacing siding;
- Exterior and interior painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work;
- Basement sealing;
- Repairing or replacing damaged or broken window panes;
- Repairing plumbing systems, electrical systems, heating or air conditioning systems and repairing wells or septic systems.



# FLOODPLAIN MANAGEMENT WORKSHOP

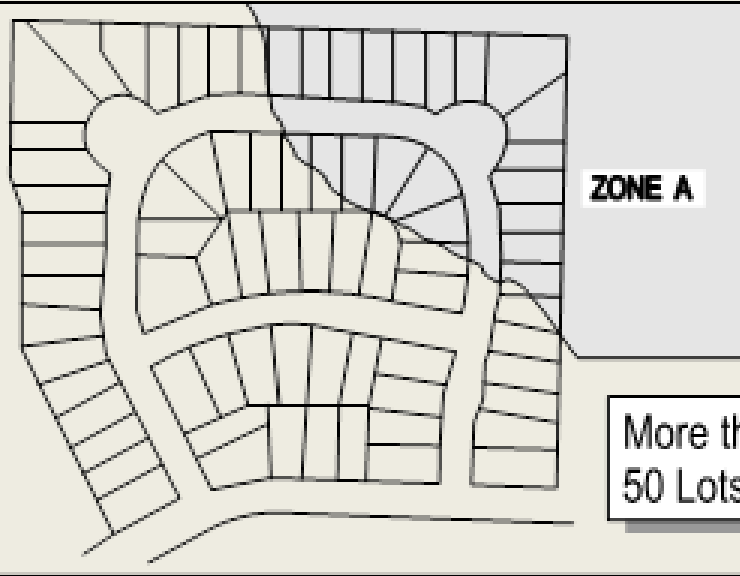
## Subdivisions

### Large and Small Developments

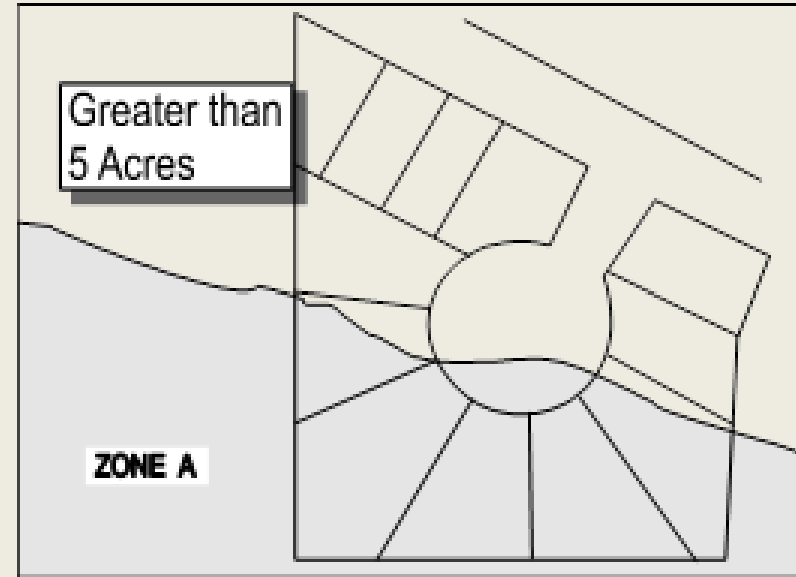
**44 CFR 60.3(b)(3): [Communities must] Require that all new subdivision proposals and other proposed development (including proposals for manufactured home parks and subdivisions) greater than 50 lots or 5 acres, whichever is the lesser, include within such proposals BFE data.**



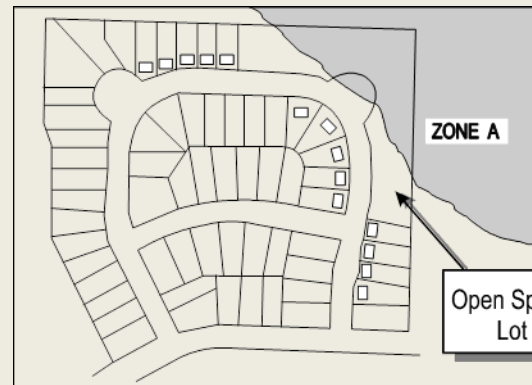
# FLOODPLAIN MANAGEMENT WORKSHOP



*Proposed 76-lot subdivision*



*Proposed 6.7-acre subdivision*

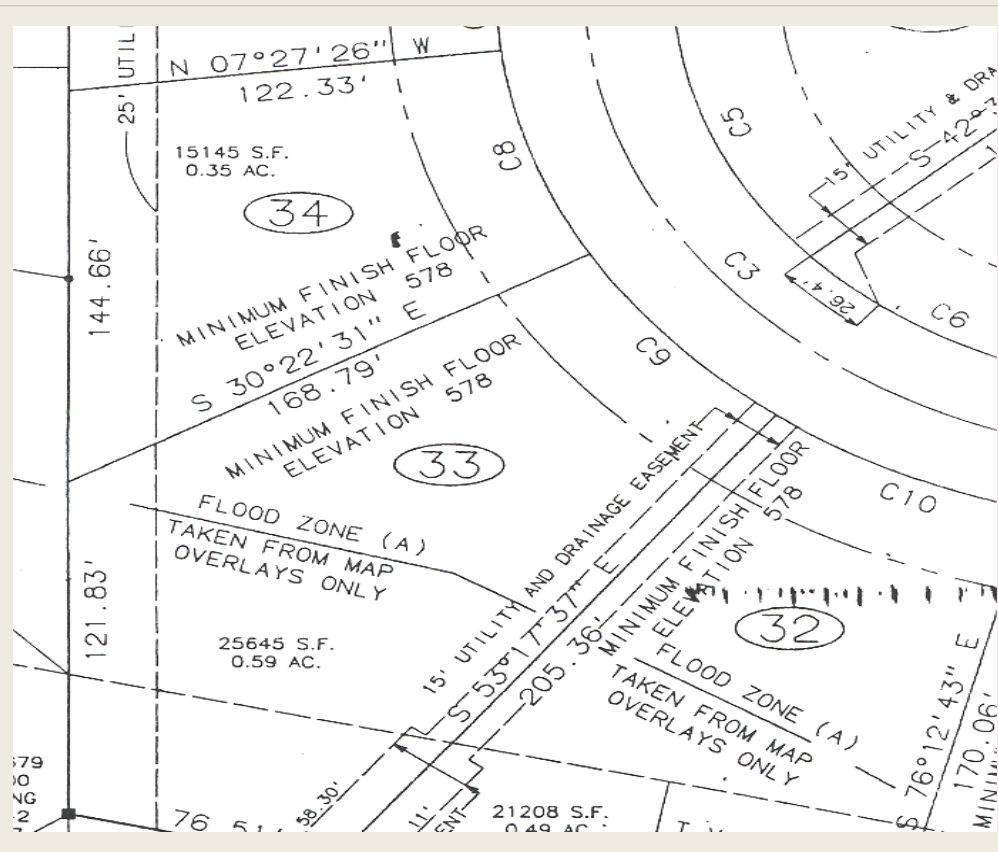


*Zone A left as open space.*



# FLOODPLAIN MANAGEMENT WORKSHOP

## Subdivisions



- Use the floodplain for open space
- Locate building lots on highest ground
- Locate utilities to minimize flood hazard
- Provide adequate drainage
- Final plat shows the SFHA [Optional]

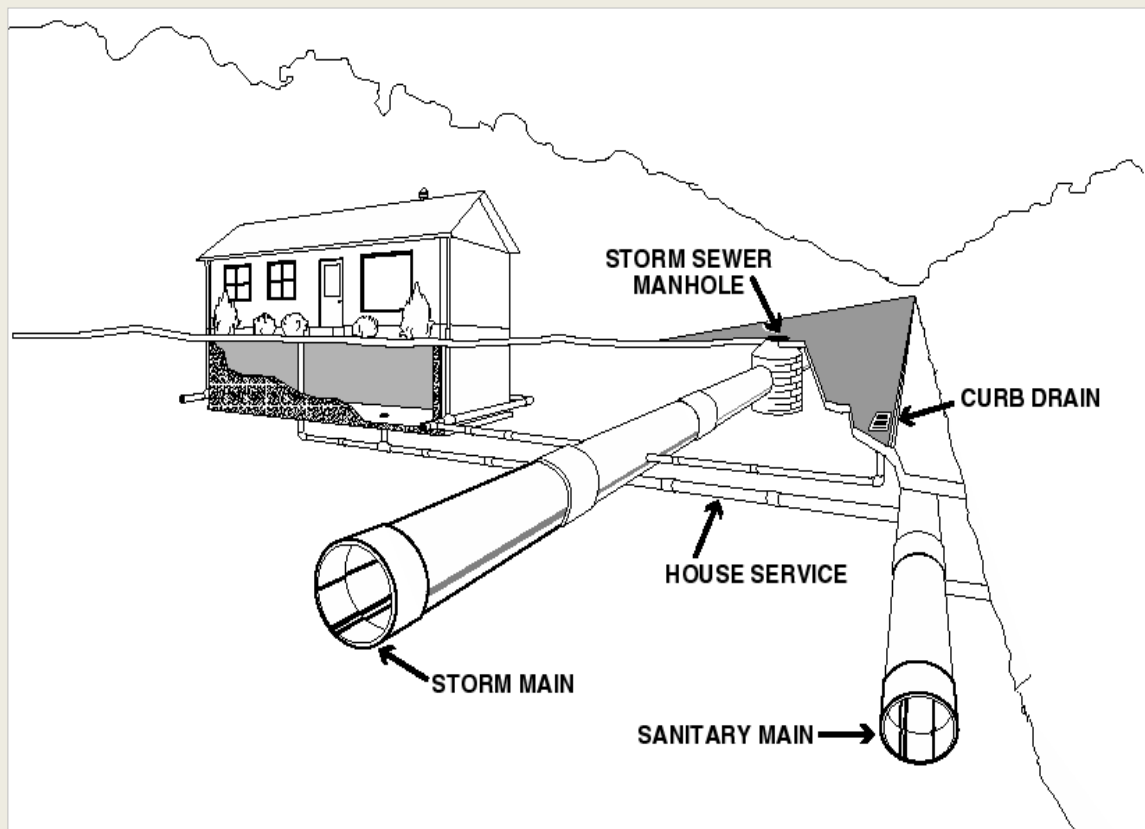




# FLOODPLAIN MANAGEMENT WORKSHOP

## Water and Sewer Systems

- Minimize or eliminate flood water infiltration
  - Elevated manholes
  - Water tight seals





# FLOODPLAIN MANAGEMENT WORKSHOP



Septic systems should be outside the floodplain or be designed to prevent backflow and buoyancy.



# FLOODPLAIN MANAGEMENT WORKSHOP

## Hazardous Materials

- Prohibit hazardous material storage in the floodplain unless elevated one foot above the BFE.
- Consider prohibiting extremely hazardous materials completely from the floodplain.





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Other Permits**

Coordinate with other local offices

- Planning, zoning, building, etc.
- Engineer
- Sanitation department
- Fire marshal
- County
- Drainage District
- Soil and water conservation district




# FLOODPLAIN MANAGEMENT WORKSHOP

## Other Permits

- DNR Floodplain Construction Permit
- DNR Sovereign Lands Permit
- Dam Safety
- Wetlands
  - DNR Water Quality Certification
  - Corps 404



# FLOODPLAIN MANAGEMENT WORKSHOP

 Home Contact Instructions FAQ Log In

## PERMT

Permit and Environmental Review Management Tool (PERMT)

Iowa DNR Flood Plain Management, Sovereign Lands/Environmental Review and  
US Army Corps of Engineers 404 Water Quality Permits

**What would you like to do today?**

<a href="#">Screen Project and Submit Application</a>	This button will take you to the screening tool and Joint Application system. Your first steps will be to choose one or more project types, and then select your location using either a point, line or shape. You'll then be informed if you should submit an application. Instructions will be provided to walk you through the the Joint Application process.
<a href="#">Request Base Flood Elevation, or Other Technical Assistance</a>	This button is used to request a base flood elevation (to assist in planning or to apply for FEMA Letters of Map Amendment) or other technical assistance. You will need to create a new account or sign into your existing account. If you are planning to construct in the near term in a flood plain, you should submit a joint application instead (button above).
<a href="#">Request Animal Feeding Operation DO, or FP Determination</a>	This button is used to submit a request for a Flood Plain Declaratory Order (less than 1000 animal units) or a Flood Plain Determination (1000 or more animal units) for your animal feeding operation. You will need to create a new account or sign into your existing account.
<a href="#">Request Environmental Review</a>	This button is used to request the Iowa DNR to search records for state- and federal- listed endangered or threatened species, rare natural communities, sensitive habitat, and state lands and waters in a proposed project area. You will need to create a new account or sign into your existing account.
<a href="#">Public Search</a>	Search by location to find Flood Plain and Sovereign Land construction projects.
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**More Information**  
[DNR Flood Plain Permitting](#); Visit the DNR Flood Plain Permitting website for contact information and details on the permitting process.  
[Sovereign Lands Permitting and Environmental Reviews](#); Visit the DNR Sovereign Lands website for more information and contact information.

US Army Corps of Engineers:  
Rock Island District  
Omaha District

Permit and Environmental Review Management Tool (PERMT)  
<https://programs.iowadnr.gov/permt/>



# FLOODPLAIN MANAGEMENT WORKSHOP

Flood data and delegation status	Incorporated areas		Unincorporated areas	
	Drainage area $\geq 2$ sq. miles	Drainage area $< 2$ sq. miles	Drainage area $\geq 10$ sq. miles	Drainage area $< 10$ sq. miles
<b>No detailed study (AO &amp; approximate A Zones)</b>				
No delegation of DNR floodplain authority	Permit application and flood data needed	No DNR floodplain permit required	Permit application and flood data needed	No DNR floodplain permit required
DNR floodplain authority delegated to community	DNR approves flood data	No DNR floodplain permit required	DNR approves flood data	No DNR floodplain permit required
<b>Detailed data available (AE, AO, and AH Zones)</b>				
No delegation of DNR floodplain authority	Permit application needed	No DNR floodplain permit required	Permit application needed	No DNR floodplain permit required
DNR floodplain authority delegated to community	Permit needed only for bridges and flood protection systems	No DNR floodplain permit required	Permit needed only for bridges and flood protection systems	No DNR floodplain permit required



# FLOODPLAIN MANAGEMENT WORKSHOP



*I'm in a non-delegated county. What do I do with this house?*





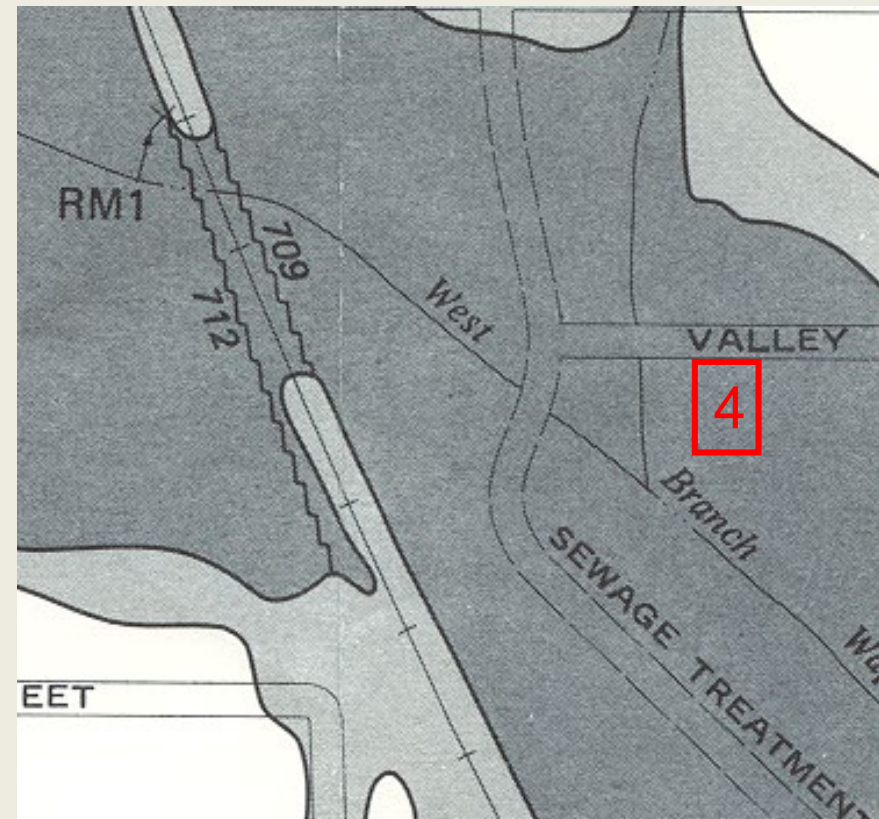
# FLOODPLAIN MANAGEMENT WORKSHOP

## A new house on site 4

Unincorporated area

Drainage area is  
greater than 10 mi<sup>2</sup>

- Need a local permit?
- A DNR permit?
- A Corps permit?





# FLOODPLAIN MANAGEMENT WORKSHOP

Flood data and delegation status	Incorporated areas		Unincorporated areas	
	≥ 2 sq. miles	< 2 sq. miles	≥ 10 sq. miles	< 10 sq. miles
No detailed study (AO & approximate A Zones)				
No delegation of DNR floodplain authority	Permit application and flood data needed	No DNR floodplain permit required	Permit application and flood data needed	No DNR floodplain permit required
DNR floodplain authority delegated to community	DNR approves flood data	No DNR floodplain permit required	DNR approves flood data	No DNR floodplain permit required
Detailed data available (AE, AO#, and AH Zones)				
No delegation of DNR floodplain authority	Permit application needed	No DNR floodplain permit required	Permit application needed	No DNR floodplain permit required
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**Figure 9-2 DNR floodplain permit and flood data approval requirements**

*Note:* While there may be no requirement for a DNR floodplain permit, other DNR, State and Federal Permits may be required.

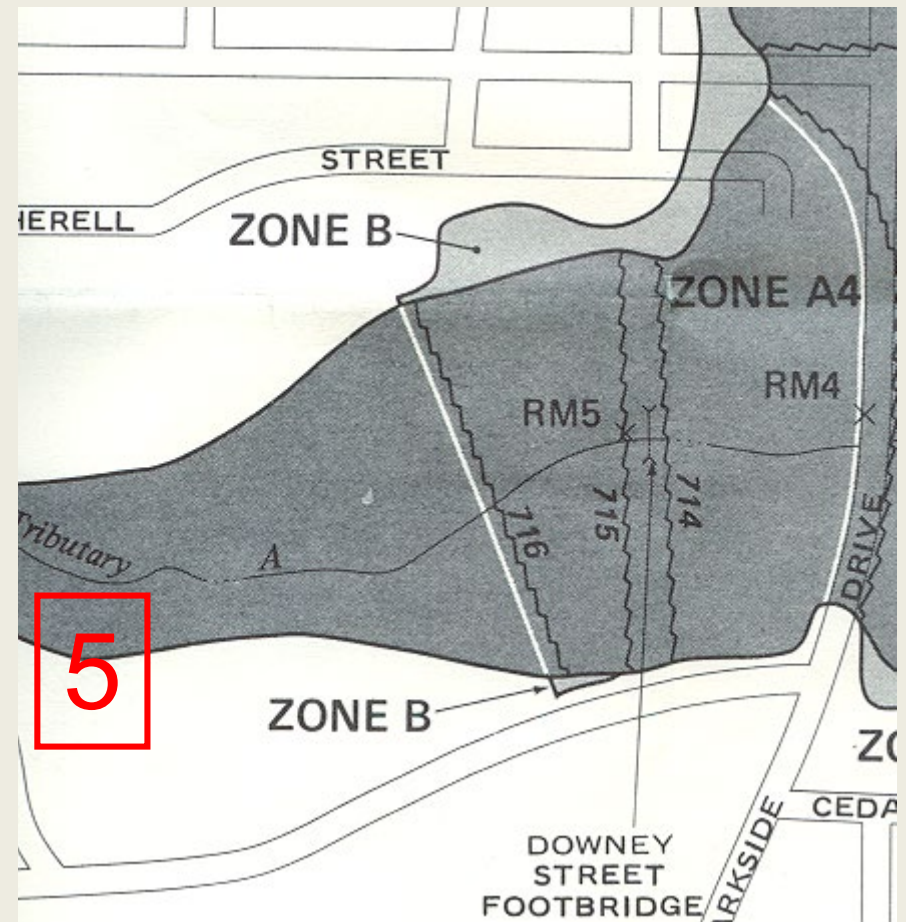


# FLOODPLAIN MANAGEMENT WORKSHOP

## A church parking lot on site 5

Drainage area is less than 10 mi<sup>2</sup>

- Need a local permit?
- A DNR permit?
- A Corps permit?





# FLOODPLAIN MANAGEMENT WORKSHOP

Flood data and delegation status	Incorporated areas		Unincorporated areas	
	≥ 2 sq. miles	< 2 sq. miles	≥ 10 sq. miles	< 10 sq. miles
No detailed study (AO & approximate A Zones)				
No delegation of DNR floodplain authority	Permit application and flood data needed	No DNR floodplain permit required	Permit application and flood data needed	No DNR floodplain permit required
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**Figure 9-2 DNR floodplain permit and flood data approval requirements**

*Note:* While there may be no requirement for a DNR *floodplain* permit, other DNR, State and Federal Permits may be required.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Single lot project, outside DNR Jurisdiction**

- Submit request to DNR to determine Base Flood Elevation and/or floodway boundaries



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #5**

Which of the following activities in the SFHA is exempt from needing a floodplain development permit?



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 10

### Regulatory Requirements: Floodways



# FLOODPLAIN MANAGEMENT WORKSHOP

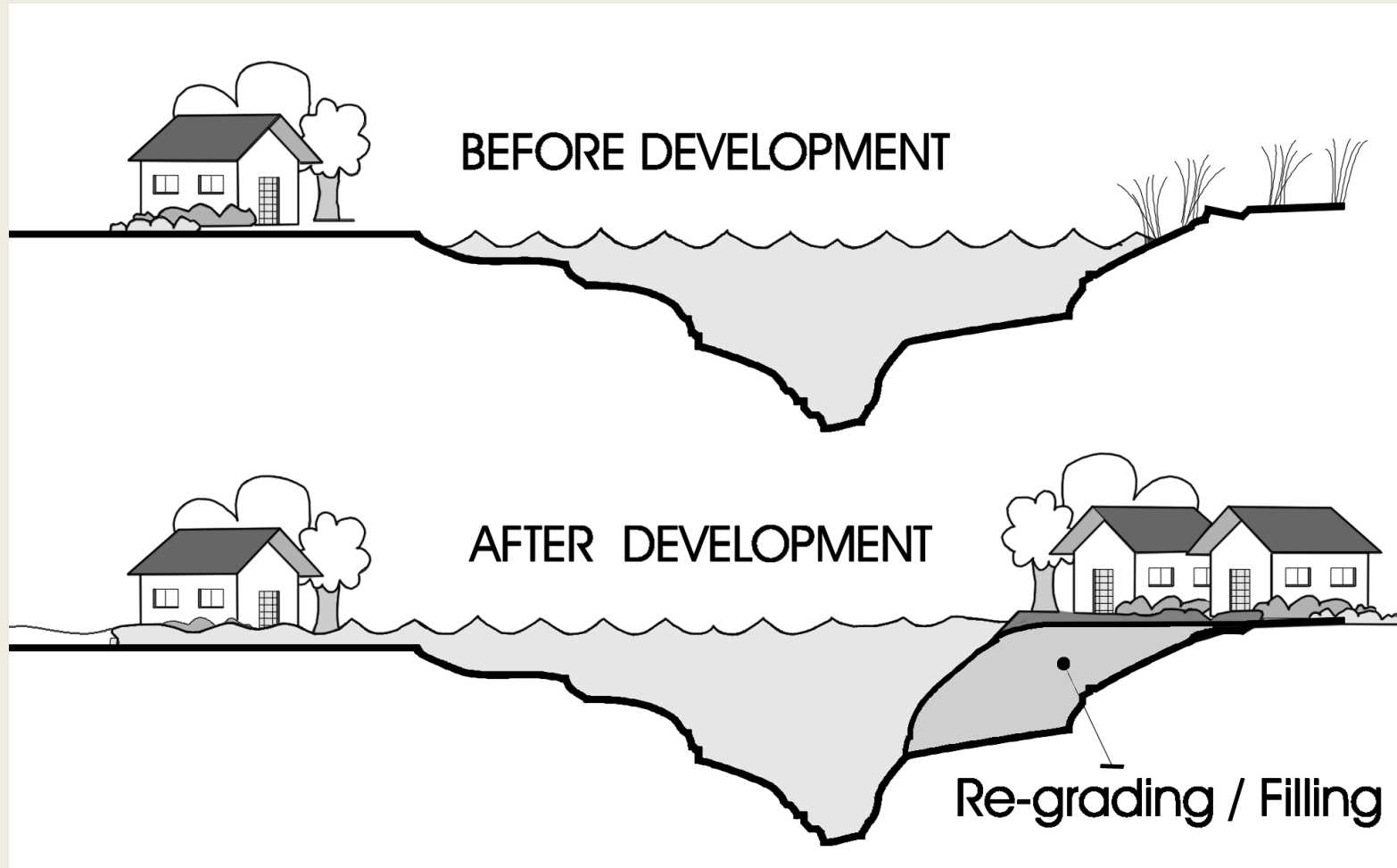
## Basic Rule #3

Development must  
not increase the flood  
hazard on other  
properties.



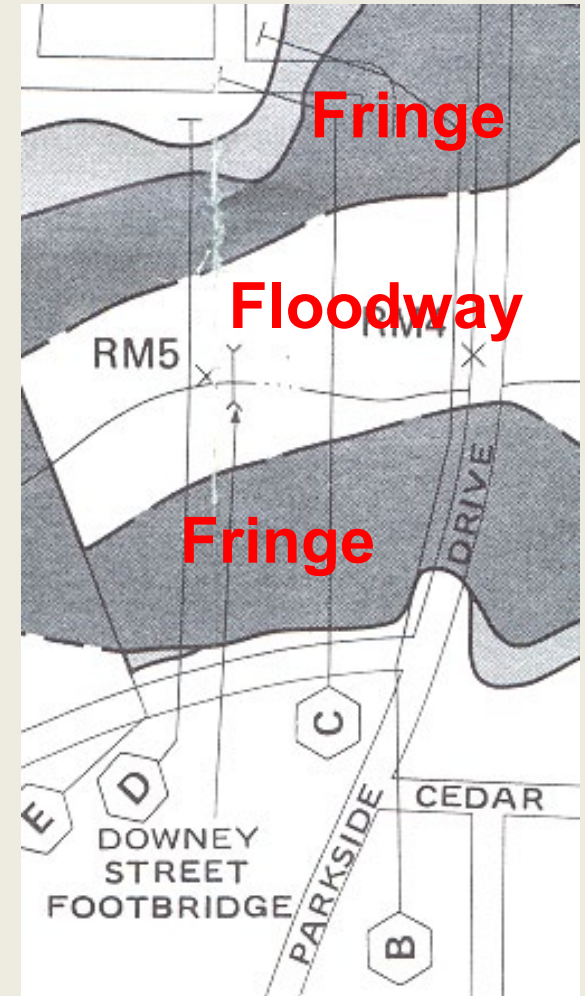
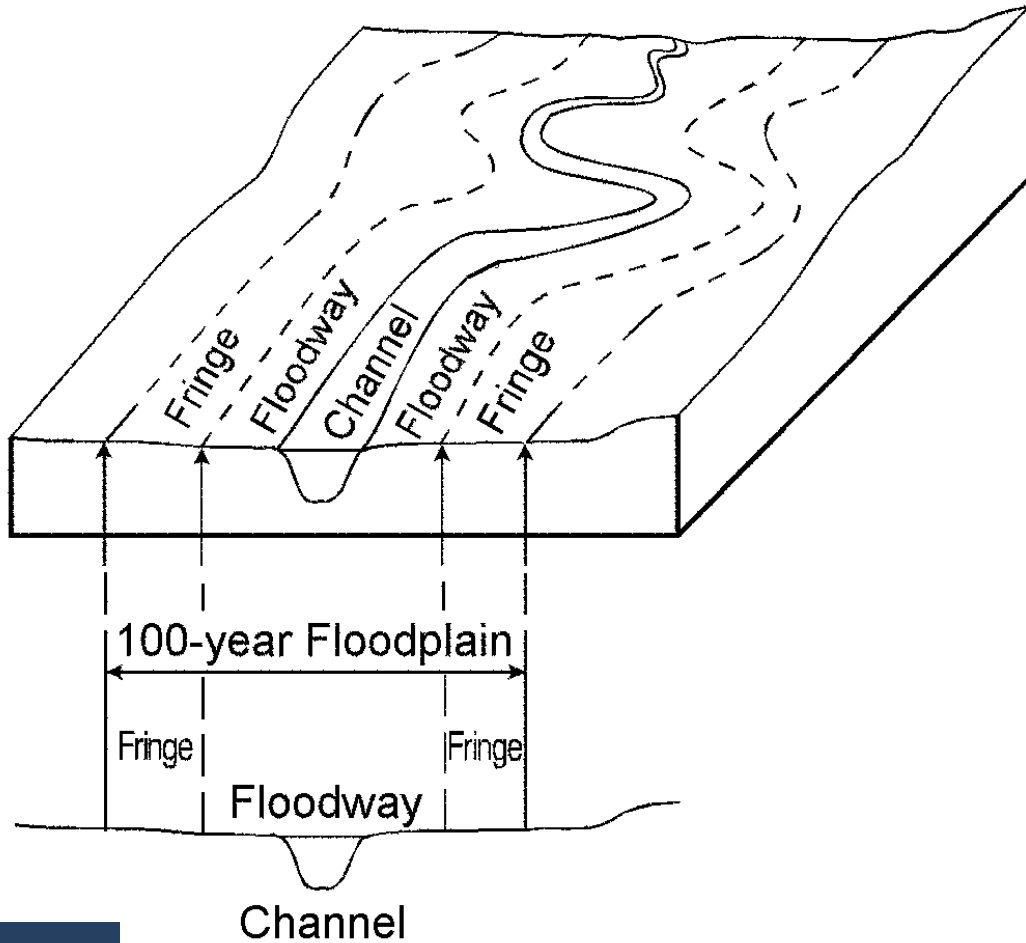


# FLOODPLAIN MANAGEMENT WORKSHOP





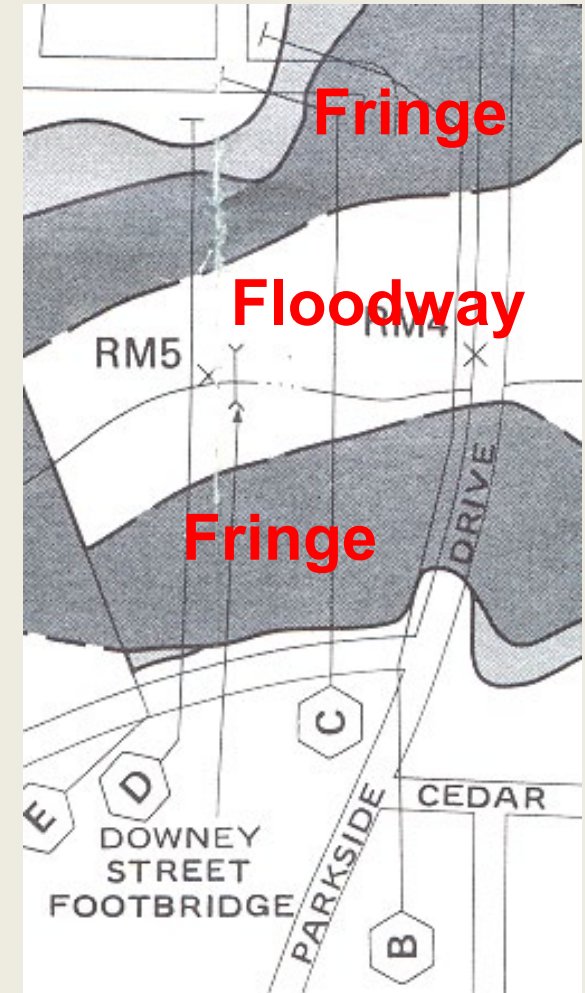
# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP

- Development in the fringe can be permitted.
- Development in the floodway needs a special review.
- If no floodway mapped:  
Request DNR to determine floodway





# FLOODPLAIN MANAGEMENT WORKSHOP

## DNR floodway permits

- Delegated communities: If floodway is not mapped, request that DNR determine floodway
- Non-delegated communities: Send applications to DNR
  - Projects in a mapped floodway
  - All projects where no floodway mapped



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Exemptions**

- Non-obstructions to flow:
  - Sign post, driveway at grade, etc.
- Buried pipeline crossings



# FLOODPLAIN MANAGEMENT WORKSHOP

## Use PERMT tool

The screenshot shows the PERMT website interface. At the top, there is a navigation bar with the IOWA Department of Natural Resources logo, links for Home, Contact, Instructions, and FAQ, and a Log In button. Below the navigation bar, the title "PERMT" is displayed. The main heading reads "Permit and Environmental Review Management Tool (PERMT)" followed by "Iowa DNR Flood Plain Management, Sovereign Lands/Environmental Review and US Army Corps of Engineers 404 Water Quality Permits".

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**US Army Corps of Engineers**  
Rock Island District  
Omaha District

**Note:** DNR permit does NOT mean that all requirements of your ordinance have been met.



# FLOODPLAIN MANAGEMENT WORKSHOP

## No-rise certification

- Engineer's certification that proposed development in floodway will result in "no-rise" in the Base Flood Elevation
- Requires hydraulic analysis
- Must be required for any proposed development in floodway
- Even in areas outside DNR's jurisdiction.



*FLOODPLAIN MANAGEMENT  
WORKSHOP*

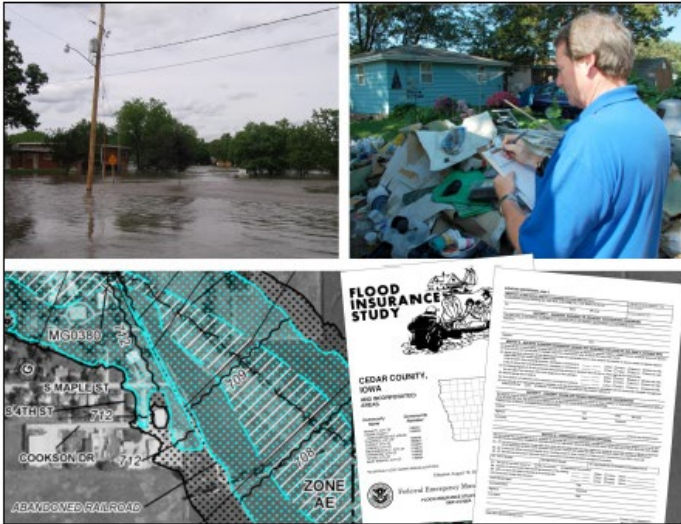
Lunch Break





# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 11

Regulatory  
Requirements:  
New Buildings



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Basic Rule #4**

New buildings must be protected from damage caused by the base flood event.



# FLOODPLAIN MANAGEMENT WORKSHOP

## “Building”

- A walled and roofed structure, with at least two rigid sides
- Principally above ground
- Gas or liquid storage tanks
- Factory built homes
- Grain Storage Bins

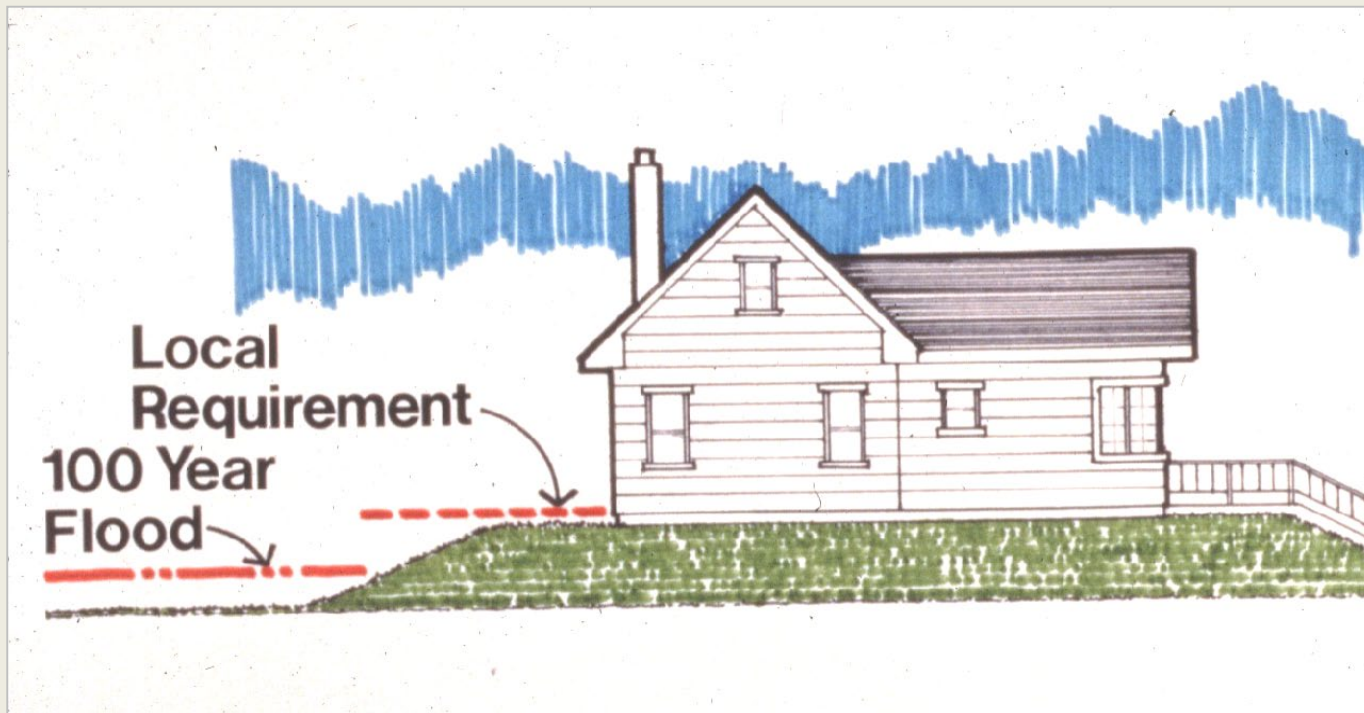




# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood Protection Elevation

Base Flood Elevation + freeboard





# FLOODPLAIN MANAGEMENT WORKSHOP

## Protection Methods

- Elevation
  - *On fill (where permissible)*
  - *On piles, posts or columns*
  - *On walls or a crawlspace*
- Floodproofing



# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation on fill

- Installed in layers and compacted
- Extend 18 feet beyond structure walls before sloping below FPE
- Slope properly to avoid erosion
- Go for LOMR-F?





# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation on piers, posts or pilings





# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation on piers, posts or pilings







# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation on walls or crawlspace





# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP

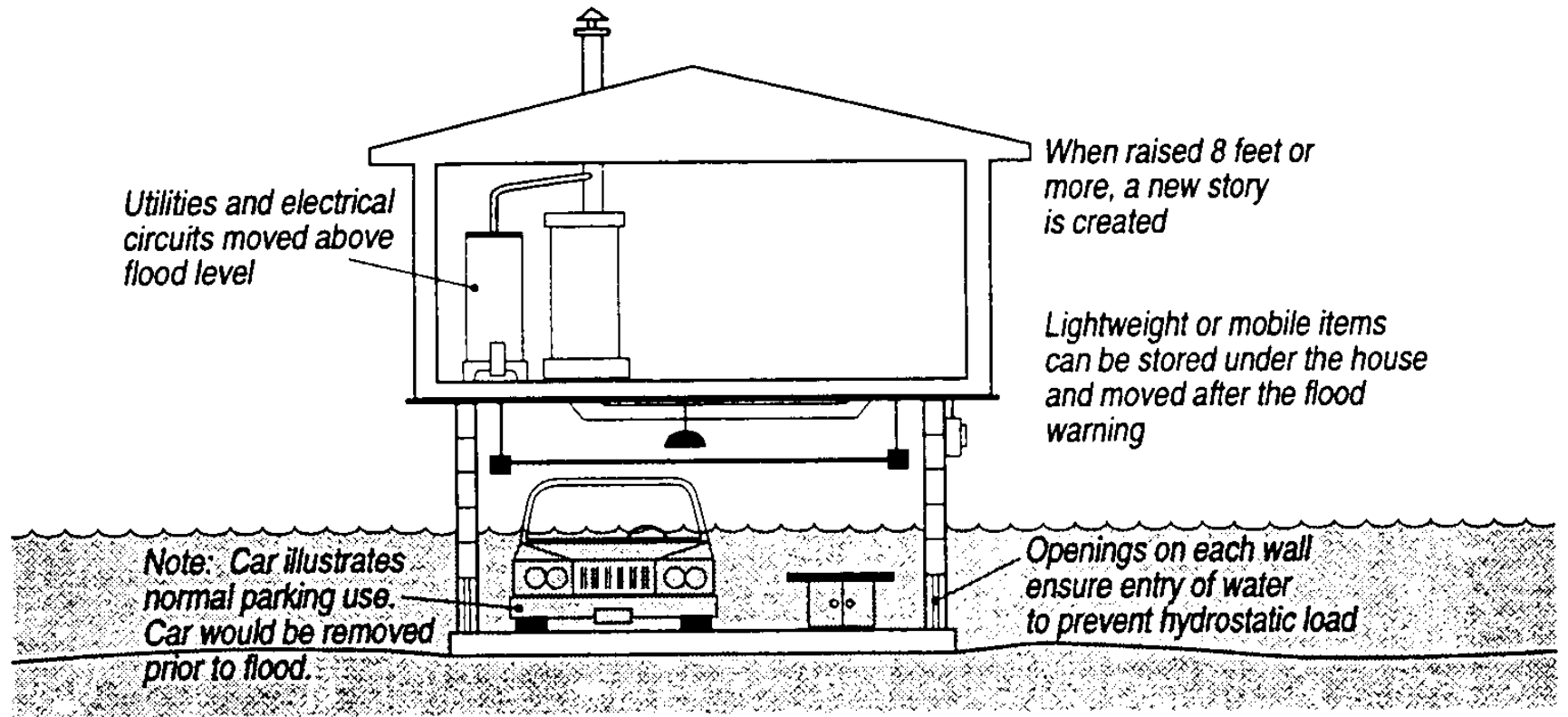
## Enclosures

- Constructed using flood resistant materials
- Area must be allowed to flood using openings
- All utilities, furnaces, a/c and ductwork must be above the FPE
- Only used for:
  - Building access
  - Vehicle parking
  - Storage of materials that have low flood damage potential.
- Not a basement



# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation on walls or crawlspace





# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation on walls or crawlspace





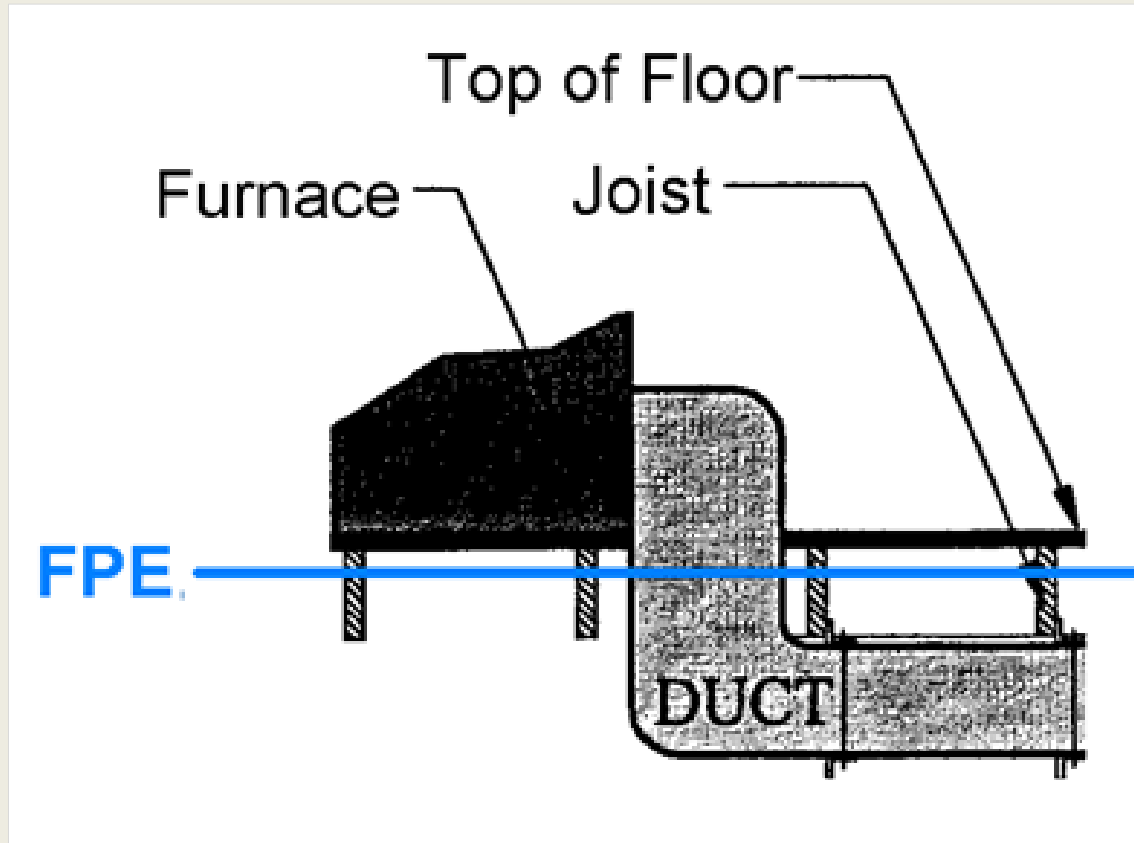
# FLOODPLAIN MANAGEMENT WORKSHOP

## Enclosures





# FLOODPLAIN MANAGEMENT WORKSHOP



Just focusing on getting the lowest floor above the flood protection elevation (FPE) means that floor joists and ductwork may still be flooded.



# FLOODPLAIN MANAGEMENT WORKSHOP





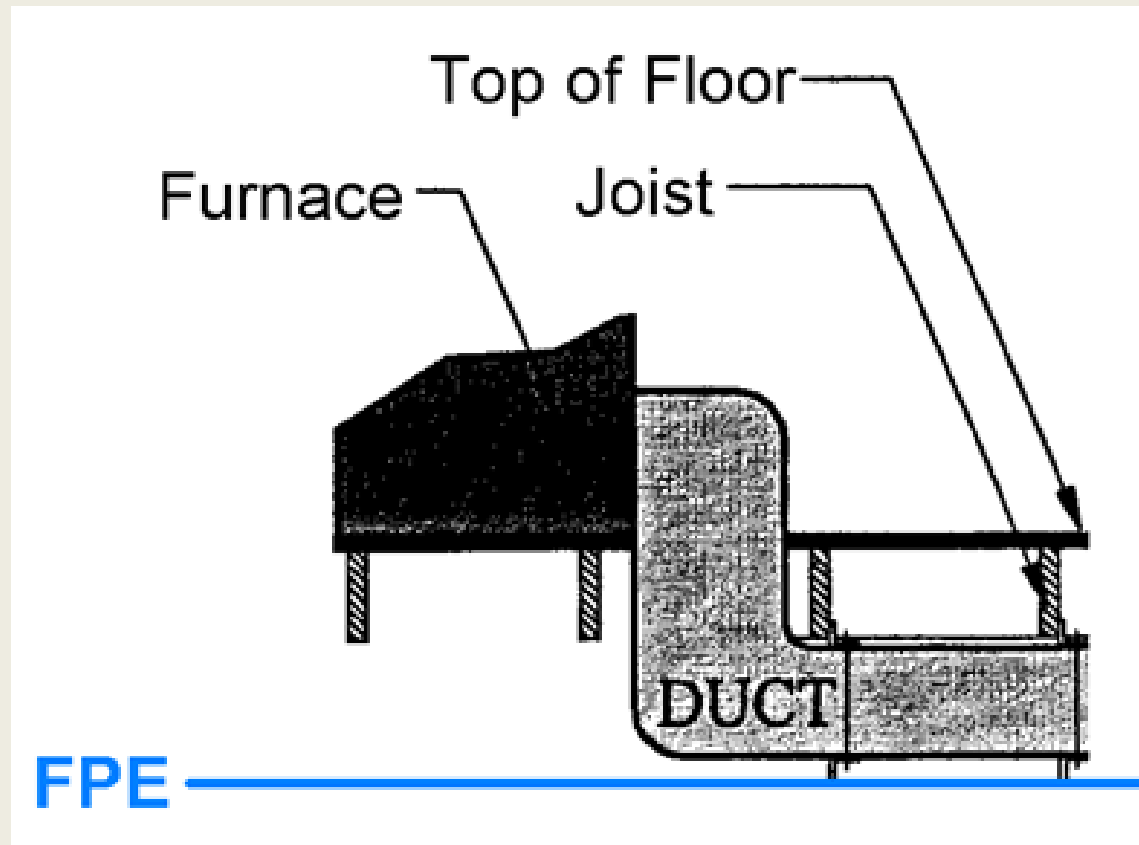


# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP



A properly elevated building has all damageable items, including floor joists, furnace, and ductwork, above the flood protection elevation (FPE).



# FLOODPLAIN MANAGEMENT WORKSHOP

## Openings

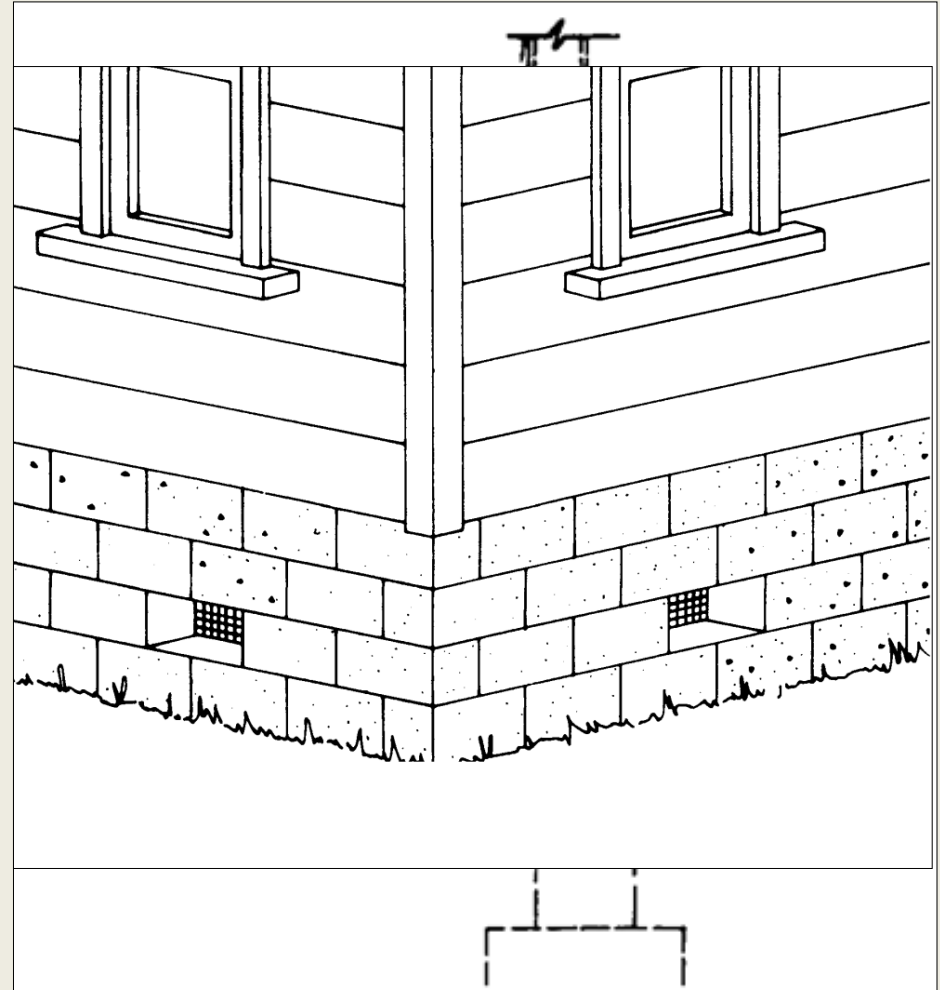
*You can be sure the openings are adequate by using one of two methods.*

1. The first method is to require the builder to have the design certified by a licensed professional engineer or architect.
2. The second method is to have the design meet or exceed three criteria.



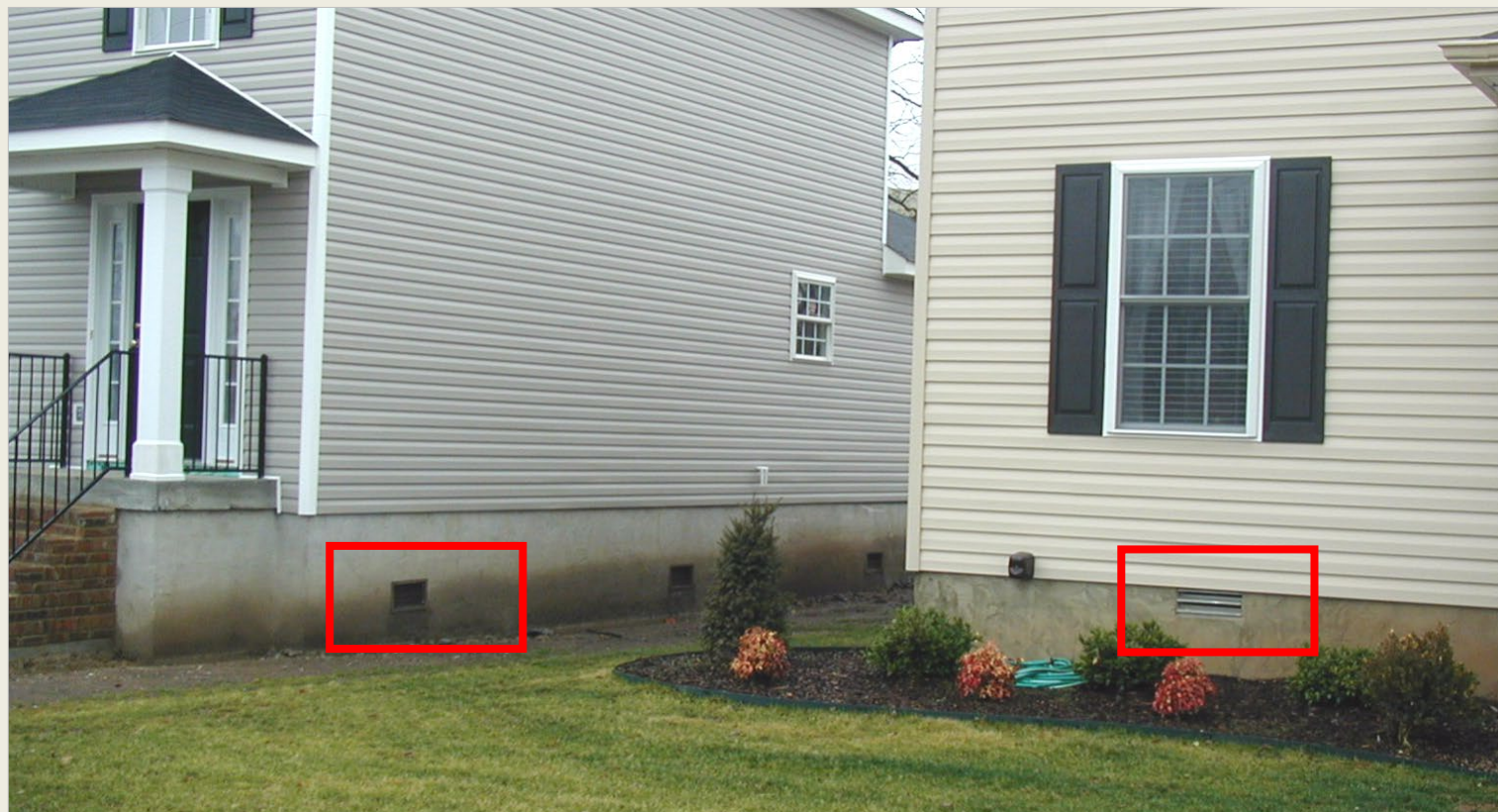
# FLOODPLAIN MANAGEMENT WORKSHOP

- Bottom of the openings must be no higher than one foot above grade
- Openings should be installed on at least 2 walls of the enclosure to ensure floodwaters will enter **and exit** the enclosure.
- Provide a minimum of two openings having a net area of not less than one square inch for every square foot of enclosed area that is subject to flooding.





# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP



***Can you tell me if these  
buildings are compliant?***



# FLOODPLAIN MANAGEMENT WORKSHOP

**Are these buildings compliant?**





# FLOODPLAIN MANAGEMENT WORKSHOP

**Is this building compliant?**







# FLOODPLAIN MANAGEMENT WORKSHOP

**Is this building compliant?**





# FLOODPLAIN MANAGEMENT WORKSHOP

**Is this building compliant?**





# FLOODPLAIN MANAGEMENT WORKSHOP

**Is this building compliant?**





# FLOODPLAIN MANAGEMENT WORKSHOP

**Is this building compliant?**





# FLOODPLAIN MANAGEMENT WORKSHOP

## ELEVATION CERTIFICATE

Important: Follow the instructions on pages 1-9.

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

SECTION A – PROPERTY INFORMATION		FOR INSURANCE COMPANY USE	
A1. Building Owner's Name		Policy Number:	
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.		Company NAIC Number:	
City	State	ZIP Code	
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)			
A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.) _____			
A5. Latitude/Longitude: Lat. _____ Long. _____ Horizontal Datum: <input type="checkbox"/> NAD 1927 <input type="checkbox"/> NAD 1983			
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.			
A7. Building Diagram Number _____			
A8. For a building with a crawlspace or enclosure(s):			
a) Square footage of crawlspace or enclosure(s) _____ sq ft			
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade _____			
c) Total net area of flood openings in A8.b _____ sq in			
d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No			
A9. For a building with an attached garage:			
a) Square footage of attached garage _____ sq ft			
b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade _____			
c) Total net area of flood openings in A9.b _____ sq in			
d) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No			
SECTION B – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION			
B1. NFIP Community Name & Community Number		B2. County Name	B3. State
B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Panel Effective/ Revised Date
B8. Flood Zone(s)	B9. Base Flood Elevation(s) (Zone AO, use Base Flood Depth)		

Completing & maintaining the Elevation Certificate is an important element of a floodplain management program.

A copy of the Elevation Certificate can be found at <https://www.fema.gov/> by using the search function.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #6**

For buildings elevated on enclosures, the maximum allowable distance between the bottom of wall openings and natural grade is:



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodproofing





# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodproofing

- Only for nonresidential buildings
- Walls are watertight
- Designed to resist hydrostatic and hydrodynamic loads and buoyancy
- Utilities are protected
- Where floodwaters < three feet deep
- Discourage human intervention





# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodproofing





# FLOODPLAIN MANAGEMENT WORKSHOP

## FLOODPROOFING CERTIFICATE FOR NON-RESIDENTIAL STRUCTURES

The floodproofing of non-residential buildings may be permitted as an alternative to elevating to or above the Base Flood Elevation; however, a floodproofing design certification is required. This form is to be used for that certification. Floodproofing of a residential building does not alter a community's floodplain management elevation requirements or affect the insurance rating unless the community has been issued an exception by FEMA to allow floodproofed residential basements. The permitting of a floodproofed residential basement requires a separate certification specifying that the design complies with the local floodplain management ordinance.

BUILDING OWNER'S NAME		<b>FOR INSURANCE COMPANY USE</b>  POLICY NUMBER   COMPANY NAIC NUMBER
STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. Number) OR P.O. ROUTE AND BOX NUMBER		
OTHER DESCRIPTION (Lot and Block Numbers, etc.)		
CITY	STATE	Zip Code

### SECTION I – FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

Provide the following from the proper FIRM:

COMMUNITY NUMBER	PANEL NUMBER	SUFFIX	DATE OF FIRM INDEX	FIRM ZONE	BASE FLOOD ELEVATION (in AO Zones, Use Depth)

Indicate elevation datum used for Base Flood Elevation shown above:  NGVD 1929  NAVD 1988  Other/Source: \_\_\_\_\_

### SECTION II – FLOODPROOFED ELEVATION CERTIFICATION (By a Registered Professional Land Surveyor, Engineer, or Architect)

All elevations must be based on finished construction.

#### Floodproofing Elevation Information:

Building is floodproofed to an elevation of \_\_\_\_\_ feet (In Puerto Rico only: \_\_\_\_\_ meters).

NGVD 1929  NAVD 1988  Other/Source: \_\_\_\_\_

(Elevation datum used must be the same as that used for the Base Flood Elevation.)

Height of floodproofing on the building above the lowest adjacent grade is \_\_\_\_\_ feet (In Puerto Rico only: \_\_\_\_\_ meters).

#### For Unnumbered A Zones Only:

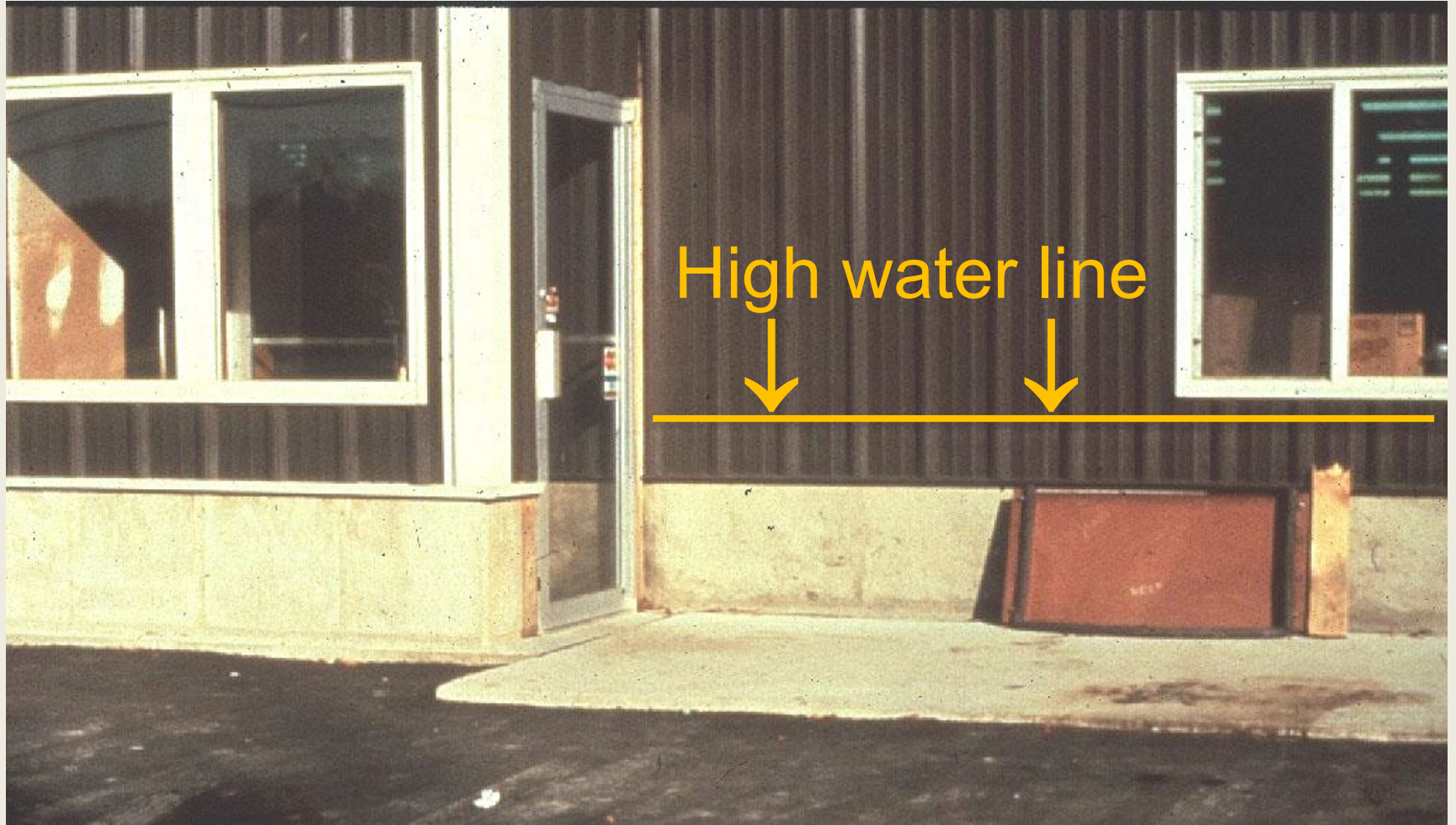
Highest adjacent (finished) grade next to the building (HAG) \_\_\_\_\_ feet (In Puerto Rico only: \_\_\_\_\_ meters).

NGVD 1929  NAVD 1988  Other/Source: \_\_\_\_\_

(NOTE: For insurance rating purposes, the building's floodproofed design elevation must be at least 1 foot above the Base Flood Elevation to receive rating credit. If the building is floodproofed only to the Base Flood Elevation, then the building's insurance rating will result in a higher premium. See the Instructions section for information on documentation that must accompany this certificate if being submitted for flood insurance rating purposes.)



# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP

## AO Zones

- Protect to the depth shown on the FIRM
- Protect to at least two feet if no depth shown on the FIRM



- All other rules are the same



# FLOODPLAIN MANAGEMENT WORKSHOP

## Basements





# FLOODPLAIN MANAGEMENT WORKSHOP

## Basements

- Any area of a building having its floor below grade on all sides
- Includes cellars and below-grade crawlspaces
- Does not include “walkout” basements
- *Floodproofed basements exceptions*



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Anchoring**

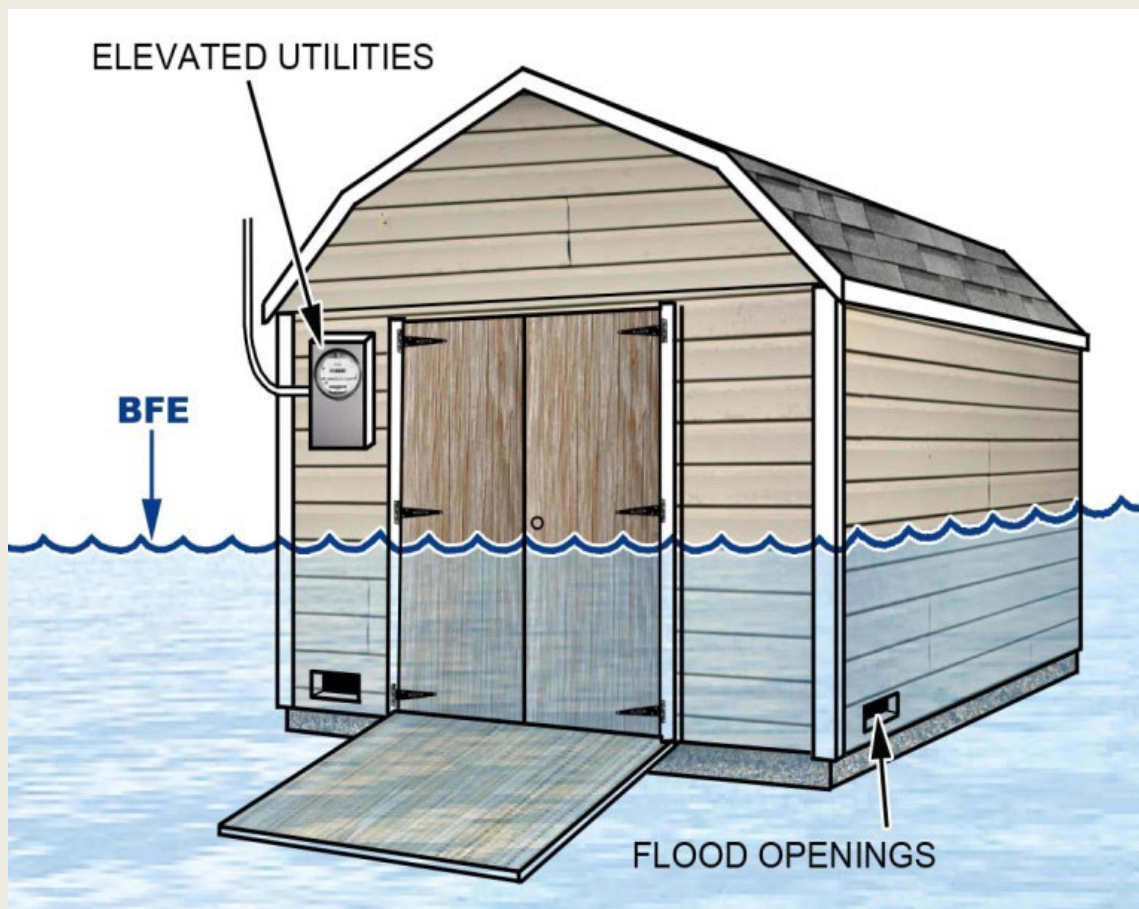
Additional anchoring measures are required:

- Where base flood velocities exceed 5 feet per second;
- In areas subject to waves and high winds;
- Factory built home
- Engineer's certification



# FLOODPLAIN MANAGEMENT WORKSHOP

## Accessory Structures







# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Accessory Structures**

Accessory structures to residential uses may be exempted from the building protection standards

- Sheds
- Detached garages

Agriculture buildings (with a variance)



# FLOODPLAIN MANAGEMENT WORKSHOP

## Residential Accessory Structures

- Not for human habitation
- Size limited to 600 sq feet.
- Used for vehicle parking and low flood damage potential storage
- Constructed using flood-resistant materials below FPE
- Elevate or floodproof utilities
- Be able to protect or elevate stored contents and equipment in event of a flood
- Provide wall openings
- Anchor structure to prevent flotation, collapse, or lateral movement



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Factory built homes**

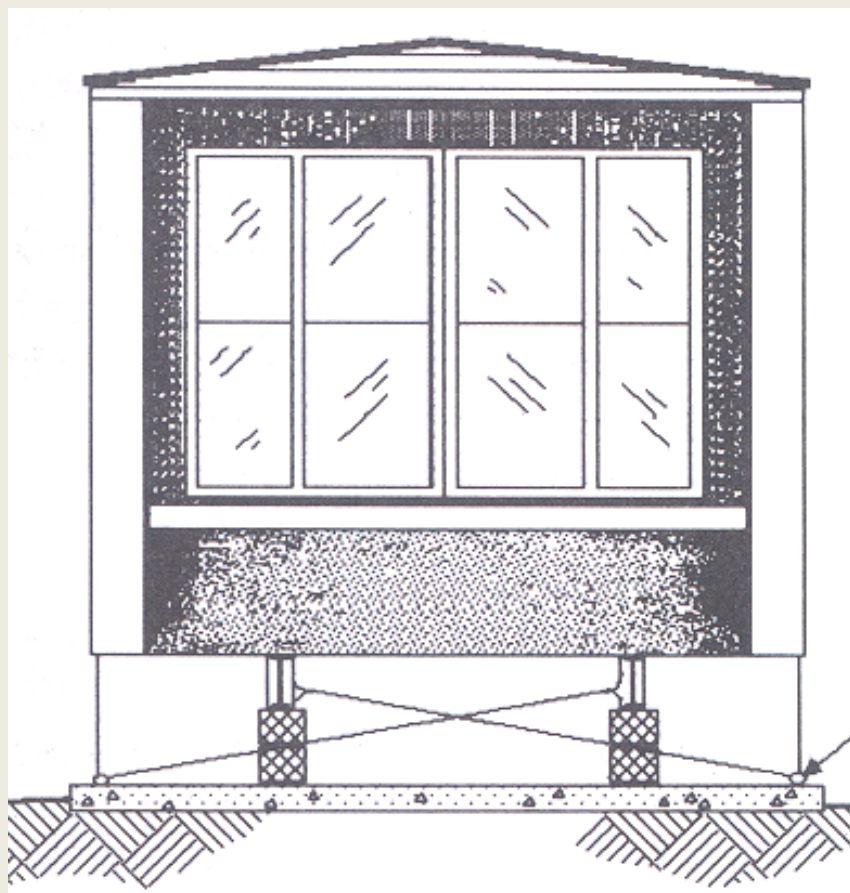
Must meet same flood protection requirements as a building, elevated to the FPE





# FLOODPLAIN MANAGEMENT WORKSHOP

## Anchoring factory built homes



- Permanent foundation with below-grade footing
- Tie-downs



# FLOODPLAIN MANAGEMENT WORKSHOP

## Recreational Vehicles

If placed in the SFHA must:

- Be on the site for fewer than 180 consecutive days,
- Be fully licensed and ready for highway use.
- Otherwise treat as a factory-built home.





# FLOODPLAIN MANAGEMENT WORKSHOP



***Can you tell me if these buildings are  
compliant?***



# *FLOODPLAIN MANAGEMENT WORKSHOP*

**Is this building compliant?**





# *FLOODPLAIN MANAGEMENT WORKSHOP*

**Is this building compliant?**







# FLOODPLAIN MANAGEMENT WORKSHOP

**Is this building  
compliant?**





# *FLOODPLAIN MANAGEMENT WORKSHOP*

**Is this building compliant?**





# *FLOODPLAIN MANAGEMENT WORKSHOP*

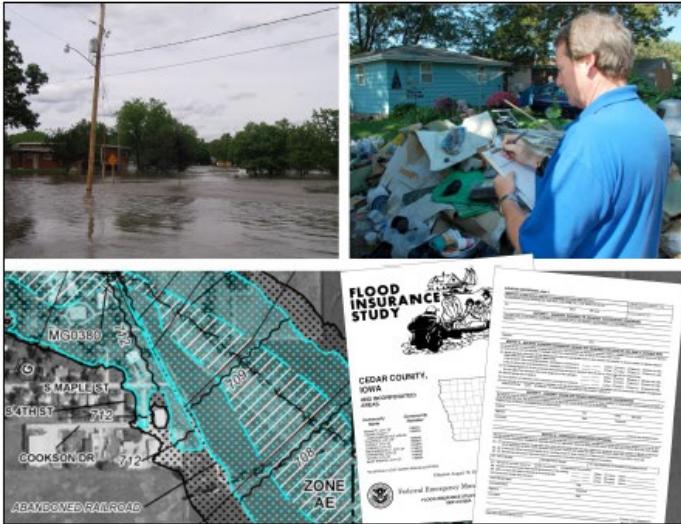
## **Poll Question #7**

How many consecutive days is a Recreational Vehicle allowed to be onsite before it is considered to be a structure?



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 12

Regulatory  
Requirements:  
Existing Buildings –  
Improvements and  
Repairs



# FLOODPLAIN MANAGEMENT WORKSHOP

## Basic Rule #5

### NFIP Rule:

- If the cost of improvements or the cost to repair damage  $\geq$  50% of the “market value” of the building, it must be brought up to current floodplain development standards.

### Iowa rule:

- This requirement also applies when the original floor area of a building is increased by 25%.



# FLOODPLAIN MANAGEMENT WORKSHOP

## Substantial Improvement

- Remodeling
- Rehabilitation
- Additions
- Repairs
- Multiple projects





# FLOODPLAIN MANAGEMENT WORKSHOP

## The formula


$$\frac{\text{Cost of improvement project}}{\text{Market Value of the building}} \geq 50\%$$

Example:

$$\frac{\$60,000 \text{ project}}{\$100,000 \text{ building}}$$



# FLOODPLAIN MANAGEMENT WORKSHOP

## Cost of Improvement

The structural costs including:

- “True” cost of all materials
- “True” cost of labor
- Built-in appliances
- Overhead & profit
- Repairs/other work done at the same time.





# FLOODPLAIN MANAGEMENT WORKSHOP

## Items to be included:

- All structural elements, including:
- Spread or continuous foundation footings and pilings;
- Monolithic or other types of concrete slabs;
- Bearing walls, tie beams, and trusses;
- Floors and ceilings;
- Attached decks and porches;
- Interior partition walls;
- Exterior wall finishes (brick, stucco, siding) including painting and moldings;
- Windows and doors;
- Reshingling or retiling a roof; and
- Hardware.
- All interior finishing elements, including:
- Tiling, linoleum, stone, or carpet over subflooring;
- Bathroom tiling and fixtures;
- Wall finishes (drywall, painting, stucco, plaster, paneling, marble, etc);
- Kitchen, utility, and bathroom cabinets;
- Built-in bookcases, cabinets, and furniture; and
- Hardware.
- All utility and service equipment, including:
- HVAC equipment;
- Plumbing and electrical services;
- Light fixtures and ceiling fans;
- Security systems;
- Built-in kitchen appliances;
- Central vacuum systems; and
- Water filtration, conditioning, or recirculation systems.
- Cost to demolish storm-damaged building components;
- Labor and other costs associated with moving or altering undamaged building components to accommodate improvements or additions; and
- Overhead and profits.



# FLOODPLAIN MANAGEMENT WORKSHOP

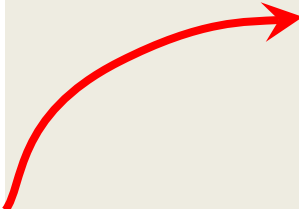
## Items to be Excluded:

- Plans and specifications;
- Survey costs;
- Permit fees;
- Post-storm debris removal and clean up; and
- Outside improvements, including:
  - Landscaping;
  - Sidewalks;
  - Fences;
  - Yard lights;
  - Swimming pools;
  - Detached structures (including garages, sheds, and gazebos); and
  - Landscape irrigation systems.



# FLOODPLAIN MANAGEMENT WORKSHOP

## The formula

$$\frac{\text{Cost of improvement project}}{\text{Market value of the building}} \geq 50\%$$
A red arrow originates from the left side of the slide and points towards the denominator of the formula, 'Market value of the building'.

Example:

$$\frac{\$60,000 \text{ project}}{\$100,000 \text{ building}}$$



# FLOODPLAIN MANAGEMENT WORKSHOP

## Market value

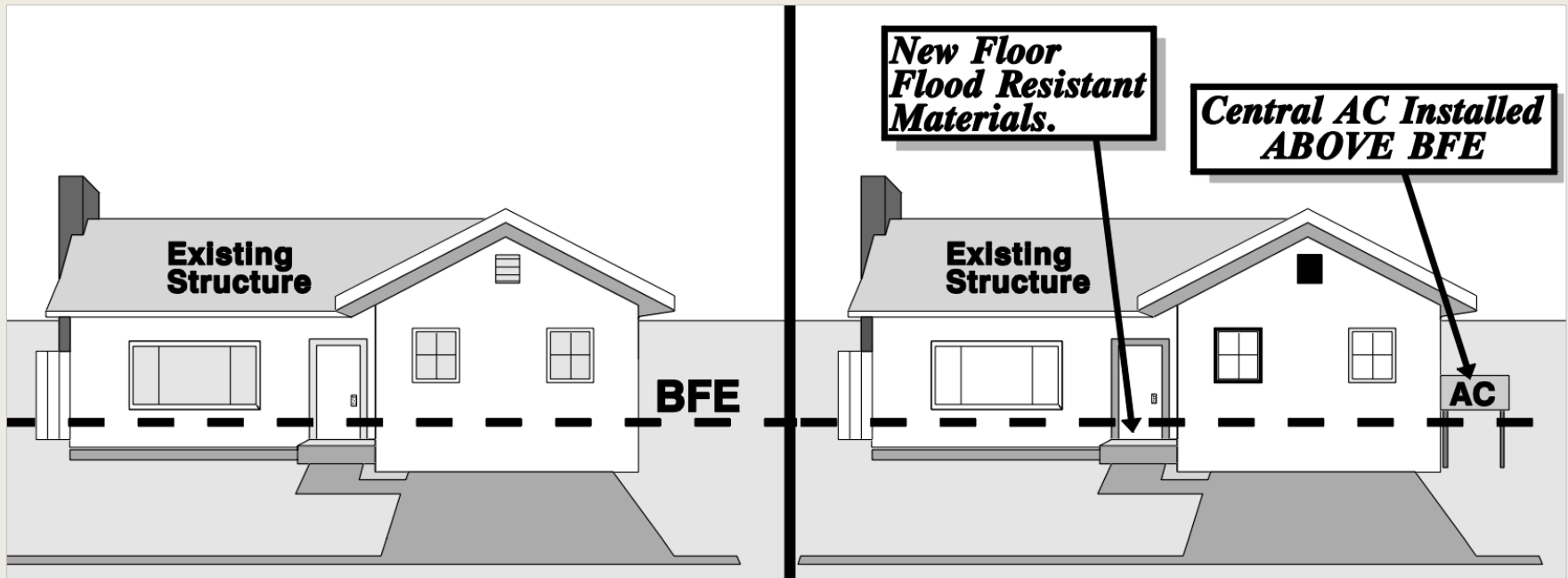
What a willing buyer would pay for the building. Sources:

- Independent appraisal
- Adjusted tax assessments



# FLOODPLAIN MANAGEMENT WORKSHOP

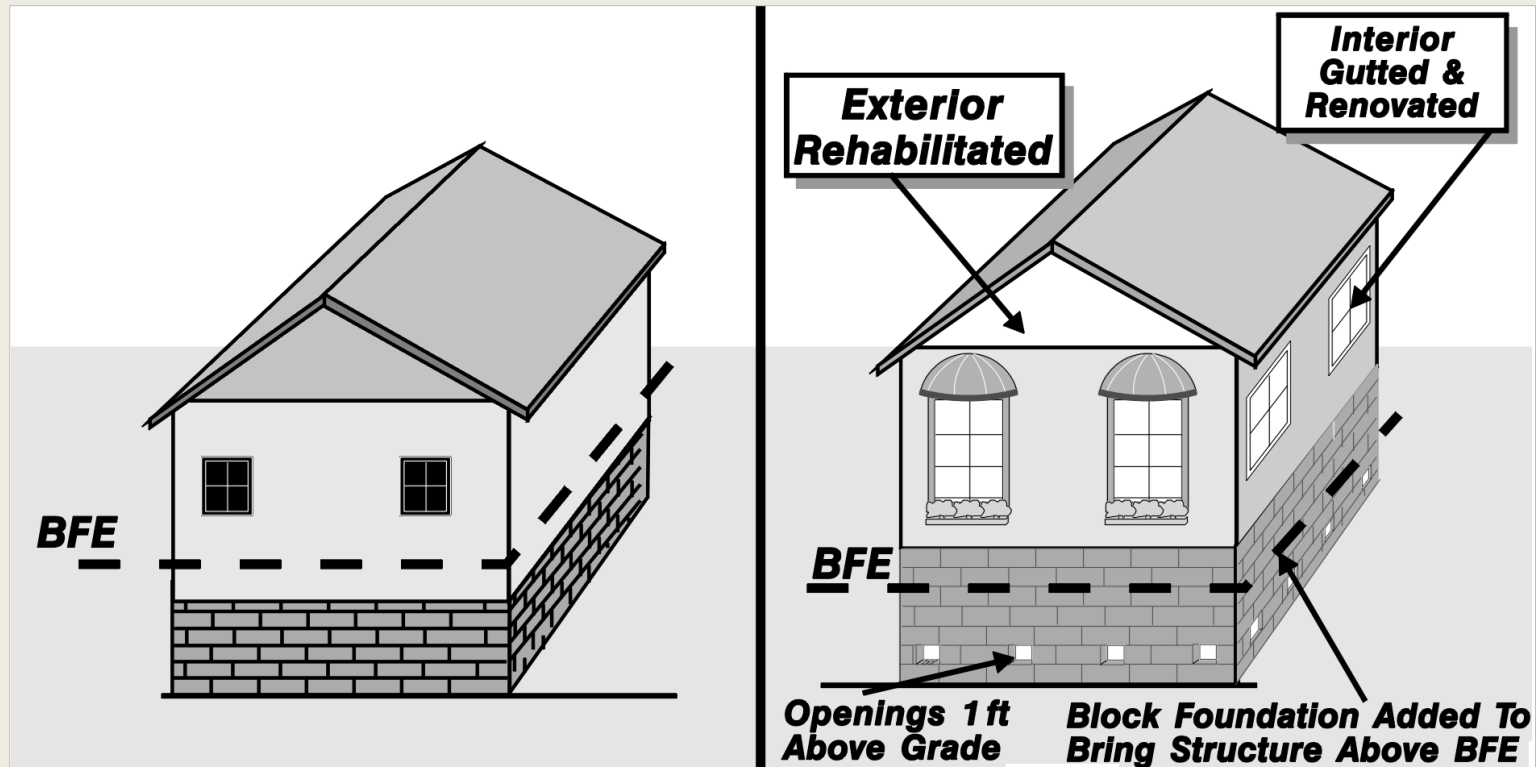
## Minor Rehabilitation: < 50%





# FLOODPLAIN MANAGEMENT WORKSHOP

## Major Rehabilitation: > 50%





# FLOODPLAIN MANAGEMENT WORKSHOP

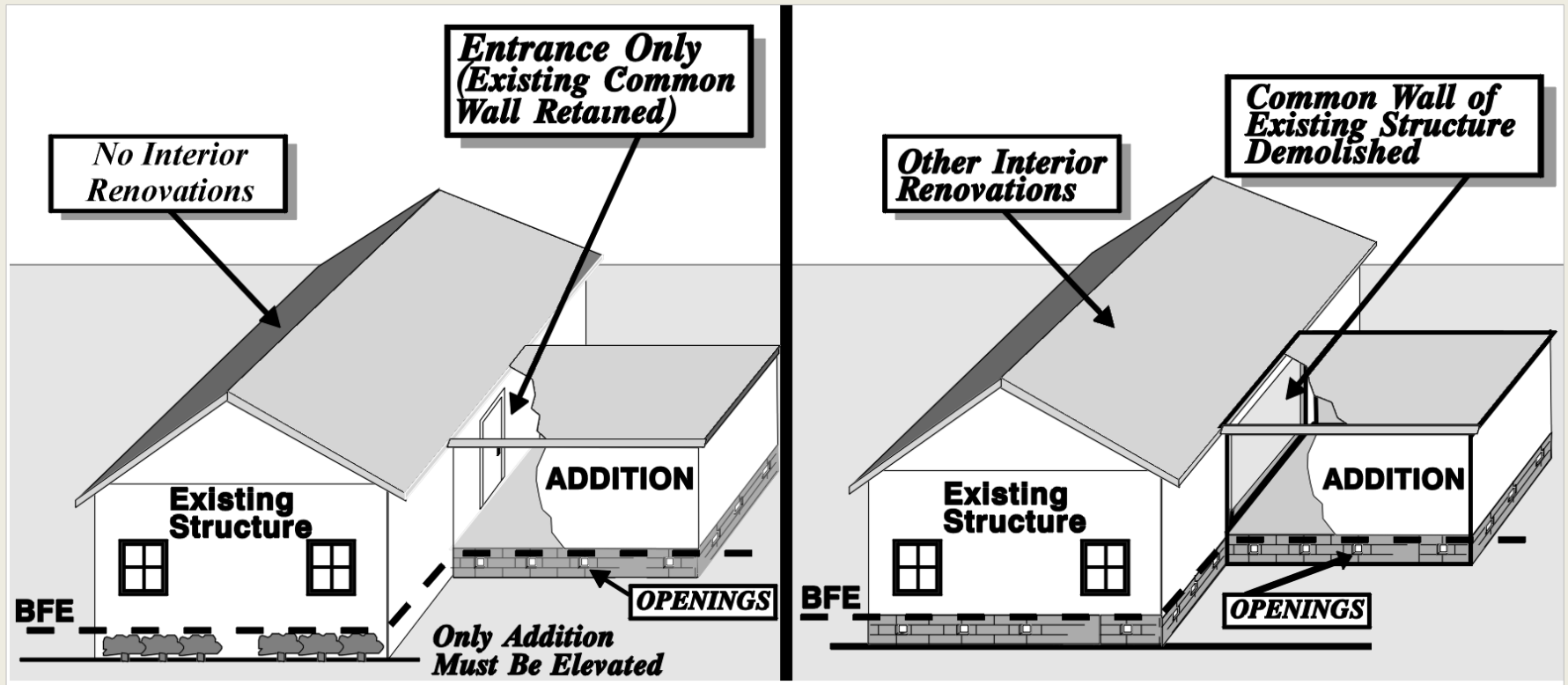
## Additions





# FLOODPLAIN MANAGEMENT WORKSHOP

Additions: 50% Market Value OR 25% Increase in Footprint







# FLOODPLAIN MANAGEMENT WORKSHOP



*I've got an old commercial building  
that the owner wants to rehab.*



# FLOODPLAIN MANAGEMENT WORKSHOP

## Builder's cost estimates

<del>Architect's fees</del>	<del>\$5,000</del>
Contractor	50,000
Contractor's profits	5,000
Cost to bring electrical up to new electrical code	10,000
<del>Expansion of parking lot</del>	<del>10,000</del>
New automatic garage doors for another part of the building	10,000
Total cost of the project	\$75,000



# FLOODPLAIN MANAGEMENT WORKSHOP

You talk to the County Assessor and you both agree that the existing building is worth \$140,000.

- Is the project a substantial improvement?
- What papers should you collect to document your decision?



# FLOODPLAIN MANAGEMENT WORKSHOP

## The formula

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

$$\frac{\$75,000 \text{ project}}{\$140,000 \text{ building}} = 54\%$$



# FLOODPLAIN MANAGEMENT WORKSHOP

## *Documents needed*

- Builder's cost estimate
- Basis for market value
  - Assessor's notes, appraiser's report



# FLOODPLAIN MANAGEMENT WORKSHOP

## Substantial Damage

- Damage from any cause
- All buildings, regardless whether insured





# FLOODPLAIN MANAGEMENT WORKSHOP

## The formula

$$\frac{\text{Cost of repair}}{\text{Pre-damage market value of the building}} \geq 50\%$$

Example:

$$\frac{\$60,000 \text{ project}}{\$100,000 \text{ building}}$$



# FLOODPLAIN MANAGEMENT WORKSHOP

## Cost to repair

- “True” cost to restore the building to its pre-damaged condition.
- Regardless whether the owner wants to restore or not.
- Get contractor’s or construction estimator’s estimate.
- Check against insurance claim.





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Exceptions**

- Non-construction expenses (surveying, permit fees, etc.)
- Demolition, emergency repairs
- Non-building work (driveway, etc.)
- Historic structures
- Code violations (see Section 4.4.8, FEMA P-758)







# FLOODPLAIN MANAGEMENT WORKSHOP

## Increased Cost of Compliance

- Building must have flood insurance
- Must have been damaged by a flood
- Must be determined to be substantially damaged by code official
- Up to \$30,000 to help comply

**USE THE ICC CLAIM TO:**

	ELEVATE THE HOUSE ON YOUR LOT
	DEMOLISH AND REBUILD THE HOUSE
	MOVE THE HOUSE TO HIGH GROUND
	FLOODPROOF A NON-RESIDENTIAL STRUCTURE



# FLOODPLAIN MANAGEMENT WORKSHOP



## Substantial Damage Estimator (SDE) Software

### Substantial Damage Estimator (SDE) User Manual and Field Workbook

Using the SDE Tool to Perform  
Substantial Damage Determinations

FEMA P-784 / Tool Version 3.0 / August 2017





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Poll Question #8**

Which of the following costs are not included in the calculation for Substantial Improvement/Damage?



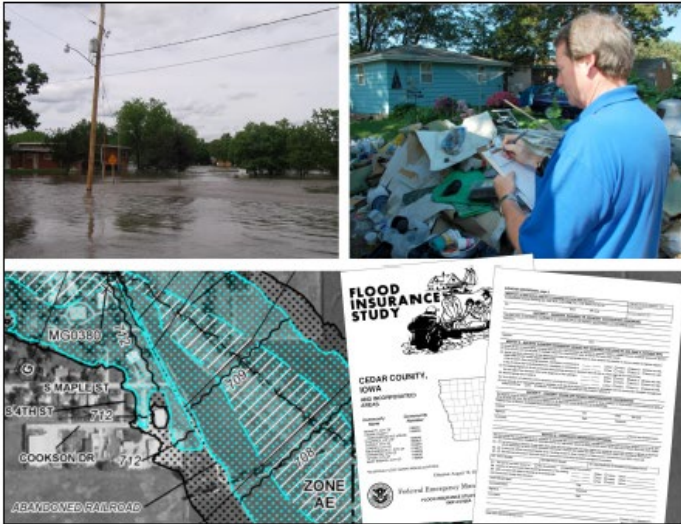
# *FLOODPLAIN MANAGEMENT WORKSHOP*

Break



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 13 Additional Regulatory Standards

## Section 14 Permit Review



# FLOODPLAIN MANAGEMENT WORKSHOP

A permit is needed for  
development

No. \_\_\_\_\_

## FLOODPLAIN DEVELOPMENT PERMIT

Specify for what purpose the permit is issued—  
New construction, alterations, fill, excavation, other

ISSUED TO: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PROJECT ADDRESS: \_\_\_\_\_  
(if different from permittee's address)

ISSUED BY: \_\_\_\_\_  
Floodplain Management Administrator

DATE: \_\_\_\_\_  
(This permit expires 180 days from this date)

THIS PERMIT MUST BE POSTED ON THE PREMISES IN A CONSPICUOUS PLACE SO AS TO BE  
CLEARLY VISIBLE FROM THE STREET.





# FLOODPLAIN MANAGEMENT WORKSHOP

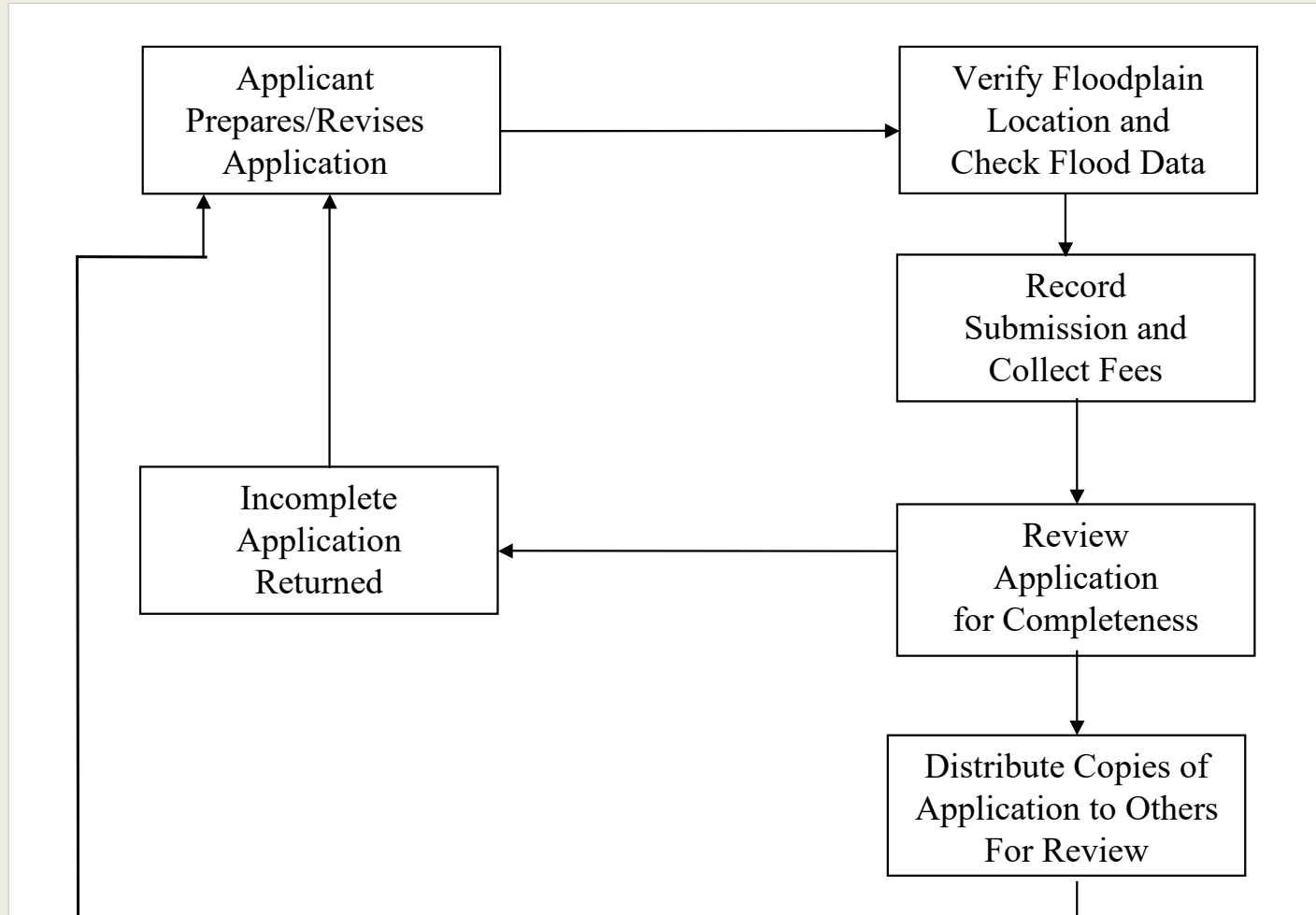
## A permit is needed for development

- New buildings and structures
- Additions or remodeling
- Fencing
- Filling, grading, excavation, dredging
- Paving, including state highways
- Storage of materials or equipment





# FLOODPLAIN MANAGEMENT WORKSHOP





# FLOODPLAIN MANAGEMENT WORKSHOP

## Flood Plain Development Application/Permit

Application/Permit# \_\_\_\_\_ Date \_\_\_\_\_

TO THE ADMINISTRATOR: The undersigned hereby makes application for a Permit to develop in a flood plain. The work to be performed, including flood protection works, is as described below and in attachments hereto. The undersigned agrees that all such work shall be done in accordance with the requirements of the ( Enter City/County Name ) Flood Plain Management Ordinance and with all other applicable city/county ordinances and the laws and regulations of the State of Iowa.

Owner/Agent: \_\_\_\_\_

Street Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_ Email: \_\_\_\_\_

Builder: \_\_\_\_\_

Street Address: \_\_\_\_\_ Phone: \_\_\_\_\_

City/State Zip: \_\_\_\_\_ Email: \_\_\_\_\_

Project Location: ¼ \_\_\_\_\_ ¼ \_\_\_\_\_ Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_ County: \_\_\_\_\_

Project Street Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Type(s) of Development

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> Filling           | <input type="checkbox"/> New Construction       | <input type="checkbox"/> Routine Maintenance     |
| <input type="checkbox"/> Excavation        | <input type="checkbox"/> Grading                | <input type="checkbox"/> Substantial Improvement |
| <input type="checkbox"/> Minor Improvement | <input type="checkbox"/> Other (describe below) |  |

Development Description

Size of Site (ft x ft): \_\_\_\_\_ Area of Site (sq. ft.): \_\_\_\_\_ Estimated Cost (\$): \_\_\_\_\_

Principal Use: \_\_\_\_\_

Accessory Uses (Storage, parking, etc.): \_\_\_\_\_

Addition or modification to non-conforming use:  Yes  No Assessed value of structure (\$): \_\_\_\_\_



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Permit Review Process**

**Step 1** – Review for Completeness

**Step 2** – Review for Compliance

**Step 3** – Application Approval or Denial



# FLOODPLAIN MANAGEMENT WORKSHOP

## Review for completeness

- Check all forms
- Check site plan
  - Property lines, set backs
  - Floodplain and floodway boundaries



# FLOODPLAIN MANAGEMENT WORKSHOP

## Review for completeness

- Check building plans
  - Lowest floor elevation
  - Foundation plans
  - What will be in enclosures
- Check certifications
  - Floodproofing



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## Review for completeness

- Check for other needed permits
  - DNR
  - Corps
- Circulate to others for review



# FLOODPLAIN MANAGEMENT WORKSHOP

## Review for compliance





# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Review for compliance**

- Check the Base Flood Elevation (BFE)
- Check floodway boundaries
- Review building plans
- Review certifications





# FLOODPLAIN MANAGEMENT WORKSHOP

## Approve or deny the permit

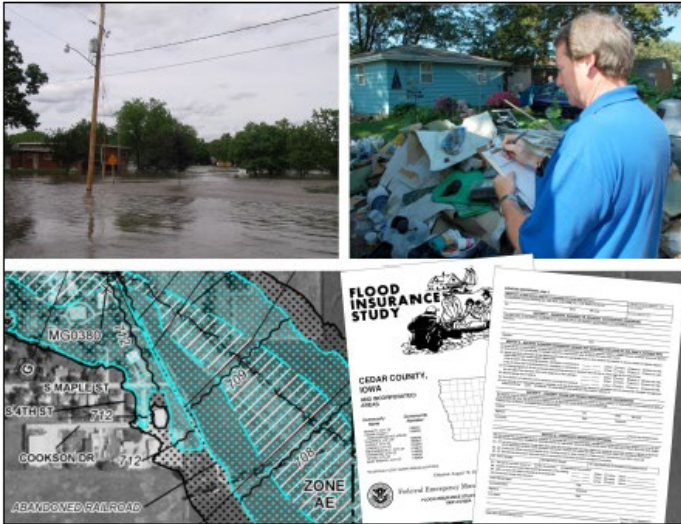
- Keep a record.
- If denied:
  - Forget the project
  - Redesign and reapply
  - Appeal
  - Request a variance





# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 15 Inspections



# FLOODPLAIN MANAGEMENT WORKSHOP

## Three Recommended Inspections

- Pre-construction inspection;
- Elevation inspection; and
- Final inspection.





# FLOODPLAIN MANAGEMENT WORKSHOP

## FLOODPLAIN INSPECTION REPORT

Date: \_\_\_\_\_ Inspector: \_\_\_\_\_

Permit #: \_\_\_\_\_ Applicant: \_\_\_\_\_

Type of inspection:  Pre-construction\*  Elevation  Final

### **Pre-Construction Inspection\***

#### Office Work

- Review permit file before going to the field
- Ask permit reviewer any questions, if necessary
- Check for any necessary state or federal permits

#### Field Work

- Check building or development location. Measure distances from waterway or landmarks. Locate floodplain and floodway boundaries.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## Pre-construction inspection

- Location of the floodplain and floodway boundaries
- Setbacks from lot lines, channel banks
- Floodway encroachment, if applicable



# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation inspection

Check  
before  
slab or  
foundation  
is poured





# FLOODPLAIN MANAGEMENT WORKSHOP

## *Elevation inspection*

- Check fill for compaction, slope and protection measures
- Check building location
- Check crawlspace openings
- Floodway encroachments



# FLOODPLAIN MANAGEMENT WORKSHOP

## Final inspection







# *FLOODPLAIN MANAGEMENT WORKSHOP*

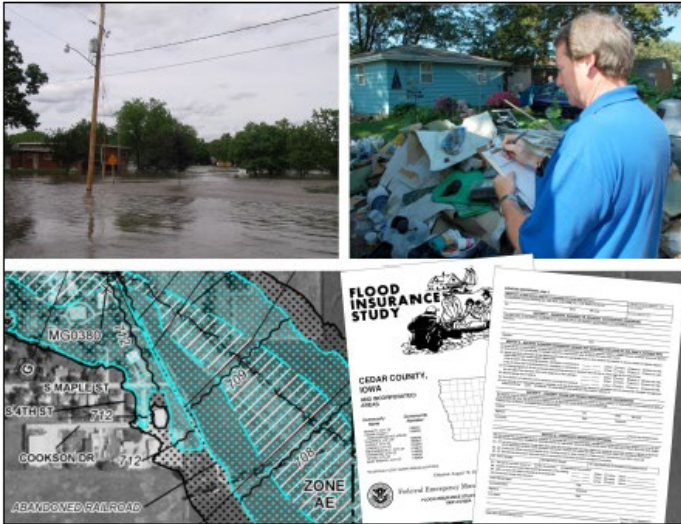
## Final inspection

- Check if foundation has been altered
- Obtain as-built elevation certificate or floodproofing certificate
- Check enclosures for openings and use
- Check for elevated utilities
- Check for floodway encroachment
- Check factory built home's anchoring



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 16

## Appeals and Variances



# FLOODPLAIN MANAGEMENT WORKSHOP

## Variations

- Conditions are unique to the property
- Pertain to the land and not structure, its inhabitants, or property owners
- Need DNR approval
- Applicant must show
  - Good cause
  - Exceptional hardship



# FLOODPLAIN MANAGEMENT WORKSHOP

## Hardship Test

- The concept of unnecessary hardship is the cornerstone of all variance standards, whether or not the floodplain is involved.
- *The applicant has the burden of proving unnecessary hardship.*



# FLOODPLAIN MANAGEMENT WORKSHOP

## Should you issue a floodplain variance?

A city or county is authorized to approve variances from the letter of your floodplain regulations “that will not be contrary to the public interest where, owing to special conditions, a literal enforcement of the provisions of this Ordinance will result in unnecessary hardship.”

The issuing of variances is guided strictly by the requirements of your local ordinance and state and federal regulations. Variations to your flood protection regulations should be avoided and only issued because of special situations.

### **When considering a variance application, ask the following 10 questions:**

1. Is the variance requested on land that is unique? Each variance request must be considered on a structure by structure and lot by lot basis. You must consider if the lot is unique. If it is not unique, then other similarly situated land would also be eligible for a variance for the same reasons.



# *FLOODPLAIN MANAGEMENT WORKSHOP*

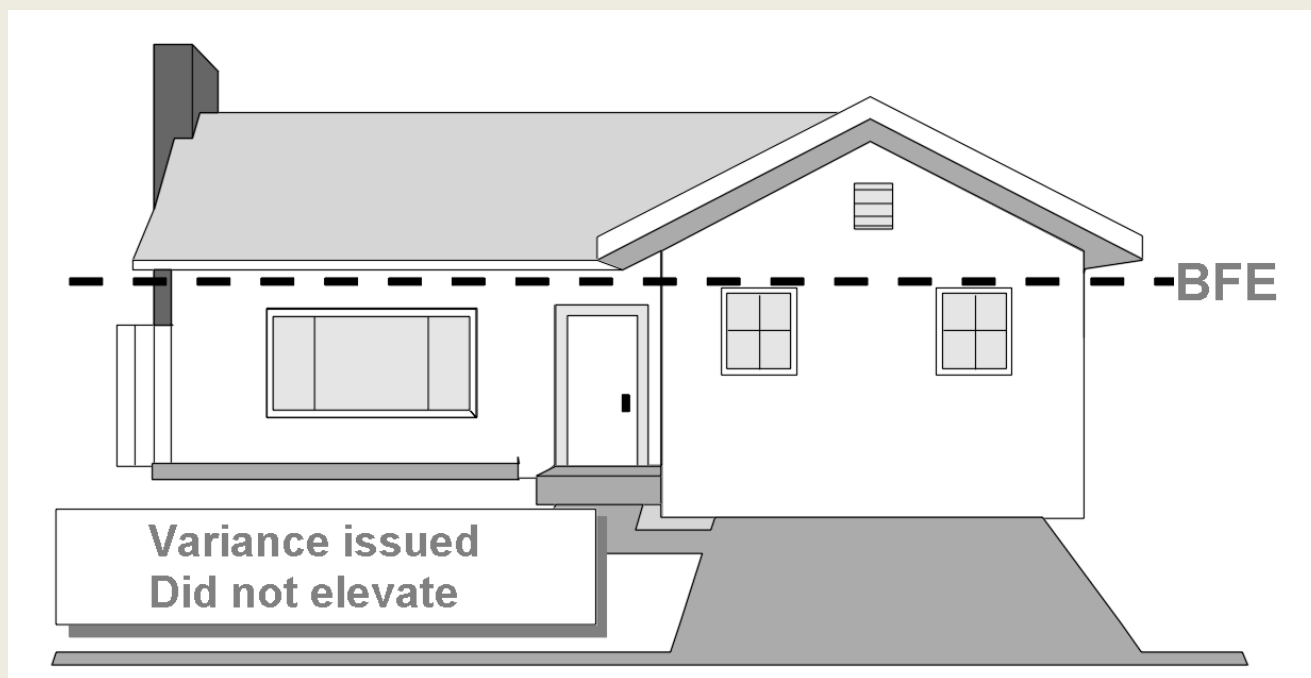
## **Examples of reasons NOT acceptable for a variance**

- House will look different from neighbors'
- Resident can't go up steps
- It will cost more to comply
- Affect on property values



# FLOODPLAIN MANAGEMENT WORKSHOP

## *No variance to flood insurance rates*



Lowest Floor 1 ft. above BFE , premium = \$941/year

Lowest Floor 1 ft. below BFE , premium = \$4336/year



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Historic Structures**







# FLOODPLAIN MANAGEMENT WORKSHOP

## Historic Structures

- Structures listed on:
  - National Register of Historic Places
  - State Historical Society of Iowa Inventory
  - A Federally-certified local historic preservation board
- Can have a variance if it's the minimum necessary to preserve the historic character



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Section 17 Enforcement



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Enforcement Steps**

- Contact property owner in person or by phone
- Follow up with written notice
- Talk to attorney
- Issue a stop work order
- Post violation notice on property



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## Legal Recourse

- Fines
- Record violation on the property deed
- Restraining order for active construction or grading activities
- Tickets
- DNR

**C I T A T I O N**

MUNICIPAL INFRACTION — [REDACTED] ORDINANCE VIOLATION

CITATION NO. CIT13-00076      DOCKET NO. [REDACTED]

The City of [REDACTED], Iowa vs.

**DEFENDANT NAME:** CHRONIC RULE-BREAKER

**ADDRESS:** \_\_\_\_\_

[REDACTED] IA [REDACTED]  
City State Zip

The undersigned states that the Defendant did violate the [REDACTED] Code of Ordinance on or about:

11 / 22 / 13 at 4:00 [ ] A.M. [X] P.M.  
Mo Day Yr

**Address of Violation(s):** [REDACTED]

Defendant herein did violate Section 16-3G-11G and 16-3G-11I of the Ordinances of the City of [REDACTED], Iowa, as follows:

The construction at 123 123rd Ave is in violation of the IA Dept. of Natural Resources NPDES permit and the [REDACTED] CSR permit; pollutants and water containing pollutants are being discharged into the municipal storm drainage system.

CIVIL PENALTY AND COURT COSTS TO BE PAID AT THE TIME AND PLACE OF THE COURT APPEARANCE SHOWN ON THE CITATION. PAYMENT MUST BE MADE BY CASH OR CHECK TO CLERK OF COURT, COURTHOUSE [REDACTED] IOWA.	CIVIL PENALTY ASSESSED: \$ 250.00
	COURT COSTS: \$ _____
	<b>TOTAL:</b> \$ _____

**Defendant is forthwith directed to pay the civil penalty and to correct/cease violation as follows:**

INSTALL AND MAINTAIN PERIMETER CONTROLS. PROVIDE CONTAINMENT FOR CONCRETE WASH-OUT AND MASONRY WORK. KEEP ALL CONSTRUCTION EQUIPMENT AND MATERIALS OFF PUBLIC RIGHT-OF-WAY.

TO ANSWER THE CHARGES ON THIS CITATION, YOU MUST APPEAR IN COURT ON

12 / 12 / 13 at 8:00 [X] A.M. [ ] P.M.  
Mo Day Yr

IN THE COURT AT [REDACTED]

**FAILURE TO APPEAR IN COURT WITHOUT GOOD CAUSE WILL RESULT IN JUDGEMENT FOR THE CIVIL PENALTY AND COURT COSTS AND AN ORDER TO CORRECT/ABATE THE VIOLATION(S) BEING ENTERED AGAINST YOU.**



# *FLOODPLAIN MANAGEMENT WORKSHOP*

## **Section 1316**

- Section 1316 of the National Flood Insurance Act
- Denies flood insurance to property
- No Federal aid or disaster assistance
- Difficult to get a mortgage



# *FLOODPLAIN MANAGEMENT WORKSHOP*

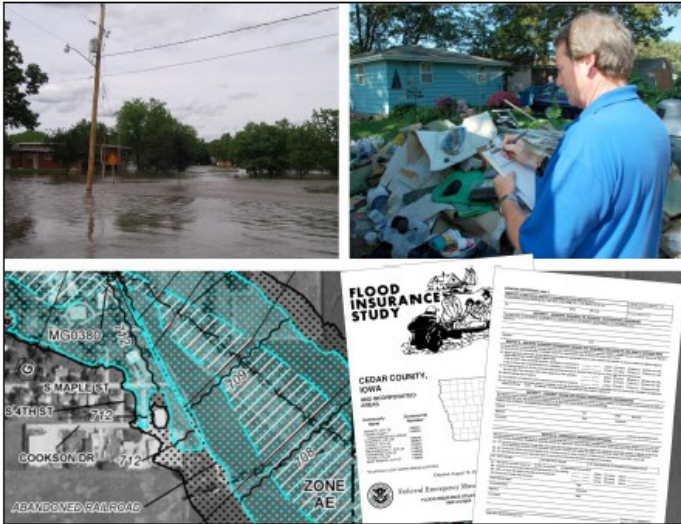
## **Poll Question #9**

True or False: A variance granted from the elevation requirements for a building will also apply to its flood insurance rates:



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Iowa Department of Natural Resources

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## Section 18 Records



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## Permit file

- Application forms and site plans
- All correspondence
- Engineering analyses
- Variance or appeals records
- As-built certifications

Keep all as-built records

Old FIRMs, LOMAs, LOMRs

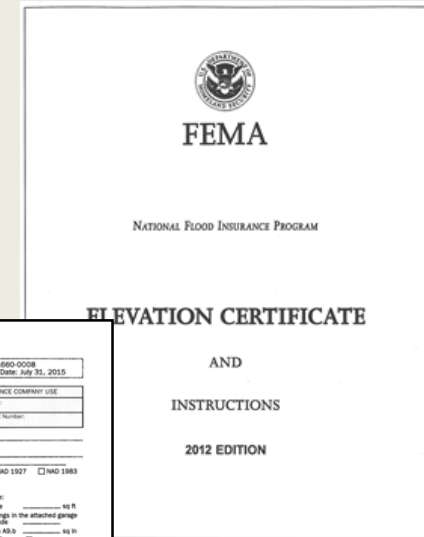




# FLOODPLAIN MANAGEMENT WORKSHOP

## Elevation Certificate

- Best record to document that the structure complies with the ordinance
- Needed by owner to obtain flood insurance
- Needed for LOMAs
- Needed for Community Rating System



U.S. DEPARTMENT OF HOMELAND SECURITY  
FEDERAL EMERGENCY MANAGEMENT AGENCY  
National Flood Insurance Program

**ELEVATION CERTIFICATE** OMB No. 1660-0006  
EXPIRATION DATE: July 31, 2015

**SECTION A - PROPERTY INFORMATION** FOR INSURANCE COMPANY USE

A1. Building Owner's Name: \_\_\_\_\_ Policy Number: \_\_\_\_\_  
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or R.O. Route and Box No.: \_\_\_\_\_ Company NAC Number: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_  
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.): \_\_\_\_\_

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): \_\_\_\_\_ Horizontal Datum:  NAD 1927  NAD 1983  
A5. Latitude/Longitude Lat. \_\_\_\_\_ Long. \_\_\_\_\_  
A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.  
A7. Building Elevation Number: \_\_\_\_\_

A8. For a building with a crawlspace or enclosure(s): \_\_\_\_\_ sq ft A9. For a building with an attached garage: \_\_\_\_\_ sq ft  
a) Square footage of crawlspace or enclosure(s) \_\_\_\_\_ sq ft a) Square footage of attached garage \_\_\_\_\_ sq ft  
b) Number of permanent flood openings in the crawlspace or enclosure(s) within 5.0 foot above adjacent grade \_\_\_\_\_ sq ft b) Number of permanent flood openings in the attached garage within 5.0 foot above adjacent grade \_\_\_\_\_ sq ft  
c) Total net area of flood openings in A8.b) \_\_\_\_\_ sq ft c) Total net area of flood openings in A9.b) \_\_\_\_\_ sq ft  
d) Engineered flood openings?  Yes  No d) Engineered flood openings?  Yes  No

**SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION**

B1. FIP Community Name & Community Number: \_\_\_\_\_ B2. County Name: \_\_\_\_\_ B3. State: \_\_\_\_\_  
B4. Map/Panel Number: \_\_\_\_\_ B5. Suffix: \_\_\_\_\_ B6. FIRM Index Date: \_\_\_\_\_ B7. FIRM Panel Effective/Revised Date: \_\_\_\_\_ B8. Flood Zone(s): \_\_\_\_\_ B9. Base Flood Elevation(s) (Zone AD, use base flood depth): \_\_\_\_\_

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in item B9:  
 FIP Profile  FIRM  Community Determined  Other/Source: \_\_\_\_\_  
B11. Indicate elevation datum used for BFE in item B9:  NAVD 1929  NAVD 1988  Other/Source: \_\_\_\_\_  
B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)?  Yes  No  
Designation Date: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  CBRS  OPA

**SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)**

C1. Building elevations are based on:  Construction Drawings\*  Building Under Construction\*  Finished Construction  
\*A new Elevation Certificate will be required when construction of the building is complete.  
C2. Elevations - Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/AE, AR/A1-A30, AR/AH, AR/AG. Complete Items C2.a-h below according to the building diagram specified in item AT. In Puerto Rico only, enter meters.  
Benchmark Elevation: \_\_\_\_\_ Vertical Datum: \_\_\_\_\_  
Indicate elevation datum used for the elevations in items a) through h) below.  NAVD 1929  NAVD 1988  Other/Source: \_\_\_\_\_  
Datum used for building elevations must be the same as that used for the BFE.  
a) Top of bottom floor (including basement, crawlspace, or enclosure floor) \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
b) Top of the next higher floor \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
c) Bottom of the lowest horizontal structural member (V Zones only) \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
d) Attached garage (top of slab) \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments) \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
f) Lowest adjacent (finish) grade next to building (LAD) \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
g) Highest adjacent (finish) grade next to building (HAG) \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters  
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support \_\_\_\_\_ feet \_\_\_\_\_ meters  feet  meters

**SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION**

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable as per the implementation under 48 U.S.C. Section 1505.  
 Check here if comments are provided on back of form. \_\_\_\_\_ Where latitude and longitude in Section A provided by a licensed land surveyor?  Yes  No  
 Check here if attachments.

Certifier's Name: \_\_\_\_\_ License Number: \_\_\_\_\_  
Title: \_\_\_\_\_ Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ ZIP Code: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: \_\_\_\_\_ Telephone: \_\_\_\_\_

FEMA Form 098-0-33 (Revised 5/12) See reverse side for continuation. Replaces all previous editions.

PLACE SEAL HERE



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014



## Sections

19. Flood Insurance

20. The Community  
Rating System

21. Disaster Operations

22. Hazard Mitigation



# FLOODPLAIN MANAGEMENT WORKSHOP

## Floodplain Management Desk Reference



Iowa Department of Natural Resources

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## Sections

23. Executive Order 11988

24. Glossary of Terms

25. References

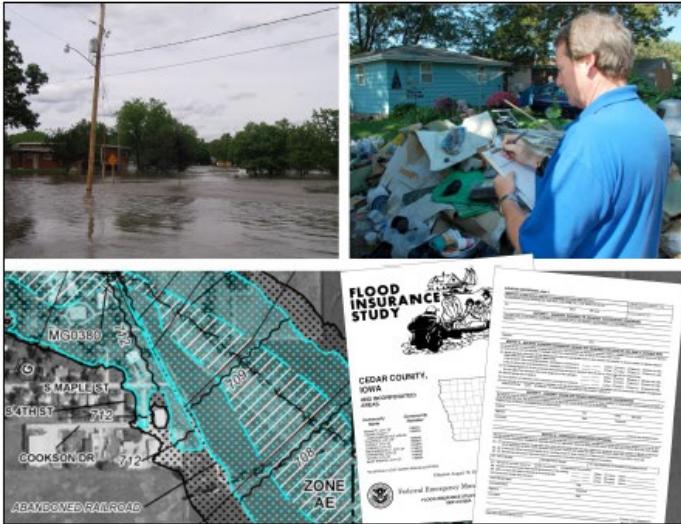
26. FIS and FIRM

27. FEMA Forms



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## Floodplain Management Desk Reference



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## Sections

28. Contacts

Appendix 1 –RiskMAP

Index



# FLOODPLAIN MANAGEMENT WORKSHOP

## *5 Basic Rules*

1. Use the current effective maps
2. Get permits for all “development” in SFHA
3. Do not increase flood hazards onto others
4. Protect new structures from the Base Flood
5. Enforce substantial improvement/damage rules

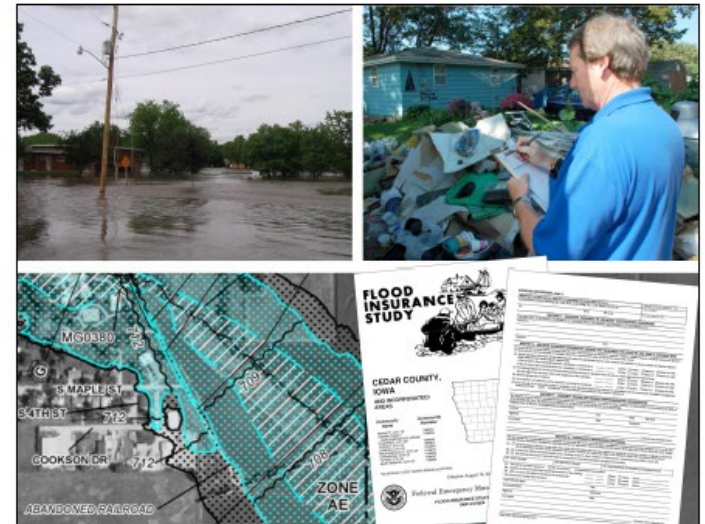


# FLOODPLAIN MANAGEMENT WORKSHOP

## *There is help*

- *Desk Reference and Ready Reference*
- DNR and FEMA staff
- IFSMA
- Emergency Management Institute

### Floodplain Management Desk Reference



Iowa Department of Natural Resources

May 2014

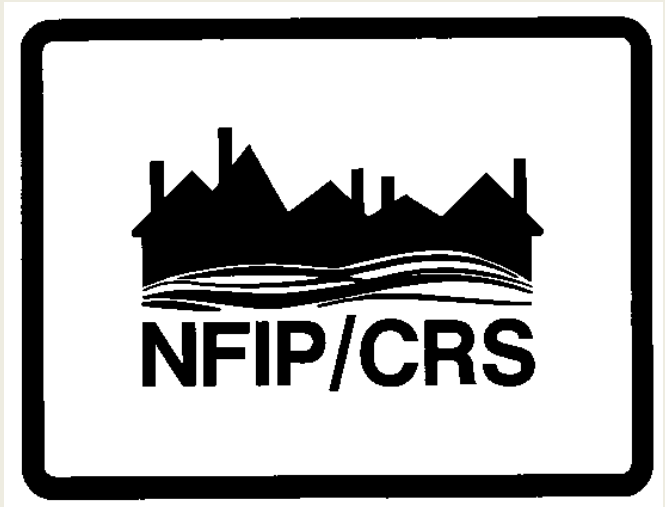




# FLOODPLAIN MANAGEMENT WORKSHOP

## *Going Above and Beyond*

- Certified Floodplain Manager
  - ASFPM: [www.floods.org](http://www.floods.org)
- Community Rating System
  - Eugene Kohls  
Insurance Services Office  
[EKohls@verisk.com](mailto:EKohls@verisk.com)  
(305) 202-1780





# *FLOODPLAIN MANAGEMENT WORKSHOP*

Iowa Floodplain and Stormwater Management  
Association (IFSMA)



[www.iowafloods.org](http://www.iowafloods.org)





# FLOODPLAIN MANAGEMENT WORKSHOP

IOWA STATE UNIVERSITY  
Extension and Outreach

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Flooding in Iowa

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FLOODING IN IOWA

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## INTRODUCTION TO FLOODING IN IOWA

The Flooding in Iowa Project is a series of web-based videos designed to educate local officials and the general public about floodplains, flood risks, and basic floodplain management principles. The videos are divided into five categories: Introduction to the NFIP, Understanding Flooding, Floodplain Mapping, Floodplain Regulation, and Flood Insurance. The tabs located on the top of this web page take you to each of these categories where you will find the related videos and participant materials.

Use this three minute video to familiarize yourself with the navigation of the website, website features, and the resources provided through the Flooding in Iowa Project.

In collaboration with  
Iowa Department of Natural  
Resources



## Important Links

Use the following links to learn more about flooding, and to connect with several of the resources referenced in this video series.

- Flooding in Iowa Program Brochure Available For Download
- Flooding in Iowa: Desk Reference for Local Officials Available for Download
- NFIP Key Terms (FEMA Glossary)
- FEMA Home Page
- FEMA Map Service Center
- Floodsmart.gov
- Iowa DNR Floodplain Management Division
- Iowa Flood Center
- Iowa Floodplain and Stormwater Management Association (IFSMA)



FLOODING IN IOWA

<http://www.extension.iastate.edu/floodinginiowa>



# FLOODPLAIN MANAGEMENT WORKSHOP



*Thank you so much for your help*



# FLOODPLAIN MANAGEMENT WORKSHOP

## Iowa DNR Floodplain and Dam Safety Program NFIP Coordination Staff

Ken Bouma	(515) 725-8352	<a href="mailto:Ken.Bouma@dnr.iowa.gov">Ken.Bouma@dnr.iowa.gov</a>
Jason Conn	(515) 725-8333	<a href="mailto:Jason.Conn@dnr.iowa.gov">Jason.Conn@dnr.iowa.gov</a>
Adrienne Ricehill	(515) 725-9320	<a href="mailto:Adrienne.Ricehill@dnr.iowa.gov">Adrienne.Ricehill@dnr.iowa.gov</a>

Iowa DNR Website: <http://floodplain.iowadnr.gov>

Flooding In Iowa Video Series: <http://www.extension.iastate.edu/floodinginiowa>

FEMA Map Service Center: <https://msc.fema.gov/portal/home>