FLOODPLAIN 101
PAUL O.
INTRO & START
9:00 – 9:15
FLOODPLAIN 101
IAFSM 2018

Tuesday March 13, 2018
Tinley Park, IL
Housekeeping

- Restrooms
- Phones, PDAs, Pagers, etc.
- Breaks & Lunch
- Attendance - CECs
- Ability to Hear / See
- Pacing– Too Fast, Slow
- Questions???
Course Topics

- Part 1: Flooding and Floodplain Management
- Part 2: Flood Studies and Maps
- Part 3: Regulations
- Part 4: Ordinance Administration
- Part 5: Flood Insurance & CRS
- Part 6: Mitigation
- Questions???
- Exercises
- CFM exam help (coastal, etc..)
Part 1
Flooding and Floodplain Management
Part 1 - Topics

- Basic Abbreviations & Terms
- Floodplain vs Floodway
- Minimum Standards of the NFIP
Common Acronyms...

BFE = Base Flood Elevation
FIRM = Flood Insurance Rate Map
NFIP = National Flood Insurance Program
SFHA = Special Flood Hazard Area
Floodplain Basics
Illinois? Floods?

- The largest inland system of rivers, lakes, and streams in the entire nation!
Illinois is a VERY Wet State!

Floods are BY FAR the most common and the most costly disasters in Illinois.

Floods happen EVERY YEAR in Illinois.

Federal Disasters 1993 - 2016
1993 & 1995 MIDWEST FLOODS
Two weeks ago in Watseka, Illinois!
What’s wrong with these pictures?
Trends in Flood Damages...

- $10 billion annually
- Four-fold increase from early 1900s
- USGS report:
  * Extreme weather events have not increased.
  * Damages have increased.

Society is to blame..... not the weather!

(Property and business interruption (BI); in U.S.$ billion indexed to 2007)
Sources: Wharton Risk Center (2008) - data from Swiss Re and Insurance Information Institute
Climate Change

In Illinois, It’s Happening
No Doubt

Consider higher standards!!
People and Property Are at Risk in the Floodplain

Many Floodplain Residents Don’t Understand the Risk

Many Structures Unnecessarily Located in Floodplain
Engineered Structures Have Provided Protection to Millions

But flood control is not always the answer.
The Hydro-ILLOGICAL Cycle

- Rain
- Panic
- Flooding
- Devastation
- Concern
- Recovery & Reconstruction
- Flood Amnesia
National Flood Insurance Program

To join the National Flood Insurance Program (NFIP), a community must adopt local floodplain management regulations.

In Illinois:
88 of 102 Counties have joined the NFIP.
Approx. 900 communities have also joined the NFIP.
Makes Available:

- flood insurance
- disaster assistance
- grants and loans

In Exchange For:

- Local floodplain ordinance and permits which:
  - Prevent increased damages
  - Protect new buildings
  - Keep flooding from getting worse
Three related program areas support the NFIP:

- Flood Hazard Identification (mapping)
- Floodplain Management (regulations, building codes, and zoning)
- Flood Insurance (coverage for residents in NFIP communities).
Three Responsibilities

- Federal
- State
- Local
Definition: “Flood”

General and temporary condition of partial or complete inundation of:

2 or more acres of normally dry land 
or
2 or more properties…
From:
Overflow of inland or tidal waters
Unusual and rapid accumulation or runoff of surface waters from any source
Or from:

Mudflow
Or from:

Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood.
Understanding the Floodplain

The floodplain is the land that is subject to a 1% or greater chance of flooding in any given year.
What is a Special Flood Hazard Area (SFHA)?

- Land areas that are at High Risk for flooding are called Special Flood Hazard Areas (SFHA), or floodplains.

- These areas are indicated on Flood Insurance Rate Maps (FIRMS)
Understanding the Floodplain

Natural Stream Flow
Understanding the Floodplain

Base Flood

A flood that has a one-percent chance of being equaled or exceeded in any given year. It often is referred to as the “1% chance flood.”

“You didn't see anything”

“100-year” flood
Understanding the Floodplain

Base (or 100-year Flood)
A ‘Regulatory Floodway’ means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without increasing the water surface elevation more than a designated height (IL = 0.1’).
Understanding the Floodway

FLOODWAY + FLOODWAY FRINGE = 100 YEAR FLOODPLAIN
SURCHARGE NOT TO EXCEED 0.1 FOOT
Understanding the Floodway
Understanding the Floodway

Obstructed Floodway
Base Flood Is Higher
Part 1 Summary Review

Where did we confuse you?

- Basic terms and abbreviations
- NFIP goals
- Floodplain vs Floodway
- Federal, state and local roles
MARK H. MAPPING
START
9:15 – 10:15
Part 2 - Topics

- Basic Terms
- Types of FEMA Maps
- Flood Insurance Studies (FIS)
- Locate flood elevation on FIRM\(^2\)s
- Updating Maps (LOMCs)
- Levees
Common Acronyms...

BFE = Base Flood Elevation
FHBM = Flood Hazard Boundary Map
FIRM = Flood Insurance Rate Map
FIS = Flood Insurance Study
LOMC = Letter of Map Change
LOMA = Letter of Map Amendment
LOMR = Letter of Map Revisions
NFIP = National Flood Insurance Program
SFHA = Special Flood Hazard Area
Types of FEMA Maps

- Flood Hazard Boundary Maps (FHBM)
- Flood Insurance Rate Map (FIRM)
- Flood Boundary Floodway Map
- Digital Flood Insurance Rate map (DFIRM)
How Do They Make Those EXCELLENT Floodplain Maps?
Approximate A Zones

- Also called “unnumbered A zones”
- Unique – no BFEs
- Permits still required
- Vital reference: FEMA publication 265 Managing Floodplain Development in Approximate A Zones
FIRM Detailed Delineations
3 Mapping Elements

- #1 Land Elevations = Topography
  Shape and surface of the floodplain
- #2 Flow = Hydrology
  How much rain runs off and how fast it collects
- #3 Flow Height = Hydraulics
  How does the water move downstream

Note: Special methods used for coastal flood studies
Cross-sections show how water flows in channels.

Channel Geometry are points in a straight line, each point having distance and elevation.

Channel roughness is given by segments called Manning’s “n”.

- Sta. 0 Elev. 500
- Sta. 1100 Elev. 475
- Sta. 2100 Elev. 475
- Sta. 3100 Elev. 475
- Sta. 4000 Elev. 510
- Sta. 2600 Elev. 450

- n=0.19 tall grass
- n=0.013 concrete
- n=0.15 grass
**Bench Marks (BM) and Reference Marks (RM)**

- **BM or RM** = Carefully measured elevation points from which other elevations are surveyed. These are a surveyor’s starting elevation.

- **Datums** (Not all elevations are equally accurate!)
  - MSL = Mean Sea level
  - NGVD 29 = National Vertical Datum 1929
  - NAVD 88* = Earth’s geoid or mass
  - Local datum = Usually very confusing
    * this datum is used for most FIRMS

Read text of FIS Report for explanation of datum used. Reference marks (RM) are identified on older FIRMS.
Hydrology 2nd Mapping Element

**Hydrology** how rainfall runs-off on different land types
- Flood Discharge (flow), cubic feet per second typically
- Flood Frequency (how often), % chance every year
- Climatology (Global Warming), esp. coastal areas

**Calibration** check computer model with real flows:
- Computer modeling
- Gaged streams – statistical analysis
- Ungaged streams - regression equations
- Coastal storm modeling
Hydraulics 3rd Mapping Element

Hydraulics how runoff flows in lakes, creeks and structures

Lakes and Wetlands store water, releasing overflows

Rivers and Creeks water slowly moves down hill / slopes

Bridges and Culverts force water into smaller openings, increases upstream water levels

Computer Models estimate flows and water levels
Flood elevation and Floodway determinations
Coastal Storms surge oceans causing wave run-up
Flood Insurance Rate Map (FIRM) Flood Zones

Base Flood Elevation (BFE) Water Surface elevation (in feet) of the base flood at specific locations

Elevation Reference Marks (RM) Points for which ground elevation data have been established and recorded on the FIRM

Flood Hazard Zones.
Zone A, Zone A1–A30, and Zone AE – 100-year or base flood
Zone B - 500 – year flood.
Zone C or X – All other areas
Flood Zones

Zone V - SFHAs inundated by the 1% annual chance (100-year) flood; coastal floods with velocity hazards (wave action); no base flood elevations are determined.

Zone B and X (shaded) - 0.2% annual chance (500-year) area; areas subject to the 100-year flood with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected by levees from the base flood.

Zone C and X (unshaded) - Areas determined to be outside the 500-year floodplain.
Flood Zones

Zone AO - Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths are shown, but no floodway

Zone AH - Flood depths of 1 to 3 feet (usually areas of ponding; BFEs are shown, but no floodway
Flood Zones

Zone AR – SFHAs from the decertification of a previously accredited flood protection system that is being restored to provide at least 100 year protection. Zones AR/A1-30, AR/AE, AR/AH, AR/AO, and AR/A - After restoration is complete, these areas will still experience residual flooding from other flooding sources.

Zone A99 - SFHAs inundated by the 100-year flood to be protected by a Federal flood protection system under construction; no BFEs.

Zone D - Areas in which flood hazards are undetermined Used with levee protected areas
100 Year Storm

The 1% chance flood is the basis for the NFIP program

- 100-year flood, also known as “Base Flood”
- Base Flood Elevation also known as “BFE”
- Flood area, also known as “Special Flood Hazard Area” “SFHA”

Detailed maps show 0.2% annual chance “500-year” flood

FIS profiles include: 10-year 50-year 100-year 500-year
Annual Chance: 10% 2% 1% 0.2%
Approximate Floodplain maps
Flood Hazard Boundary Maps (FHBM)

Late 1970s, Very inaccurate

1970s FEMA needed a beginning regulatory map to get communities into the NFIP....

Some maps were flooding area recollections by the Public Works Director
Flood Insurance Rate Map (new format)

Un-shaded X Zone
Zone AE
Floodway
Floodway fringe
Cross section
Base flood elevation
Shaded X Zone
Zone boundary
Approximate A Zone
AO and AH Floodplain Zones

Shallow flooding
AO – sheet flow
AH – ponding
Digital Flood Insurance Rate Maps
The Next Generation

Original FIRM (Flood Insurance Rate Map)
Kane County - Jelkes Creek

DFIRM (Digital Flood Insurance Rate Map)
Kane County - Jelkes Creek
Use same 100-yr. flow \((Q_{100})\)

Fringe

Normal Stream Level

Floodway

Fringe Flood Level With Fringe Filled (BFE with Floodway)

BFE

Total allowable surcharge

Normal Stream Level
How are floodways delineated?

- Encroachment limits are adjusted to an allowable surcharge — 0.1 foot surcharge in Illinois.

- The allowable surcharge (one foot FEMA) **must not be exceeded** at any point along the reach.
Advantages of DFIRMss

- Map revisions will be faster and easier – months instead of years.

- Communities will be able to use the digital flood map data with their local data, such as parcel data.

- The new flood risk maps will cover entire counties.

- If a community is located in more than one county, it will be mapped only to the county border.
Online mapping products:

- Digital Flood Insurance Rate Maps (DFIRM)
- Flood Insurance Rate Maps (FIRMs)
- Flood Insurance Study reports (FIS reports)
- Digital Q3 flood data
- Community Status Book
- Flood Map Status Information Service (FMSIS)
- Letters of Map Change (LOMCS)
- NFIP Insurance Manuals.
FEMA Flood Map Service Center: Welcome!

Looking for a Flood Map? 🌊

Enter an address, a place, or longitude/latitude coordinates:

Enter an address, a place, or longitude/latitude coordinates: Search

Looking for more than just a current flood map?
Visit Search All Products to access the full range of flood risk products for your community.

About Flood Map Service Center

The FEMA Flood Map Service Center (MSC) is the official public source for flood hazard information produced in support of the National Flood Insurance Program (NFIP). Use the MSC to find your official flood map, access a range of other flood hazard products, and take advantage of tools for better understanding flood risk.

FEMA flood maps are continually updated through a variety of processes. Effective information that you download or print from this site may change or become superseded by new maps over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet.

FEMA Map Service Center

www.msc.fema.gov
FEMA’s Map Service Center

- Online Digital Maps
  - Scanned images of older maps
  - DFIRMS of newer maps
  - Option to create FIRMette
- Ordering for flood insurance studies
- Records of letters of map change
- Create FIRMettles, FIRMette Tutorial

http://www.msc.fema.gov
National Flood Hazard Layer (NFHL)

- Online Interactive Map of All DFIRM data
- Can be loaded into Google Earth
- Displays Letters of Map Change (LOMCs) Information

Search: FEMA Geo Platform
The “FIRMette”

- Available online
- Scaled to use as regulatory map
- Printable
- [www.FEMA.gov](http://www.FEMA.gov)
  - Click “Map Store”
  - Click “Map Search”
  - Type in address
  - Click “view” map
Paper Map?
A thing of the past......

- As of October 1, 2008, customers may ONLY order Digital maps:
  - New DFIRM in GIS
  - Old non-converted maps will simply be scanned pdfs.
  - Existing paper maps in the warehouse will not be distributed. They have been recycled!
Flood Insurance Study (FIS)
Components of a Flood Insurance Study (FIS)

**Narrative**

- Appraises a community’s flood problems
- Establishes insurance risk zones
- Community flood history
- Study information
- Plots floodplain boundaries
- Flood elevation profiles
- Provides data to delineate floodways in some communities
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\(^1\) Feet Above Confluence With Lake Highwater

\(^2\) Elevation Computed Without Consideration of Backwater From Lake Highwater
Mapping Level Of Detail

- **Approximate study**—
  - Draws flood floodplain boundaries;
  - no base flood elevations or depths

- **Limited Detail study** –
  - Draws rough flood elevations to low degree of accuracy;
  - BFEs not displayed on FIRM;
  - more accurate than approximate study,
  - less accurate than detailed study

- **Detailed study**—
  - Draws flood elevations (BFEs) or depths on FIRM;
  - often includes floodway and coastal high hazard areas
Accuracy Precedence

#1 Floodway Data Table (Most Accurate)

#2 Plotted Profiles (Second Most Accurate)

#3 BFE on FIRM Panel (Least Accurate)
Sometimes the maps are just plain wrong!

Sometimes the floodplains are modified.

There is a process to correct them.
Letter of Map Amendment (LOMA)

House is shown in the floodplain

But NATURAL ground elevations prove it to be higher than the flood elevation
Letter of Map Amendment (LOMA)

Situation:

Structure is located on NATURALLY high ground

Information needed by FEMA:

Completed MT-1 Form 1 (or MT-EZ)

Cost: “free”
MT-EZ Form

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY
APPLICATION FORM FOR SINGLE RESIDENTIAL LOT OR STRUCTURE AMENDMENTS TO
NATIONAL FLOOD INSURANCE PROGRAM MAPS

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.4 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and submitting this form. This collection of information is required or retains benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing the burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1300 South Bell Street, Arlington, VA 22202-5300, Paperwork Reduction (1660-0013). NOTE: Do not send your completed form to this address.

This form should be used to request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) remove a single structure or legally recorded parcel of land or portion thereof, described by metes and bounds, certified by a registered professional engineer or licensed land surveyor, from a designated Special Flood Hazard Area (SFHA), an area that would be inundated by the flood having a 1%-chance of being equaled or exceeded in any given year (base flood), via letter of map amendment (LOMA). It shall not be used for requests submitted by developers, for requests involving multiple structures or lots, for property in aluvial fan areas, for property located within the regulatory floodway, or requests involving the placement of fill. NOTE: (1) an L-1 form for such requests is defined as material from any source (excluding the subject property) that raises the grade to or above the base flood elevation (BFE). The common construction practice of removing uninstalled material (topsoil) and backfilling with select structural material is not considered the placement of fill if the practice does not alter the existing (natural grade) elevation, which is at or above the BFE. Also, fill that is placed before the first issuance of the Federal Insurance Rate Map (FIRM) map showing the area in an SFHA is considered natural grade.

LOMA: A letter from DHS-FEMA stating that an existing structure or parcel of land that has not been elevated by fill would not be inundated by the base flood.

A - This section may be completed by the property owner or by the property owner's agent. In order to process your request, all information on this form must be completed in its entirety, unless stated as optional. Incomplete submissions will result in processing delays.
1. Has fill been placed on your property to raise ground that was previously below the BFE?
   - No
   - Yes - STOP! You must complete the MT-1 application forms. Visit https://www.fema.gov/sites/default/files/mt-1.png (or call the FEMA Map Information Exchange toll-free) [877-FEMA-HELP (877-336-4357)]
2. Legal description of Property (Lot, Block, Subdivision or abbreviated description from the Deed) and street address of the Property (required):
3. Are you requesting that a flood zone determination be completed for (check one):
   - A structure on your property? What is the date of construction? [MM/YYYY]
   - A portion of your legally recorded property? (a certified metes and bounds description and map of the area to be removed, certified by a registered professional engineer or licensed land surveyor, are required. For the preferred format of metes and bounds descriptions, please refer to the MT-EZ instructions.)
   - Your entire legally recorded property

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Applicant's Name (required):
E-mail address (optional) (c) By checking here you may receive correspondence electronically at the e-mail address provided:
Mail/ing Address (Include Company Name if applicable) (required):
Daytime Telephone No. (required):
Fax No. (optional):
Signature of Applicant (required)

End of Section A

6 - This section must be completed by a registered professional engineer or licensed land surveyor. Incomplete submissions will result in processing delays.

DHS-FEMA Form 086-0-22, FEB 11
MT-EZ Form
MT-EZ

LOMA: A letter from DHS-FEMA stating that an existing structure or parcel of land that has not been elevated by fill would not be inundated by the base flood.

A – This section may be completed by the property owner or by the property owner’s agent. In order to process your request, all information on this form must be completed in its entirety, unless stated as optional. Incomplete submissions will result in processing delays.

1. Has fill been placed on your property to raise ground that was previously below the BFE?
   □ No   □ Yes – If Yes, STOP!! – You must complete the MT-1 application forms; visit http://www.fema.gov/plan/prevent/fhm/dl_mt-1.shtm or call the FEMA Map Information eXchange toll free: (877-FEMA MAP) (877-336-2627)

2. Legal description of Property (Lot, Block, Subdivision or abbreviated description from the Deed) and street address of the Property (required):

First Question: Is there fill??
LOMAs are shown on the NFHL

Example – Oswego, Illinois
LOMAs are shown on the NFHL

Example – Oswego, IL
Even w/o the DFIRM – LOMAs are shown!

Scores of LOMAs in Downers Grove area!
Even w/o the DFIRM – LOMAs are shown!

Scores of LOMAs in Downers Grove area!
The E-LOMA

- Internet based system to process simple LOMA requests
- Only available to licensed land surveyors and professional engineers
- Allows determinations to be printed out locally by the user
- Random audits to be completed to verify accurate determinations
# Types of Map Changes

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<th>MT-2 Map Changes</th>
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<td>➢ Letter of Map Revision (LOMR)</td>
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<td>• Letter of Map Revision Based on Fill (LOMR-F)</td>
<td>➢ Conditional Letter of Map Revision (CLOMR)</td>
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<td>• Conditional Letter of Map Revision Based on Fill (CLOMR-F)</td>
<td>➢ Physical Map Revisions (PMR)</td>
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Letter of Map Revision (LOMR)

Floodplain as shown on the floodplain map

New floodplain based on PHYSICAL modification

Base (or 100-year Flood)

Fill

New stream location
Letter of Map Revision (LOMR)

Situation:

Physical changes to the floodplain, the floodway, or flood elevations.

Information needed by FEMA:

Detailed engineering and MT-2 Form

Cost: not cheap
A letter from FEMA stating that a proposed development project would not be inundated by the 1% chance flood if built as proposed.
Issue a LOMR-F with a basement below BFE??

...NOT in Rock Island County!
...NOT under Ray’s review!
Technical Bulletin 10-01

- BFE
- 20 Feet or Greater
- Granular Drainage Layer
- 5 Feet or Less
- Basement Floor
- Engineered Fill
- BFE
- 5 Feet or Greater
- Sump Pump (1/4 Horsepower or Greater, With Emergency Backup Power and Discharge Above the BFE)
- Compacted Fill or Soil of Similar Character (Verified by Borings)
LOMC
TOLL-FREE HOTLINE
1-877-FEMA MAP (366-2627)

- Inundated with calls about changing the maps from residents, insurance companies, or appraisers, etc?
- Need to know the status of a current LOMA / LOMR?
## LOMC Fee Schedule

<table>
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<th>Requests for Single-Lot, Single-Structure Map Change</th>
<th>Paper Form Fee</th>
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<td>Single-Lot/Single-Structure LOMR-F</td>
<td>$525</td>
<td>$425</td>
</tr>
<tr>
<td>Single-Lot/Single-Structure LOMR-F Based on As-Built Information (CLOMR-F previously issued by FEMA)</td>
<td>$425</td>
<td>$325</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requests for Multiple-Lot/Multiple-Structure Map Changes</th>
<th>Paper Form Fee</th>
<th>Online LOMC Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple-Lot/Multiple-Structure LOMA</td>
<td>Free</td>
<td>Free</td>
</tr>
<tr>
<td>Multiple-Lot/Multiple-Structure CLOMA</td>
<td>$800</td>
<td>$700</td>
</tr>
<tr>
<td>Multiple-Lot/Multiple-Structure CLOMR-F and LOMR-F</td>
<td>$900</td>
<td>$800</td>
</tr>
<tr>
<td>Multiple-Lot/Multiple-Structure LOMR-F Based on As-Built Information (CLOMR-F previously issued by FEMA)</td>
<td>$800</td>
<td>$700</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Requests for Map Changes Requiring Special Technical Review</th>
<th>Paper Form Fee</th>
<th>Online LOMC Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLOMR Based on New Hydrology, Bridge, Culvert, Channel or Combination Thereof</td>
<td>$6,750</td>
<td>$6,500</td>
</tr>
<tr>
<td>CLOMR Based on Levee, Berm or Other Structural Measures</td>
<td>$7,250 (plus $60/hr)</td>
<td>$7,000 (plus $60/hr)</td>
</tr>
<tr>
<td>LOMR Based on Bridge, Culvert, Channel, Hydrology, or Combination Thereof</td>
<td>$8,250</td>
<td>$8,000</td>
</tr>
<tr>
<td>LOMR Based on Levee, Berm or Other Structural Measures</td>
<td>$9,250 (plus $60/hr)</td>
<td>$9,000 (plus $60/hr)</td>
</tr>
<tr>
<td>LOMR Based on As-Built Information Submitted as a Follow-up to a CLOMR</td>
<td>$8,250</td>
<td>$8,000</td>
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<tr>
<td>LOMR Based Solely on Submission of More Detailed Data</td>
<td>Free</td>
<td>Free</td>
</tr>
<tr>
<td>LOMR/CLOMR Based on Structural Measures on Alluvial Fans</td>
<td>$7,250 (plus $60/hr)</td>
<td>$7,000 (plus $60/hr)</td>
</tr>
</tbody>
</table>
Levees In Illinois

Failures somewhere in Illinois with every major flood!
“Accredited” Levees In Illinois

Alorton
Alton
Andalusia
Beardstown
Bethalto
Brooklyn
Brookport
Cahokia
Cairo
Caseyville
Centreville
Collinsville
Creve Coeur
Dupo
East Alton
East Carondelet
East Dubuque
East Moline
East Peoria
East St. Louis
Fairmont City

Fulton
Galena
Golconda
Granite City
Gulfport
Hartford

Harrisburg
Hull
Karnak
Kaskaskia
Keithsburg
Madison
Meredosia
Milan
Moline
Mound City
Mt. Carmel
North Pekin
Oquawka
Ottawa
Peoria
Pleasant Hill
Pontoon Beach
Prairie du Rocher
Quincy
Rock Island
Rosiclare
Roxana
Sauget
Silvis
South Roxana
Venice
Washington Park
Wood River

yellow font = levee certification in question
What is a FEMA “Accredited Levee”?

- Freeboard (3 ft. +++)
- Closures
- Embankment protection
- Foundation stability
- Settlement
- Interior Drainage
- Operation & Maintenance plan

In lieu of these structural requirements, a Federal agency with responsibility for levee design may certify that the levee meets these standards.
FEMA Levee Responsibilities

- Determine and establish appropriate risk zone designations in areas behind levees
- Reflect those determinations on maps
- FEMA ACCREDIT levees
  - Establish mapping standards
  - Design, operations, and maintenance
  - Vast Involvement: Public and Local Government
  - Provide at least 1-percent-annual-chance flood protection
- FEMA **DOES NOT** certify levees
Community/Levee owners Responsibilities

If a community or levee owner wants the floodplain maps to recognize protection from the 100-year flood...

*the levee owner* must provide the documentation to show that the levee meets design, construction, and operation & maintenance standards for 100-year flood protection.
Brookport, Illinois Levee

BROOKPORT

10 years of successive USCOE Levee Inspection Failures!
Brookport, Illinois Maps

Brookport, Illinois Flood Insurance Rate Map
April 1976

Brookport, Illinois IDNR Residual Risk Map
February 2007
Residual Risk Awareness?

There are about 1 million residents behind levees

YET only 1% are covered by a Flood Insurance!!

Floodplain Manager just became aware of his residual levee risk.
Part 2 Summary Review

Where did we confuse you in covering:

• Types of flood maps
• Flood insurance studies (FIS)
• Using maps
• Working with Approximate A zones
• Letters of Map Change (LOMC)?
• Levee accreditation
BREAK
10:15 – 10:30
Part 3
Regulations
Part 3 - Topics

- Regulations:
  - State floodway permits
  - Dams
  - Public Waters
  - NFIP Building Protection (elevation/floodproofing)
- Utilities
- RVs
State Regulatory Involvement

• Passage of State Legislation
• Adoption of State Model Floodplain Ordinances
• Six Northeastern Illinois Counties
• “Downstate” Counties
GARY J.
STATE PERMIT.
START
10:30 – 11:00
IDNR/OWR Permit Programs
Adm. Rules

- Construction in Floodways of Rivers, Lakes and Streams: Part 3700 Rules
- Rules for Construction and Maintenance of Dams: Part 3702 Rules
- Regulation of Public Waters: Part 3704 Rules
- Floodway Construction in Northeastern Illinois: Part 3708 Rules
- Allocation of Water from Lake Michigan: Part 3730 Rules
State Permit required in a:

- Mapped Floodway

- Floodplain with no identified Floodway
IDNR/OWR Floodway Permit Program (Part 3700 Rules)

The IDNR/OWR exercises jurisdiction over construction in the floodway of watercourses which have a drainage area of:

• 1 square mile or more (640 acres) in an urban area, or
• 10 square miles or more (6400 acres) in a rural area.
• Consult with IDNR/OWR for assistance with determining jurisdiction
IDNR/OWR Floodway Permit Program (Part 3700 Rules)

The Part 3700 Rule are applicable to:

- All jurisdictional streams in downstate counties regardless of the floodway/floodplain mapping
- Jurisdictional streams in NE IL which do not have regulatory (designated) floodways
Two types of Permits are currently offered:

1. Statewide Permit
   Statewide Permits are pre-authorizations of certain minor projects which are permissible per the Part 3700 rules.
   A permit application submittal is usually not needed.

2. Formal Permit
   Formal Permits are needed for significant projects which do not meet a Statewide Permit. These projects generally require an extensive project review of engineering data.
   Examples: New Bridges and Culverts, Levees
IDNR/OWR Floodway Permit Program
(Part 3700 Rules)

Current Active Statewide Permits

- SWP 2 - Bridge and Culvert Crossings of Streams in Rural Areas
- SWP 3 - Mooring Facilities Used Exclusively for Barge Floating Purposes
- SWP 4 - Aerial Utility Crossings
- SWP 5 - Minor Boat Docks
- SWP 6 - Minor Non-Obstructive Floodway Construction
- SWP 7 - Outfalls
- SWP 8 - Underground Pipeline and Utility Crossings
- SWP 9 - Minor Shoreline, Stream Bank, and Channel Protection activities
- SWP 10 - Accessory Structures and Additions to Existing Residential Structures
- SWP 11 - Minor Maintenance Dredging
- SWP 12 - Bridge and Culvert Replacement Structures
- SWP 13 - Temporary Construction Activities
- SWP 14 - Special Uses of Public Waters
The IDNR/OWR exercises jurisdiction over construction in the regulatory floodway of watercourses in Cook, DuPage, Kane, Lake, McHenry and Will counties (excluding the City of Chicago) if the watercourse has a drainage area of:

- 1 square miles or more (640 acres) in an urban area
- 10 square miles or more (6400 acres) in a rural area
- Consult with IDNR/OWR for assistance with determining jurisdiction
IDNR/OWR Floodway Permit Program (Part 3708 Rules)

Two types of Permits are offered:

1. Regional Permit No. 3
   Regional Permit No. 3 is a pre-authorizations of certain minor projects which are considered permissible per the Part 3708 rules. A permit application submittal is usually not needed.

2. Formal Permit
   Formal Permits are needed for significant projects which do not meet Regional Permit No. 3. These projects generally require an extensive project review of engineering data.
   Examples: Bridges and Culverts, Channel Modification Projects, Flood Control Projects
IDNR/OWR Floodway Permit Program
(Part 3708 Rules)

Current Active Regional Permit

Regional Permit No. 3 - Authorizes underground and overhead utilities, storm and sanitary sewer outfalls, sidewalks, patios, athletic fields, playground equipment and streambank protection activities.

RP1 and RP2 are administered by IDOT

RP3 can be found at https://www.dnr.illinois.gov/WaterResources/Pages/PermitsStatewideRegionalGeneral.aspx
IDNR/OWR Floodway Permit Program (Part 3708 Rules)

- Appropriate Uses
- Floodway Map Revisions
- Delegation
  - Municipalities/Counties
  - IDOT Agreement
IDNR/OWR Floodway Permit Program
(Parts 3700 and 3708 Rules)

• Permit Application Review Fees

• Check or Electronic Payment

• Fee Schedule and FAQ

can be found at
http://www.dnr.illinois.gov/WaterResources/Pages/default.aspx
IDNR/OWR Permit Program Process

Joint Application Form

Complete and Submit Joint Application Form
When to Submit…

- An application submittal is only needed for jurisdictional construction activities that require a formal or general permit.
When not to Submit…

- An application submittal is not needed for construction activities that:
  - are not jurisdictional.
  - are authorized by a regional or statewide permit.
  - are an exempted activity per administrative rules.
  - can be authorized by IDOT/DOH per MOA.

* a permit application submittal is needed for work in a delegated community
What to Submit…

- Permit application package that is tailored to obtaining an IDNR/OWR permit.
  - One size does not fit all.
- Properly completed IDNR/OWR copy of application form.
1. Application number.
2. Date Received (day/month/year).
3. Applicant’s name with contact person.
4. Agent’s name.
6. Adjacent Property Owners Information.
7. Project Location.

10. Purpose of Project.

11. For Dredging Projects Only

12. Start Date of Project

13. Projected Date of Completion.

14. Signature.

[https://www.dnr.illinois.gov/WaterResources/Pages/PermitApplicationandInstructions.aspx](https://www.dnr.illinois.gov/WaterResources/Pages/PermitApplicationandInstructions.aspx)
Support Information

- Narrative
- Location Map
- FIRM
- Site Plan
- Grading Plan
- Plotted Cross Sections
- Design Drawings
- Computations/H&H Analyses
- Engineering Report
Do Not Submit...

- More than one copy of the application form, engineering report, etc. However, 2 copies of drawings are preferred.
- Corps of Engineers, IEPA, and Applicant’s copy of the application form.
- Wetland reports needed by COE.
- Full sets of engineering drawings.
- Soil boring reports.*
- Contract documents. *

* May be needed for a dam safety submittal.
Proposed Updates to the Part 3700 Rules

- Definitions
  - Adds new definitions
  - Expands Definitions for Worst Case Analyses

- Jurisdiction
  - Expands Explanation for exempted activities
    (converted from some statewide permits)

- Permit Application
  - Update Website reference
  - Timetable for OWR Response to applications
  - Technical Guidance for Applications
Proposed Updates to the Part 3700 Rules

- Fees
- General Standards
- Bridge/Culvert Crossing Modifications
- New Levees/Floodwalls
- Modified Levees/Floodwalls
- Violations and Enforcement
Proposed Updates to the Part 3700 Rules

- Standards for New Bridges/Culverts
  - Includes new worst-case scenario language
- Standards for Bridge/Culvert Reconstruction
  - Includes new worst-case scenario language
  - Replaced Bridge/Culvert Permit Requirements
    - No Impacted Structures
    - Has Impacted Structures
Dam Safety Permit Program

Part 3702 Rules
Regulation of Dams
Definition

“Dam” – All obstructions, walls, embankments, or barriers, together with their abutments and appurtenant works, if any, constructed for the purpose of storing or diverting water or creating a pool.
Part 3702 Rules
Dam Categorization

- Size (small, intermediate or large)
- Hazard (Class I, II or III)
When is a dam safety permit required?

- Construction of a new dam
  (Class I, Class II, or jurisdictional Class III)

- Major Modification to an existing or new dam
  (Major Structural Change)

- Breach or remove an existing or new dam

An existing dam is defined as a dam which was constructed prior to September 2, 1980.
Class I High Hazard Dam
Part 3702 Rules
Class II Dam with Pedestrian Bridge
Part 3702 Rules
Class III Low Hazard Dam
Part 3702 Rules
IDNR/OWR Public Waters Permits
(Part 3704 Rules)

- Activities in Public Waters
- Navigation impacts
- Encroachments
- Impairment of Public’s rights, interests and uses
- Impairment of Natural Resources
IDNR/OWR Public Waters Permits (Part 3704 Rules)

- Natural Waterways
- Waterways Improved for Navigation
- Man-Made Waterways
- Appendix A
Public Notices

Needed for:

- Projects that involve revisions to the regulatory floodway or flood profile.
- Projects in public waters that are not authorized by a regional, statewide or general permit.
- Formal permits for dams.
Public Waters Park Project & Floodway Parts 3704 & 3708 Rules
IDNR-OWR Offices

- **Northeastern Illinois**
  Regulatory Programs Section
  2050 W. Stearns Road
  Bartlett, IL 60103
  Phone 847/608-3116
  Fax 847/931-2037

- **Downstate Illinois**
  Regulatory Programs Section
  One Natural Resource Way
  Springfield, IL 62702-1271
  Phone 217/782-0900
  Fax 217/785-8100

- **Web Site:**
  https://www.dnr.illinois.gov/WaterResources/Pages/default.aspx
RON D.
LOCAL REGS.
START
11:00 – 11:30
Development is ......

• Construction of new buildings
• Addition or substantial improvements to existing buildings
• Manufactured (mobile) homes and RVs
• Subdivisions or commercial developments
• Storage of materials
• Fill, grading, excavating
• Fences, culverts, bridges, roads
• And ANYTHING else that changes the floodplain
Any Floodplain “Development” (fences, fills, grading, etc..) Cannot Block or Obstruct the Flow of Water

Holy Crap!
Building Protection Standards

Methods to Elevate Buildings in an A Zone

• Elevation on Fill
• Elevation on flow-thru walls
• Elevation by poles, piers, or columns
Get a Site Plan with elevations

- BFE 332
- Well
- Gas
- Septic

Dimensions:
- 333.1 x 333.9 x 332.6
Slab on Fill
Criteria for Elevation on Fill

- Usually limited to three or four feet in height
- Fill placed in 6’ layers and compacted (95% proctor)
- Extend fill 10’ around structure
- Side slopes 1’ vertical to 1.5’ horizontal
- Erosion control
House built on fill above the flood elevation
Perimeter Wall Foundation

Opening (typical)
Criteria for Elevation on Perimeter Wall Foundations

- Usually limited to three or four feet in height above grade
- Enclosed areas below the lowest floor must have openings to equalize hydrostatic pressures (1” per 1 sq. ft.).
- Openings no more than one foot above grade.
- Flood resistant materials
- NO HVAC, electric, utilities, etc..
Elevation on Solid Perimeter Walls

CRAWLSPACE BUILDING

LOWEST FLOOR

INTERIOR GROUND LEVEL AT OR ABOVE OUTSIDE GRADE

BFE

AT LEAST TWO FLOOD OPENINGS ON DIFFERENT SIDES

NO MORE THAN 12" ABOVE GROUND
Any enclosed area **must** be flow thru.
NOTE: ALL DUCT WORK MUST BE ABOVE THE BFE

FLOOD OPENING

FOOTER DEPTH PER BUILDING CODE
Crawlspace Rules

- Total height no more than 4 feet.
- No more than 2’ below grade.
- Flow through openings
  Ratio = 1” per 1’
- Interior drainage controls
- Flood resistant materials
Crawlspaces

Interior above grade?

or

Interior below grade?

Figure 2. Limitations on below-grade crawlspaces in shallow flood hazard areas (TB 11)
Openings in Foundation Walls and Walls of Enclosures

Below Elevated Buildings in Special Flood Hazard Areas in accordance with the National Flood Insurance Program

Technical Bulletin 1 / August 2008
Watch the vents!

“standard vents” are only 42 sq. in.
Engineered Flood Vents

Each is rated differently.

Get the ISO flow thru report!
House built on elevated foundation walls

Flow through lower area
What do you notice about the vents?
Post or Pile Foundation
Post or Pile Foundation

- Should be used in areas of deep flooding and/or high velocities (floodways)
- Properly anchored to resist wind and water forces
- Lower area must remain open (not enclosed later). Get non-conversion agreement.
House built on piers or poles above the flood elevation
NON-CONVERSION AGREEMENT FOR ENCLOSURE 8 BELOW THE BASE FLOOD ELEVATION

This DECLARATION made this ___ day of ____________, 20__, by ________________________ ("Owner") having an address at ____________________________, is hereby made.

WITNESSETH:

WHEREAS, the Owner is the record owner of all that real property located at _______________ in the City of ____________, in the County of ____________, designated in the Tax Records as ________________________.

WHEREAS, the Owner has applied for a permit to place a structure on that property that has an enclosed area below the base flood elevation constructed in accordance with the requirements of Article ___________ Section ___________ of the Floodplain Management Ordinance of ______________ ("Ordinance") and under Permit Number ___________ ("Permit").

WHEREAS, the Owner agrees to record this DECLARATION and certifies and declares that the following covenants, conditions and restrictions are placed on the affected property as a condition of granting the Permit, and affects rights and obligations of the Owner and shall be binding on the Owner, his heirs, personal representatives, successors, future owners, and assigns.

UPON THE TERMS AND SUBJECT TO THE CONDITIONS, as follows:
The structure or part thereof to which these conditions apply is:

1. At this site, the Base Flood Elevation is _______ feet above mean sea level, National Geodetic Vertical Datum.

2. Enclosed areas below the Base Flood Elevation shall be used solely for parking of vehicles, limited storage, or access to the building.

3. All interior walls, ceilings and floors below the Base Flood Elevation shall be constructed of flood resistant materials.

4. Mechanical, electrical or plumbing devices shall not be installed below the Base Flood Elevation.

5. The walls of the enclosed areas below the Base Flood Elevation shall be equipped and remain equipped with permanent flow thru openings as shown on the Permit.

6. The jurisdiction issuing the Permit and enforcing the Ordinance may take any appropriate legal action to correct any violation. Any alterations or changes from these conditions shall not render the structure uninsured or increase the cost for flood insurance.

7. A duly appointed representative of the City is authorized to enter the property for the purpose of inspecting the exterior and interior of the enclosed area to verify compliance with this Declaration.

Recommended on all enclosed lower areas!!
PAUL O.
LOCAL REGS.
START
11:30 – NOON
Manufactured homes must be anchored to resist flotation, collapse, or lateral movement by being tied down in accordance with the Rules and Regulations for the Illinois Mobile Home Tie-Down Act (77 IL Administrative Code 870, IL Dept. of Public Health).

Experience shows that manufactured homes are easily damaged. As little as one foot of water can cause substantial damage.

Dry stacked blocks are not acceptable — they will NOT withstand a flood.
Why Anchor?
All new construction and improvement shall be constructed with electrical, HVAC, plumbing and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
Utility Service for Buildings

All utilities, appliances, and equipment must be elevated above the BFE or protected. Utilities include plumbing, electrical, gas lines, heating, and air conditioning.
Above ground tanks
Utilities

Vented area below elevated floor.
Recreational Vehicles & Travel Trailers

1. Self propelled or towable by a light duty truck
2. No porch or deck
3. No permanent dwelling. Only seasonal use.
4. No more than 400 sq. ft.
5. Wheels on axles and inflated
6. Quick disconnect utilities
7. Licensed and titled as an RV
8. Supported by wheels or jacks. No blocks.
If an RV is on-site for more than 180 days, it must:
Wet Floodproofing / Minor Accessory Structures

“Permanent or contingent measures applied to a structure and/or its contents that prevent or provide resistance to damage from flooding by allowing flood waters to enter the structure.”
Wet Floodproofing / Minor Accessory Structures

When to Use Wet Floodproofing

- Enclosed areas below the BFE that are used for parking, building access, or limited storage
- Attached or detached garages
- Minimal value storage sheds and garages
Wet Floodproofing
Garages and sheds

- Non-habitable
- Use only for storage and parking & no later modification
- Accessory to an existing structure on same lot
- Flood resistant materials
- No HVAC
- Flow-thru openings
- Less than $15,000 in value and less than 500 sq. ft.
Openings to allow floodwaters to flow in & out
Agricultural Structures

**Variances are allowed for:**
- Pole frame buildings
- Steel grain bins
- Steel frame corn cribs
- General purpose feeding barns open on one side

**Variances are not allowed for:**
- Livestock confinement buildings
- Poultry houses
- Dairy operations
- Similar livestock operations

---

**Important Information**

Farm houses are not agricultural structures.

Contact IDNR/OWR for additional guidance on variances for agricultural structures.

---

**State Specific Guidance**

Non-elevated agricultural structures must be considered on a site-specific basis and may be permitted only by a variance. Applicants must show that sites are in "wide, expansive floodplain areas" and no other alternative location outside of the floodplain exists.

---

The best flood protection is to elevate agricultural buildings, but certain types can be approved by variance if they are "wet floodproofed."
Non-Residential Floodproofing

ONLY NON-RESIDENTIAL STRUCTURES MAY BE FLOODPROOFED IN LIEU OF ELEVATION.
Floodproofing Requirements

1. Non-residential construction may be floodproofed below the BFE so that the structure is watertight with walls substantially impermeable to the passage of water.

2. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
Floodproofing Certificate

- A Floodproofing Certificate is required for all floodproofed structures
- The Floodproofing Certificate must be signed by an Engineer
- The form can be obtained at: www.FEMA.gov/library/floodproof
The Floodproofing Certificate must be signed by an engineer and on file for EVERY floodproofed structure.
Substantial Improvement
“Improvement” Triggers

- Reconstruction
- Rehabilitation
- Addition
- Other improvements
Substantial Improvement

- Lateral additions or vertical additions
  - 50% increase in market value or
  - 20% increase in floor area*

(*Illinois specific ordinance)
Substantial Improvement

The Formula

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

Example:

\[
\frac{\text{$75,000 project}}{\text{$140,000 house}} = 54\%
\]
“Market Value”

- Independent professional appraisal
- NFIP claims data
- Tax or building department estimates
- Detailed Actual Cash Value estimates
- Uniform Residential Appraisal Report (URAR): value depreciation by age/quality
“Improvement or Damage Cost”

Repair or improvement cost data:
- Qualified contractors’ estimates
- NFIP data
- Standard Building Code/Marshall & Swift

Related data:
- Tax assessments
- Surveys
- Other local agencies or departments
Excludable Costs

- Repairing existing health/safety violations
- Preparation – specifications, surveys, building permit fees, plans
- Site work – septic systems, wells, water supplies, landscaping
- Items separate from / incidental to improvement
Existing House

Original Ground
Substantial Improvement
Existing House + Garage/FR/BR Addition

• Raise Existing House & Build Addition above FPE
Vertical Addition Compliant With NFIP Criteria (Zone A)

Existing Pre-FIRM Residential Structure

Utility Box

FPE

Elevate on fill or crawl required

After Substantial Improvement

AFTER
Substantial Damage
(The 50% Rule)
Substantial Damage

“The 50% Rule”:

If damages from ANY source (flood, fire, tornado, etc..) exceed 50%.

The structure must be brought into compliance with floodplain regulations (elevated or floodproofed).

THE Illinois state model ordinance tracks CUMMULATIVE substantial damage
Existing House with Floor Below FPE
Substantially Damaged House Raised & Rebuilt above FPE
Non-Triggers

Correcting existing violations of codes that are minimum necessary for safe living conditions, including:

- Health codes
- Sanitary codes
- Safety codes

Alteration of registered “historic structure”
Post-Flood Requirements

- Perfect time to reconstruct the RIGHT WAY!
- Available mitigation funds???
- Flood Insurance help???
- Obtain state or cooperative assistance
- **ALL RED TAGGED** (substantially damaged) buildings must be brought into compliance regardless of insurance or mitigation availability.
Post Flood Responsibilities

- MOVE FAST! Don’t wait for FEMA!
- Identify, tag, and document flooded structures
- Post information for the public on permit requirements. Use media sources.
- Provide technical information
- Contact State or FEMA for assistance and guidance if needed.
Field Inspections During FloodCrest
Post Flood – Survey

- Document high water marks
- Digital photos
- Mark locations on map
- Post notices on properties
- Follow up letters
Substantial Damage Regs Work!

Flooded 2008

Red Tagged!

Not Flooded 2013
FEMA Technical Bulletins and References

TB 1 - Openings in Foundation Walls and Walls of Enclosures

TB 2 - Flood Damage-Resistant Materials Requirements

TB 3 - Non-Residential Floodproofing -- Requirements and Certification

TB 4 - Elevator Installation

TB 6 - Below-Grade Parking Requirements

TB 7 - Wet Floodproofing Requirements

TB 10 - Ensuring that Structures Built on Fill In or Near Special Flood Hazard Areas are Reasonably Safe From Flooding

TB 11 - Crawlspace Construction for Buildings Located in Special Flood Hazard Areas
Critical Facilities

Critical Facility- Any facility which is critical to the health and welfare of the population and, if flooded, would create an added dimension to the disaster. Damage to these critical facilities can impact the delivery of vital services, can cause greater damage to other sectors of the community, or can put special populations at risk.

Examples:
- Fire and police stations,
- schools,
- Hospitals,
- retirement homes,
- major roads and bridges,
- critical utility sites,
- Hazardous material facilities.

Nursing Home under construction in the floodplain. Caseyville, IL
The last word.. Critical Facilities

If they can’t be located outside of the floodplain all together, make sure the facility and all ingress and egress is located above the 500-year flood elevation!

Snow Valley Nursing Home
Lisle, IL
State and Federal Executive Orders

Illinois Executive Order V (2006) – All state agencies must comply with State Regs and NFIP. Critical Facilities.

Federal Executive Order 11988 (1978) – Federal agencies must protect against flooding. Written prior to NFIP. Vague.

Federal Flood Risk Management Standards (2016) – Added layer to EO11988. Fed agencies and funding must comply with FPM regs. Additional flood protection (freeboard, climate change, etc.). Rescinded by the guy currently living in the White House.
LUNCH
12:00 – 12:30
Part 3 Summary Review

Where did we confuse you on regulations:

- State floodway permits
- Dams
- Public Waters
- NFIP Building Protection (elevation/floodproofing)
- Utilities
- RVs
- Sub Dam and Sub Imp
DALLAS A.
LOCAL ADMIN.
START
12:30 – 1:15
Part 4
Ordinance Administration
Duties of Floodplain Administrators
Variance
Community Audits & Compliance
Recordkeeping
Elevation Certificates
To participate in the National Flood Insurance Program (NFIP) certain duties are required!!!!!
Everyday Activities

a. Review applications
b. Provide base flood data (where available) Come to 3B!
c. Review plans and specifications
d. Ensure that other permits are obtained
e. Provide notice of water course alterations
f. Issue/deny permits
g. Inspect development
h. Look out for violations
a. Review applications

- Review and evaluate development permit applications
  - Is development in flood *plain*?
  - Is development in flood *way*?

- Any development in the floodplain requires a permit
b. Provide base flood data

- Interpret floodplain boundaries and provide BFE data when available

- If your community map has unnumbered A zones
  - Determine BFE or
  - Require that applicant hire engineer or
  - Make FEMA do it
c. Review plans and specs

- Ensure conformance with NFIP floodplain management criteria
- Include review of
  - site plan
  - foundation design
  - thoroughly notated plans
d. Ensure other permits obtained

Advise applicant of other permits or approvals that may be necessary

Examples include:
- Clean Water Act: 404 permit, NPDES permit
- State permit requirements
- Other local permits such as storm water management permits, septic permits, etc.
e. Notify of water course alterations

Provide required notification of changes in existing water courses to:

- FEMA
- State
- Adjacent communities
f. Issue or deny permits

Floodplain Administrator can:

- Issue floodplain development permit
- Conditionally approve permit
- Deny permit
g. Inspect development

- Check development location
- Verify construction according to plans

Inspect
- Setback from floodway
- Foundation construction
- Flood resistant material requirements
- Utilities and other building systems
- Anchoring, at/above BFE, floodproofing
h. Look out for violations

- Investigate
  - Reported by citizens
  - Reported by other officials
  - Found by chance
- Implement enforcement provisions
- Retrofit to protect from future flooding
- EDUCATE!
A “Perfect” Set of Records

- Applications
- Permit and inspection records
- Compliance files – variances, ECs
- LOMCs and other flood studies
- Old ordinances, old flood maps
- Back-up copies in secure location
- Logical filing system, i.e., by address
Got GIS? Risk Identification!

- Use of digital maps identifying flooded structures.
- GIS database used for extracting information about structures and flooding.
Variance

- Grant of relief from requirements of floodplain development ordinance
- Permits construction in a manner that would otherwise be prohibited
- Stays with property if sold
- Not relief from flood insurance!
- Granted by local governing body
Conditions for Variances

1. For a piece of property; not personal
2. Is minimum necessary to afford relief
3. If within designated regulatory floodway, cannot cause increase in flood levels during base flood
4. No extraordinary public expense
5. No increase in flood heights
Conditions for Variances

6. No fraud or victimization of public
7. No conflict with existing local laws or ordinances
8. No increased threat to public safety or creation of nuisance
Key to Valid Variance

“Unnecessary hardships”

- Loss of all beneficial or productive use
- Deprivation of reasonable return on property
- Rendering property valueless
- Inability to develop property in compliance with the regulations
- Reasonable use cannot be made consistent with regulations
Insufficient Reasons

- Less than drastic depreciation of property
- Convenience of property owner
- Circumstances of owner not the land
- To obtain better financial return
- Property similar to others in neighborhood
- Hardship created by owner’s own actions
If a Variance is Issued

A community must

- Maintain a record of all variance actions, including those denied, along with the justifications (findings of fact).
A Word of Advice...

DO NOT GRANT VARIANCES!

They place people and property at risk, and flood insurance costs sky-rocket.

If you’re going to grant a variance be sure to DOCUMENT!...

...This is the community’s only protection after the flood when damages have occurred.
If full compliance isn’t possible...

Corrective measures should be coordinated with state NFIP Coordinator and FEMA.
Last Resort: Section 1316

- All other means exhausted
- Community declares structure in violation at public meeting
- Declaration/request sent to FEMA
Record Keeping

- Provides evidence of activity
- Supports decision-making
- Supports delivery of programs and services
- Demonstrates accountability of person and community
I'm here to see your Floodplain permit files and Elevation Certificates.

7 communities nationwide kicked out of NFIP. 5 are in Illinois! We (Paul) are serious!
The Community Assistance Visit (CAV)

The CAV provides a means to render technical assistance and a process to correct program deficiencies and violations.
Community Assistance Visit Possible Violations

Examples of deficiencies and violations………..

- Failure to require ANY permits;
- Failure to obtain state floodway permit;
- Failure to use proper flood elevation data;
- Non-compliant ordinance;
- Structures below BFE;
- HVAC or electric components not elevated;
- Failure to correct violations to practicable extent;
- Pattern & practice of issuing non-compliant variances;
- Allowing non-compliant lower enclosures or no vents;
- Fill and debris.
Community Assistance Visit
IF YOU CAN’T GET THE WHOLE THING, GET WHAT YOU CAN REASONABLY AND PRACTICALLY GET, to limit flood damage exposure to people and property. Save your community’s good standing in the National Flood Insurance Program!
WHO’S TO BLAME?

- The developer?
- The builder?
- The owner?
- The building official?
- The realtor?
- The prior administration?

**WE DON’T CARE!!!!**

Regardless of who is at fault, the violation must be corrected.
Probation

- Formal notification to the community that FEMA regards the community’s floodplain management program as not compliant with the minimum standards of the NFIP.
- An additional $50 dollar premium will be charged on policies sold or renewed during the probation period.
- The maximum probation period is one year.
Suspension

A community is subject to suspension unless it corrects program deficiencies and remedies all violations by the compliance deadlines set during the probation period.
Effects of Suspension or Non-Participation in the NFIP

- No federally-backed flood insurance.
- No federal/state grants and loans.
- No federal flood disaster assistance.
- No federal mortgage insurance.
If your community has any Rep Loss properties...

- There is NO, NO, NO, NO, NO, NO, NO, NO reason that you should not have adopted a cumulative substantial damage provision in your local ordinance!!!

NO REASON!
Illinois is ranked #1 in the nation:

1. Overall flood loss reduction
2. Fewest number of flood insurance claims occurring on newer post-FIRM structures (1%).
   *Some states have as much as 50% of flood claims taking place on newer post-FIRM buildings.
3. Mitigation of repetitive loss properties (50% no longer make damage claims)
FEMA Technical Bulletins and References

TB 1 - Openings in Foundation Walls and Walls of Enclosures

TB 2 - Flood Damage-Resistant Materials Requirements

TB 3 - Non-Residential Floodproofing -- Requirements and Certification

TB 4 - Elevator Installation

TB 6 - Below-Grade Parking Requirements

TB 7 - Wet Floodproofing Requirements

TB 10 - Ensuring that Structures Built on Fill In or Near Special Flood Hazard Areas are Reasonably Safe From Flooding

TB 11 - Crawlspace Construction for Buildings Located in Special Flood Hazard Areas
PAUL O.
ELEV. CERT.
START →
1:15 - 1:45
The FEMA Elevation Certificate
The Elevation Certificate

11/30/18

Expire Date

Now

Five pages long!!

Must use the new form
Section A
What’s New

Identify whether the enclosure, crawlspace, or garage has engineered flood openings.

Two new Building Diagrams have been added:

1. The new Diagram 1B is for raised-slab-on-grade or slab-on-stem-wall-with-fill single- and multiple-floor buildings.

1. The new Diagram 9 is for all buildings (other than split-level) elevated on a subgrade crawlspace.
**Section A – Property Information**

**DEPARTMENT OF HOMELAND SECURITY**
Federal Emergency Management Agency

**ELEVATION CERTIFICATE**

**IMPORTANT: FOLLOW THE INSTRUCTIONS ON PAGES 9-16**

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**

<table>
<thead>
<tr>
<th>A1. Building Owner's Name</th>
<th>Form Insurance Company Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Policy Number:</td>
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</tbody>
</table>

<table>
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<tr>
<th>A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.</th>
<th></th>
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<tbody>
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<td>Company NAIC Number:</td>
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<table>
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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: 
   - NAD 1927
   - 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? Yes 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? Yes No

Background information on the property....NOT you.
**Section A- Property Information**

**Photo Requirements**

**DEPARTMENT OF HOMELAND SECURITY**
Federal Emergency Management Agency

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### Section A - Property Information

#### Building Diagrams (now 11 of them)

**DEPARTMENT OF HOMELAND SECURITY**  
Federal Emergency Management Agency

**ELEVATION CERTIFICATE**

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Instructions for Completing the Elevation Certificate (Continued)

Building Diagrams

The following diagrams illustrate various types of buildings. Compare the features of the building being certified with the features shown in the diagram and select the diagram most applicable. Enter the diagram number in Item A7, the square footage of crawlspaces or enclosures and the area of flood openings in square inches in Items A3.a-c, the square footage of attached garage and the area of flood openings in square inches in Items A4.a-c, and the elevations in Items C.0.a-f.

In A zones, the floor elevation is taken at the top finished surface of the floor indicated; in V zones, the floor elevation is taken at the bottom of the lowest horizontal structural member (see drawing in instructions for Section C).

DIAGRAM 1A
All slab-on-grade single- and multiple-floor buildings (other than split-level) and high-rise buildings, either detached or row type (e.g., townhouses) with or without attached garage.

Distinguishing Feature: The bottom floor is at or above ground level (grade) on at least 1 side.*

DIAGRAM 1B
All raised slab-on-grade or slab-on-stem-wall with fill single- and multiple-floor buildings (other than split-level), either detached or row type (e.g., townhouses), with or without attached garage.

Distinguishing Feature: The bottom floor is at or above ground level (grade) on all sides! side.*

DIAGRAM 2A
All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses), with or without attached garage.

Distinguishing Feature: The bottom floor (basement or underground garage) is below ground level (grade) on all sides.*

DIAGRAM 2B
All single- and multiple-floor buildings with basement (other than split-level) and high-rise buildings with basement, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing Feature: The bottom floor (basement or underground garage) is below ground level (grade) on all sides; most of the height of the walls are below ground level on all sides and the floor and area of express is also below ground level on all sides.*

* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.
Diagram 3

All split-level buildings that are slab-on-grade, either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing feature: The bottom floor (excluding garage) is at or above ground level (grade) on at least 1 side.

Diagram 4

All split-level buildings (other than slab-on-grade), either detached or row type (e.g., townhouses); with or without attached garage.

Distinguishing feature: The bottom floor (basement or subgrade and garage) is below ground level (grade) on all sides.

Diagram 5

All buildings elevated on piers, posts, piles, columns, or parallel shear walls. No obstructions below the elevated floor.

Distinguishing feature: For all zones, the area below the elevated floor is open, with no obstruction to flow of floodwaters (open during work and or mood screening is permissible).

Diagram 6

All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.

Distinguishing feature: For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings. **present in the walls of the enclosure include information about exposure size and openings in Section A - Property Information.

* A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

** An “opening” is a permanent opening that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of 2 openings is required for measures of crankshafts. The openings shall provide a total net area of not less than 1 square inch for every square foot of area enclosed, excluding any bars, bollars, or other covers of the opening. Alternatively, an individual engineer may determine the openings, if any.

C2a, C2b, C2c, C2d, C2e, C2f, C2g, C2h
Instructions for Completing the Elevation Certificate (Continued)

**Diagram 7**
All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least 1 side is at or above grade. The principal use of this building is located in the elevated floors of the building.

**Diagram 8**
All buildings elevated on a crawl space with the floor of the crawl space at or above grade on at least 1 side, with or without an attached garage.

**Diagram 3**
All buildings (other than split-level) elevated on a sub-grade crawl space, with or without attached garage.

---

A floor that is below ground level (grade) on all sides is considered a basement even if the floor is used for living purposes, or as an office, garage, workshop, etc.

An "opening" is a permanent opening that allows for the free passage of water automatically in both directions without human intervention. Under the NFIP, a minimum of 2 openings is required for basements or crawlspaces. The openings shall provide a total net area of not less than 1 square inch for every square foot of area enclosed, excluding any trees, sheds, or other cover of the opening. Alternatively, an individual Enlarged Fixed Opening Certification or an Evaluation Report issued by the International Code Council Evaluation Service (ICCE) must be submitted to document that the design of the opening will
Diagram #1 and 1B – Slab or wall

Next higher floor?
Diagram # 7 - Fully enclosed lower area

Permanemnt Flow Thru openings are VERY important!
Diagram #8 and #9 – Crawlspace
(above grade crawl and below grade crawls)
Section A - Property Information

Crawlspaces

<table>
<thead>
<tr>
<th>Field Description</th>
<th>Reference</th>
<th>Required</th>
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<tr>
<td>b) Number of permanent flood openings in the attached garage within 1.0 foot above adjacent grade</td>
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<td>c) Total net area of flood openings in A9.b in sq in</td>
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<td></td>
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</tbody>
</table>
Crawlspaces

Interior above grade?

or

Interior below grade?

Figure 2. Limitations on below-grade crawlspaces in shallow flood hazard areas (TB 11)
**Section A – Property Information**

**Openings**

<table>
<thead>
<tr>
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</table>
Openings in Foundation Walls and Walls of Enclosures

Below Elevated Buildings in Special Flood Hazard Areas in accordance with the National Flood Insurance Program

Technical Bulletin 1 / August 2008
Any enclosed area must be flow thru

- Each opening no more than 1 foot above grade
- Elevated lowest floor
- Interior grade must be at or above the exterior grade along the entire length of the lowest side to prevent being a basement
Watch the vents! “standard vents” are only 42 sq. in.
Section A – Property Information

Engineered Openings?

All Engineered Openings must have an ICC-ES Evaluation Report.
### Section B – Flood Insurance Rate Map (FIRM) Information

<table>
<thead>
<tr>
<th>B1. NFIP Community Name &amp; Community Number</th>
<th>B2. County Name</th>
<th>B3. State</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>B4. Map/Panel Number</th>
<th>B5. Suffix</th>
<th>B6. FIRM Index Date</th>
<th>B7. FIRM Panel Effective/Revised Date</th>
<th>B8. Flood Zone(s)</th>
<th>B9. Base Flood Elevation(s) (Zone AO, use base flood depth)</th>
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<tbody>
<tr>
<td></td>
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</table>

**B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:**

- [ ] FIS Profile
- [ ] FIRM
- [ ] Community Determined
- [ ] Other/Source: __________________________

**B11. Indicate elevation datum used for BFE in Item B9:**

- [ ] NGVD 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
Flood Studies and Maps

Go to:
Map Service Center website!
Section B – Base Flood Elevation information

<table>
<thead>
<tr>
<th>B1. NFIP Community Name &amp; Community Number</th>
<th>B2. County Name</th>
<th>B3. State</th>
</tr>
</thead>
<tbody>
<tr>
<td>B4. Map/Panel Number</td>
<td>B5. Suffix</td>
<td>B6. FIRM Index Date</td>
</tr>
</tbody>
</table>

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in Item B9:
- FIS Profile
- FIRM
- Community Determined
- Other/Source: [ ]

B11. Indicate elevation datum used for BFE in Item B9:
- NGVD 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
Flood Insurance Rate Map (FIRM)

Base Flood Elevation (BFE)
Water Surface elevation (in feet) of the base flood at specific locations

Elevation Reference Marks (RM)
Points for which ground elevation data have been established and recorded on the FIRM

Flood Hazard Zones.
Zone A, Zone A1–A30, and Zone AE — 100-year or base flood
Zone B — 500–year flood
Zone C or X — All other areas
Flood Insurance Study (FIS)
Flood Profile in the Flood Insurance Study (FIS)
BFES in Unnumbered (unstudied) floodplains

- Illinois State Water Survey (?)
- Highway Engineer
- Engineering study
- BFES in Approximate A Zones Booklet
- Estimate and FEMA concurrence
- FEMA??? (No BFE available from Federal, State, or Local Sources)
- NOT Osman
Section C – Building Elevation Information

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

C1. Building elevations are based on:
   - Construction Drawings*
   - Building Under Construction*
   - Finished Construction


Complete Items C2.a - h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.

* A new Elevation Certificate will be required when construction of the building is complete.

**Benchmark Utilized:**

**Vertical Datum:**

Indicate elevation datum used for the elevations in items a) through h) below.
- NGVD 1929
- NAVD 1988
- Other/Source:

Datum used for building elevations must be the same as that used for the BFE.

<table>
<thead>
<tr>
<th>Item</th>
<th>Feet</th>
<th>Meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Top of bottom floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Top of the next higher floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Bottom of the lowest horizontal structural member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d) Attached garage (top of slab)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e) Lowest elevation of machinery or equipment servicing the building</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Describe type of equipment and location in Comments)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f) Lowest adjacent (finished) grade next to building (LAG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g) Highest adjacent (finished) grade next to building (HAG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Deck elevation?

- Section C(h) now captures the lowest adjacent grade at lowest elevation of deck or stairs, including structural support.

- This information is required if the EC is being used to support a request for a LOMA or LOMR-F.

- Is Deck connected to the structure?
Only surveyors can do lat and long?

**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 by fine or imprisonment under 18 U.S. Code, Section 1001.

- Check here if attachments.
- Were latitude and longitude in Section A provided by a licensed land surveyor?
  - Yes
  - No

**Certifier's Name**

**Company Name**

**Title**

**Address**

**City**

**State**

**Zip Code**

**Signature**

**Date**

**Telephone**

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

Comments (including type of equipment and location, per C2(e), if applicable)
### Section E - Building Elevation Information (Survey Not Required) for Zone AO and Zone A (Without BFE)

For Zones AO and A (without BFE), complete Items E1 - E5. If the Certificate is intended to support a LOMA or LOMR-F request, complete Sections A, B, and C. For Items E1 - E4, use natural grade, if available. Check the measurement used. In Puerto Rico only, enter meters.

**E1.** Provide elevation information for the following and check the appropriate boxes to show whether the elevation is above or below the highest adjacent grade (HAG) and the lowest adjacent grade (LAG).

- **a**) Top of bottom floor (including basement, crawlspace, or enclosure) is ___________ - ___________ ○ feet ○ meters ○ above or ○ below the HAG.

- **b**) Top of bottom floor (including basement, crawlspace, or enclosure) is ___________ - ___________ ○ feet ○ meters ○ above or ○ below the LAG.

**E2.** For Building Diagrams 6 - 9 with permanent flood openings provided in Section A Items 8 and/or 9 (see pages 8 - 9 of Instructions), the next higher floor (elevation C2.b in the diagrams) of the building is ___________ - ___________ ○ feet ○ meters ○ above or ○ below the HAG.

**E3.** Attached garage (top of slab) is ___________ - ___________ ○ feet ○ meters ○ above or ○ below the HAG.

**E4.** Top of platform of machinery and/or equipment servicing the building is ___________ - ___________ ○ feet ○ meters ○ above or ○ below the HAG.

**E5.** Zone AO only: If no flood depth number is available, is the top of the bottom floor elevated in accordance with the community’s floodplain management ordinance? ○ Yes ○ No ○ Unknown. The local official must certify this information in Section G.
Section F
Property Owner’s Agent

<table>
<thead>
<tr>
<th>Property Owner or Owner’s Authorized Representative’s Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
</tr>
<tr>
<td>Signature</td>
</tr>
<tr>
<td>Comments</td>
</tr>
</tbody>
</table>

The property owner or owner’s authorized representative who completes Sections A, B, and E for Zone A (without a FEMA-issued or community-issued BFE) or Zone AO must sign here. The statements in Sections A, B, and E are correct to the best of my knowledge.
**Section G**  
**Community Authorization**

<table>
<thead>
<tr>
<th><strong>SECTION G - COMMUNITY INFORMATION (OPTIONAL)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The local official who is authorized by law or ordinance to administer the community’s floodplain management ordinance can complete Sections A, B, C (or E), and G of this Elevation Certificate. Complete the applicable item(s) and sign below. Check the measurement used in Items G8 - G10. In Puerto Rico only, enter meters.</td>
</tr>
</tbody>
</table>

**G1.** The information in Section C was taken from other documentation that has been signed and sealed by a licensed surveyor, engineer, or architect who is authorized by law to certify elevation information. (Indicate the source and date of the elevation data in the Comments area below.)

**G2.** A community official completed Section E for a building located in Zone A (without a FEMA-issued or community-issued BFE) or Zone AO.

**G3.** The following information (Items G4 - G10) is provided for community floodplain management purposes.

<table>
<thead>
<tr>
<th><strong>G4. Permit Number</strong></th>
<th><strong>G5. Date Permit Issued</strong></th>
<th><strong>G6. Date Certificate of Compliance/Occupancy Issued</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**G7.** This permit has been issued for:  
- New Construction  
- Substantial Improvement

**G8.** Elevation of as-built lowest floor (including basement) of the building:  
- [ ] feet  
- [ ] meters  
  Datum [ ]

**G9.** BFE or (in Zone AO) depth of flooding at the building site:  
- [ ] feet  
- [ ] meters  
  Datum [ ]

**G10.** Community’s design flood elevation:  
- [ ] feet  
- [ ] meters  
  Datum [ ]

Local Official’s Name [ ]  
Title [ ]

Community Name [ ]  
Telephone [ ]

Signature [ ]  
Date [ ]

Comments [ ]
BUILDING PHOTOGRAPHS
See instructions for Item A6

<table>
<thead>
<tr>
<th>IMPORTANT: In these spaces, copy the corresponding information from Section A.</th>
<th>FOR INSURANCE COMPANY USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.</td>
<td>Policy Number:</td>
</tr>
<tr>
<td>City</td>
<td>State</td>
</tr>
</tbody>
</table>

If using the Elevation Certificate to obtain NFIP flood insurance, affix at least 2 building photographs below according to the instructions for Item A6. Identify all photographs with date taken; "Front view" and "Rear view"; and, if required, "Right Side View" and "Left Side View." When applicable, photographs must show the foundation with representative examples of the flood openings or vents, as indicated in Section A8. If submitting more photographs than will fit on this page, use the Continuation Page.

Required for new insurance policies!!!
Copies of the Elevation Certificate

Download from:
http://www.fema.gov/

or

simply go to www.FEMA.gov and search “elevation certificate”
Part 4 Summary Review

Where did we confuse you in covering:

- Duties of Floodplain Administrators
- Variances
- Substantial damage/improvement
- Community Audits & Compliance
- Recordkeeping
- Elevation Certificates
BREAK
START
1:45 - 2:00
ANNETTE B. NFIP
START
2:00 – 2:30
Part 5

Flood Insurance
Part 5 - Topics

- Basic Terms & Abbreviations
- NFIP Insurance Overview
- Policy Types and Rating
- Increased Cost of Compliance
- Community Rating System
- Grandfathering
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFE</td>
<td>Base Flood Elevation</td>
</tr>
<tr>
<td>CRS</td>
<td>Community Rating System</td>
</tr>
<tr>
<td>FIRM</td>
<td>Flood Insurance Rate Map</td>
</tr>
<tr>
<td>ICC</td>
<td>Increased Cost of Compliance</td>
</tr>
<tr>
<td>NFIP</td>
<td>National Flood Insurance Program</td>
</tr>
<tr>
<td>PRP</td>
<td>Preferred Risk Policies</td>
</tr>
<tr>
<td>WYO</td>
<td>Write Your Own</td>
</tr>
</tbody>
</table>
National Flood Insurance Program (NFIP)

- Now covers 5.1 million policies in 20,000 communities.

- $994 billion in risk exposure (almost all high risk properties).

- In floodplains - less than 50% coverage.

- In all risk zones – less than 10% coverage.

- Adverse selection – only those who need it buy it.
How Does Flood Insurance Work?
Who Can Buy Flood Insurance?

- Anybody in a community participating in the NFIP.
- Anywhere within that community (all zones)
- Not all flood insurance is NFIP

To purchase NFIP policy:
- Call any licensed insurance agent
- Call FEMA directly at 1-800-720-1093
Coverage Amounts

Buildings
- Up to $250,000 Residential
- Up to $500,000 Non-Residential

Contents
- Up to $100,000 Residential
- Up to $500,000 Non-Residential

Less if community is in the Emergency phase of the program
NFIP Flood Insurance

Can be purchased for:

- a building under construction
- a finished structure
- contents inside an insurable bldg.
Insurable Property
Definition of an eligible building

- 2 or more outside rigid walls
- A fully secured roof
- Permanently affixed to a site
- At least 51% of ACV above ground
- Could be manufactured home or travel trailer if it meets above criteria
NFIP Does NOT Cover

- Basement improvements
- Basement personal belongings
- Structures built over water
Limitations

Basements and enclosures beneath the lowest floor – limited coverage
When It’s Written

Waiting Period
- Generally 30 days, unless...it’s at the time of loan closing, mortgage review or map revision

Lenders
- Must have determination on file guaranteeing accuracy
- May require insurance even outside SFHA
Who Writes Flood Insurance?

NFIP flood insurance
- FEMA
- Write Your Own (WYO) companies

Private flood insurance
- WYO Companies
- Other high-risk insurers, i.e., Lloyd’s of London
Who Can Buy Flood Insurance?

- Anybody in a community participating in the NFIP.

- Anywhere within that community (all zones)
Who MUST buy Flood Insurance?

- Required for buildings in SFHA (floodplain) when:
  - Making
  - Increasing
  - Renewing
  - Extending a mortgage, home equity, improvement, construction, commercial or farm credit loan
Who **MUST** Buy Flood Insurance?

**Community Status**
- Does the community participate in the NFIP?
- Is insurance available?

**Type of Loan**
- Is the lender Federally regulated?

**Type of Property**
- Is it an insurable structure?

**Location of Property**
- Is it located within a floodplain?
Lender’s Responsibility
Insurance is required when:

- A lender makes, renews, extends, or increases a loan.
- That loan is from a federally regulated or insured lender.
- The loan collateral is insurable under the NFIP’s standard policy.
- That collateral is or will be located in a high risk flood area (A Zone).
- The community participates in the NFIP.
How Much Coverage is Required?

- Amount of the loan at initiation
- Maximum available through the NFIP
- Value of building at loan origination
- Whichever is less
When do flood insurance policies become effective?

30-Day Waiting Period

- Exceptions for:
  - Insurance in connection with a loan
  - Purchased within 13 months of a map change (1 day)

Good morning…
I’d like to find out about flood insurance.
Lenders Documentation

“a lender’s decision made in the exercise of due diligence and good faith as to the location of a property, which is the subject of the loan, on such a map will be final and sufficient to comply with the Act”.

Do lenders HAVE to depend on the Zone Determination Company’s floodplain determination?

NO!
Flood “Certification” Vendors

- Not FEMA endorsed
- Essentially unregulated industry
- Approx 150 firms but only 1/3 subscribe to NFDA standards and practices
- Quality control issues
- What are they *really* determining?
Flood Insurance Requirements For Typical Residential Sitings In FEMA/HUD Designated Special Flood Areas

PROPERTY IN FLOOD HAZARD STRUCTURE (A) IS NOT
INSURANCE IS NOT REQUIRED.

STRUCTURE (E) IN SFHA ALTHOUGH ON HIGH BLUFF
[THIS SITUATION CAN RESULT FROM INADEQUATE
BASE DATAMAPS]:
LENDER MUST REQUIRE INSURANCE INITIALLY BUT
BUYER [BUILDER] MAY REQUEST "LETTER OF MAP
AMENDMENT" UPON APPROVAL BUYER/BUILDER MAY
RECEIVE REFUND.

STRUCTURE (B) IN SFHA - BUT SUBSTANTIALLY
ELEVATED ON NATURAL KNOB - TOO SMALL TO
BE SHOWN ON MAP
LENDER MUST INITIALLY REQUIRE INSURANCE.
BUYER [OR BUILDER] CAN REQUEST "LETTER
OF MAP AMENDMENT" - IF REQUEST IS
GRANTED, INSURANCE MAY BE REFUNDED.

STRUCTURE (F) LOCATED IN SFHA.
SUBSTANTIALLY ELEVATED ON FILL - INSURANCE
INITIALLY REQUIRED - BUT BUYER/BUILDER MAY
REQUEST "LETTER OF MAP REVISION".
ELEVATED THROUGH MEANS OTHER THAN FILL
[POSTS, PIERS, PILING, ETC.]
INSURANCE ALWAYS REQUIRED.

STRUCTURE (D) LOCATED IN SFHA, NOT ELEVATED.
INSURANCE IS REQUIRED.
Deductibles

Standard

- $1,000 Post FIRM
- $2,000 Pre FIRM

Higher deductibles available for lower premiums

Separate deductible for building and contents
Comparison Cost of Flood Insurance

Existing Pre-FIRM House

1 FT ABOVE BFE

$887/year VS $887/year VS $887/year

$26,610 /loan VS $26,610/loan VS $26,610/loan

1 FT BELOW BFE

Based on $75,000 bldg. & $20,000 contents coverage. Single family, no basement, standard deductible

10 FT BELOW BFE
Comparison cost of Flood Insurance

Pre-FIRM House

- **+1 FT**
  - $887/year
  - $26,610/loan
- **-1 FT**
  - $887/year
  - $26,610/loan
- **-10 FT**
  - $887/year
  - $26,610/loan

Post-FIRM House

- **+1 FT**
  - $535/year
  - $16,050/loan
- **-1 FT**
  - $3,037/year
  - $91,110/loan
- **-10 FT**
  - $21,583/year
  - $647,490/loan
The Preferred Risk Policy (PRP)

- Written only for areas located outside of the mapped floodplain (B,C and X Zones)
- Sold in “packaged” coverage amounts. Very cheap!

<table>
<thead>
<tr>
<th>Building Type</th>
<th>Building Coverage</th>
<th>Contents Coverage</th>
<th>Annual Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential w/o basement</td>
<td>$30,000</td>
<td>$12,000</td>
<td>$150</td>
</tr>
<tr>
<td>Residential with basement</td>
<td>$30,000</td>
<td>$12,000</td>
<td>$175</td>
</tr>
<tr>
<td>Non-Residential w/o basement</td>
<td>$50,000</td>
<td>$50,000</td>
<td>$557</td>
</tr>
</tbody>
</table>
Effective January 1, 2011, buildings that are newly designated within a Special Flood Hazard Area due to a map revision are eligible for coverage under PRP for a period of up to 2 years after the effective date of the map.
PRP Extension
Grandfathering

If homeowner:

- maintains continuous coverage or
- was built in compliance with an old FIRM, insurance can be rated using previous map if it benefits them.
“Old Maps” Rule

Keep old maps!!!

If old maps aren’t available, check for historical maps at: www.msc.fema.gov

Many, but not all, old maps are there.
How can Homeowners reduce the cost of their Flood Insurance?

- With lenders approval, increase the amount of deductible
- If location of the structure is a close call, apply for Letter of Map Amendment
- Mitigate to reduce vulnerability
Options & Actions

- Property Owners (and insurance agents)
  - Identify what full-risk rate is; get an Elevation Cert.
  - Look into map change (LOMA or LOMR)
  - Look into effect of higher deductibles
  - Look into rate-reducing mitigation actions
Options & Actions

- Communities
  - Join CRS/Increase CRS Rating
  - Be aware of mitigation grants
  - Work together!
  - Provide technical advice
    - Elevation Certificates
    - Building/Rebuilding to reduce flood risk
    - Implement Higher Standards
Building Construction:

- Get it right and insurance premiums will be affordable
- Get it wrong and premiums will be very expensive
- Exceed minimum standards and insurance will be relatively cheap
What is Increase Cost of Compliance (ICC)??

- Part of the standard Flood Insurance Policy.
- Not a grant.
- Up to $30,000 to assist with code compliance:
  - Floodproof
  - Relocate
  - Elevate
  - Demolish
ICC Details

ICC Claim Filed if Structure was:

- Damaged by flood.
- Substantially or repetitively damaged
ICC opens the Window of Opportunity
How to Qualify for ICC??

Three conditions must be met for an ICC claim to be paid:

1. Building must be covered by a Standard Flood Insurance Policy.

2. Structure must be substantially damaged or cumulatively substantially damaged by a flood.

3. The building has a history of NFIP claim payments that satisfy the definition of “target group repetitive loss structure”.

When ICC is Approved

- NFIP will release ½ of the estimated amount to begin construction.

- NFIP will release the other ½ when an elevation certificate and local building permit showing compliance is provided.
QUICK Mitigation is the Key

One month after the flood!!!!
ICC Before and After
PAUL O.
CRS
START
2:30 – 2:45
Community Rating System (CRS)

Another way to reduce the cost of a flood policy!
Community is above-and-beyond NFIP minimums.
Must pass a “clean” CAV first.
Community Rating System in Illinois (65 Communities)

- Adams County 8
- Addison 6
- Bartlett 7
- Calumet City 6
- Carbondale 9
- Country Club Hills 8
- Deerfield 8
- DeKalb City 8
- Des Plaines 7
- Downers Grove 7
- Flossmoor 8
- Glendale Heights 7
- Hoffman Estates 7
- LaSalle County 9
- Lansing 7
- Lincolnshire 5
- Jersey County
- Rock Island Co 7
- Lake in the Hills 6
- Glenview 6
- Crystal Lake 6
- Lisle 7
- Mount Prospect 7
- North Utica 9
- Northbrook 7
- Oak Brook 7
- Orland Hills 5
- Palatine 7
- Peoria County 5
- Prospect Heights 8
- Sangamon County 8
- South Holland 5
- St. Charles 5
- Wheeling 7
- Willowbrook 6
- Wood Dale 5
- Riverwoods
- Whiteside County
- Lake County 6
- Gurnee 8
- River Forest 7
- Sycamore 7
CRS in Illinois

- Ranked #6 in the nation for participation
- Six communities are class 5 or better
- Only four communities in the nation with higher CRS ratings.
- 40% of all flood insurance policies in Illinois are subject to CRS discounts.
Incentive

CRS provides an incentive for communities to initiate new flood protection activities.
CRS Activity Examples

Activity 300 - Elevation certs, Outreach projects

Activity 400 - Higher standards, Open space preservation, Stormwater management

Activity 500 - Acquisition and relocation, Drainage system maintenance

Activity 600 - Flood warning program, levee safety, dam safety
CRS Activities

300 Public Information Activities
- 310 Elevation Certificates
- 320 Map Information
- 330 Outreach Projects
- 340 Hazard Disclosure
- 350 Flood Protection Information
- 360 Flood Protection Assistance
CRS Activities

400 Mapping & Regulatory Activities
- 410 Additional Flood Data
- 420 Open Space Preservation
- 430 Higher Regulatory Standards
- 440 Flood Data Maintenance
- 450 Stormwater Management
CRS Activities

500 Flood Damage Reduction Activities
- 510 Floodplain Management Planning
- 520 Acquisition and Relocation
- 530 Flood Protection
- 540 Drainage System Maintenance
CRS Activities

600 Flood Preparedness Activities
- 610 Flood Warning Program
- 620 Levee Safety
- 630 Dam Safety
## CRS Premium Discounts

<table>
<thead>
<tr>
<th>Class</th>
<th>Points</th>
<th>Discount</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>500-999</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td>1000-1499</td>
<td>10%</td>
</tr>
<tr>
<td>7</td>
<td>1500-1999</td>
<td>15%</td>
</tr>
<tr>
<td>6</td>
<td>2000-2499</td>
<td>20%</td>
</tr>
<tr>
<td>5</td>
<td>2500-2999</td>
<td>25%</td>
</tr>
<tr>
<td>4</td>
<td>3000-3499</td>
<td>30%</td>
</tr>
<tr>
<td>3</td>
<td>3500-3999</td>
<td>35%</td>
</tr>
<tr>
<td>2</td>
<td>4000-4499</td>
<td>40%</td>
</tr>
<tr>
<td>1</td>
<td>4500+</td>
<td>45%</td>
</tr>
</tbody>
</table>
CRS Representative for Illinois

Lou Ann Patellaro, CFM
ISO / CRS Specialist
ISO - Commercial Property
Cell – (954) 651-5021
Office/Fax – (708) 634-3040
Part 5 – Summary Review
Where did we confuse you in covering:
• NFIP Insurance Requirements
• Types of flood insurance and policies
• Increased Cost of Compliance (ICC)
• Community Rating System (CRS)
• Grandfathering
Part 6

Mitigation
RON D. MITIGATION
START
2:45 – 3:00
The Most Important Mitigation Tool is:

YOU ARE AWESOME
Mitigation is a mind set
Mitigation Works!
5,000 Buyouts
Don’t Plan for the Past; Plan for the Future

- Urban flooding is becoming more significant
- Increasing number of extreme events

FEMA currently has 3 mitigation grant programs:

- Hazards Mitigation Grant Program (HMGP)
- Flood Mitigation Assistance (FMA)
- Pre-Disaster Mitigation (PDM)

Other sources:

- IDNR/OWR
- DCEO (HUD funds)
- Metropolitan Water Reclamation District
Mitigation Funds will NOT Solve all of your Problems

• Limited amount of funds
• Some projects too big
• Some projects too small
• Some don’t qualify under the rules
IDNR Funds

- Requests for applications will go out soon
- Acquisition and demolition
- No elevations, no Mobile Homes
- Funds are on a reimbursement basis
- No Cost share
- Can be used as Cost Share for FEMA
- Easier than the FEMA program
- Limited funding
Hazard Mitigation Grant Program (HMGP)

- FEMA allocates 15% of the total disaster assistance generated in response to a Presidential declaration toward HMGP.
- Program is administered by the State.
- 25% Cost share with the State/Local Community.
- Voluntary and Competitive (No Guarantee).
- Projects must meet benefit-cost, environmental and other Federal, State and local criteria.
- Can fund acquisition, elevation, and small structural flood projects, wind and earthquake projects
- Priorities: Substantial Damage and repetitive loss
Flood Mitigation Assistance (FMA)

- Yearly Allocation from Insurance Policy Base.
- Requires Mitigation Plan.
- Administered by the State.
- Repetitive Loss properties are targeted.
- Community needs to be in good standing in the NFIP.
- Structures must be insured.
- Voluntary and Competitive (No Guarantee).
Pre-Disaster Mitigation Program (PDM)

- Annual nationwide competitive program.
- Funds projects for all natural hazards
- Flood insurance is not a prerequisite
- Mitigation plan is a prerequisite
- Can fund plans
- Changing emphasis – can now fund floodwalls, green infrastructure, floodplain and stream restoration
Repetitive Loss

- Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event.

Severe Repetitive Loss

Has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000;

For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.
Rep Loss in Illinois

- 2,815 rep loss properties (5.5% of 50,000 policies)
- $67 million in total rep. loss payments (31% of our total claims)
- Located in 303 communities
- 1993 - #5 on the national list!
- 2007 - #15 on the national list!

- Most grievous remaining Rep Loss properties are located on Federal lease property.
Communities must have mitigation plans to be eligible for Federal Mitigation projects. (DMA 2000). HMGP, FMA, and PDM.
Current mitigation plan status

Green = Plan done
Yellow = Developing plans
White = Haven’t started
Black = non-NFIP county
Part 6 – Summary Review

Where did we confuse you in covering:

• HMGP
• FMA
• PDM
• Mitigation Planning
IEMA Point of Contact:

Sam Al-Basha
State Hazard Mitigation Officer
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704
217-785-9942  sam.m.al-basha@illinois.gov

IDNR-OWR Point of Contact
Ron Davis
217-524-7200
Ron.davis@illinois.gov
FEMA Point of Contact:

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Natural Hazard Specialist
536 South Clark Street
Chicago, IL  60605-1521

312-408-5321

Frank.shockey@fema.dhs.gov
IDNR/OWR Contacts:

Paul Osman  
Statewide Programs Manager  
(217) 782-4428  
Paul.Osman@Illinois.gov

Ron Davis  
Downstate Floodplain Manager  
(217) 524-7200  
Ron.Davis@Illinois.gov
THANK YOU
A great View! Look at all that GREEN in Grafton!

THANK YOU
EXERCISE SLIDES
Mapping Example

- New Residential Development
- Site Description
- What is the Baseflood Elevation on Map
- What is the Baseflood Elevation on Study Profile
Mapping Example

- First step
- Select Correct FIRM Panel
A 150 ft by 150 ft corner lot on the North side of Butler Dr. and on the West side of Heyden Dr.
Mapping Example

- Identify Specific Location

A 150 ft by 150 ft corner lot on the North side of Butler Dr. and on the West side of Heyden Dr.
Mapping Example

- Identify Specific Lot

A 150 ft by 150 ft corner lot on the North side of Butler Dr. and on the West side of Heyden Dr.
What risk zone is this site located in?

Zone A3

Is this site in the 1% floodplain?

YES – Any risk zone beginning with the letter “A” is the 1% floodplain.
Mapping Example

Is the Site in the Regulatory Floodway?

Map type is the new FIRM (no separate floodway map).

NO – If there was a regulatory floodway on Flat Creek it would have been represented by the “hatched” area.
Mapping Example

- Determine BFE Using FIRM

1. Determine flow direction.

2. Draw upstream BFE line for site.

BFE = 455.5 ft (by FIRM).
Determine BFE Using FIS Flood Profile

1. Still need to determine flow direction and draw BFE line.

Now determine nearest landmark to site

A. Road crossings
B. Cross Sections

What is the nearest landmark?

Cross Section “D”
Mapping Example

➢ Determine Distance to closest Landmark

Measure the distance to the nearest landmark along the centerline of the stream.

Distance between Cross Section “D” and site = 5 X 125 ft + 100 ft = 725 ft +/-
Mapping Example

- **Determine BFE**

  1. Measure downstream from X-Section “D” 725 ft or 5.8 “squares” or “boxes”.
  2. Extend measurement line up to the 1% water profile.
  3. Measure horizontally over from the intersection of 1% profile to determine BFE.

  BFE = 454.6 ft (Nearly a foot lower than FIRM!).
A 150 ft by 150 ft corner lot on the North side of Butler Dr. and on the West side of Heyden Dr.

This Flood County, USA’s floodplain ordinance requires all development to be one-foot above the determined BFE, at what elevation could the lowest floor be at this site?

Lowest Floor Elevation = 455.6 feet (By FIS)

Or LFE = 456 feet (If rounding up)
Floodplain Exercise

Single family home located at 1212 Thornbrook Road (on the curve)

1. Floodplain?
2. Floodway?
3. Base Flood Elevation?
4. Construction method to use?
Floodplain Exercise

A single family home located at 512 Woodley Road (southeast corner of Woodley Road and Miller Avenue) has suffered fire damage. The owner wants to repair the home.

1. Floodplain?
2. Floodway?
3. Base Flood Elevation?
4. Construction method to be used?
A convenient store is proposed at 2207 E. College Avenue (northeast corner of College and Rolfe Road)

1. Floodplain?
2. Floodway?
3. Base Flood Elevation?
4. Construction method to be used?
Floodplain Exercise

A single family home is proposed at 1022 John Street (southwest corner of College Avenue and John Street)

1. Floodplain?
2. Floodway?
3. Base Flood Elevation?
4. Lender zone determination?
5. Filling on lot?
6. Nursing home w/ basement?
Floodplain Exercise

Ullin is getting a new Super Walmart on the corner of Ullin Road and East 2\textsuperscript{nd} Street!!!!

1. Floodplain?
2. Floodway?
3. Base Flood Elevation?
4. Construction methods to be used?
The Mayor of Ullin got a raise! He wants to do a $100,000 improvement to his double-wide trailer. He lives on the corner of Ohio and Cache Street.

1. Floodplain?
2. Floodway?
3. State permit required?
4. Local permit required?
5. Base flood elevation?
Coastal Regs
Coastal Floodplains

Definitions

- Coastal High Hazard Area: an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The area is designated on the FIRM as Zone V1 – V30, or VE or V.
Coastal Floodplains

Definitions........

- Coastal A Zone: the portion of the SFHA landward of a V zone...which may be subject to wave effects, velocity flows, erosion, scour, or combinations of these forces and are treated as V zones.
Coastal Floodplain

- Wave Runup Depth $\geq$ 3ft
- Wave Runup Depth $< 3ft$
- 100-Year Stillwater Elevation
- 100-Year Wave Crest Elevation
- 100-Year Wave Runup Elevation = BFE
- Inland Extent of Wave Runup
- Datum (e.g., NGVD, NAVD)
Coastal Floodplain Map

A#, AE, A, AO Zones

V#, VE Zones
Levels of Detail in Floodplain Delineations

COASTAL FLOOD HAZARD ZONES.

1. Zone A, Zones A1-A30, and Zone AE are subject to flooding by the base or 100-year flood (1% annual chance) and waves less than 3 feet.

2. Zone B (or shaded Zone X) is subject to flooding by the 500-year flood (0.2% annual chance).

3. Zone C (or Zone X) is all other areas.

4. Zone V, Zones V1-V30, and Zone VE are where waves are expected to be 3 feet or more.

5. BASE FLOOD ELEVATION (BFE).
   Water surface elevation (in feet above datum).

In undeveloped Coastal Barrier Resource Areas (COBRA), NFIP insurance is not available for new or substantially improved structures built after November 16, 1990.
Coastal Floodplain Map

Coastal Barrier Resource Act (CoBRA) of 1982
Coastal Barrier Improvement Act of 1990

• Areas subject to certain flood coverage restrictions. The NFIP is prohibited from writing flood insurance policies on new or substantially improved buildings in these areas.
Coastal Barrier Zones

LEGEND

FLOOD INSURANCE NOT AVAILABLE FOR STRUCTURES - NEWLY BUILT OR SUBSTANTIALLY IMPROVED ON AND AFTER NOVEMBER 16, 1991 - NOT USED IN A MANNER CONSISTENT WITH THE PURPOSE OF THE OTHERWISE PROTECTED AREAS.

†Coastal barrier areas are normally located within or adjacent to special flood hazard areas.
Building Protection Standards
Coastal High Hazard or V Zone Construction

- Mean High Tide: All new construction in V Zones must be located landward of the reach of mean high tide.

Methods to Elevate Buildings in a V Zone

- New and substantially improved structures must have the bottom of the lowest horizontal member at or above the BFE.
Bottom of the lowest horizontal structural member supporting the lowest floor
Building Protection Standards
Coastal High Hazard or V Zone Construction (cont.)

Methods to Elevate Buildings in a V Zone

- A certificate of the design foundations for buildings in V zones is required to be submitted prior to permit issuance.

V Zone Building Design and Performance Certificate

Section 1: Flood Insurance Rate Map (FIRM) data

NOTE: This Certificate is NOT a substitute for a New Construction Certification.

Community Name________________________ Community ID Number__________ FIRM Panel Number____
Panel Surf:________________ FIRM Zone____ Date of FIRM Panel____ Date of Issue____

Section 2: Elevation Information

1. Elevation of the bottom of the lowest (horizontal) structural member ________ feet
2. Base Flood Elevation (BFE) ________________________________ feet
3. Elevation of Lowest Adjacent Grade (LAG) __________________________ feet
4. Foundation Type: Fill_ Pillar_ Post_ Ped_ Column_ _Line_ Stem Wall_ Encased Wall_ __________
   Foundation Description: __________________________
5. Approximate depth of construction used for foundation design __________________________ feet
6. Elevated high fillings or foundation below LAG __________________________ feet
7. Datum used: NAVD_ ___________ NAVD_ ___________ Other ___________

Section 3: V Zone Certified Statement

I certify that I have performed or reviewed the structural design, plans, and specifications for construction and that the proposed design and methods of construction are in accordance with established standards of practice for the following provisions:

- The bottom of the lowest horizontal member of the lowest floor, including piers and columns, is elevated at least above the BFE and
- The pile or column foundation and structure attached there to be designed to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used are those associated with the base flood. Wind loading values used are those required by the applicable State or local building code. The potential for scour and erosion of the foundation has been accounted for and design conditions associated with the base flood, including wave action.

Signature
Phone Number________ EMAIL________
Representing________________________
Address________________________
City____________ State_____ Zip Code_____

Courtenay, Idaho 83422
Coastal High Hazard Areas or V Zones

- Structural Fill is prohibited to support buildings.
- Nonstructural fill, such as might be used for landscaping, should be placed so that it does not divert waves and surging floodwaters onto other structures.

Third Edition

FEMA Publication No. 55

This three-volume manual is intended for architects, engineers, building professionals, and community officials who need technical guidance concerning the proper methods of planning, siting, designing, constructing, and maintaining residential buildings in coastal areas subject to flood, wind, and seismic hazards. The manual includes a summary of past coastal hazard events, such as hurricanes, northeasters, and tsunamis; a discussion of coastal hazards and regulatory requirements that affect coastal construction; and detailed design guidance, including formulas and example problems.
Connect the Load Path in the V Zone

- Continuous path from roof to wall to foundation
- Materials that resist deterioration
Building Protection Standards
Coastal High Hazard or V Zone Construction (cont.)

V Zone / Breakaway Wall Certificate

- In V Zones, the applicant must include the V Zone Certificate and an engineer’s certification of design on a breakaway wall.
Building Protection Standards
Coastal High Hazard or V Zone Construction (cont.)

Breakaway Walls (V Zone)
• Minimum standard requires collapse after not less than 10 and no more than 20 pounds per square foot.
Pre-Event
Building Protection Standards
Coastal High Hazard or V Zone Construction (cont.)

Altering Sand Dunes

- Your flood damage prevention ordinance prohibits manmade alterations of sand dunes that will increase potential flood damage.

CoBRA

- NFIP insurance not available.
- You must still review and issue permits.
Permit Issuance (continued)

• Fill is not allowed as a method to elevate buildings in V Zones.
• FEMA does not allow placement of fill in V Zones as a method to remove a site from the mapped floodplain by means of a LOMR-F.
• Non-structural fill may be used for landscaping purposes and cannot divert waves and water toward any building.