



Department of the Environment

The New Maryland Model Floodplain Management Ordinance

MAFSM Conference
October 21, 2010
Kevin G. Wagner



Agenda

- Brief history/background
- What's driving new ordinances
- Introduction to new model ordinance
- Customizing the model ordinance
- Ordinance review checklist



Brief History of FPM in Maryland

1860 – First recorded flood in MD

1933 – State waterway construction authority

1968 – NFIP authorized by Congress

1972 – Tropical Storm Agnes, DNR/WRA
designated State Coordinator

1973 – Flood Disaster Protection Act (Fed/State)

1976 – Flood Hazard Mgmt. Act (MD)





Brief History of FPM in Maryland

1983 – WYO program began

1991 – first State model ordinance completed
(revisions in 1995, 1999, 2004 and 2010)

1994 – National Flood Insurance Reform Act

1995 – MDE designated State Coordinator

Present –





Types of Flooding in MD

- Nontidal (riverine)
- Tidal
- Coastal (wave action)



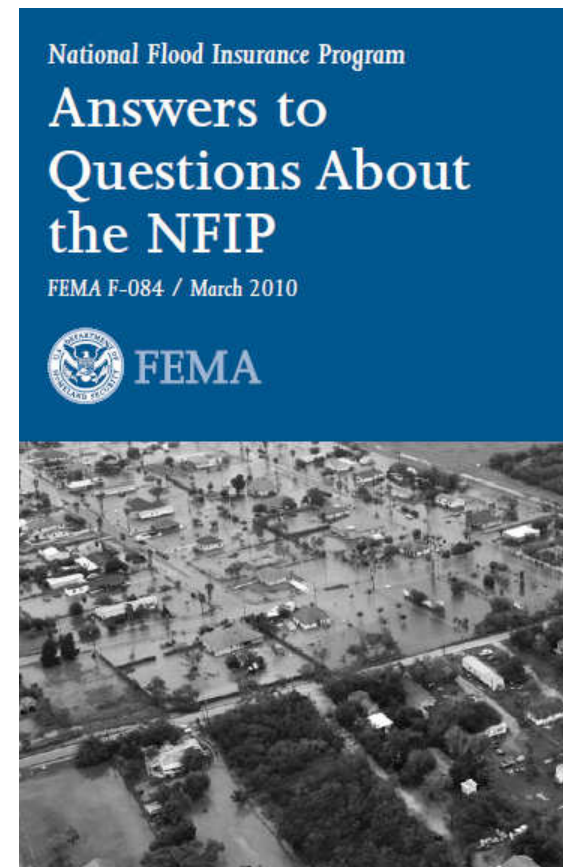
Floodplains

- FEMA differentiates two main types: riverine & coastal
- Maryland differentiates tidal & nontidal floodplain for regulatory purposes
 - FEMA maps/studies used as a minimum
- Standard is 100-year, or 1% annual chance flood



National Flood Insurance Program (NFIP)

- Created in 1968
- Administered by FEMA
- Three main parts
- Numerous stakeholders
- Community = Participating County or Municipality





Joining the NFIP – Land Use Authority

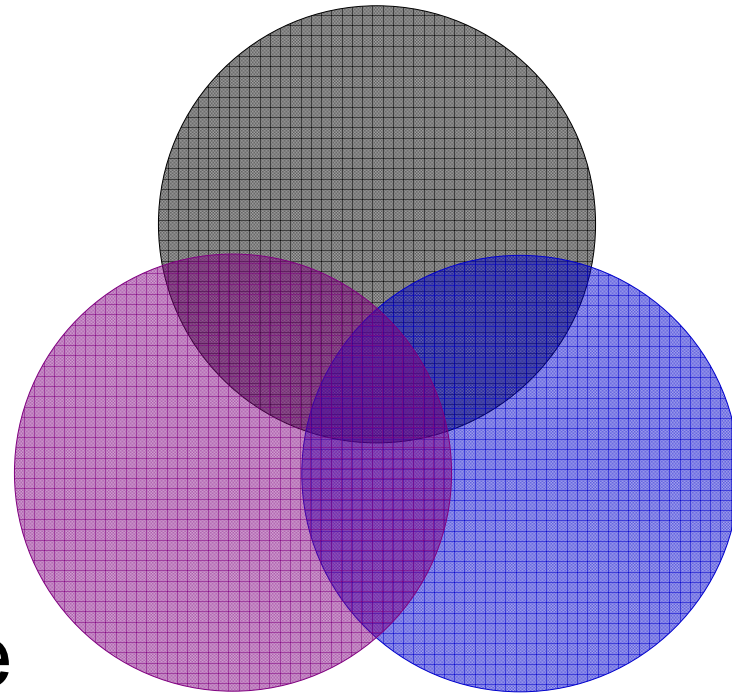
1. Application
 - FEMA Form 81-64
2. Resolution of Intent
3. Floodplain Management Ordinance
 - No SFHA? (Resolution for Nonfloodprone community)
 - Resolution of Delegation?





Three Main Parts of the NFIP

Floodplain Management/
Regulations



Insurance

Mapping





NFIP Basics

1. Mapping

- Flood Insurance Rate Map (FIRM)/Flood Insurance Study (FIS)

2. Floodplain Management/Regulations

- Local Floodplain Management Ordinance

3. Insurance

- Renters, Homeowners, Business Owners



NFIP: Mapping

- What flood risks have been mapped in your community?
 - Zone A, AE, V or X (shaded or unshaded) and floodway?
- Local floodplain management ordinance based on the map



NFIP: Regulations

- Based on Code of Federal Regulations (44 CFR 60.3)
- Local Floodplain Management Ordinance
 - Based on flood risk zones mapped in community
 - Higher regulatory standards?





NFIP: Insurance

- Foundation of program
- Makes flood insurance available to renters, and home and business owners
- What is the insurance ramification?
- Policies written by Write Your Own (WYO) companies
- NFIP website: www.FloodSmart.gov





How will the new flood maps affect your flood risk? Search your area for [map changes now.](#)

Call toll free: 1-888-379-9531

Search: Go

Increase type size a-a

HOME

FLOODING AND FLOOD RISKS

ABOUT THE NATIONAL FLOOD INSURANCE PROGRAM

RESIDENTIAL COVERAGE

COMMERCIAL COVERAGE

PREPARATION & RECOVERY

ONE-STEP FLOOD RISK PROFILE

How can I get covered?

- Rate your risk
- Estimate your premiums
- Find an agent

Address:

City:

State:

Zip code:

Residential: Yes No

GO



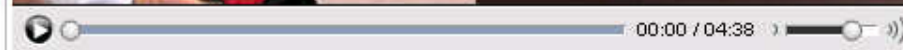
Real Flood Stories: A STORM, A HURRICANE AN EXPERT'S FIRSTHAND ENCOUNTER

Meteorologist Frank Billingsley had been providing hurricane and tropical storm information to viewers for years. But it was only after Tropical Storm Allison hit that he learned the importance of having flood insurance himself.

[See His Story](#)

[Transcript](#)

[See all Flood Stories >>](#)



WHAT WOULD FLOODING COST ME?

Two inches of water can cost you \$7,800. This [interactive tool](#) shows the real cost of a flood to your home, inch by inch.



GET COVERAGE STARTING AT \$119 PER YEAR.

Find out about our [Preferred Risk Policy](#) for homes in low-to-moderate risk areas.



IT'S PEAK HURRICANE SEASON. Get protected. Get flood insurance.

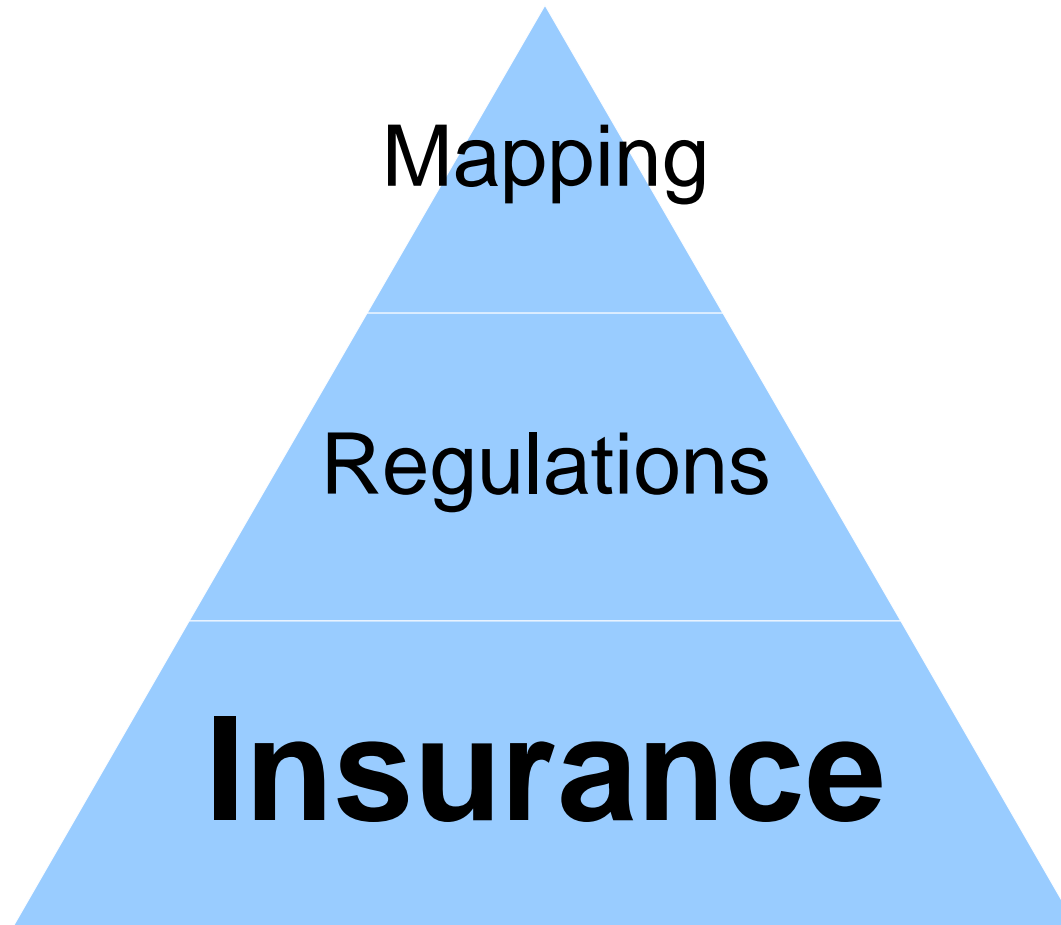


In just one hour, Hurricane Wilma caused over 2 inches of rainfall

Hurricane season is flood season. Learn more at FloodSmart.gov



Three Main Parts of the NFIP





NFIP Community

- Most important part of the NFIP!
- County or incorporated municipality
 - Local Floodplain Manager/Code Official
- Adopt and enforce a local floodplain management ordinance
 - Based on maps (44 CFR 60.3)
 - Higher regulatory standards? (ex. Freeboard)





Communities in the NFIP

- 135 participating communities
- Ocean City – first community to join the NFIP (July 1970)
 - Most policies in State, ranked 29th in nation
- Prince George's County is a Class 5 CRS community



Who Else is Involved?

- Property Owners/Renters
- Surveyors/Engineers/Architects
- Land Developers
- Contractors
 - Excavation/foundation, Plumbing, HVAC, Electrical, Propane/Oil
- Mortgage Lenders



Who Else is Involved?

- Flood determination companies
- Insurance companies and agents
- Local officials (Floodplain Manager, Code Enforcement Officer, Planner, etc.)
- Other State/Federal Agencies
- Real estate professionals
- Emergency response community





MDE's Role

- NFIP State Coordinating Office
- Provide technical assistance on the NFIP
 - Ordinance assistance
- Work with various stakeholders including local community
- Map Mod Coordination for 17 Counties
- Wetlands and waterways permitting



Map Revisions Drive Ordinance Reviews and Adoptions

- Types of changes to FIRMs
 - Zones, new elevation datum, etc.
- Timeline for ordinance adoption
 - Letter of Final Determination (LFD) triggers six-month clock
- Consequences

Results of Review of 1992 Model Ordinance

- Inadequate in many respects
 - Regulatory language
 - Missing Federal regulations
- Not being revised
- Ordinances based on 1992 model are not consistent with current regulations



Introduction to New Model

- Many hours invested!
- Eliminates unenforceable language
- Reviewed by local FPMs throughout the State
 - Incorporated feedback (ex. freeboard, compensatory storage)
- Reviewed by FEMA Region III





Introduction to New Model

- Model Ordinance
 - Full, nontidal or tidal
- Resource Version
 - Annotated with CFR, COMAR, Building Code/MBPS, CRS
- Notes
 - Explains certain provisions; identifies higher standards





Introduction to New Model

- Flow charts
 - Help with implementation
- Consistent with State regulations for nontidal waters of the State
- Retains certain long-standing recommendations





Retains Long-Standing Recommendations

- Freeboard (1 foot)
- Flood protection setbacks
- MDE review of variance requests
- Subdivision size triggering flood study
 - 5 lots or 5 acres, whichever is lesser
- Panelboards 3 ft above BFE





Retains Long-Standing Recommendations

- Manufactured homes placed or sub. improved in existing man. home park must be elevated. No allowance to elevate 36" above grade (See 44 CFR 60.3(c)(12)(ii)).



Which Model to Use?

- Full Ordinance
 - Has the kitchen sink
- Nontidal Ordinance
 - Excludes tidal, V Zones and Coastal A Zones (CAZ)
- Tidal Ordinance
 - Same as nontidal, but includes tidal



Full Ordinance

- 9 Sections
- Includes nontidal, tidal and Coastal High Hazard Areas (V Zones/CAZ)





Nontidal Ordinance

- 8 Sections
- Excludes tidal, V Zones and CAZ



Tidal Ordinance

- 8 Sections
- Nontidal provisions kept due to higher regulatory standards
 - Flood protection setbacks
 - State nontidal regulations
- Only two modifications
 - Definition for Flood Zone (Section 2.0)
 - Section 3.6 Review of Application

Tidal_2.0_Flood Zone - Microsoft Word

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Type a question for help

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1 2 3 4 5 7

Flood Zone: A designation for areas that are shown on *Flood Insurance Rate Maps*:

- (1) **Zone A:** *Special flood hazard areas* subject to inundation by the 1-percent annual chance (100-year) *flood*; *base flood elevations* are not determined.
- (2) **Zone AE and Zone AI-30:** *Special flood hazard areas* subject to inundation by the 1-percent annual chance (100-year) *flood*; *base flood elevations* are determined; *floodways* may or may not be determined. In areas subject to tidal flooding, the Limit of Moderate Wave Action may or may not be delineated.
- (3) **Zone AH and Zone AO:** *Areas of shallow flooding*, with *flood* depths of 1 to 3 feet (usually areas of ponding or sheet flow on sloping terrain), with or without BFEs or designated *flood* depths.
- (4) **Zone B and Zone X (shaded):** Areas subject to inundation by the 0.2-percent annual chance (500-year) *flood*; areas subject to the 1-percent annual chance (100-year) *flood* with average depths of less than 1 foot or with contributing drainage area less than 1 square mile; and areas protected from the *base flood* by levees.
- (5) **Zone C and Zone X (unshaded):** Areas outside of Zones designated A, AE, AI-30, AO, VE, V1-30, B, and X (shaded).
- (6) **Zone VE and Zone VI-30:** *Special flood hazard areas* subject to inundation by the 1-percent annual chance (100-year) *flood* and subject to high velocity wave action (also see *coastal high hazard area*).

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Tidal_3.6 - Microsoft Word

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3.6 Review of Application

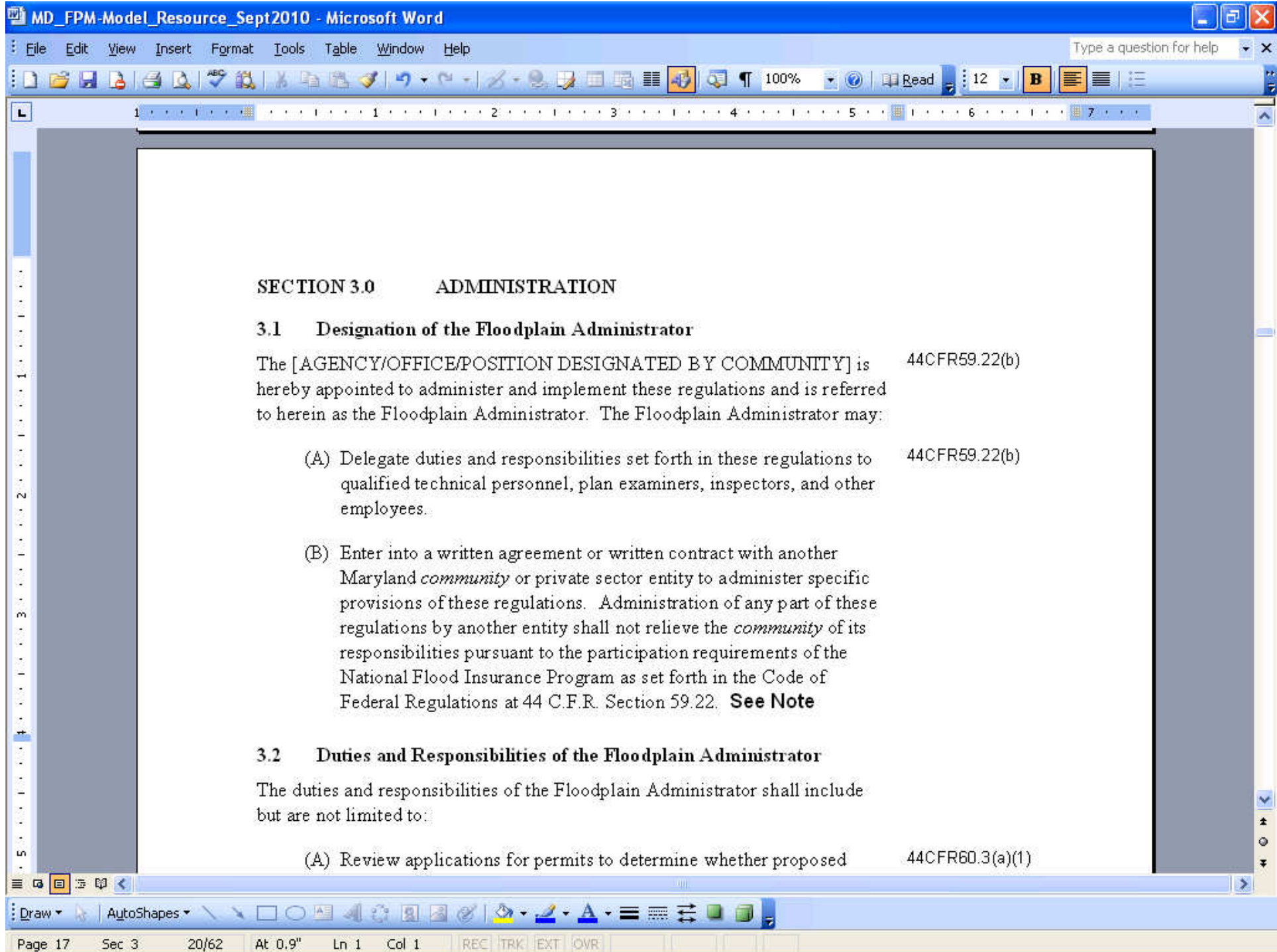
The Floodplain Administrator shall:

- (A) Review applications for *development in special flood hazard areas* to determine the completeness of information submitted. The applicant shall be notified of incompleteness or additional information that is required to support the application.
- (B) Notify applicants that permits from MDE and the U.S. Army Corps of Engineers, and other State and Federal authorities may be required.
- (C) Review all permit applications to assure that all necessary permits have been received from the Federal, State or local governmental agencies from which prior approval is required. The applicant shall be responsible for obtaining such permits, including permits issued by:
 - (1) The U.S. Army Corps of Engineers under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act;
 - (2) MDE pursuant to COMAR 26.23 (Nontidal Wetlands) and Section 401 of the Clean Water Act; ~~and~~
 - (3) MDE for construction on *nontidal waters of the State* pursuant to COMAR 26.17.04; ~~and~~
 - (4) MDE pursuant to COMAR 26.24 (Tidal Wetlands).
- (D) Review applications for compliance with these regulations after all information required in Section 3.5 of these regulations or identified and required by the Floodplain Administrator has been received.

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Resource Version

- Available for each ordinance type
- Annotated with CFR, COMAR, Building Code/MBPS, CRS
- “See Note”



SECTION 3.0 ADMINISTRATION

3.1 Designation of the Floodplain Administrator

The [AGENCY/OFFICE/POSITION DESIGNATED BY COMMUNITY] is hereby appointed to administer and implement these regulations and is referred to herein as the Floodplain Administrator. The Floodplain Administrator may:

44CFR59.22(b)

- (A) Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees. 44CFR59.22(b)
- (B) Enter into a written agreement or written contract with another Maryland *community* or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the *community* of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 C.F.R. Section 59.22. **See Note**

3.2 Duties and Responsibilities of the Floodplain Administrator

The duties and responsibilities of the Floodplain Administrator shall include but are not limited to:

- (A) Review applications for permits to determine whether proposed 44CFR60.3(a)(1)

discharges from systems into floodwaters.

44CFR60.3(a)(6)(ii)

(C) On-site waste disposal systems shall be located to avoid impairment to or contamination from them during conditions of *flooding*.

4.4 Buildings and Structures

New buildings and *structures* (including the placement and replacement of *manufactured homes*) and *substantial improvement* of existing *structures* (including *manufactured homes*) that are located, in whole or in part, in any *special flood hazard area* shall:

B (1603.1, 1612.1, 1612.4(ASCE24); 3403.2, 3404.2, 3405.5, 3409.2)

R301.2.4, R322.1

(A) Be designed (or modified) and constructed to safely support flood loads. The construction shall provide a complete load path capable of transferring all loads from their point of origin through the load-resisting elements to the foundation. *Structures* shall be designed, connected and anchored to resist flotation, collapse or permanent lateral movement due to structural loads and stresses, including hydrodynamic and hydrostatic loads and the effects of buoyancy, from *flooding* equal to the *flood protection elevation* or the elevation required by these regulations or the *building code*, whichever is higher.

EB (302.2, 303.2, 304.5, 501.3, 506.2.4, 601.3, 701.2, 801.2, 901.1, 1001.1, 1003.5, 1101.4, 1202.6, 1301.3.3)

44CFR60.3(a)(3)(i) & (b)(6)

(B) Be constructed by methods and practices that minimize flood damage.

44CFR60.3(a)(3)(iii)

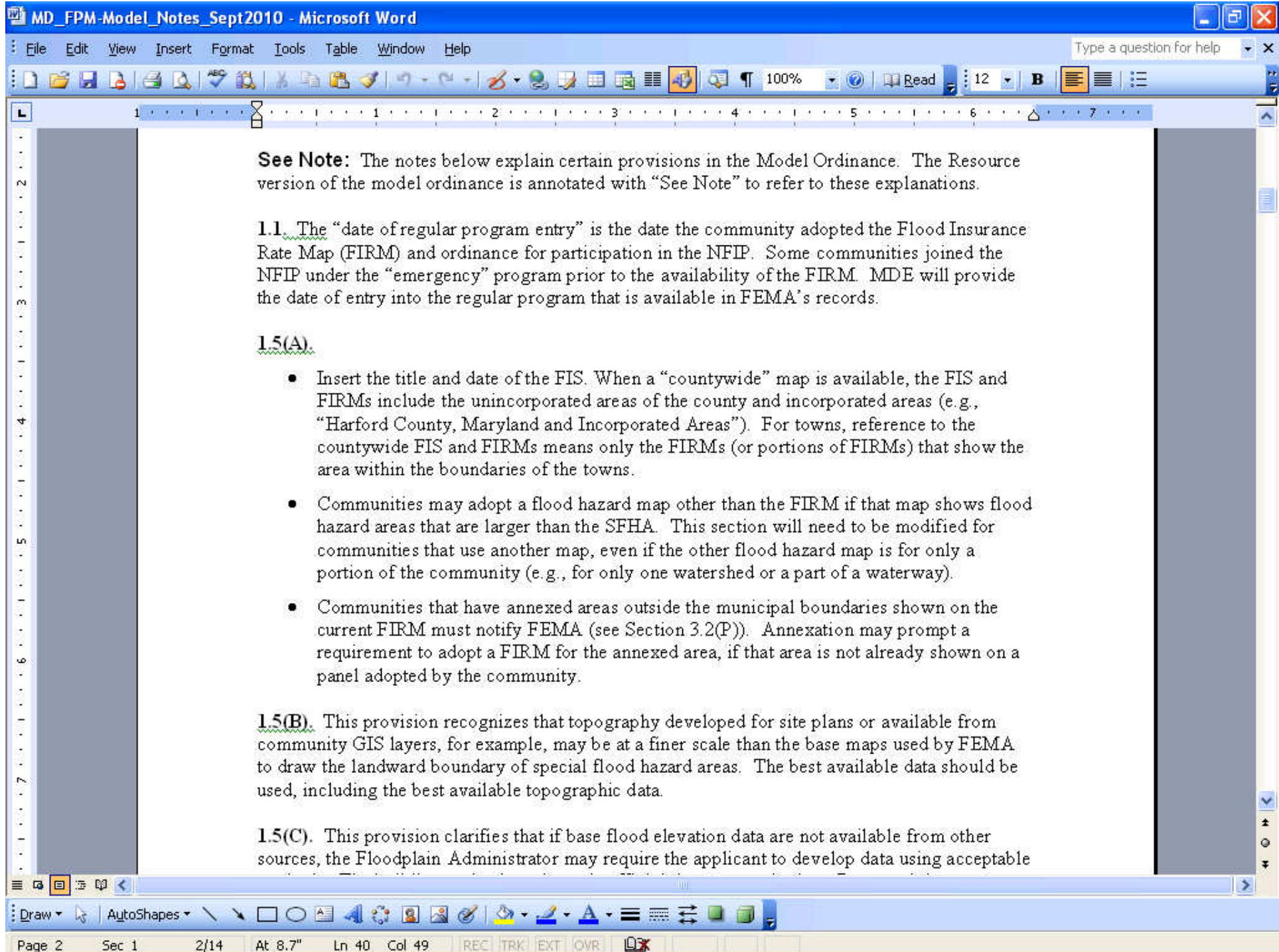
(C) Use *flood damage-resistant materials* below the elevation of the *lowest floor* required in Section 5.4(A) or Section 5.5(A) (for A Zones) or Section 6.3(B) (for V Zones and *Coastal A Zones*).

44CFR60.3(a)(3)(ii)
B1612.4(ASCE24),
B1403.5
R322.1.8

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Notes

- Explains “See Note” reference in Resource version
- Indicates where higher regulatory standards exist





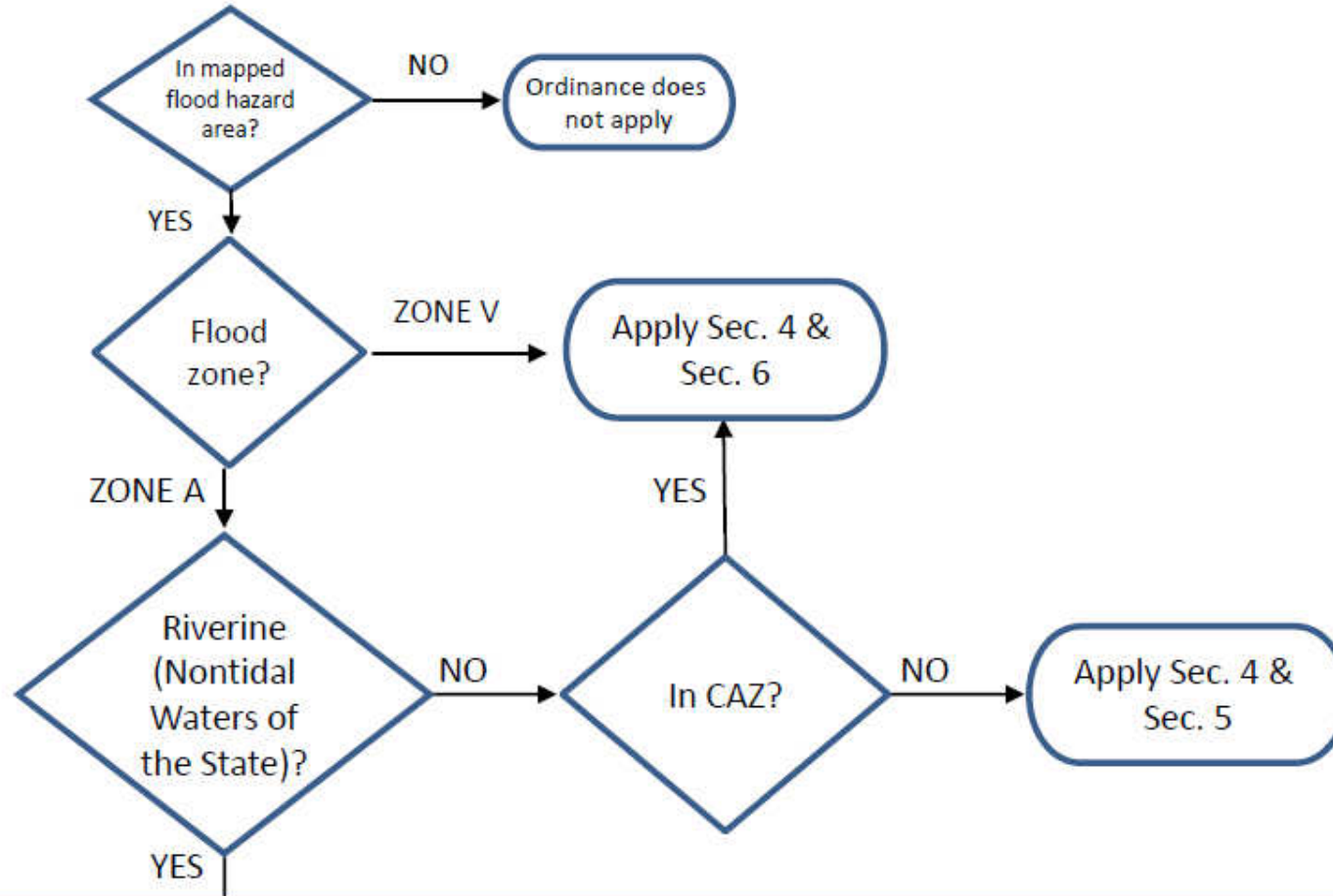
Flow Charts

- Tidal and riverine flooding
- Riverine flooding only
- V Zone and CAZ requirements and new construction
- Accessory structures
- Manufactured homes



Tidal and Riverine Flooding

Determining general applicability for communities that have only both tidal flooding and riverine flooding (Nontidal Waters of the State), with and without floodways, and with and without BFEs. Also see Chart B (Riverine Only) and Chart C (V Zone & CAZ).



Introduction to New Model

- Removes some recommendations
 - Requirement for variance for fill in excess of 600 cy
 - Requirement for variance for accessory structures larger than 600 sf
 - The “cumulative substantial improvement” language (tracking requirement)



Introduction to New Model

- Modifies some recommendations
 - Agreement to Submit an Elevation Certificate
 - Combined the Declaration of Land Restriction and Nonconversion Agreement
 - How enclosures below elevated buildings and accessory structures are handled (see table)



<p>Previous Model Ordinance →</p>	<p><300 sq ft: NCA¹ - not recorded on deed</p>	<p>300-600 sq ft: DLR² – recorded on deed</p>	<p>>600 sq ft: By variance, DLR – recorded on deed</p>
<p>New Model Ordinance →</p>	<p style="text-align: center;">DLR(NCA)³ – recorded for:</p> <ul style="list-style-type: none"> ▪ Enclosures below elevated buildings (parking, storage, access) ▪ Crawl/underfloor spaces more than 4 ft in height ▪ Accessory structures 300 sq ft and larger 		



New Provisions that Exceed NFIP Minimums

- Additional foot of freeboard (2 ft)
- Critical facilities
- Fill
- Compensatory storage in nontidal water





New Provisions that Exceed NFIP Minimums

- Two submissions of Elevation Certificates
- Accessory structure size/value
- “V Zone Design Certificate”
- Coastal A Zones (CAZ)/Limit of Moderate Wave Action (LiMWA)



Freeboard

- Factor of safety above Base Flood
- Can assist with errors during construction process (ie. Structure built too low)
- Lower flood insurance premiums
- Additional CRS credit (2 feet = 200 points)



Freeboard

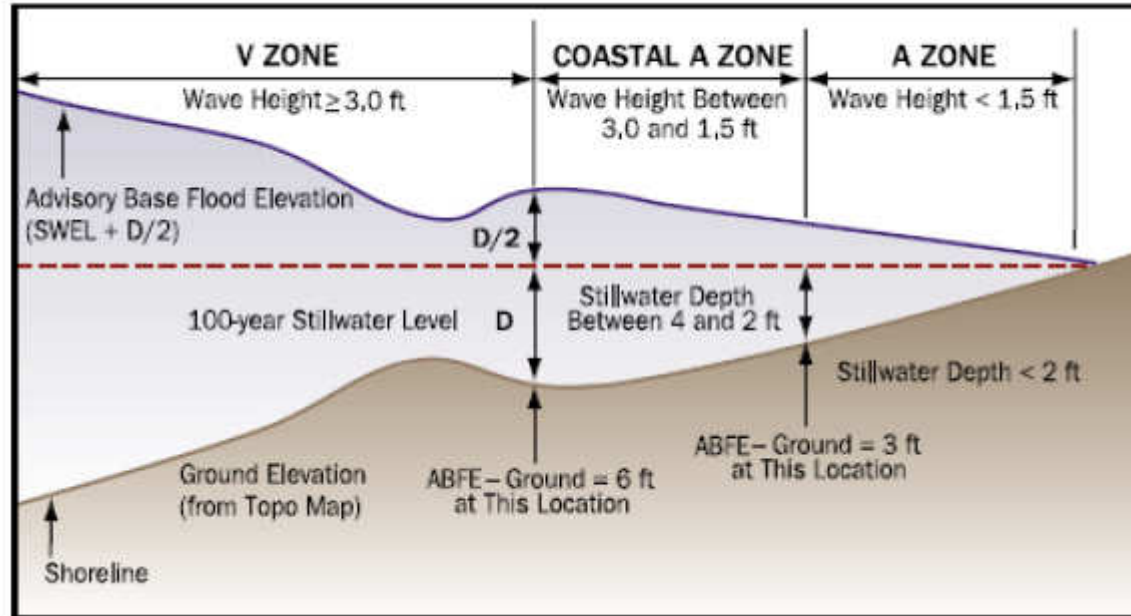
- Maryland Commission on Climate Change recommended 2 foot freeboard in tidal areas (2007?)



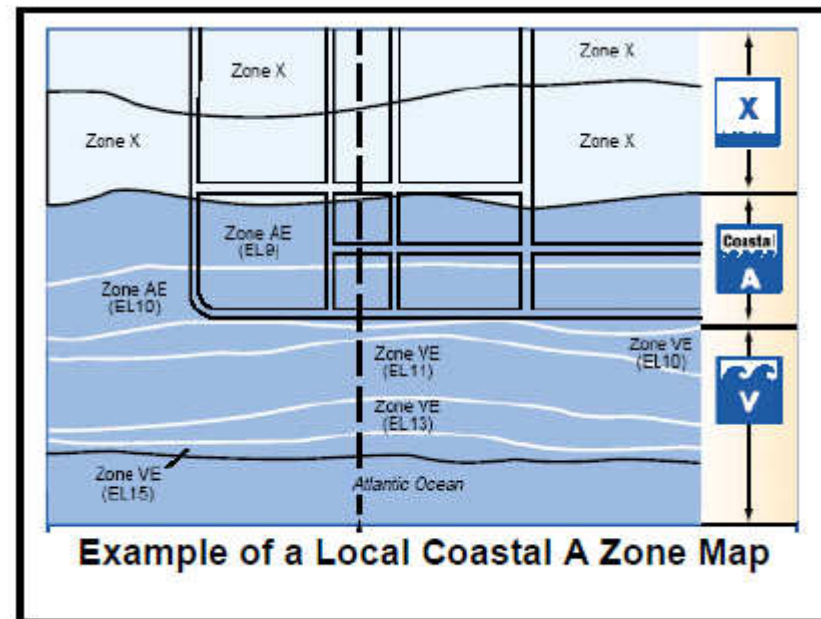
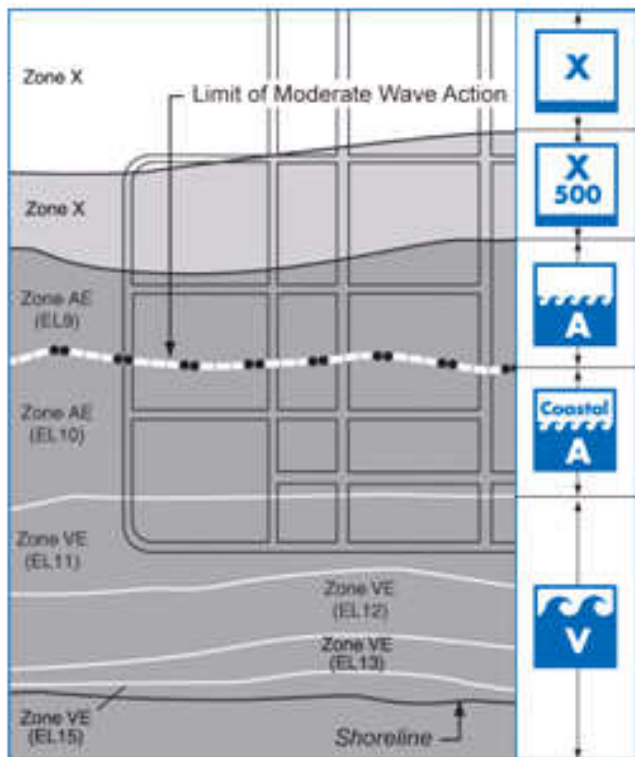
Coastal A Zones

- V Zone standards (some exceptions)
- Wave heights between 1.5 to 3 feet
- FEMA to include in coastal studies after October 1, 2008
 - New coastal study nearly complete for MD
- Referenced in ASCE 7, ASCE 24 and 2009 ICC codes

Coastal A Zones



Coastal A Zones





Community Rating System

- Resource Version identifies CRS Activity 430 series (higher standards)
 - 200 points for 2 foot freeboard
 - Up to 650 points for CAZ
- MDE will request FEMA/ISO review to get estimate of uniform credits





Customize the Model Ordinance

- MDE will help community identify the applicable version of the model based on flood zones on new FIRMs
- Fill in placeholders [IN BRACKETS]
- MDE will provide the date of the first effective FIRM (used in several places)





Customize the Model Ordinance

- Fill in Date of FIS in Section 1.5
 - Provided by Letter of Final Determination (LFD)
- Fill in Accessory Structure size and cost limitations at Sec. 5.7 and Sec. 6.5



Customize the Model Ordinance

- Fill in Accessory Structure size and cost limitations at Sec. 5.7 and Sec. 6.5
- Certain provisions that exceed NFIP/State minimums may be modified to meet the minimums (refer to the Resource Version and Notes)

Customize the Model Ordinance

- MDE assistance:
 - Add other community-specific provisions from existing ordinance
 - Add cumulative substantial improvement/damage or “repetitive loss” requirement
 - Reference the Maryland Building Performance Code (especially Sec. 1612 and R322)

Delegation of authority to another jurisdiction

- Adopt equivalent ordinance
 - By reference?
 - Nonfloodprone?
- Execute interlocal agreement (Resolution of Delegation)
 - May need to be updated



Assistance from MDE

- Phone / email
- Response to written inquiries
- Review prior to adoption to assure modifications are acceptable
- Watch timing – FEMA has no flexibility if not adopted by FIRM effective date



Adoption Process

- Start early!
 - After preliminary maps/study come out
- LFD starts 6-month countdown
- Develop an ordinance that works for your community
- Coastal communities will go through this process again

Ordinance Review Checklist

- Know your ordinance!
- Review preliminary maps/study closely
 - New zones being added?
- What's been giving you a headache?
 - Multiple variances, elevating utilities, etc.?
- Understand what you have and what you need



Sources of Additional Information

- Training at EMI
- Websites
- FEMA telephone numbers





Emergency Management Institute (EMI)

- Located in Emmitsburg, MD
- Numerous courses available for FREE!
 - Floodplain Management, Retrofitting Floodprone Residential Bldgs., CRS, etc.
- <http://training.fema.gov/EMICourses/>
 - Complete FEMA Form 75-5 and forward to MEMA State Training Officer





Websites

- FEMA – www.fema.gov
- Maryland Department of the Environment
www.mde.state.md.us
www.mdfloodmaps.net
- FEMA Map Service Center
www.msc.fema.gov
- FEMA Mapping Information Platform
www.hazards.fema.gov
- NFIP – www.FloodSmart.gov





Phone Numbers

FEMA Publication Warehouse

1-800-480-2520

FEMA Map Information eXchange (FMIX)

1-877-FEMA-MAP (1-877-336-2627)





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Wetlands & Waterways Program

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