

Demystifying Floodplains:
What you need to know

SNEP Network 6/21/23

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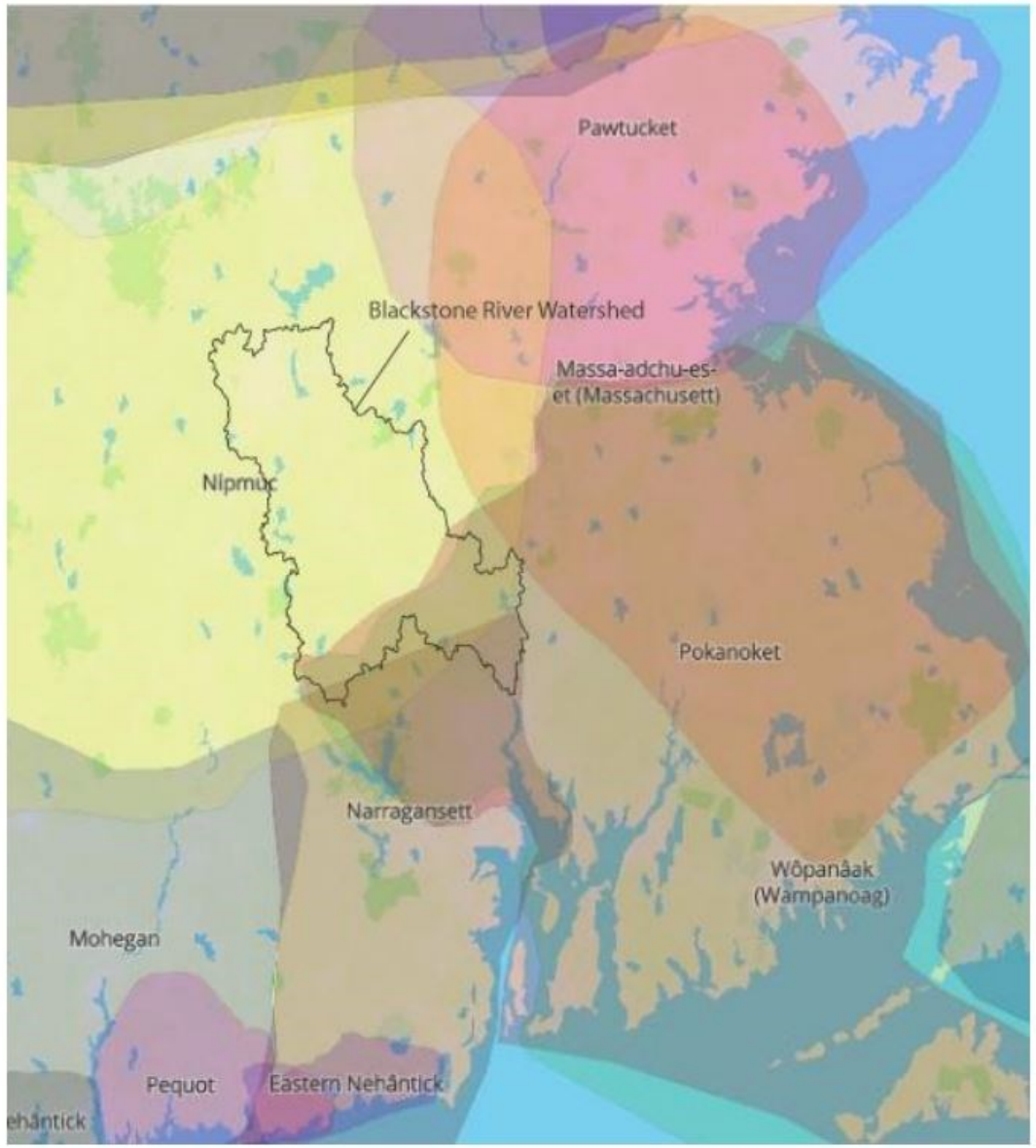


Needs Assessment Report Figure 6: Blackstone Region Indigenous Lands (Native Land Digital, 2021)

Indigenous Lands

- Nipmuc
- Pokanoket
- Wampanoag
- Narragansett

Centuries of careful land stewardship through hunting & gathering with close ties to the river

PAKACHOAG
WHERE THE RIVER BENDS

Linked!

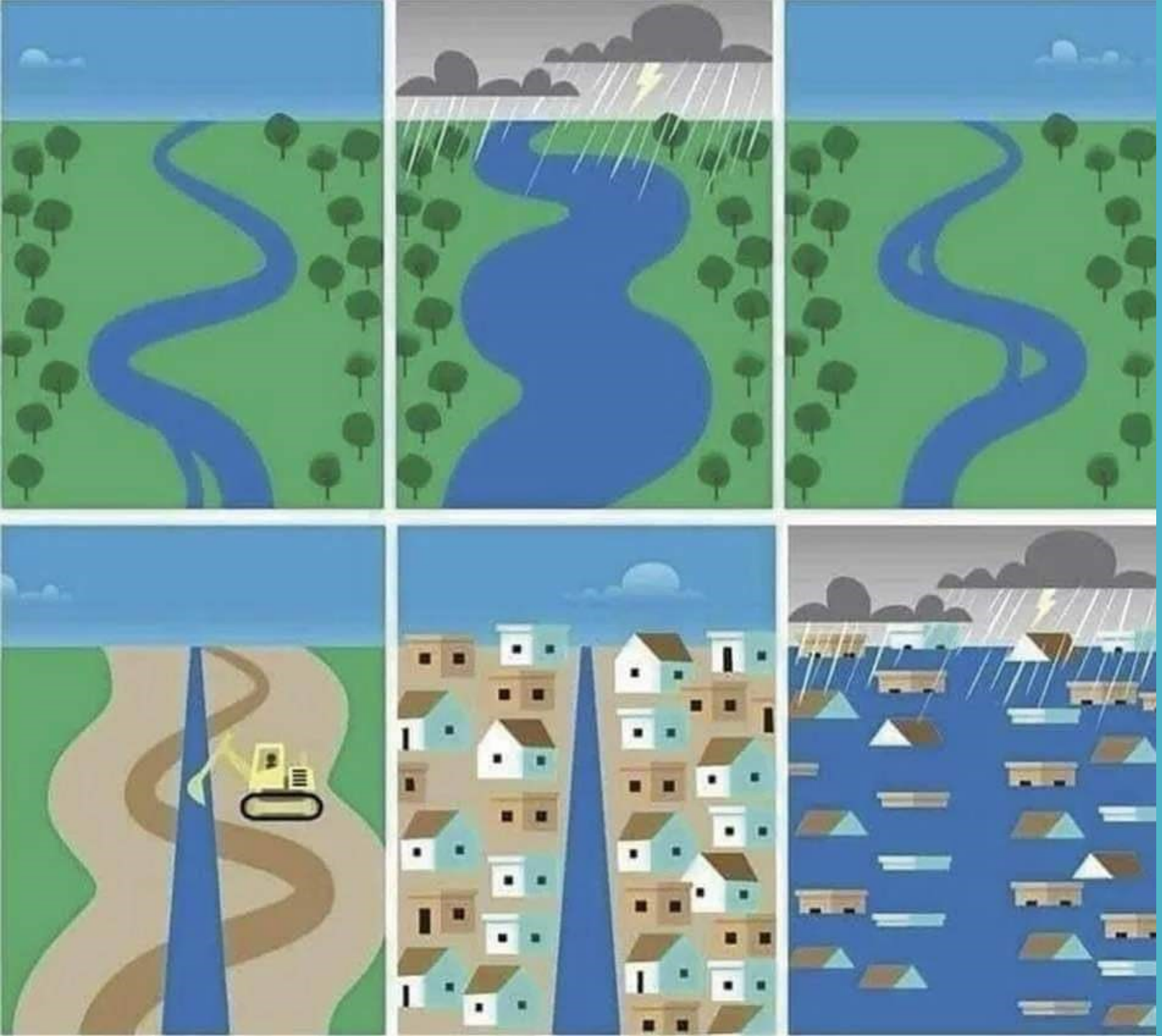


Objectives: we want to help you…

- Better understand "**floodplain management**" and related **municipal responsibilities**
- Make **smart floodplain management decisions** in your community
- Feel confident in **explaining the basics** to homeowners, businesses, or others dealing with floodplain issues
- Know **where to go next** for more **information and resources on going above and beyond** what's required



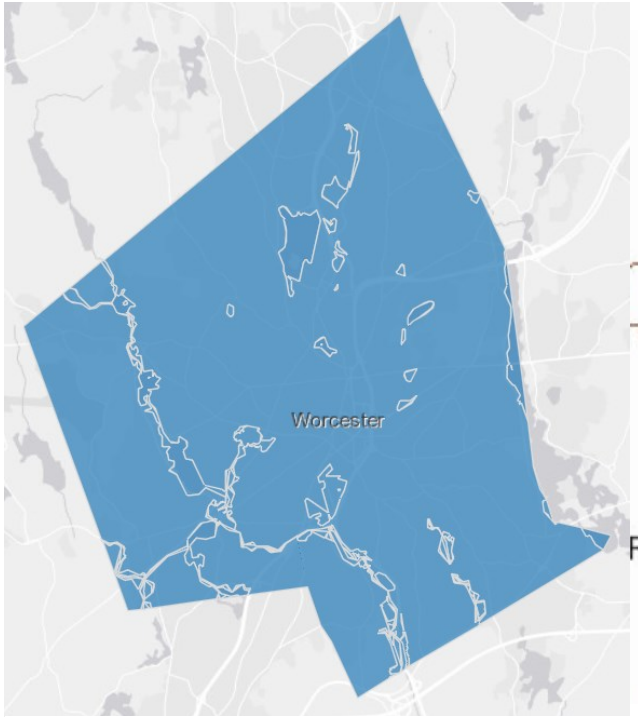
It's a floodplain… but it's dry?



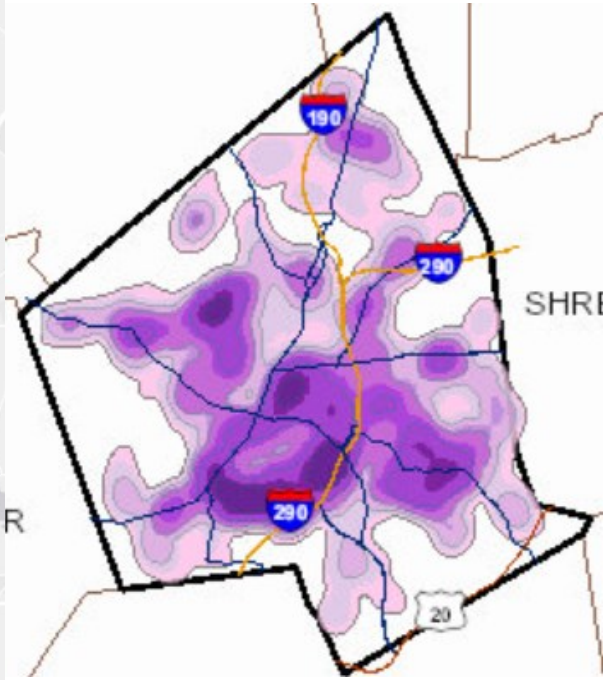
Here are five things everyone should know about floodplains…

(and no, they don’t currently)

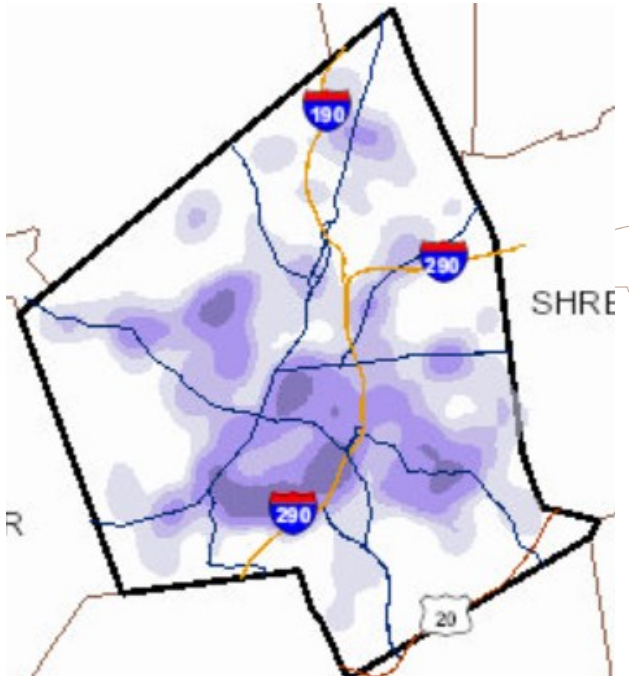
1a. What do we mean by "floodplain?"



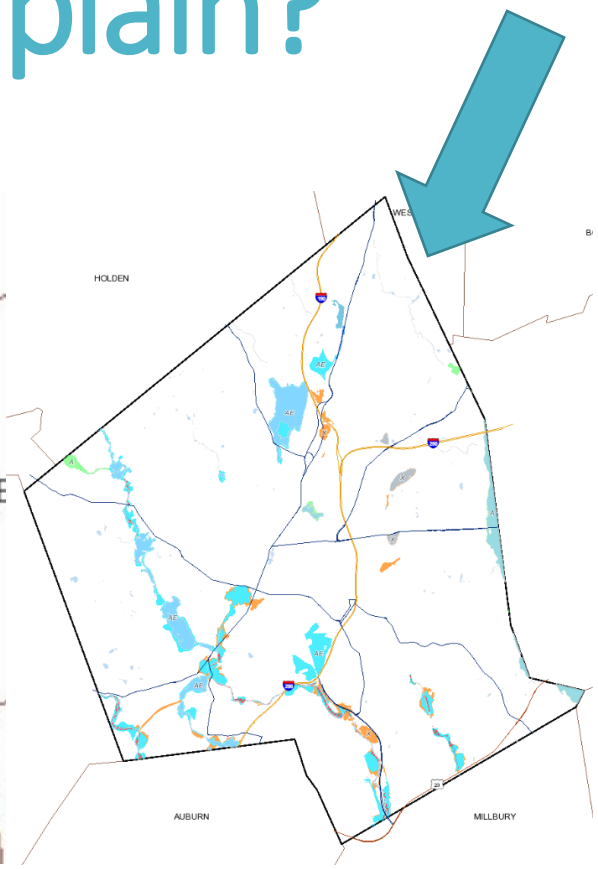
"Flood zones in Worcester"
(X is a zone, right?)



"Reported Flood Events"



"Projected Flood Events"



This one.
And usually, just the blue part.

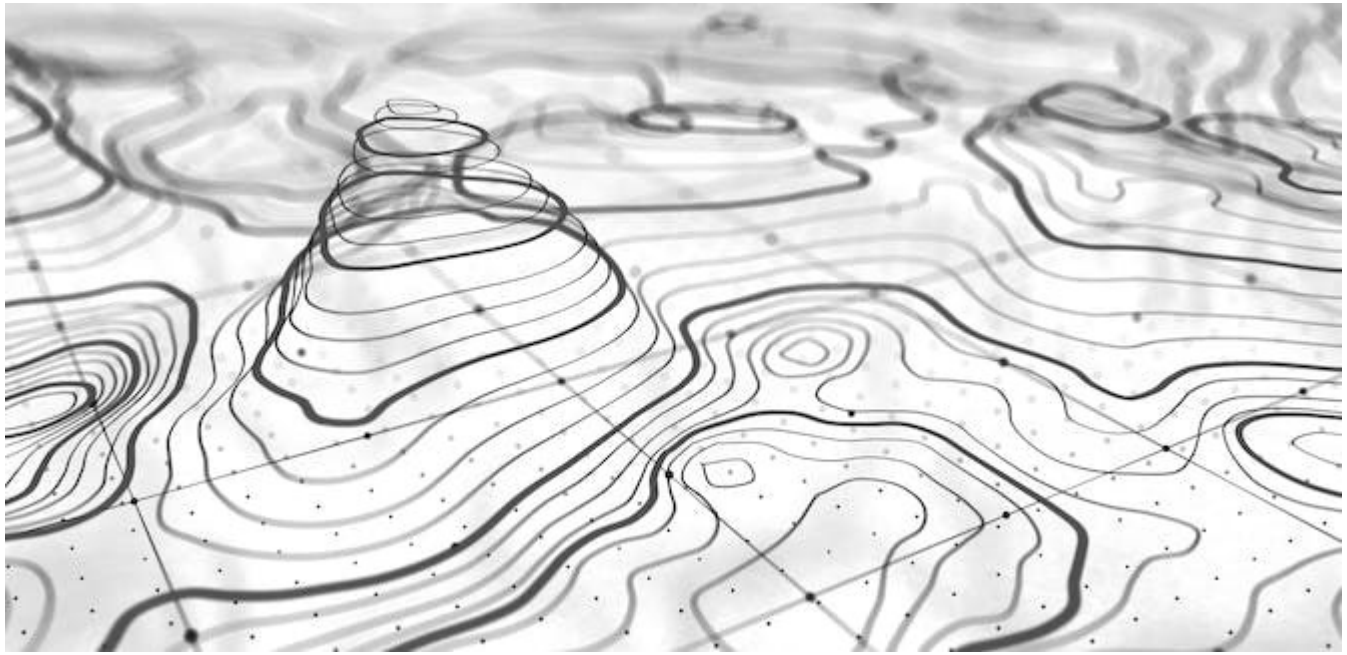
1a. What do we mean by "floodplain?"

- ✓ **Federally regulated** area, SFHA determined by FEMA

- ✓ "**100 year**"/Base Flood Elevation (**BFE**)
  - ✗ based on statistics from an extraordinarily limited and old dataset
  - ✗ statistically, there's ~30% chance of that happening during a 30-year mortgage
  - ✗ realistically, every 25 years or so, and becoming more frequent

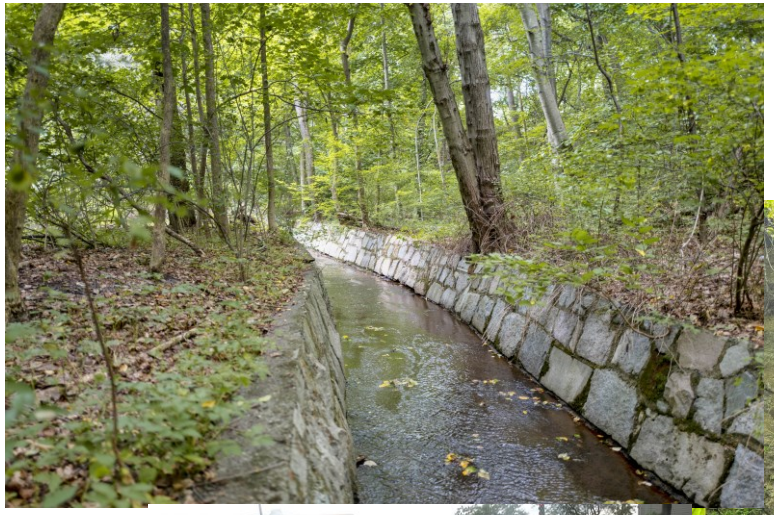


1b. Floodplains are based on **elevations**



(**not** area, **not** proximity to water,
not because the federal govt says so)

1b. Floodplains are based on **elevations (+impact)**







They're also based on how we've **impacted** our watersheds

- waterway channelization
- low-capacity stormwater pipes
- undersized culverts
- combinations of these



https://msc.fema.gov/portal/home

FEMA

Navigation

Search

- MSC Home
- MSC Search by Address
- MSC Search All Products
- MSC Products and Tools
  - Hazus
  - LOMC Batch Files
  - Product Availability
- MSC Frequently Asked Questions (FAQs)

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

Search

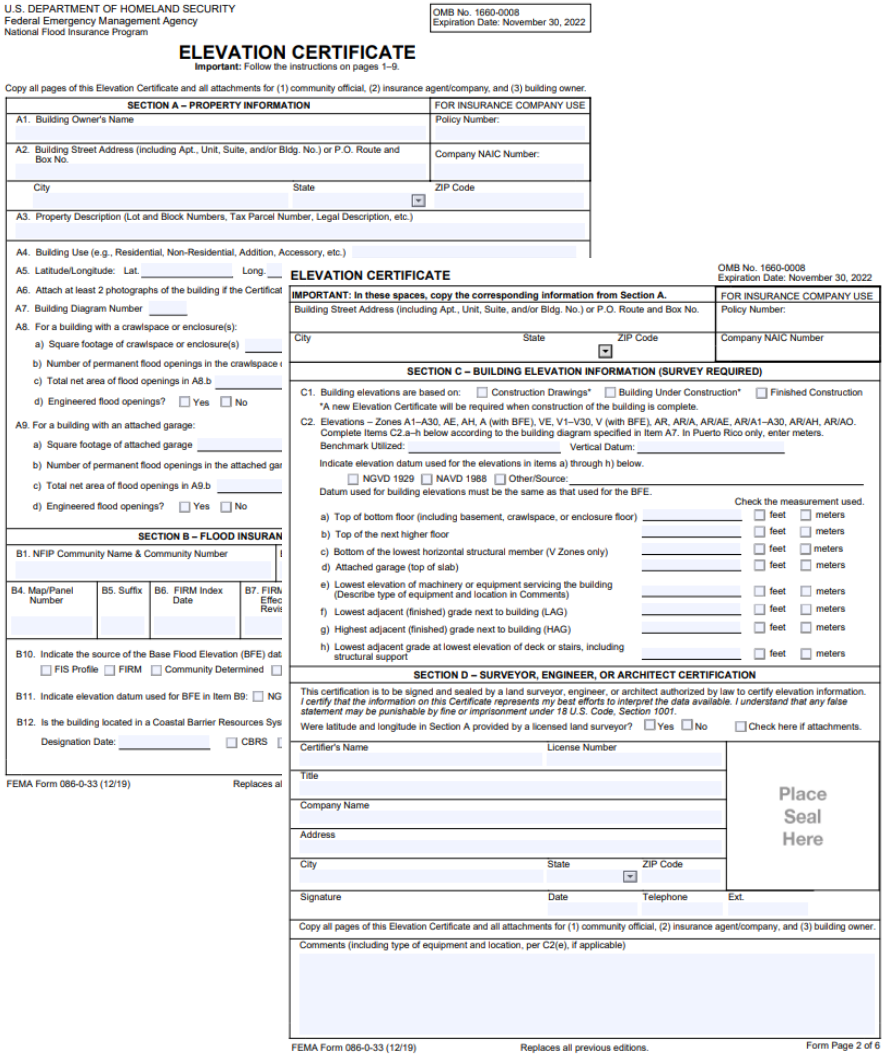


Looking for more than just a current flood map?

Visit **Search All Products** to access the full range of flood risk products for your community.


T
389.2
384.9
S
Zone AE
P
Zone AE
363
374.0
362.5
TOWN OF
GRAFTON
250306
355
349.5
350
346
N
0.2-PERCENT-ANNUAL-CHANCE
FLOOD DISCHARGE
CONTAINED IN STRUCTURE
25027C0827E
eff. 7/4/2011
PIN
Approximate location based on user i
and does not represent an authoritat
property location
MAP PANELS
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available
Unmapped
NO SCREEN
Area of Minimal Flood Hazard Zone X
Effective LOMRs
Area of Undetermined Flood Hazard
OTHER AREAS
Otherwise Protected Area
Coastal Barrier Resource System Area
SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE)
Zone A, V, A99
With BFE or Depth
Regulatory Floodway Zone AE, AO, AH,
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard,
of 1% annual chance flood with ave
depth less than one foot or with dra
areas of less than one square mile
Future Conditions 1% Annual
Chance Flood Hazard Zone X
Area with Reduced Flood Risk due t
Levee. See Notes. Zone X
Area with Flood Risk due to Levee Zone D
OTHER FEATURES
20.2
17.5
Cross Sections with 1% Annual Chance
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall

2. What's an **elevation certificate?**



U.S. DEPARTMENT OF HOMELAND SECURITY
Federal Emergency Management Agency
National Flood Insurance Program

OMB No. 1660-0008
Expiration Date: November 30, 2022

ELEVATION CERTIFICATE
Important: Follow the instructions on pages 1–9.

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

SECTION A – PROPERTY INFORMATION | FOR INSURANCE COMPANY USE

A1. Building Owner's Name — Policy Number:

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. — Company NAIC Number:

City — State — ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.)

A5. Latitude/Longitude: Lat. ____ Long. ____

A6. Attach at least 2 photographs of the building if the Certificat

A7. Building Diagram Number ____

A8. For a building with a crawlspace or enclosure(s):
a) Square footage of crawlspace or enclosure(s)
b) Number of permanent flood openings in the crawlspace
c) Total net area of flood openings in A8.b
d) Engineered flood openings? ☐ Yes ☐ No

A9. For a building with an attached garage:
a) Square footage of attached garage
b) Number of permanent flood openings in the attached ga
c) Total net area of flood openings in A9.b
d) Engineered flood openings? ☐ Yes ☐ No

SECTION B – FLOOD INSURAN

B1. NFIP Community Name & Community Number

B4. Map/Panel Number	B5. Suffix	B6. FIRM Index Date	B7. FIRM Effec Revis

B10. Indicate the source of the Base Flood Elevation (BFE) dat
☐ FIS Profile ☐ FIRM ☐ Community Determined

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

B12. Is the building located in a Coastal Barrier Resources Sys
Designation Date: ____ ☐ CBRS

FEMA Form 086-0-33 (12/19) Replaces al

ELEVATION CERTIFICATE

OMB No. 1660-0008
Expiration Date: November 30, 2022

IMPORTANT: In these spaces, copy the corresponding information from Section A. | FOR INSURANCE COMPANY USE

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. — Policy Number:

City — State — ZIP Code — Company NAIC Number

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings* ☐ Building Under Construction* ☐ Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations – Zones A1–A30, AE, AH, A (with BFE), VE, V1–V30, V (with BFE), AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO. Complete Items C2.a–h below according to the building diagram specified in Item A7. In Puerto Rico only, enter meters.
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.

	Check the measurement used.
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	☐ feet ☐ meters
b) Top of the next higher floor	☐ feet ☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	☐ feet ☐ meters
d) Attached garage (top of slab)	☐ feet ☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	☐ feet ☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	☐ feet ☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	☐ feet ☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	☐ feet ☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. *I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.*

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

Certifier's Name — License Number

Title

Company Name

Address

City — State — ZIP Code

Place Seal Here

Signature — Date — Telephone — Ext.

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

Comments (including type of equipment and location, per C2(e), if applicable)

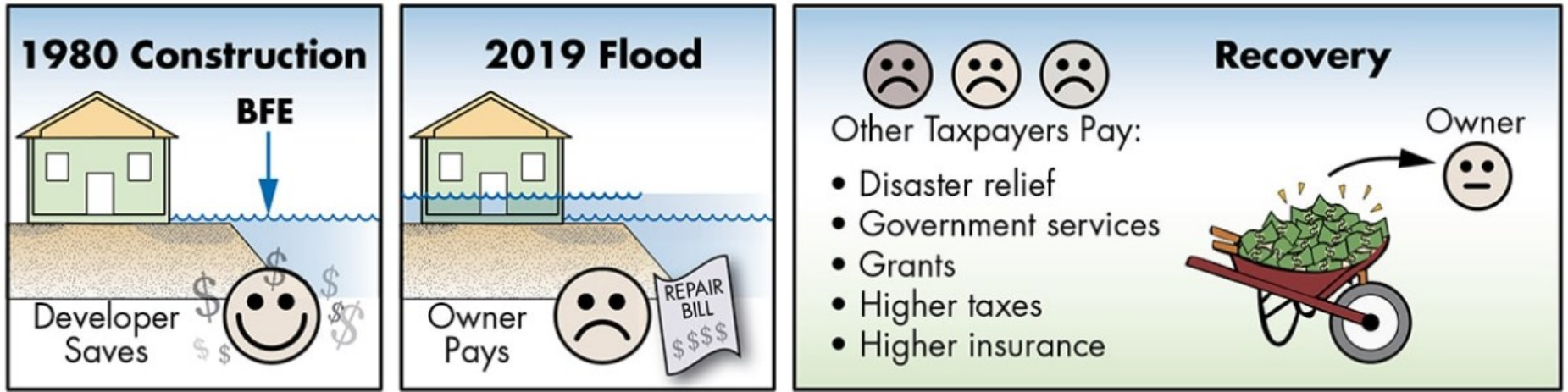
FEMA Form 086-0-33 (12/19) Replaces all previous editions. Form Page 2 of 6

- **Survey** of a building and surrounding land at specific points (doorways, openings, critical equipment) to the .01"
- Required to determine relation to the known floodplain **elevation**
- Says if a building is **in or out** of the floodplain (if BFE known)



2. What's an **elevation certificate?**

- **Homebuyers** should always request an EC before purchasing a home near a known mapped floodplain
- **Homeowners** can request an EC if they think their structure is outside of the floodplain (LOMA & LOMR)
- Municipal **floodplain coordinator** determines whether a EC is required or not
    - To determine whether building is or out
    - To determine **substantial improvement**



3. What's **substantial improvement?**
(Also called the "50% rule")

Reconstruction, rehabilitation, addition, or other improvement of a structure, including built in appliances, HVAC, roofing, electrical, labor costs (incl. value of volunteer work), etc. (see here)

Regardless of the reason

Structure only, not the land value

Value is based on fair market value. Typically uses tax assessment, but owners can provide their own appraisal, which must be accepted by the municipality.

Repairs meet or exceed 50% of the structure's value.

If yes…

You can't do the work

OR

You need to make the building meet current floodplain regulations (1' freeboard)

3. What's **substantial improvement?**

WHAT?
I can't improve my own home?!

The federal government doesn't want to allow **bad investments** with public payout for private, flood-prone homes.

SI is not triggered by alterations to "**historic structures**," provided that the alterations will not preclude the structure's continued designation.

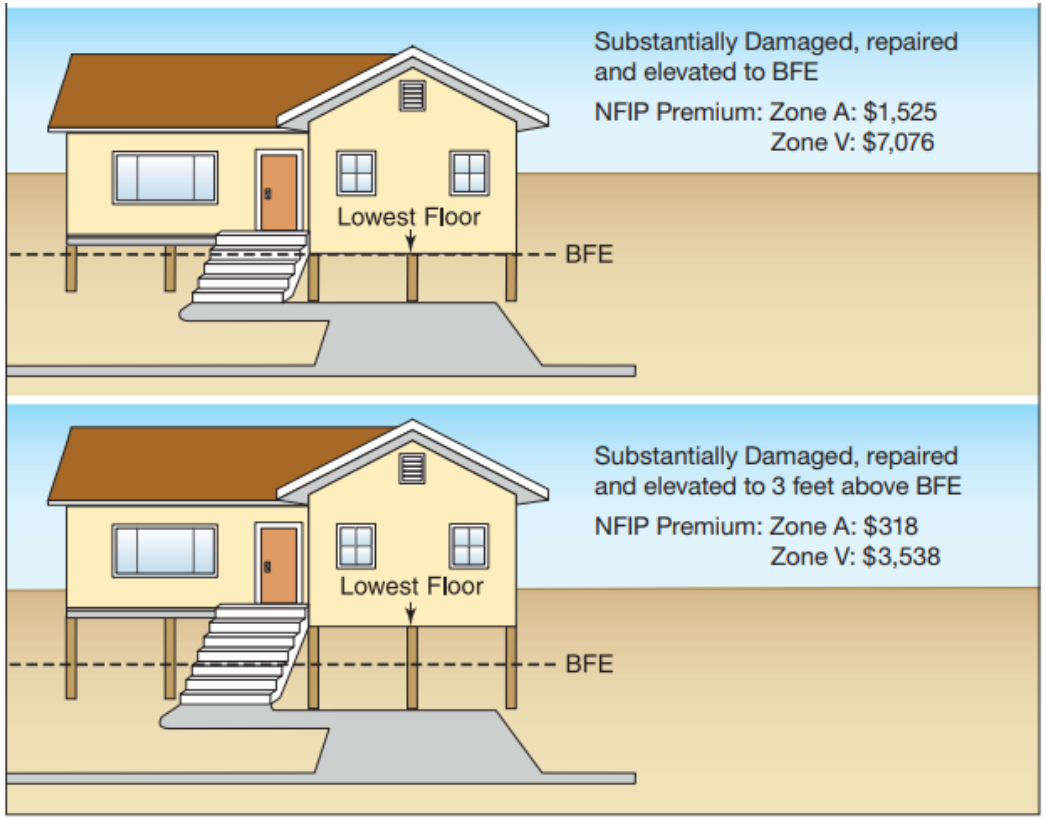
What about historic structures?

What if I'm required to fix violations?

SI is not triggered by improvements to correct **existing, documented health/safety/sanitary violations** (minimum necessary to ensure safe living conditions)

FAQ on Substantial Improvement

fema.gov/sites/default/files/2020-07/fema_p213_08232018.pdf





Answers to Questions About Substantially Improved/ Substantially Damaged Buildings

FEMA 213 / *August* 2018

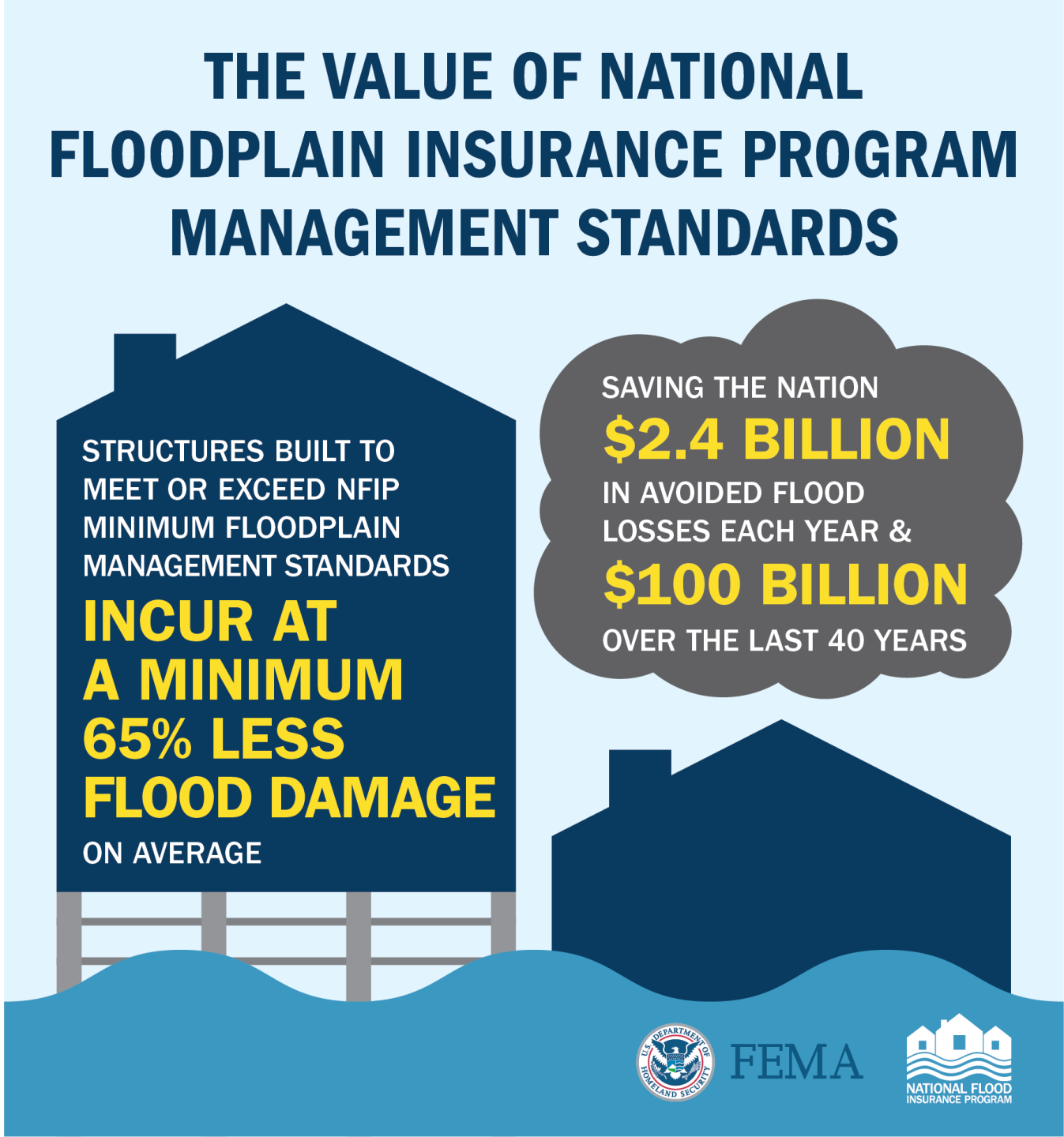
FEMA

4. Basic **land-water** interaction

- Water needs a place to go. If you remove its ability to infiltrate, it will find a new place to go. So be intentional, create a place or it'll find its own way.
- Plan for more than the 1-year storm in a construction project – that happens too often & TSBs will be overwhelmed.
- Planners and permitting authorities can ask for more! Stormwater standards ***require*** true consideration of LID.



It's federal.
But also state.
And maybe local.



5. (MA) What's **compensatory storage?**

Defined by 310 CMR 10.57(4)(a)1
(MA Wetlands Protection Act)

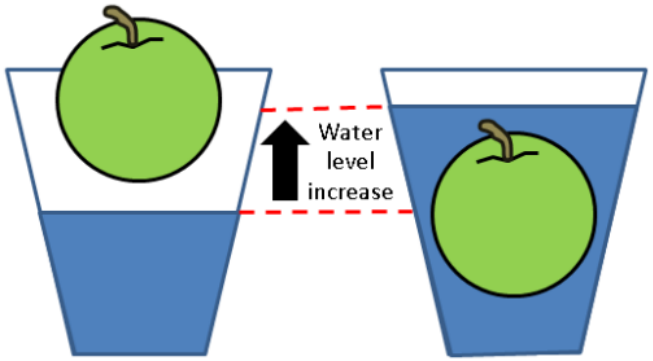


Figure 1 above shows how water levels raise when displaced by a solid object.

If you add **fill** (building, dirt, footings…), you have to add ***new*** floodplain ***at every 1' elevation.***

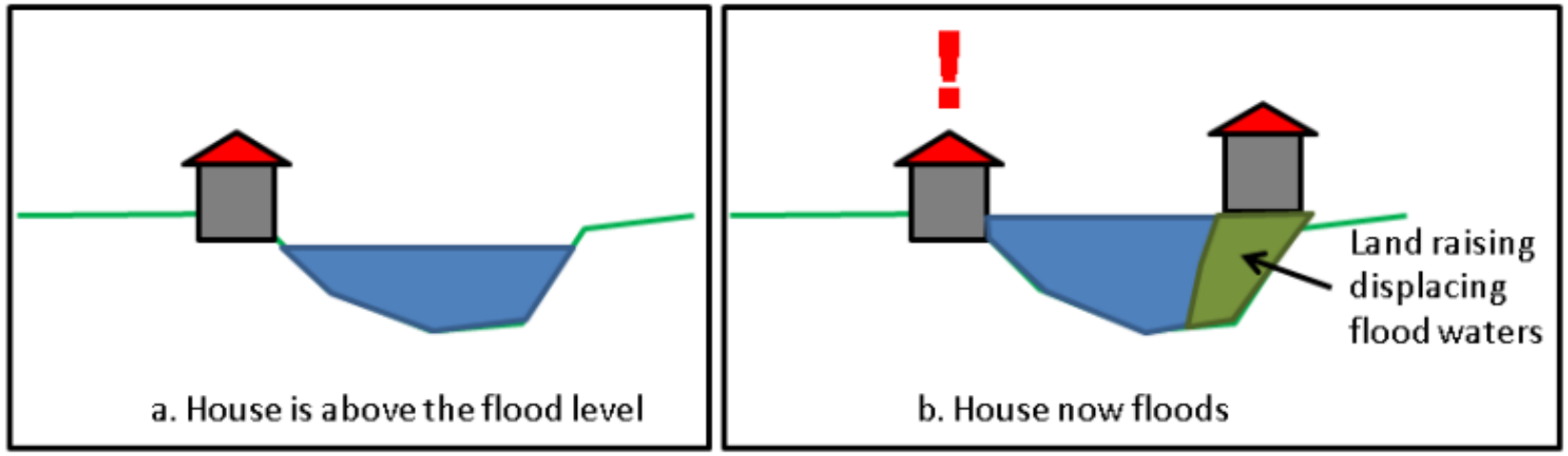
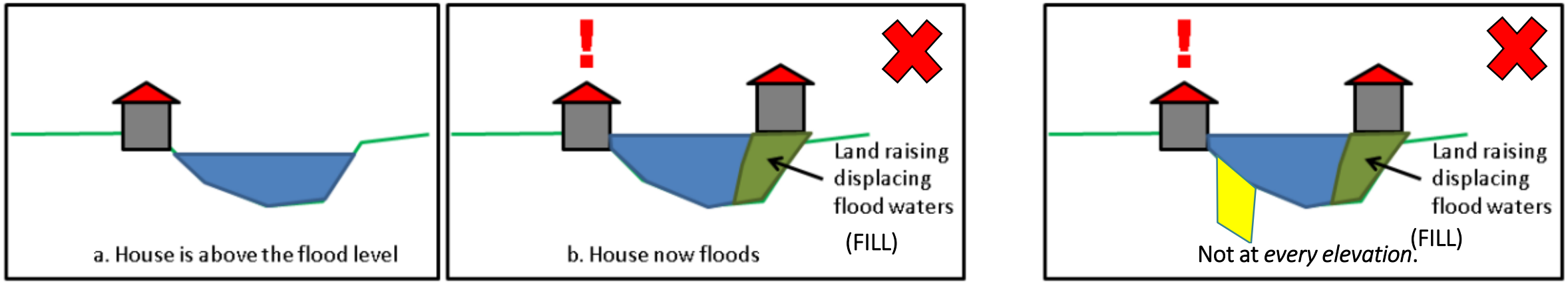


Figure 2 shows how development can displace flood waters and increase flood risk.

5. (MA) What's **compensatory storage?**



If the <u>entire</u> parcel is in the floodplain, there is no opportunity for compensatory storage and you can't build there.

5 Things To Know About Floodplains

1. **What is a floodplain**
   - FEMA 100 year, based on elevations & impact
2. **What is an elevation certificate**
   - determines in or out, homebuyers should get it
3. **What is substantial improvement**
   - can't invest =/> 50% of structure's value
4. **Basic land-water interaction**
   - water will find a way; give it good options
5. **Locally specific regulations**

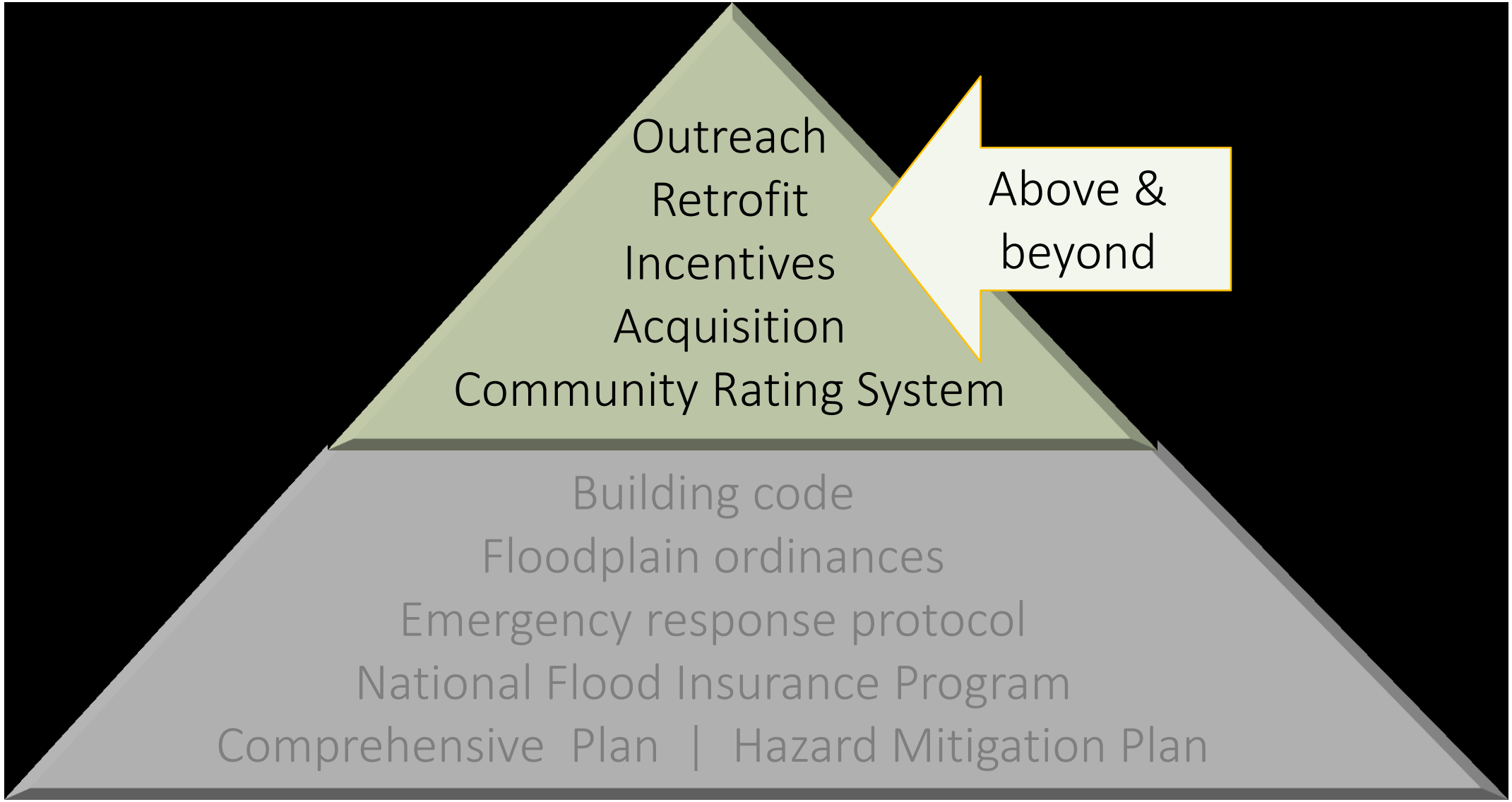


→ In MA/RI, **compensatory storage:** fill requires =/> cuts for new floodplain

Pause, breathe, questions?



Going above and beyond





National Flood Insurance Program

Community Rating System

A Local Official's Guide to
Saving Lives, Preventing Property Damage, and
Reducing the Cost of Flood Insurance

FEMA B 573 / 2018

FEMA



CRS for Community Resilience Green Guide

Produced by the Association of State Floodplain Managers and Coastal States Association

December 2017

Number of policies in these communities:
4,985

Estimated savings:
$501,570

City/Town	Class	Discount
Bristol	7	15%
Charlestown	6	20%
East Providence	8	10%
Middletown	7	15%
Narragansett	7	15%
New Shoreham	8	10%
Newport	7	15%
N. Kingstown	9	5%
Pawtucket	8	10%
Warwick	9	5%
Westerly	7	15%

Greening Your Community

Cost-effective LID solutions



Supporting LID in Your Community

How to Compare Local Land Use Regulations with Best Practice

know where it goes

take simple steps to reduce STORMWATER POLLUTION



Low Impact Development Site Planning and Design Techniques: A Municipal Self-Assessment

THE UNIVERSITY OF RHODE ISLAND COOPERATIVE EXTENSION

RI dot Driven to get you there

DEM RHODE ISLAND

Floodplain Resources

www.massfm.org

www.riflood.org



weather.gov/wrn/flood_infographics

Get together. Talk about it.

NFIP community? You need a coordinator. Anyone know theirs? They're officially responsible for this, but we get it. We don't have time. But this is a big one that we should really check on. Let's get folks together.

- What questions do you get from residents?
- What are your local regulations?
- Are you CRS community? Can you do more?
- What resources do you need? What questions do you have?
- Have you ever met your state floodplain coordinator? (MA: Joy Duperault; RI: Melinda Hopkins)





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