

# New York State Department of Environmental Conservation

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# Floods and Flood Forces

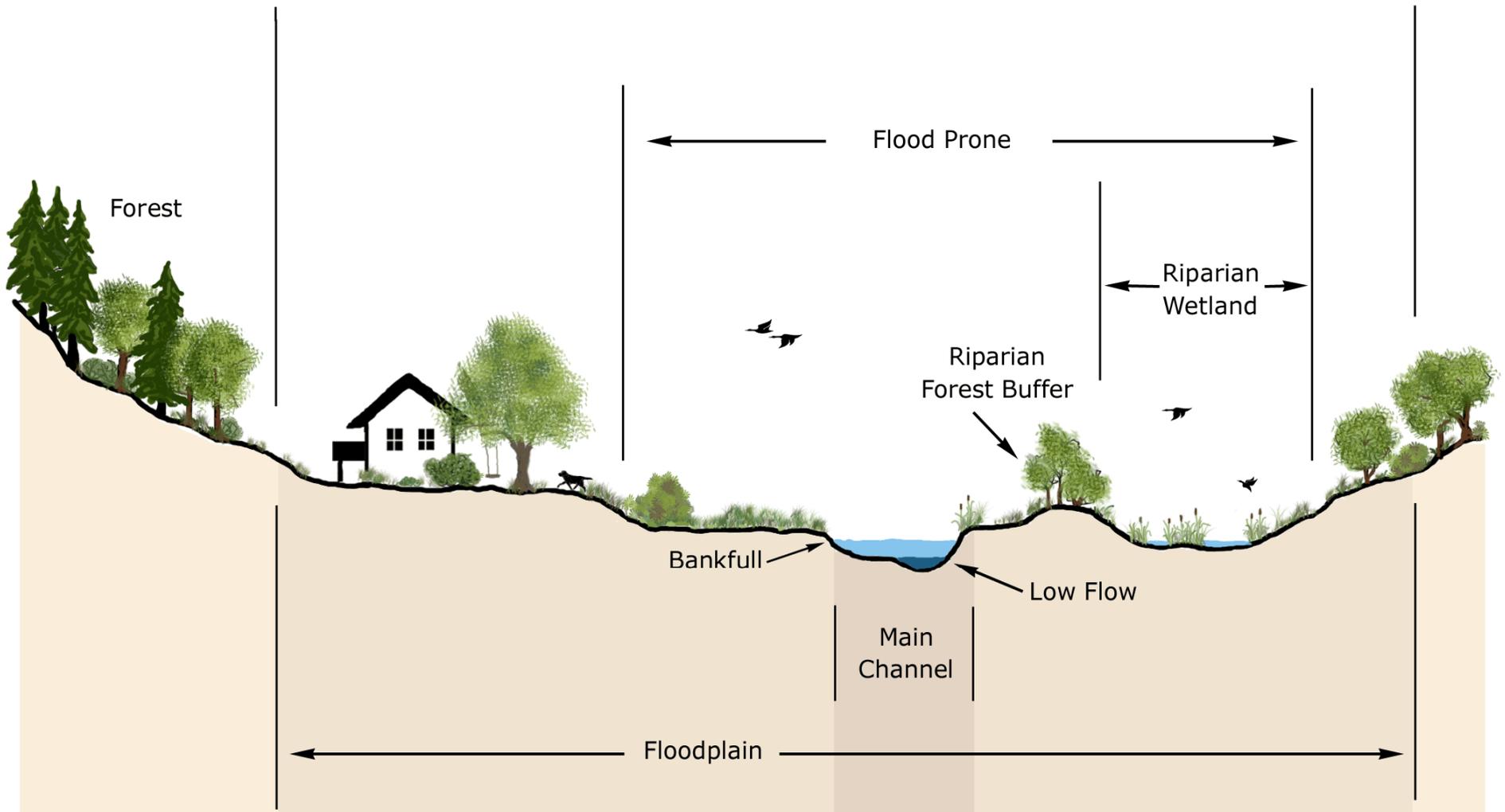


# Floods are the Nation's Most Common Disaster

- 80% of all Presidentially Declared Disasters involve flooding - \$5 Billion in 2010
- Sandy will be one of the most expensive flood disaster ever
- Flooding is one disaster that can be mapped
- Floods are Acts of God; Flood Damages are an Act of Man: Gilbert White



# STREAM CHANNEL



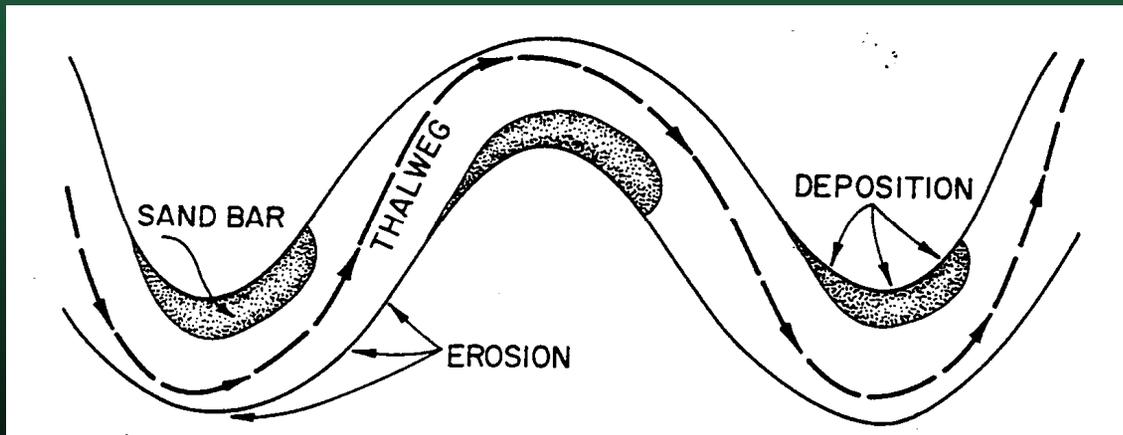
# WHAT DO STREAMS DO?

- **Collect water from the watershed**
- **Convey varying amounts of water**
- **Dissipate energy**
- **Transport and redistribute sediment**
- **Seek dynamic equilibrium**
- **Change in response to changing conditions**



# Riverine Morphology

- Rivers naturally meander.
- Cut away banks on outside bends; Deposit materials on inside bends
- They carry silt, sand, cobble, etc. and constantly move materials downstream.



# Streams are shaped by:



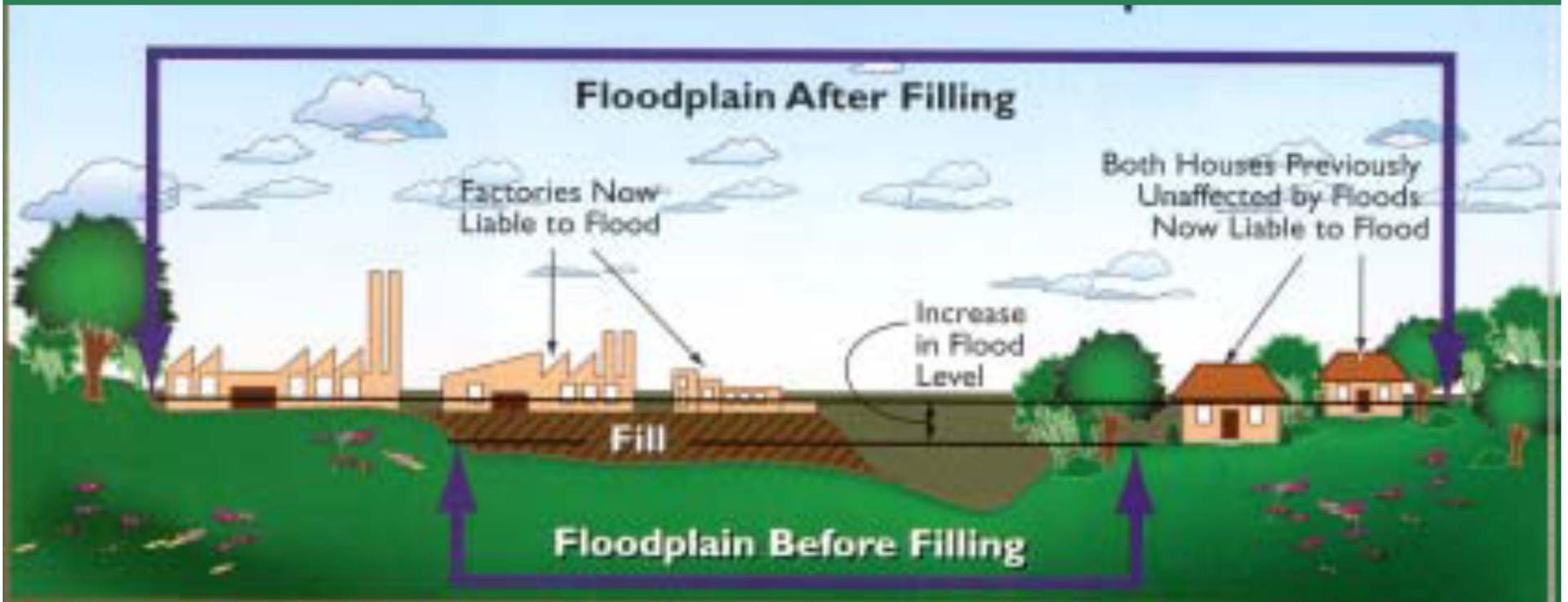
- Water volume
- Slope
- Soil type, rock, plants, wood
- Landscape topography (the land is a “container”)



# Streams re-adjust to disturbance, often in unanticipated ways



# Fill Can Increase Flood Heights and Stream Velocities



# Why Floods Occur

- Natural process. Stream flows vary and streams occasionally overflow.
- Natural stream banks contain about a two-year flood event (50% chance/year).
- Development accelerates runoff.
- Extreme precipitation events are increasing.



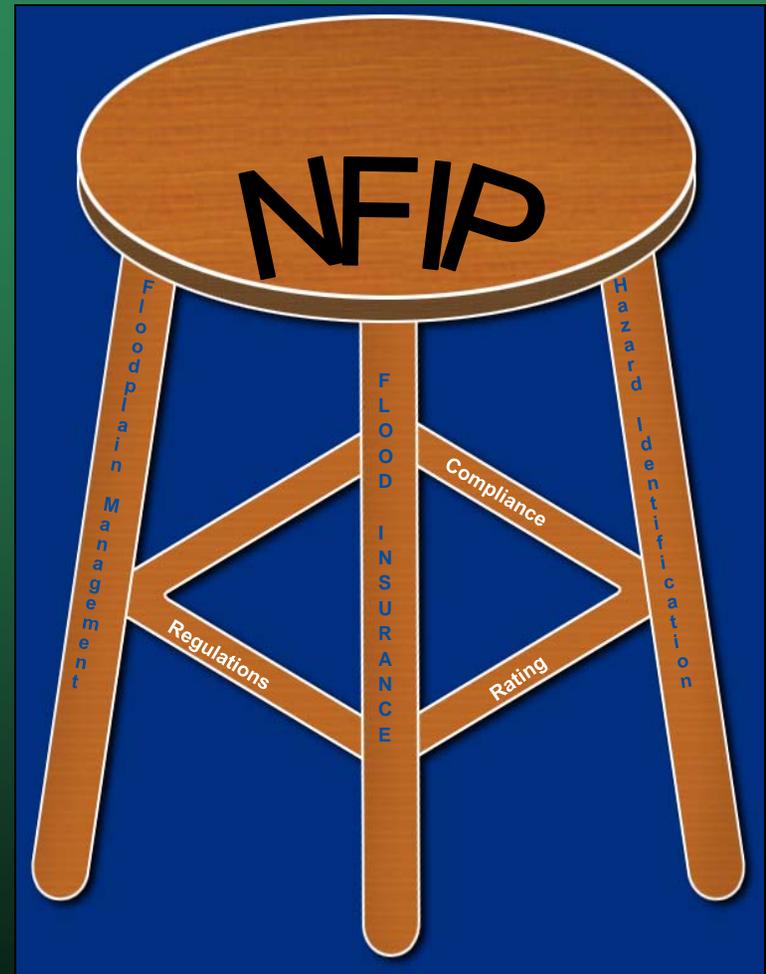
# The “100-Year” Flood

- 1% chance of being equaled or exceeded each year.
- 26% chance of occurring in a 30-yr period
- 63% chance of occurring in a 100-yr period
- Same Probability Every Year
- Chance of Fire is under 5% over 30 years
- Chance of ‘500-Year Flood’ is 6% over 30 years



# Floodplain Management and the NFIP's 3-Legged Stool

- The NFIP balances three related program areas:
  - Flood Hazard Identification (mapping).
  - Floodplain Management (regulations such as building codes and zoning).
  - Flood Insurance (provision of flood insurance for property owners in participating communities).



# Standard NFIP Building Requirements

- The lowest enclosed area, including basement must be at or above the Base Flood Elevation *plus two feet (residential)*
- Non-residential buildings may be flood proofed in lieu of elevation
- **NO** development in the regulatory floodway that would raise flood elevations



# Standard NFIP Building Requirements: A Zone (No Base Flood Elevation)

- Where no Base Flood Elevation: Lowest floor at least 3' above highest adjacent grade
  - If have a BFE then use it
  - Developments over 5 acres or over 50 lots must provide a BFE



# Reducing Flood Damages

- Maintain Natural Floodplains and Wetlands
- Avoid Excessive Dredging
- Do not Leave Debris on Stream Banks
- As much as possible, connect streams to their floodplains
- Keep Stormwater On Site
- Build to Floodplain Design Standards
  - Build it Back
  - Build it Up
  - Avoid Building in Floodways



# Biggert-Waters Flood Insurance Reform Act of 2012

- Major Changes to Flood Insurance
- Goal is to Pay Down Program Debit and Phase Out Insurance Discounts that Do Not Cover Risk
- Older (pre-FIRM) Structures have been Discounted
- Newer (post-FIRM) Structures pay Actuarial Rates based on Lowest Floor and Flood Elevations

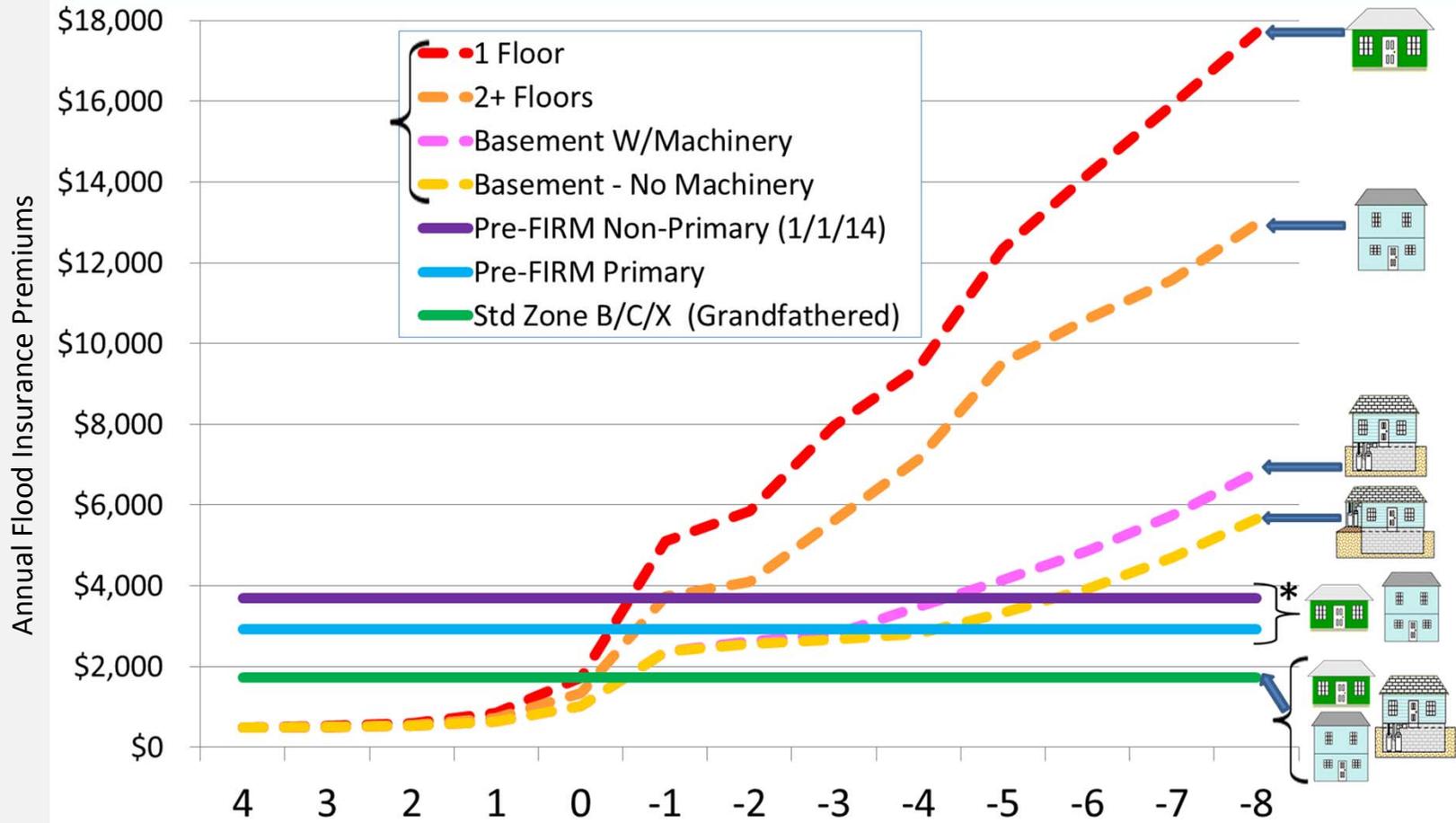


# BW-12 Changes

- Discounted Rates Phased Out:
  - Non-Primary Residences; Non-Residential Properties; Severe Repetitive Loss Properties
  - 25% Annual Increase until Actuarial
- Immediate Actuarial Rates for:
  - Sale or Purchase of Property; New or Lapsed Policy; Refused Mitigation Offer



# Elevation and Insurance Premiums



Rates for 200K Building/80K Contents coverage on 10/1/2013 (except as noted).  
 Basement Rates are a bit higher

\*Pre-FIRM

# What Can be Done?

- Floodplain Management is Key
  - Proper Design reduces Damages 75% for 100-Year Flood for Compliant Structure
  - Floodway Violations Increase Flood Elevations and Redirect Floodwaters
- Plan to Mitigate Older Structures
- Manage Upland Stormwater
  - Not part of NFIP but key for runoff controls

