Floodplain Natural Resources & Functions:

- Water Resources
  - Natural Flood and Erosion Control
  - Surface Water Quality Maintenance
  - Groundwater Recharge
- Biological Resources
  - Biological Productivity
  - Fish and Wildlife Habitats
- Societal Resources
  - Recreational Opportunities
  - Scientific Study and Outdoor Education
  - Harvest of Natural and Agricultural Products
  - Support Economic Base of Community

Oklahoma Water Resources Board

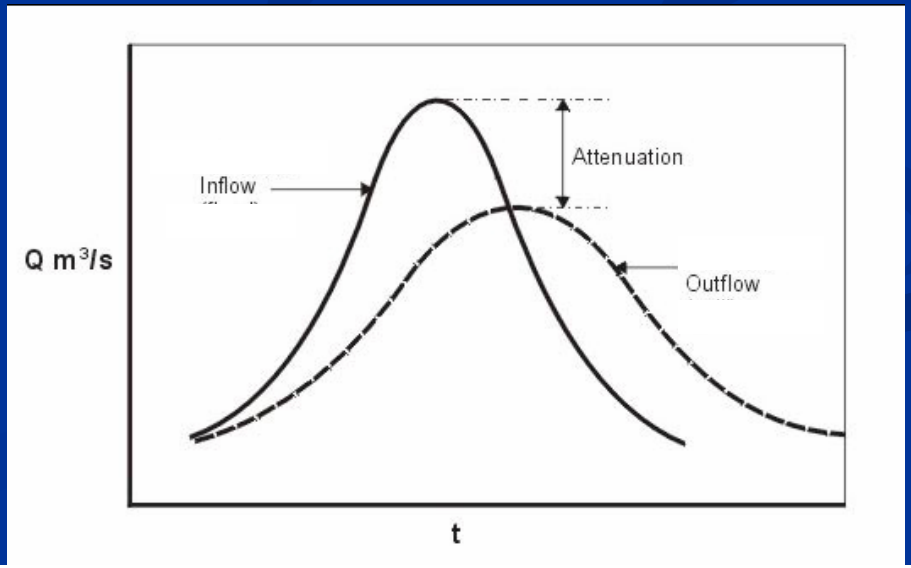
Natural Flood and Erosion Control:

- Provide flood storage and conveyance
- Dissipate energy of high flows
- Reduce flood velocities
- Reduce flood peaks
- Reduce erosion potential and impacts
- Stabilize soils

One acre of floodplain land flooded one foot deep holds 330,000 gallons of water.

Functioning floodplains provide natural attenuation.

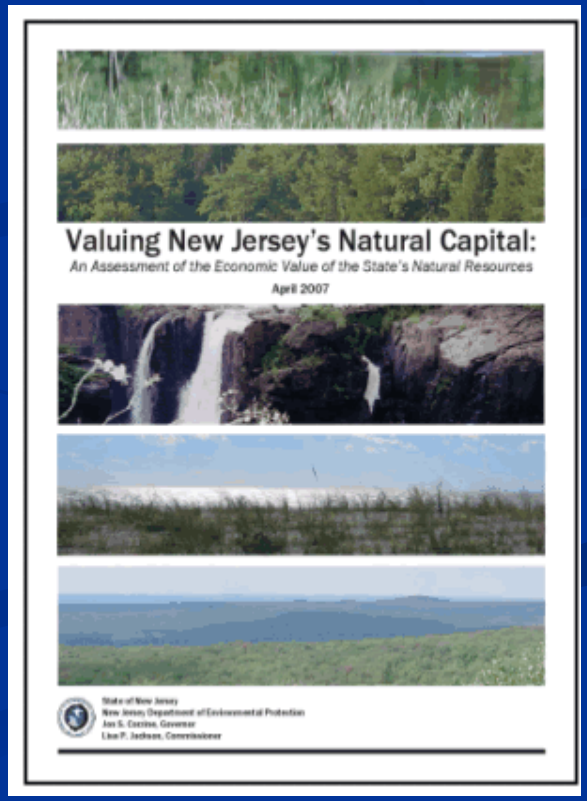
Natural Attenuation is the overall impact of the floodplain to change in the shape of the flood hydrograph (reducing the flood peak and increasing flood duration) due to a combination of storage and resistance.



"Valuing New Jersey's Natural Capital: An Assessment of the Economic Value of the State's Natural Resources", April 2007

Reported eco-service values per acre:
(goods and services only,
no ecotourism benefits)

Freshwater wetlands:	$393,000
Estuary/tidal bay:	$426,000
Beach/dune:	$1,405,000
Riparian corridor:	$117,000



❖It's time to think not just about reducing loss, but about stewarding resources.

- ❖ The beneficial use of the floodplain is our best protection against floods. The preservation of wetlands protects a natural sponge for floodwaters. The conservation of coastlines retains a natural barrier to hurricanes.

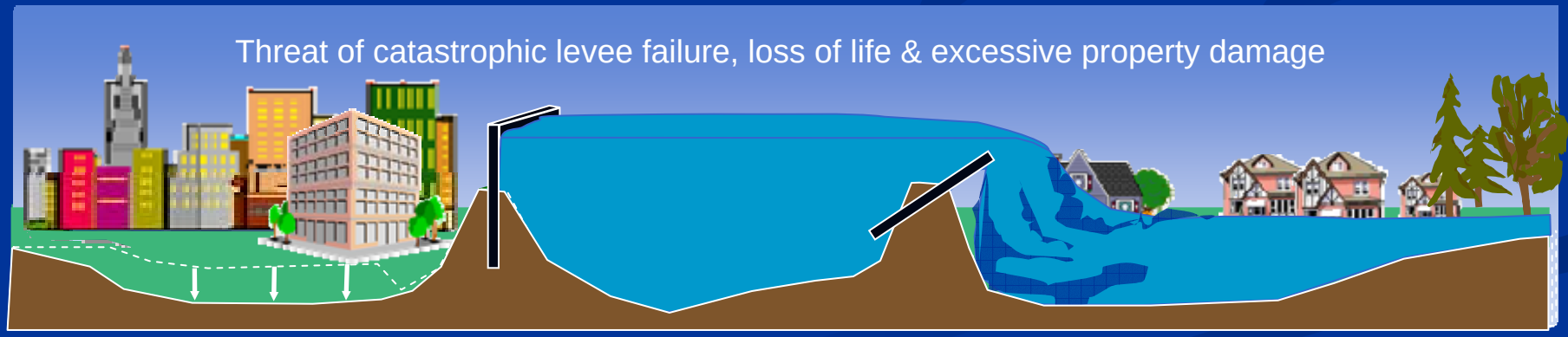
❖ Smart decisions about building — decisions that take the total, integrated impact on the floodplain into account — will keep people and property out of harm's way.

While flooding is a natural process that has many benefits, floods can wreak havoc on development in the floodplain.

Trenton, N.J. (Island Section) – April 2005
Picture by: John Jenks, USGS-NJ

Ever Increasing Unstainability

1. River variable, utilizes floodplain
2. Occupy floodplain
3. Land floods
4. Build levee
5. May even excavate floodplain to build levee
6. Decrease floodplain elevation
7. Cut off floodplain
8. Raise flood WSEL's
9. Decrease natural attenuation
10. Raise downstream flood levels
11. Decrease sediment supply to floodplain
12. Aggrade channel bed
13. Land subsidence in former floodplain
14. Increase flood WSEL
15. Eminent levee breach
16. Build levee higher
17. Develop former floodplain further
18. Raise flood WSEL higher
19. Raise downstream flood levels
20. Aggraded channel bed
21. Land subsides further
22. Increase flood risk
23. Higher Risk requires higher levees
24. Etc…



Source: Wildman, American Rivers

Proposed Considerations for Comparison Matrix

- Regulatory Floodplain
  - Definition
  - Allowable Development
  - Fill
- Floodway
  - Definition
  - Allowable Development
  - Fill

The regulatory floodplain may, or may not, correspond to the area needed for the watercourse or shoreline to maintain its natural biologic, geomorphic and hydrologic functions.

Nor is it an area that defines the limit of flood damage or losses.

S. Hillebrand. U.S. Fish & Wildlife Service Digital Library System http://images.fws.gov/

The Regulatory Floodplain is defined by the area inundated during the 1% probability flood event or base flood (otherwise known as the 100-year flood).

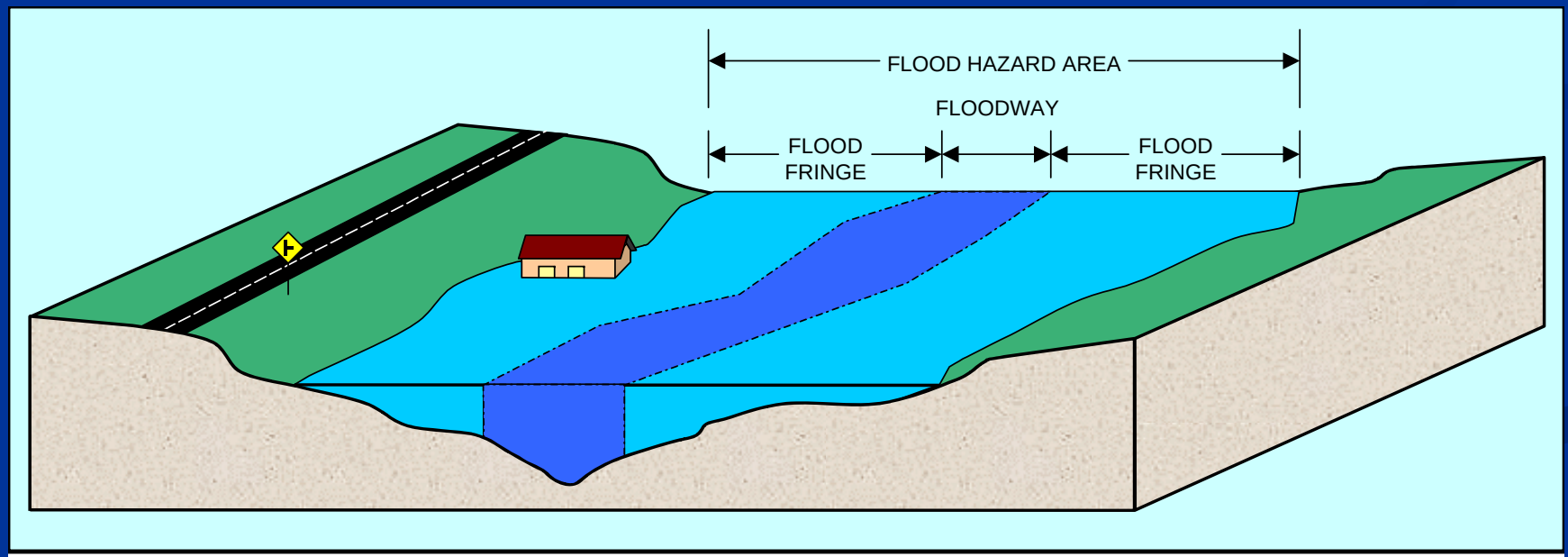


FIGURE A THE FLOOD HAZARD AREA IS COMPRISED OF THE FLOODWAY AND FLOOD FRINGE

The Regulatory Floodway is defined as the channel and portion of adjacent floodplain that must remain open to permit passage of the base flood without cumulatively increasing the water surface elevation more than a designated height.

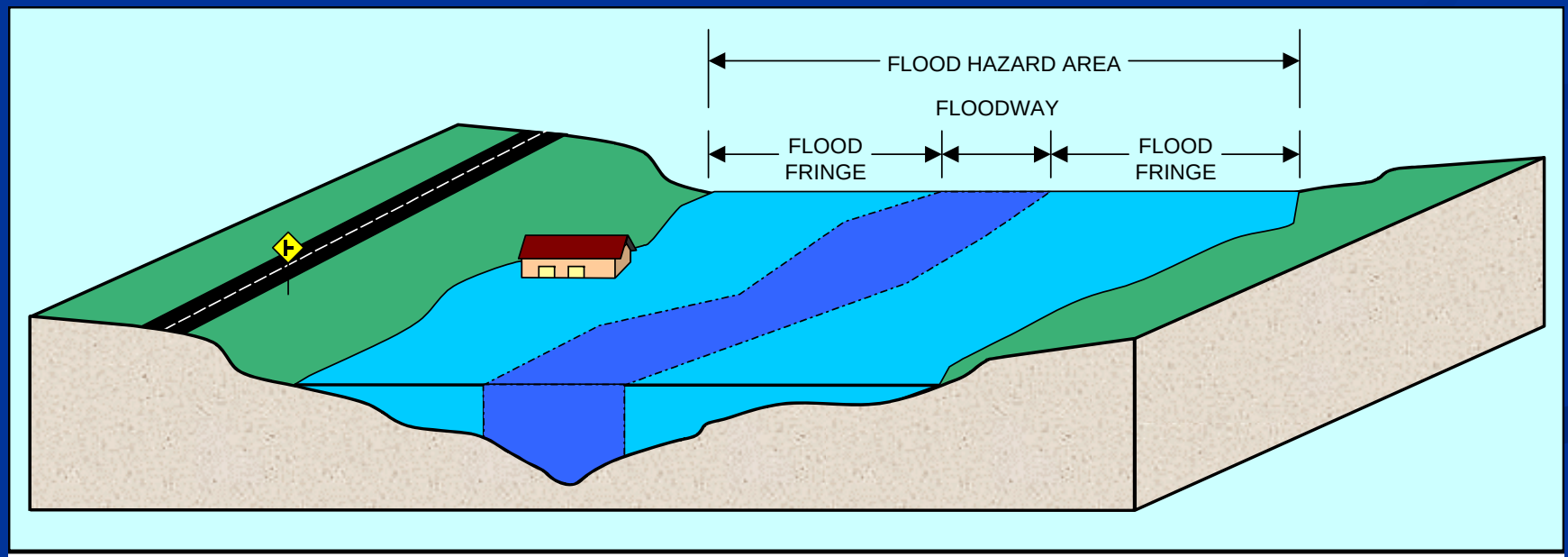
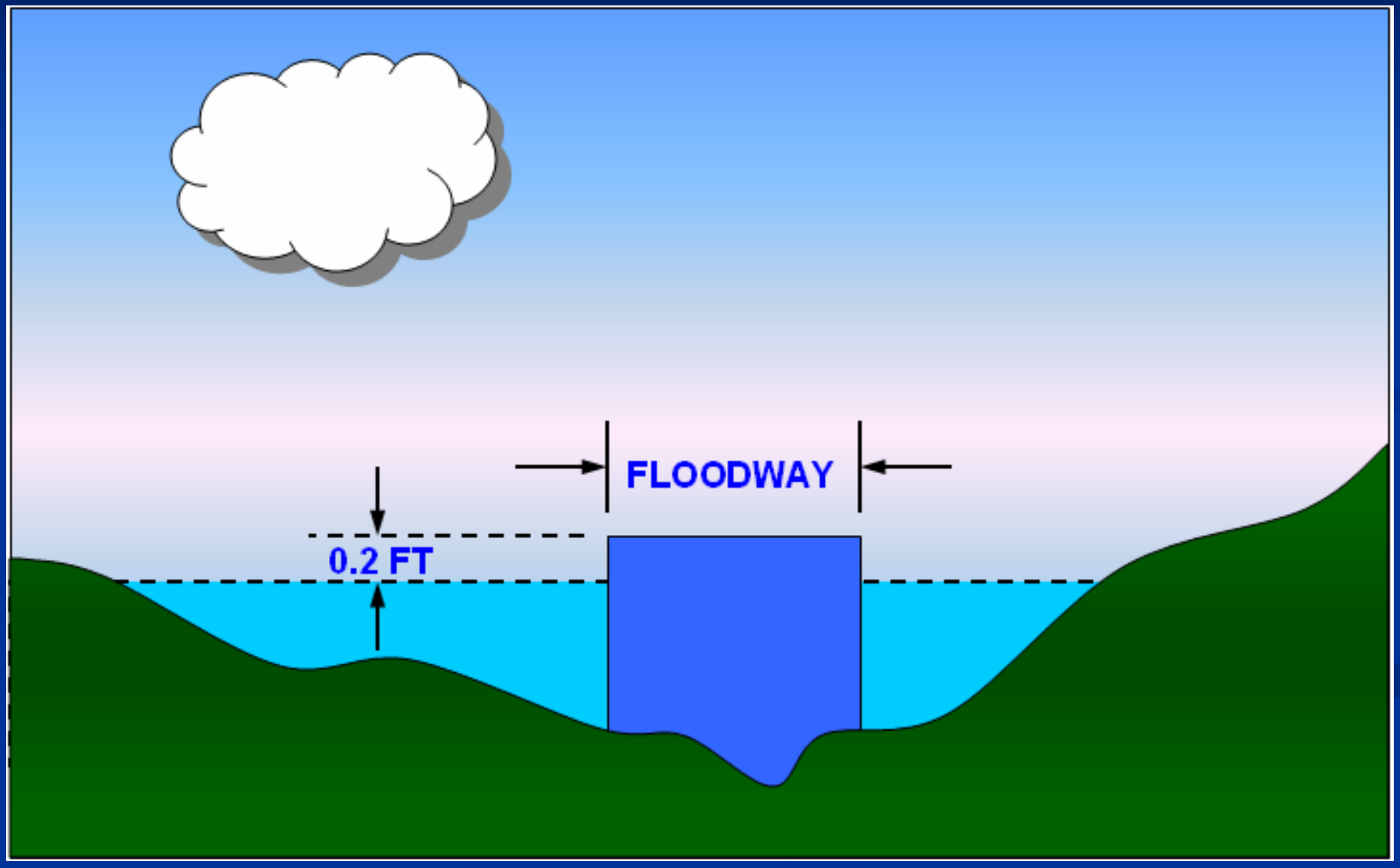


FIGURE A THE FLOOD HAZARD AREA IS COMPRISED OF THE FLOODWAY AND FLOOD FRINGE

Floodway **(NJ)**



Additional Proposed Considerations for Comparison Matrix

- Stream/riparian corridors and vegetation disturbance
- Standards for the lowest habitable floor of structures (freeboard)
- Venting of crawl spaces/ storage areas
- Substantial improvement to structures
- Coastal zone construction

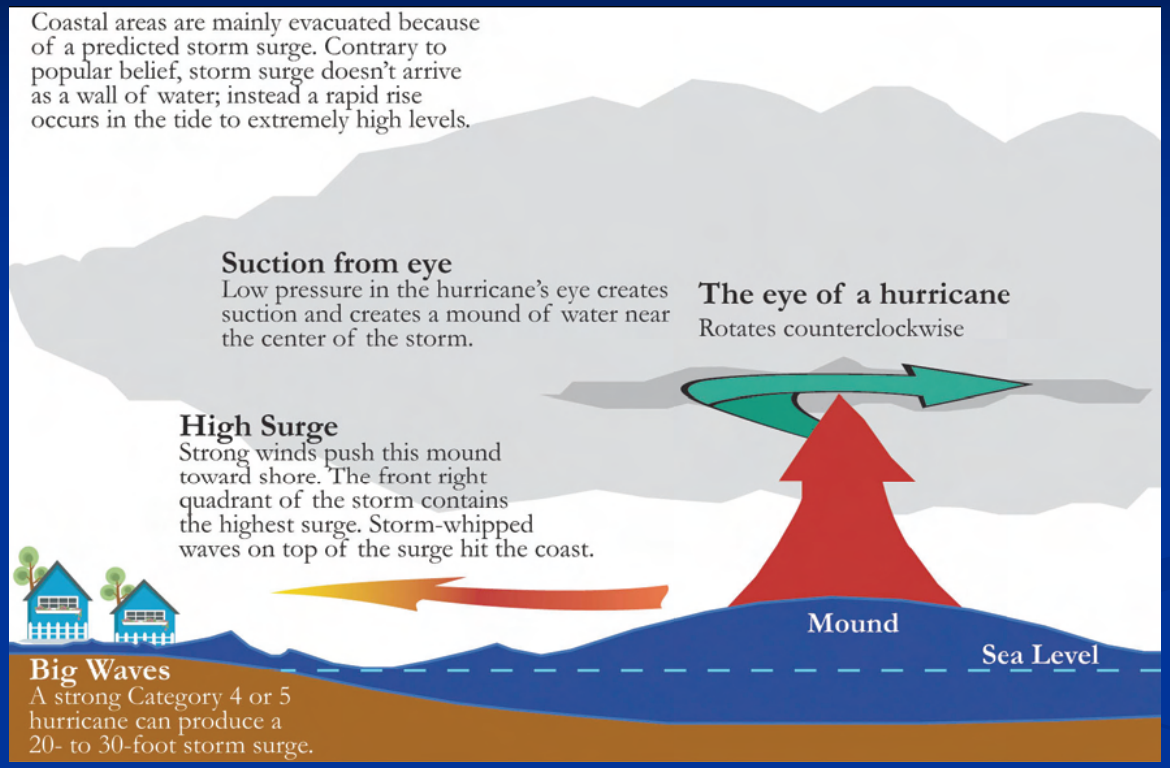
Freeboard

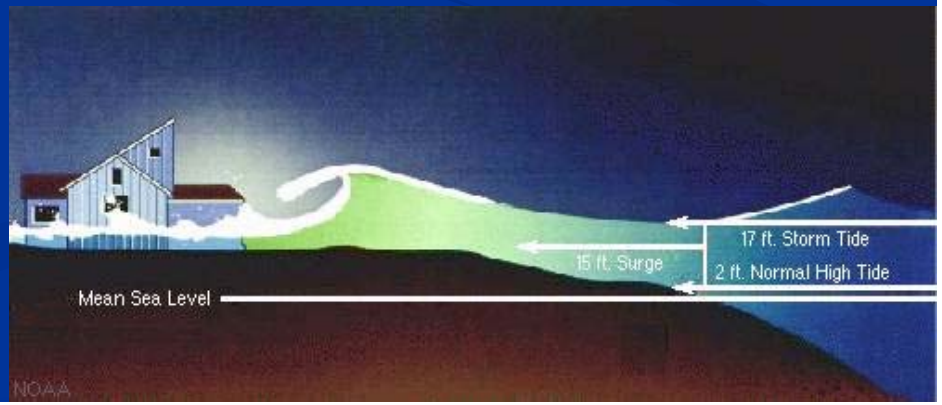
- Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood.
- Freeboard is not required by NFIP standards, but communities are encouraged to adopt at least a one-foot freeboard. Freeboard results in significantly lower flood insurance rates due to lower flood risk.

Substantial Improvement

- **Substantial damage: Damage sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.**

Coastal Zone:





Additional Proposed Considerations for Comparison Matrix

- Required permits/ application process
- Enforcement
- Tidal/ non-tidal
- Main stem/ tributary