

Learning From Our Experience to Reduce Exposure to Flood Hazards



Shayne Jaquith: River Scientist
The Nature Conservancy

A History of Vermont's Largest Floods

All New England Flood:	1869	Unknown
The Great Vermont Flood:	1927	\$450M
The Great New England Hurricane:	1938	\$482M
Floods of 1973:	1973	\$326M
Tropical Storm Irene:	2011	\$750M
Great Vermont Flood of 2023	2023	\$500M*

Source: National Weather Service
Cost figures adjusted for 2012 dollars
Preliminary estimate in 2023 dollars



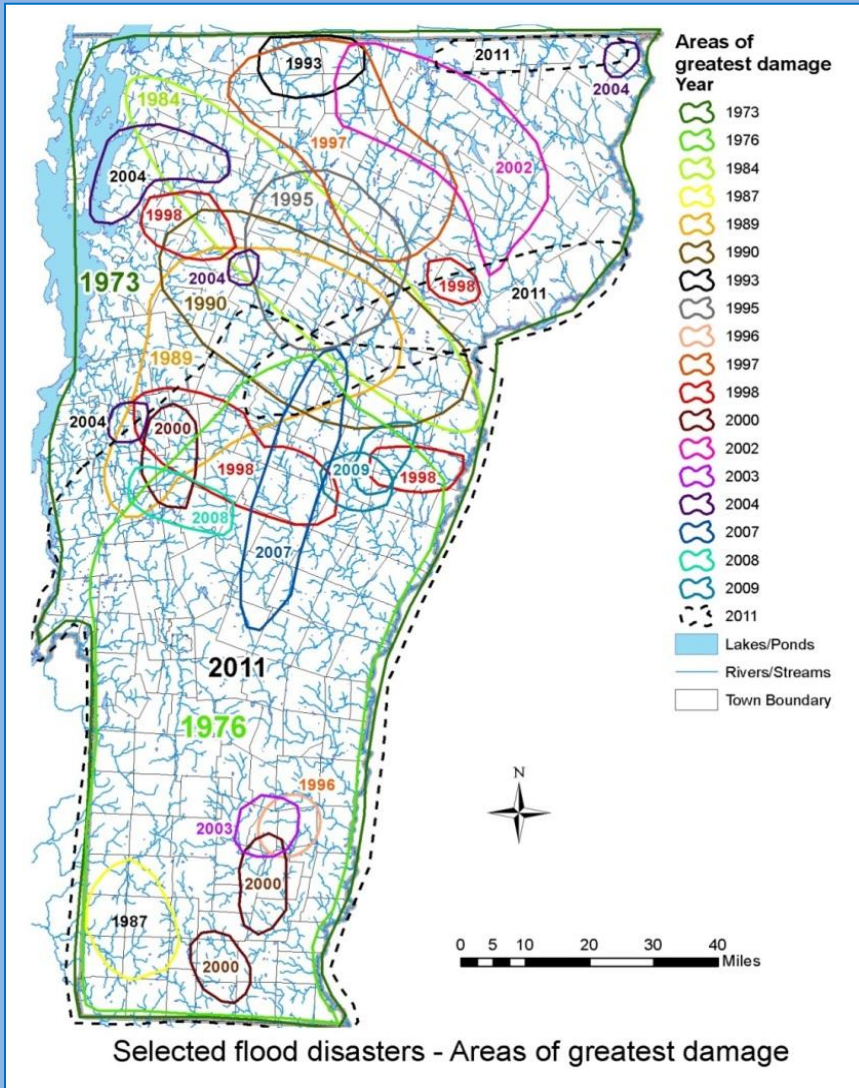
gettyimages
Credit: Spencer Grant



More Frequent Floods

Frequent Flood Disasters

- 1927 – 2011: 3 large-scale disastrous floods (1 every 14 years)
- 1973 – 2011: **19** disastrous floods of regional-scale (1 every 2 years)

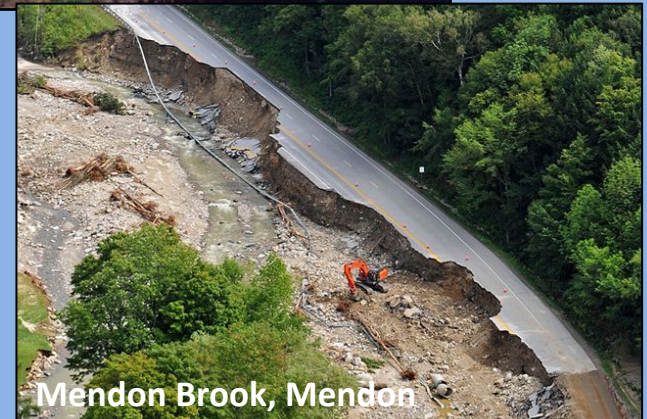


Inundation vs. Erosion



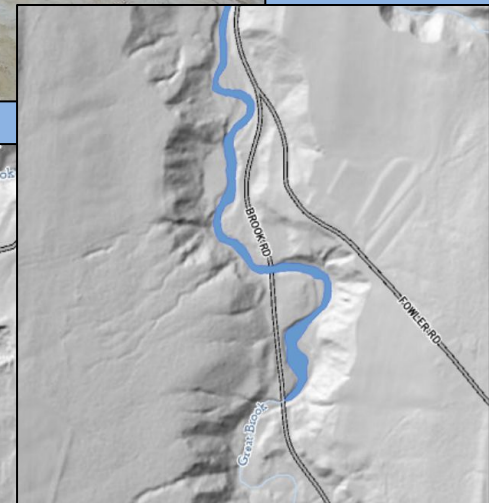
Gihon River, Eden

Over 75% of all flood damage costs result from erosion damage and not inundation.

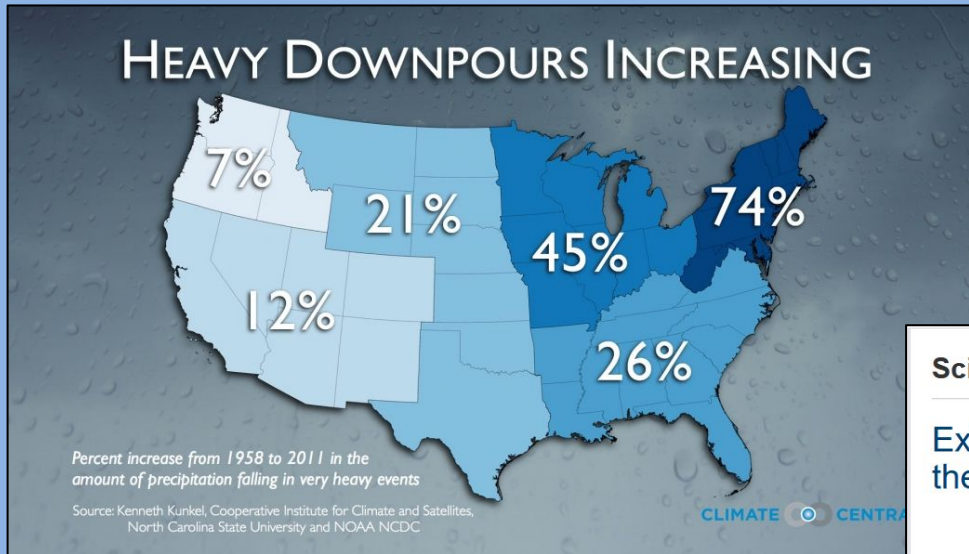


Mendon Brook, Mendon

Flood Risk Factors: Topography



Flood Risk Factors: Climate



Science News

from research organizations

Extreme precipitation in Northeast US to increase 52% by the end of the century

Date: May 30, 2023

Source: Dartmouth College

Summary: With a warmer climate creating more humid conditions in the Northeast, extreme precipitation events -- defined as about 1.5 or more inches of heavy rainfall or melted snowfall in a day -- are projected to increase in the Northeast by 52% by the end of the century, according to a new study.

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Property damages from flooding in Vermont are calculated to exceed \$5.2 billion over the next 100 years.

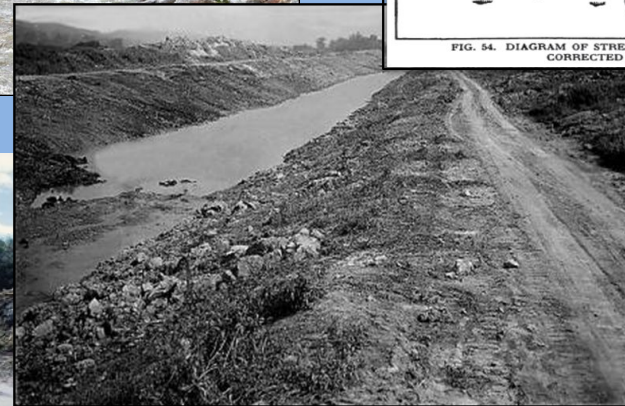
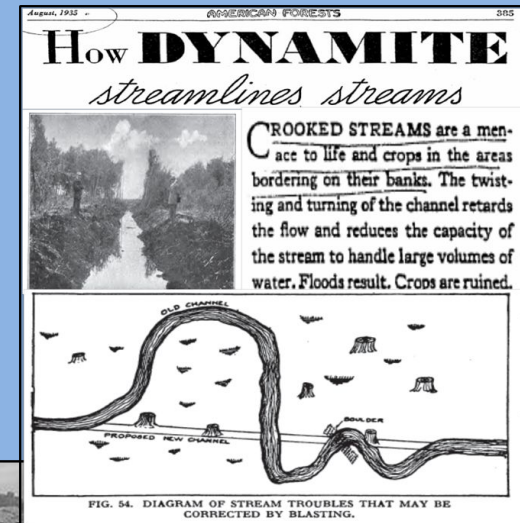
-UVM Gund Institute

Flood Risk Factors: Riverside Developments

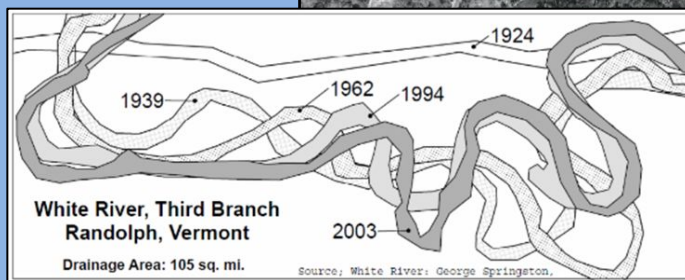


Photo: Mansfield Heli-flight 2011

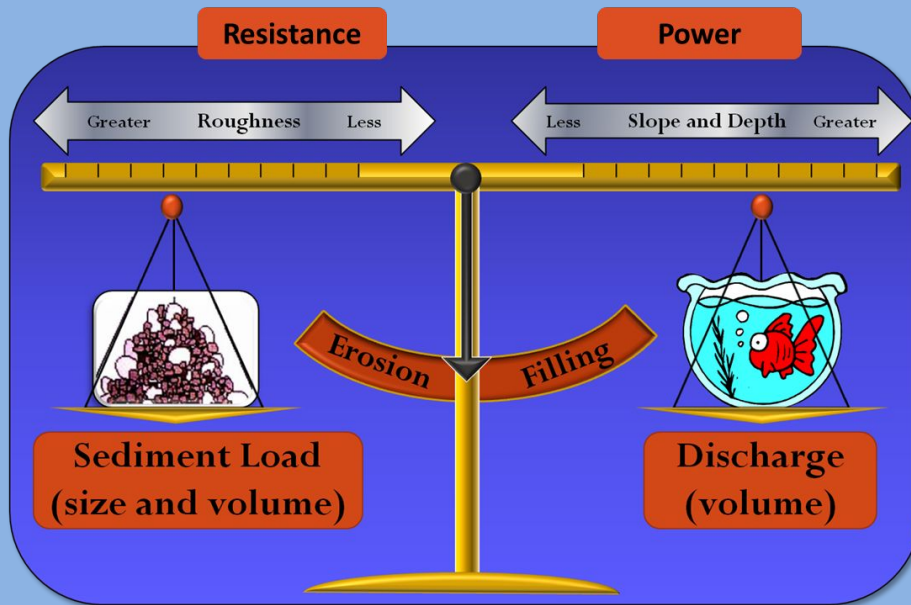
Historic Flood Hazard Management: Controlling the River



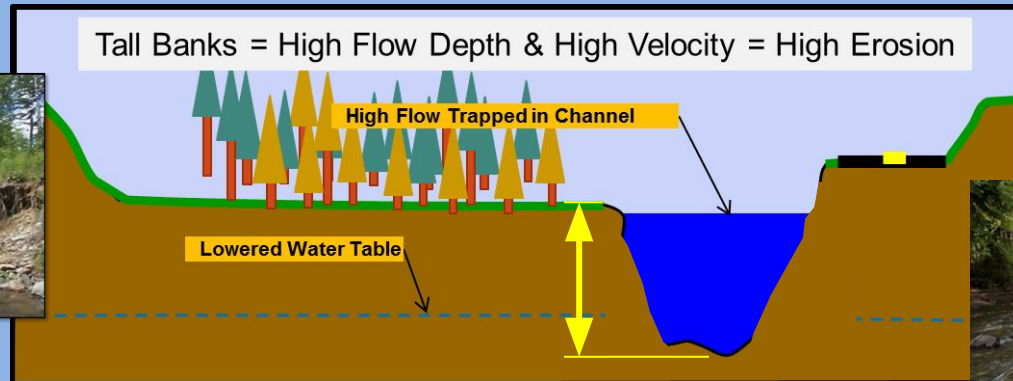
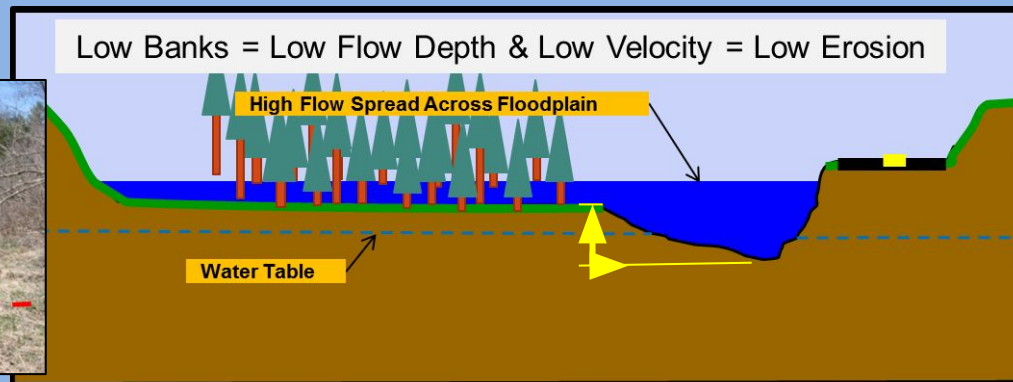
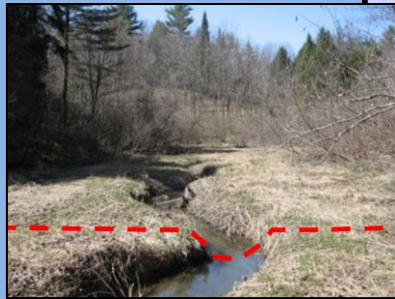
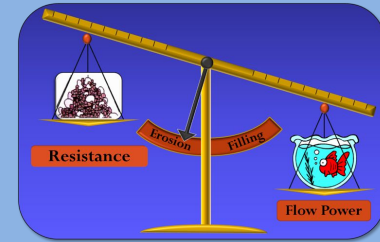
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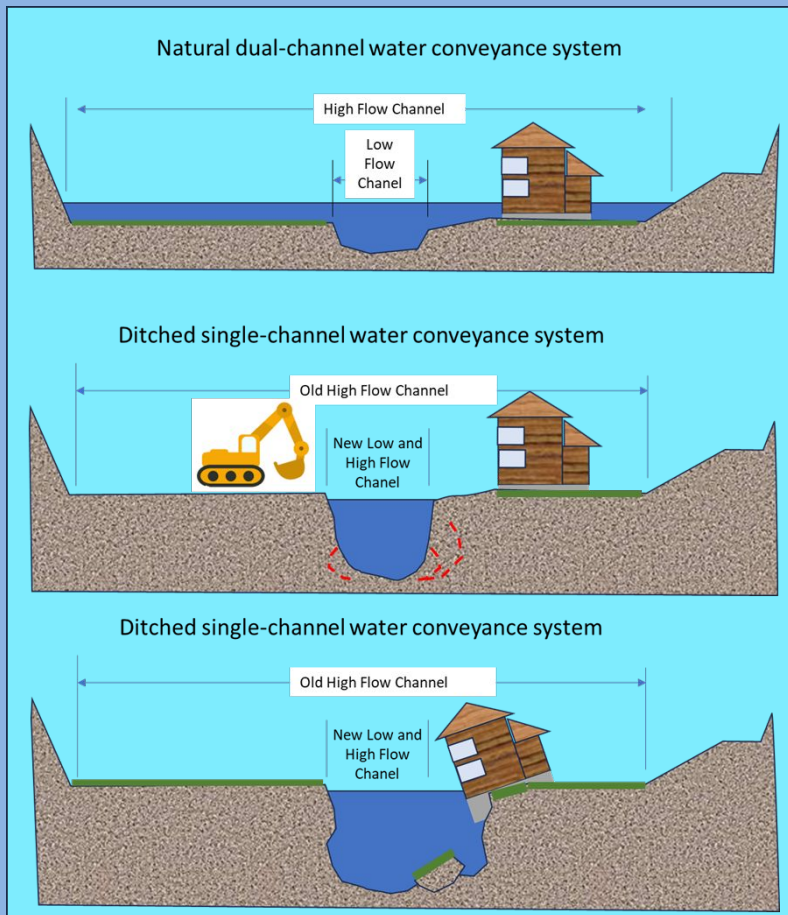
Historic Flood Hazard Management: Disrupting the Balance



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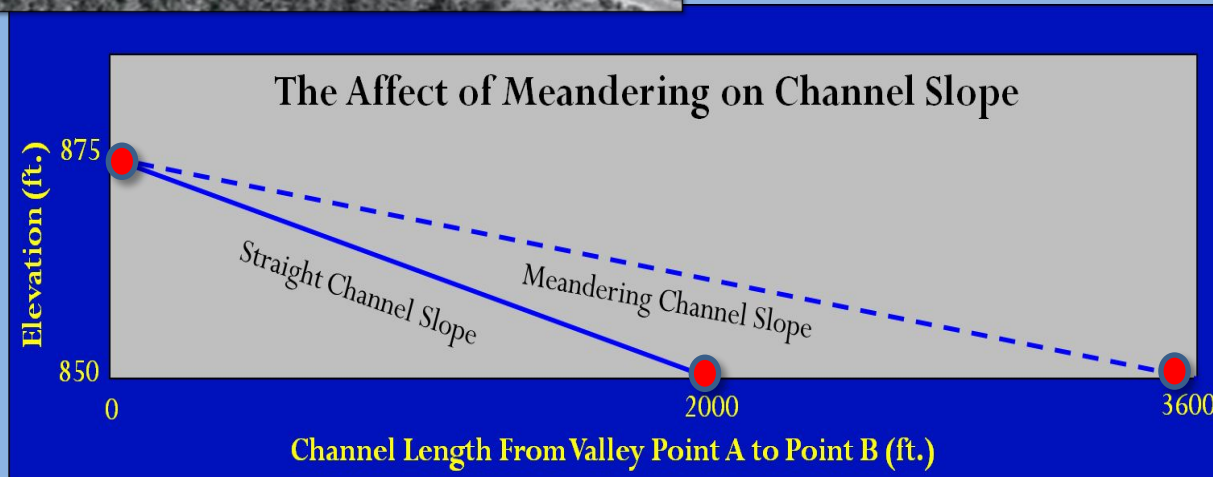
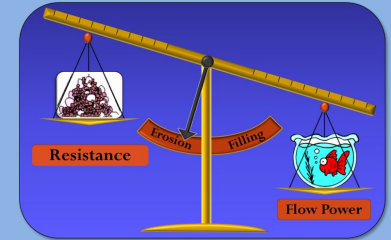
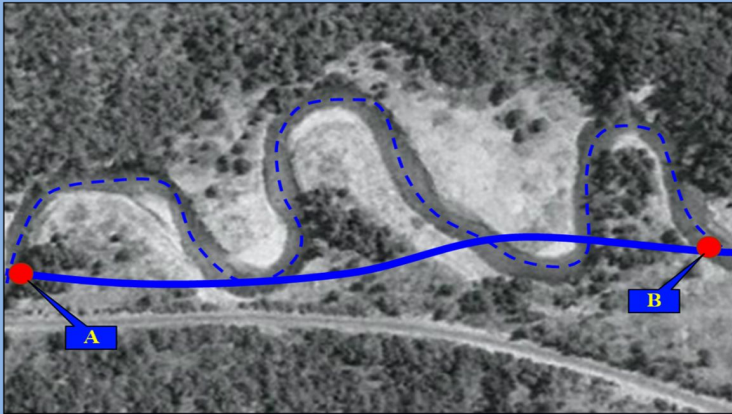


Historic Flood Hazard Management: Disrupting the Balance

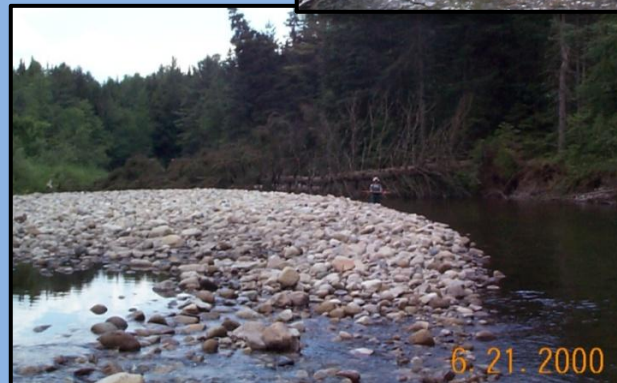
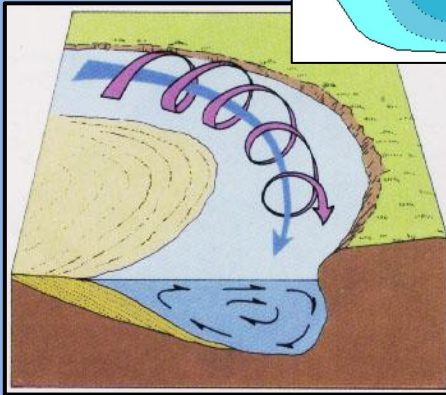
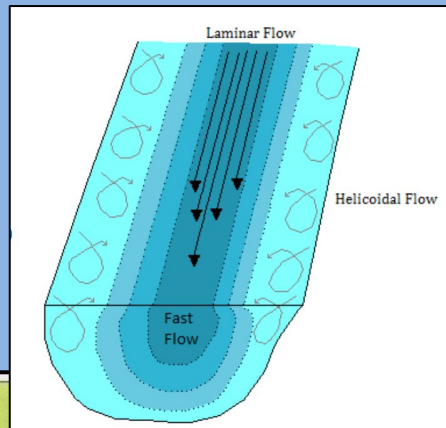


Dredging to keep the water in the channel. Trading an inundation problem for an erosion problem.

Historic Flood Hazard Management: Disrupting the Balance

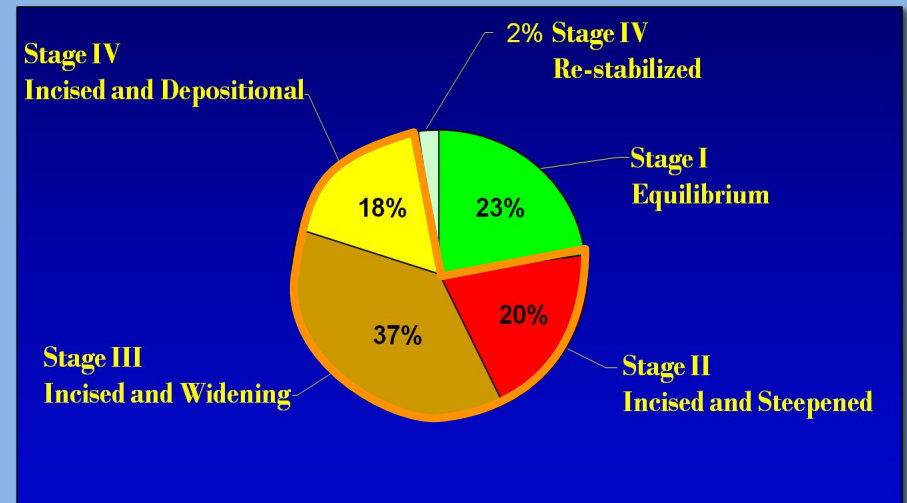
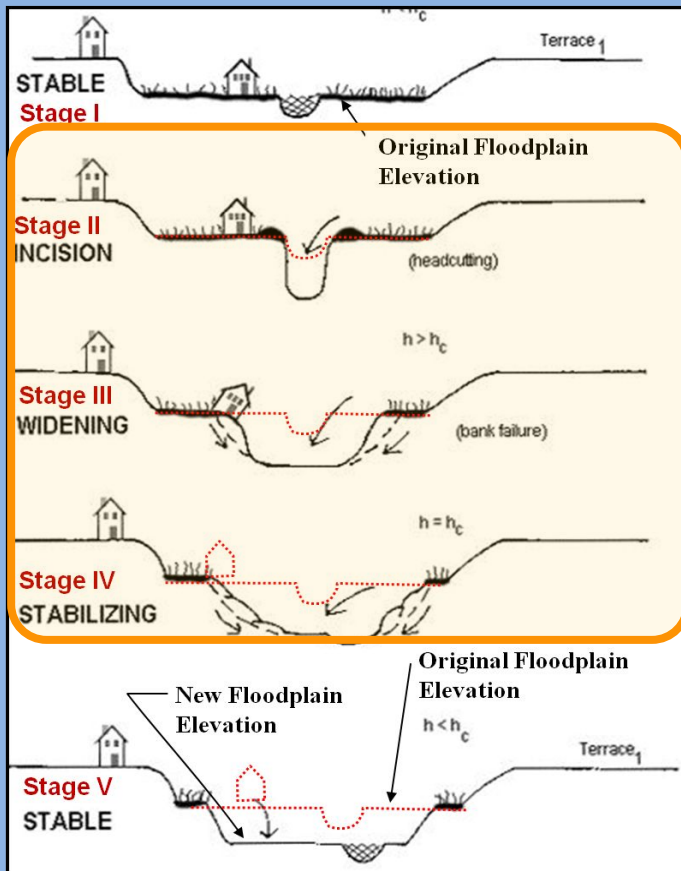


Historic Flood Hazard Management: Disrupting the Balance



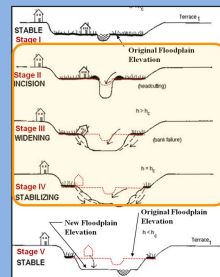
Historic Flood Hazard Management: Channel Evolution

Historic land use and channel management activities have resulted in extensive channel instability.

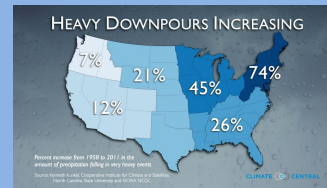


- 5,000 river miles assessed.
- 75% undergoing channel evolution.

Vermont's Flood Risk Equation



Vermont DEC



Escalating Costs, Risks, and Ecosystem Degradation



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