Flood Smart Communities
Floodplain Function Assessment

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The Flood Smart Communities Approach

- Watershed approach to floodplain management
- Combines wide range of expertise with local needs and knowledge
- Community-specific assessments
The Flood Smart Approach
Functioning Floodplains
Conversion of natural floodplains can lead to:

• At risk development
• Reduced or eliminated flood storage of the floodplain
• Altered hydrology downstream
Goal: Provide municipalities and stakeholders with a map of areas that are likely playing an important role in mitigating high stream flows and flooding to help them in decision making about where to invest resources and what land uses make sense.
More and Less Active Floodplains

- FEMA floodplains (100, 500-yr)
- SSURGO data – flood frequency (2, 20, 100-yr)
- NHP Variable Width Riparian Buffers (50-yr)
- FATHOM data – modeled flooding data (5, 20, 100-yr)
Mini Catchments = Unit of Analysis

- Break NHD stream lines at confluences and road and railroad crossings
- Delineate catchment for each reach of stream
Based on Duck-Pensaukee Methodology

Indices of Indicators

1. Effectiveness
2. Opportunity
3. Social Significance
Assessed for Each Unit

**Effectiveness** – characteristics of the floodplain that would make it effective at slowing, spreading and storing floodwaters.

- Surface **roughness** of the floodplain (i.e. vegetation)
- **Slope** of the floodplain (longitudinally downriver, i.e. not [flooded] bank slope perpendicular to flow)
- **Volume** capacity of the floodplain (topographic position in the cross section, also low basin vs. gorge looking downriver)
Assessed for Each Unit

**Opportunity** - characteristics of the catchment that would contribute more water to the floodplain.

- Chesapeake Conservancy 1m landcover dataset - Impervious surfaces
- SSURGO Hydrologic Soils Groups - Impervious soils, high groundwater, bedrock
- New York State 10m DEM – slopes greater than 15% and 30%
- Size of mini catchment compared to size of floodplain – upland area
Assessed for Each Unit

**Social significance** — development or important assets that could be receiving benefit from effective floodplains.

- Vulnerable hot spots
- Locally identified flood prone areas
- Critical points of interest
Strategy Recommendations

**Protect natural floodplains** = high potential to baffle and store flood waters

**Enhance the floodplain** = high potential to store flood waters but with increased vegetation, potential to baffle would improve

**Restore the stream buffer** = Moderate potential to store and/or baffle flood waters but with increased vegetation, potential to baffle would improve
A Floodplain Unit was prioritized if it was:

• In or upstream of a catchment with social significance

• In or downstream of a catchment with opportunity
Strategy Recommendations

Floodplain Recommendations
- Protect Floodplains
- Restore Stream Buffers
- Enhance Floodplain Vegetation
Strategy Recommendations
Options for Protection and Enhancement:

- Conservation Ownership or Easement
- Land Use Tools to Avoid or Minimize Conversion – Overlay districts, zoning
- Local Laws and Regulations to Maximize Mitigation – Compensatory storage
Questions?

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Floodplain Assessment

- Generated Flow Paths
- Elevation-based eco-hydrologically active areas (EHAs)
- Slope classes within riparian areas
Prioritized Units

- Protect
- Restore
- Lowest elev slice

Based on land cover and soil type (hydric or non)