



SLRCONSULTING.COM

Beaver Kill & Willowemoc Creek Flood and Resilience Study

Stakeholder Information Gathering

MEETING TO BE RECORDED!

January 15, 2026





Agenda

- Recording!
- Please mute your line A small icon showing a microphone with a slash through it and a toggle switch, indicating the mute function.
- Introductions (please sign in using chat)
- Background & Overview
 - Resilient NY Program
- Beaver Kill and Willowemoc Creek Flood Study
 - Focus watercourses & watershed
 - Flood history
 - Community engagement/data gathering



Meet the Team



Mark Carabetta, CFM

US Manager of Climate
Resilience Planning



Allison Lent

Associate Water Resources
Engineer



Matthew Trueheart

Associate Water Resources
Engineer



Elizabeth McCarthy

Project Climate Resilience
Consultant



Danny Goodman

Geospatial & Data Solutions
Consultant



Pamela Green

Climate Resilience Scientist



SLR at Work and Play



SLR water resources engineer Matt Trueheart and field dog Murphy on Great Chazy River



SLR crew hard at work on the Paulins Kill



SLR water resources scientist Adam Doan on Delaware River



SLR water resources engineer Mieke Scherpier on Alton Creek



SLR environmental scientist Mark Carabetta on Big Crow Lake



SLR water resources engineer Allison Lent on Esopus Creek



SLR water resources engineer Miguel Castellanos on Neversink River



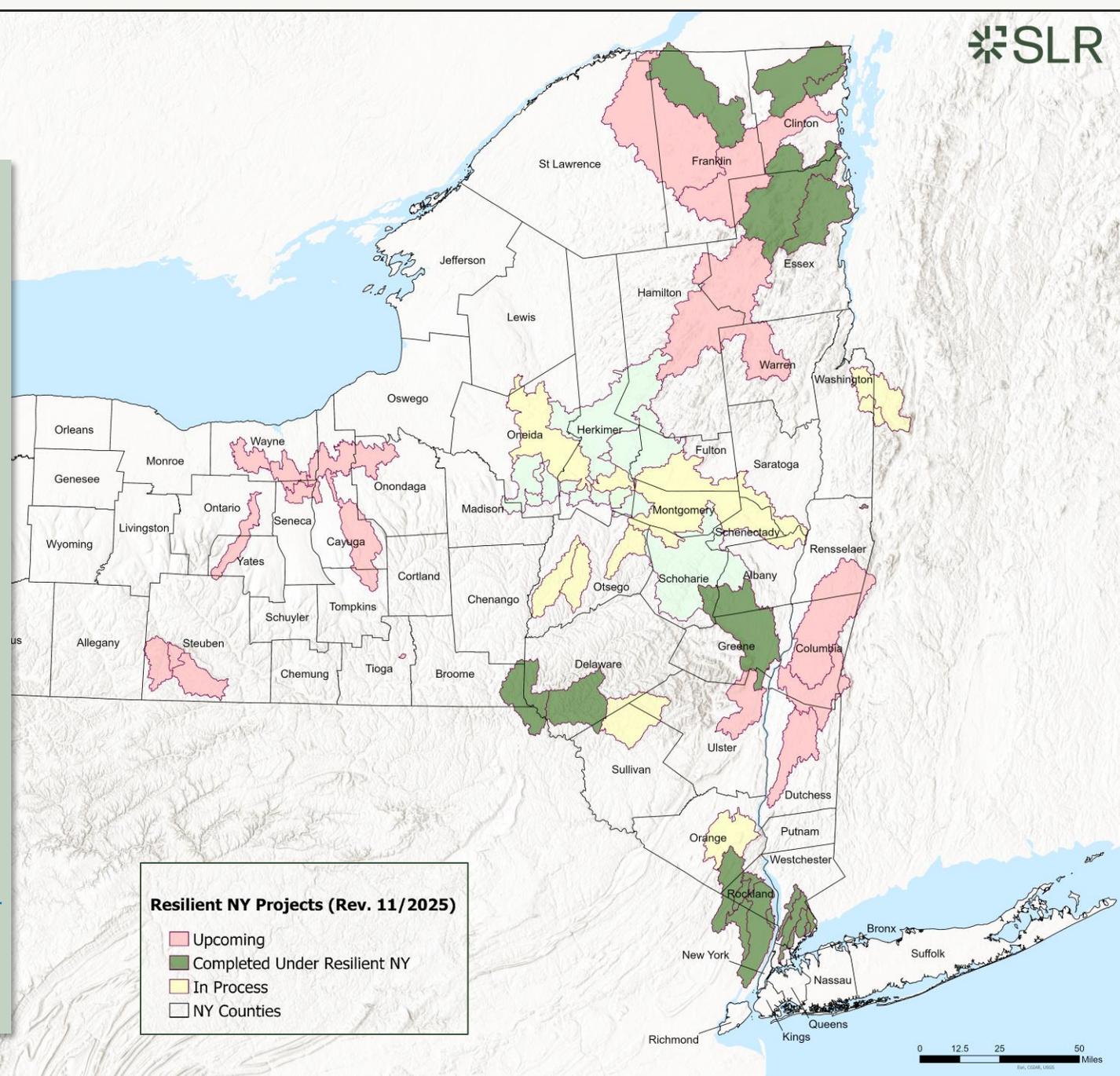
SLR water resources engineer Katie Casson on Cherry Valley Creek

Resilient NY Program

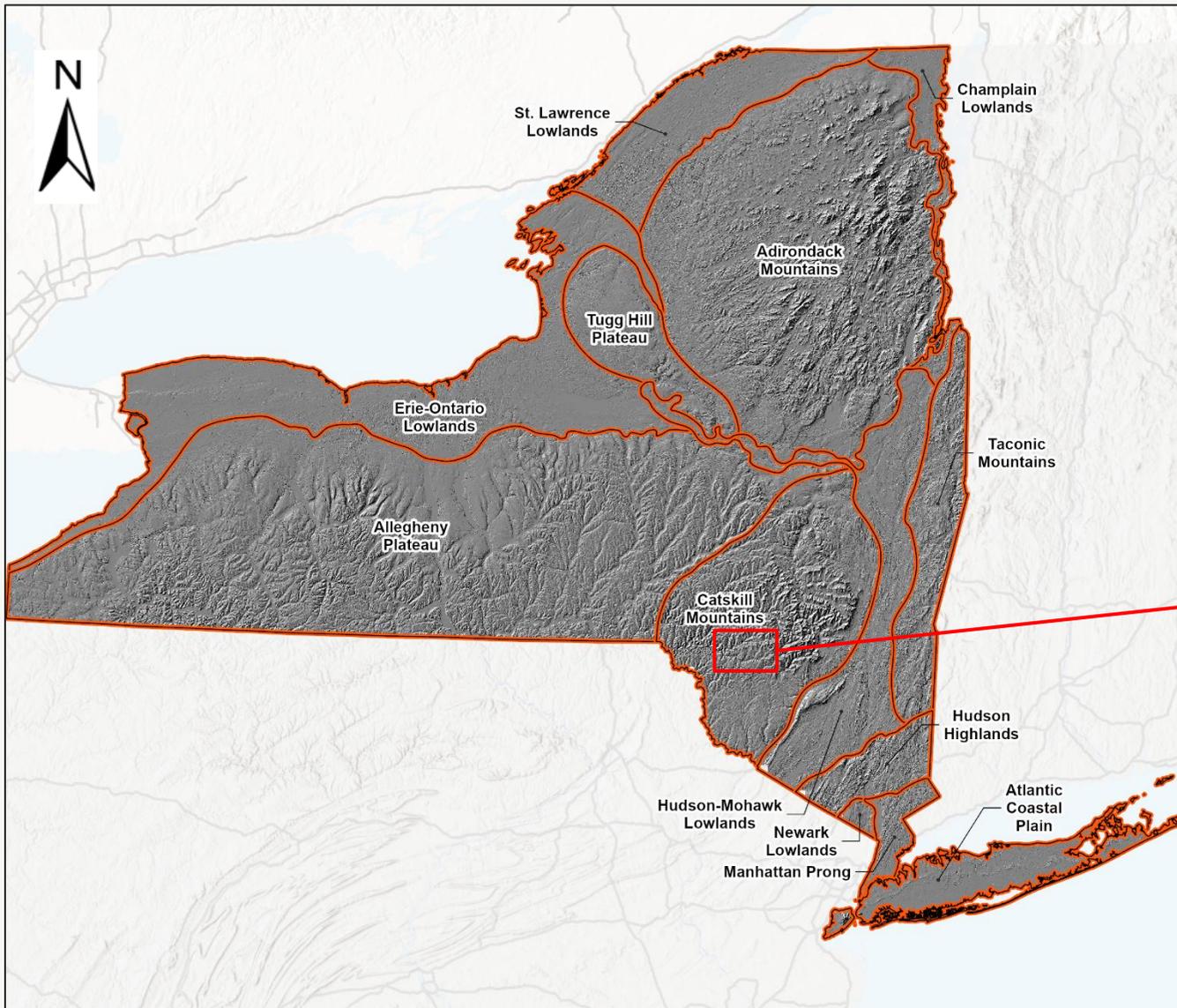


- Statewide initiative of NYSDEC to make communities in the State more resilient to future flooding and climate change
- Conduct flood studies and develop flood and ice-jam hazard mitigation recommendations that help guide implementation of mitigation projects
- Visit the Resilient NY webpage:

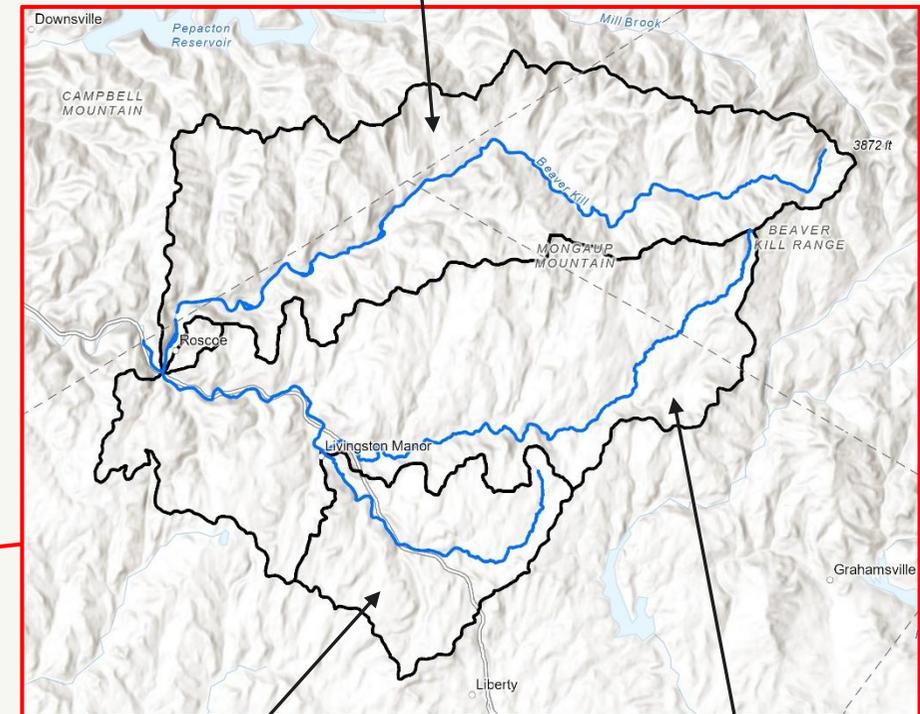
<https://dec.ny.gov/environmental-protection/water/water-quantity/resilient-ny>



Physiographic Provinces



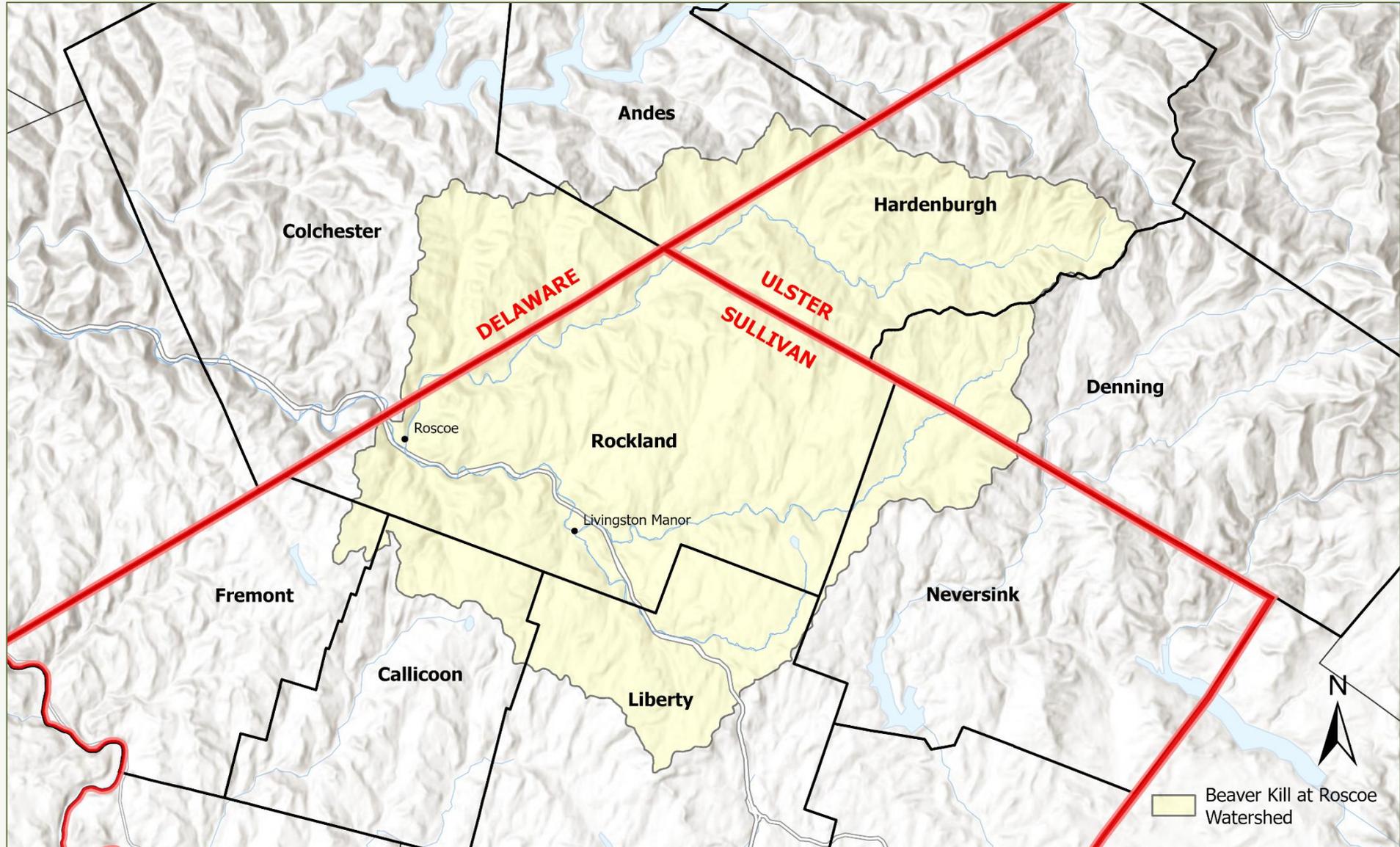
Beaver Kill Watershed
Drainage Area = 97.3 square miles



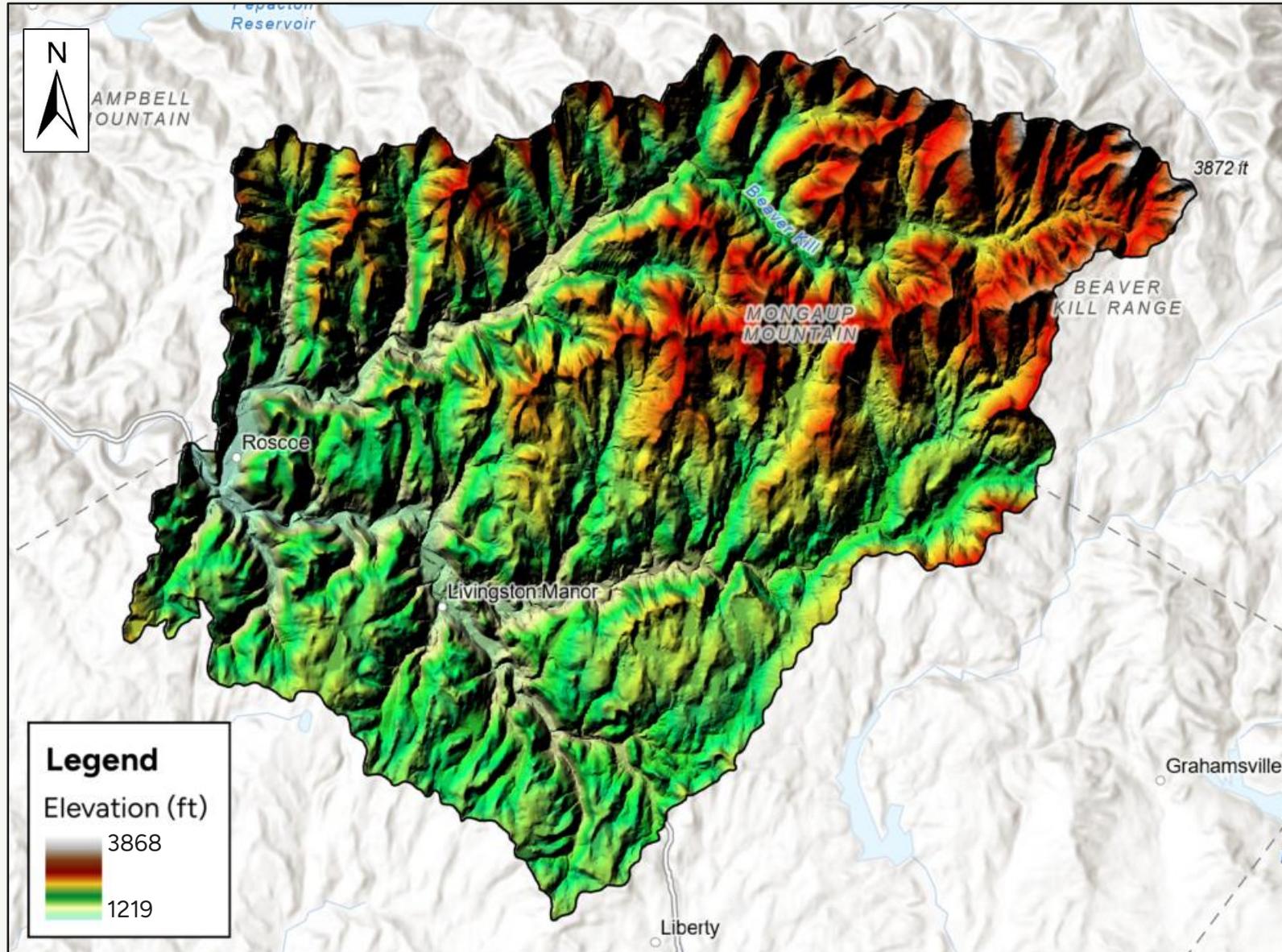
Little Beaver Kill
Watershed Drainage
Area = 30.3 square
miles

Willowemoc Creek
Watershed Drainage
Area =
100.5 square miles

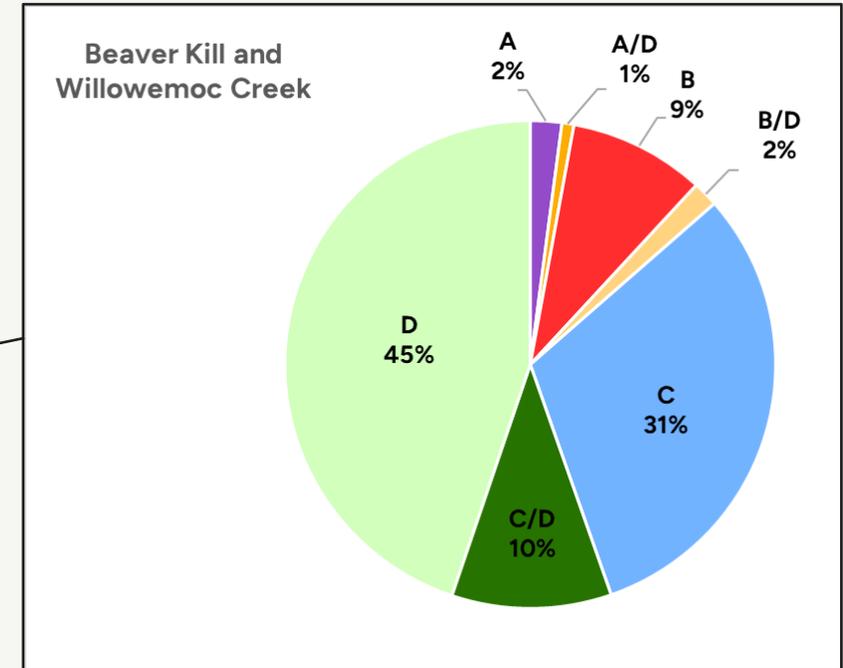
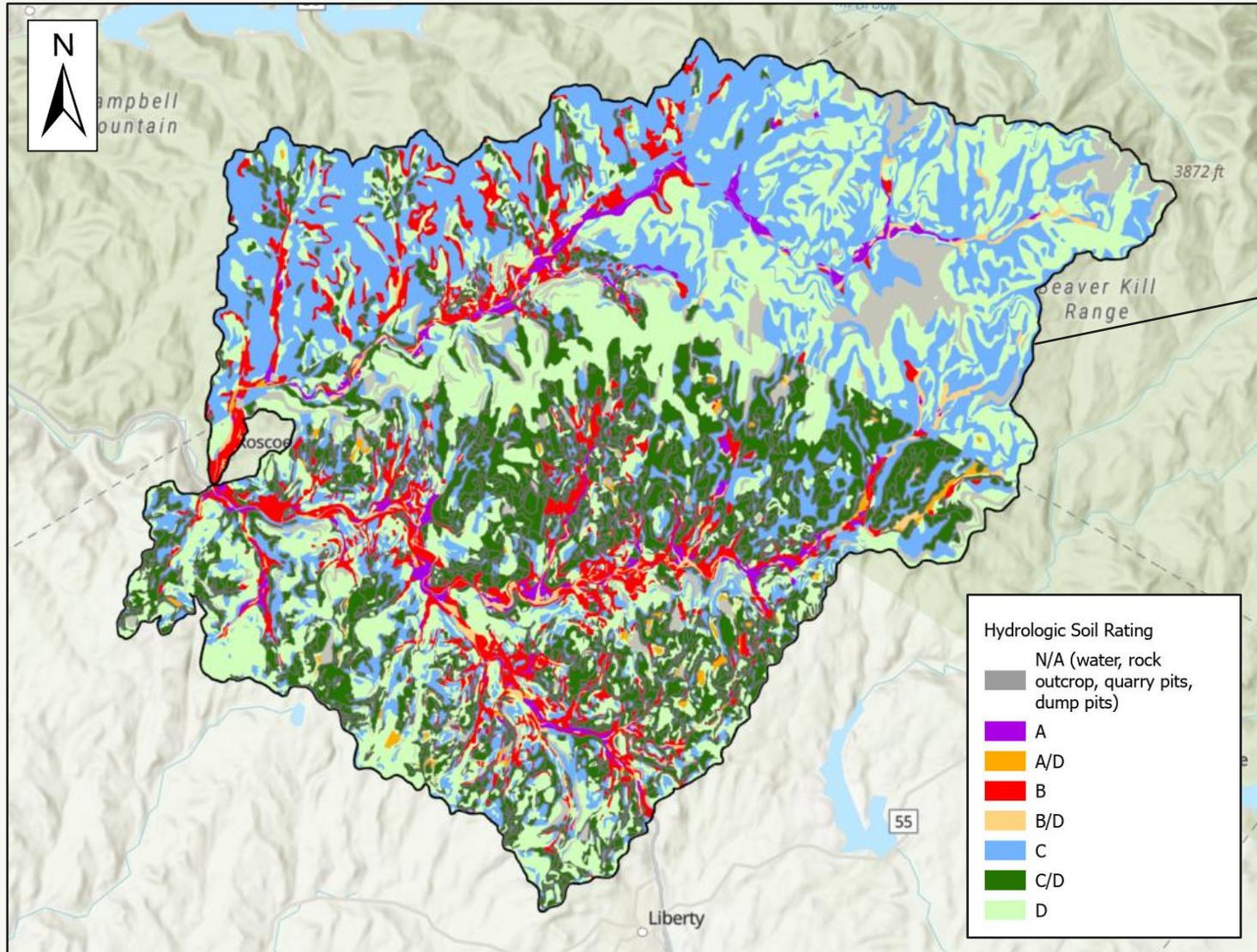
Counties, Towns and Villages



Raised-Relief Map



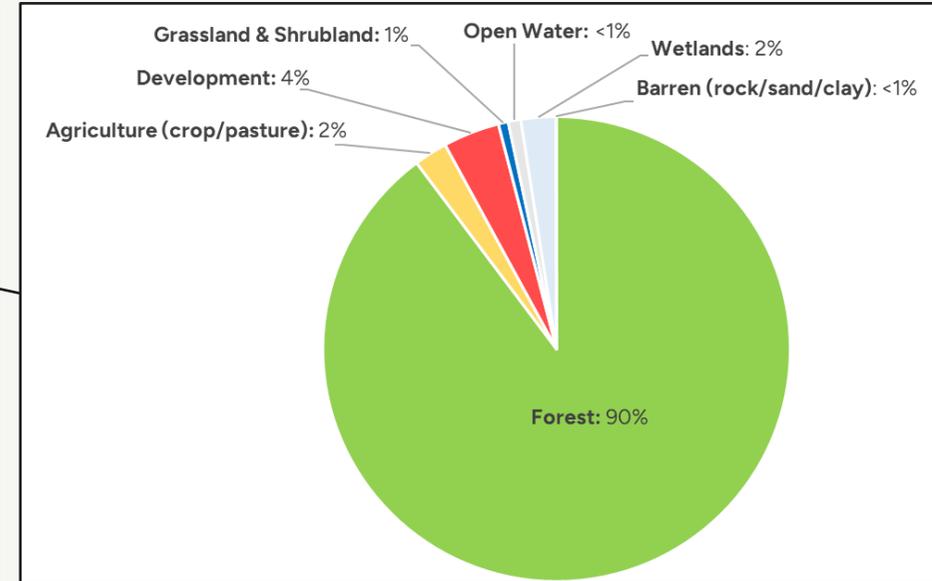
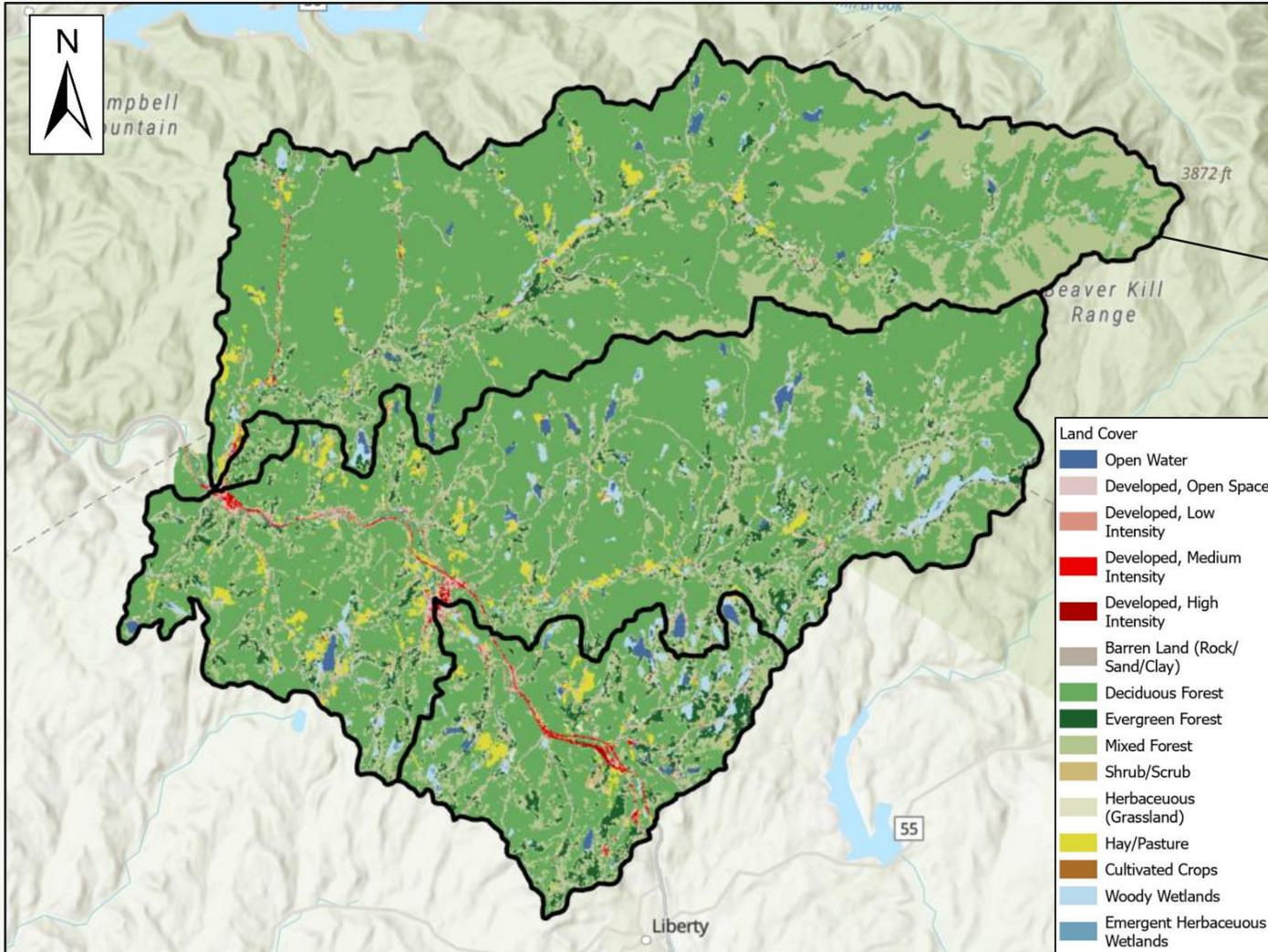
Hydrologic Soil Groups



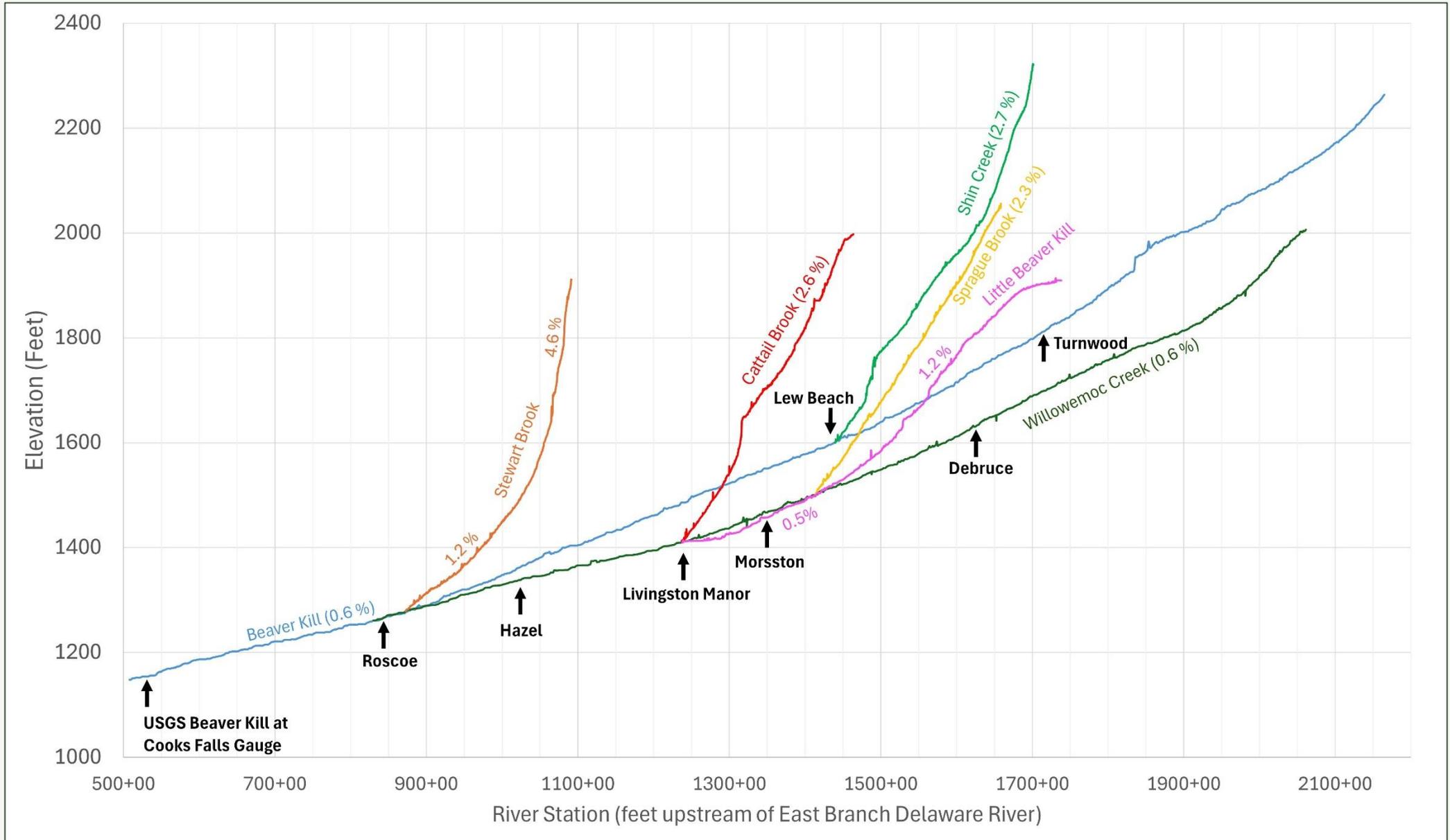
A - High infiltration, low runoff
B
C
D - Low infiltration, high runoff

↓

Land Cover



Longitudinal Profile

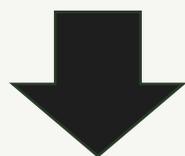




Approach

Data Collection

- Input from experts and witnesses
- Input from watershed municipalities
- Existing reports, studies, publications
- Existing hydraulic models



Identification of High-Hazard Areas



Meeting with City representatives
Utica, NY (M. Castellanos)



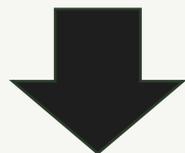
Margaretville LFA meeting (A. Bennett)



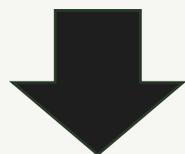
Approach

Field Assessment and Investigations

- Geomorphic investigations
- Hydraulic modeling



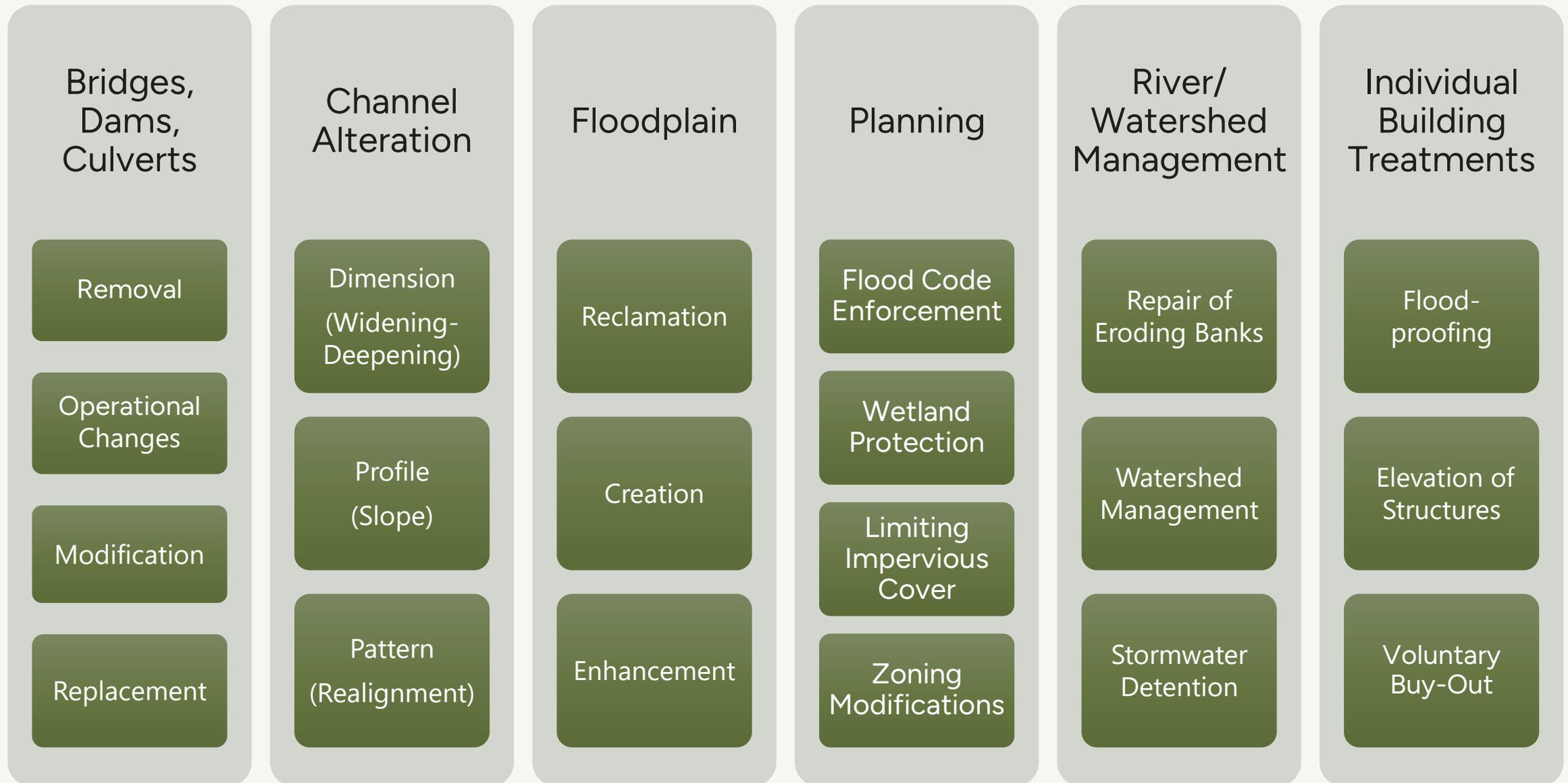
Evaluation of Mitigation Strategies



Development of Flood Mitigation Alternatives & Reporting

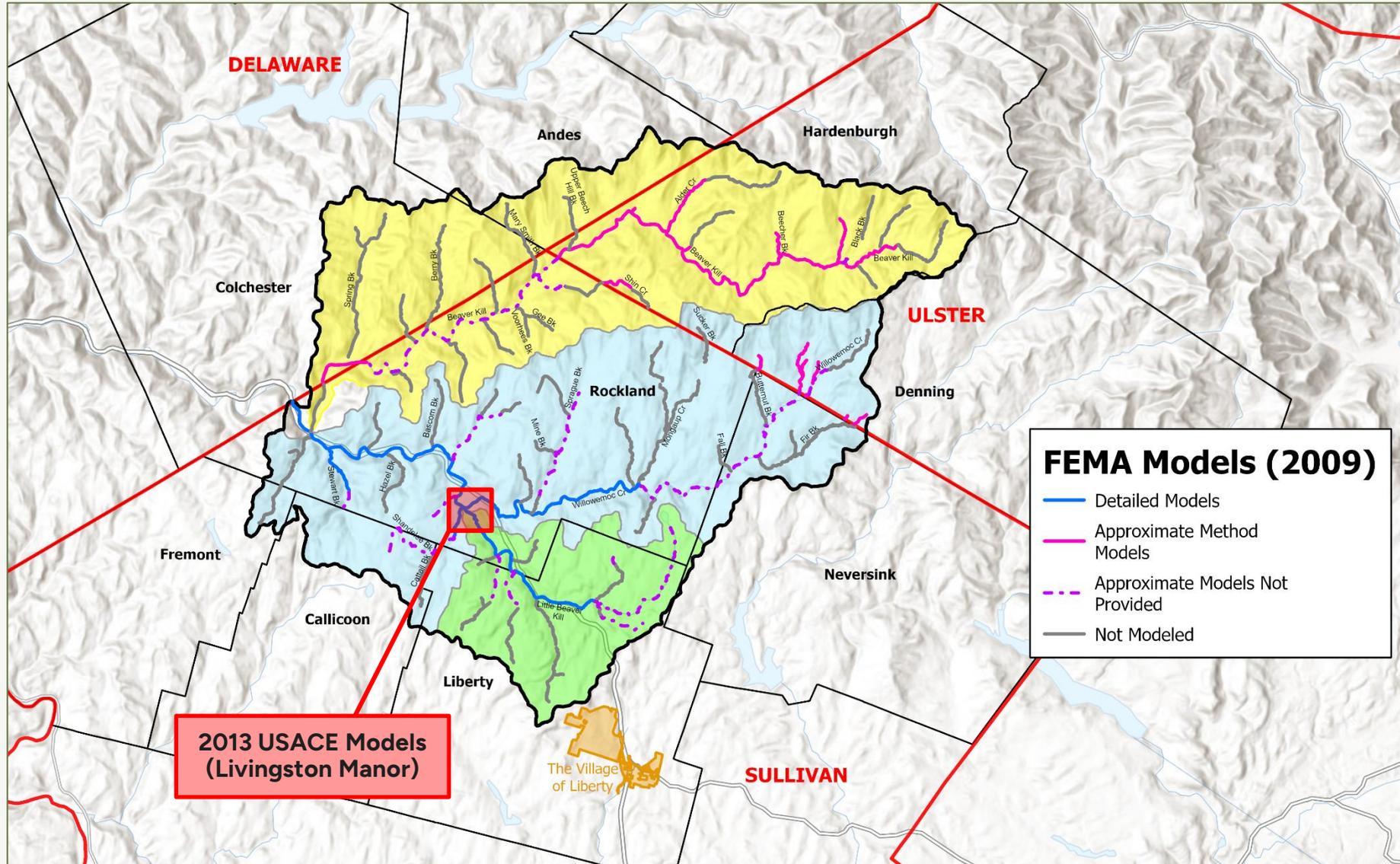


Examples of Flood Mitigation Strategies



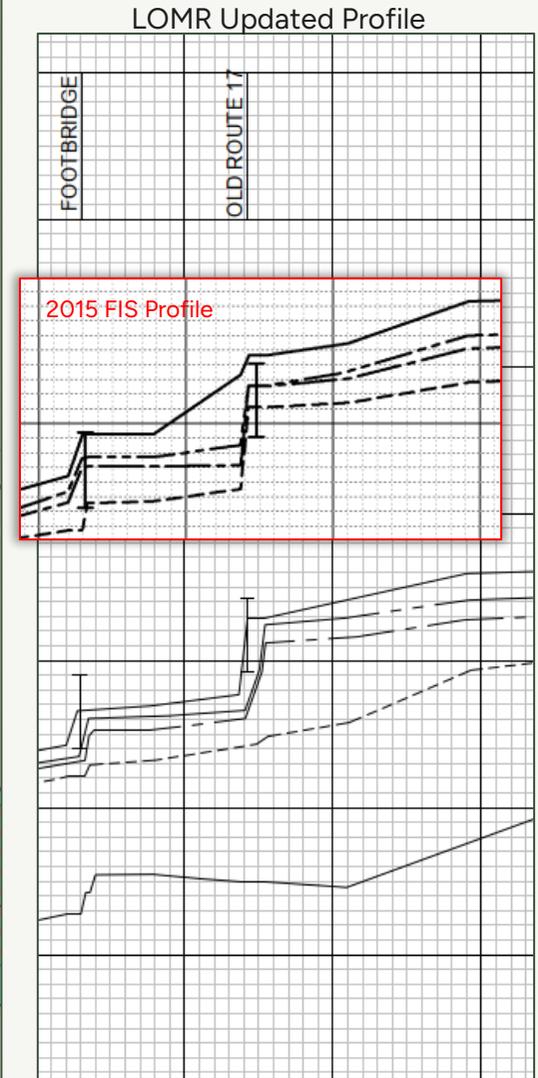
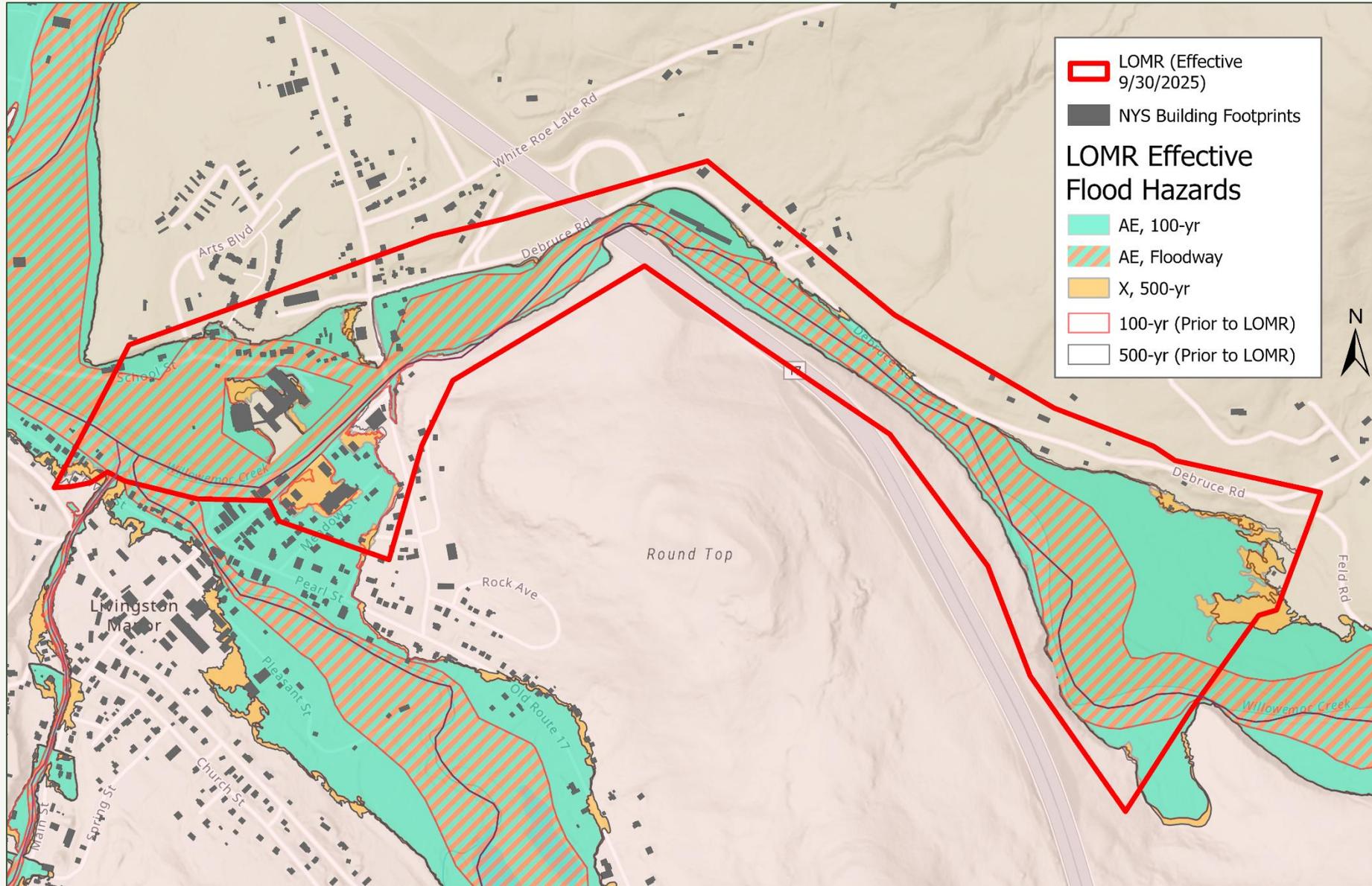


Hydraulic Model Availability



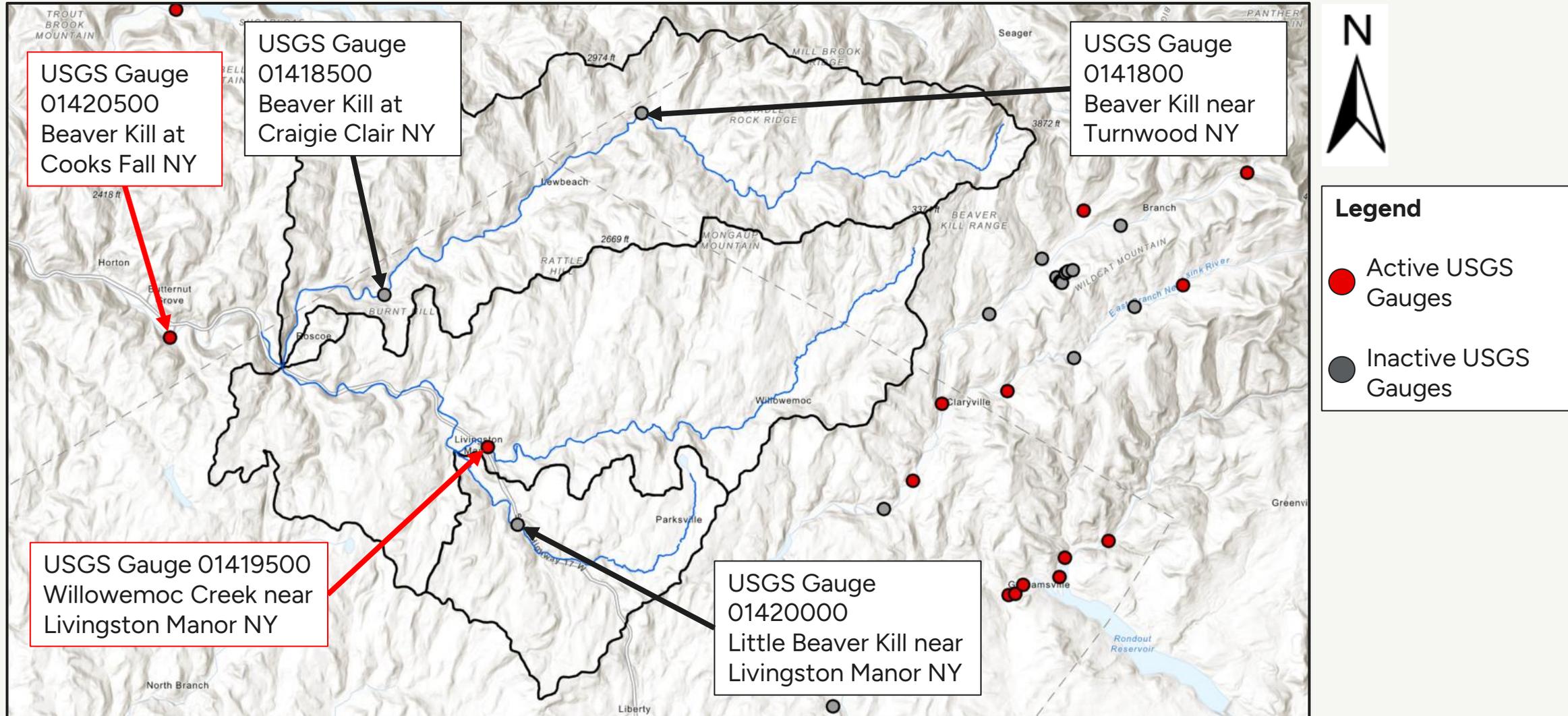


Willowemoc Creek in Livingston Manor – LOMR (Effective 9/30/2025)



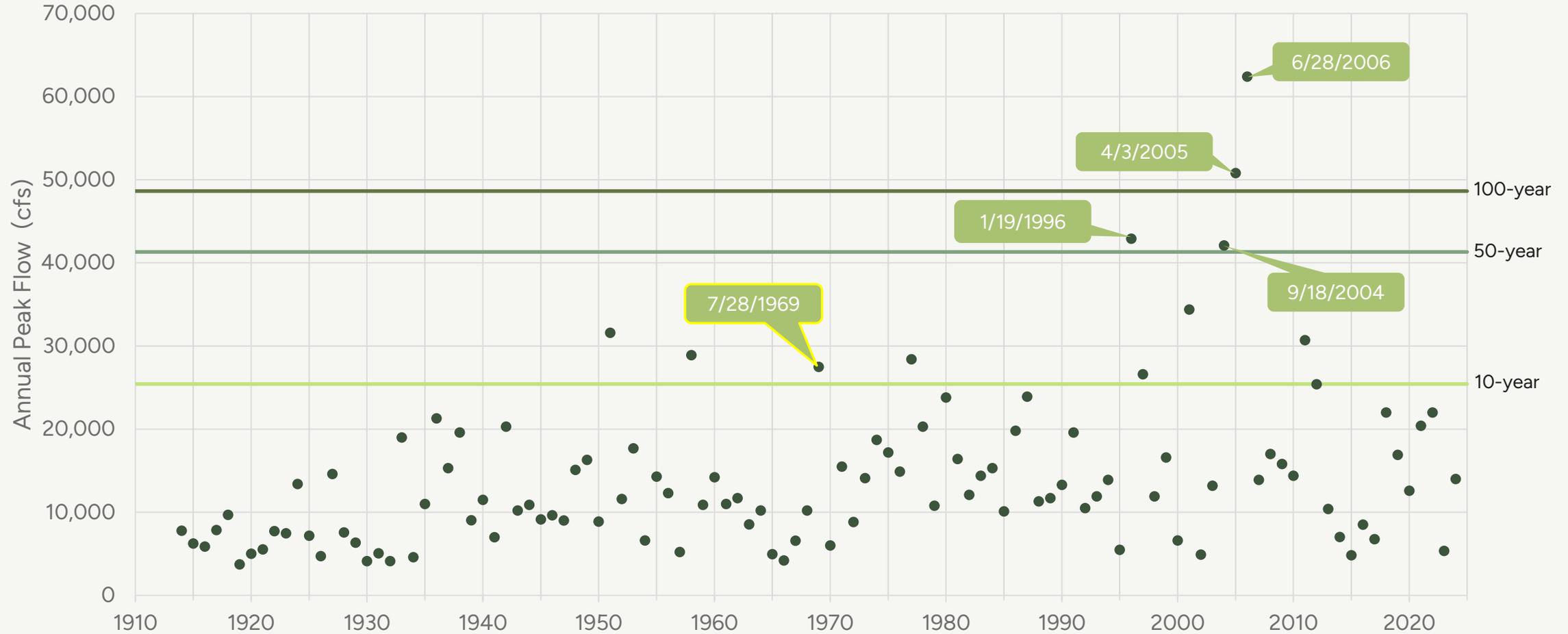


USGS Gauge Locations of Peak Flow Data





ANNUAL PEAK FLOWS: USGS 01420500 BEAVER KILL AT COOKS FALLS, NY



Gauge Location: USGS Beaver Kill at Cooks Fall, NY

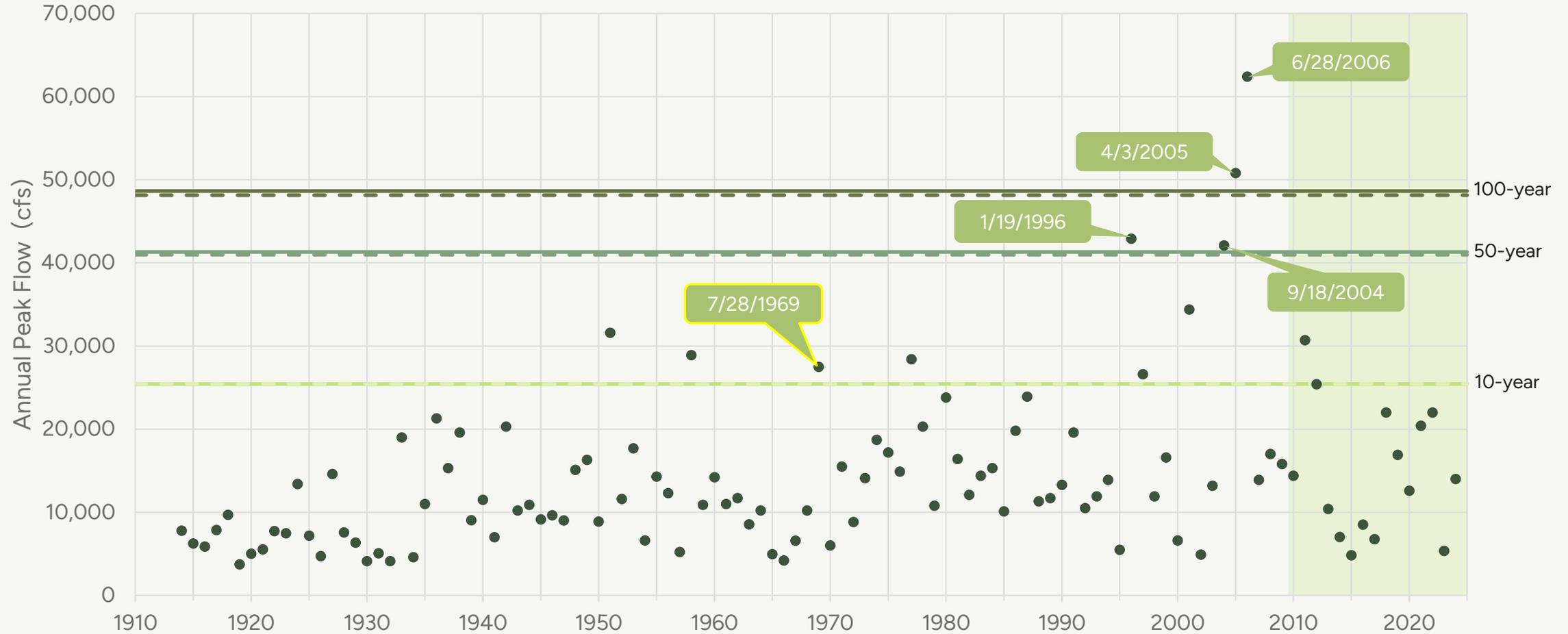
Contributing Drainage: 241 square miles

Period of Record: 1914-2025

Recurrence intervals are from FEMA Flood Insurance Study for Delaware County



ANNUAL PEAK FLOWS: USGS 01420500 BEAVER KILL AT COOKS FALLS, NY



Gauge Location: USGS Beaver Kill at Cooks Fall, NY

Contributing Drainage: 241 square miles

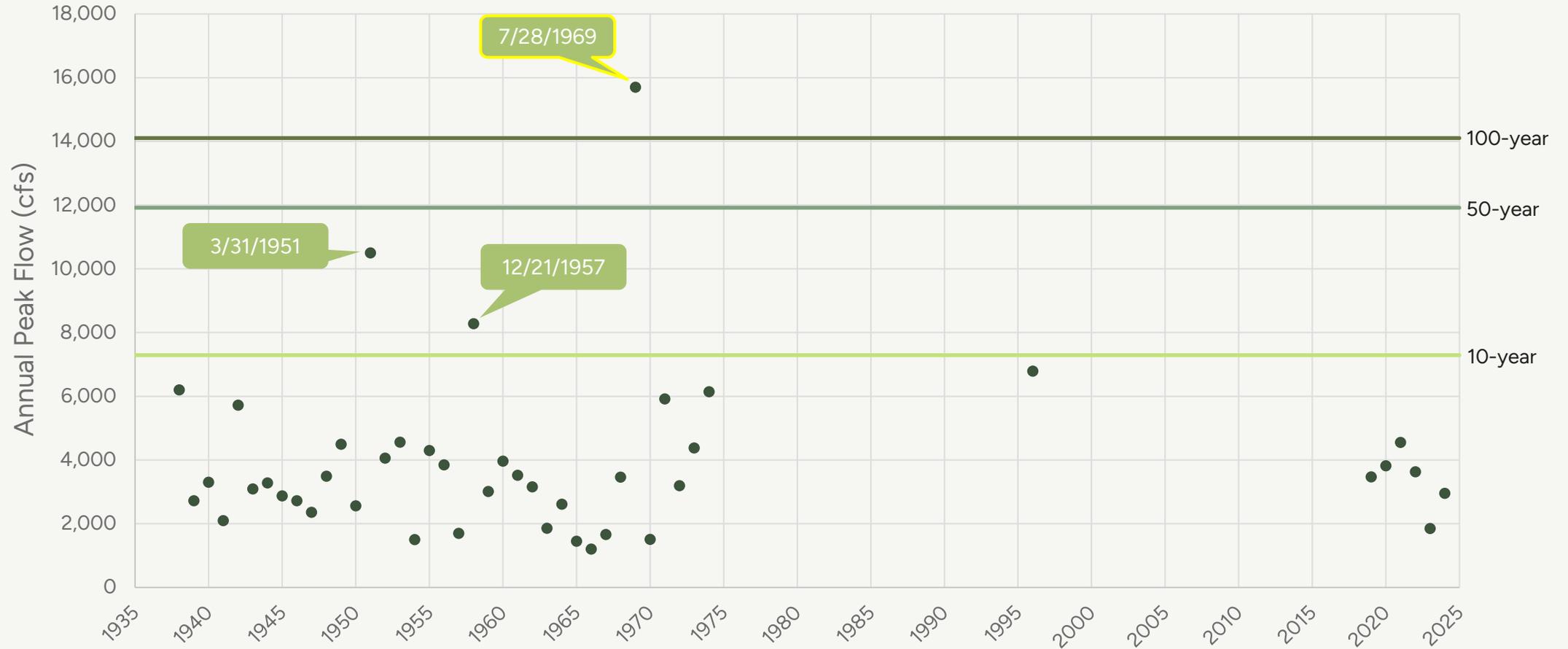
Period of Record: 1914-2025

Recurrence intervals are from FEMA Flood Insurance Study for Delaware County and updated for current gage record



ANNUAL PEAK FLOWS: USGS 01419500 WILLOWEMOC CREEK NEAR LIVINGSTON MANOR, NY

USGS Willowemoc Creek near Livingston Manor, NY



Gauge Location: Willowemoc Creek near Livingston Manor, NY

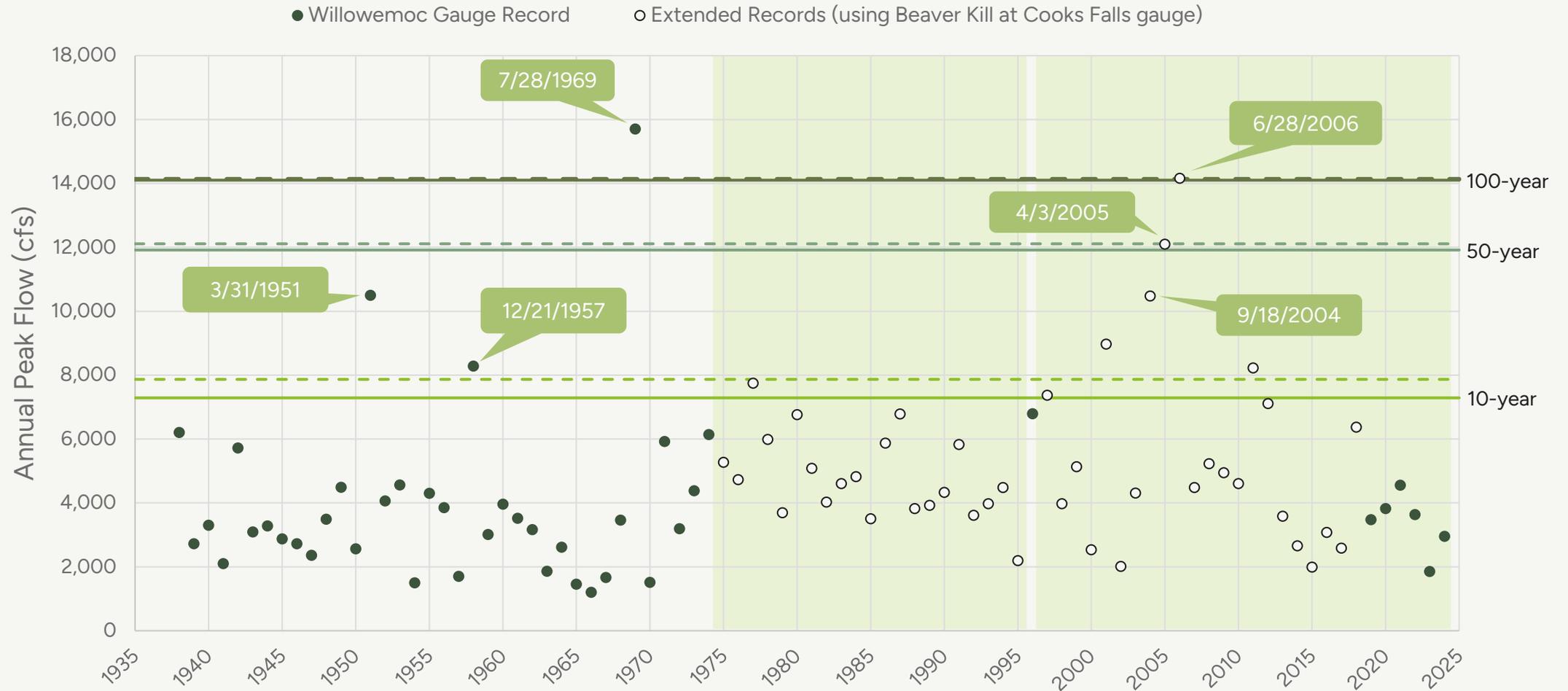
Contributing Drainage: 62.6 square miles

Period of Record: 1938-1973; 1996; 2018-present

Recurrence intervals are from FEMA Flood Insurance Study for Sullivan County



ANNUAL PEAK FLOWS: USGS 01419500 WILLOWEMOC CREEK NEAR LIVINGSTON MANOR, NY



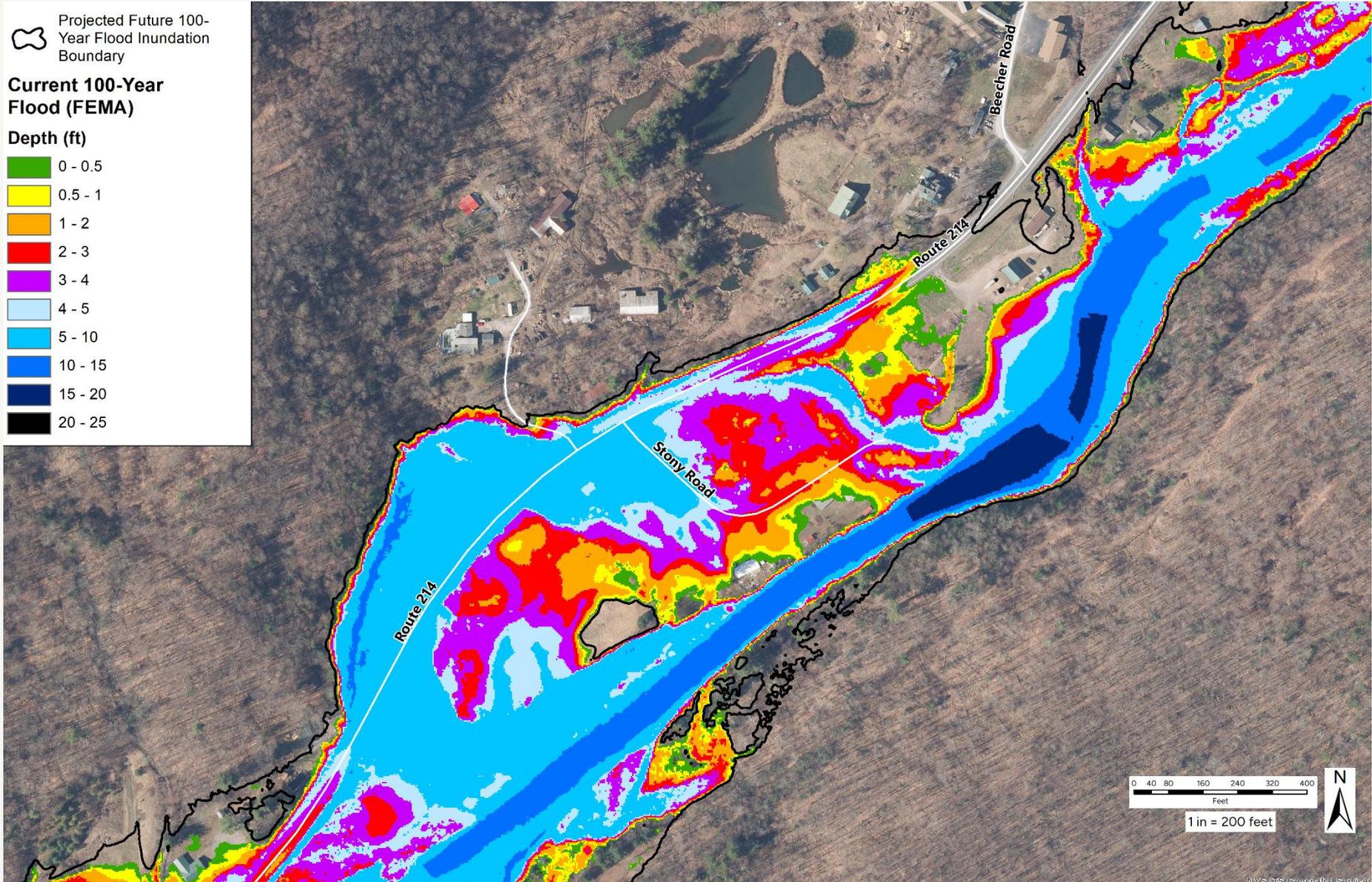
Gauge Location: Willowemoc Creek near Livingston Manor, NY

Contributing Drainage: 62.6 square miles

Extended Period of Record: 1938-2025

Recurrence intervals are from FEMA Flood Insurance Study for Sullivan County and updated with extended gauge record analysis

Consideration of Future Flows under Climate Change Scenarios





History of Flooding: Beaver Kill and Willowemoc Creek

1951

Flood Control Measures built in Livingston Manor

- 1,400-ft levee along the banks of Willowemoc Creek
- 1,000-ft levee along Willowemoc Creek below Cattail Brook
- 1,200 feet of wall built in front of the high school on the right bank

January 19, 1996

- Flood resulting from rapid snow melt and heavy rainfall
- Damaged roads, bridges, bridge abutments, and retaining walls

September 18, 2004

- Remnants of Hurricane Ivan resulted in many streams and creeks overflowing their banks
- Beaver Kill experienced major flooding

April 2005

- Flooding resulted in several million dollars of damage to over 100 buildings and 6 bridges
- Flooding of the Roscoe Library at a depth of about one foot

July 27-28, 1969

- Flood of record at Willowemoc gauge
- Bridges and roads washed out
- Damage to residences, campgrounds, sewer treatment plant, and motel in Livingston Manor
- 3 feet of water on Main Street

June 26-29, 2006

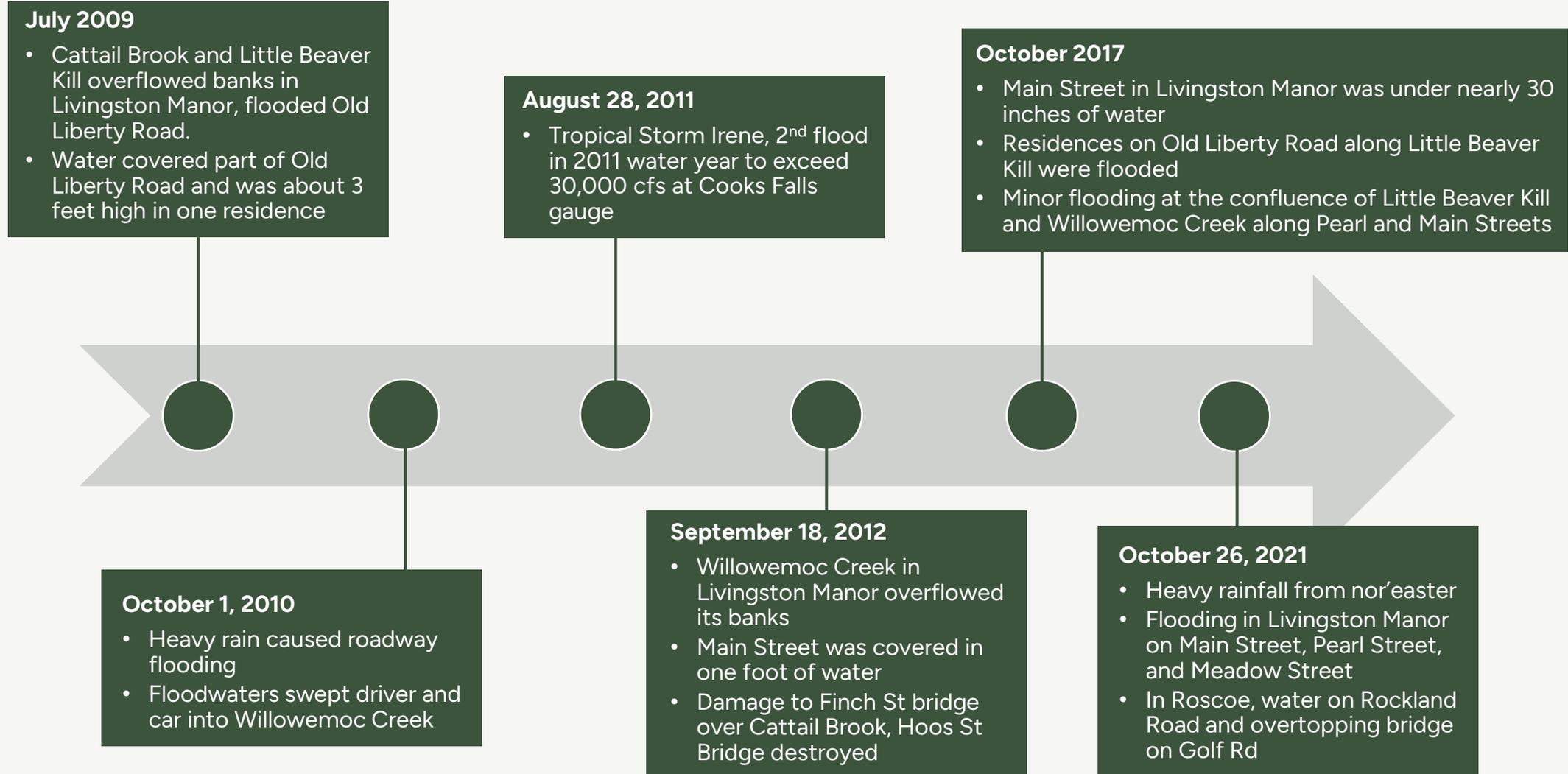
- Floodwaters of a tributary to Willowemoc Creek caused a house to collapse and swept away a resident
- Old Route 17 and Route 17 closed
- Flooding along Lower River Street
- Main Street businesses in Roscoe suffered damages
- Residences along Hazel Road and Pleasant Street flooded
- Roscoe Library flooded with nearly four feet of water

June 19, 2007

- Flash flood from severe thunderstorm destroyed many homes, roadways, and loss of life
- 10 roads severely damaged with Route 206 (Rockland Road) washed out in many places

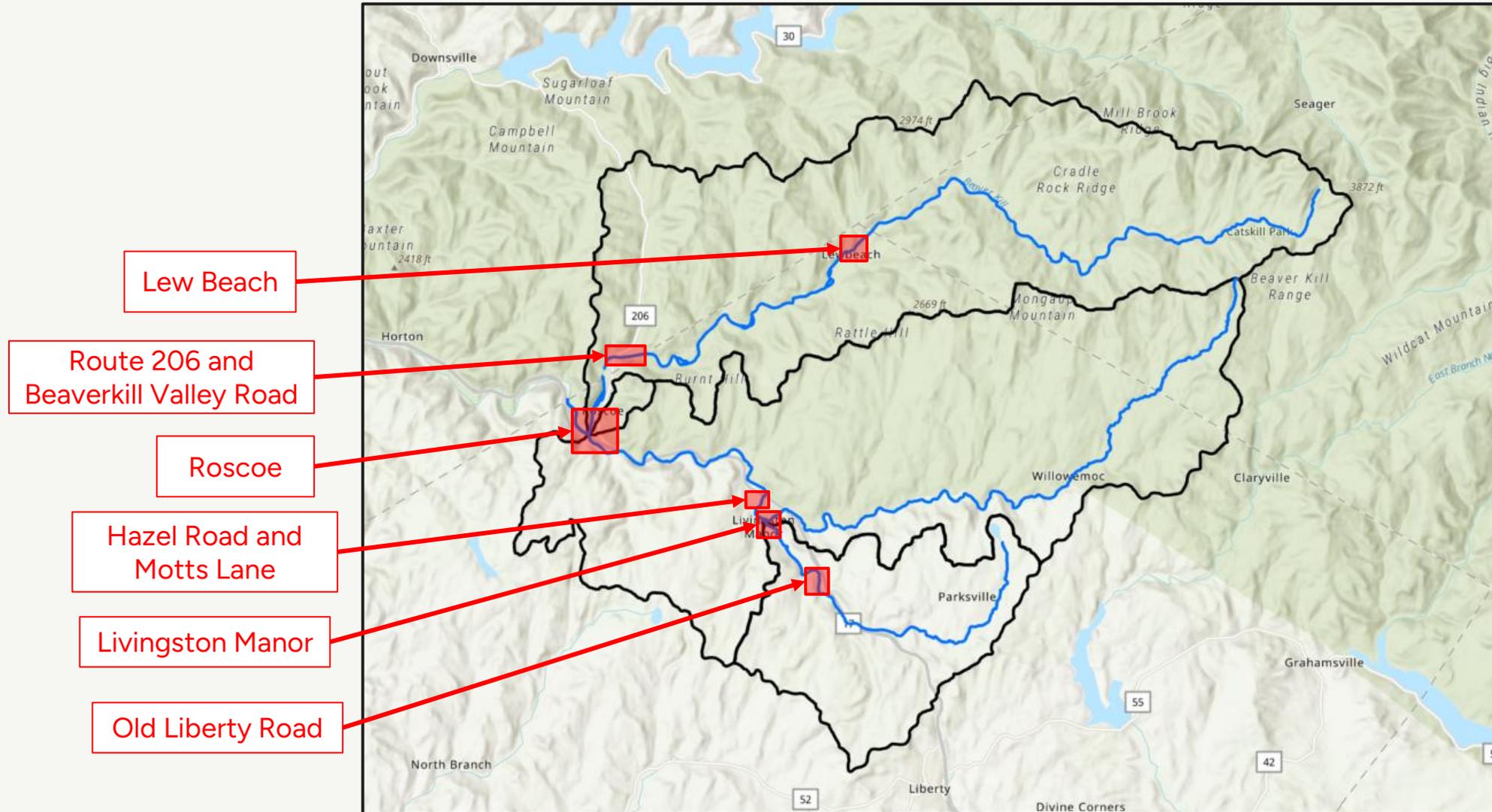


History of Flooding: Beaver Kill and Willowemoc Creek





Flooding Hot Spots: Beaver Kill and Willowemoc Creeks



Lew Beach (Hamlet in Town of Rockland)



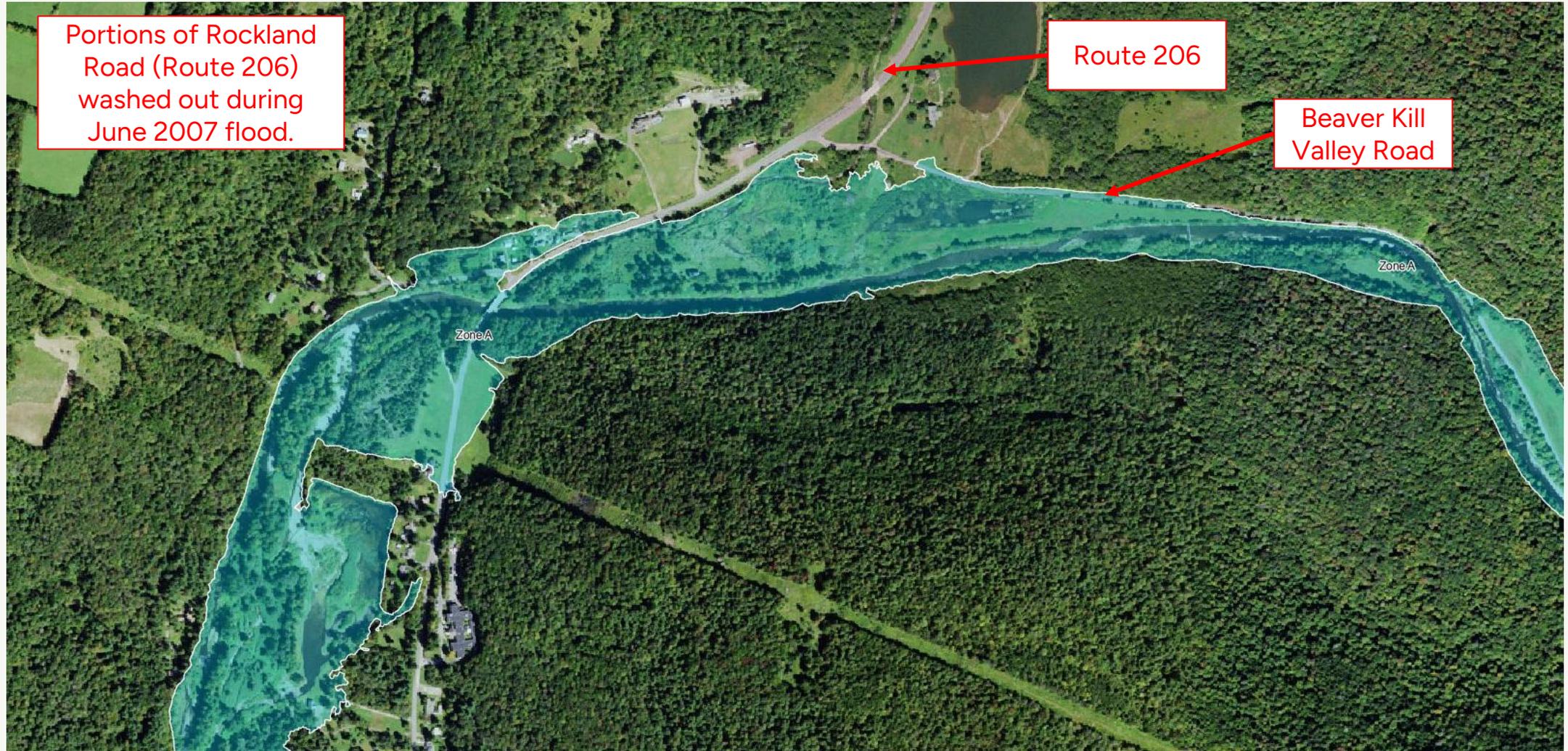
Beaver Kill



Route 206 and Beaverkill Valley Road



Beaver Kill



Roscoe

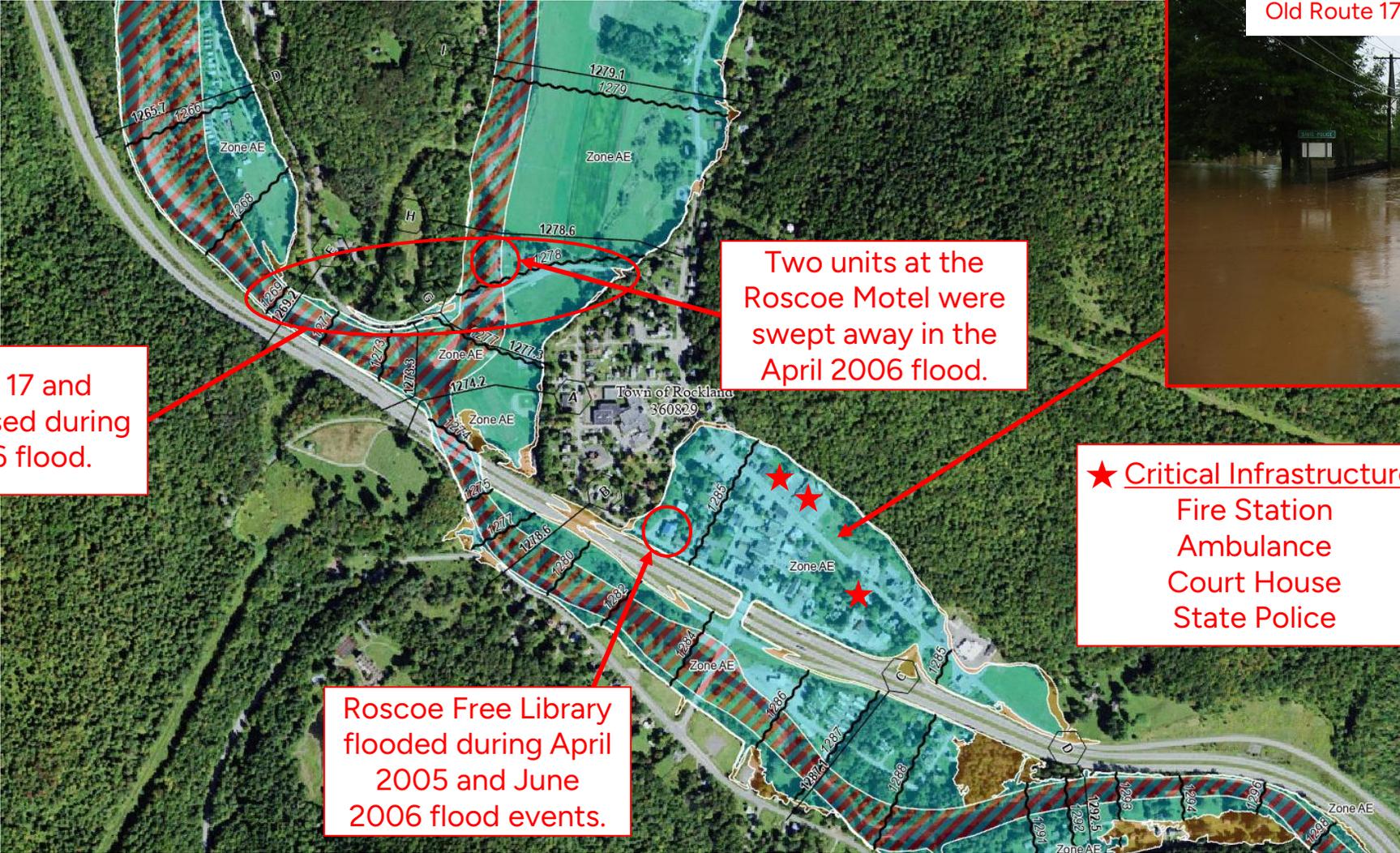
Confluence of Beaver Kill and Willowemoc



Main downtown area is subject to significant flooding.



Old Route 17 During April 2006 Flood



Old Route 17 and Route 17 closed during June 2006 flood.

Two units at the Roscoe Motel were swept away in the April 2006 flood.

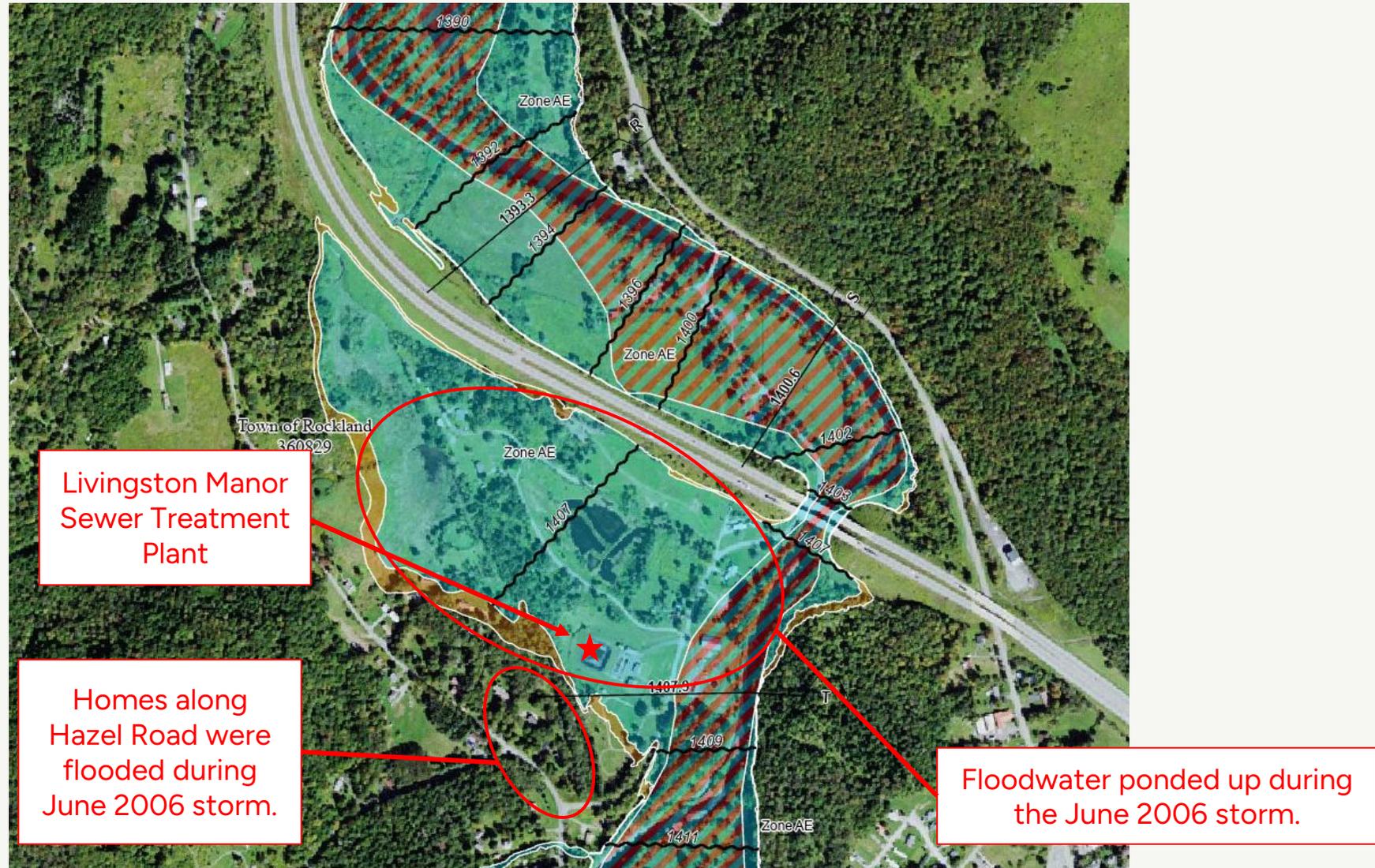
★ Critical Infrastructure
Fire Station
Ambulance
Court House
State Police

Roscoe Free Library flooded during April 2005 and June 2006 flood events.

Livingston Manor



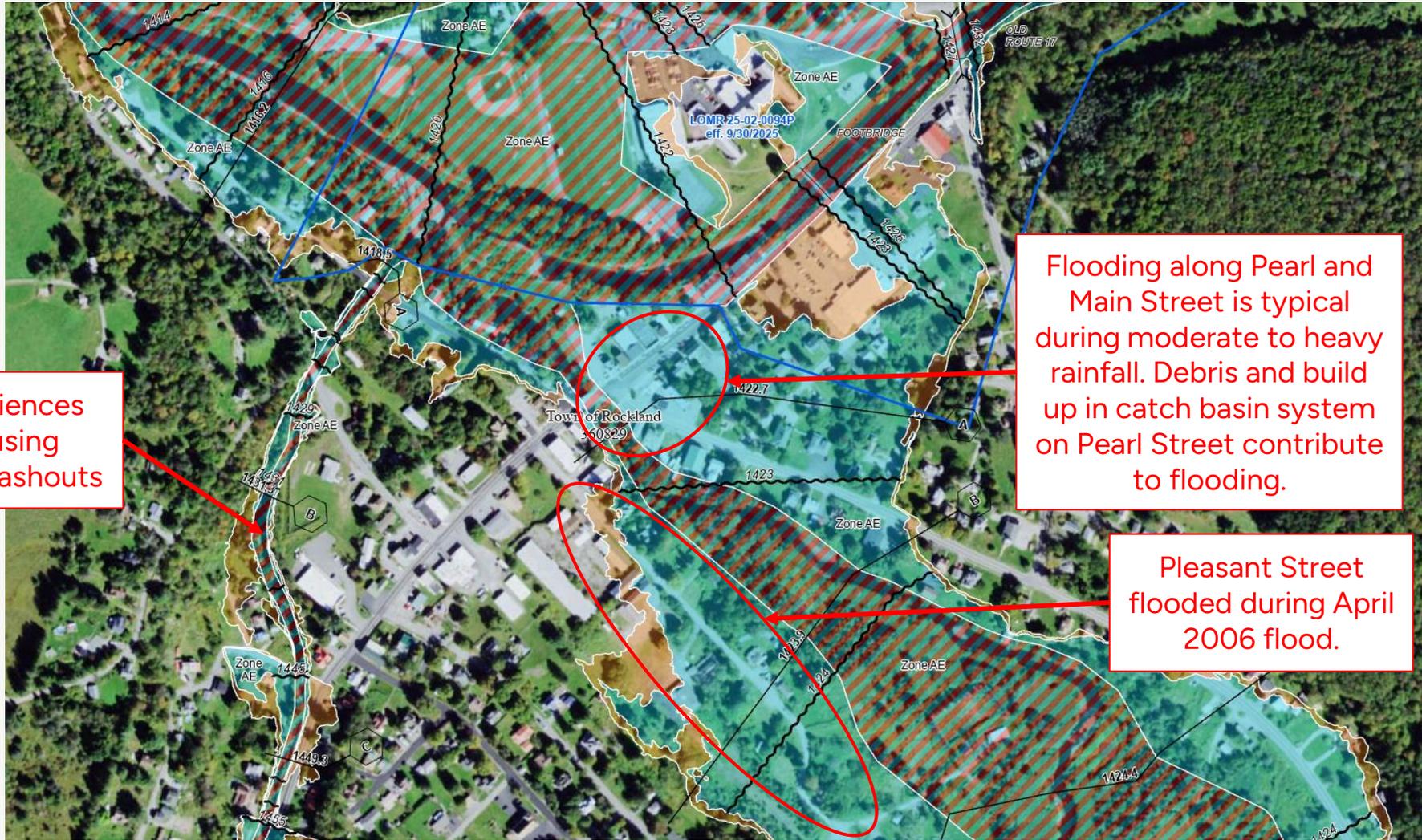
Willowemoc Creek (near Livingston Manor Covered Bridge / Motts Flats)



Livingston Manor

Confluence of Little Beaver Kill and Willowemoc

Repetitive flooding resulting in loss of life and property. Main Street is heavily affected during flood events.



Cattail Brook experiences flash flooding causing culvert and bridge washouts

Flooding along Pearl and Main Street is typical during moderate to heavy rainfall. Debris and build up in catch basin system on Pearl Street contribute to flooding.

Pleasant Street flooded during April 2006 flood.

Livingston Manor



Confluence of Little Beaver Kill and Willowemoc



66 Main Street during September 2012 Flood



Main Street during September 2012 Flood



Finch Street bridge over Cattail Brook during June 2006 Flood



Main Street during September 2004 Flood



Morsston



Little Beaver Kill





Data Gathering

Reports and Studies:

- FEMA Flood Insurance Studies (FIS) and Rate Maps (FIRMS)
- County Hazard Mitigation Plans – Ulster (2024), Sullivan (2021), Delaware (2021)
- 2016 USACE Livingston Manor Flood Risk Management and Ecosystem Restoration Feasibility Report

Contacts:

- Public Works/Highway Departments
- Emergency Responders
- Other key contacts with firsthand knowledge of flooding

Observations:

- Areas of flooding/flow paths/flooding depths
- Bridges/culverts that overtopped or became clogged with debris
- Locations of critical facilities and anchor businesses
- Photographs and videos



Thank you,
any questions?