SLRCONSULTING.COM

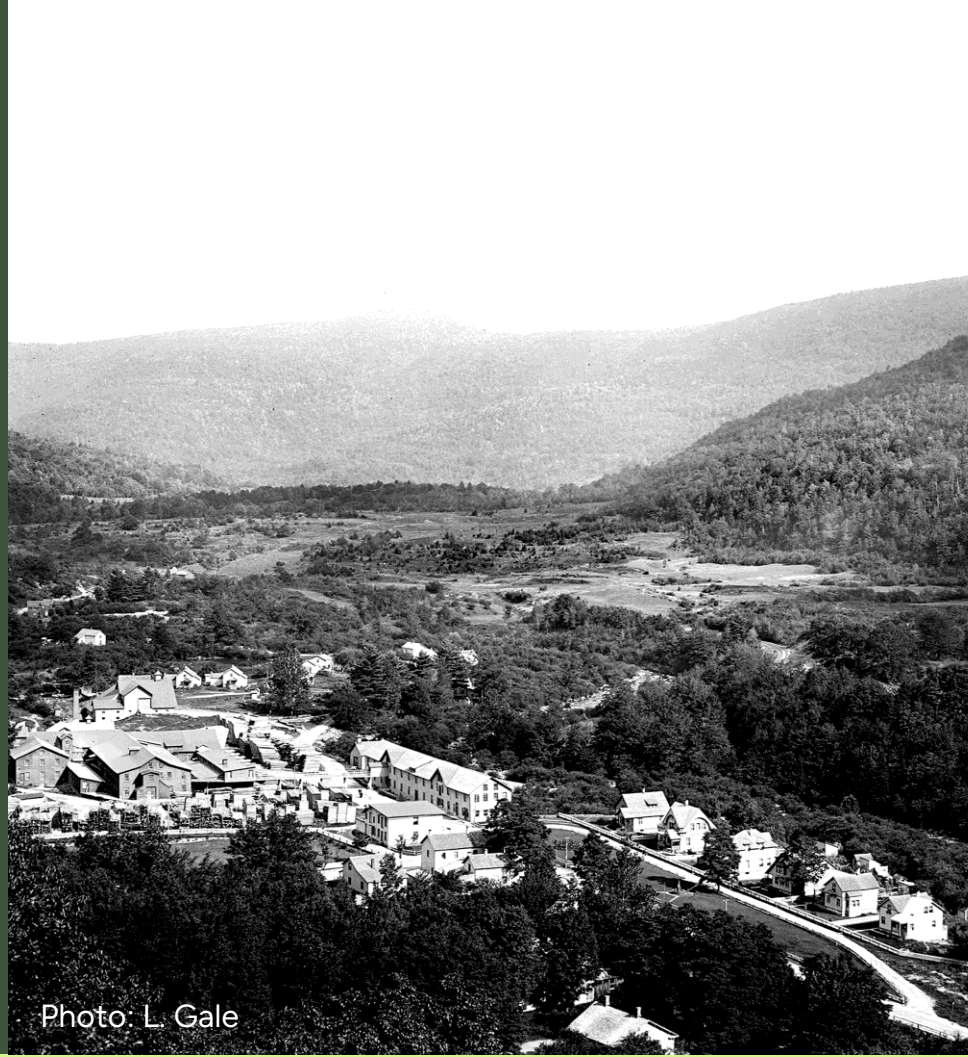
Hamlet of Chichester Local Flood Analysis

April 25, 2026

SLR

AGENDA

- Introductions
- Review of Chichester LFA study area and approach
- Flood history
- FEMA zones and definitions
- Meeting schedule
- Collect information about flooding and flood damages



Meet the Team

Mark Carabetta, CFM
US Manager of Climate Resilience Planning

Matt Trueheart
Associate Water Resources Engineer

Adam Doan
Principal Water Resources Scientist

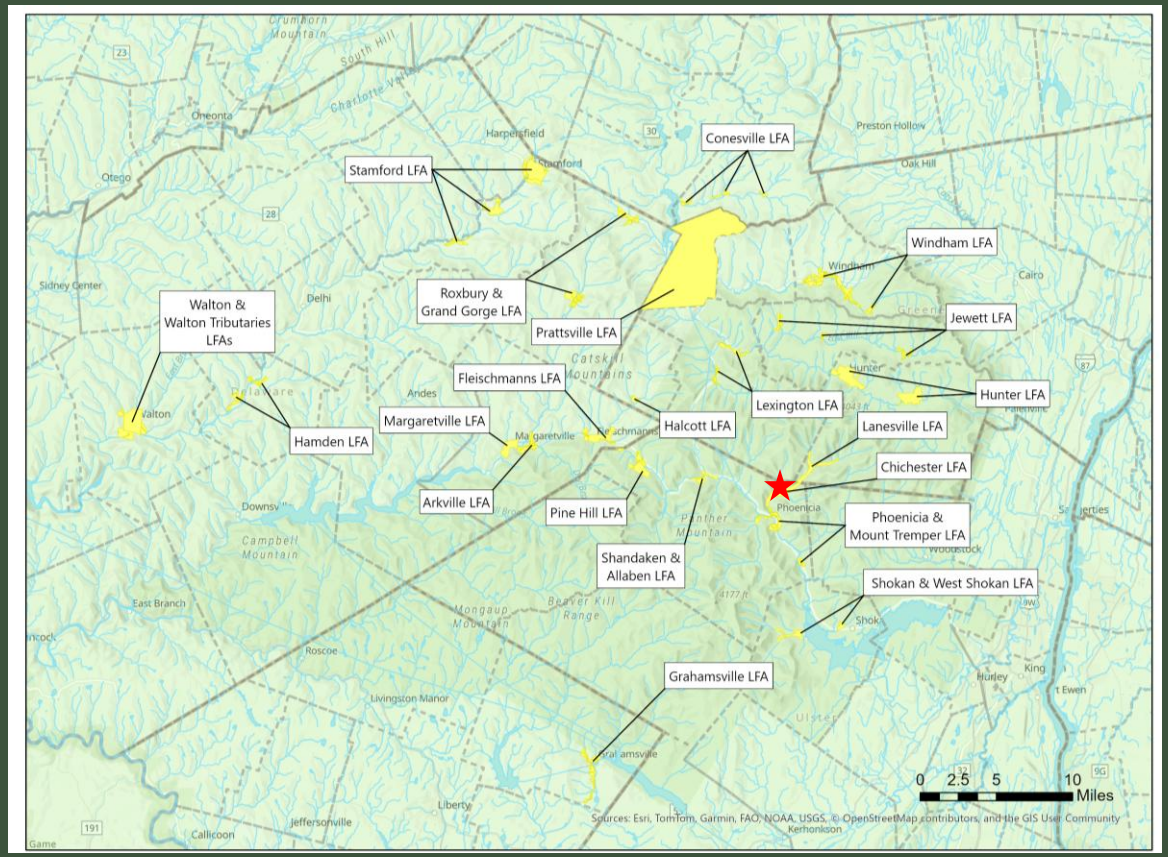
Pamela Green
Climate Resilience Scientist

- **Hamlet of Chichester**
- **Chichester Flood Advisory Committee (ChiFAC)**
  - **Town of Shandaken (officials and residents)**
  - **Cornell Cooperative Extension of Ulster County (CCEUC)**
  - **Ulster County Department of the Environment (UCDOE)**
  - **Ulster County Soil and Water Conservation District (UCSWCD)**
  - **New York City Department of Environmental Protection (NYCDEP)**
  - **Catskill Watershed Corporation (CWC)**

Ashokan Watershed Stream Management Program (AWSMP)

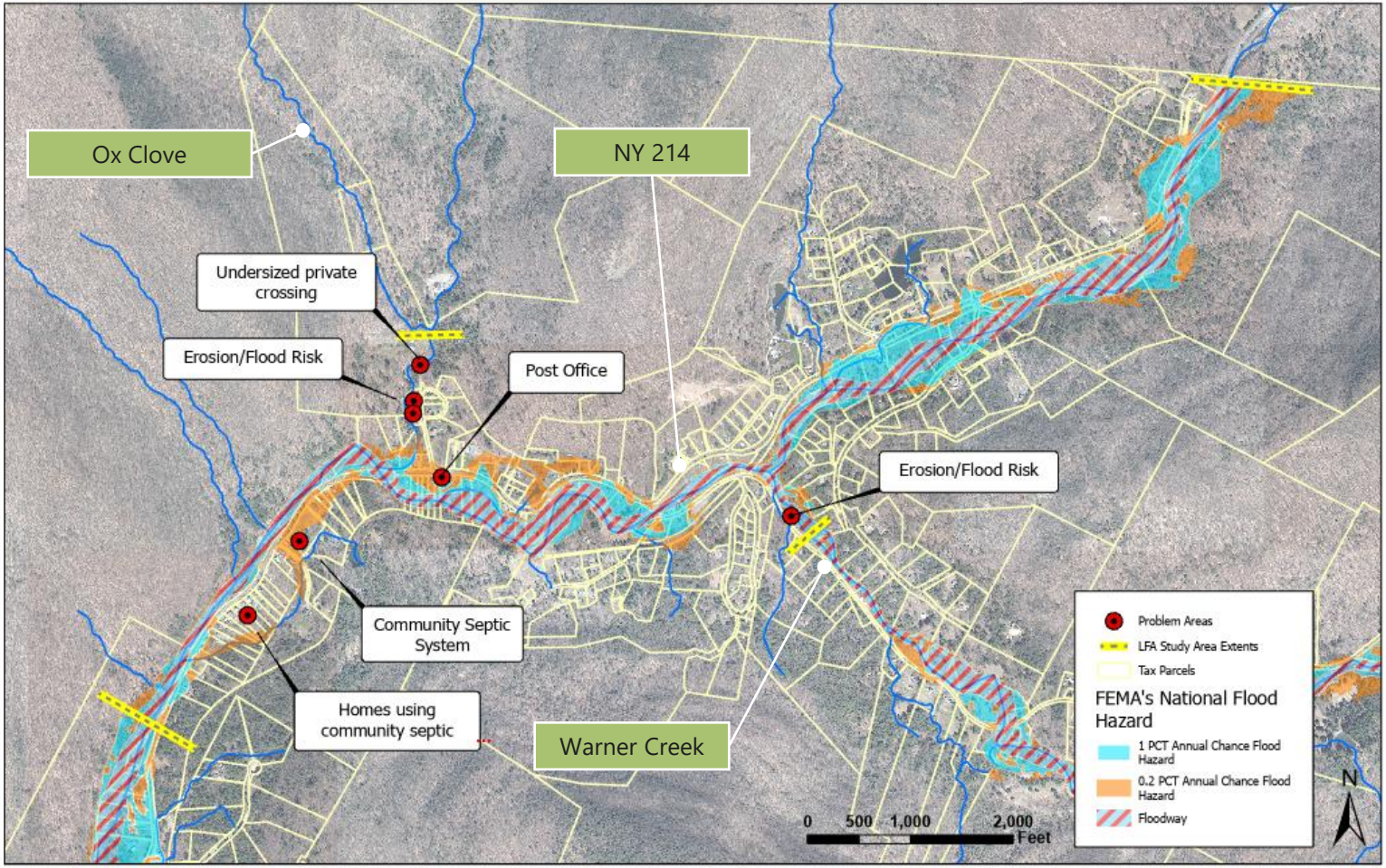
LFAs completed by SLR

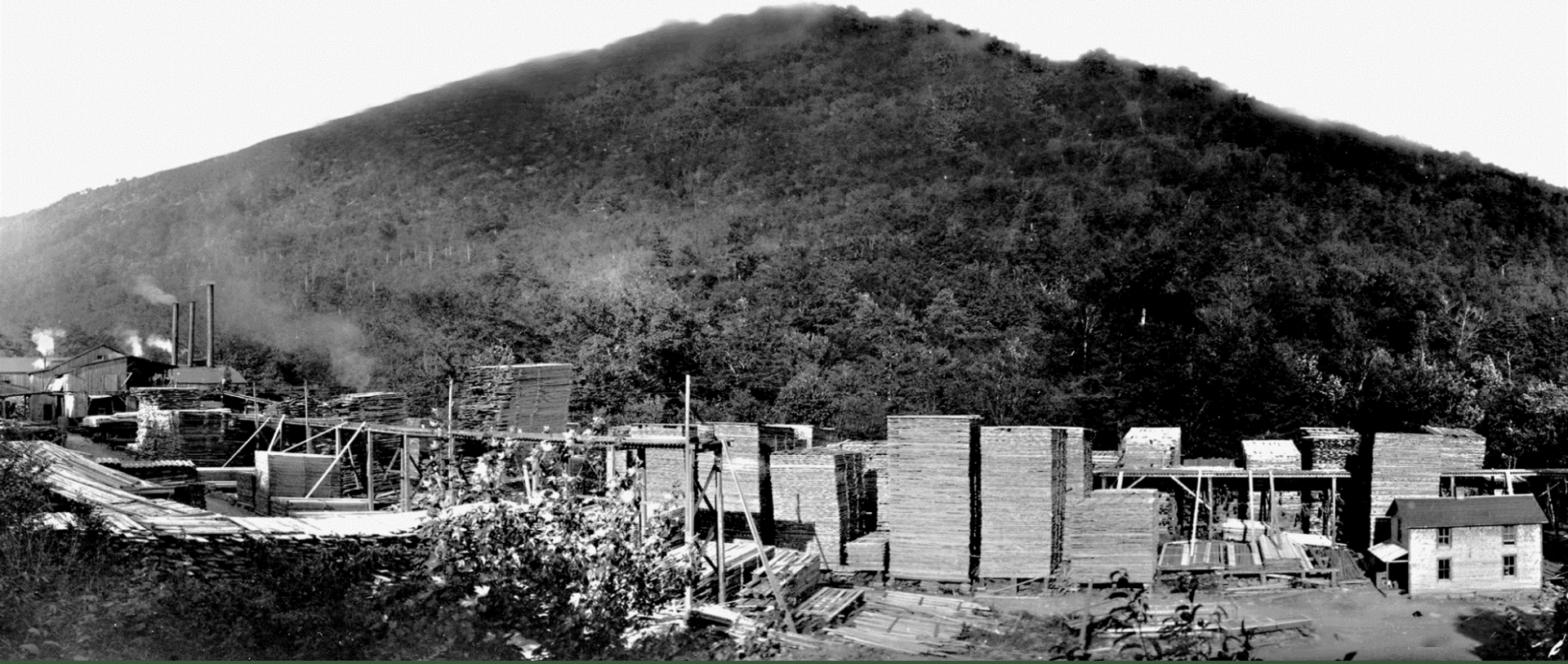
- Prattsville (2013)
- Walton (2015)
- Windham (2015)
- Lexington (2016)
- Fleischmanns (2016)
- Phoenicia & Mount Tremper (2016)
- Arkville (2017)
- Conesville (2017)
- Hamden (2017)
- Walton Tributaries (2015)
- Tannersville (2018)
- Shandaken & Allaben (2018)
- Hunter (2018)
- Halcott (2019)
- Roxbury & Grand Gorge (2019)
- Stamford (2020)
- Grahamsville (2022)
- Jewett (2022)
- Pine Hill (2023)
- Lanesville (2025)
- Margaretville (2025)
- Shokan-West Shokan (underway)



Final LFA Reports: http://catskillstreams.org/lfa/

Chichester LFA Project Area






Park Rd
Chichester
State Route 214
State Route 214
State Route 214
Stony Clove Creek
Stony Clove Creek
Silver Hollow Rd
Stony Clove Ln
Fichtner Rd
Cinder Ln

Flood Mitigation Toolbox

Bridges, Dams, Culverts

- Removal
- Operational Changes
- Modification
- Replacement

Channel Alteration

- Dimension (Widening - Deepening)
- Profile (Slope)
- Pattern (Realignment)

Floodplain

- Reclamation
- Creation
- Enhancement

Planning

- Flood Code Enforcement
- Wetland Protection
- Limiting Impervious Cover
- Zoning Modifications

River/ Watershed Management

- Repair of Eroding Banks
- Watershed Management
- Stormwater Detention
- Sediment or Debris Management

Individual Building Treatments

- Flood-proofing
- Elevation of Structures
- Voluntary Buy-Out

Upper Boiceville Road Culvert Replacement, Boiceville
Recommended in Olive LFA, completed 2017
Constructed 2020 to 2021

Before

- Steel beam deck atop concrete abutments
- 7-foot span, 5-foot rise
- Passes 25-year flow
- Overtopped in 50-year flow

After

- Embedded four-sided box culvert
- 18-foot span, 7-foot rise
- Passes 50-year future flow with freeboard for potential debris jams


Pre-construction
Summer 2021

Post-construction
December 2023

Railroad Avenue, Tannersville

Tannersville LFA completed 2018
Constructed in 2023

- Relocation of Sawmill Creek channel away from roadway embankment
- Correcting incised condition that precludes left bank floodplain activation
- Restoration of three-stage channel including a bankfull channel, lower floodplain, and upper floodplain
- Stabilization of the Railroad Avenue roadway embankment
- Restoration of in-stream features and vegetated riparian zone

Construction cost: ~$1M

Fellow Mountain Café Elevation, Hunter

(recommended in Hunter LFA, completed 2018)

Background

- Former Odd Fellows Hall
- History of basement w/utilities flooding
- First floor below BFE
- Renovation = Substantial Improvement = NFIP compliance required
- 2019 CWC design ($19,000), construction ($278,115), tank anchor ($3,500)

Mitigation Solution

- Elevated 3.25′ (BFE +2′)
- Poured foundation with flood vents; no basement
- Utilities elevated; fuel tanks anchored
- Cost = $300,615 (CWC); private funding
- New commercial business on Main Street

Townsend Elementary School Floodproofing, Walton
(recommended in Walton Tributaries LFA, completed 2017)

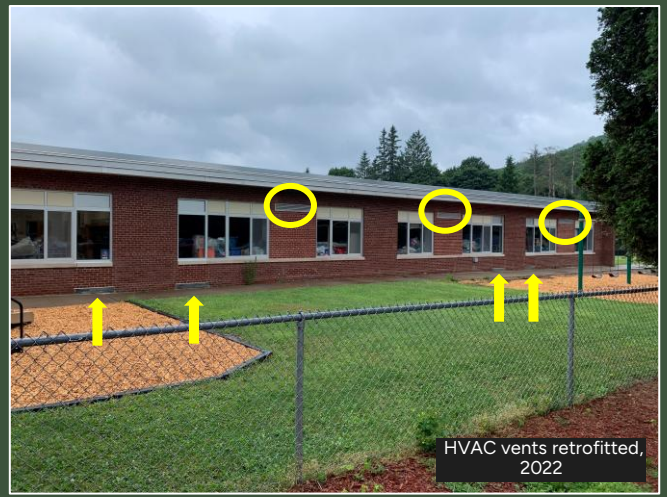

Post-flood, August 2011

Background

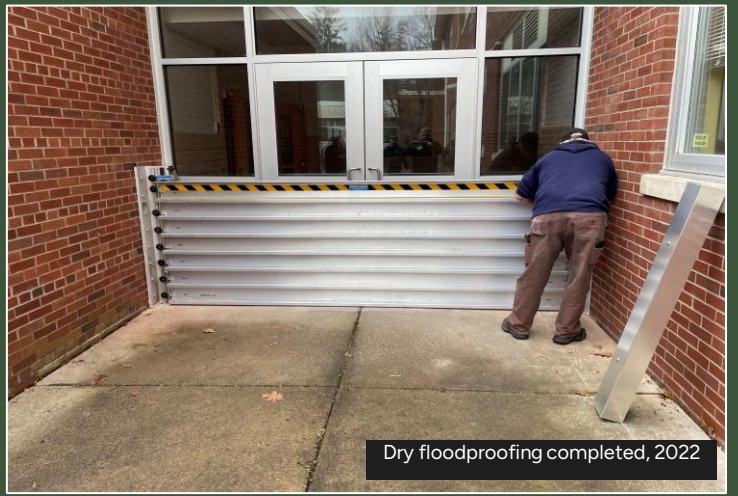
- Gym, Kindergarten and 2nd Grade wing flooded in 2006 & 2011
- Location vulnerable to winter ice jam formation resulting in flooding
- 2019 CWC design ($96,760) and 2020 construction ($647,403)

Mitigation Solution

- Construction completed in 2022
- 10 exterior entranceways retrofitted to accommodate flood panels (dry floodproofing); Stored on site, annual training exercise
- Elevation of 12 HVAC vents and retrofit of > dozen additional openings
- Elevation of utilities
- Total Cost = $744,162 (CWC); contribution from Walton CSD


HVAC vents retrofitted, 2022


Flood log installation


Dry floodproofing completed, 2022

Olive Fire Dept., Co. No. 5 Relocation, Boiceville

(recommended in Olive LFA, completed 2017)

Background

- Located in Floodplain; 6' inundation @ 100yr
- Inundated @ > 30yr floods
- Land was deeded to Town by NYC for sole purpose of providing fire protection in 1959 (nearby school built in 1952)
- OFD is its own entity (contract w/town)
- #1 recommendation in LFA was to address this critical facility

Timeline/Process

Town & OFD worked w/DEP to find suitable site (2018)

Subdivided, purchased (2019-20)

Design and lining up construction financing (2020-2021)

Site work and construction (2021-23)

Buyout (2024) and demolition (2025) of former structure & public recreational access (2026…)

Mitigation Solution

- Rebuilt half-mile away, outside floodplain
- ~ $3M Total Cost
  $1,032,400 (CWC); ~$2M (OFD)
  - $50,000 (septic)
  - $827,400 (design / construction)
  - $155,000 (property purchase)

The FIRST critical facility relocation in the watershed under this program

Fuel Tank Anchoring

500-yr floodplains throughout the watershed

- No cost for residents or businesses in floodplains (may be basements or exterior)
- Residential up to 330 gallons (oil), 420 pounds (propane)
- Commercial tanks eligible (w/engineered designs)

Why you should anchor tanks

Anchored propane tank

Anchored fuel oil tank

Preparation of concrete pad

Our analysis will focus on:

- Flood prone homes, businesses, and critical facilities along Stony Clove Creek and small portions of Warner Creek and Ox Clove
- Homes and infrastructure at risk from erosion
- Vulnerable or undersized bridges
- Flood prone or vulnerable areas of roadway
- Threats to water quality

Public Input – Help us understand flooding patterns and problems

Engineering Analysis – Hydraulic modeling of flood mitigation scenarios

Benefit Cost Analysis – To understand viability

Funding - Identification of potential funding sources

LFA Report and Plan - Blueprint for near- and long-term flood mitigation

Implementation – Funding sought to implement recommended projects

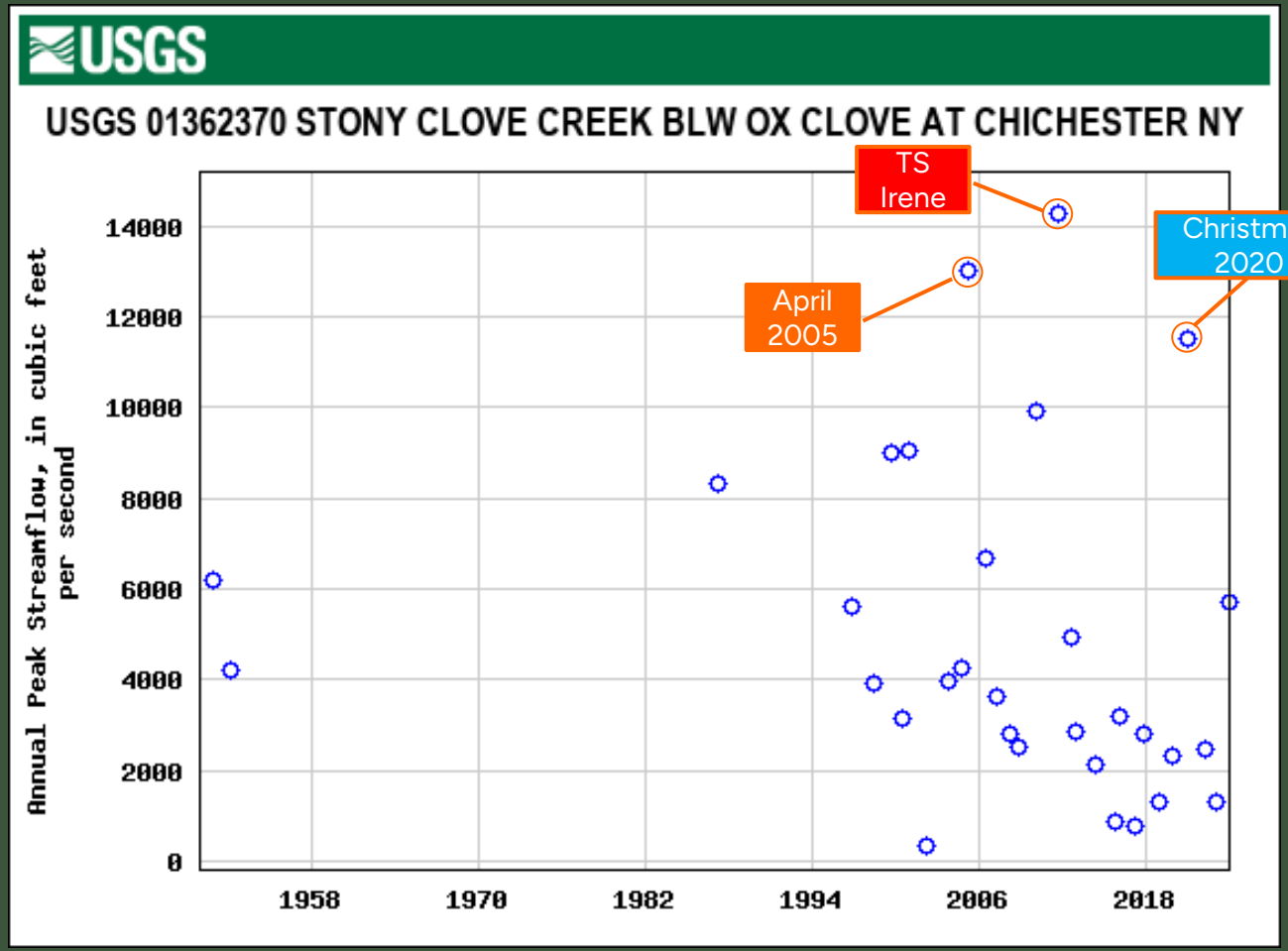
PREVIOUS ANALYSES

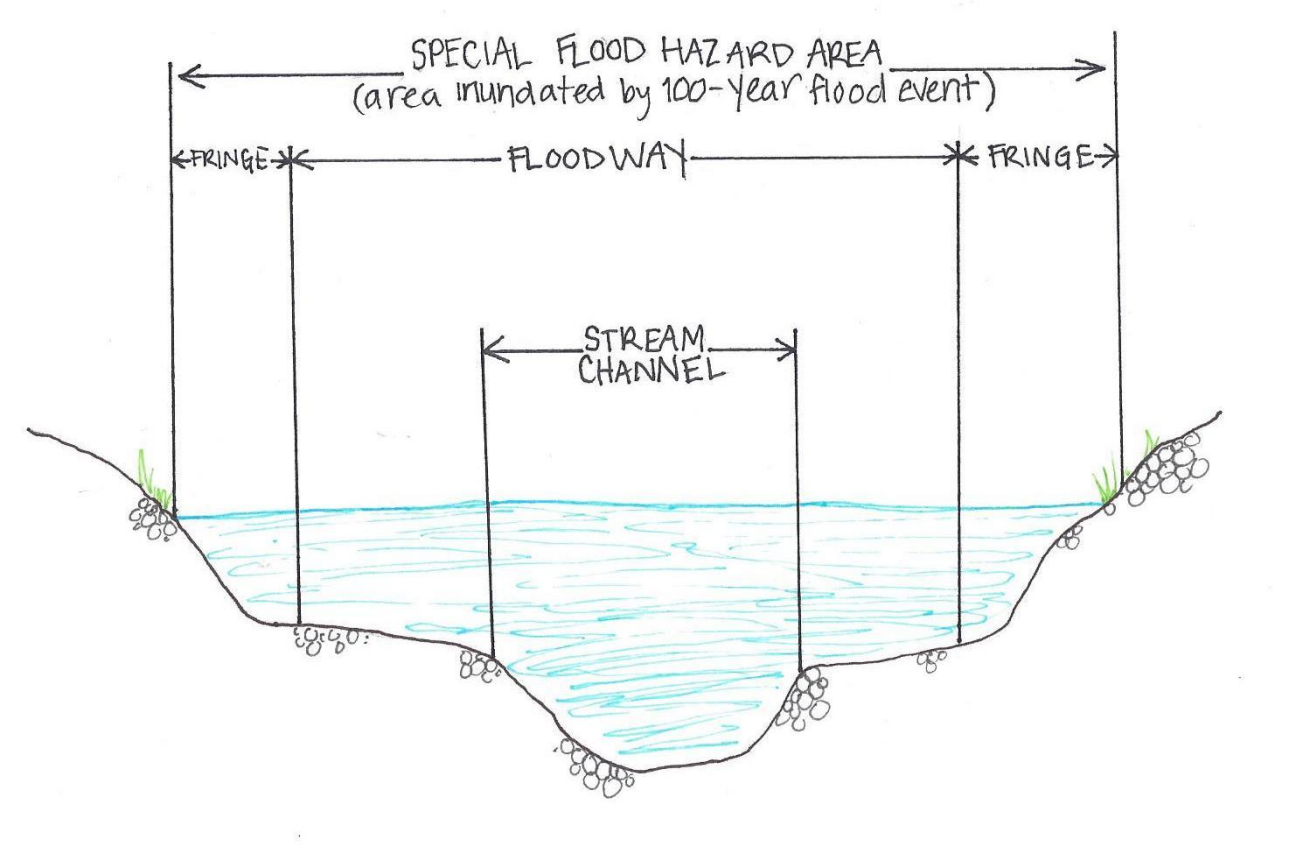
- Phoenicia/Mt. Tremper LFA (SLR, 2016)
- Ulster County Multi-Jurisdictional Natural Hazard Mitigation Plan (Tetra Tech, 2024)
- Town of Shandaken Comprehensive Plan (Stantec, 2005) – currently being updated
- Town of Shandaken Flood Mitigation Plan (Tetra Tech, 2019)
- Flood Insurance Study for Ulster County (FEMA, 2016)
- Additional Flood Modeling for Phoenicia (SLR, 2025)
- Stony Clove Creek Stream Management Plan (GCSWCD, 2005)
- Various stream restoration projects (AWSMP & Town of Shandaken)
- Bank Erosion Monitoring Study (SLR, currently being updated)

Flood History

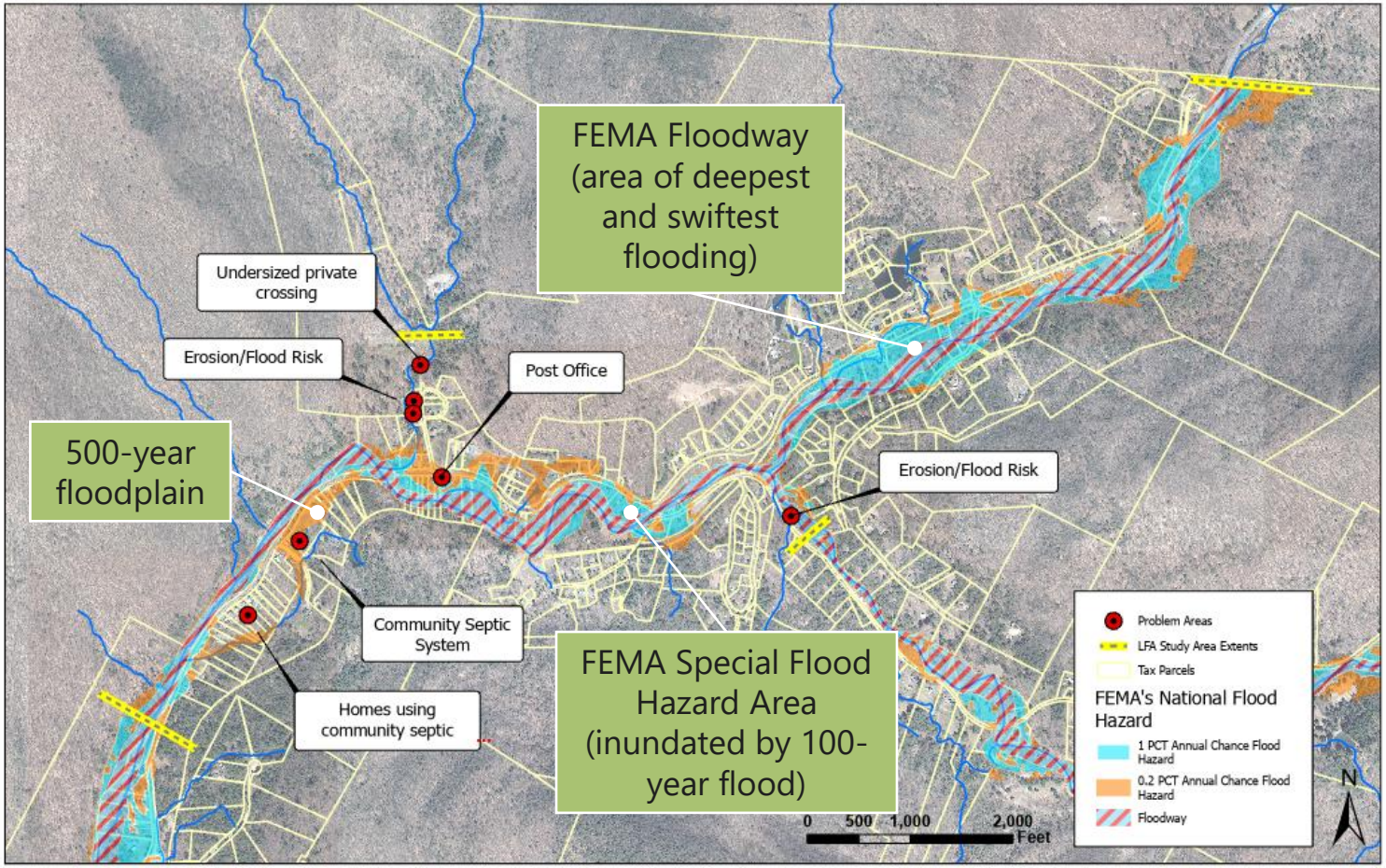
- In the Catskills, flooding can happen any time of year but usually results from:
  - Winter and spring rain/snowmelt (April 2005, Christmas 2020)
  - Late summer and fall tropical storms or hurricanes (Tropical Storm Irene – August 2011)
- Climate Change Impacts – intense, unpredictable storms

Photo: A. Bennett DEP


USGS
USGS 01362370 STONY CLOVE CREEK BLW OX CLOVE AT CHICHESTER NY
Annual Peak Streamflow, in cubic feet per second
14000
12000
10000
8000
6000
4000
2000
0
1958
1970
1982
1994
2006
2018
TS Irene
April 2005
Christmas 2020



Special Flood Hazard Area, Floodway and Flood Fringe


FEMA Floodway (area of deepest and swiftest flooding)
Undersized private crossing
Erosion/Flood Risk
Post Office
500-year floodplain
Erosion/Flood Risk
Community Septic System
Homes using community septic
FEMA Special Flood Hazard Area (inundated by 100-year flood)
Problem Areas
LFA Study Area Extents
Tax Parcels
FEMA's National Flood Hazard
1 PCT Annual Chance Flood Hazard
0.2 PCT Annual Chance Flood Hazard
Floodway
0 500 1,000 2,000
Feet
N

FEMA ZONES & DEFINITIONS

Special Flood Hazard Area (SFHA)

- Area flooded by the base flood
- “100-year floodplain” or “1% annual chance flood”

500-year floodplain

- 1 in 500 probability of occurring in any given year or 0.2% annual chance flood

Development within the SFHA and 500-year floodplain

- First floor* must be +2 feet above base flood elevation (per Town Code)
- If federally secured mortgage, must obtain flood insurance
- “Pre-FIRM” buildings must comply with code if they make substantial improvements, which can include rebuilding after flood

* First floor can be basement floor

FEMA ZONES & DEFINITIONS

Floodway

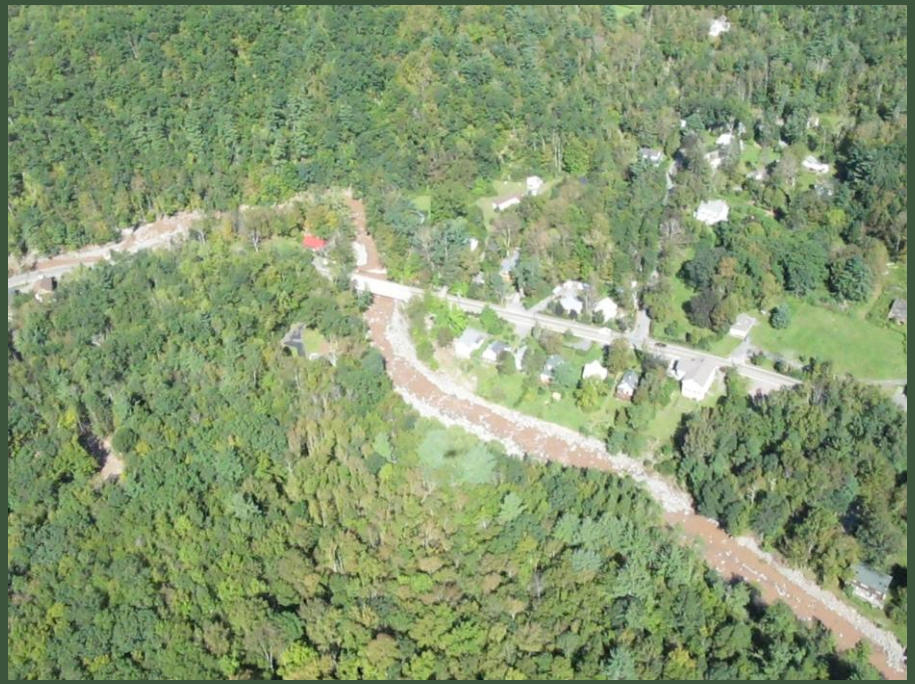
- Area of deepest and swiftest flooding
- Area of greatest danger during a flood

Development within the Floodway

- Filling or development within floodway requires demonstration that no rise in base flood will occur

Why do we want to reduce flooding?

- Floods are getting worse
- A structure in the SFHA can expect a **26%** chance of flooding within the span of a 30-year mortgage (that % increases when you consider future flows)
- Just 1 inch of water in a home can cost an average of $25,000
- Flood insurance can help homes and business recover and does not require a national disaster declaration



Suggested LFA Meeting Schedule

Public Meeting #1 -
gather information about flooding
(April)

Public Meeting #2 -
present preliminary results and gather feedback/ideas
(September)

Public Meeting #3 -
present final results
(January 2027)

ChiFAC (Feb) kick-off

ChiFAC (May)

ChiFAC (Aug)

ChiFAC (Oct)

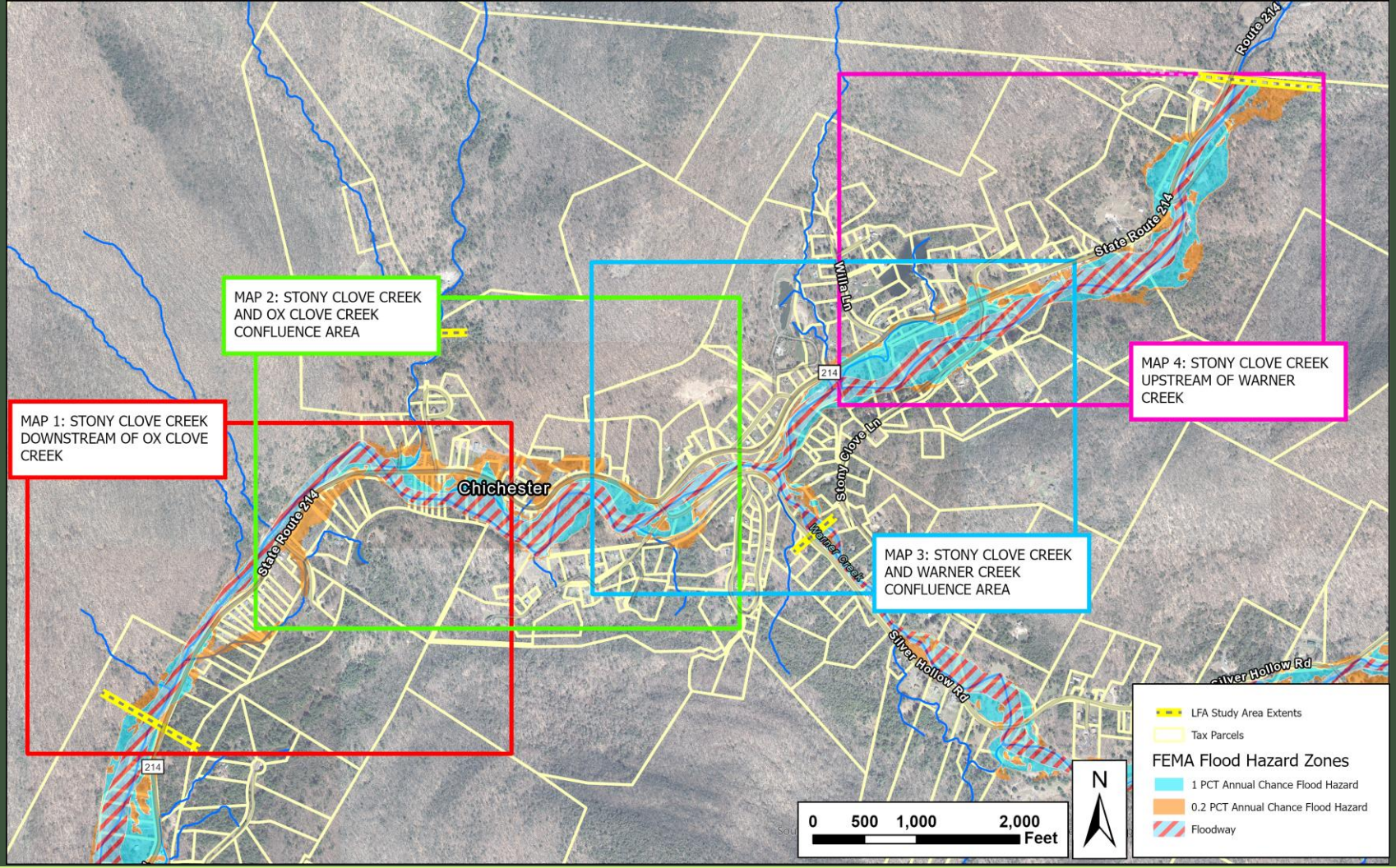
ChiFAC (Dec)

Town of Shandaken Accepts LFA Recommendations

LFA INFORMATION NEEDS

- Observations of flood damages and road washouts
- Bridges/culverts that overtopped or became clogged with large wood and sediment
- Observations of bank erosion and channel behavior
- Locations of critical facilities and anchor businesses
- Sources of potential water quality impairment during a flood
- Homes/Business to include for first floor elevation survey

NYCDEP, 2011


MAP 1: STONY CLOVE CREEK DOWNSTREAM OF OX CLOVE CREEK
MAP 2: STONY CLOVE CREEK AND OX CLOVE CREEK CONFLUENCE AREA
MAP 3: STONY CLOVE CREEK AND WARNER CREEK CONFLUENCE AREA
MAP 4: STONY CLOVE CREEK UPSTREAM OF WARNER CREEK
Chichester
State Route 214
Route 214
Wills Ln
Stony Clove Ln
Warner Creek
Silver Hollow Rd
214
LFA Study Area Extents
Tax Parcels
FEMA Flood Hazard Zones
1 PCT Annual Chance Flood Hazard
0.2 PCT Annual Chance Flood Hazard
Floodway
N
0 500 1,000 2,000
Feet

To follow the progress:
www.ashokanstreams.org/Chichester-local-flood-analysis

Thoughts/Questions/Comments?