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Shokan – West Shokan Local Flood Analysis

Public Meeting #1

September 11, 2025

SLR

AGENDA

- Introductions
- Review of Shokan – West Shokan LFA study areas and Shokan Stormwater Management area
- LFA approach
- Flood history and available data
- 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

Mieke Scherpbier, CFM
Project Water Resources Engineer

Matt Trueheart
Associate Water Resources Engineer

Adam Doan
Principal Water Resources Scientist

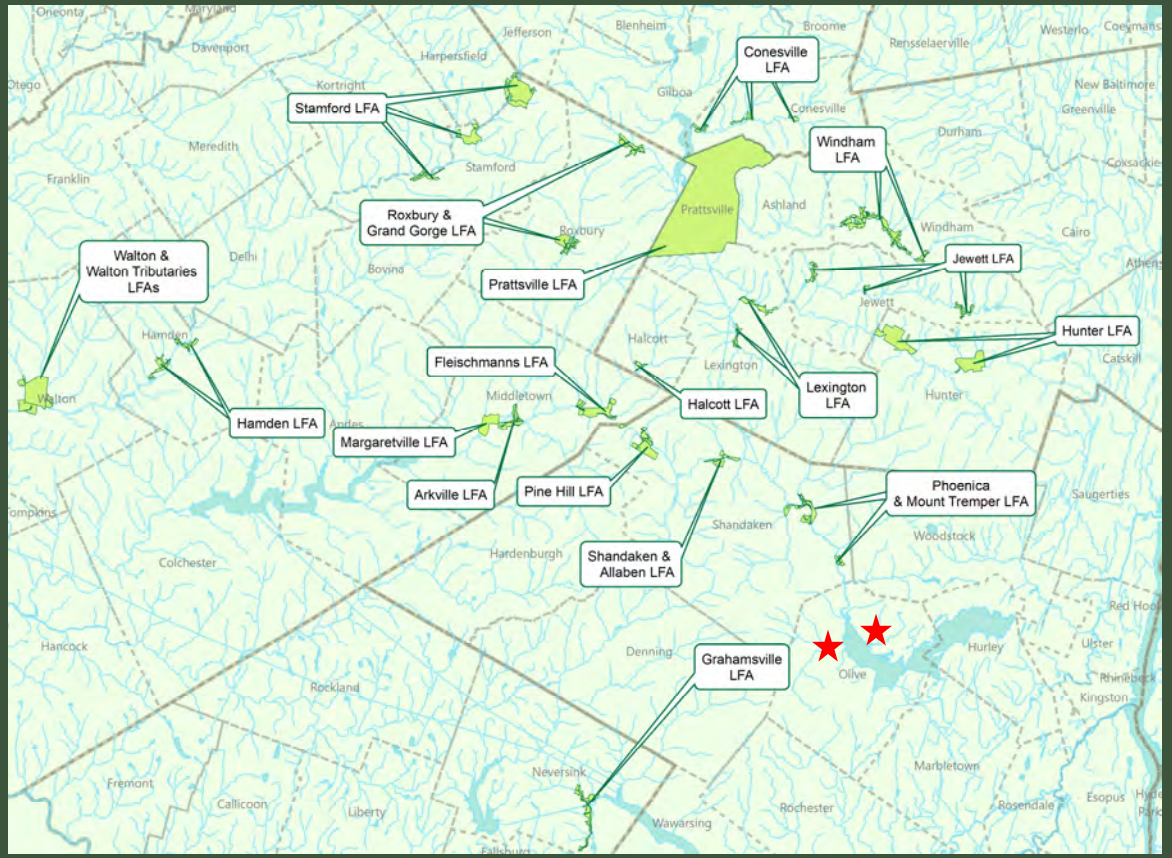
Katie Casson
Staff Water Resources Engineer

- **Town of Olive**
- **Olive Flood Advisory Committee (OFAC)**
  - **Town of Olive (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 (underway)



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

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

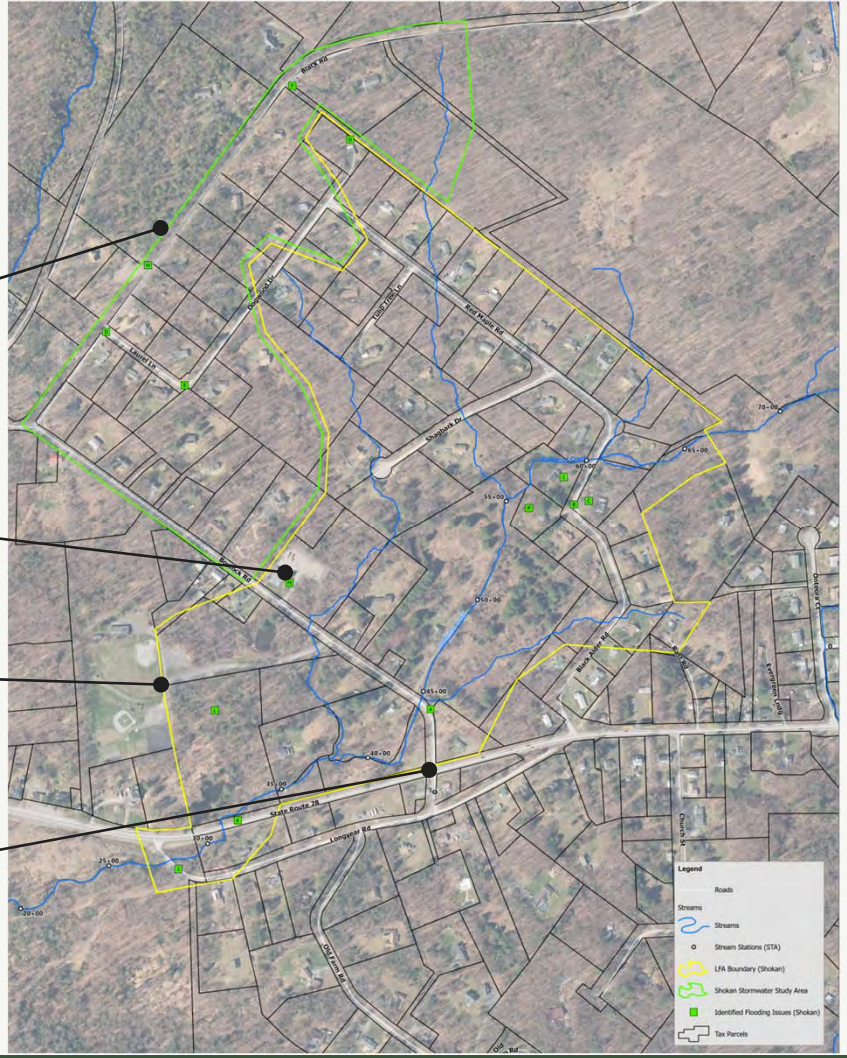
Shokan LFA Project Area and Stormwater Study Area

Shokan Stormwater Study Area

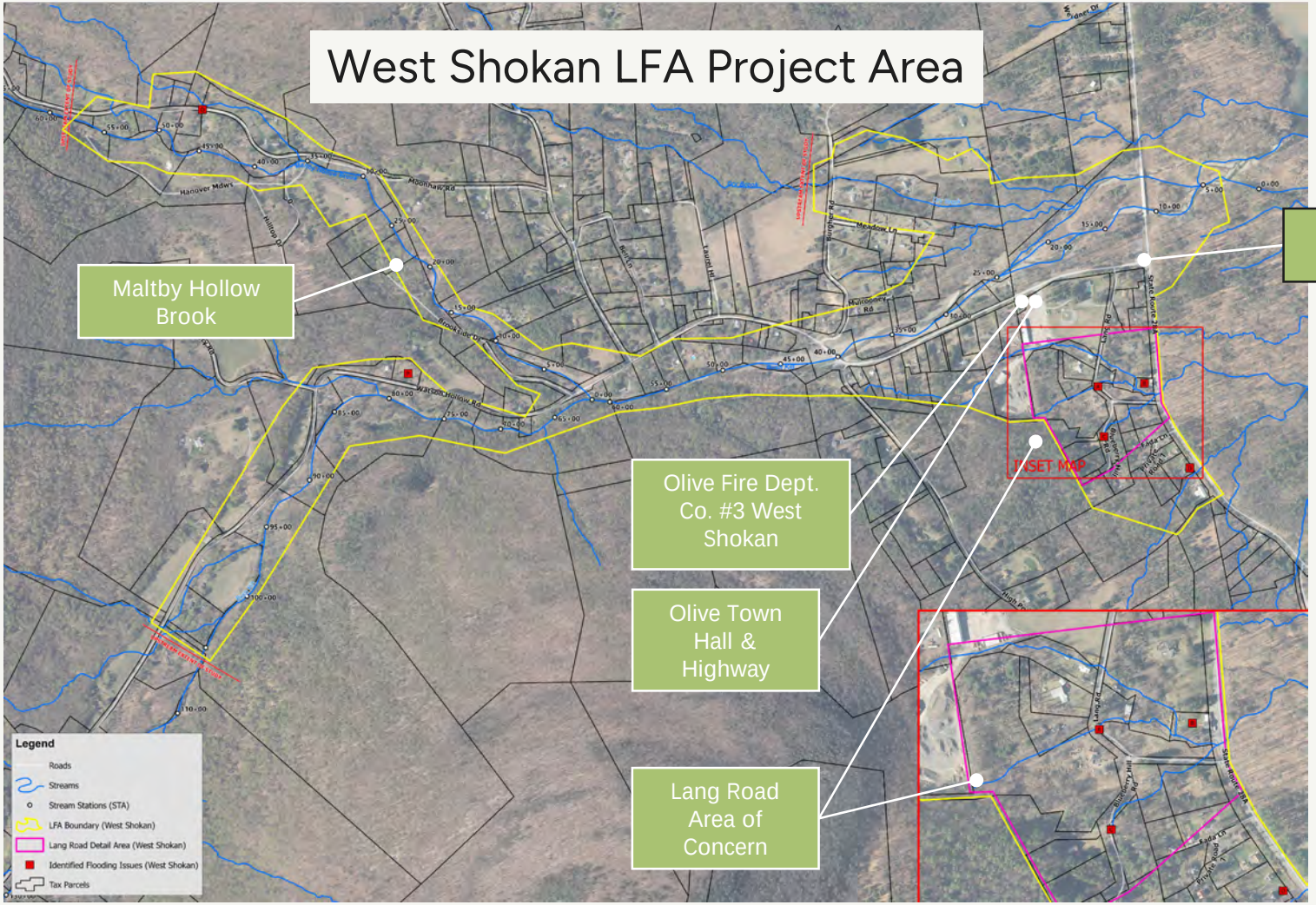
Olive Town Courthouse

Shokan LFA Study Area

Route 28 at Bostock Rd



West Shokan LFA Project Area



Building on Previous Efforts

- Shokan
  - **Bostock Road Culvert** (upsizing)
  - **Red Maple Culvert** (upsizing)
- West Shokan
  - **Burgher Road Culvert** (upsizing)
  - **Hillside Drive Culvert** (upsizing)
  - **Maltby Hollow Bridge** (upsizing)
  - **Bushkill Stream Project** (improved bridge hydraulics, bank erosion, sediment management)

TOWN OF OLIVE LOCAL FLOOD ANALYSIS

FLOOD ENGINEERING ANALYSIS REPORT
HAMLETS OF BOICEVILLE AND WEST SHOKAN
TOWN OF OLIVE
ULSTER COUNTY, NEW YORK

Prepared for:

Cornell Cooperative Extension of Ulster County
3130 Route 28
Shokan, NY 12481

For the Town of Olive, NY

Prepared by:

Woidt Engineering & Consulting, PC
11 South Washington Street
Binghamton, New York 13903

December 30, 2016
Revised May 26, 2017
Revised July 11, 2017
Revised August 8, 2017

Our analysis will focus on:

- Flood prone homes and businesses adjacent to Bush Kill, Maltby Hollow, Butternut Creek, and tributaries
- Critical facilities and anchor businesses
- Vulnerable or undersized bridges and culverts
- Flood prone or vulnerable areas of roadway
- Threats to water quality
- Homes and businesses at risk from erosion
- Stormwater flooding in Shokan adjacent to the LFA study area (Stormwater Study Area – Project 3)


Photo: NYCDEP

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 – Town and/or **Residents** seek funding for recommended projects

PREVIOUS STUDIES & AVAILABLE DATA

- Flood Engineering Analysis Report Hamlets of Boiceville and West Shokan (Woidt Engineering, 2016, revised 2017)
- Ulster County Multi-Jurisdictional Hazard Mitigation Plan (TetraTech, 2024)
- Town of Olive Comprehensive Plan Phase 1 Report (LaBella, 2022)
- Flood Insurance Study for Ulster County (FEMA, 2016)
- Bush Kill Stream Management Plan (AWSMP, 2015)
- Various stream restoration projects (AWSMP & Town of Olive)
- SLR Bostock – Red Maple modeling
- SLR Bush Kill GOSR Project modeling

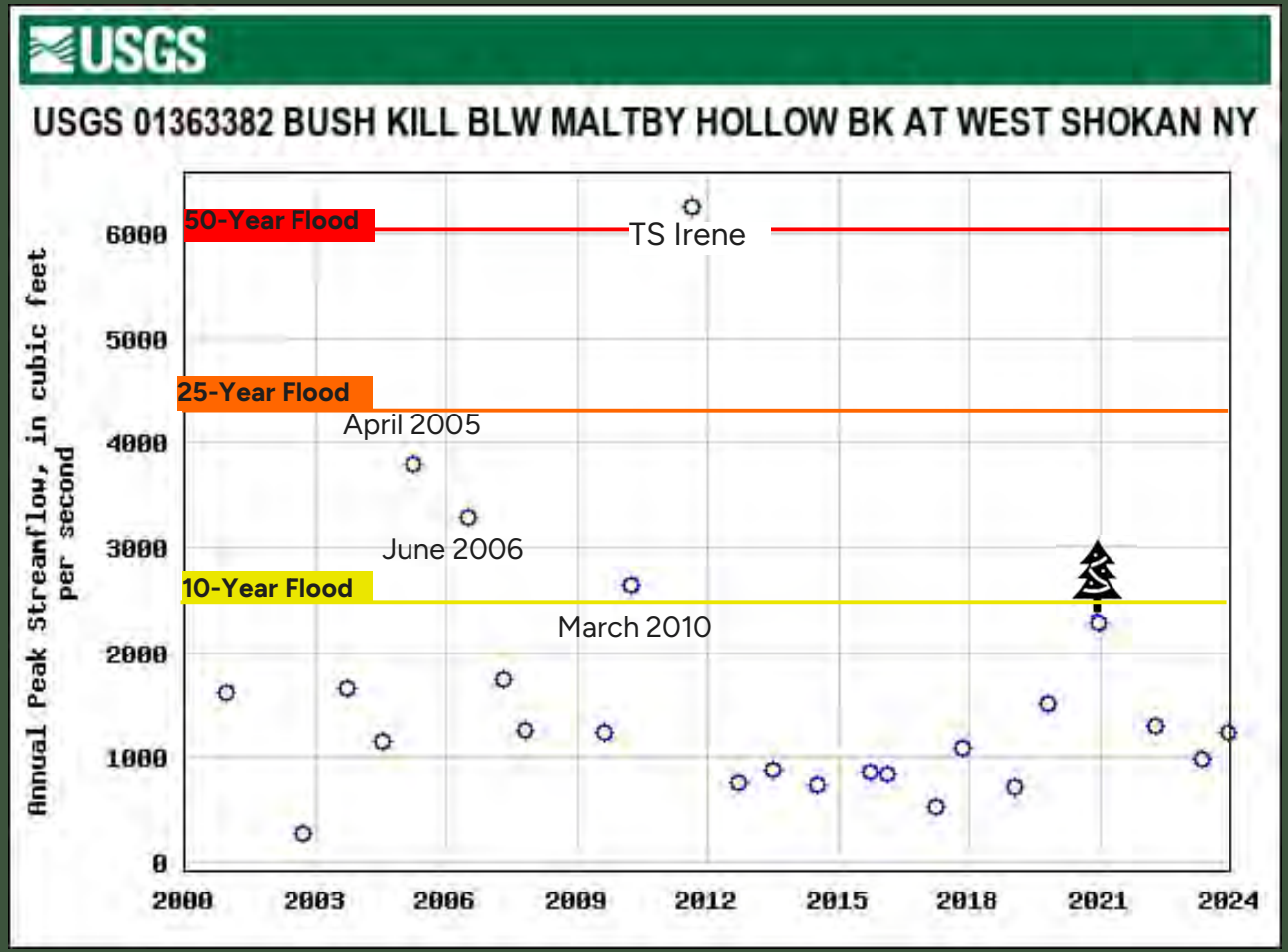
FLOOD HISTORY

In the Catskills, flooding can happen any time of year but usually results from:

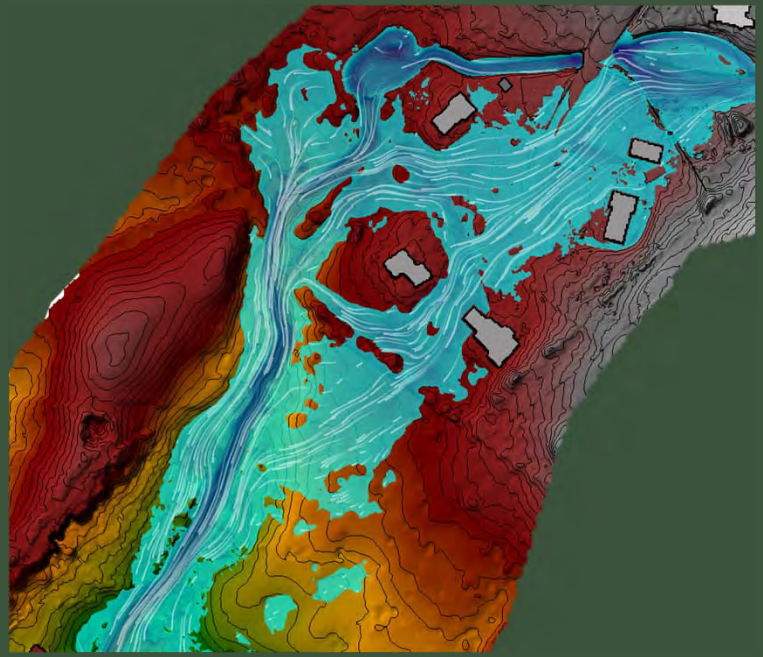
- Winter and spring rain/snowmelt (April 2005, Christmas 2020)
- Late summer and fall tropical storms or hurricanes (Tropical Storm Irene – August 2011)
- Climate Change Impacts – intense, unpredictable storms

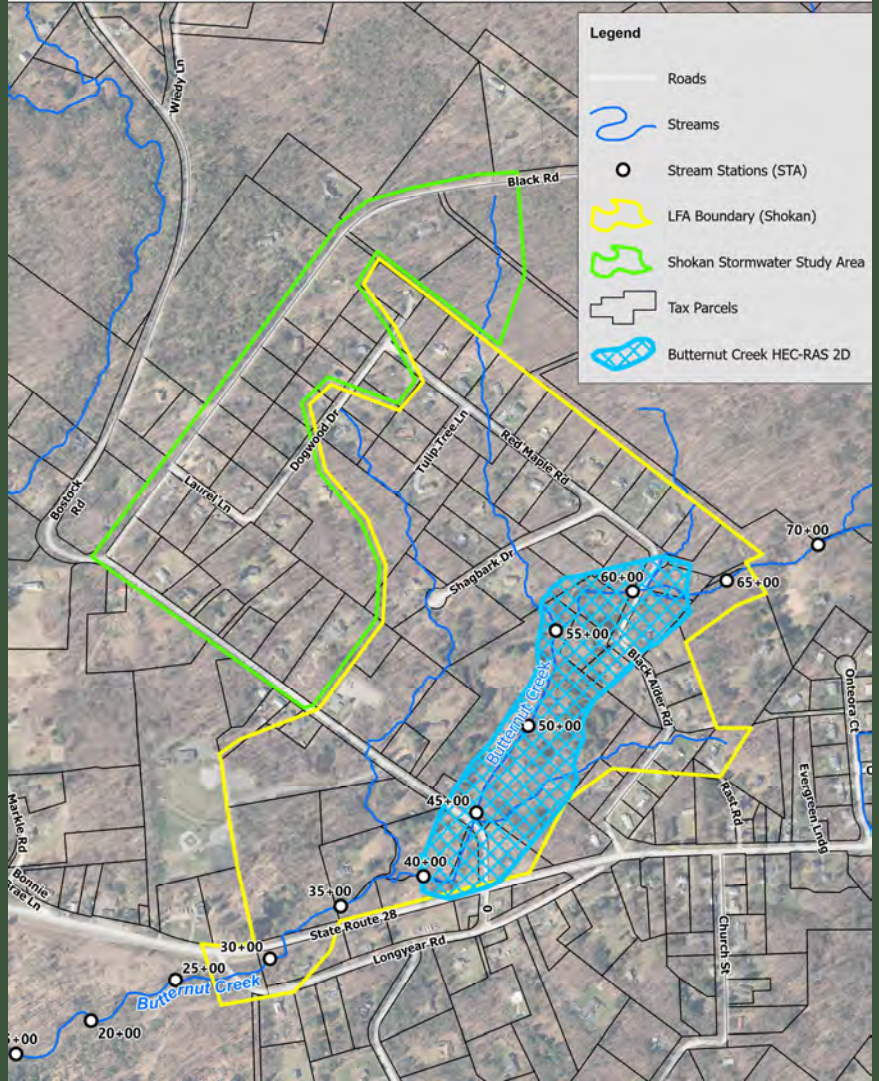
Image courtesy of NYCDEP – D. Davis

Image courtesy of NYCDEP – D. Davis

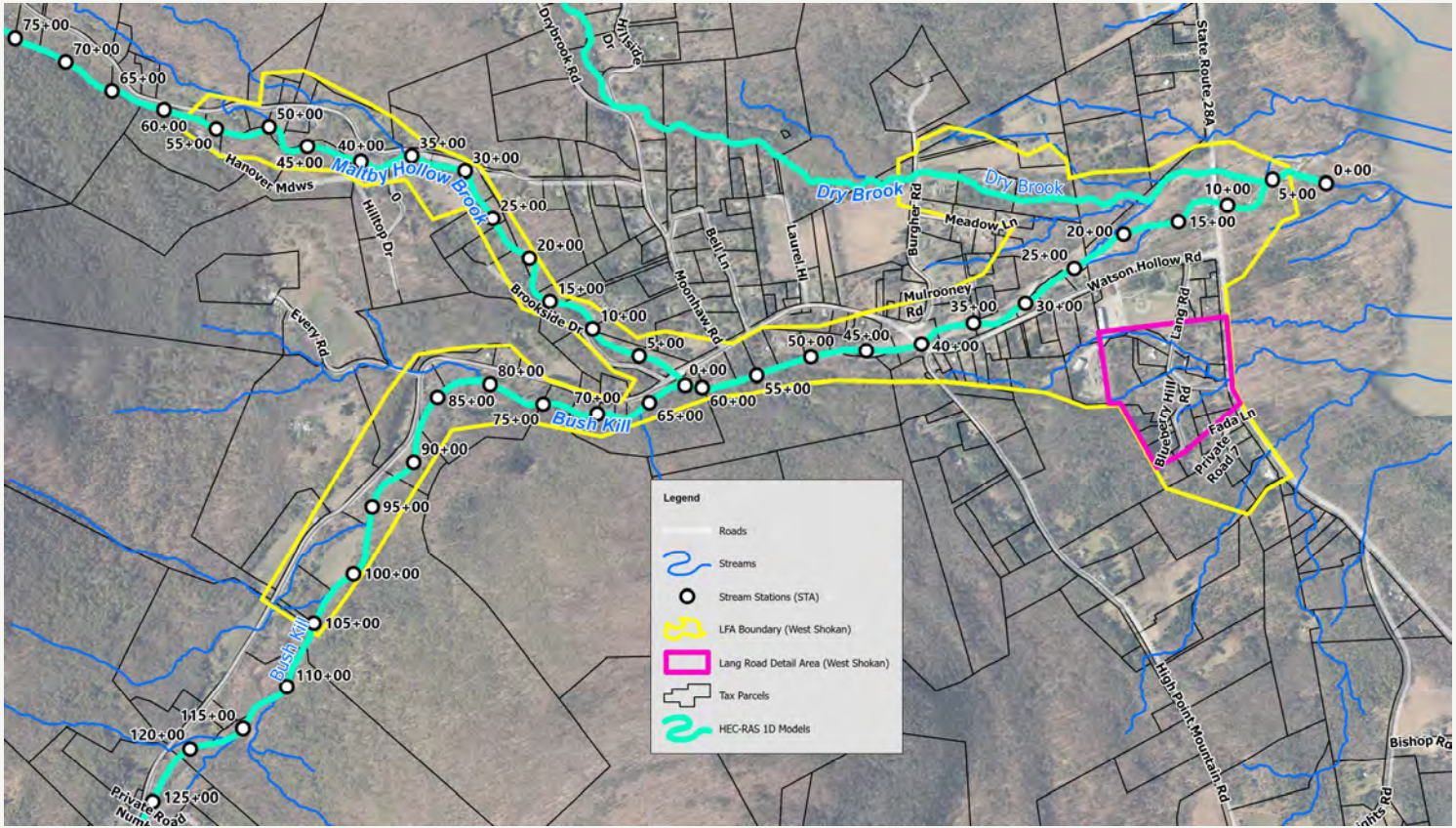

USGS
USGS 01363382 BUSH KILL BLW MALTBY HOLLOW BK AT WEST SHOKAN NY
Annual Peak Streamflow, in cubic feet per second
6000
5000
4000
3000
2000
1000
0
2000
2003
2006
2009
2012
2015
2018
2021
2024
50-Year Flood
25-Year Flood
10-Year Flood
TS Irene
April 2005
June 2006
March 2010

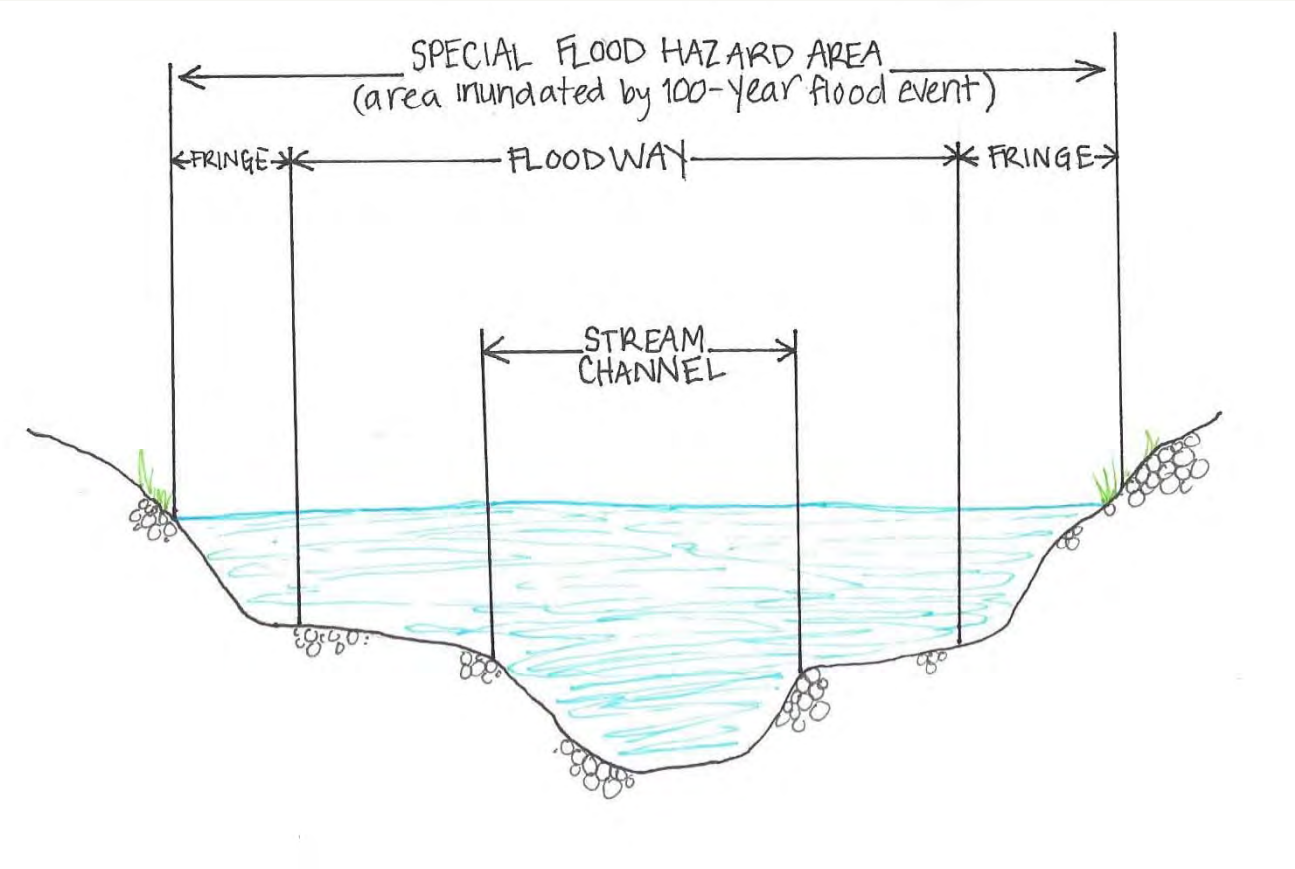
Available Hydraulic Modeling –Shokan





Available Hydraulic Modeling – West Shokan





Special Flood Hazard Area, Floodway and Flood Fringe

FEMA ZONES & DEFINITIONS

Special Flood Hazard Area (SFHA)

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

Development within the SFHA

- 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

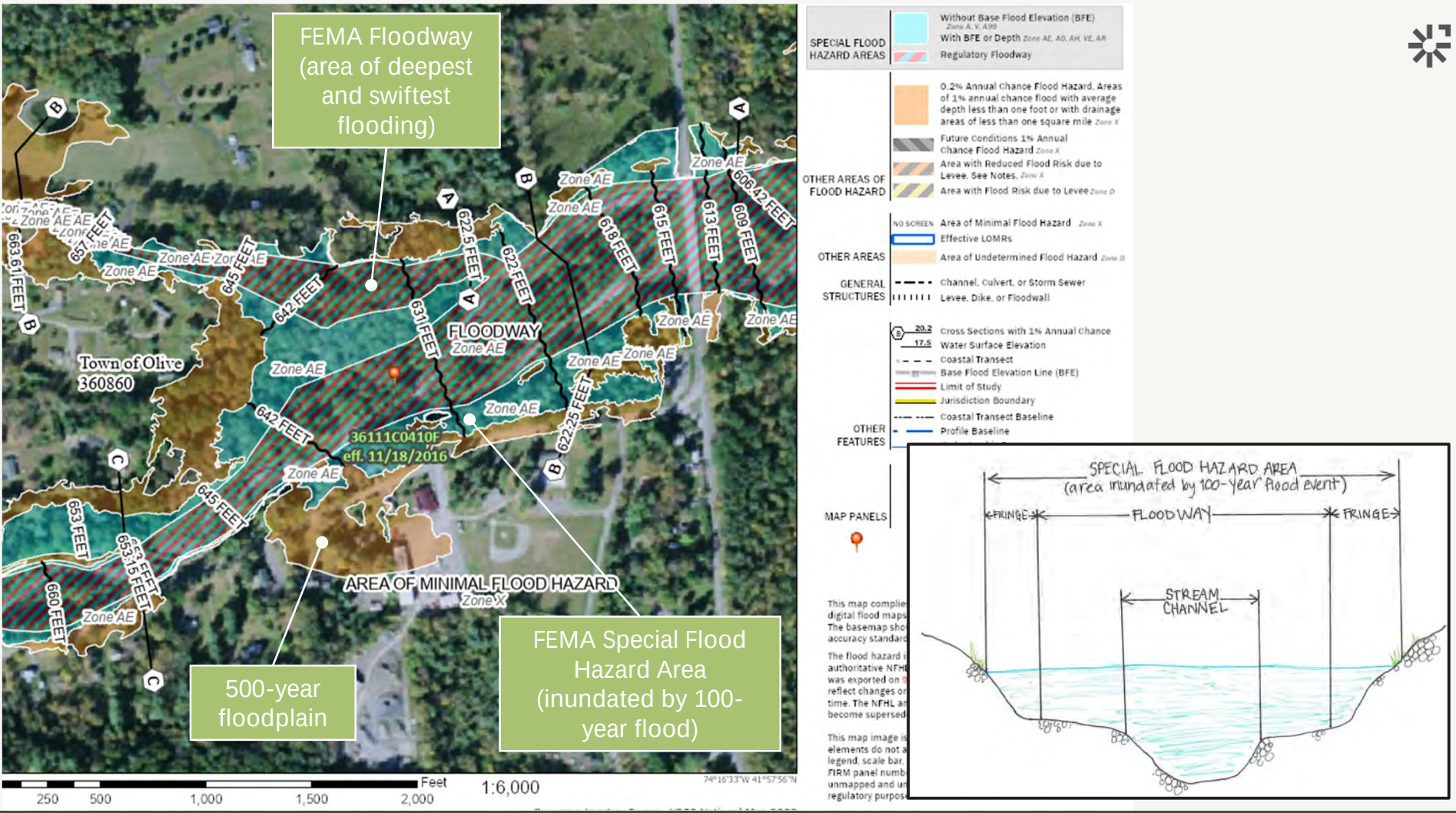
FEMA ZONES & DEFINITIONS

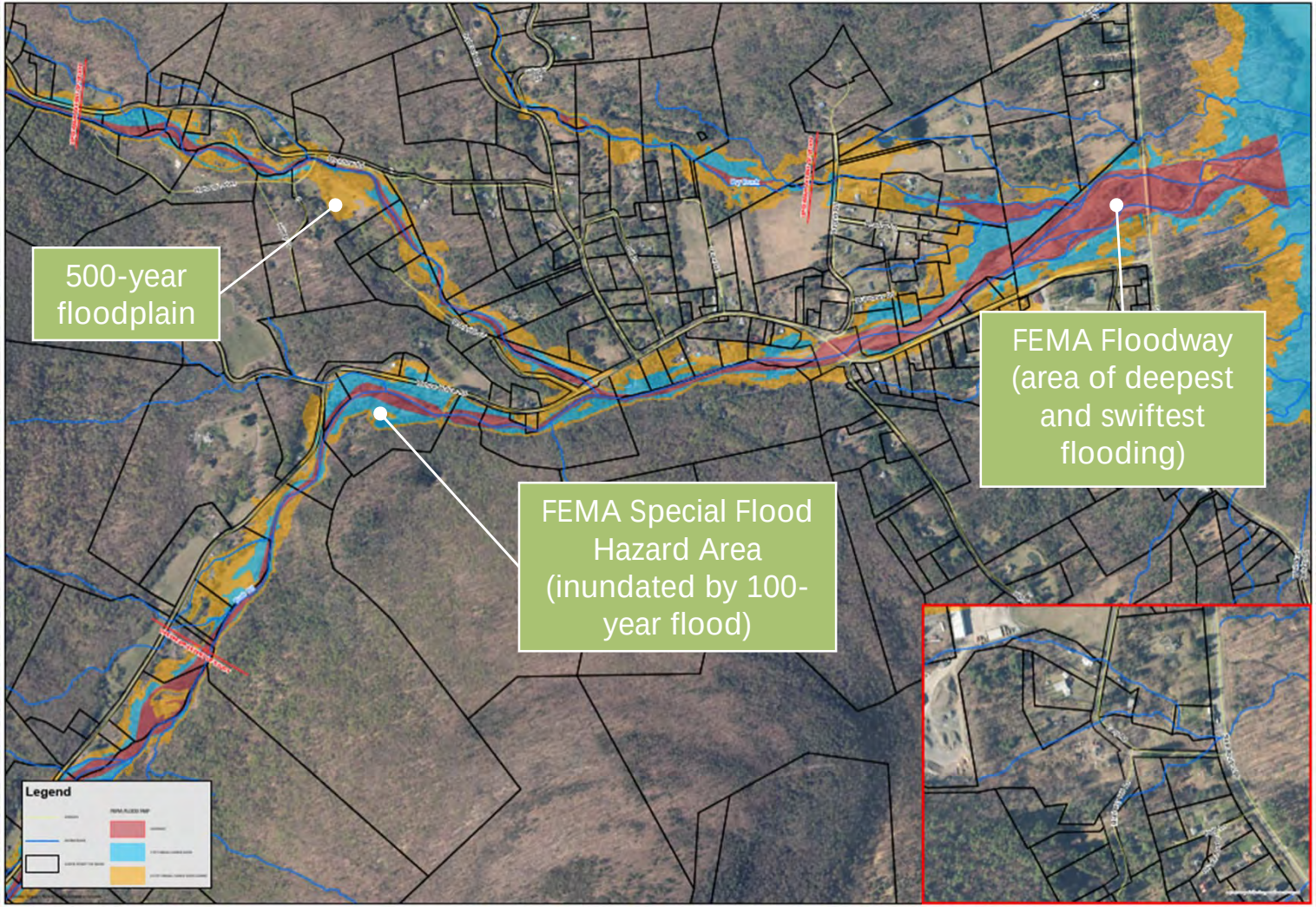
Floodway

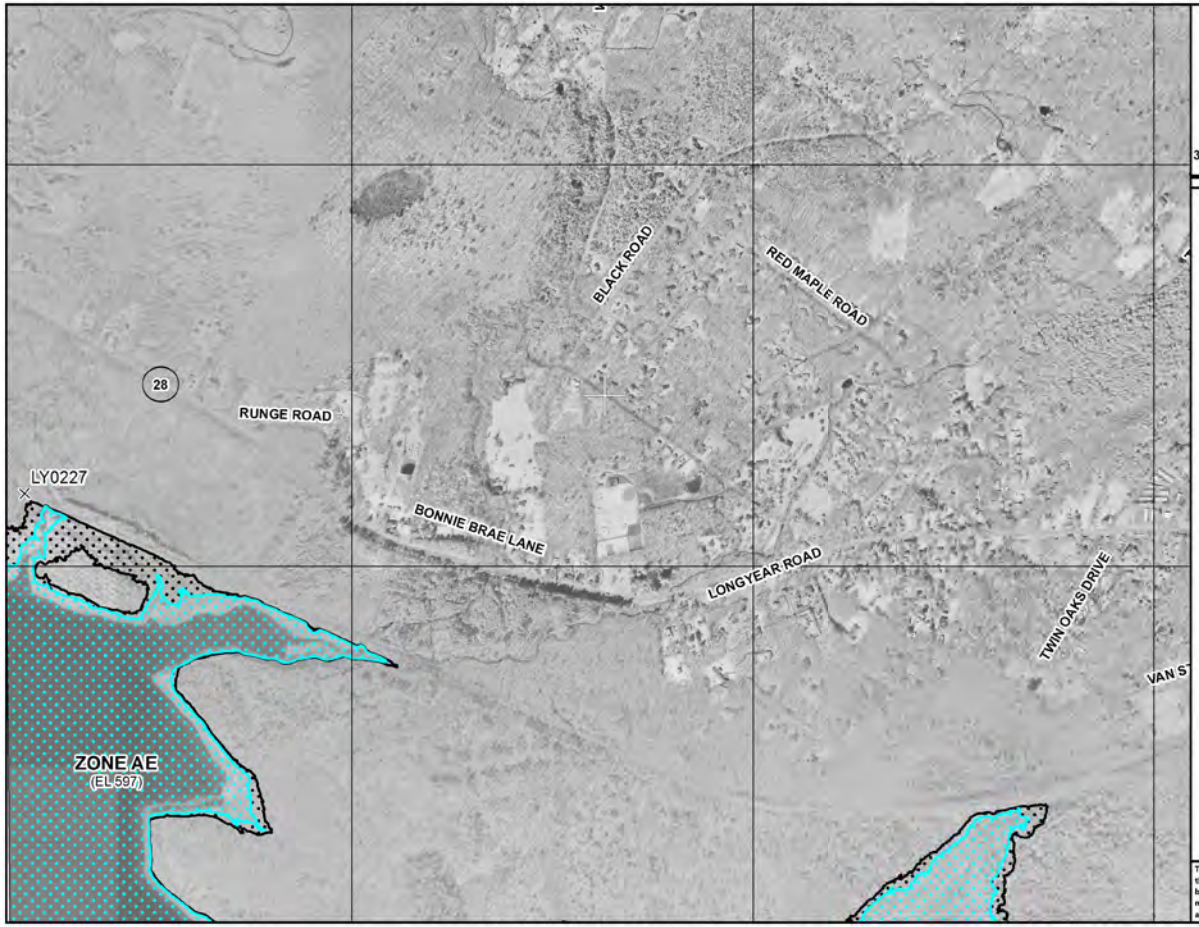
- Area of deepest and swiftest flooding
- Area of greatest danger during a flood

Development within the Floodway

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


FEMA Floodway (area of deepest and swiftest flooding)
FLOODWAY
Zone AE
Town of Olive
360860
36111C0410F
eff. 11/18/2016
AREA OF MINIMAL FLOOD HAZARD
Zone X
500-year floodplain
FEMA Special Flood Hazard Area (inundated by 100-year flood)
622.5 FEET
622 FEET
631 FEET
642 FEET
645 FEET
657 FEET
663.61 FEET
618 FEET
615 FEET
613 FEET
609 FEET
606.42 FEET
622.25 FEET
653 FEET
653.15 FEET
660 FEET
Feet
250
500
1,000
1,500
2,000
1:6,000
74°16'33"W 41°57'56"N
SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE)
With BFE or Depth
Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile
Future Conditions 1% Annual Chance Flood Hazard
Area with Reduced Flood Risk due to Levee. See Notes.
Area with Flood Risk due to Levee
OTHER AREAS
Area of Minimal Flood Hazard
Effective LOMRs
Area of Undetermined Flood Hazard
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall
OTHER FEATURES
Cross Sections with 1% Annual Chance
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
MAP PANELS
SPECIAL FLOOD HAZARD AREA
(area inundated by 100-year flood event)
FRINGE
FLOODWAY
FRINGE
STREAM CHANNEL


500-year floodplain
FEMA Special Flood Hazard Area (inundated by 100-year flood)
FEMA Floodway (area of deepest and swiftest flooding)
Legend



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 M

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0430F

FIRM

FLOOD INSURANCE RATE MAP

for ULSTER COUNTY, NEW YORK
(ALL JURISDICTIONS)

CONTAINS:

COMMUNITY	NUMBER
HURLEY, TOWN OF	360857
OLIVE, TOWN OF	360860

PANEL 430 OF 910
MAP SUFFIX: F
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
36111C0430F

MAP REVISED
NOVEMBER 18, 2016

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

Shokan-West Shokan LFA Study Milestones

Month 1

Kick Off Meeting

With SLR & FAC

- FAC identifies known issues, flood history, damages, photos*
- Set Date for Public Meeting No. 1*

- FAC provides input on future report layout*
- FAC Preps Postcard and Flyer for Public Meeting *
- SLR: Gathering Data, Preparing Model and field measurements
- SLR prep for Presentation, Share draft with committee

Months 1-2

Months 2-3

Public Meeting No. 1

- SLR: Continues Gathering Data, Preparing Model and field measurements
- Public invited to provide flood history, damages & photos.

- FAC / SLR Meet to review feedback/comments from PM 1
- SLR: report calibrated model, hydrology & existing conditions
- FAC / SLR Meet to Plan Public Meeting No. 2

Months 3-4

Months 4-6

- FAC Preps Outreach for Public Meeting 2*
- SLR delivers Technical Memo
- FAC identifies potential mitigation solutions & iteratively review*
- Coordinate locations & outreach for First Floor Elev. surveys*

- FAC decides which solutions will receive full concept design & Benefit Cost Analysis (BCA)*

Months 5-7

Month 7

Public Meeting No. 2

to include:

- Education on Stormwater v. Riverine Flooding
- other concerns from Public Meeting No. 1
- FFE Discussion

- FAC / SLR Meet to review feedback & comments from PM 2
- Review progress with First Floor Elevations.
- Discuss Report Timeline

Months 7-8

Months 8-9

- FAC / SLR review and add (or modify) solutions that need full concept design based on PM 2 comments*
- SLR presents draft report

- FAC reviews draft report; supplies consolidated comments*
- SLR Supplies Semi-Final Draft
- FAC Prep outreach for Public Meeting No. 3.*

Months 9-10

Month 10

Public Meeting No. 3

To Include:

- Results of study
- Present on Recommendations with next steps Explained
- FAC reviews final project prioritization and last draft report*

- SLR Furnishes final report
- FAC moves towards LFA adoption*

Month 11

FAC: Flood Advisory Committee

Timeline above is prepared for planning purposes and may be subject to change, in good faith, as the project may dictate.

*Indicates FAC Feedback & Participation Required

LFA INFORMATION NEEDS

- Observations, photos, or videos of flood damages and road washouts
- Bridges/culverts that overtopped or became clogged with debris
- Observations of bank erosion and channel behavior
- Locations of critical facilities and anchor businesses
- Sources of potential water quality impairment during a flood

Butternut Creek at Bostock Road Culvert
December 18, 2023

Photo: AWSMP

Maltby Hollow Brook at Watson Hollow Road Bridge
Post-Irene November 14, 2011

Unnamed Tributary at Lang Road, May 9, 2025
Photo: AWSMP

Making Sustainability Happen

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