

# Regulatory tools to protect stream buffers

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of Planning and Sustainability**

Cayuga County WQMA

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# Agenda

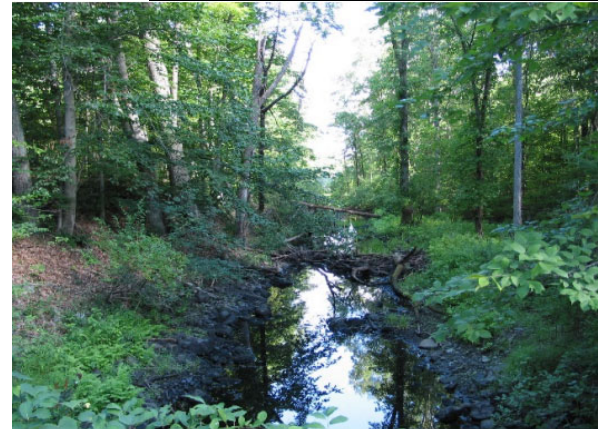
- Stream buffer benefits
- Buffer widths
- State and county recommendations
- Examples of town stream setback regulations



# What is a stream buffer?

- Vegetated areas on either side of a stream
- Also known as riparian buffer
- Buffer waterbody from impacts of human activity

[https://www.dec.ny.gov/docs/remediation\\_hudson\\_pdf/hrewfssb1.pdf](https://www.dec.ny.gov/docs/remediation_hudson_pdf/hrewfssb1.pdf)



Healthy stream buffers have trees, shrubs and grasses.



Unhealthy buffers include hardened shorelines and lack tree and shrub cover.

# Importance of stream buffers

## Habitat and biodiversity

- Enhance habitat and biodiversity by providing terrestrial wildlife habitat and travel corridors, and food and habitat in aquatic ecosystems

## Stream stability

- Attenuate flooding, stabilize stream banks and prevent erosion of streambanks and streambeds

## Water Quality

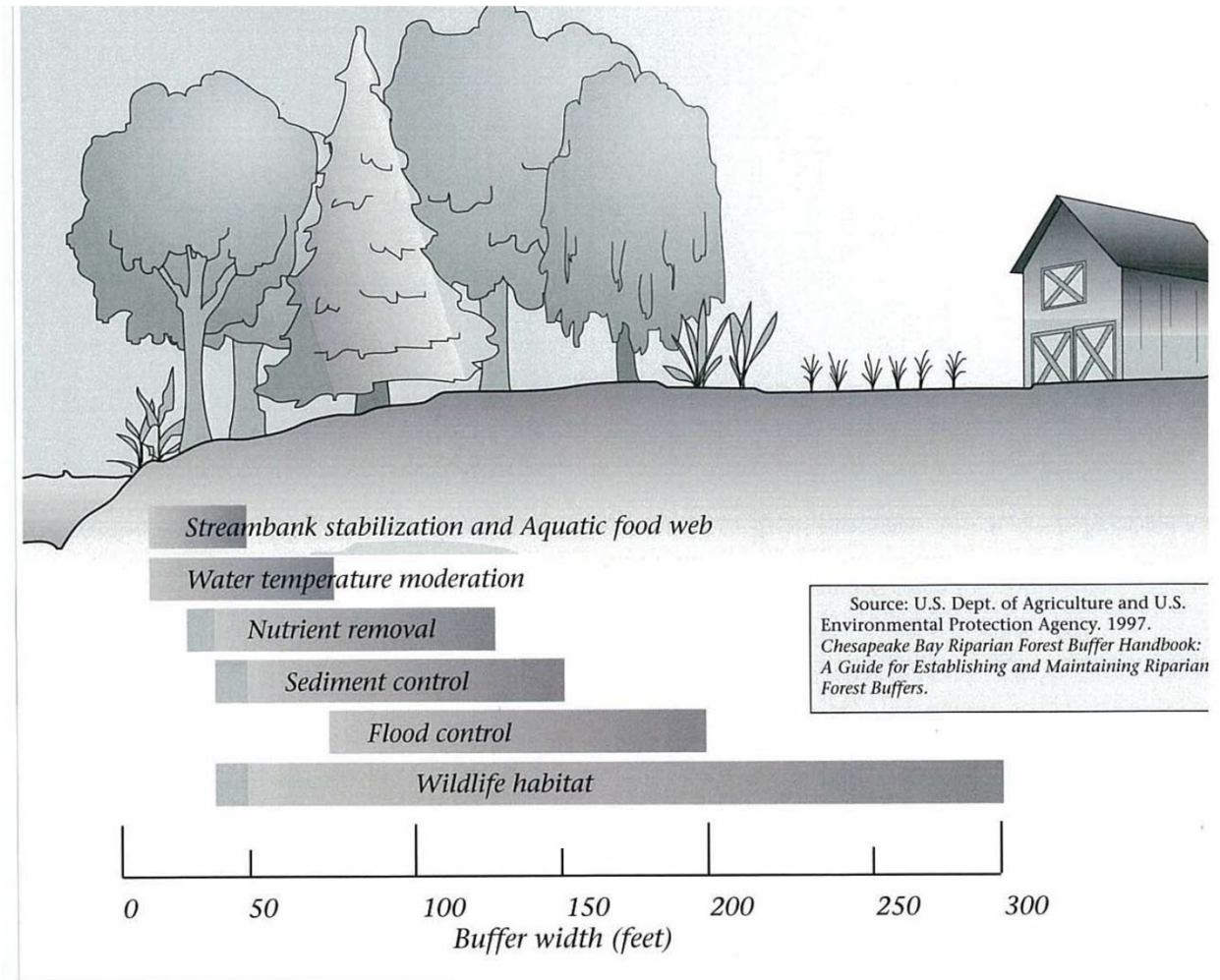
- Protect water quality by removing pollutants and moderating temperatures

## Financial savings

- Prevent property damage, reduce public investment, and enhance property values



Buffer widths vary depending on objectives



# New York State Water Quality Documents

## HABs Action Plan – Priority 1 Projects

- Establish vegetated riparian buffers to inhibit or reduce nutrient-rich stormwater runoff and eroded soil from reaching the lake or tributary streams.
- Rehabilitate degraded vegetated buffers to improve riparian habitat function on tributaries to Cayuga Lake.

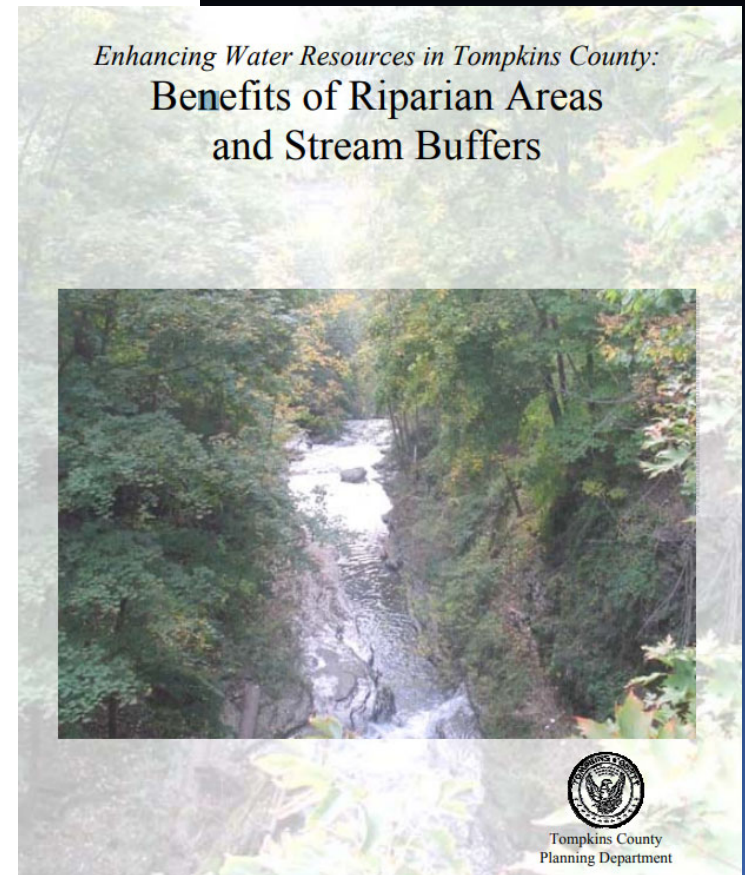
## Draft Cayuga Lake TMDL

- BMPs that reduce high amounts of phosphorus with a low cost to install
  - Riparian forest (or herbaceous) buffer on pasture with exclusion fencing

# Tompkins County Resources

- Stream Buffer Planting Guide
- Riparian Protection Agreement
- Riparian Buffer Easement
- Model Stream Buffer Ordinance
  - Recommends 100-ft buffer on perennial streams
  - Two zones

[www2.tompkinscountyny.gov/planning/water-resources-stream-buffers](http://www2.tompkinscountyny.gov/planning/water-resources-stream-buffers)



# Enhancing Water Resources in Tompkins County: Benefits of Riparian Areas and Stream Buffers

- Details of main benefits of stream buffers
- Considerations for stream buffer implementation
- Site conditions
- Recommendations for buffer width
- Uniform vs. variable width

**Stream Buffer Width Recommendations (Adapted from Environmental Law Institute, 2003; Fischer and Fischenich, 2000)**

Benefit	Minimum Width	Description
Water Quality Protection	100 feet	Buffers, especially dense grassy or herbaceous buffers on gradual slopes, intercept overland runoff, trap sediments, remove pollutants, promote ground water recharge, and moderate temperature changes. For low to moderate slopes, most filtering occurs within the first 30 feet, but greater widths are necessary for steeper slopes, buffers comprised of mainly shrubs and trees, where soils have low permeability, or where non-point source pollution loads are particularly high.
Streambank Stabilization	165 feet	Riparian vegetation moderates soil moisture conditions in stream banks, and roots provide tensile strength to the soil matrix, enhancing bank stability. Widths for erosion control will vary based on site conditions. Wider buffers will help ensure that built structures are protected from the natural meandering of stream channels.
Aquatic Habitat	100 feet	Buffers provide food, shelter, and migration corridors for reptiles and amphibians and help ensure adequate protection of macro-invertebrates.
Detrital Input	165 feet	Detrital input (e.g., leaves and twigs) provide the principal energy source for aquatic food webs in small streams.
Flood Protection	65 to 500 feet	Riparian buffers promote floodwater storage due to backwater effects, they intercept overland flow and increase travel time, resulting in reduced flood peaks. Areas needed for flood attenuation are highly variable based on the physical characteristics and level of development within a watershed. Riparian buffers also set back development from flood hazard areas.
Wildlife Habitat	330 feet	Buffers, particularly diverse stands of shrubs and trees, provide food and shelter for a wide variety of mammals.



# 239 Review Guide

## Municipal Guide to NYS General Municipal Law §239-l, m & n: Required Planning, Zoning and Subdivision Referrals

**Stream Buffers:** For projects that would disturb land within **100 feet** of a perennial stream, or **50 feet** of an intermittent stream, County Planning would review the project's potential impacts on water quality.

For communities that have not established stream buffer regulations that protect water quality, County Planning would likely recommend that the municipality require applicants to redesign the project so as not to disturb the 100- or 50-foot buffer and to vegetate that buffer if it is not currently vegetated.

In stream buffer locations where communities rely on municipal storm sewer systems, County Planning would likely recommend that the municipality require applicants to **document** how the project would impact water quality and quantity through the use of that system. These modifications are recommended to help preserve and protect water quality.

**Natural Features Focus Areas:** For projects located in a Natural Features Focus Area, County Planning may comment that larger vegetated stream buffers be provided to help protect wildlife habitat or corridors.

# Municipal examples



- Adopted 2012
- Zoning – Special Regulations

<https://ecode360.com/16064379>



- Adopted in early 2000s
- Revised in 2019
- Zoning – Design Standards





<https://ecode360.com/35597697>



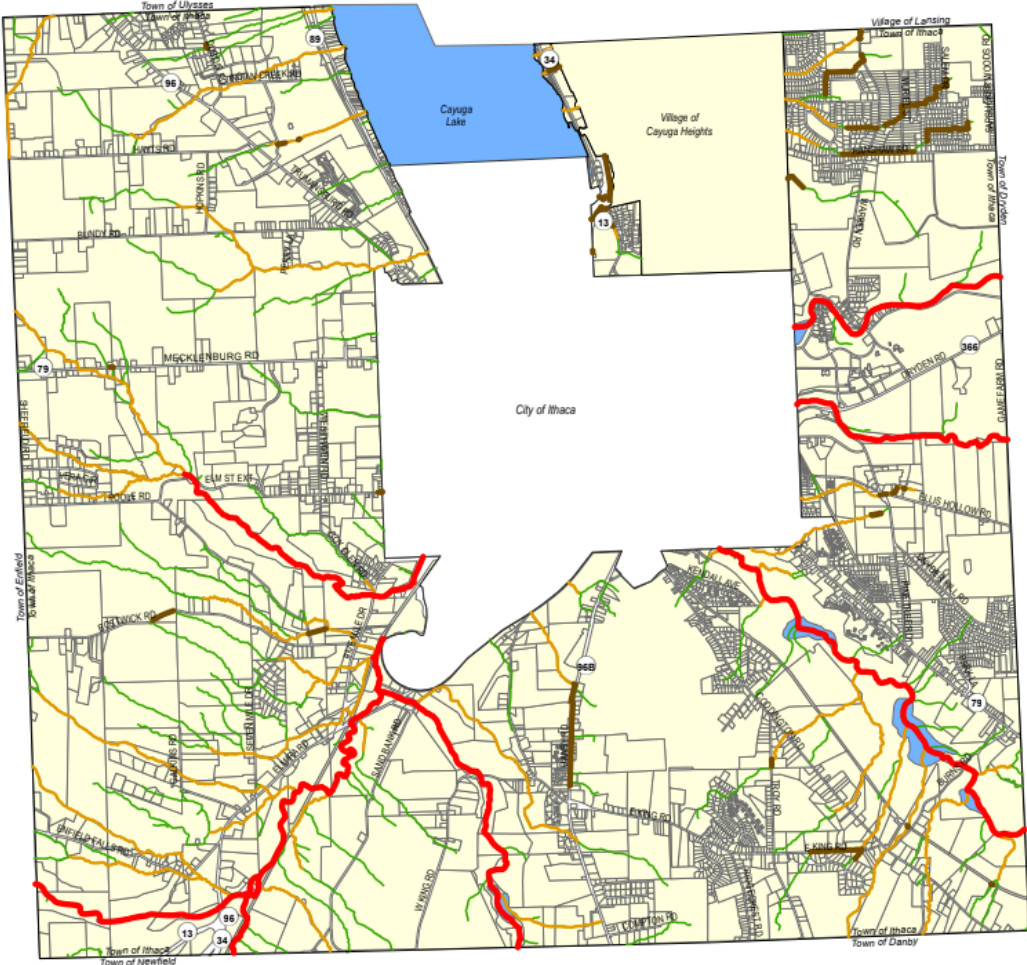
# Town of Ithaca

- Stream Setback Map
  - Identifies streams with setback requirements
- Setback widths
  - Three possible widths depending on the land area that drains into the stream
  - Adjustments for steep slopes and streamside wetlands
- Two zones of protection
  - Zone 1 = streamside zone is adjacent to stream
  - Zone 2 = outer setback zone is transitional zone
- Variance procedure

# Town of Ithaca Stream Setback Map

	100ft setback (1500 acre and greater drainage area)
	50ft setback (175 acre to less than 1500 acre drainage area)
	35ft setback (35 acre to less than 175 acre drainage area)
	Stream sections known to be culverted or enter a roadside ditch

Stream sections culverted or directed into a road side ditch do not have a required setback. The map does not indicate all stream sections that have been culverted or enter into a road side ditch.

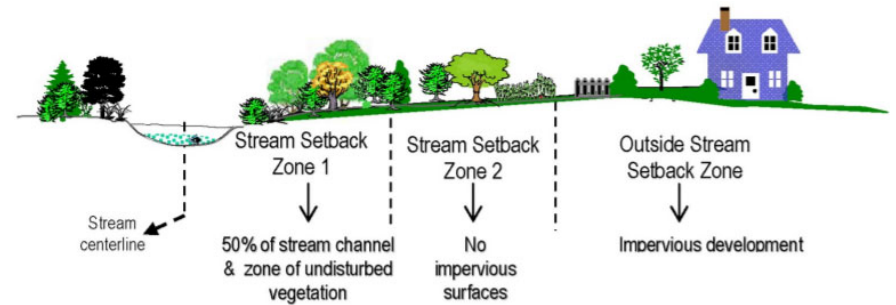




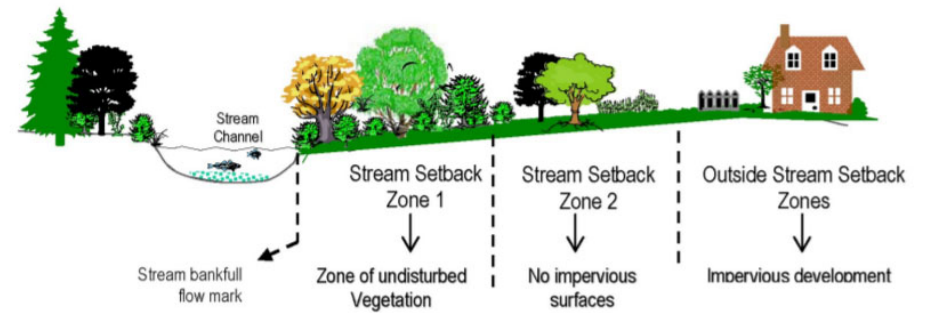
## Minimum Setback Widths (Feet) per Zone

Stream Size	Total Setback Width	<u>Setback Zone 1</u>	<u>Setback Zone 2</u>
Small	35ft	20ft	15ft
Medium	50ft	30ft	20ft
Large	100ft	50ft	50ft

# Town of Ithaca Stream Setback Law Appendix



*Figure 1a – Stream Setback Zones 1 & 2 for small streams requiring measurement from the stream center line.*



*Figure 1b – Stream Setback Zones 1 & 2 for larger streams requiring measurement from the bankfull flow mark.*

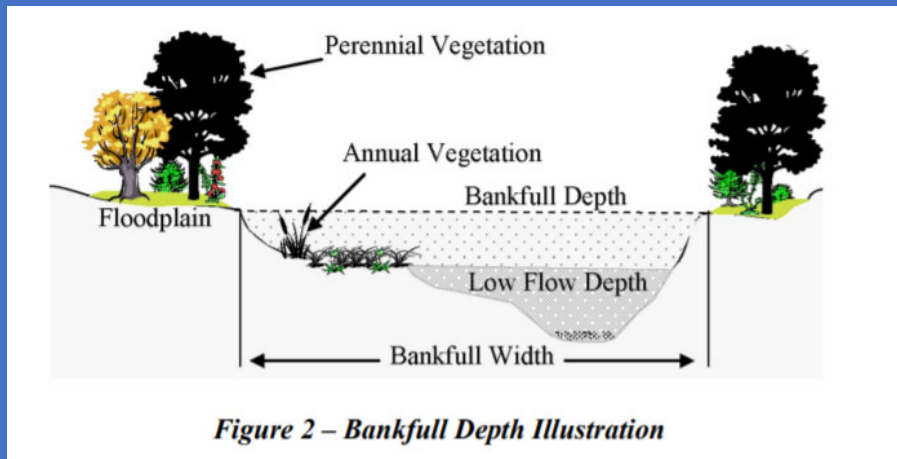


Figure 2 – Bankfull Depth Illustration

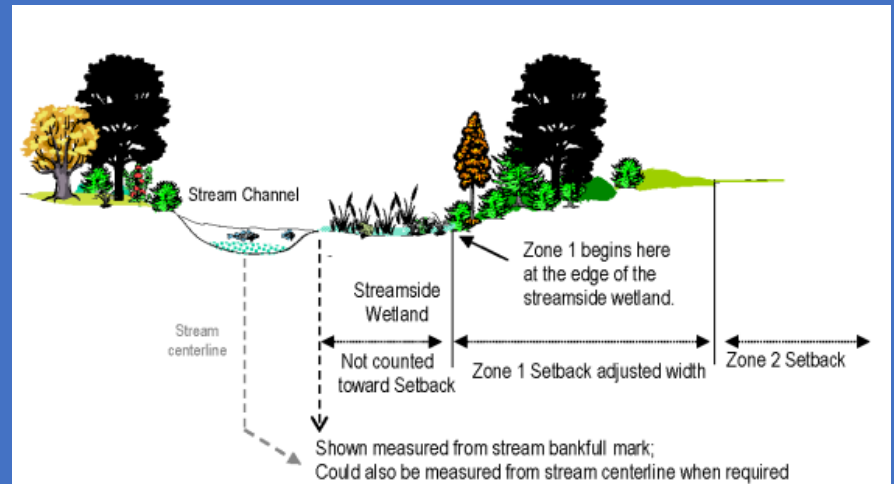


Figure 3 – Stream Setback adjustment for streamside wetland

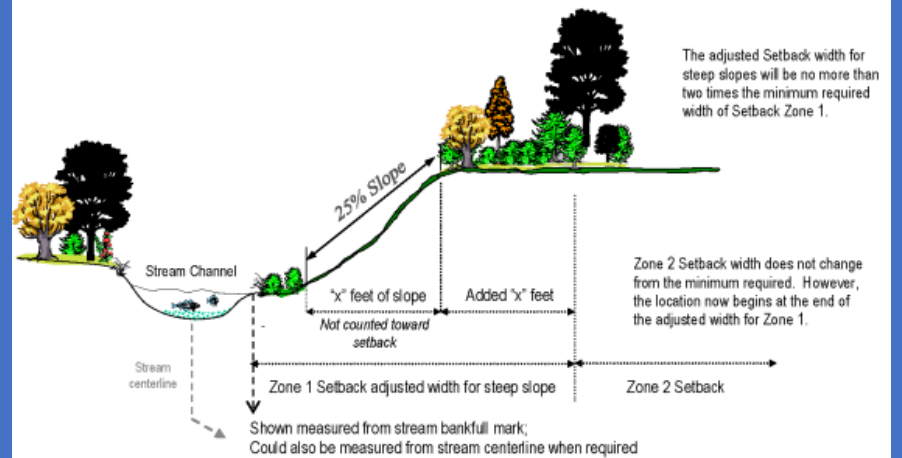


Figure 4 – Stream Setback adjustment for 25% slope or greater

# What is allowed & prohibited – Zone 1

- **Minimal disturbance – maintained natural vegetation**

No new disturbance of soil or vegetation - to the extent practical

No new construction of buildings or structures

No new mowing or clearing out of vegetation

No installation of septic tanks or drainage fields

Permitted Uses:

Installation of utilities, stream crossings, footpaths, benches, selection tree cutting, pruning of vegetation, and others as specified in law



## What is allowed & prohibited – Zone 2

- **Limited uses – no impervious surfaces**

No new construction of buildings or structures

No installation of septic tanks or drainage fields

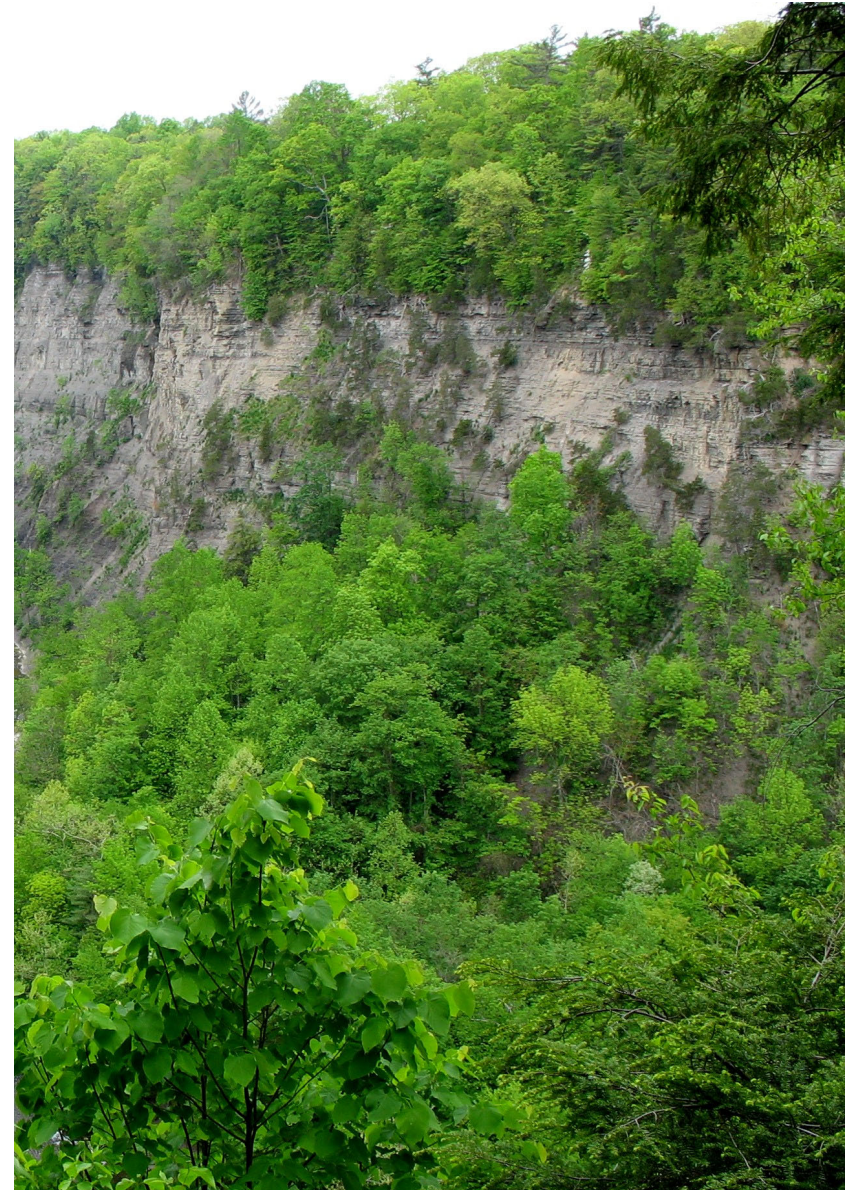
Permitted Uses: Those permitted in Zone 1, plus:

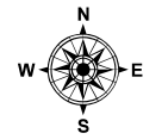
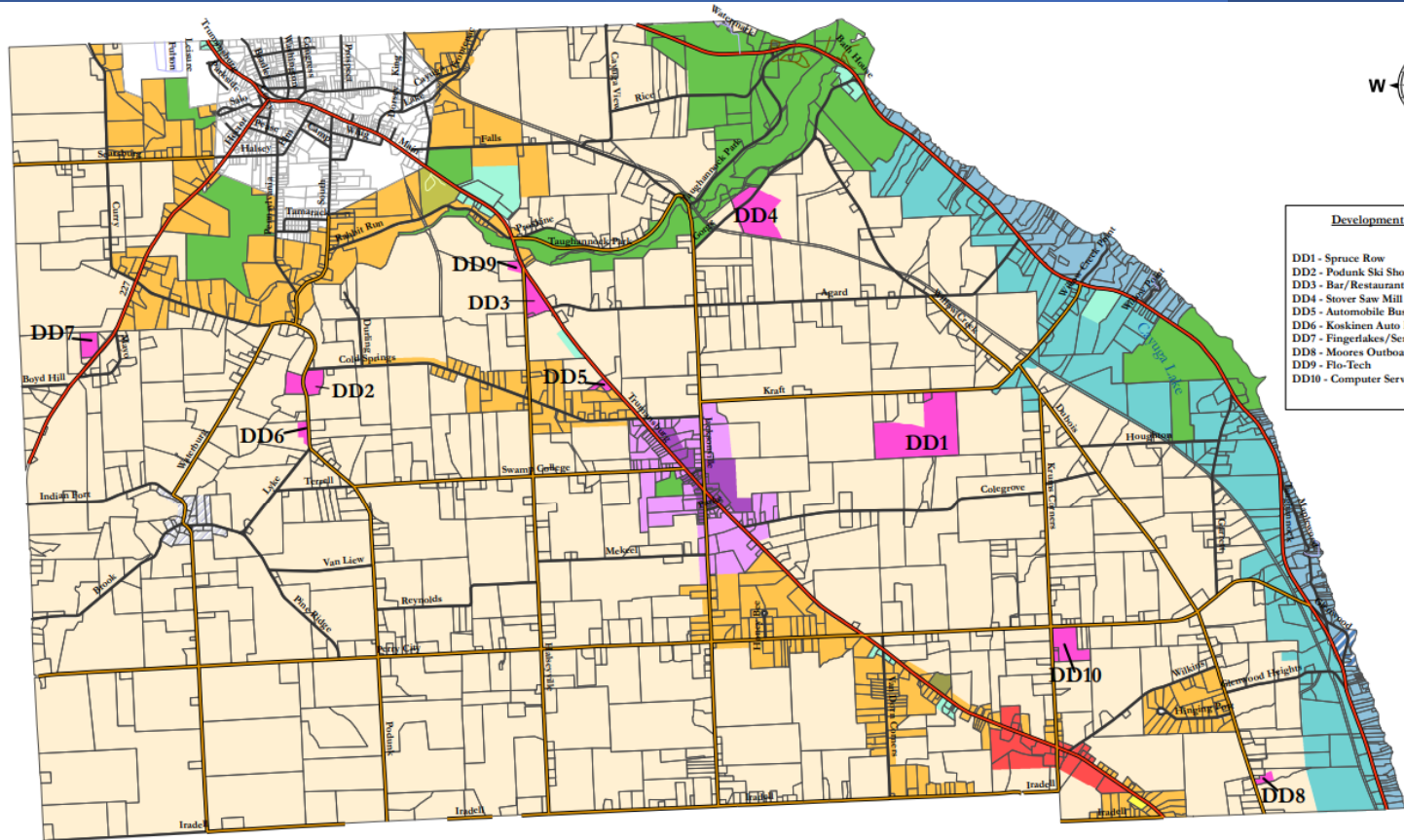
Landscaping, mowing, home gardening, and installation of stormwater facilities

Tilling/growing crops for new commercial agriculture

# Town of Ulysses

- Regulated streams based on USGS topo maps
- Setback widths
  - Vary based on zoning district
  - Taughannock and Trumansburg Creeks = 100-ft setback
- Zones of protection
- Wetlands setback included
- Variance procedure





- Development Districts**
- DD1 - Spruce Row
  - DD2 - Podunk Ski Shop
  - DD3 - Bar/Restaurant/Trailers
  - DD4 - Stover Saw Mill
  - DD5 - Automobile Business
  - DD6 - Koskinen Auto Repair
  - DD7 - Fingertakes/Seneca Insurance
  - DD8 - Moores Outboard
  - DD9 - Flo-Tech
  - DD10 - Computer Services



# Town of Ullysses

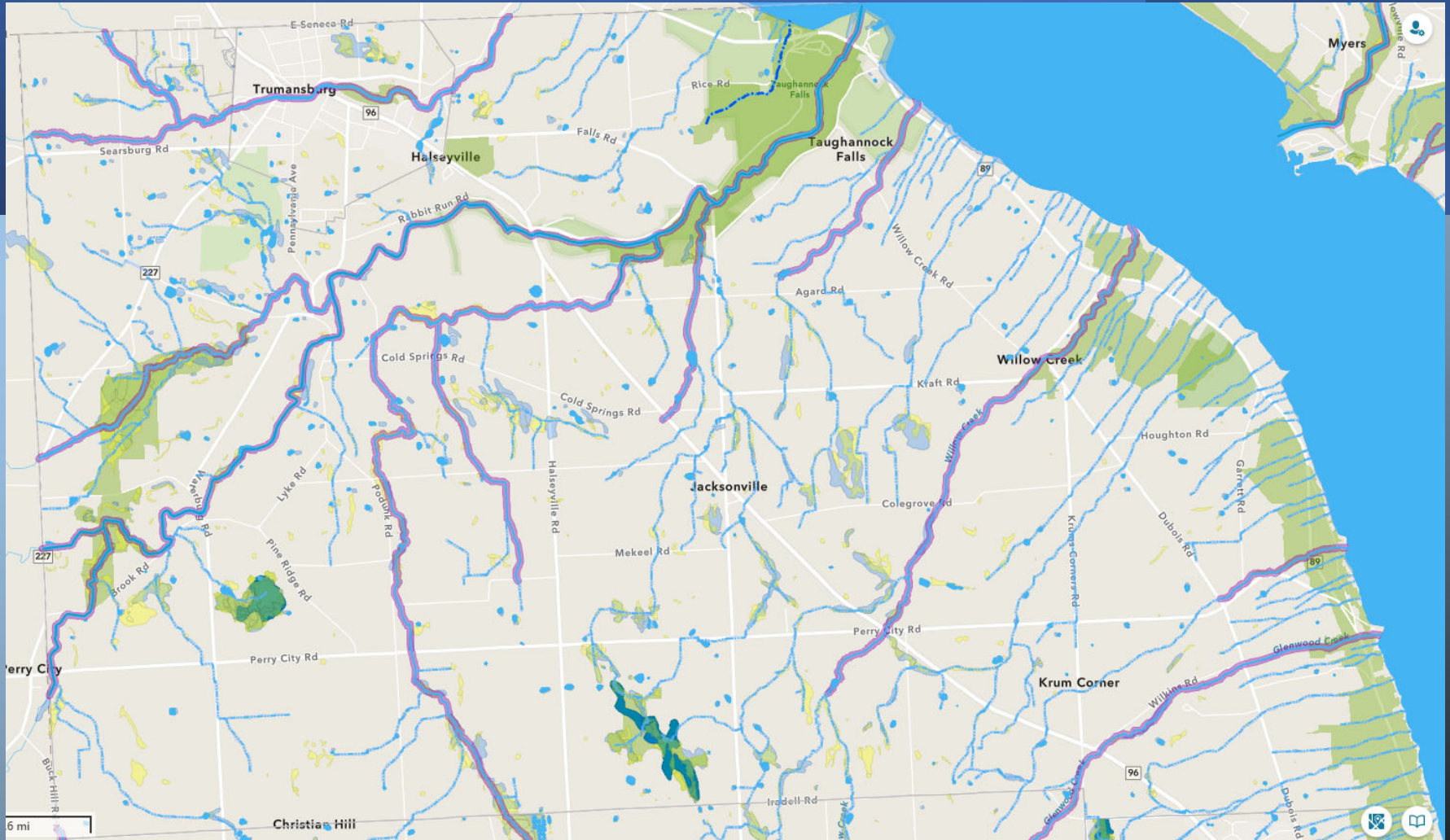
## Final Zoning Map

### December 2019



- |                               |                               |                                   |  |
|-------------------------------|-------------------------------|-----------------------------------|--|
| A/R - Agricultural/Rural Zone | LS - Lake Shore Zone          | P/R - Park/Recreation Zone        | M - Marina Zone                        |
| A2 - Special Ag Zone          | HC - Hamlet Center Zone       | B1 - Business Zone                | OTMU - Office and Technology Mixed Use |
| R - Residential Zone          | HN - Hamlet Neighborhood Zone | RM - Multiple Residence Zone      | Development District                   |
| CZ - Conservation Zone        | WH - Waterburg Hamlet Zone    | MHP - Manufactured Home Park Zone |  |







# Minimum setback widths and zones

- Trumansburg and Taughannock Creeks in all zoning districts – 100 feet
- Depends on zoning district
  - Perennial streams – 50 to 100 feet
  - Intermittent streams – 25 to 100 feet

100 ft setback should include

~75 ft undisturbed mature forest adjacent to stream bank

~15 ft middle zone of actively growing forest with periodic thinning

~15 ft outer zone planted with warm season grass

# Resources

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- Village of Trumansburg – Stream Corridor Conservation Overlay District
- NYS Department of State [Wetland and Watercourse Protection Measures](#)
- Orange County Model [Stream Corridor Overlay LL](#)

# 2019 WRC Stream Buffer Training



Image by Annie Bastoni, member of TC WRC

Plants along stream banks can reduce flooding, protect water & soil, and provide habitat.

[cctompkins.org/buffers](http://cctompkins.org/buffers)

## Stream Buffers

Buffers are an effective tool for protecting streams, wetlands, and lakeshore. Collectively referred to as riparian buffers, a swath of trees and shrubs adjacent to the water can improve water quality, and reduce flooding and property loss in a changing climate.

The slides and videos below are from a [November 2019 training](#).

["Riparian Buffers 101: Why are buffers important and how are they vulnerable?" SLIDES.](#)  
[Riparian Buffers 101 VIDEO](#) (20:50min) with Lydia Brinkley, Upper Susquehanna Coalition

["Ordinances/Site Review: Tips and tools to protect buffers at the municipal level" SLIDES.](#)  
[Ordinance Review VIDEO](#) (26:49 min) with Scott Doyle, Tompkins County Planning and Sustainability

["Watershed Planning: Ways to identify and prioritize stream buffers in need of improvement" SLIDES.](#)  
[Watershed Planning VIDEO](#) (19:31 min) with Kristen Hychka, NYS Water Resources Institute.

[Project Implementation: How to implement a stream/buffer restoration projects and funding options available" SLIDES.](#)

[Project Implementation VIDEO](#) (23:44min) with Lydia Brinkley, Upper Susquehanna Coalition

["Case Studies: Lessons learned from stream restoration projects in Tompkins County" SLIDES.](#)  
(Angel Hinickle the only one to use slides).

[Case Studies VIDEO](#) (9:36 min). Angel Hinickle, Tompkins County Soil & Water Conservation District; Scott Doyle, Tompkins County Planning & Sustainability; and Lydia Brinkley, Upper Susquehanna Coalition



Questions?

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