River Systems: Riparian Corridors & Stormwater Management

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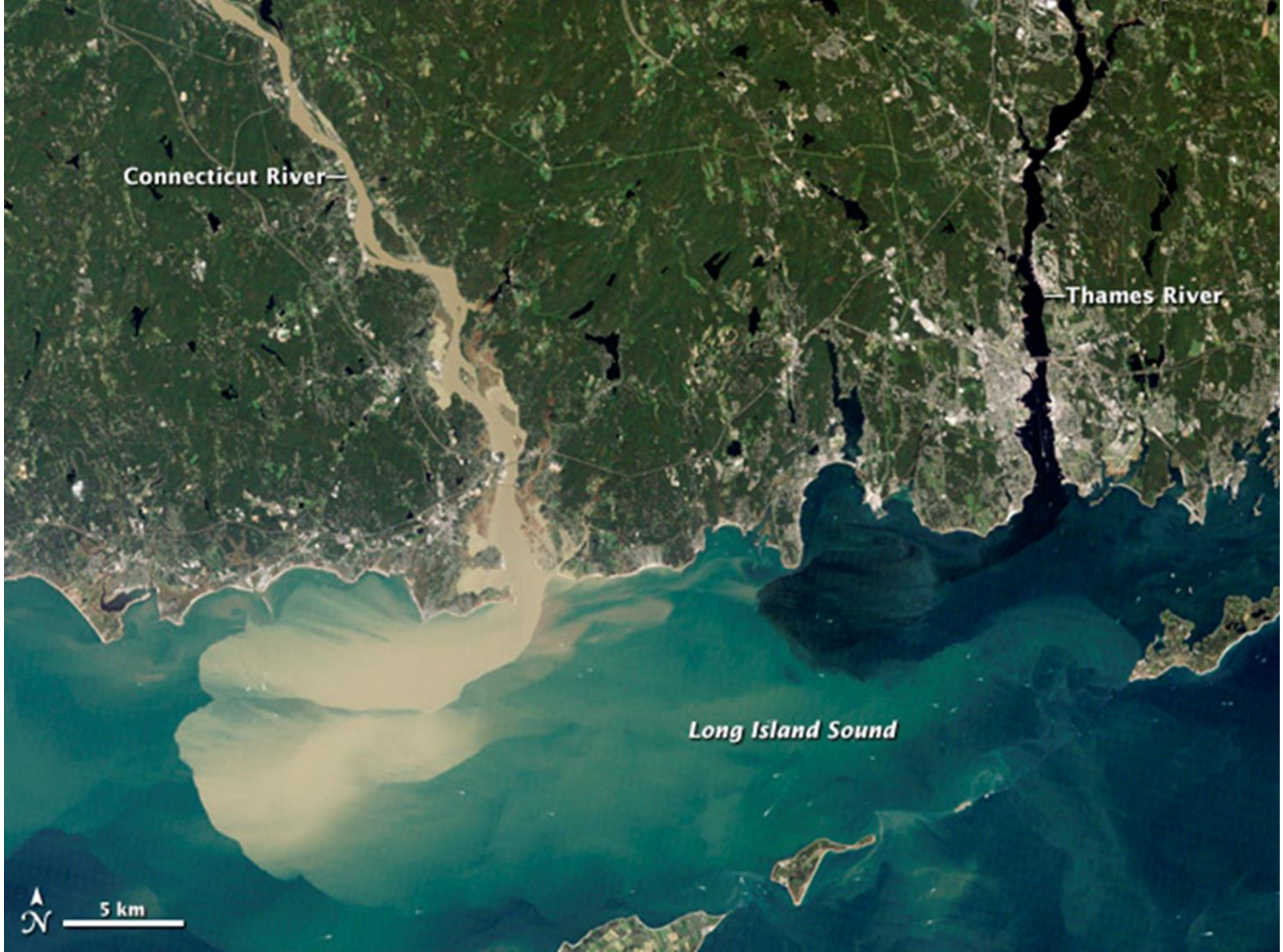

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The historic and primary narrative around climate change has been carbon reduction and sea level rise

NYC in 2100 under extreme sea level rise scenario. (Credit: Climate Central, Surging Seas)

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Our communities are under immediate threat from storms like the one that hit the Southbury/Oxford area in August.

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Amplifying the impacts of stormwater runoff

We're making it worse, one land use change at a time.

→Increase in impervious surface

→Loss of forest/open space

→Lack of protections for riparian/vegetated buffers

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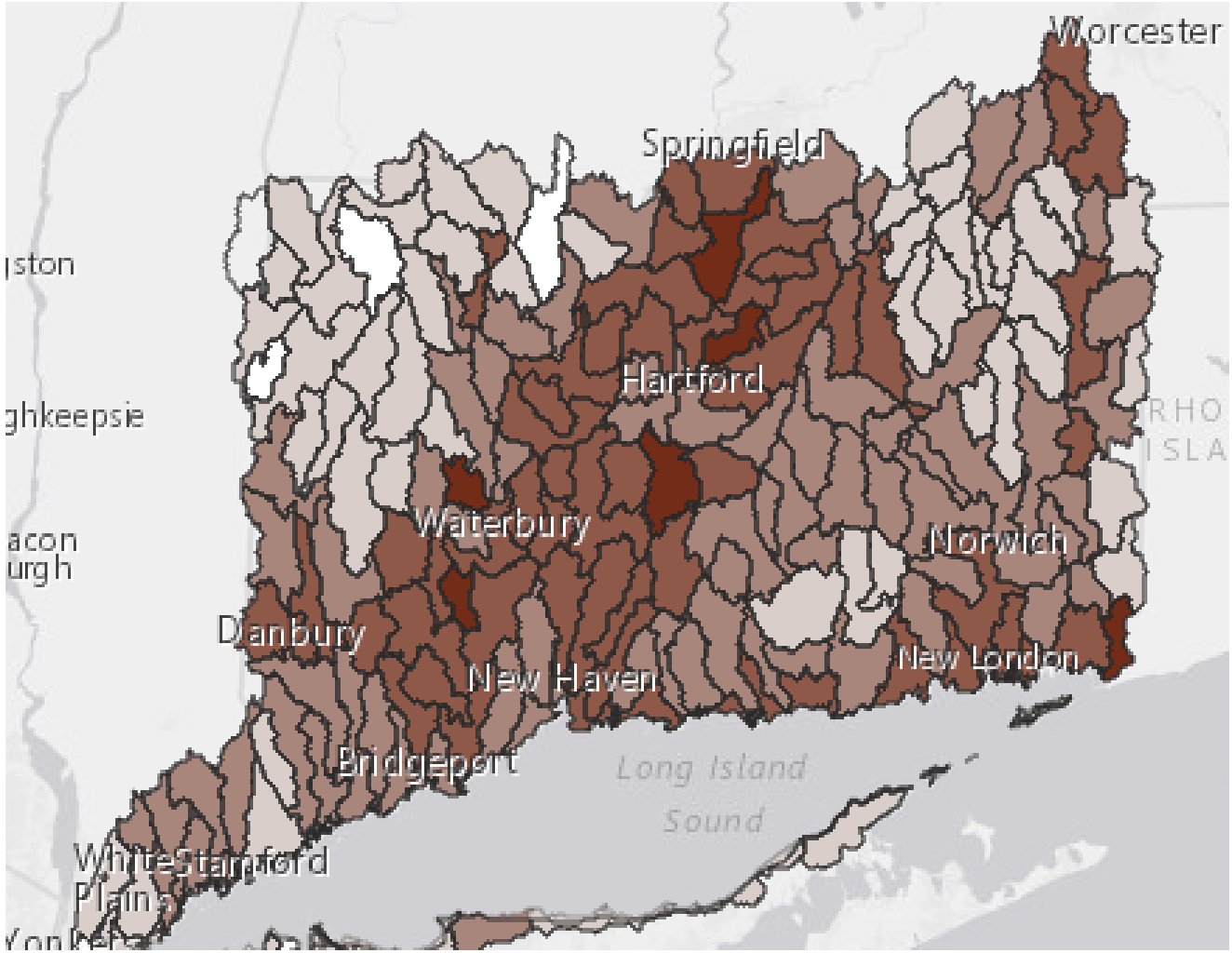
Impervious Surface



Percent Impervious Change 1985-2015

pctISchg8515

- 2.1 - 3.0%
- 1.1 - 2.0%
- 0.6 - 1.0%
- 0.2 - 0.5%
- 0 - 0.1%

Source: UCONN CLEAR CT Land Cover Viewer https://clear.uconn.edu/projects/landscape/ct-landcoverviewer/

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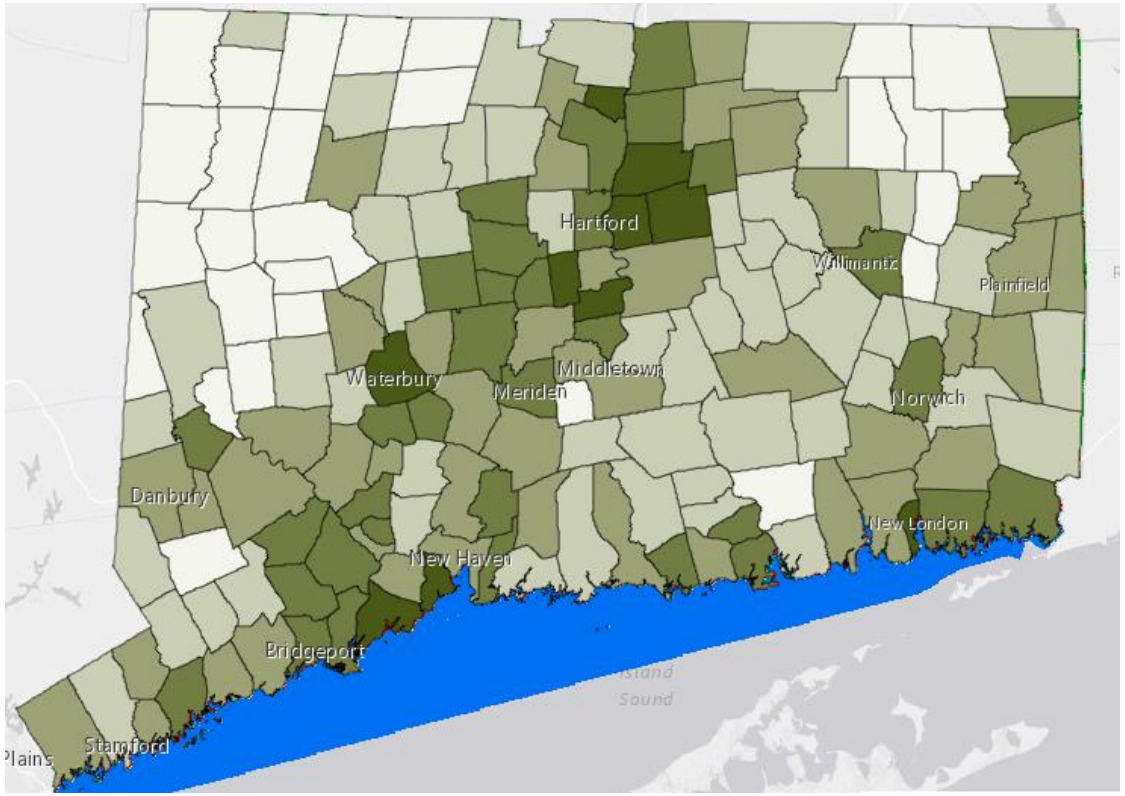
Loss of forest/open space



Forest Change By Town

1985-2015 relative percent forest change

- -2.9 - -0.7%
- -5.9 - -3.0%
- -9.9 - -6.0%
- -16.9 - -10.0%
- -26.5 - -17.0%

Source: UCONN CLEAR CT Land Cover Viewer https://clear.uconn.edu/projects/landscape/ct-landcoverviewer/

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Riparian Buffers

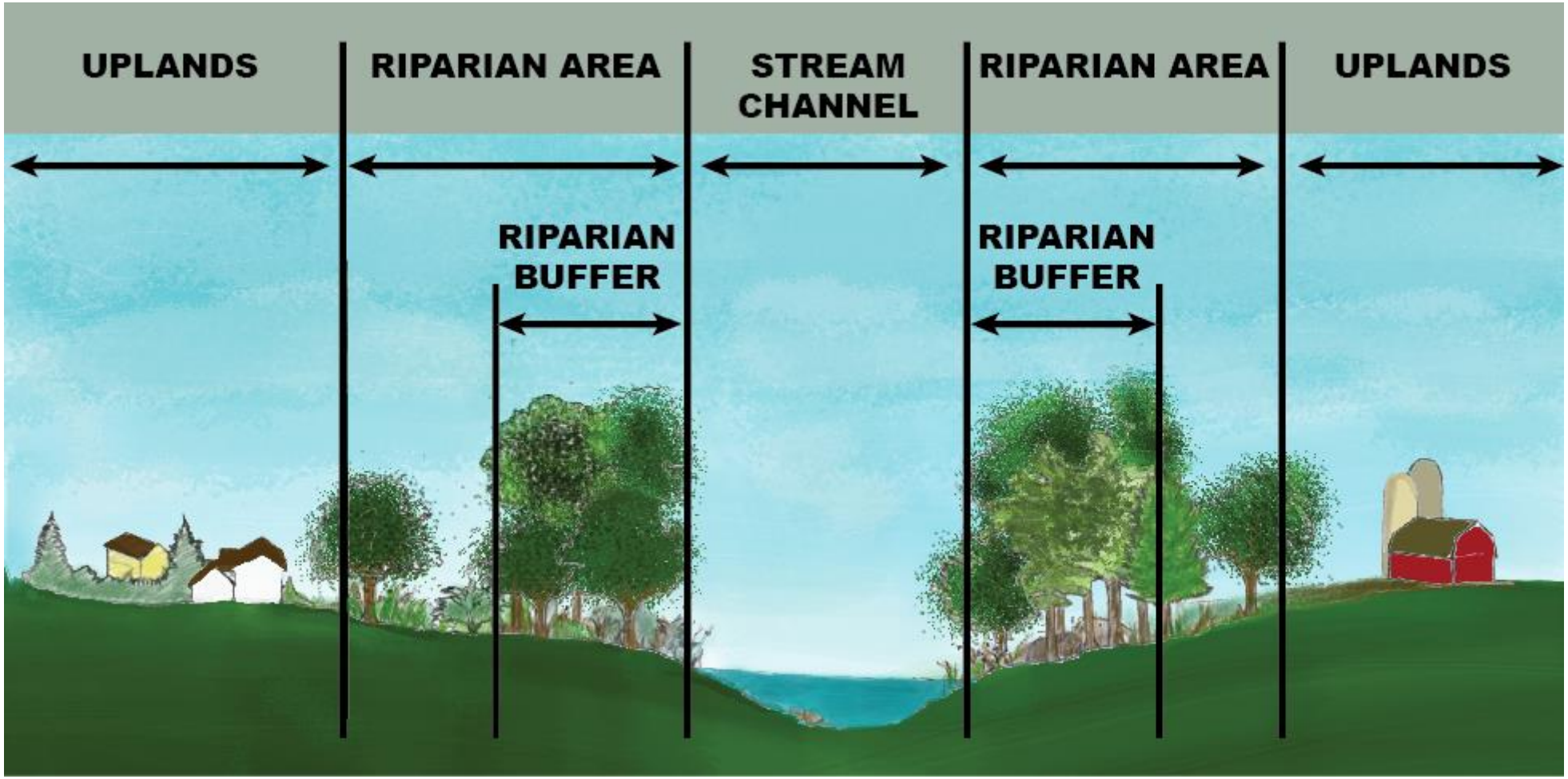
Riparian Setback Standards Adopted by New England States: The Case for Riparian Corridor Protections by WestCOG

Appendix 3: Riparian Setback Standards Adopted by New England States: 2021

State	State Law Establishing Buffer Zone	State Law Establishing Minimum Setbacks
Connecticut (1995)		
Regulate activities adjacent to wetlands**	No	No
Regulate activities Adjacent to Rivers and Streams**	No	No
Maine (2002)		
Regulate activities Adjacent to Wetlands		75
Regulate Shore lands of Rivers		250
Regulate activities Adjacent to Streams		75
Principal Structure Setback 12 Significant River Segments		125
Shore & Protection Sub-Dist. Rivers draining 50 sq. miles+		250
Massachusetts (1996)		
River Front protection corridor for perennial streams	200	
River Front protection in 14 designated Urban Areas	25	
New Hampshire (1988, 1990)		
State established buffer zone	250	
Setbacks for 4th order streams and Higher		150
Setbacks for Primary Structures on 1st to 3rd order Streams		50
Setbacks for Accessory Structures		20
Setback for Woodland Buffer*		50
Setback for controlled release fertilizers		25
Setback for all other fertilizers		50
Setbacks for New Auto Junk Yards***		50/250
Setbacks for applicator license applied Pesticides		50
Rhode Island (2015)****		
Buffer zones for Swamps of 3 acres or more	100	
Buffer zones for Marshes of 1 acre or more	100	
Buffer for Rivers, Streams & Intermittent streams < 10 ft. wide	100	
Buffer for Rivers, Streams & intermittent streams > 10 ft. wide	200	
20 Designated Drinking Water Supply Reservoirs	200	
Rivers in watershed of public drinking water supply reservoirs	200	
76 Designated Rivers in Regions 1&2	200	
33 Designated rivers in Regions 1&2	150	
All Streams in River Protection Zones 1&2	100	
Swamps & Marshes of any size in Urban region	100	
3 Designated rivers in Urban region	150	
14 designated rivers in Urban region	100	
Ponds contiguous to river in public drinking water watershed	100	
15 designated Ponds greater than 10 acres	50	
Vermont (2015)		
Setback from streams less than 2 square mile watershed		50
Setback from stream s more than 2 sq. mi. watershed		100

*25% of woodland buffer between 50 & 150 feet remains unaltered (RSA 483-B:(V(b))
**Buffer zone recommendations established by CTDEP policy in 1997.
***Auto Junk yards on streams (1st to 3rd order) designated before 2015 are setback 50 ft. On streams designated after 2015, auto junk yards are setback 250 ft.
**** Rhode Island's wetland regulations implement a 2015 law. Table reflects the final rule.

Riparian Buffers



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Riparian Buffers

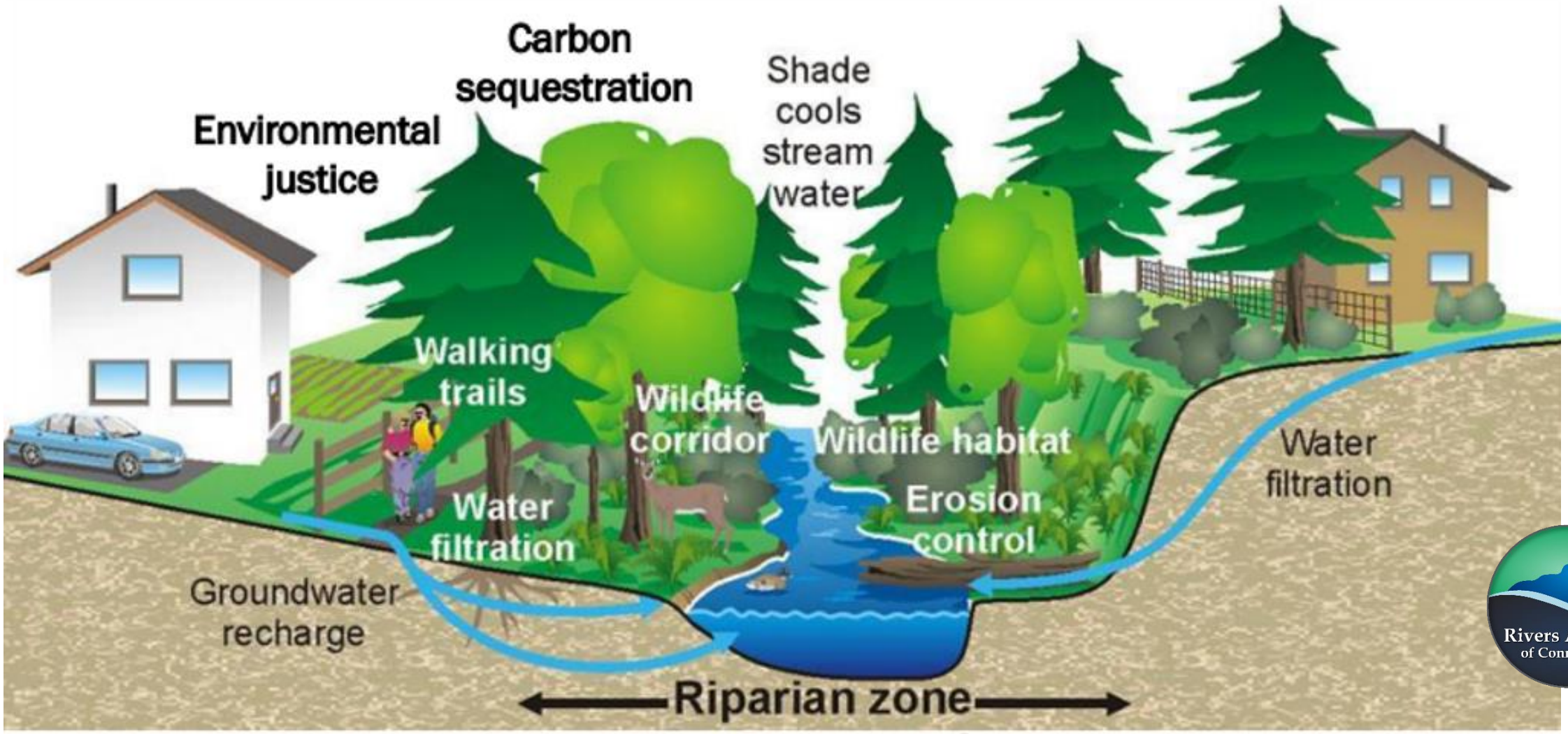

Figure © Canadian Geoscience Education Network

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Riparian Buffers

Bantam Lake WBP Pollutant Load Reduction Optimization Analysis for the Bantam Lake Watershed.

Table 13a. Scenario 1 Results

(Maximum Possible Implementation Extent, No Optimization)

BMP Category	BMP Name	Treated Area (ac)	TP Load Reduction (lb/yr)	TN Load Reduction (lb/yr)	Cost ($)	Cost per Pound P Reduced ($ / lb)
Structural	Bioretention Area *(HSG A/B)*	71.3	61.7	284.0	$ 8,005,079	$ 129,700
	Sand Filter *(HSG A/B)*	71.3	88.5	284.0	$ 9,289,206	$ 29,204
	Bioretention w/ ISR *(HSG C/D)*	116.7	137.9	1,057.4	$ 13,229,308	$ 104,951
	Gravel Wetland *(HSG C/D)*	233.5	221.4	1,748.2	$ 14,881,912	$ 95,934
	Wet Pond *(HSG C/D)*	116.7	96.2	451.2	$ 5,762,927	$ 67,226
	Infiltration Basin *(HSG A/B)*	142.6	221.3	1,757.1	$ 6,462,056	$ 59,924
Institutional *(aka Non-structural)*	Street Sweeping	267.0	11.8	84.7	$ 331,000	$ 28,051
	Catch Basin Cleaning	250.0	9.8	70.5	$ 100,000	$ 10,204
Agricultural / Other	Riparian Buffer Improvement	343.7	35.9	626.9	$ 216,000	$ 6,017
	Livestock Exclusion Fencing	10.6	3.8	51.7	$ 31,000	$ 8,158
	Totals:	**1,623.5**	**888.2**	**6,415.6**	**$ 58,308,488**	$ 65,645

Note:

1. Treated runoff depth is 1" for all structural BMPs.
2. Street Sweeping and Catch Basin Cleaning results are annual.
3. TP reduction goal is 107 lb/yr.
4. Color scale for "Cost per pound of P Reduced" ranges from lowest (green) to highest (red).

Common-sense Solutions

Give nature the opportunity to protect our waters and our communities

- ✓ Broaden our climate solutions focus! An ounce of prevention is worth a pound of cure.
- ✓ vulnerability for downstream/downslope residents and communities must be taken into account for proposed land-use changes. Strong considerations for climate change impacts must be incorporated into our land-use decision making framework so that local commissions are provided with the regulatory tools necessary to make these decisions.
- ✓ Consistent protections for riparian areas must be incorporated into our statutory and regulatory framework.

30+ YEARS OF PROTECTING CONNECTICUT'S WATERS

Rivers Alliance of Connecticut

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Scan to learn more about what we do!