

# THE CASE FOR RIPARIAN CORRIDOR PROTECTIONS

Zoning Strategies to Reduce Pollution of Inland Waters and Resultant Hypoxia of Long Island Sound

November 17, 2021  
UCONN CLEAR 2021 WEBINAR SERIES





Why Protect Riparian Corridors



Development within Connecticut's Riparian Corridors



Past Legislative Efforts to Protect Riparian Corridors



Rise of Pollutant Loadings on State Watercourses



Riparian Corridor Practices in Connecticut



Benefits of Forested Riparian Corridors



The Role of Navigable Waters



Alternative Zoning Strategies

# Agenda

# Why Protect Riparian Corridors?

---

Severity of Flooding

---

Drinking Water Quality

---

Ecosystem Health

---

Migratory Pathways for Terrestrial and Aquatic Species

---

Thermal Pollution of River Systems

---

Micro-Climate Resiliency - “Cloud Cover Benefits”  
***Breaking News***

---

The Health of Aquatic Systems in Long Island Sound

# Why Protect Riparian Corridors (cont.)?

## Federal, State, and Local Governments each play a Role

### Point Source Regulations

- State Stormwater Mgt. regulations govern point source discharges
  - Municipalities are mandated to address discharges from Municipal Separate Storm Sewer Systems (MS4).

### Non-Point Source Regulations

- Prior 2021, Local efforts to protect Riparian Corridors were discretionary in nature except for the state's 24 coastal municipalities
- **Public Act 21-29** - Mandates ALL Zoning Commissions to address land use practices influencing the hypoxic conditions in Long Island Sound.

## Why Protect Riparian Corridors (cont.)?

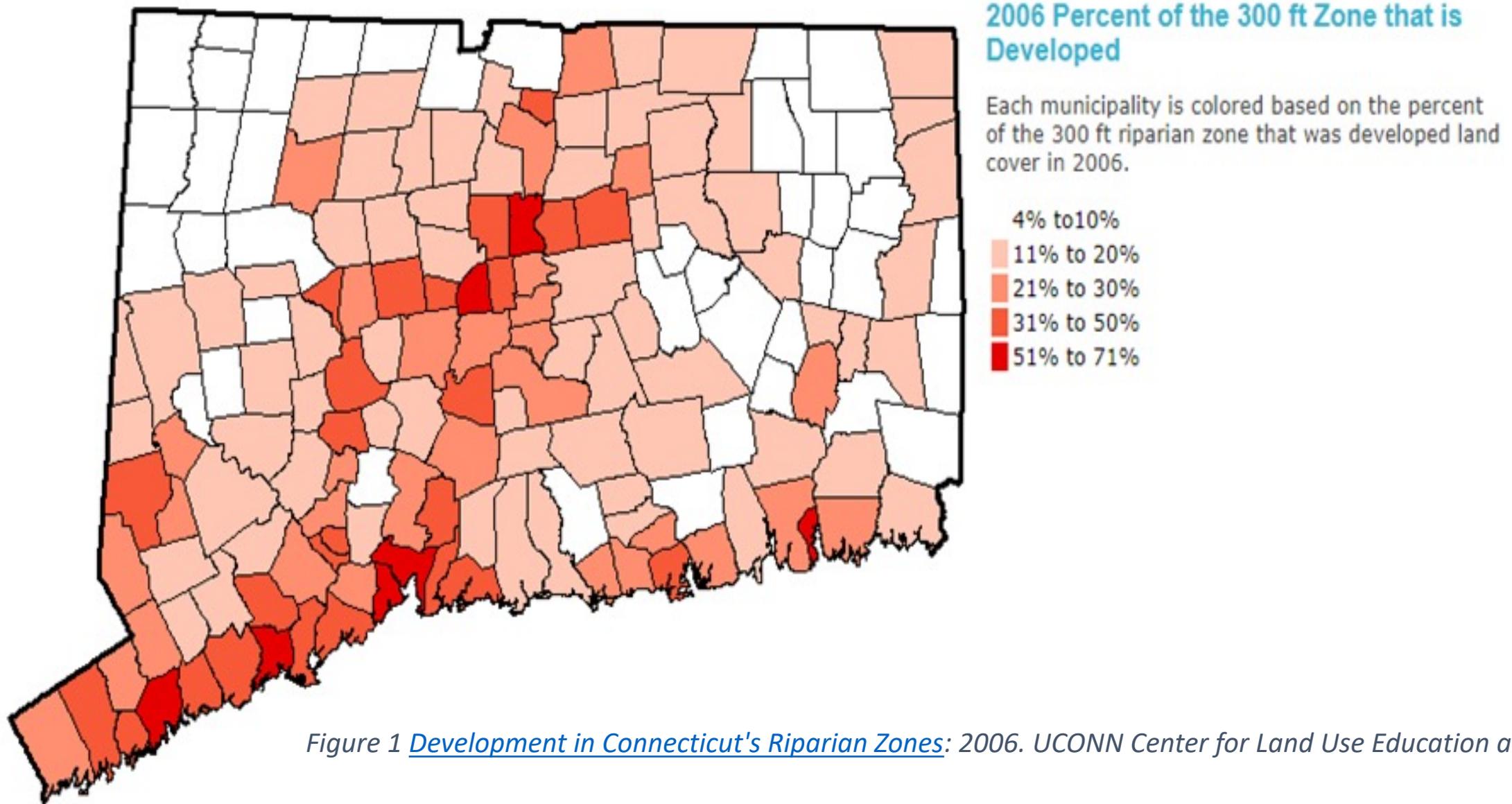
Stormwater Mgt. Programs are of limited value for non-point source discharges:

- *They “do not address a variety of water quality issues associated with piecemeal development of land adjoining streams and rivers including failing septic systems and the overuse of fertilizers and chemicals homeowners apply to their lawns and gardens.”*

Algae Growth on Holts Ice Pond, Mill River, Stamford, CT

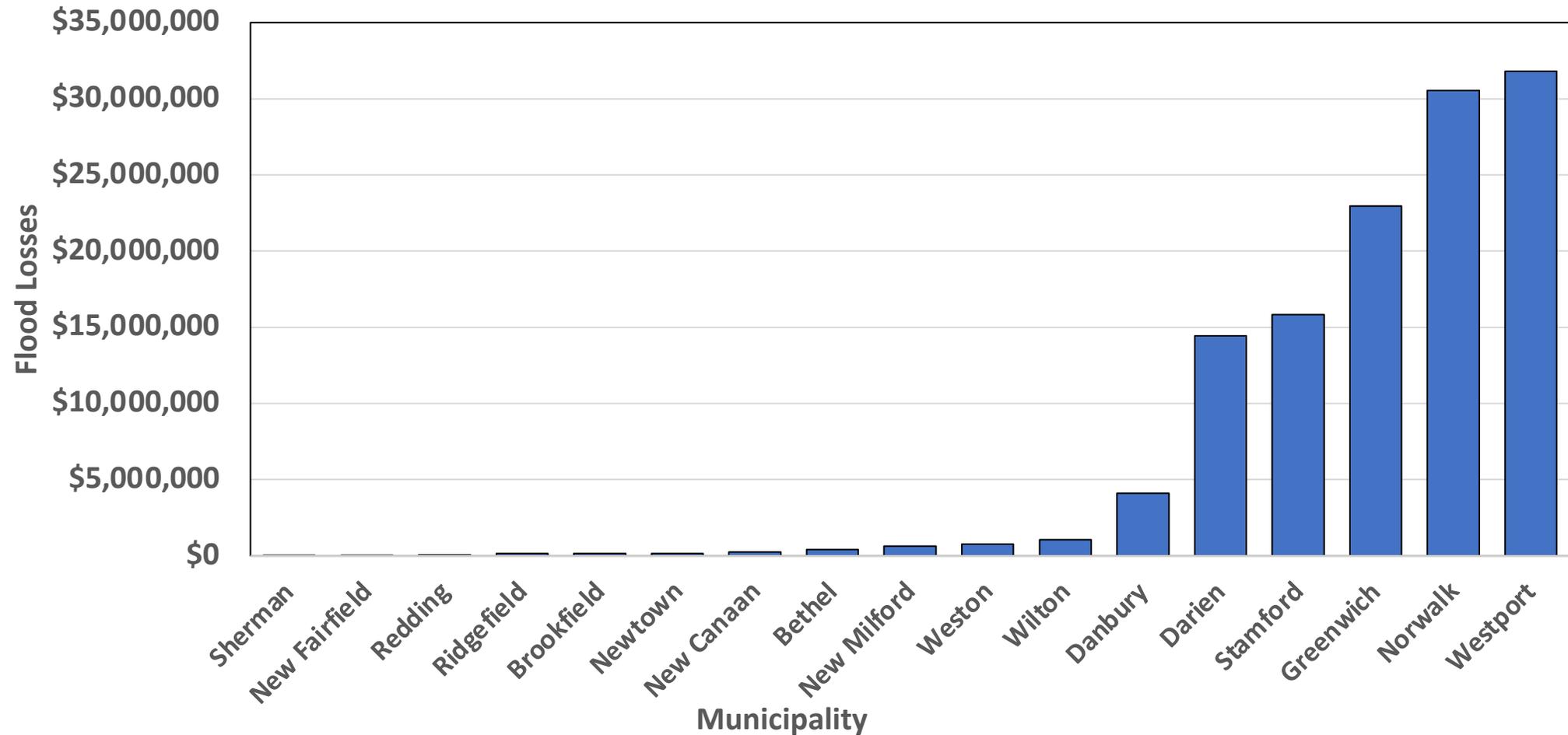


# Development along CT's Riparian Corridors



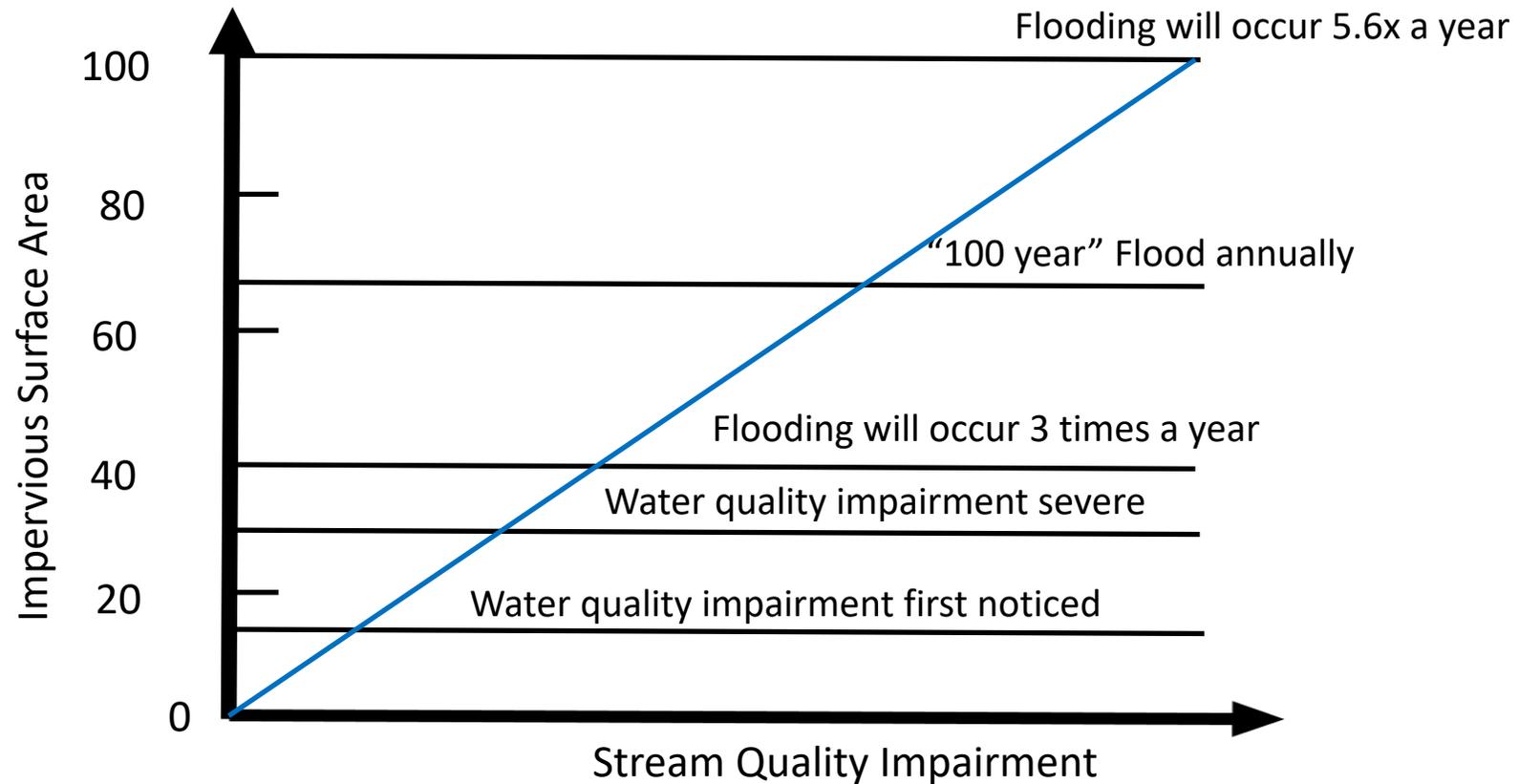
# Consequences of Development in Western CT

Figure 2: Flood Insurance Losses in Municipalities of Western Connecticut: 1984 to 2019



# Watershed Development – Impacts to Stream Quality and Flooding

## Watershed Development Effects



Source: Richard D. Klein, Urbanization and Stream Quality Impairment, Water Resources Bulletin, American Water Resources Association, Vol. 15, No. 4, August 1979.

Figure 3 Watershed Development – Impacts to Stream Quality and Flooding

# Selected Waters For Protection/Restoration

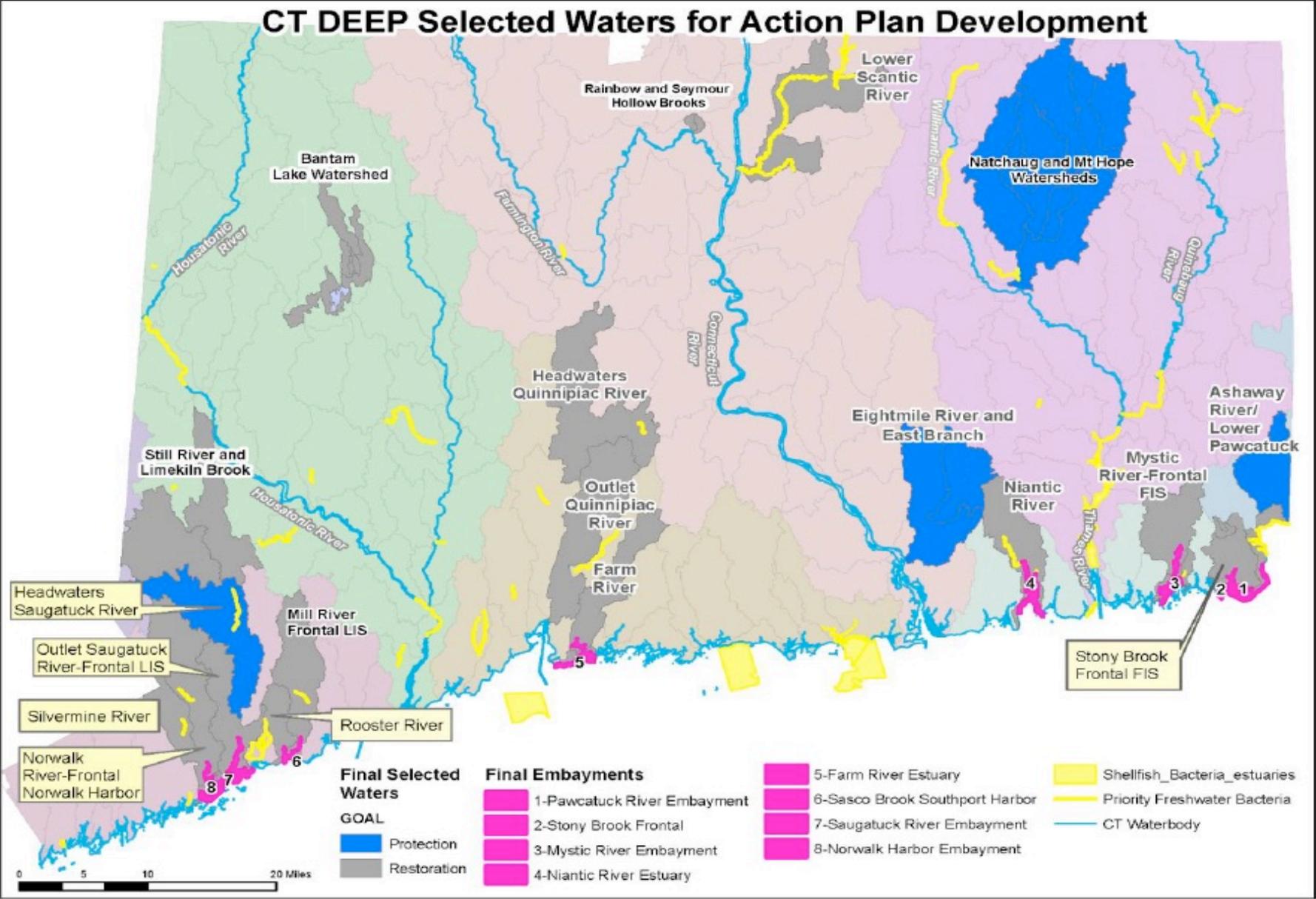


Figure 4 CTDEEP Selected Waters for Restoration and Protection

# Past Legislative Efforts to Protect Riparian Corridors

**Table 1: Federal or State Enabled Riparian Corridors in Connecticut: 1971 to 1993**

Name of River Commission	Towns involved	River Segments Included	Towns in Western Connecticut	Date Authorized by State/Federal Law
Five Mile River Commission	2	Five Mile River	Norwalk, Darien	1971
Connecticut River Gateway Commission	8	Lower Connecticut River		1973
Connecticut River Assembly	15	Upper Connecticut River		1979
Housatonic River Commission	5	Upper Housatonic River	New Milford	1979
Shepaug Bantam River Protection Commission	5	Shepaug/Bantam Rivers		1984
Niantic River Gateway Commission	2	Niantic River		1987
Housatonic Estuary Commission	6	Housatonic River		1990
Bi-State Pawcatuck River Commission	2	Pawcatuck River		1990
Bi-State Farmington River Commission	5	Farmington River		1990
Farmington River Coordinating Committee	5	Farmington River (Wild and Scenic Designation)		1993 (PL 103-313) 2016 (PL 116-9)
<b>Total 9 Commissions</b>	<b>50</b>	<b>10</b>	<b>3</b>	

# Protecting Rivers Became a Greater State Focus in 1984

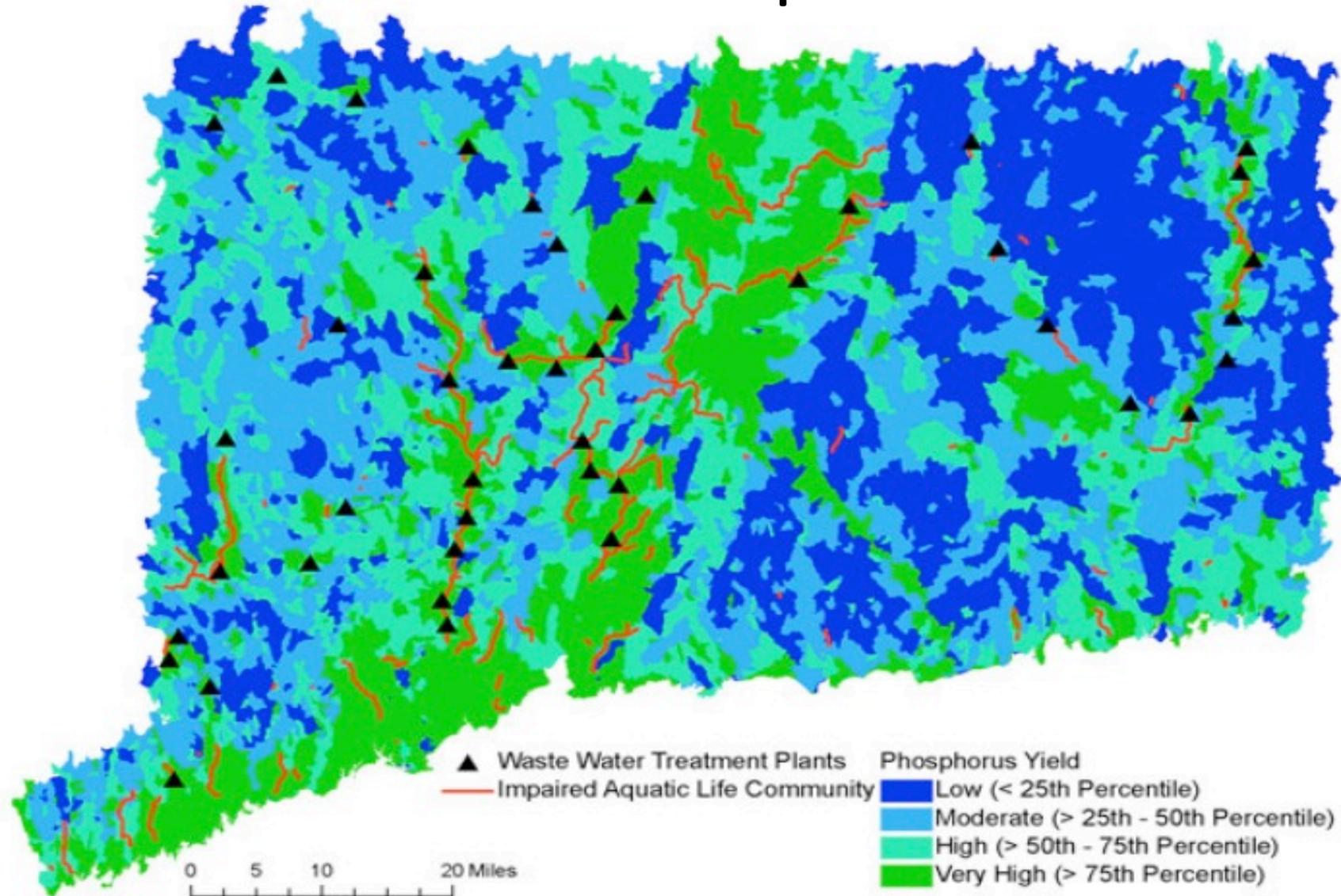
## River Policy Driven by State Policy – Not Local Governments

- **Public Act 84-522 - Made (DEP) responsible for:**
  - Determining *statewide river policy*,
  - *Identifying rivers* that should be protected,
  - Designating *protected river corridors*
  - *Approving or denying municipal applications* for such designations.
- This Law led to the Development of ***River Management Plans***
  - These have been a key tool for addressing the health of riparian corridors

# Rise of Pollutant Loadings on State Watercourses

- **High Phosphorus Levels** – found in most municipalities in Western Connecticut - and across the state.
- **State Legislative Mandate** - DEEP MUST develop a phosphorus reduction strategy (2012).
- **Reduction Strategy** – The Plan (Issued in 2017) addresses nutrient pollutant loadings to comply with Section 303(d) of the Clean Water Act.

# Statewide Phosphorus Yields



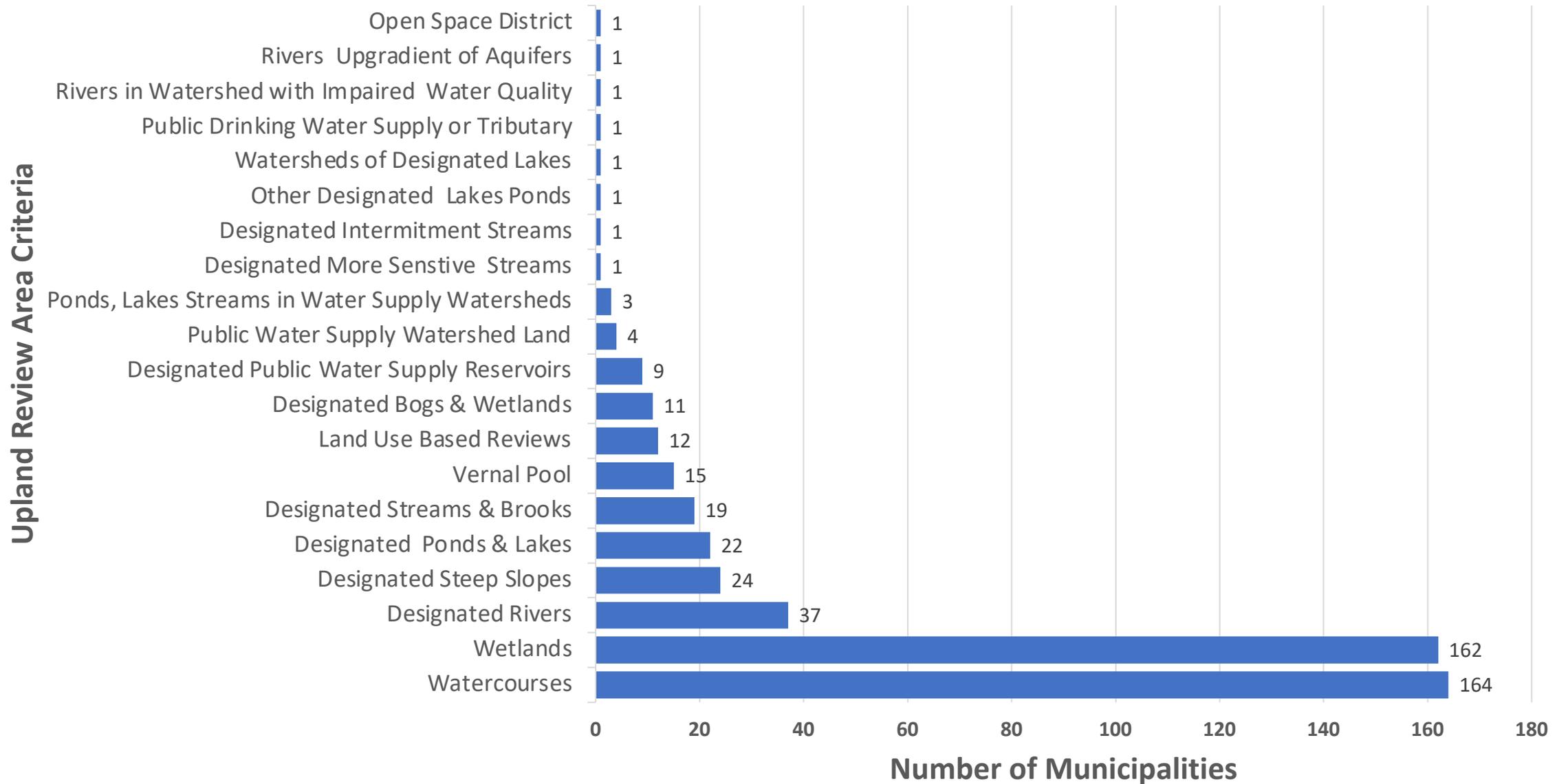
**Figure 7:** Statewide Phosphorus Yields based on using Sparrow (Moore, et.al. 2011). Aquatic life impairment based on assessment for the 2012 impaired waters list. Source: Connecticut DEEP, Recommendations for Phosphorus Strategy Pursuant to PA 12-155, February 16, 2017, Appendix B p. 2.

# Riparian Corridor Practices in Connecticut

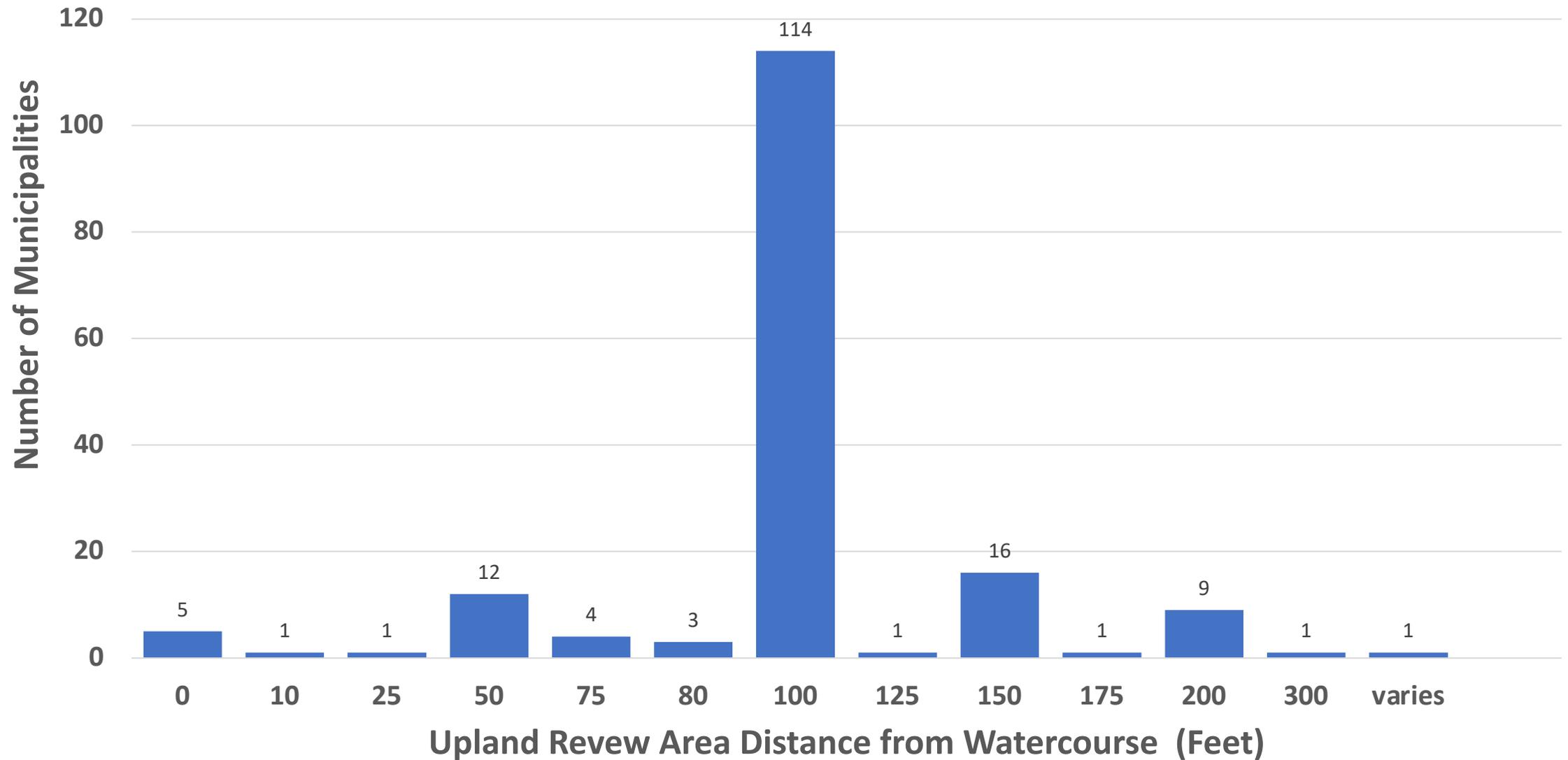
## Two Key Players in the Riparian Land Use Arena

- **Municipal Inland Wetland Agencies**
  - Authority to regulate riparian corridors under “Upland Review Area” rules
- **Planning and Zoning Commissions**
  - Authority to regulate land use including riparian setbacks, flood control standards, ecosystem based floating zones and watershed based land use controls.

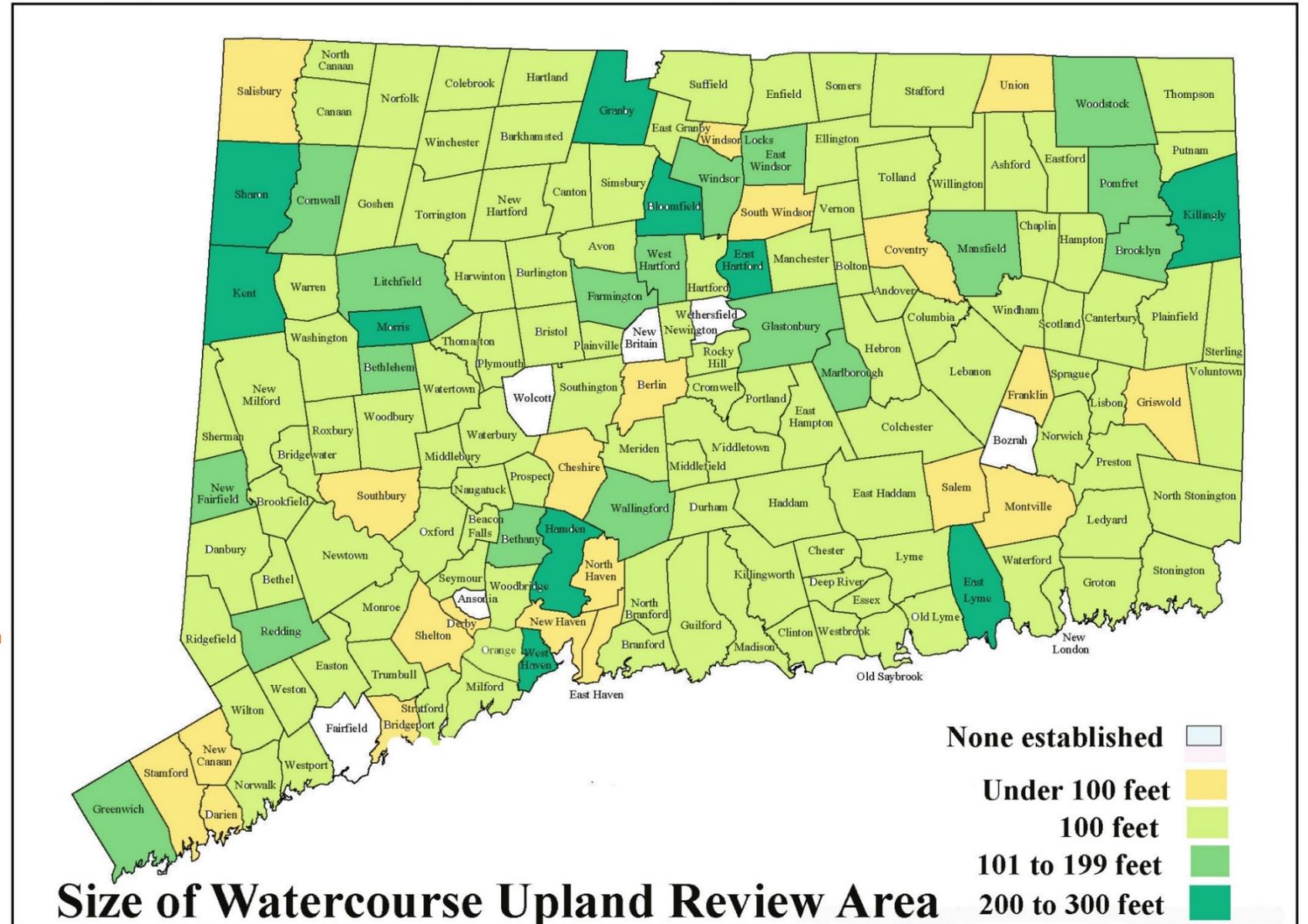
# Figure 5: Connecticut Municipalities With Specific Upland Review Area Criteria in Wetland Regulations



**Figure 6: Inland Wetland and Watercourse Regulations for Watercourse Upland Review Areas**



# Connecticut's Watercourse Upland Review Areas:2021



Note: Fairfield Upland Review Area varies by river

**Table 3: Water Resource Setback Zoning Practices in Connecticut Municipalities**

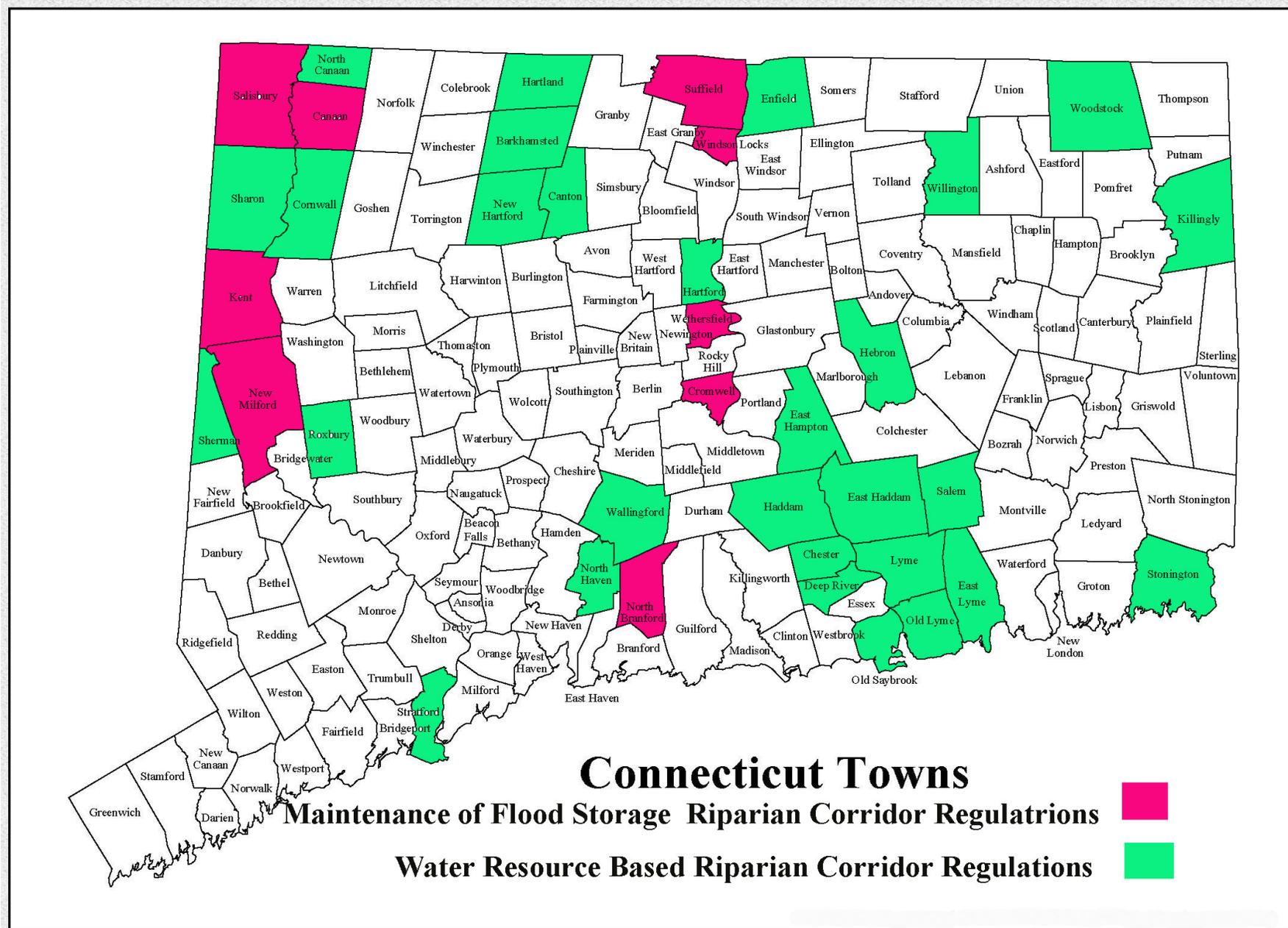
<b>Setback Practice</b>	<b>Number of Municipalities</b>	<b>Average Setback</b>
<b>Ecological Planning</b>		
<b>Conservation Setbacks</b>	5	300
<b>Maintain Flood Storage</b>		
<b>Riparian Setbacks</b>	9	199
<b>Flood Storage Zone Materials Setbacks</b>	1	25
<b>Minimize Land Disturbance</b>		
<b>Cemetery Plot Setbacks</b>	1	75
<b>Parking Facility Setbacks</b>	3	28
<b>Land Disturbing Activity Setbacks</b>	3	33
<b>Subdivision Setbacks</b>	3	25
<b>Excavation Setbacks</b>	6	53
<b>Timber Cutting Setbacks</b>	3	75
<b>Tower Setbacks</b>	2	50
<b>Building Setbacks</b>	17	61

**Table 3: Water Resource Setback Zoning Practices in Connecticut Municipalities (Cont.)**

<b>Setback Practice</b>	<b>Number of Municipalities</b>	<b>Average Setback</b>
<b>Protect Water Resource</b>		
Waterbody Setbacks	2	38
Riparian Setbacks	<b>30</b>	<b>109</b>
Watershed Setbacks	3	117
<b>Reduce Pollutant Loading</b>		
Manure Setback	11	127
Compost Pile Setbacks	1	200
Hazmat Discharge Setbacks	1	150
Hazmat Storage Setbacks	1	50
Septic Setbacks	6	88
Animal Barns Setbacks	7	86
Leaf Composting Setbacks	1	100
Junk Yard Setbacks	1	200
Salt Storage Setbacks	1	250
Fertilizer Setbacks	1	150
<b>Grand Total</b>	<b>119</b>	<b>100</b>

**Note:** Because East Hampton has two riparian zoning regulations (one riparian based and the other to protect water resources), there are only 38 municipalities with riparian setbacks.

# Connecticut's Protected Riparian Corridors: 2021



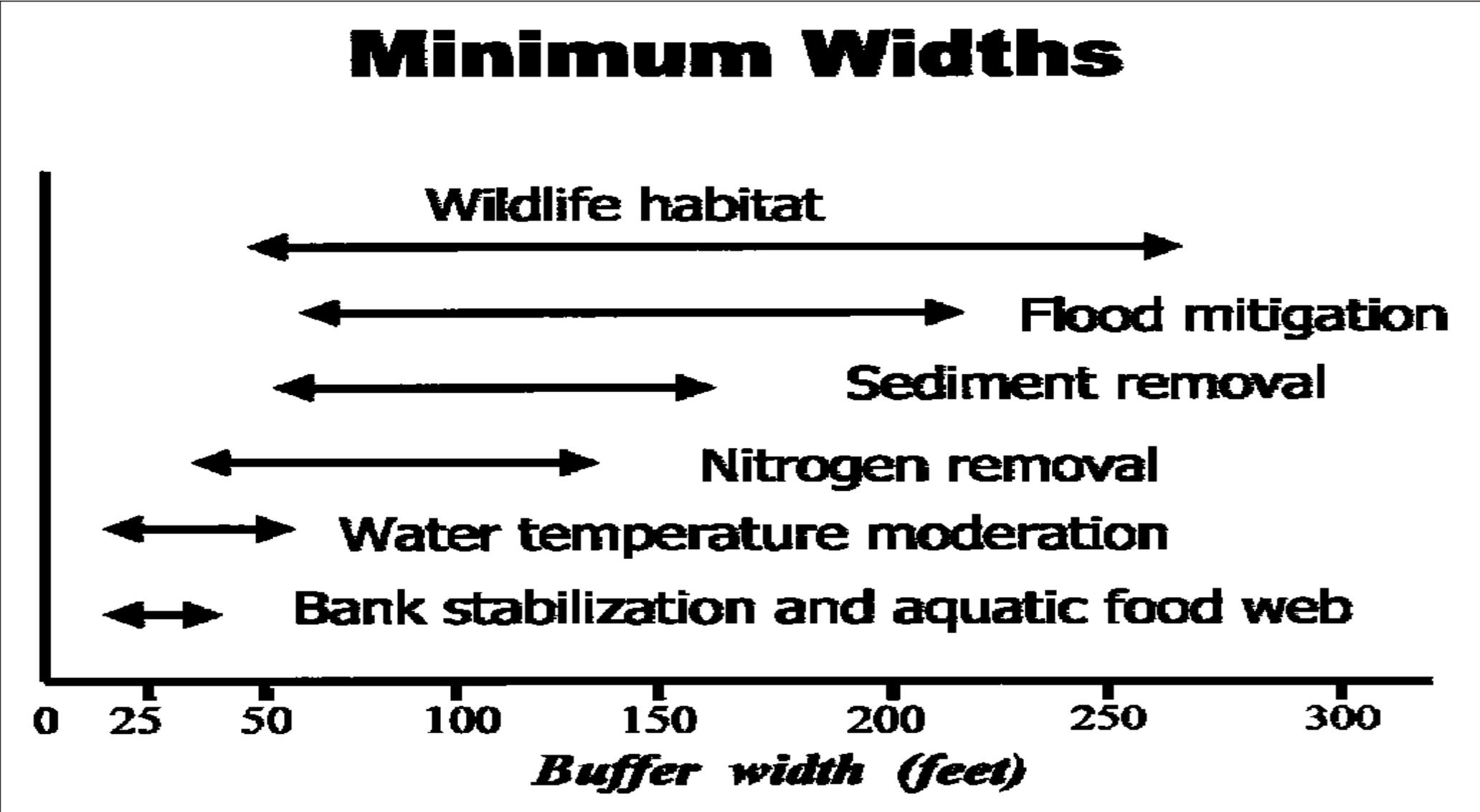
# Benefits of Forested Riparian Corridors

**Table 4: Effect of Different Size Buffer Zones on Sediment & Nutrient Reduction from Surface Runoff**

Item	Buffer Zone			Reduction: 100 x (input-output/input)		
#	Width (meters)	Width (Feet)	Plant Cover	Sediment %	Nitrogen %	Phosphorus %
1	4.6	15	Grass	61	4	28.5
2	9.2	30	Grass	74.6	22.7	24.2
3	19	62	Forest	89.8	74.3	70
4	23.6	77	Grass/Forest	96	75.3	78.5
5	28.2	93	Grass/Forest	97.4	80.1	77.2
Item 4: Width comprises 4.6 meters grass buffer plus 19 meters of trees						
Item 5: Width comprises 9.2 meters of grass buffer plus 19 meters of trees						

Source: Richard Lowrance, et. al., [Water Quality Functions of Riparian Forest Buffer Systems in the Chesapeake Bay Watershed](#), August 1995, p. 30

Figure 8: Minimum Riparian Buffer Widths Vary with Desired Ecosystem Services



Source: Palone, Roxane, S, and Albert H. Todd, eds. *Chesapeake Bay Riparian Handbook: A Guide for Establishing and Maintaining Riparian Forest Buffers*, pp. 6-8.

# The Role of Navigable Waters

## Public Act 21-29 Links Hypoxia to Navigable Waters

- Zoning regulations adopted pursuant to Section 8-2 of CT General Statutes shall: “In any municipality that is contiguous to or on a navigable waterway draining to Long Island Sound,
  - A) be made with reasonable consideration for the **restoration and protection of the ecosystem and habitat of Long Island Sound**;
  - B) be designed to **reduce hypoxia, pathogens, toxic contaminants** and floatable debris on Long Island Sound; and
  - C) provide that such municipality's zoning commission consider the environmental impact on Long Island Sound coastal resources, as defined in section 22a-93, of any proposal for development.”

# The Role of Navigable Waters

## Does Your Municipality Discharge Pollutants to Navigable Waterways draining to Long Island Sound?

- The Answer Lies in Recent U.S. Supreme Court and EPA Rulings
  - Recent Supreme Court decisions and a 2020 EPA rule have narrowly strengthened Clean Water Act authority over tributaries of navigable waters when it can be shown that they are hydrologically connected to downstream river systems and are the cause of pollution of the waters of the United States.
- Hypoxia is a Federal Water Compliance Issue – the ultimate Court arbiter of hypoxic conditions in the Sound is EPA and Federal Courts.

22250 Federal Register / Vol. 85, No. 77 / Tuesday, April 21, 2020 / Rules and Regulations	
<b>DEPARTMENT OF DEFENSE</b> Department of the Army, Corps of Engineers <b>33 CFR Part 328</b> <b>ENVIRONMENTAL PROTECTION AGENCY</b> <b>40 CFR Parts 110, 112, 116, 117, 120, 122, 225, 226, 300, 302, and 401</b> <b>(EPA-HQ-OW-2018-0146; FRL-10004-88-OW)</b> <b>608-2040-AFF5</b> <b>The Navigable Waters Protection Rule: Definition of "Waters of the United States"</b> <b>AGENCY:</b> Department of the Army, Corps of Engineers, Department of Defense, and Environmental Protection Agency (EPA). <b>ACTION:</b> Final rule. <b>SUMMARY:</b> The Environmental Protection Agency and the Department of the Army are publishing a final rule defining the scope of waters federally regulated under the Clean Water Act. The Navigable Waters Protection Rule is the second step in a comprehensive, two-step process intended to review and revise the definition of "waters of the United States" consistent with the Executive Order signed on February 28, 2017, "Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the 'Waters of the United States' Rule." Once effective, it replaces the rule published on October 22, 2019. This final rule implements the overall objective of the Clean Water Act to restore and maintain the integrity of the nation's waters by maintaining federal authority over those waters that Congress determined should be regulated by the Federal government under its Commerce Clause powers, while adhering to Congress' policy directive to preserve States' primary authority over land and water resources. This final definition increases the predictability and consistency of Clean Water Act programs by clarifying the scope of "waters of the United States" federally regulated under the Act. <b>DATES:</b> This rule is effective on June 22, 2020. <b>ADDRESSES:</b> The EPA has established a docket for this action under docket ID No. EPA-HQ-OW-2018-0146. All documents in the docket are listed on the <a href="http://www.regulations.gov">http://www.regulations.gov</a> website. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through <a href="http://www.regulations.gov">http://www.regulations.gov</a> . <b>FOR FURTHER INFORMATION CONTACT:</b> Michael McDevitt, Crosses, Wetlands, and Communities Division, Office of Water (5054-T), Environmental Protection Agency, 1200 Pennsylvania Avenue NW, Washington, DC 20460; telephone number: (202) 566-2465, email address: <a href="mailto:OWAwaterinfo.gov">OWAwaterinfo.gov</a> ; or Jennifer A. Meyer, Regulatory Community of Practice (CBOW-CO-R), U.S. Army Corps of Engineers, 441 G Street NW, Washington, DC 20314; telephone number: (202) 761-5003; email address: <a href="mailto:EGACF_CWA_Ruleb@usace.army.mil">EGACF_CWA_Ruleb@usace.army.mil</a> . <b>SUPPLEMENTARY INFORMATION:</b> <b>Table of Contents</b> I. General Information A. Where can I find information related to this rulemaking? B. What action are the agencies taking? C. What is the agencies' authority for taking this action? II. Background A. The Final Rule B. History of This Rulemaking 1. The Clean Water Act 2. Regulatory History 3. U.S. Supreme Court Decisions 4. The 2015 Rule C. Executive Order 13778 and the "Step One" Rulemaking D. Summary of Stakeholder Outreach and the "Step Two" Rulemaking E. Overview of Legal Construction for the Final Rule 1. Statutory Framework 2. U.S. Supreme Court Precedent 3. Principles and Considerations F. Summary of Final Rule as Compared to the 2015 Rule and the 2019 Rule G. Existing Guidance III. Definition of "Waters of the United States" 1. Key Terms and Concepts 2. Typical Year 3. Potential, Intermittent, and Episodic 4. Breaks 5. Territorial, Sun and Traditional 6. Navigable Waters a. Instream Waters D. Tributaries E. Unflow F. Lakes and Ponds, and Impoundments of Jurisdictional Waters G. Adverse Wetlands H. Waters and Features That Are Not Waters of the United States 1. Portions of the Definition of "Waters of the United States" in the Code of Federal Regulations IV. State, Tribal, and Federal Agency Datasets of Waters of the United States	<b>Overview of the Effects of the Rule and Supporting Analyses</b> VI. Statutory and Executive Order Reviews A. Executive Order 12868: Regulatory Planning and Review; Executive Order 13526: Improving Regulation and Regulatory Review B. Executive Order 13771: Reducing Regulation and Controlling Regulatory Costs C. Paperwork Reduction Act D. Regulatory Flexibility Act E. Unfunded Mandates Reform Act F. Executive Order 13175: Federalism G. Executive Order 13177: Consultation and Coordination With Indian Tribal Governments H. Executive Order 13646: Protection of Children From Environmental Health and Safety Risks I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use J. National Technology Transfer and Advancement Act K. Executive Order 12888: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations L. Congressional Review Act <b>I. General Information</b> A. Where can I find information related to this rulemaking? 1. Docket. An official public docket for this action has been established under docket ID No. EPA-HQ-OW-2018-0146. The official public docket consists of the documents specifically referenced in this action and other information related to this action. The official public docket is the collection of materials that is available for public viewing at the OW Docket, EPA West, Room 3334, 1201 Constitution Ave. NW, Washington, DC 20004. This Docket Facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The OW Docket telephone number is (202) 566-2426. A reasonable fee will be charged for copies. 2. Electronic Access. You may access this Federal Register document electronically under the "Federal Register" listings at <a href="http://www.regulations.gov">http://www.regulations.gov</a> . An electronic version of the public docket is available through EPA's electronic public docket and comment system, EPA Dockets. You may access EPA Dockets at <a href="http://www.regulations.gov">http://www.regulations.gov</a> to view public comments as they are submitted and posted, access the index listing of the contents of the official public docket, and access those documents in the public docket that are available electronically, including the economic and regulatory analyses for the final rule. For additional information about

Federal Register,  
April 21, 2020

# Land Use Controls within the Hierarchy of Water Quality Concerns

## Three Basic Land Use Strategies to Meet PA 21-29

### Watershed Mgt. Protections

Basin level Controls:

1. Impermeability controls
2. Land Use Compatibility
3. Chemical Management

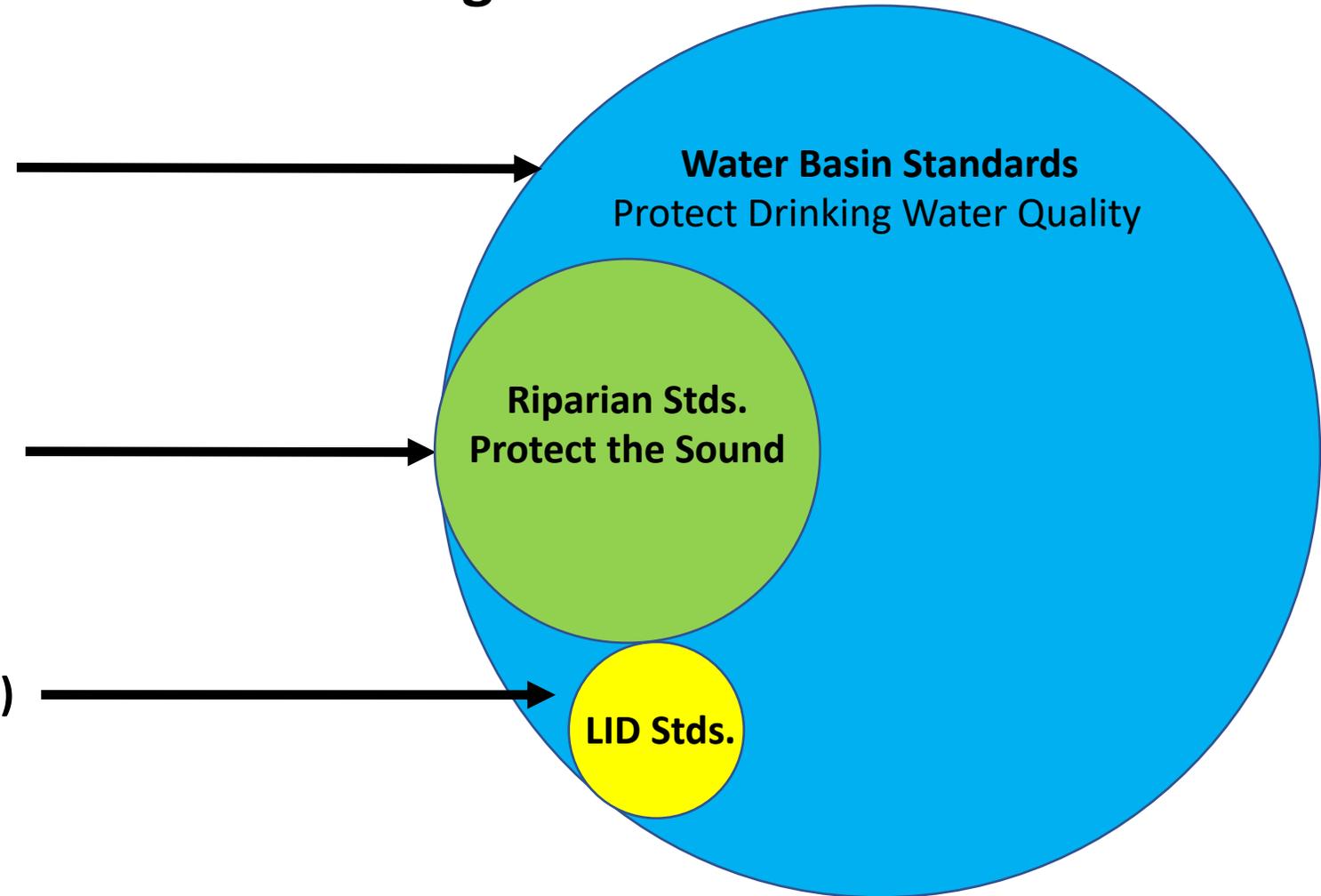
### Riparian Corridor Protections

River level Controls

1. Minimum Setbacks
2. Tree Canopy Protections

### Low Impact Development (LID)

Project Based Reviews



**Note:** These three strategies are not mutually exclusive – rather they are complementary.

**Note:** Melded together they form a comprehensive management plan for the protection of Long Island Sound and its contributing watersheds.

# Questions?

**Charles Vidich**, Senior Project  
Manager  
Western CT Council of  
Governments  
cvidich@westcog.org

**Kristin Floberg**, Planner  
Western Connecticut Council  
of Governments  
kfloberg@westcog.org

<https://westcog.org/regional-planning/zoning-strategies/>

